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THE PRESIDENT'S ADDRESS.

DELIVERED AT THE ANNUAL MEETING OF THE CANADIAN MEDICAL
ASSOCIATION, MONTREAL, AUGUST 26TH, 1896.

BY

JAMES THORBURN, M.D., Toronto.

I desire in the first place, to thank you for the honour you have conferred upon me in making me President of this great Association. I consider it the highest honour in the gift of the profession of the Dominion of Canada. When I think of the eminence of my predecessors, I have great apprehension of my ability to meet your expectations; but, gentlemen, relying on your kind assistance and loyal support, I will fulfil the duties of my office to the best of my skill.

During the past year many bright men have gone the way of all living. Medical science has lost her most valued son in Pasteur. Although many names are prominent in connection with the recent great advances that have been made in medicine,—that of Pasteur will always be pre-eminent. He may fairly be credited with having put the germ theory of disease beyond all dispute. Protective inoculation, apart from Jenner's work, was first understood and successfully applied by him. The surgery of the present day owes its success very largely to him. Lister was stimulated to carry out his early experiments upon suppuration and infection in consequence of following Pasteur's researches upon fermentation, including ammoniacal fermentation of urine in the bladder. More recent therapy owes much to him. His success in the handling of patients, who were presumably inoculated with rabies, is well known, and there can be little doubt that the serum-therapy of to-day comes indirectly from

Pasteur's labours. It may be that the results of the work of Pasteur and a host of others on the lines indicated, are not yet thoroughly understood or appreciated by the profession generally; but the knowledge that we have recently obtained, respecting both the diagnosis and treatment of such diseases as hydrophobia, anthrax, tetanus, diphtheria, tuberculosis, Asiatic cholera, typhoid fever, and septicaemia has already been productive of good results and is likely to do much more in the future. Some are still sceptical as to the good that has been accomplished through modern serum-therapy, but the ordinary conservatism of our profession has some influence now, as it so frequently had in the past, in preventing us from accepting new theories. One of the most remarkable instances of extreme conservatism that we know of, was the opposition that Jenner encountered when he gave to the world the result of his experience in his work in connection with vaccination. At the present time the number of those opposed to vaccination is very small indeed. The centenary of the vaccination of James Phipps, by Jenner, has recently been celebrated over the civilized world, and well might it be.

By the discovery of vaccination and its subsequent use, more lives have been saved than all the wars devised by the wickedness of man have destroyed; and I think it would be in keeping with the custom of our profession if some resolution were passed by this Association expressive of our gratitude for this wonderful discovery.

In considering the different events of the past year it becomes my melancholy duty to refer to the deaths of some of our ablest and most highly respected members. Drs. Fenwick and Saunders, of Kingston, and Dr. McFarlane, of Toronto, were well known to most of you as highly successful medical practitioners and worthy and honourable men in all respects. They have gone from our midst, and it is difficult for us who are left to realize the sad fact that we will never more see their kindly faces at our meetings. It is a somewhat remarkable coincidence that these three honoured members of our Association died from septic poison, received while in the discharge of their duties, and their deaths must ever remain as witnesses of the self-sacrifice and devotion of our noble calling. No soldier leading a forlorn hope died a braver death. The duty of the military man is to destroy life and weaken the enemy; that of the medical man is to relieve pain and prolong life. May their honoured names forever remain green in our memories.

An important subject for us to consider, gentlemen, is a common registration for the Dominion, or inter-provincial reciprocity. The various Provinces of our Dominion have regulations as to their medi-

cal curricula, which, while generally satisfactory from a local point of view, are widely divergent. This condition of affairs has been unavoidable. The wide extent of our country with a sparse population, especially in certain localities, has made it difficult to maintain a uniformly high standard of medical education, both in the preliminary and regular medical courses. I think, however, the time has arrived when the obstacles in the way may be overcome by mutual concessions on the part of the different provincial medical authorities.

The importance of obtaining a common standard for the whole Dominion cannot be questioned. As it is now, the physician's license does not extend beyond his own province. I have, however, every reason to believe that with a common Canadian standard we could have reciprocal registration with the motherland, as already provided by the Imperial Statutes, 1888, and then we would have uniformity of registration, not only in the Dominion, but throughout the Empire, of which we are all so proud, and whose banner, wherever it waves, is the emblem of civil and religious liberty.

Speaking as a member of the Ontario Medical Council, I may say we have always endeavoured to maintain a high standard of preliminary and medical education. I have no doubt, however, that our Council would give careful consideration to any scheme unanimously recommended by the Canadian Medical Association.

The want of uniformity of registration in the different provinces is not only detrimental to our common progress and national unity, but has a tendency to drive away many good and valuable men from our land. As the law stands now, we are simply localised practitioners, liable to be prosecuted if we venture to practice beyond our immediate province. The making of a curriculum suited to the whole Dominion is not an easy matter. After having considered the question with some care, and having consulted with some of the most prominent teachers and practitioners in the various provinces, I would suggest that throughout the Dominion a four years' course with sessions of eight or nine months each, be devoted to lectures, hospital, and laboratory work. I should not have the number of didactic lectures increased, but the number delivered daily decreased, and I should recommend that no lecture should occupy more than forty-five minutes. As it is at present, nearly the whole day is spent by the student attending lectures, leaving little or no time for the important branches involving observation and research. The five years' course with winter session of six months, and one summer session of three months, is, in my opinion, not equal to a four years' course with sessions of eight or nine months. We all know from personal experi-

ence, that the six months' term is practically but a five months' session: for allowance must be made for the two weeks' holiday at Christmas, and the last two weeks in March, which are taken up in examinations, etc. The long interval between the cessation of lectures in March and their commencement in October, over six months, is practically a barren period to most of the students. In the longer session of eight months, the student could divide his time to better advantage between attending lectures and taking part in practical work at the bedside, laboratory, etc. In addition, it would afford him some time for social life, which, in these days of rush and hurry, is sadly neglected, frequently to the detriment of many well informed medical men, and in consequence of which they frequently fail to attain that success in life to which their professional knowledge entitles them. We should not only be educated men, but also men of gentle deportment and good manners.

I hope, gentlemen, that the committee appointed at our last annual meeting on reciprocal registration, will be able to report favourably for the eight months' session, as I am thoroughly convinced that such a course would be better both for the student and teacher.

Another subject of very considerable importance is the relationship of medical men to life insurance. Heretofore no special reference has been made to the subject. It has a most practical bearing on the success of every medical man. It is a well known fact that many physicians can diagnose a disease with almost a perfect certainty, but from lack of special training as to the probable expectation of life, are often at a loss to state, with any approximate degree of certainty, what that may be in any individual life.

It has been said, and truly so, that the medical examiner is the watchman at the gate of entrance to life insurance. His office is a most sacred one, and, from the fact that so much confidence is placed in him, it is his duty to shield his company from every appearance of imposition. Examining for life insurance is so important, and the amount paid in medical fees so enormous, that in common fairness and honesty, physicians should fit themselves most thoroughly for this branch of their profession. This has been recognized by the University of Vermont, which provides a course of lectures in life insurance medical examinations. The services which every first class insurance company is seeking, are those of the educated, scientific, and skilled physician. The companies require the very best services that can be obtained. In our own Dominion the monied interest involved in life insurance is enormous. The obligations of the regular life institutions alone to policy-holders amount to about three hundred

and twenty millions of dollars, and in this I do not include the numerous benefits of friendly and assessment societies. These figures are being augmented each year by about twelve millions of dollars, and in the past twenty years alone, they have been increased about four fold. The profession receives from the companies for medical examination fees yearly a sum not less than \$150,000, and if we turn to the land immediately to the south of us, the figures quoted appear but insignificant. The thirty-three companies reporting to the New York insurance department, are responsible to policy-holders in the enormous sum of nearly six billions of dollars, and pay for medical examination fees a sum not less than two millions of dollars, which does not include the compensation of medical officers and directors, but simply the fees for the examination of applicants.

Such an important part has the physician played in his relation to life insurance, that in the United States there was formed some five or six years ago, a medical directors' association, and some two or three years later, a similar association was organized in England. In the former organization, the chief medical officers of some of our more prominent Canadian Life Insurance Companies are members. The objects of these associations are to obtain increased information and greater unity of opinion regarding medical subjects connected with life insurance. The American society consists only of the life insurance medical directors; but in the English society, both the medical directors and all physicians who are legally qualified are eligible for membership. The plan of the British Association appears to be the better, for, while there are many questions which more particularly concern the executive phase of the medical department of the business, the real utility of these organizations is, and should be, the discussion of all medical subjects in relation to insurance, and the securing as much as possible of uniformity of opinion and practice. This can only be done by a conference, not simply of medical directors, but of both directors and examiners.

The question of professional secrecy is one which is ever and anon brought prominently before the profession and the public. In some countries, for example, France, and in some of the States of the North American Union, the physician is not allowed to divulge information received from his patient in a professional capacity, unless it involves conspiracy against the State or murder. Legal decisions in Britain and her colonies, as well as in some parts of the United States, are not satisfactory or definite, and much is left to the decision of the judge and jury. No one questions the sacredness of married life, and the divulging of information obtained by a physician in his profes-

sional capacity would certainly be considered as contrary to all good morals and unbecoming the conduct of a physician and a gentleman. It is to be regretted and severely deprecated that some medical men are over-fond of retailing their professional experiences—some for the mere love of gossip, others from a desire to advertise themselves as something unusual. All such conduct is inexcusable, and I am glad that it is condemned by the majority of the profession, as well as by the more thinking public. It is when a medical man is brought into a court of law that his position is somewhat altered. As I have already intimated, in some countries all professional information is considered sacred, and must not be divulged voluntarily, nor can the physician be compelled to reveal it. From a careful study of cases in Great Britain and other English-speaking countries, I learn the decision of judges in general is to make it compulsory on a medical man to tell under oath, like any other witness, all that he may know, whether his knowledge has been obtained in a medical capacity or otherwise. If, however, the knowledge involves the witness he need not incriminate himself. I think this ruling is of doubtful expediency; its tendency is to disturb the mutual confidence that exists between the patient and the physician—that honourable, sacred feeling so healthful to both parties. There are, I must confess, so many circumstances connected with individual cases that a fixed rule is not always possible. Speech is silver, but silence is gold.

In view of the wonderful discoveries of modern days, especially in reference to mechanical appliances, one should hesitate before pronouncing emphatically against the possibility of almost any discovery. The uses of electricity are so varied and well established that we should not ignore any statement as to its results without investigation. It was only the other day that a message was sent around the civilized world in a space of time not greater than I am occupying in speaking to you now. Electricity has also been recognized as a very important therapeutical agent in the treatment of diseases. One of the most recent discoveries, known as the Roentgen Rays is the skiagraphing or photographing of the shadows of internal parts through dense structures, muscles and bones. This must prove of great assistance in the diagnosing of many diseases hitherto obscure, and must also prove of great service to the surgeon, in locating the presence of bullets, needles, and other substances that have entered the body, as well as in indicating the presence of disease, for example, in case of injuries to the vertebrae, stone in the gall bladder, kidney, and vesical bladder, the position of the foetus in utero, in fact, gentlemen, I have no doubt but that the uses of the instrument will become most frequent as improvements are made upon it.

I have watched the growth and development of this Association with the deepest interest. I had the privilege and pleasure of being present at its first meeting held in Quebec in 1867. Has it received the support from the various parts of the Dominion to which it is entitled? I don't know that I can say unreservedly, yes; but, I certainly can say that it has ever and always received the most loyal and cordial support of the profession of Montreal. I have no hesitation in telling the honourable and zealous body of physicians and surgeons of this city, that our members from the east and from the west, from the Atlantic and the Pacific, highly appreciate the work you have done in the interests of our national Medical Society, and I think I may take the liberty of offering you the congratulations of the medical profession from the various provinces of our great Dominion, on the honour that has been conferred on Montreal, by the unanimous decision of the Council of the British Medical Association, to hold its next annual meeting in your fair and prosperous city. I also have much pleasure in tendering our congratulations to your distinguished townsman, Dr. Thomas G. Roddick, the President elect.

Many subjects of a scientific nature in the various departments of medicine, will be brought before you, and I know that they will receive your most careful consideration, and I ask you one and all to put forth the most strenuous efforts to make this meeting a pronounced success.

In conclusion, gentlemen, allow me to express the hope that the Canadian Medical Association will continue to extend its usefulness and maintain its high reputation; and, in addition, that we may ere long have a common standard of medical education in Canada, with reciprocity between our different provinces, and also reciprocity between our Dominion and the mother country.

THE ADDRESS IN MEDICINE.

DELIVERED AT THE ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION, MONTREAL, AUGUST 26TH, 1896.

BY

GEORGE WILKINS, M.D., M.R.C.S., Eng.,

Professor of Medical Jurisprudence and Lecturer on Histology, McGill University,
Physician to the Montreal General Hospital.

GENTLEMEN,

When asked to deliver the address in medicine, naturally I felt quite proud of the honour. At the same time I must confess I was puzzled as to the text I should select for my discourse. In the early part of my professional career, as a young practitioner, with much spare time at my disposal, I was able to undertake experimental physiological and pathological work, which a busy routine practice later on compelled me to abandon. Possibly this may be considered a sufficient excuse for me to-day taking up as the subject of my address, "The modern treatment of some diseases as the result of experimental investigation." Whilst writing these lines, and excusing myself on the grounds of press of work, I cannot help thinking that some of the greatest advances in modern surgery and medicine are due to the investigations of some of our busiest of men.

About this time twenty years ago I had the instructive pleasure of seeing Mr. Lister, now Sir Joseph, astonish his audience by assertions and proof that many surgical conditions were due to the access of germs, and also by demonstrating the freedom with which, under the spray, cavities hitherto considered inaccessible to the surgeon might be invaded consistent with longevity. Since that time enormous strides have been made, both in medicine and surgery, resulting in many innovations in the treatment of disease.

Although in many respects new, they are practically of remote origin. The grand discovery, or rather experiment, of Jenner's just one hundred years ago, cannot yet be fully estimated. When he vaccinated the eight year old boy from the infected hand of a dairy-maid, and subsequently inoculated him with small-pox, he may truly be said to have laid the foundation of microbic pathology, although he knew nothing of microbes. Yet it is extraordinary to note how the centenary year of this grand discovery has been kept in his own town of Gloucester. Here, more than any other place in Her Majesty's dominions, has the anti-vaccination cry been raised, and in conse-

quence during the early part of this year the mortality from smallpox amongst the unvaccinated has been frightful. About the very day, one hundred years later, on which he vaccinated the Phipps boy, we find those who were the most bitter opponents of his teachings, rushing to avail themselves of his precepts by being protected by vaccination.

Although Jenner little thought that micro-organisms played any role in disease, we find that the theory was by no means a new one, for fifty years previously Linnaeus had stated that minute organisms were the cause of many diseases. He named amongst others the plague, smallpox, measles, syphilis, dysentery and whooping-cough. Since Jenner's time, others, notably Ehrenberg, described "infusorial animals" which he said were the cause of many diseases affecting man. Ten years subsequently, Sir Henry Holland after studying the life history of the minute organisms seen in water with the microscope, came to the conclusion that many diseases must be due to the presence of organisms in the atmosphere which the microscope of the day was unable to demonstrate. The improvement in this instrument and in the preparation of structures for examination has opened up new avenues to knowledge. By these means we have been able to penetrate still deeper into the secrets of the organism, and through its revelations Virchow was able to promulgate the doctrine of cell pathology that has done so much to place the science of medicine on an intelligible basis. Improved methods of staining have enabled us to identify different structures in their minutest ramifications. It has made it possible to distinguish between active protoplasm and the material formed by it, and has revealed essential differences between cells otherwise apparently alike in all respects.

With its aid and working upon the lines commenced by Jenner, Pasteur and his co-workers have thrown much light upon the cause of specific diseases, as well as upon the means of fighting them. Pasteur's discovery and demonstration that the dependence of many diseases is upon the presence of minute organisms may be justly ranked with that of Harvey, both in regard to the far-reaching benefits which it has conferred upon mankind and for the simplicity of its origin. It contributes the most important of all the links yet made between science and therapeutics. It has completely upset the zymotic theory of many diseases, according to which the history and cause of these diseases were comparable to fermentation following the addition of yeast to a saccharine fluid.

Jenner's work was a standing illustration of the attenuation of a virus. It anticipated and pointed the way to the processes by which

Pasteur has attained such sensational results in hydrophobia and which more recent investigators have obtained in snake poison. Possibly we can not have a more striking example of the range of possibility of immunised serum than has been recently afforded by Sewall in cobra poisoning. By gradually increasing the dose of the poison it was found possible by the immunising effects of rabbit serum after a course of five or six months' treatment to render the animal so highly protected that a dose sufficient to kill 370 unprotected animals would be without effect upon the protected animal.

Pasteur's work has been a wonderful example of development as a result of close observation. Although his labours in connection with the process of fermentation are deserving of the highest praise, the results of his investigations as to the cause of disease in the silk-worm quite overshadowed all his previous labours in the magnitude of its effects. The silk industry, which was being paralyzed by the miserable little parasite on the mulberry leaf upon which the worms fed, and was thus entailing losses yearly to the extent of several millions of francs, was revived through the result of his researches. Whilst engaged in this work, a yet more extensive field for investigation lay open for him on seeking for the cause of the ravages made by anthrax. Here he had a definite organism which he was able to cultivate in various manners, treat with various reagents and then watch the process of the disease set up by the modified organism. Through the isolation of this bacillus he was able to perform pure experiments, the results of which were not obscured by extraneous factors. His attenuation of the poison by growing the organism in ordinary broth was a master-thought worthy of such a mind.

He was thus able to obtain a protective virus with which millions of sheep in various parts of the world have been inoculated, thus arresting the further progress of a rapidly fatal disease. One of Pasteur's pupils (Marchoux) has been carrying his experiments still further, and finds that the antidotal powers of the serum are greater if it is taken a short time after a fresh dose of the virulent anthrax has been given to the immunized animal. He finds that the best results are obtained if the serum is prepared two or three weeks after the last inoculation.

This plan of protection from infective diseases which was first employed by Jenner in smallpox and subsequently, as just stated, by Pasteur in anthrax, is now being extended to other diseases, and the substances which are formed in the body and their mode of action are now being carefully investigated in various parts of the world.

From the success which has attended these investigations it

looks as if in the very near future a great many, if not all the contagious diseases with which we are now afflicted may be as much under human control as smallpox and anthrax are known to be.

The immunity thus afforded by vaccination is only one example of a very similar process that occurs naturally when a healthy woman becomes pregnant with a syphilitic child by a syphilitic father. The interchange of serum that takes place between the placental vessels and the uterine circulation of the mother is that of toxin mixing with normal blood. It is the result of the union of a syphilitic spermatozoon with a healthy ovum, as the result of which, as development proceeds, syphilitic toxins are produced which diffuse into the blood of the mother and she becomes gradually immune. By the time of maturity of the foetus the mother, in the large majority of cases, is rendered so completely immune that she will not contract the disease by contact of the placental blood with lacerations of the cervix or perineum. She is equally protected from infection though she may have an excoriated and fissured nipple and the little one tug at it with mucous patches and sores on the lips, whilst a healthy wet nurse would at once be infected by such a child.

This state of immunity thus naturally transferred to the mother through the foetal circulation is what Pasteur conveyed to the sheep by the introduction of a mitigated virus. Behring, however, advanced still further. In 1891 he showed that if immunity to tetanus or diphtheria had been conferred upon animals, their blood or serum was found not only able to protect other animals against either the bacteria or their soluble specific poisons, but even to cure them if injected subsequently to the virulent matter. In the first of these methods the animal forms its own antitoxin; in the second it is previously formed in another animal and transferred as a therapeutic agent. Although this method of treatment was published for the first time in April, 1893, by Behring and Kossel, yet so overwhelmingly great has been the success attending it and the amount of literature published regarding it that it is practically old.

The introduction by them of serum therapeutics marks a distinct epoch in the history of medicine. Although our knowledge of the pathology of disease has greatly increased within the last few years, medical therapeutics was practically at a standstill. The disastrous results of the tuberculin treatment had so shaken the faith of the advanced modern physician, that it required strong evidence in support of the contention of those who introduced the serum treatment, before it could gain their confidence, although the principle rests upon an entirely different basis. This principle has had ample evi-

dences of its reliability, and we have good reason for hopes of its extension to many other diseases than the one in which it is so markedly successful—diphtheria. This principle depends upon the fact that the blood serum of animals highly immunised by artificial means to any bacterial disease, possesses the property of protecting other animals against the same disease, and that this protection is afforded whether the serum is administered before, simultaneously, or after the injection, provided in the latter case that the disease has not advanced too far before the protective injection is made. The principle is one that appears to be applicable to all bacterial diseases. Indeed, the precision with which this principle is worked out in diphtheria, is one of the most remarkable illustrations of the scientific basis of rational medicine. In the whole range of experimental pathology or pharmacology, there is nothing that offers clearer or more striking results than the experiments of Behring and Klein. They quite equal in their results the so-called exact sciences. What can be more positive than that a certain definite dose of pure diphtheria toxin is capable of killing within 36 hours, ten animals of a certain size, and that we are able to procure from various animals a serum artificially prepared, of which 0.1 ccm. will exactly neutralize the previously fatal doses, and thus, when the two are mixed, and animals injected with this mixture, absolutely no effect is produced. This probably is a point that is often overlooked in the use of antitoxin and one that the thermometer will aid us in. In practice the antitoxin should be administered in sufficient doses to completely neutralize the effects of the toxin circulating in the blood.

Notwithstanding our familiarity with this method of treatment it happens not to be entirely devoid of danger. Considerable attention has been directed to that fact by the sudden death, a few months ago, of the healthy child of a Berlin surgeon, after the administration of a dose purely for immunising purposes. In this particular case food was found in the trachea, which fact might or might not be accounted for by artificial respiration that had been attempted. Apart from this, however, other cases have occurred, and given rise to much speculation and theorizing as to their probable cause. On the one side it was thought that the absence of a toxin to be neutralized in the blood might cause such an untoward event, but the rarity of fatal occurrences in very mild cases disproved any such theory. Adamkiewicz performed some experiments which give us useful hints which may be of importance in subcutaneous medications.

He injected air into the veins of a guinea pig. 2 cc., injected rapidly and forcibly will kill at once, whilst 10 cc. may be slowly and

gradually injected, with only a few seconds intervals, and the animals suffer no inconvenience.

In some experiments on patients on which "cancerin," a substance obtained from the serum of dogs inoculated with cancer juice, was used, alarming results were produced by rapid and forcible injection, whilst no inconvenience was produced where the same or larger doses were given so as to allow the organism time for adaptation. These experiments seem to point to the fact that the living body is provided with a self-regulating apparatus which protects it against noxious influences within certain limits; once these are past, the animal is lost.

According to his views, and the results of his experiments, any substance, serum included, may have a double noxious action when introduced into the body, proportional to, first, the force with which it is injected, and secondly, the specificity with which it acts upon the blood, or through the blood on other constituents of the body. The virulence appears to increase with the force of the injection.

With respect to diphtheria, we fear it is too frequently the case that unsanitary conditions are regarded as the essential factor in its development. Except in so far as such conditions lower vitality and render those subject to them more vulnerable, such is not the case. In England, where records are well kept, the general death rate due to so-called zymotic diseases has been greatly lowered in consequence of improved sanitary organization and regulations, whereas the death rate in diphtheria has risen. It is obvious that the more thorough and complete are sanitary measures the more is the general standard of health raised; but that such measures alone can prevent the spread of contagious diseases, which may attack the most robust, is just as certainly untrue. Contagious diseases, of which diphtheria is a prominent example, have to be met by prompt isolation of the sick and measures of disinfection. The explanation of the failure to limit the spread of the disease is no doubt due to the difficulties of diagnosis. These difficulties are due to the various forms which the disease may assume, and the confusion arising from the existence of throat inflammation that simulates the milder types of the specific affection.

The discovery of the specific bacillus by Lœffler, and the proofs of its specificity which we all now know so well through the investigations of many able workers in this branch of medicine have placed in our hand a diagnostic test, the application of which is almost a matter of duty.

The success attending the use of serum-therapy in diphtheria has with renewed vigour, directed the attention of medical scientists to the application of the method to tuberculosis which is so fatal to the human race.

Working on lines somewhat different from those adopted by Koch, Maragliani professes to be able after the lapse of six months' preparatory treatment to procure from the horse a serum which possesses antitoxic qualities so far as tuberculosis is concerned. According to his results, 1 c. c. of the antitoxic serum will easily neutralize what would be a rapidly fatal dose of tuberculosis in a fair sized guinea pig.

Other Italian observers have been working with perfectly normal serum from a healthy horse, and report that injections of from 3 to 5 c. c. of this serum injected into children act powerfully as a tonic, causing in every case increase of corpuscles and gain in weight. Several cases of chorea were treated in this way, and on an average were cured in 15 days.

As is well known, and also as might be expected, serum-therapy has been applied to the treatment of many other diseases, and apparently with some measure of success. In the absence of personal experience, I may be permitted to relate what has been done without endorsing this mode of treatment.

Naturally a disease that is so prevalent as typhoid fever would come in for a good share of attention in this direction. Quite recently we read in a communication to the Société de Biologie that the writer had succeeded in immunizing several horses against this virus. He had obtained the serum of such strength, that one-fifth of a drop inoculated into a guinea pig 24 hours before injection protected it against a dose of typhoid virus, fatal to animals not previously injected with the protection serum. It was ascertained also that injections of the serum produced no injurious effects upon a healthy man. The author stated that he had since employed injections of serum in three cases of typhoid fever. The temperature showed a regular fall from the time the first injection was made, and seven days after the commencement of the injection, all three patients were quite free from fever and had commenced to convalesce.

That the serum of a typhoid patient has a specific effect, seems to be proven by a communication made to the Academy of Medicine last month by Dieulafoy. By the addition of a drop of the serum from the blood taken from the finger of a typhoid patient to a few drops of a culture of Eberth's bacillus, under the microscope the bacilli can be seen to stick together, forming islets, with well marked clear spaces between them, whereas if the serum is taken from a healthy person or from one with tuberculosis, nephritis, rheumatism, or any of the diseases which might have been mistaken for typhoid, the bacilli of the culture are isolated and motile.

Pneumonia also has had its share of attention. Numerous experiments have been made upon animals and several attempts have been made to treat patients in the same manner. According to Emmerich serum from immunised animals can cure pneumo-coccus infections in rabbits and mice. Klemperer reports several cases of pneumonia having been treated with the serum of rabbits thus rendered artificially immune. In all the cases so far reported, each time the serum was injected there was a diminution in the height of the temperature and in the frequency of the pulse and respiration and the patients all made a good recovery. Again, in other cases, patients inoculated with the serum of those suffering from pneumonia obtained immediately after the crisis, at once commenced to improve, the temperature becoming lower and defervescence as a rule at once following.

Streptococcus serum is a substance about which there is much diversity of opinion as to its value and uses. Virulent cultures of erysipelas streptococcus have been able to antagonise the evil effects of the inoculation of animals with anthrax virus. Rabbits inoculated by Emmerich with this virus were cured by the injection of the streptococci cultures whilst those in which no streptococci were used died. The serum, freed by filtration or otherwise from the streptococci, had an equally good although not an equally rapid effect.

Quite recently we read of this same fluid, but prepared from the ass, as being used with decidedly beneficial effect in pyogenic affections, in which it has had the credit of saving some valuable lives.

This serum, as now prepared, differs very materially from that used for diphtheria antitoxin. In the latter case, it is the toxins formed by diphtheria bacilli in bouillon cultures which are employed to set up immunity in animals furnishing the serum. The anti-streptococcus serum is obtained from the blood of an ass which has received during several months repeated and increasing injections of living virulent streptococci. Before use for clinical purposes, the serum is filtered through porcelain which removes all microbes. Some cases have been reported by most reliable authorities of its use in suppurative peritonitis and also in cellulitis following punctured wounds made during the post-mortem examinations of such cases, in which the prognosis would otherwise have been unfavourable.

Acute septicæmia or pyæmia from any cause are amongst the other affections from which we may hope to get good effects by its use.

Many cases have been published giving a decidedly favourable report of the result of this mode of treatment. On both the European and American continents the serum of the horse seems to be most used for this purpose but it requires about one year's preparation to obtain a

sufficiently powerful antitoxin. By that time the serum of the horse may have a preventive power of 1 to 30,000. Its administration will cut short a septicæmia already in evolution, or at least render it chronic so that the localisation of the septic processes will permit the organism to overcome the affection.

In tetanus the effects of antitoxin are little short of marvellous. Minute doses injected into animals will completely neutralize fatal doses of the tetanus toxin when injected eight or twelve hours afterwards. From reports of cases already published, the antitoxin treatment would seem to be the one which gives the best hope of cure although, not quite as successful as the corresponding treatment for diphtheria. The explanation appears to be that tetanus is rarely recognised as such until a late stage when the toxins are circulating in the blood.

Serum-therapy has doubtless a great future, but care is required that the causation of disease is not lost sight of in the eager hunt for cure and the enthusiasm with which each newly discovered antidote is hailed. The powerful toxic action of the substances produced by the microbes has now for many years been well recognized. But whilst the inert albumen through the influence of their organisms may give rise to albumoses having a powerful toxic action, antidotes are also formed. These when cultivated without the body, and introduced into the living organism, give rise to the production of these antidotes in still greater quantity.

The introduction of either the pathogenic microbe or of toxic products appears to incite in the body a process of tissue change, by which antitoxins are produced, and these may be employed either for the purpose of protection or cure. By their use diphtheria and tetanus are deprived of much of their terrible power.

In using the term serum-therapy, it is to be remembered that there are some infectious diseases in which bacteria have not yet been found. Some of the diseases in which the subject of artificial immunity has been studied by Pasteur, are diseases in which no bacterial parasite has been forthcoming.

The subject of auto-intoxication is necessarily one of great importance to the physician. It is by no means new, but as the result of experimental investigations of late years it is applicable to an extensive range of diseases, and may have its source in variable places, such as the alimentary canal, the respiratory tract, the muscles, etc.; as examples of the former I may mention diseases such as migraine, tetany, gout, etc., whilst cyanosis, and severe cerebral symptoms may have their origin in poisons from the respiratory tract.

The physiologist, through his more intimate knowledge of the functions of organs gained from his experimental work, is able, in many cases, to scientifically direct our energies as to the causes of diseased symptoms and very frequently to supply the remedy. Glands, whose functions up to recent time were supposed to be very limited are now shown to have a much more complicated purpose to serve. As examples, I may quote the liver, thyroid gland, supra-renal capsules, pancreas. That the liver for example must have other functions than those allotted to it by our text books is proven by the fact that animals inoculated by having bacterial poisons injected into the portal vein, die much less rapidly than when injected into the jugular vein, but with exactly the same symptoms. This would seem to point to the fact that the liver does elaborate certain poisons brought to it in quite the same manner that lymph glands elaborate or destroy products brought to them. Chemical and experimental evidences seem to support this view.

The sudden intoxication following the passage of a choleraic stool would be a clinical example of this view, the poison evidently reaching the liver by way of the intestine. The condition may be regarded as of a fermentative nature, the ferment leading to the production of an intensely powerful toxin. The subject of internal secretion recently brought into notice and now being worked up by Schafer and Oliver, more especially with reference to the pancreas is likely to have an important bearing on our views as to the action of many medicines. In the case of purgatives and diaphoretics for example, we have looked mainly at the secretions poured out after their administration, whereas it may be that the main point of the benefit that they produce is not by the substances liberated through the secretions they cause but returned from the intestine and skin into the circulating blood.

How important an effect, the excessive admixture of the juices from one part of the animal body with the circulating fluid might have, has been many times demonstrated in the action of thyroid juice. A few drops injected into the blood of a small animal will kill it as quickly as a rifle ball owing to its action in causing coagulation of the blood. That these glands are important to our well-being and in some cases to our existence has been proven many times; it is still but an unsettled point whether toxic effects are produced through a something accumulating in the blood which it is the gland's duty to get rid of. The weight of scientific evidence certainly points to the probability that the function of many of these glands is secretory rather than excretory; that they form something which is distributed either to

the muscles or nerves or other histological elements which is essential to their normal tone and which modifies everywhere protoplasmic movements, and which in removal of the gland produces toxic effects by the removal of the internal secretion. Whilst powerful for harm in this way these secretions are equally powerful for good when administered internally. Although there may be, and in fact there is, as yet doubt as to the utility of the juices or extracts of some glands there is none whatever as to that of the thyroid. Few histories are more interesting than that of the successive steps by which its extract was ascertained to cure myxœdema, beginning with the observation that cretinism was associated with goitre and that the essential feature of this affection, myxœdema, could be induced by extirpation of the gland. Upon this, experiment showed that the cause was not the accumulation in the blood of some substance which ought to have been withdrawn from it by the gland but the absence of some material which the gland supplied.

Some very recent investigations have done much in support of this view of internal secretion. The result has been to prove conclusively that the active ingredient in producing the beneficial effects is the colloid contents of the cell spaces. It has been isolated in a state of purity and shown amongst other peculiarities to contain a considerable quantity of iodine in organic combination. The other proteid contents of the gland substance have been shown to be inactive. The therapeutical value of the various preparations of the gland in myxœdema, lupus and cretinism is one of the most important and remarkable therapeutical discoveries of modern times, and at times savours of the miraculous. Many of the cases are actually snatched from a life of unloveliness and suffering and restored to health and vigour. In many other affections such as psoriasis, ichthyosis, obesity, and goitre it has proved serviceable. Its efficacy now requires no further proof; so many illustrations and reports of cases have been published showing at a glance the condition of the same patient both before and after its administration, that the subject is in some degree becoming stale and tiresome. But there are many clinical observations which can be made on patients during the early period of treatment which are of interest and importance. Its forms of administration are of no small importance. It has been given subcutaneously, and in the form of raw gland, the fluid extract and the dried extract. The consensus of opinion is in favor of the dried extract which does not appear to deteriorate by keeping.

No matter in what form administered it requires caution in its administration, especially in the commencement of the treatment, on

account of the great differences in the susceptibility met with in different people.

Death has occurred from syncope during its use, to avoid which, during the use of the remedy, cardiac stimulants and tonics are required and should be given.

That the ingestion of the gland has a powerful effect is now being almost daily demonstrated. Large doses of fresh thyroid cause a rapid increase of the pulse rate, with a rise, followed by a fall, of blood pressure. It nearly always causes emaciation, hence its utility in obesity, just referred to. In some animals it has caused paresis of the lower extremities. The mental condition is materially altered. hence its use with marked beneficial effect in some cases of insanity. A fact of importance in human pathology is that over-feeding pregnant animals with thyroid preparation, produces symptoms of thyroidism, such as I have just described, in the young. It has been suggested that some of these symptoms might be due to meat poisoning, as fresh glands are not as toxic as the various preparations.

Brown-Sequard's recommendation of the use of testicular extract a few years ago, for which he promised such wonderful results, whilst sadly disappointing to many others, more so probably than to its promoter, has certainly been the means of directing the attention of scientists to the employment of the extract of other organs in the treatment of disease.

Just now the supra-renals are claiming a great deal of attention both from the physiologist and the practical physician. That their removal is invariably followed by death is well known, but the purpose they serve has not been definitely made out. The blood of animals from which they have been removed produces toxic effects similar to those of veratrine. Injecting an extract of the capsules causes an enormous rise in blood pressure, but the supra-renals in cases of Addison's disease have no such poisonous effect.

The practical use of this and many other animal extracts is still *sub-judice*.

Pasteur's treatment of rabies, by which the death rate has been brought down to 1 per cent., has given us some reason for hope that other nervous affections may be cured by some of the animal extracts. In neuræsthenia, tabes, and in some forms of epilepsy, brain extracts have been used with reported success. In pseudo-hypertrophic paralysis the juice of the thymus gland has been tried. Anæmia, debility, and lymph-adenoma have all had their share of experimentation with bone marrow. Although the success attending the use of many of these extracts so far does not, in my opinion, justify us in

relying upon them for success in treatment, it has opened up a new line of thought both in physiology and therapeutics. The methods of experimentation that are now being pursued and their application to practical medicine will no doubt lead to a better classification of disease and to the generalisation of many marked phenomena that hitherto have been absolutely unrelated.

The short synopsis I have already given of some only of the experimental work done in medicine shows that it is rapidly increasing the grounds for its claims to be a true science. Like all other sciences the observations that are made are capable of verification. Many of the laws that have been established by observation are now capable, by comparison and classification, of being generalised and verified with as much exactness as astronomy or mathematics. When Hippocrates, over 400 years before the Christian era, by his clinical study of disease declared that no one disease was more divine or human than another, and that none arose without a natural cause, he laid the foundation of rational medicine. Although he knew neither anatomy nor physiology, nor had the results of experimental work to act upon, through his close observation as to the symptoms of disease, he was able to generalize, and, as a result, to prove that both priestcraft and philosophy were powerless in disease. The angry gods of Hippocrates' times can now be grown and cultivated on agar or nutritive bouillon gelatine, or in the serum of an ass, and their anger may be appeased by the serum of a horse cultivated by a Roux, or Pasteur, or Klein, and administered by an iconoclast.

It was in following the Hippocratic method of close observation of clinical facts and their verification that Jenner has been such a benefactor to the human race. Long before his well-known experiment, it was common "folk lore" around his native town, especially amongst the milkmaids, that whilst smallpox raged around them they were free from the disease, at least those of them who had contracted cowpox in their daily avocation. For years Jenner studied those cases, and then came his noted experiment of 1796.

Now, one hundred years later, we are in the midst of researches which, under new methods and aids, promise great results. The summit has not yet been reached.

As Nasmyth, the great engineer, said, the greatest progress in his work was owing to the introduction of a new tool or the perfecting of some older one, which might be used either for welding iron or boring a tunnel. What position would scientific medicine be in now were it not for the advances in microscopy? The grandest discovery of the present century is due to it.

The artizan sitting at his bench grinding his lens and the chemist in his laboratory are equally advancing our noble science with their improved methods.

When the astronomer thought his telescope had reached its limits of power, new means of investigation shed light on hitherto unobserved facts. By means of the photographic camera and the spectroscope, a new impulse was at once given to the science of astronomy. In our science the practical application of these means of observation places it in advance of the other sciences. Even if interrupted at times by speculative hypotheses, it goes steadily onward. The success in treatment which has already resulted from the researches of our scientific *confrères* proves that where the greatest difficulties are to be overcome, success meets with the greatest reward. Those, therefore, who wish to penetrate into nature's secrets must be prepared not to turn back at some apparently insuperable obstacle, but to advance steadily until thoroughly satisfied that there is no path in the way sought for.

THE ADDRESS IN SURGERY.

DELIVERED AT THE 29TH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION HELD IN MONTREAL, AUG. 27TH, 1896.

BY

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In considering this era of many books when in our own territory the intellectual atmosphere is really obscured by the perpetual precipitation of what we are pleased to call literary matter, one is struck by the fact that the man who has done the most important work of the era, the man whose work is the inspiration of a large part of this surgical literature, has never written a book. The published writings of Sir Joseph Lister exist only in scattered papers in the pages of various medical and scientific journals. They might all be collected in one small octavo volume. But I will venture to say that octavo volume would contain more of the marrow of surgery than many bulky treatises. It would indeed, I believe, be found to throw a clearer light on the great problems of medical science in general, than any single volume that can be named.

The enormous practical importance of the work Lister has done in establishing antiseptic surgery has, I cannot help thinking, overshadowed to some extent the equally great importance of his earlier work on pathology. Equal importance, I say advisedly, for the pathological principles acquired in his earlier work prepared the way for the acceptance of the Germ Theory and gave it a rational basis to work on. A practice founded on isolated data, a purely empirical practice with no definite homogeneous pathological groundwork, must be unsatisfactory, unmanageable, even at times dangerous. One cannot have a better example of this than the history of venesection.

It is my purpose in this short paper to draw attention to some of the cardinal points in the teaching of Lister. And first I shall speak of his work on the essential nature of inflammation, as I consider it gives the key-note of all his teaching. It would be impossible to overestimate the importance of these researches. They occupied him for several years, and the results are published in the Transactions of the Royal Society for 1858. They may be called the *Principia of Surgical Pathology*. This work removed many erroneous impressions as to the nature of the inflammatory process; it proved the correctness of many of the surmises arrived at by the marvellous genius of John Hunter; but replaced his definition of inflammation by an entirely

different one and gave us a new idea of the subject. And some of the most interesting facts in physiology and pathology were for the first time discovered and demonstrated.

At the time when he began his work the question of the nature of inflammation was in a most unsettled condition. All sorts of theories were held about it, and there was little but theory. But the subject was being eagerly investigated. Many influences, a consideration of which may not detain us now, had combined to awaken a spirit of research into vital phenomena, and experimental pathology and microscopic analysis were being brought to bear on what may truly be called, this burning question. The web of the frog's foot and the membranous wing of the bat were, on account of their transparency, the favorite subjects of study.

It was well known that the application of an irritant to the web of the frog's foot resulted in changes in the calibre of the blood vessels and the abnormal accumulation in them of blood corpuscles. Lister set himself to discover whether these phenomena were related to each other as cause and effect. The Astley Cooper prize had just been awarded to Wharton Jones for an essay in which he contended that the stagnation of the blood was due to a contraction of the arteries. It occurred to Lister that if a mild irritant were employed one might get "the alteration in the blood vessels without the concomitant alteration in the blood," and he experimented with warm water. As a result of his experiments he arrived at the conclusion that "the arteries regulate by their contractility the amount of blood transmitted in a given time through the capillaries, but neither full dilatation, extreme constriction, nor any intermediate state is capable *per se* of producing accumulation of corpuscles in the latter." His next step was by a series of most ingenious experiments, which it is impossible to describe in the limits of this paper, to establish the fact that inflammation "may be brought about in two totally distinct ways, viz., either by the direct operation of a noxious agent upon the tissues or indirectly through the medium of the nervous system."

Then, from a study of the phenomena observed in the affected tissue he arrived at an explanation of the essential changes underlying these phenomena. As this was the earliest exposition of the modern doctrine of inflammation we may consider it in some detail. A strong inference may be drawn from the following experiment. A frog was placed in a jar of water strongly charged with carbonic acid. When the limbs had ceased to act it was withdrawn. It was found, though the heart was still beating, the blood-vessels were loaded with stagnating blood. After a time the frog regained

consciousness and resolution occurred in the vessels. We may infer that the carbonic acid, poisoning the web as well as the brain, paralyzes for a time the functional activity of both, and that the return of circulation, like the recovery of cerebral functions, depends on the restoration of the dormant faculties of the affected tissues. The same conclusions are present in cases of galvanic shock.

Then, the condition of the blood corpuscles in the inflamed part is suggestive. In healthy frog's blood, the corpuscles have no tendency to adhere; in the inflamed web they adhere to each other and to the wall of the vessel as they do in shed blood. If the blood, then, passing through the vessels of an inflamed part behaves as it does when let out of the body and in contact with dead matter, the inference is, that the tissues of this part are more like dead matter than living—that their vitality is at a low ebb. A consideration also of the nature of the agents acting as irritants would lead to the same conclusions. All of these irritants, chemical, thermal, mechanical, electrical, are such, that if applied sufficiently strongly, or for a long enough time, they will kill the tissues.

But direct evidence on the question was obtained from an unexpected quarter. While examining a frog's web, in which he had induced inflammation by a grain of mustard, Lister observed to his astonishment, that, in addition to the usual appearances of inflammation in the irritated part, the pigment cells in this area had a totally different appearance from what they had elsewhere. This observation opened up a new path for investigation and led to most important results. It had long been known that changes occurred in the colour of the frog similar to, though not so marked as, those of the chameleon. It was also known that the pigment was situated in certain cells of the skin, and German investigators had concluded that the changes in shade from light to dark were caused by contractile changes in the protoplasm of these chromatophorous cells. But Lister showed that the change was not due to a change of shape in the cell but to variations in the distribution of the pigment. He showed that the cells were branching cells, the processes of which subdivided and anastomosed so as to form a reticular meshwork in the skin. When the skin of the frog is pale, the pigment granules are aggregated in a small black mass around the nucleus, the branches of the cell being seen with difficulty. Where the skin is dark, the pigment granules are scattered throughout the protoplasm, being more closely packed in the smaller branches, until finally they come in contact and give the appearance of fine dark lines. And there are intermediate conditions corres-

ponding to the hue of the frog. If the frog is exposed to light, it becomes pale, if secluded from the light, it becomes dark. How is the change brought about? Is it a direct action of sunlight on the skin, or is it reflex, through the eye? Lister decided this in a simple way, he blindfolded the frog, made a little hood, or jacket for it, leaving only an opening for air, and now found that, whether exposed to light or not, the dark colour was permanent. This proved that the movement, or, at least, that the concentration of pigment, was a reflex change, through the eye and similar to the contraction of the pupil. Before this experiment, there was no evidence that any function but that of muscular contraction was under the influence of the nervous system. Further experiment showed that the spinal cord held the same relation to the concentration of the pigment granules as to the contractility of the arterial musculature. Division of the sciatic nerve, or of the spinal cord was followed, in the one case, by relaxation of the arteries; in the other, by diffusion of the pigment granules and the corresponding darkening of the skin. But in time, contractility and concentration returned. Transverse segments could be removed from the spinal cord with the same result. After a longer or shorter time, there was a restoration of the suspended function. But when the whole spinal cord had been cut away the nervous control of these functions was lost and permanent relaxation and diffusion resulted.

And the direct action of the irritant on the pigment cells was shown to be distinctly of the nature of a paralysis or arrest of function. In the inflamed spot on the frog's web, the pigment is in an immovable condition. If a frog of medium colour has been the subject of experiment and if we place it in a white basin and expose it to light it soon becomes pale, but the irritated spot remains dark. If, on the other hand, we cover it in a jar and exclude it from light it becomes dark, but the irritated spot appears pale by contrast. Power of concentration as well as power of diffusion is lost.

The same results were obtained when the experiment was varied by acting on a portion of the web entirely removed from the foot so that the influence of the nervous and circulatory systems were eliminated. This is absolute evidence that this particular form of tissue loses its power of action when an irritant has acted sufficiently long upon it. It has not been destroyed; after a time its power returns. If the irritant has been too powerful or continued for too long a time, the tissue may lose its properties permanently; it may die.

Similar results were also obtained in a series of most interesting experiments upon ciliated cells

And so, from the behaviour of the blood in an irritated, that is, an inflamed part, from a consideration of the nature of irritants, and of the behaviour of the tissues when irritated, "we are drawn to the inevitable inference that the occurrence of inflammatory congestion in a part, indicates an enfeebled state of the tissues bordering more or less closely on death, and if continued, leads to death."

These experiments showed that the phenomena of inflammation could be induced in tissues entirely cut off from the influence of the nervous or circulatory system. This is proof that the tissues possessed life in themselves. Again, when the irritation was removed, inflammation passed off, therefore the tissues possessed inherent powers of recovery. This idea of the inherent vitality of the cell, the self-preserving power of the tissues, is a favourite one in Lister's teaching. One of his earliest contributions to surgical literature is a note of a case in which, on account of secondary hæmorrhage, a tourniquet had been applied to the arm so as completely to stop the circulation in it, and had so remained for thirty hours before he was called in to amputate. The arm was of course swollen, cold and discoloured, but encouraged by the results of the observations he was then carrying out on this subject of the vitality of the tissues, he decided to tie the brachial and give the arm a chance, and with complete success.

And blood is a tissue in which the phenomena of depressed function and renewed vigour may be seen, and which has an inherent power of resisting noxious agents. And this not only in its fluid state. Coagulation does not necessarily imply death of the blood. Lister showed in a series of most remarkable experiments that blood in its normal condition has no tendency to coagulate. In most text-books of physiology Bricke's theory of coagulation is adopted, namely, that coagulation is prevented by the peculiar action of the blood vessels. But we cannot prevent a tendency unless the tendency be there to prevent. The vascular parietes exert no special action on the blood, they simply continue to live and to hold their normal relations to the blood. We have as much right to say that the blood exerts a peculiar influence on the walls of the blood-vessels to prevent their degenerating. What is it that induces coagulation? Contact with dead, or rather with non-living solid matter. Now take the case of a wounded vein. There is, of necessity, a clot in the wound. But this clot does not extend, the blood flowing over it does not coagulate upon it, the blood-clot does not induce coagulation, therefore it is living tissue. Later on, when antiseptic surgery enabled him to study the whole subject under new conditions, Lister was able to prove the truth of theories he had been led to form as to the behaviour of blood-clot in

a wound. I find in some text-books references to Schede's method of utilising blood-clot in wounds and, if I mistake not, I have read of Halstead's blood-clot, but I do not find that blood-clot behaves differently in Hamburg or Baltimore from what it did in the Royal Infirmary of Edinburgh a quarter of a century ago, when one of Lister's favourite demonstrations was the vascularisation of blood-clot and epithelial growth upon it. Some of you will remember Hunter's famous case in which he believed organisation had taken place in a blood-clot in the tunica vaginalis.

These principles explained healing by first intention. The tissues irritated by the passage of the knife, present the early stages of inflammation, dilatation of vessels, stasis of blood, effusion of liquor sanguinis and corpuscles which glue the sides of the wound together and in which organization at once sets in. In such a wound, it may be that none of the cardinal signs of inflammation show themselves. And the germ theory explained the too frequent failure of this method of union. The initial cause of irritation had passed away, but septic germs had gained access to the wound and led to a persistent irritation, directly, by their poisonous action on the tissues; indirectly causing reflex irritation through the nervous system.

In the same way granulation tissue was shown to have no tendency to suppurate unless irritated. The bearing of this upon the treatment of ulcer is evident. Remove the irritation and the tendency to supuration ceases. When granulations are covered over by epithelium, their structure is not changed, but external agencies are excluded and no more pus is formed. Also, when two granulating surfaces are brought together, they cease to form pus. Each protects the other from irritation. Then, too, when antiseptic surgery began, and it was shown that some antiseptic agent was necessary to purify the skin, the hands, the instruments, Lister showed that the less the antiseptic, with its unavoidable irritation, acted on the wound, the better. Twenty-five years ago, when the most extravagant ideas were abroad as to antiseptic treatment, when wounds were being pickled in antiseptics, and abscess cavities were being over distended with carbolic acid, these were Lister's words, "The injured tissues do not need to be stimulated or treated with any mysterious 'specific'; ALL THAT THEY NEED IS TO BE LET ALONE. Nature will then take care of them: those which are weakened will recover and those which have been deprived of vitality by the injury, will serve as pabulum for their living neighbours." This is the watch-word of Lister's whole system of treatment. Remove the obstacle to healing: relieve irritation, assist Nature. The most potent and frequent hindrance to

the healing process was septic infection, and naturally engrossed the largest amount of attention, but this principle underlies Lister's work in all directions.

In the quotation just given, we have the first indication of a new principle: "pabulum for their living neighbours." That which struck Lister most in the study of granulation tissue under the new conditions of antiseptic surgery was its power of absorbing dead tissue as sloughs and necrosed bone. It was generally supposed that matter had to be in a state of solution before it could be absorbed. Lister showed this was not necessary. He pointed out that the granulations ate the dead bone, "nibbling" was the word he used in describing the process. And this observation led to the successful reintroduction of animal ligature. Many of these observations, for example, the specific action of living tissues, the germicidal action of the blood, and even of the white corpuscles, and this "nibbling" of dead substances by the cells of granulation tissue, were forerunners of the modern doctrine of phagocytosis. Lister laid stress on the fact that a granulating surface was a non-absorbing surface, and that a wound was safer from infection when once covered by granulations, and spoke of the granulating surface as a "living plaster," or protective. Metchnikoff's theory explains this by assuming that the amœboid cells of the granulating surface are capable of coping with the micro-organisms which find their way to it.

We can see that the trend of Lister's thought was much influenced by the teaching of John Hunter. To one of these lines of thought I will now refer, and that is the influence of the nervous system in pathological processes, what Hunter spoke of as "sympathy." We have just seen the importance which Lister attached to the action of the nervous system in inflammation. While he proved that inflammation might occur independently of the central nervous system, he held that in ordinary circumstances it played a very important part in the process, and he believed with Hunter, that in such events as pneumonia, following upon chill, or the sudden congestion occurring in the kidneys after the passing of a bougie into the bladder, we had proofs of inflammation brought about reflexly through the nervous system.

Hunter pointed to the good effects of bleeding from the temples in iritis, and similar things as an example of this sympathy, or what he sometimes called "textural contiguity." He also pointed to the general contraction of the arteries occurring in venesection. And Lister observed that the reduction of pressure in the veins resulting from the action of gravity, as in an elevated arm, led to reflex con-

traction of the arteries and local anæmia, and long before Esmarch described his bloodless method, Lister had turned this observation to advantage, and by simply elevating the limb and then applying a tourniquet, secured absolute anæmia, in the part to be operated upon.

Early in the history of antiseptic surgery, Lister, in treating of suppuration, considered it due to two causes, that is, that the abnormal stimulus of the tissues which led to suppuration might be excited through the action of the nervous system, or the direct action of stimulating salts, and sub-divided the latter into putrefactive stimulation from bacterial products and the irritative action of antiseptics themselves. This was before Ogston's work and when the science of bacteriology was in its infancy. It would appear now that the aphorism of Weigert must hold, and that without micro-organisms we can have no suppuration. But the question has two sides, there is the soil and the seed, and the deterioration of tissue which makes it a fit soil for the growth of germs may be brought about by altered nervous action. But if this doctrine of suppuration is pushed further, and all inflammation, as some pathologists would have us believe, is micro-organismal, if this is the orthodox faith I cheerfully confess myself a heretic, for I cannot understand why the products of bacterial life should have a monopoly of inflammatory power.

One of Lister's favorite instances of this action of the nervous system was the practice of counter-irritation whether by blisters, or in acupuncture, or in the use of the actual cautery. It has been said that in the light of modern pathology counter-irritation is an exploded theory and an obsolete practice. I should be sorry to think so. Counter-irritation, like venesection may have been unwisely used, but the fact remains, that it is one of our most powerful and trustworthy methods of treatment.

As much as twenty years ago it was Lister's practice, in early cases of gelatinous degeneration of the knee-joint, with perhaps effusion, to make free incisions through the infiltrated tissues into the joint, and this was in a certain proportion of cases followed by very satisfactory results. We know now that this disease was tuberculous, an infective inflammation. I believe the explanation of these cures to be that partly as a result of the relief of tension, partly as a consequence of the counter-irritation caused by the open wounds, reflex nutritional changes were set up which improved the vitality of the tissues and enabled them to cope with the tubercle bacilli.

Gentlemen, I have perhaps tried to cover too much ground in the time at my disposal. But there are two or three things suggested by this survey of Lister's doctrines to which I would like to draw atten-

tion. First, we see the supreme importance of a thorough training in the branches of knowledge on which scientific surgery is based. It was his training in chemistry and physics and his remarkable, we may almost say unrivalled, skill in microscopic technique which enabled Lister to carry out these researches.

Again, I wish to point out that Lister's teaching is to a very great extent clinical and practical. There is not one of the principles which we have been considering which is not capable of demonstration at the bed-side, or, at least, for which strong inferences may not be drawn from the facts of our daily work.

Lastly, I must refer to the spirit in which Lister works. On the one hand, devotion to the good of his fellowmen, the best interests of the patients committed to his care, on the other, a reverent attitude towards the Eternal Power who manifests Himself in these mysteries of life. It appears to me that in his habits of observation, his methods of study, and, fortunately for humanity, in the general result of his work, we have a fine illustration of the thought of an ancient Eastern poet who has said :

“ Devoutly look, and naught but wonders shall pass by thee,
Devoutly read, and then all books shall edify thee,
Devoutly speak, and men devoutly listen to thee,
Devoutly act, and then the strength of God acts through thee.”

Original Communications.

THE INFLUENCE OF MITRAL LESION ON THE EXISTENCE OF PULMONARY TUBERCULOSIS.

BY

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The relationship of valvular lesions of the heart to pulmonary tuberculosis has from time to time engaged the attention of clinicians since the days of Laennec. Louis, in his "Researches on Phthisis" (page 48, Sydenham Society edition), states that in 111 autopsies made on patients who died of phthisis, three only exhibited any obvious enlargement of the heart. The enlargement was in the left ventricle, but the condition of the valves is not mentioned.

Rokitansky, who was a strong believer in the antagonisms of certain diseases, made the statement that "persons labouring under enlargement of the heart, dilatation, hypertrophy, and their complications, whether primary or superinduced by mechanical obstruction at the orifice, do not contract tuberculosis." The same author has further stated that heart disease and tuberculosis do not go together, and that all cyanosis, or rather all forms of disease of the heart, vessels, or lungs, inducing cyanosis of various kinds and degrees, are incompatible with tuberculosis, against which cyanosis offers a complete protection. (Dr. Percy Kidd, St. Bartholomew Hospital Reports.) These conclusions, like so many others of such a general character, have been much modified by subsequent observations.

Traube held the opinion that in an engorged state of the lungs pneumonia did not become caseous. In 1864, he stated that he had frequently found pulmonary tuberculosis present in patients suffering from aortic disease, but that he had never met it in connection with mitral lesions.

Peacock (Malformation of the Heart, 2nd ed., page 189), gives a case of pulmonary stenosis, in which pulmonary tuberculosis was present, and remarks: "It is possible that the various conditions may, as supposed by Laennec, be in some degree opposed to the occurrence of tubercular affections, but the opposition certainly in no degree amounts to an incompatibility, as asserted by Rokitansky."

Dr. Pollock states that disease of the heart, whether in the walls or

¹ Read before the Canadian Medical Association at Montreal, August, 1896.

valves, is by no means an infrequent complication of phthisis. He was also of the opinion that hypertrophy and dilatation of the heart retarded the progress of tuberculosis. In his experience no history of rheumatism was obtainable in a considerable proportion of cases. The reason for this will be explained further on.

Lebert points out that the frequency of tuberculosis in congenital heart lesions arises from the fact that the latter are those of pulmonary stenosis. Phthisis was present in one-third of all the cases of stenosis of the pulmonary valves.

Ruhle claimed heart disease among those antagonistic to phthisis, and the combination was less uncommon in aortic than in mitral disease.

Fagge, Vol. I., says mitral stenosis is an almost complete barrier to the development of phthisis, the post-mortem records of Guy's supplying only four cases of their association in the last thirty years.

I shall endeavour to lay before you our present knowledge of the effects of valvular heart disease on the existence of pulmonary tuberculosis as I have been able to collect it from various sources in medical literature, and shall then refer more particularly to mitral disease.

In this paper the study of primary valvular lesions, such as arise from rheumatism and other diseases in youth shall occupy our attention, and little reference will be made to those conditions of the heart which are secondary to pulmonary disease.

One of the most satisfactory series of statistics has been given by Bernard Schultze in a report of the Pathological Institute of Kiel. Out of 6,935 sections in 484 heart lesions were found, and of the latter 109 were combined with pulmonary tuberculosis; endocarditis alone 80, valvular disease alone 20, endocarditis and valvular disease 9. Of the 89 cases of endocarditis, in 67 the disease was recent and in 22 cases old. Considering all the cases, there occurred mitral lesions with tuberculosis in 4.76 per cent.

	Per cent.
Aortic lesions with tuberculosis in.....	15.4
Tricuspid " "	12.8
Pulmonary " "	83.3

The small percentage of cases of mitral lesions, occurring with tuberculosis, must be here noted compared with other forms of valvular disease, especially those of the pulmonary orifice.

With reference to the special nature of the lesion in the 484 cases:

	Per cent.
Mitral insufficiency occurred in.....	7.4
Aortic "	6.82
Tricuspid "	14.63
Mitral stenosis.....	12.2
Aortic "	19.05
Pulmonary stenosis.....	83.3

In five out of the six cases of pulmonary stenosis tuberculosis was also found. From these figures it will be seen that pulmonary tuberculosis occurs more frequently with mitral stenosis than with mitral insufficiency. This is also shown by most of the series of statistics which I have examined. In my own experience I have met with two cases of mitral stenosis, primary in character, combined with pulmonary tuberculosis, and not a single case of primary mitral insufficiency. I have in two or three cases noted a mitral systolic murmur which I thought was due to changes in the heart secondary to tuberculosis.

In the statistics of the Kiel Pathological Institute, which we are now considering, in 67 of the 109 cases of organic heart disease combined with tuberculosis, there were evidences of recent disease, so that in only 42 could it be positively stated that the cardiac disease preceded the pulmonary tuberculosis.

Dr. Percy Kidd, in the St. Bartholomew Hospital Reports, mentions 26 cases observed during life and 27 post-mortems, in which valvular disease was combined with tuberculosis. The latter 27 cases occurred in 500 autopsies made on tubercular subjects. Of the 26 cases observed during life, complicated mitral stenosis was found in two and combined with aortic lesions in one case. Symptoms of mitral insufficiency were present in six or seven cases, but in almost every one, lesions of other valves were present, or the disease appeared to be of recent date. In only one case of simple insufficiency could the conclusion be drawn that the lesion was of a primary character. In the 27 post-mortems old valvular disease existed in only 11 cases. In most of these the tuberculosis ran a very chronic course. There was no marked preference for either lung.

In an article on the relation of cardiac affections to tuberculosis, Ernest Coulbeaux cites three cases of mitral stenosis. In one the tuberculosis was recognized during life, in another the heart affection alone was noticed, and in the third the cardiac lesion seemed to be secondary to the lung disease. He also reports six cases of mitral insufficiency, three males and three females. In two of these cases the lesions in the lungs were not known to be tubercular until the post-mortem was made. All degrees of change were found in the lungs. Coulbeaux arrived at the conclusion that there does not exist any absolute antagonism between tuberculosis and valvular disease of the heart.

Alfred Eyman, of Wurzburg, in an inaugural thesis, gives the following statistics from the Vienna hospitals. In the Allgemeine Krankenhaus, during eleven years, 19,429 cases of tuberculosis were observed, and in only 34 cases were signs of heart lesions found.

In eleven years, at the Rudolph Hospital, out of 8,224 cases of tuberculosis treated, heart lesions were noted in only 46. Adding the number in both hospitals together, in 27,627 cases of tuberculosis signs of organic heart lesions were noted in .8 per cent.

Again, in eleven years in 3,056 cases of organic heart disease observed in the Allgemeine Krankenhaus 31 showed evidence of tuberculosis, and in the Rudolph Hospital in eleven years out of 1,082 cases of heart disease 38 were tubercular. In both hospitals, therefore, out of 4,138 cases of heart disease 69 were tubercular, 1.7 per cent. of all the cases.

Frommolt, who has written a very exhaustive paper on the subject (*Archiv. für Heilkunde*, 1875), found that out of 7,870 autopsies made in ten years in the Dresden pathological room, 276 presented cardiac lesions, and of these 21 were tubercular, or about 8 per cent. Tuberculosis existed in 5 per cent. of the cases of mitral stenosis and in 10 per cent. of the cases of mitral insufficiency.

In commenting on these statistics, Fraentzel says that while in many cases heart lesion is secondary to tuberculosis, the latter affection is rarely developed in those who have previously had mitral disease.

Krygen, in an inaugural thesis, Munich, 1887, found in 1,100 sections on tubercular subjects ten cases of heart disease :

Aortic insufficiency.....	4
Mitral ".....	3
Mitral insufficiency and aortic stenosis.....	1
Aortic stenosis.....	1
Mitral and aortic insufficiency.....	1
Pulmonary stenosis.....	2

He found healed tuberculosis in 59 cases of valvular disease.

A. Brousse, in a thesis on mitral lesions and tuberculosis, relates a case in which death occurred at 41 years of age from pulmonary tuberculosis in a patient in whom mitral insufficiency had been known to exist many years before the development of phthisis. The patient, although she possessed a strong hereditary tendency to the disease, and was during her life directly exposed and lived under very unhealthy conditions, having suffered from cold, hunger, fatigue, etc., escaped until her forty-first year. When, however, she was attacked she rapidly succumbed to the disease.

Such cases of the delayed onset of tuberculosis in those who have an hereditary tendency and who are directly exposed to the disease are not infrequent in the literature of valvular disease combined with pulmonary tuberculosis.

Pidoux states that the two diseases do not often exist together,

and when they are combined, the heart lesion retards the evolution of the tuberculosis.

Teissier says that tuberculosis is always less virulent, often local and runs a very chronic course when mitral disease is present.

Prof. Peters, of Paris, states that in three years, out of an immense number of cardiac cases, he met with pulmonary tuberculosis but five times.

Germain See and Hanot are opposed to the idea of antagonism. They found in 277 cases of valvular disease twenty-two cases of tuberculosis, or about 8 per cent.

Perls had only observed one case of mitral lesions combined with tuberculosis.

It will thus be observed that there is much discrepancy in the results to be obtained from statistics, as well as in the opinion of very distinguished and careful physicians.

In the post-mortem cases much difficulty arises in determining whether the cardiac lesions found are primary and the result of rheumatism and other infectious diseases of early life, or whether they are secondary to tubercular disease.

The frequency with which endocarditis occurs during the tubercular process has been shown by Potain to be much greater than was formerly supposed to be the case.

Teissier (*Comptes Rendus*, No. 26, p. 1022), has under Potain's directions made some very interesting observations on this point. He describes three forms of endocardial changes which are found in tubercular cases: (1) those of true tubercular character, a condition which is rarely found; (2) vegetative or ulcerative endocarditis produced by organisms which have secondarily invaded those suffering from pulmonary tuberculosis, such for instance as the streptococcus, the staphylococcus, and the bacillus coli communis; (3) a sclerosis of the endocardium neither characterized by the presence of bacilli of tuberculosis nor pyogenic organisms. This condition is probably produced by the toxin of tuberculosis, and the process is similar to that which occurs in the connective tissue of the liver and kidneys. Teissier found this sclerosis of the endocardium, in a greater or less degree, in thirty-five out of one hundred cases.

In Frommolt's cases, as well as those of Germain See and Hanot, the lesions may, in many instances, have been of a secondary and not of a primary character. It is therefore probable that the lesser proportion of five per cent. of mitral cases, which become tubercular, is the outside limit.

This relative infrequency of the combination of the two diseases is

more striking when it is considered that the surroundings of many of the cardiac patients are very favourable to the development of tubercular disease. They often are unable to take much exercise and are confined to close rooms. Many of them spend months in hospital wards near tubercular cases and are thus directly exposed to the disease.

In the study of the clinical cases, in which there is a combination of valvular disease and pulmonary tuberculosis, two difficulties present themselves: (1) The difficulty in diagnosis; (2) to decide which is the primary lesion.

One might not at first think there was much difficulty in making a diagnosis between mitral diseases and pulmonary phthisis. It has, however, been pointed out, particularly by French observers, that in some cases of mitral stenosis the difficulty is quite marked. Patients having the latter disease may suffer from dyspnoea, hæmoptysis and emaciation together. Signs of local consolidation may also be present. The pulmonary apoplexy may cause more or less elevation of temperature.

Two cases have occurred in my practice in which this difficulty presented itself. In the first a presystolic murmur was present, as well as other signs of mitral stenosis. Auscultation and percussion revealed the presence of a consolidated patch in the right apex. The character of this was determined by the presence of the bacilli of tuberculosis in the sputum. In the second case the signs of the heart lesions were marked, and similar evidence was obtained of the presence of pulmonary consolidation to those above stated. In this latter case the sputum was not examined for bacilli, and I was very doubtful at the time of the presence of tuberculosis, although the patient had been treated for that disease. I have since learned that the patient made a complete recovery from the pulmonary trouble, thus establishing the opinion that it was probably not tubercular.

Whether the lesion is primary or secondary can only be decided in clinical cases by a careful examination into the previous history, as to the existence of rheumatism, or by a definite knowledge of the presence of a lesion previous to the onset of the tuberculosis. It may be here stated that the existence of rheumatism in early life is noted in a small proportion of the cases of the combined disease tabulated in the various hospitals.

In reading over the history of cases one is struck with the fact that when the two diseases occur in combination during the middle period of life, from 30 to 50, and when cardiac compensation is complete, the evolution of the tuberculosis is much delayed. On the other hand,

when the disease attacks an individual after middle life, or when from bad habits or bad hygienic surroundings there is a low state of vitality the process is often rapid.

An example of slow evolution came under my observation two years ago. A young lady (the case already mentioned) 24 years of age suffering from phthisis consulted me as to the advisability of going to Colorado. On examination I found distinct signs of mitral stenosis, as well as those of pulmonary tuberculosis. The sputum contained bacilli. The patient was advised to go to Georgia for the winter. She has been examined on two or three occasions since, and the last time, about a month ago, there were signs of decided improvement. I do not at all think in this case the disease would have pursued this course had not the mitral stenosis co-existed with the lung disease.

From the statistics and the observations of eminent physicians the following conclusions may be arrived at :

1. That primary mitral disease and pulmonary tuberculosis rarely exist in the same individual. It would appear that in uncomplicated cases, viz., those in which the other valves are healthy, mitral stenosis occurs more frequently in combination with tuberculosis, whereas when the other valves are affected insufficiency is the more frequent condition.

2. That pulmonary tuberculosis is a very frequent sequel to pulmonary stenosis.

3. The presence of mitral disease acts as a preventive to tuberculosis, especially when the vital powers are at or near their normal standard, and the prophylactic agency is shown in those who have a strong hereditary tendency to the disease and whose surroundings are of a decidedly unhealthy character.

4. In the small number of cases in which tuberculosis follows a mitral lesion during middle life, its evolution is very much delayed. When, on the other hand, from age or bad habits, the vital powers are on the decline, the process is often as rapid as in ordinary cases.

The question arises, why should the lungs become a less favourable ground for the growth of tubercle bacilli when mitral disease is present? The following theories have been propounded :

1. That on account of the passive congestion there is a greater transudation of serum which causes foreign bodies to be more easily removed from the bronchial tubes.

2. That the transuded serum acts as a germicide, thus preventing the growth of bacilli.

3. That owing to the passive congestion a greater number of leuco-

cytes are exuded and that these carry off the bacilli, while at the same time the lymphatic circulation is stimulated.

Professor Peter, in the *Gazette des Hôpitaux*, August, 1893, gave the following explanation: The apices of the lungs are most frequently attacked by tuberculosis, because they contain less blood and permit less ingress and egress of air, owing partly to the comparatively immovable character of the chest wall and also to some extent to the way in which the bronchi leading to these parts branch off from the main tubes. This can be demonstrated in post-mortem conditions. When owing to passive congestion and to the presence of hæmorrhagic foci the lower portions of the lung are not sufficient for the aeration of the blood, greater expansion of the upper part is absolutely necessary and the patient is compelled to use greater efforts in respiration, which result in greater dilatation of the air cells in the apices of the lungs. Under such circumstances there will be a diminished tendency to the development of tubercle.

To arrive at a correct conclusion it is necessary to study the minute anatomy of the lungs in which passive congestion, the result of mitral disease, has for some years existed.

The pathological changes have been given by Delafield and Prudden as follows :

(1.) A change in the capillaries in the walls of the air spaces. These are dilated, tortuous and project into the air spaces. The degree of dilatation varies very much.

(2.) A thickening of the walls of the air spaces due partly to the growth of smooth muscular tissue, and partly to an increase of the connective tissue.

(3.) The deposit of pigment.

(4.) The formation of cells within the interspaces.

In considering these changes one might at once conclude that some at least are of no value in preventing tuberculosis, for instance the fibroid thickening and the deposit of pigmentary matter.

There are these four conditions present however which may aid in the prophylaxis of phthisis.

(1.) Increased pressure in the pulmonary circulation.

(2.) The presence of transuded serum in the tissue.

(3.) The increase of involuntary muscular fibre.

(4.) The presence of an increased number of leucocytes in the alveoli.

In the writer's opinion too much importance has been given to the prophylactic agency of the transuded serum. In hepatic cirrhosis we have a similar condition in which, as the result of passive conges-

tion, there is an enormous transudation of serum, and yet it is a well established fact that the ascites of hepatic cirrhosis is frequently complicated by tubercle of the peritoneum.

I am much more inclined to agree with Peters that the passive congestion of the lungs acts as a prophylactic by producing an increased amount of chest measurement, especially in the apices, thus expanding the alveoli. The increase of involuntary muscular fibre, which is more especially referred to by Rindfleisch, enables the patient, more especially by coughing, to expel foreign matter from the alveoli and bronchi.

Rindfleisch is of opinion that the increase of connective tissue in brown induration of the lungs, is not nearly as great as it seems. The bulging of the capillary loops narrow the alveoli, thus lessening the amount of air in the lung and giving rise to a greater apparent solidity.

There is, however, a great increase of involuntary muscular tissue. The sphincter like ring of muscular fibres which surround the bronchial tubes, where they end in the infundibula, are much increased in number. Starting from this point (from the sphincter-like ring) a number of muscular fibres run downwards, forming loops in the walls of the infundibulum at right angles to the ring.

Rindfleisch says: "I think it not unlikely that this very considerable increase of contractile power may underlie the well-known immunity of lungs affected with brown induration for such disorders as set out from the retention of catarrhal secretions."

It appears therefore as probable that the immunity from pulmonary tuberculosis existing in mitral diseases is due to the following conditions.

- (1.) The increased amount of blood in the lungs.
- (2.) The greater expansion of the apices.
- (3.) The increase of the involuntary muscular fibres of the bronchial tubes and alveoli.

It may be interesting here to note that in the opposite condition, where there is a diminished amount of blood in the pulmonary circulation, statistics show that there is a greater tendency to tuberculosis. In Schultze's cases tuberculosis occurred in 83 per cent. of cases of pulmonary stenosis. It is also well known that tuberculosis is a frequent complication of thoracic anæmia which, by process, partially cuts off the pulmonary circulation.

Braehmer thought the smallness of the heart was a cause of tuberculosis, because less blood would be sent to the lungs. He, therefore, considered the strengthening of the heart as an important point in the management of pulmonary phthisis.

Dettmerler has also mentioned (1887) the importance of strengthening the heart muscle as well as the other muscles of the body.

This subject of the relationship between mitral lesion and tuberculosis might be considered simply as an interesting pathological study, but to the writer it presents a practical aspect which is of great importance. If the condition of the lung which results from mitral lesion is a barrier to tuberculosis, can we without injury to the patient bring about a somewhat similar condition in those who do not suffer from heart disease?

It might be stated in this connection that Professor Bier, of Berlin, has instituted a method of treating tubercular joints by producing a venous congestion of the part.

It would be out of the question to induce passive hyperæmia of the lungs even if we knew how it might be brought about. An active hyperæmia would no doubt have a similar effect, and we are acquainted with several methods whereby it can be induced.

In this connection I made an attempt to find out the condition of the lungs found in those who live at high altitudes, as well as those who for years have practised a system of lung gymnastics, so that I might compare the conditions with those already described, which result from mitral disease. The search was not a very exhaustive one, and I regret that I was not able to obtain any definite information on the subject.

It is generally admitted that in cold northern climates the quantity of blood circulating in the lungs is increased and that this moderate hyperæmia prevents the formation of tubercle.

Tucker Wise, in his article on Alpine resorts, says, "It would appear that a general hyperæmic condition of the lungs impedes the deposition of tubercle and restrains phthisical processes. At high altitudes patients have not only the advantage of moderate hyperæmia, but owing to the rarity of the air the lungs are expanded to a greater degree and the apices are subject to an increased movement. Whether the muscular tissue is increased in those who live at high altitudes or not I cannot say."

It will thus be seen that the immunity of those who live at high altitudes is due partly to conditions of the lung similar to those which result from mitral lesions. In addition to these, the purity of the atmosphere and the presence of so much sunlight no doubt aids in the prophylaxis.

Chest exercises as they have been described by La Grange in his work "Medication par l'exercice," and by Otis, of Boston, have also an effect upon the lung similar to that resulting from mitral lesions

The apices are expanded, allowing of a freer exchange of air, a moderate hyperæmia is produced, and it is reasonable to suppose that the muscular tissue is increased in amount.

It is doubtful if we pay sufficient attention to chest exercise as a means of preventing tuberculosis. If such exercises were properly taught in our public schools, they could be continued through life, and would, I think, be the means of preventing tuberculosis in many who are predisposed to that disease.

Another point of practical interest may be here referred to. It is, I believe, the rule with the majority of life insurance companies to exclude all cases of mitral disease, even if the compensation is perfect and the candidate is healthy in every other respect. If, however, mitral disease so effectually prevents the onset of pulmonary disease, as it is shown to do by statistics, should not this fact have some weight in deciding the fate of such cases. I quite believe there are cases of mitral disease which have a much better prospect of long life than many who have small hearts and arteries, and who may, on the first exposure, contract pulmonary tuberculosis.

LITERATURE.

Lyden, E.—Ueber die affection des Herzens mit tuberculose. *Deutsche Med. Wochenschr.*, 1896, Vol. 22, p. 1.

Potain.—Lésions de l'endocarde chez les tuberculose du rétrécissement mitral pur. *Compt. rend. Acad. d'sc. Par.*, 1905, Vol. 121, pp. 1023-1030.

Weismayr, A. R.—Tuberculose bei Herzfehlern, *Wien Klin. Wchenschr.*, 1896 Vol. 9, pp. 131-150.

Von Schrotter.—Drei Fälle von Tuberkulose der Lungen mit gleichzeitigen organischen Herzfehler. *Med. Clin. Centrabl.*, 1879, 14, 617.

Ranzier, G. et L. Chienesse.—Pneumothorax partiel chez un tuberculeux coexistence de l'insuffisance mitrale et de l'infiltration tuberculeuse du sommet droit. *N. Montpel. Med.*, 1895, 4, 832-842.

Brousse, A. and Ducamp.—Lesion mitrale et tuberculose pulmonaire. *Gaz. hebdom. et sc. med. de Montpel.*, 1880, 11, 277-280.

Pappenheim, E.—Ueber den Einfluss der Herzkrankheiten auf die Entstehung der Tuberkulose.

Coulbeaux, E.—Rapports des affections cardiaques et de la tuberculose pulmonaire.

Eymann, A.—Ueber die combination Phthisis und Herzfehler.

Gros, A.—Troubles et lésions cardiaques chez les phthisiques. *Etude pathogénique.*

Schultze, B.—Beitrag zur Statistik der Tuberculose verbunden mit Herzklap-penerkrankungen.

St. Bartholomew Hospital Reports, Vol. 23, 1887.

Peter, M.—L'antagonisme entre les maladies du cœur et tuberculyzation pulmonaire n'a rien d'absolu. *Gaz. d'Hop. Par.*, 1875, Vol. 48, 769-785.

Sevestre.—Affection cardiaque et tuberculose pulmonaire. *Bull. Soc. Anat. Par.*, 1876, Vol. 51, 43.

HÆMORRHAGIC PANCREATITIS,¹

BY

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I am indebted to the kindness of my friend, Dr. H. T. Machell, of Toronto, for the privilege of reporting this interesting case.

Douglas G., aged nine months, had been a healthy babe weighing 10½ lbs. at birth, and developed well until his illness. During the first three months he had a great deal of colic, the motions often containing curds. The bowels, although the motions were never constipated, always required some stimulus to excite them to act. A glycerine suppository was generally used. The motions were soft and yellow. In the ninth month they became more liquid, and contained a great many small, yellow, fatty-looking particles. The mother's milk was examined and found to contain a great amount of fat. He had always been a placid child, but in the ninth month he became fretful, and his general condition failed slightly. The mother having become pregnant, it was decided to wean the child, and milk prepared with peptogenic milk-powder was given, but he refused everything but the breast. In those few days he took not more than eight ounces of milk, and as vomiting had occurred the attempt to feed him was abandoned. During the following night sudden profuse vomiting set in, and all nourishment was stopped for some hours. He was purged with calomel, followed by castor oil. The motions were slightly green and contained many solid particles. There was no elevation of temperature nor thirst.

Next day (November 14, 1895) he was better. He vomited occasionally, and had a severe attack of colic; calomel was repeated and a small dose of paregoric given. He was not nursed. He slept fairly well. The temperature was slightly subnormal.

In the morning (November 15) he passed a large, soft, yellow motion and appeared well. He sat up and played with toys. He did not want the breast until nearly noon, when he took it greedily, and again in three hours. Later, he vomited again profusely, was prostrate and inclined to lie quietly. In the evening he became fretful and had a severe attack of colic lasting an hour, with tenderness over the epigastrium. Paregoric was given to relieve the pain, and calomel, followed by repeated doses of liquid magnesia, to move the

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

bowels, but without effect. He appeared to have no pain and showed signs of prostration.

On the following morning (November 16) he was weak and listless. Attempts to give nourishment were followed by vomiting. He had an attack of pain, but not so severe as on the preceding day. Towards evening he grew rapidly worse. All efforts to move the bowels failed. When I saw him with Dr. Machell, the medical attendant, he was in great distress and very pallid. The temperature was slightly elevated; pulse weak and rapid. He was constantly moaning and tossing about, and from time to time straining considerably. The thirst was very great. In his napkin there was a small, green motion, chiefly mucus, with traces of fecal matter. This was the only motion that day, although he had had repeated doses of strong purgatives. The abdomen was slightly distended, and examination of it revealed nothing unusual, except in the region of the ascending colon, where an elongated mass about the size of the middle finger could be felt extending from the costal margin to a point nearly as low as the iliac crest. It was firm, moved with respiration, and was dull on percussion. The abdomen elsewhere was tympanitic. The resemblance of this sausage-like mass to that in intussusception, the failure to move the bowels even with strong purgatives, the straining and vomiting, seemed to render operation advisable, as the only hope of giving relief. In this opinion the father, a physician, acquiesced, and Dr. George A. Peters operated. On opening the abdomen the mass was found to be an accessory lobe of the liver. The intestines were everywhere healthy, and there was no exudate in the peritoneal cavity. The incision did not admit of examination of the other abdominal organs. occurred next morning.

The probability of the illness being hæmorrhagic pancreatitis was suggested, and this was confirmed by the autopsy, in which only a partial examination of the abdomen was permitted. The middle third of the pancreas and its immediate surroundings were found deeply infiltrated with blood, neither the head nor the tail being affected. There was no extensive clot. All other abdominal organs were healthy.

As the autopsy was not done until forty hours after death the pancreas had become so much disorganised by post-mortem change that nothing could be determined from the histological examination, further than that the tissue was infiltrated with blood. There were cells among the stroma, but their nature was not recognisable. The pancreas undergoes such rapid changes after death that an early inspection is necessary to render the histological examination of value.

The disintegration of the pancreas will, doubtless, be especially rapid in children.

A bacteriological examination was made by Mr. J. J. Mackenzie, B.M.A., bacteriologist to the Provincial Board of Health. The only organism present was a bacillus resembling the proteus group in growth and characters. Inoculation on rabbits and guinea pigs showed that it possessed a very low degree of virulence. The bacillus coli communis could not be found, though carefully sought for.

This case presents a fairly typical picture of acute pancreatitis—as typical as could well occur in an infant. The pancreatic disease probably began on the 15th, two days before death, the history preceding that day being simply that of gastro-intestinal indigestion. On the 15th he had a severe attack of colic, followed by marked prostration; this recurred again next day, and in the evening became extreme. There was some vomiting, and for the last forty-eight hours the bowels could not be made to act, even with strong purgatives. There was extreme distress during the last night, with low fever, great thirst, weak pulse, and, finally, collapse.

The age is unusual for the disease to occur; there are no cases recorded of the disease in infants. Of all the cases reported the youngest is about 20 years, and the majority are about 45; some have been of advanced age. The majority of cases occur in males who have been more or less intemperate and have become very fat.

In most cases there is a history of gastro-intestinal derangement extending over varying periods, often for years, and while the cause of the disease is still uncertain, the general opinion is that it has its starting point in inflammation of the stomach and duodenum, from which the infecting agents gain access to the pancreas by the duct or otherwise. Against this view, however, is the fact that in the majority of cases bacteriological examinations of the pancreas have been negative. In this case only a bacillus of very mild infective character was found.

Few organs in the body are less liable to disease than the pancreas. Owing to its position it is seldom injured, and constitutional infections and disturbances rarely derange its functions materially or injure its tissue. The organ itself is not sensitive, nor is the constitution acutely disturbed by derangements of its function. Recent observations have shown that many, if not all, gland structures furnish to the economy an "internal secretion," in addition to the more manifest functions which they possess. In the case of the pancreas the arrest of the supply of pancreatic fluid, as well as of that of its "internal secretion," could produce only a gradual disturbance of health. It is

probable, therefore, that to the implication of neighbouring structures, especially the retro-peritoneal ganglia, and consequent dilatation of the abdominal vessels from the vaso-motor paresis is to be attributed the fulminant symptoms ending in collapse, and even sudden death in many of these cases. In the reports of these cases we read such records as "found dead in bed," or "in a chair as if asleep."

In his Middleton-Goldsmith lecture on "Acute Pancreatitis," the most thorough exposition on the subject that has yet appeared, Fitz classifies the fifty-four cases which he collected into three classes: (1) hæmorrhagic, (2) suppurative, and (3) gangrenous pancreatitis. In the main, all the cases since reported may be placed under one of these heads. The case of the infant here detailed may, I think, fairly be designated hæmorrhagic pancreatitis, for, although owing to unavoidable circumstances, the results of histological examinations do not clearly demonstrate the existence of inflammatory exudate, the symptoms were sufficient to justify such a conclusion.

In addition to the foregoing, Fitz also detailed a class of hæmorrhagic cases in which only extravasation of blood was found post-mortem, and in which there was a history of sudden death from shock, and no symptoms indicating an inflammatory process.

Various explanations have been offered to account for the hæmorrhage. The pancreas has been compared to the brain in the laxness of its tissue and the ease with which its vessels will yield to pressure but even in the brain rupture never takes place in a healthy vessel. Weakening of the vessel wall from some pathological process must take place before it will dilate or rupture from internal pressure.

Klebs has suggested the possibility of degeneration of the wall of the vessel by the action of the pancreatic secretion. Fat necrosis has been assigned as a cause in those cases in which the necrosis occurs.

As in many cases of pancreatitis, there is a great deposit of fat in the tissues, Sticker believes that repeated and increasingly extensive ruptures take place at the root of the mesentery similar to those occurring in the abdominal wall of very fat people and in pregnancy; that those repeated lacerations interfere with the nutrition of the part, so that ultimately a more extensive rupture occurs, with free hæmorrhage.

The causes of the hæmorrhage are probably various, and all these opinions may be true. Thorough examinations of the small vessels of the gland have not yet been made, and at least until that is done in a series of cases the question must remain in doubt.

Disseminated fat necrosis has been very frequently found in association with pancreatitis. It did not occur in this case. It has

usually been found in cases in which there was an inordinately large deposit of fat, but it does not occur even in all these cases. Its causation, as well as its relation to the hæmorrhage, is doubtful. But there is no doubt that either process may occur in the absence of the other.

The diagnosis is of great importance, and presents grave, often insuperable, difficulties. As the disease has become better known in recent years, a correct diagnosis has occasionally been made. The clinical history is that of epigastric pain, gradually developed or sudden and severe, it may be agonizing; tenderness; generally some fulness in the upper zone of the abdomen; nausea and moderate vomiting; usually constipation that may resist the strongest purgatives, but there has been diarrhœa in a few cases. Marked prostration occurs early with low fever, weak pulse, and, finally, collapse. Death has usually occurred within four or five days. If the patient survives a rapid recovery may result, or suppuration or gangrene may follow. The necrosed mass has been discharged *en masse* into the bowel with ultimate recovery. In a case under my care at present the formation of a large cyst followed the pancreatitis.

The affections with which this disease is most likely to be confounded are perforative peritonitis, especially of the stomach and abdomen, and acute intestinal obstruction; with these may sometimes be included irritant poisoning, and hepatic and pancreatic calculi.

In the case here detailed acute obstruction would not have been considered possible but for the malformation of the liver. The vomiting was not extreme, nor did the vomit contain bile, much less become feculent. There was no marked swelling of the abdomen.

Perforation was not deemed possible, because there was no history of gastric or intestinal disease. There was no marked distension of the abdomen or evidence of the presence of gas in the peritoneal cavity; nor was there any initial shock followed by reaction with marked elevation of temperature.

The age excluded the possibility of hepatic or pancreatic colic.

It was not possible to make a positive diagnosis, but, with the exclusion by the operation of acute obstruction of the bowel, the extreme distress evidently due to a lesion somewhere in the abdomen, the moderate distension of the bowels, the failure of strong purgatives to move them, the slight elevation of temperature, and the great prostration seemed a sufficient ground to justify a probable diagnosis of acute pancreatitis, notwithstanding the age of the patient.

LITERATURE.

1. Fitz, R. H., The Middleton-Goldsmith Lecture for 1889.
2. Thayer, Boston M. and S. J., 1889, CXXI., 506-508.
3. Harris, Boston M. and S. J., 1889, CXXI., 606.
4. Koenig, W., Ein Fall von Pankreas Nekrose-nach Blutung und Fettnekrose Kiel, 1889, C. Broeckel.
5. Dumas, Loire Med., St. Etienne, 1889, VIII., 385-391.
6. Loomis, A., N. Y., Med. Rec., 1890, XXXVII., 105.
7. Langerhaus, Berl. Klin. Wochenschr., 1889, XXVI., 1, 114.
8. Dittrich, P., Vetjtschr. f. gerichtl. Med., Berl., 1890, N.F. LII., 43.
9. Dittrich, P., Wien. Med. Bl., 1890, XIII., 405, 423, 438.
10. Fitz, R. H., Tr. Ass. Am. Phys., Phila., 1890, V., 191-200.
11. Formad, H. F., Univ. M. Mag., Phila., 1891-2, IV., 49-52.
12. Seitz, J., Ztschr. f. klin. Med., Berl., 1892, XX., 1, 203, 311.
13. Whitton, T. B., Australas. M. Gaz., Sydney, 1891-2, XI., 276.
14. Rolleston, Brit. M. J., 1892, II., 894.
15. Day, F. L., Boston M. and S. J., 1892, CXXVII., 569-571.
16. Fitz, R. H., Boston M. and S. J., 1892, CXXVII., 571.
17. Biggs, G. P., N. Y., Med. Rec., 1893, XLIII., 153.
18. Noyes, R. F., Tr. Rhode Isl. Med. Soc., 1892-3, IV., 454.
19. Hawkins, H. P., Lancet, Lond., 1893, II., 358-361.
20. Kotschau, J., Centralbl. f. allg. Path. u. path. Anat., Jenn, 1893, IV., 454-456.
21. Paul, W. B., Boston M. and S. J., 1894, CXXX., 8.
22. Paul, J. E., Lancet, Lond., 1894, II., 968, 970.
23. Sticker, G., Deutsche Med. Wochenschr., Liepz. u. Berl., 1894, XX., 274-276.
24. Whitney, W. F., Boston M. and S. J., 1894, CXXX., 379-381.
25. Mimier, H., Rev. de Méd., Par., 1894, XIV., 353-384.
26. Middleton, G. S., Glasgow M. J., 1894, XLII., 99-103.
27. Musser, J. H., Univ. M. Mag., Phila., 1894-5, VII., 375-379.
28. Paul, J. E., Tr. Clin. Soc., Lond., 1895, XXVIII., 10-12.
29. Sievers, R., Finska läk-sällks. handl., Hellingsfors, 1895, XXXVII., 607.
30. Von Bonsdorff, Finska läk-sällsk. handl., Hellingsfors, 1895, XXXVII., 243.
31. Williams, W. C., Chicago M. Rec., 1896, LXVIII., 127.
32. Atkinson, J. E., J. Am. M. Ass., Chicago, 1895, XXIV, 999-1002.
33. Chantemesse, A., Bull. Soc. Anat. de Par., 1895, LXX., 578-586.
34. Cutler, E. J., Boston M. and S. J., 1895, CXXXII., 354.
35. Rosenfeld, G., Verhandl. d. Cong. F. innere Med., Weisb., 1895, XIII., 414.
36. Sarfert, Deutsche Ztschr. f. Chir., Leipz., 1895, XLII., 125-134.
37. Thayer, W. S., Am. J. M. Sc., Phila., 1895, CX., 306-405.
38. Pontick, E., Berl. Klin. Wochenschr., 1895, XXXIII., 385-390.
39. Le Cornet, E. R., J. Am. Med. Ass., Chicago, 1896, XXVI., 581.
40. Rolleston, Lancet, Lond., 1896, I., 705.

TWO CASES
OF
EARLY ATROPHY OF MUSCLES IN CEREBRAL DISEASE.

BY

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Muscular atrophy in diseases of the nervous system is almost invariably due to lesions affecting the cells of the anterior cornua or the nerves leading from them. Clinically such cases are known as atrophic paralysis, and form a distinct and well defined group. In cerebral disease, or in lesions of the fibres of the cord above the anterior cornua, atrophy is usually absent, although a moderate degree of wasting has often been noted in old standing cases of hemiplegia with contractions and is regarded as due to disease. Of late years, however, cases have been observed in which muscular atrophy has been early noted in limbs paralyzed from various forms of cerebral disease. Contrary to expectation, in some of these no changes have been found either in the anterior cornua or in the peripheral nerves. With the object of drawing attention to this condition I submit the two following cases :

CASE I. Tumour of optic thalamus—hemiplegia atrophy of muscles of hand, forearm and leg—anterior cornua and peripheral nerves normal.

Miss F., æt. 55, was first seen June 21st, 1892. For a month or five weeks past states that she has had pain over the anterior part of the scalp, intermittent, not severe and present chiefly in the morning. She has also had pain in the back of the neck, most marked on rising from the recumbent posture. About the same time she began to experience difficulty in walking, having a tendency to fall backwards and her knees giving way under her. She has vomited once or twice half an hour after her evening meal, without effort or nausea. There has been giddiness. Her friends state that she has been growing stout since her illness began, and that her memory has been failing for three months.

Present Condition.—The patient is well nourished and somewhat stout. Intelligence is fair, but she exhibits no anxiety about her condition, and there is a tendency to laugh easily.

In walking she moves the legs slowly and requires assistance. There is a marked tendency to fall backward and to the left side.

She is unable to use the hands even for eating. The arms and legs both show a marked degree of muscular power.

The left labio-nasal fold is not so prominent as the right, and the movements in the lower part of the face are not quite so marked as on the right, but the upper muscles of the face move normally. The tongue is protruded straight.

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

The sense of position is normal and there is no ataxia of arms and legs.

Sensation in the face and limb is normal. Both knee jerks are exaggerated, but there is no ankle clonus.

The left eye is shrunken and functionless, the result of an old injury. The right optic disc shows a marked grade of neuritis. The pulse is 90. The heart, lungs and urine are normal.

Mental failure and weakness progressed rapidly, and on July 12th she was admitted to the Montreal General Hospital. She was then quite unable to give any account of herself. She lies on her back with her head slightly retracted, sleeping a great deal day and night. She answers questions only in monosyllables and in slow measured tones after a pause of some seconds, relapsing into a soporose condition when left alone. There is no pain. Urine and fæces are passed in bed.

The left arm and leg are paralysed and flaccid. She is not able to register with the dynamometer with the left hand, but registers 30 with the right. There is some loss of power in the right limbs.

July 15. Urine alkaline s.g 1030 : no albumen ; no sugar. Complains of pain in right sterno-mastoid muscle.

July 20. She lies in the same condition, sleeping most of the time, and snoring loudly. The pain in the neck has gone. There is not much change from day to day.

July 26. Wasting of the left thenar eminence was noticed to-day, and on measuring the following results were obtained :

	Right.	Left.
Arm.....	9½ in.	9½ in.
Fore-arm.....	8	7½
Hand over thenar eminence.....	7	6½

There was an inch difference in the legs in favour of the right side. No tenderness of the muscles or nerve trunks present. With the faradic battery a much stronger current was required to produce contraction of the muscles of the left hand and forearm, and in the respiratory muscles of the face. In the leg there was slight diminution of electrical irritability to faradism. The galvanic reactions were not obtained. The atrophy progressed rapidly in the hand, and the thenar and hypothenar eminences became flat and depressed. On Aug. 3rd, she passed into a comatose condition, the breathing became rapid and stertorous, and death occurred on the following day (Aug. 4.)

The measurements of the limbs taken after death were as follows :

	Right.	Left.
Arm.....	9½	9½
Fore-arm.....	8	7½
Hand.....	7	6½
Thigh.....	14½	14½
Calf.....	11	10½

During her stay in hospital the temperature was slightly elevated, 98 to 100, and 102½ for three days preceding her death. The pulse was also increased in rate, varying from 72 to 104.

The clinical diagnosis was tumour of the brain, based on the optic neuritis, with other cerebral symptoms. Its locality was regarded as being in the neighbourhood of the cerebellum, owing to the peculiar gait. In the absence of any signs of peripheral neuritis, such as tenderness or loss of sensation, the atrophy of the hand was regarded as due to changes in the anterior cornua of the cord.

AUTOPSY.—Brain.—The floor of the third ventricle was full and bulging. The right optic thalamus was enlarged and infiltrated with a white tumour of the same colour as the white substance of the cerebrum ; its boundaries were ill-defined and infiltrating. It was rather firmer than the surrounding brain tissue and extended back as far as the superior vermiform process of the cerebellum. The tumour was

placed in Müller's fluid for examination, but during changes in the laboratory was unfortunately lost before its exact boundaries or microscopic characters were determined.

The spinal cord and a portion of the median nerve at the elbow were also removed and placed in Müller's fluid for examination. Sections of the cord at the levels of the 4th, 5th, 6th, 7th and 8th cervical and 1st dorsal nerve were subsequently made and stained by Weigert's method and with carmine. The cells of the anterior cornua presented no diminution in size or number; there was no descending degeneration and the cord was in all respects normal. The median nerve also showed no sign of degeneration.

The abdominal and thoracic organs were under-weight, but otherwise presented no change of importance.

The chief features of this case were hemiplegia and wasting of the paralysed muscles. The wasting was noted fourteen days after the limbs became paralysed. It affected chiefly the thenar muscles of the hand, where the atrophy was considerable, and to a less extent the forearm and leg. The limbs were flaccid and there had never been any irritative symptoms. The wasting in the hand was such as to suggest a lesion of the anterior cornua. Anatomically, however, no microscopic changes were found in the lower motor segment or even in the pyramidal tracts of the cord. During life there was no evidence of neuritis, sensation having been normal, and no tenderness of the nerve trunks or muscles was present.

CASE II.—Sarcoma of crus cerebri—Hemiplegia and rapid atrophy of muscles of hand, forearm, arm and shoulder—Autopsy.

I am indebted to Dr. James Stewart, of Montreal, for brief clinical notes of the following case.

Mr. R., æt. 47. The first symptom noted was loss of colour vision. He then suffered from severe pain in the head. Weakness in the left arm and leg, gradually increasing in intensity, set in. The muscles of the thenar and hypothenar eminences, the forearm, the arm, the deltoid and lower portion of the pectoralis major wasted rapidly and death occurred four months from the onset of symptoms.

Autopsy.—The thenar and hypothenar eminences, the muscles of the forearm and arm, the deltoid and lower portion of the pectoralis major were much wasted on the left side. On removing the brain a greyish, soft, flattened growth lying on and adherent to the right crus cerebri was observed. The growth reached from the anterior border of pons forward to about the level of a line through the middle of the temporo-sphenoidal lobe. The growth was quadrilateral in shape, $1\frac{1}{2}$ inches long and $1\frac{1}{2}$ inches broad. The third and fourth nerves lay alongside the tumour, whilst the optic tract lay beneath the growth. None of the cranial nerves were involved, a fact which caused much obscurity in localising the growth during life.

Microscopically the tumour proved to be a sarcoma with large vascular spaces. The upper part of the spinal cord was removed and also a portion of the ulnar nerve. Sections of the cord at various levels in the cervical region down to and including the first dorsal segment showed the cells of the anterior cornua to be perfectly normal. There was no degeneration of the lateral column. The sections were stained both with carmine and by Weigert's method.

Sections of the ulnar nerve were normal. The muscle was not examined.

The chief interest in this case lies in the fact that a considerable degree of atrophy of the muscles of the arm was present, associated with a tumour of the crus cerebri and without lesions of the anterior cornua or peripheral nerves to account for it.

Atrophy of the muscles is occasionally seen in old cases of hemiplegia with contracture, and lesions in the anterior cornua or in the peripheral nerves have been demonstrated. Charcot first described atrophy in the cells of the anterior cornua at levels corresponding with the wasted muscles. Déjerine found degeneration of the peripheral nerves and regards this as the sole cause of the atrophy.

There is, however, a class of cases in which wasting occurs early in the paralysed members and in which no changes either in the anterior cornua or peripheral nerves have been present. The wasting cannot be attributed to disuse, as it occurs too early; and again, it may be present to a considerable extent in muscles only partially paralysed.

Anatomical Lesions.—The pathological conditions in the brain vary both in site and character. In a considerable proportion of the cases tumours have been present, but in others softening or hæmorrhage have existed. Bremer and Carson¹ have collected six (including their own) cases in which a tumour was present. Quinke² has reported a seventh and quotes a case of Barresi's and one of Gliky's. Packard, in a paper read at the meeting of the Pædiatric Society in Montreal, 1896, reported a case of a tumour in a child associated with considerable atrophy, and in both my own cases a cerebral growth was present.

In Babinski's³ case a focus of softening in the centrum ovale minus, in the course of the psycho-motor fibres was found. Eisenlohr reports two cases, in one of which a recent, and in the other an old, hæmorrhagic focus in the brain was found.

The site of the lesions varies, but all involve some portion of the motor tract. A considerable number of the cases of tumour have been in the motor cortex, but in others the paralysis and ensuing atrophy have resulted from disease of the motor tract in the sub-cortical region and in the internal capsule. The optic thalamus has also been primarily involved with damage to the adjacent internal capsule.

Secondary degeneration of the pyramidal tracts and medulla sometimes occurs, and also degeneration of the opposite cross pyramidal tract of the cord and of the direct pyramidal tract on the same side as the lesion. The degeneration of the pyramidal tracts is by no means constant and it can therefore have nothing to do with atrophy of the muscles.

The most surprising and important fact in these cases of early muscular atrophy is, however, the absence of changes in the motor cells of the anterior cornua, in the anterior nerve roots and in the peripheral nerves. This fact is all the more remarkable inasmuch as

the degree of atrophy is often considerable and occurs within a very short period of time.

The following writers (l.c) report cases of early muscular atrophy with integrity of the lower motor segment, determined by microscopic examination of the cord and nerves. Quincke, Babinski, Eisenlohr, (two cases), Bremer and Carson which, with my own cases, make a total of seven.

The muscles in the few cases in which they have been examined present changes similar to those found following affections of the nerves (v. Babinski, Eisenlohr l.c).

No very satisfactory explanation of muscular atrophy with integrity of the lower motor segment has yet been offered. Quincke suggests the presence of trophic centres in the cortex, but were this the case early atrophy might be expected to occur much more frequently. Babinski (l.c) and Joffrey and Achard⁵ suggests that the motor cells of the anterior cornua undergo dynamic changes, sufficient to interfere with the nutrition of the muscles, but not evidenced by anatomical changes.

Symptoms—The period elapsing between paralysis of the muscles and atrophy varies considerably. It is often difficult to fix owing to the fact that wasting is present when the patient first comes under observation and has not previously been noticed by him, and again, its onset may not be observed by the physician until it has reached a considerable degree. The most rapid onset is recorded by Borgherini⁶ in which muscular atrophy (amounting to a difference of 1 cm. in the arm, 5 cm. in the forearm, 5 cm. in the thigh and 1 cm. in the leg) was noted on the third day after an attack of hemiplegia, but it is usually observed about three⁷ or four⁸ weeks after the onset of paralysis. Although paralysis is usually complete, atrophy may occur where paresis⁹ only is present.

The muscles of the arm usually present an earlier and greater degree of wasting than the leg. The muscles of the arm, forearm, shoulder and hand, may all be affected, and in one of Quincke's cases wasting began in the shoulder and arms, the thigh and calf. When the hand is affected, the atrophy may reach a considerable degree, the eminences of the thenar and hypothenar groups being flat or depressed, and the first interosseous muscle also showing a considerable degree of atrophy.

The difference in the size of the limbs varies from 4 cm. to 5 cm. In the hands, although the difference in measurement may be slight, the atrophy seems to reach at times a higher grade than in other muscles. From these facts it appears that the muscles most affected

are those which suffer most in cerebral paralysis, and in which the movements performed are complex and highly differentiated.

The knee-jerks in the cases under discussion are usually increased and foot clonus has been noted, facts which support the view of integrity of the lower motor segment.

Electrical Reactions.—In the few cases examined the electrical reactions have shown diminished faradic contractility corresponding to the wasting (Quinke). In my first case, however, the faradic irritability was much lowered and strong currents were required to produce contraction. The galvanic irritability has shown slight qualitative and quantitative changes, but never the slow muscular movements seen in nerve degeneration.

Summarising we may state that in a certain small proportion of cases of cerebral disease muscular atrophy occurs early and if present in the hand may reach a considerable degree, and that in these cases no anatomical changes are observable in the lower motor segment.

¹ Bremer and Carson, Am. Jour. Med. Sc., 1851, 1, 133.

² Quinke, Deut. Arch. Klin. Med., 42, 492.

³ Babinski, C. r. de la Société de Biologie, 1886, 76.

⁴ Eisenlohr, abstract in Virchow's Jahresbericht d. Ges. Med., 1894, 2, 130.

⁵ Arch. de Méd., Ecp, 1891.

⁶ Deut. Arch. Klin. Med., 45.

⁷ Eisenlohr l. c.

⁸ Eisenlohr, Quinke l. c. [three cases.]

⁹ Quinke l. c., Case I. Bremer and Carson l. c.

TETANY FOLLOWING SCARLATINA.¹

BY

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Tetany is observed but rarely ; besides the present case I have met with it in only one other instance, a case in which the affection was of the intermittent type and occurred in a man 55 years of age,

This patient was a boy of Italian descent, 5½ years of age, strong looking and well developed. The attack developed on the 16th of April, 1896. I had attended him for an attack of scarlatina which had commenced on the 4th of the same month ; it was a well marked case with somewhat severe throat symptoms, the tonsils being much enlarged, although very little false membrane appeared ; no untoward symptoms however, had occurred and desquamation then was in progress. I learned that while the child appeared to be doing well, in the afternoon of the previous day his hands and legs had become stiff and extended and painful and that the condition had remained continuously since that time ; he had not slept and was very much distressed.

The boy is the eldest of three living children ; one other child had died in infancy. He had been fairly strong and healthy ; but had been a mouth breather until about a year ago, when adenoids were removed from the vault of the pharynx. During the period of dentition he had frequent attacks of convulsions, and when one and a half years of age had an attack resembling the present one. He was apparently well at bed time but in the morning the mother noticed that the arms and legs were stiff, and the feet pointed downwards and the hands were flexed. This condition lasted a week before entirely disappearing. During the last three years until the present attack of scarlatina he has been well.

The family history points to a strong neurotic tendency, The paternal grandfather is an epileptic now in Longue Pointe Asylum and his great-grandfather was also an epileptic. His maternal grandmother died of apoplexy. An aunt and an uncle are epileptics. His elder brother died of convulsions at the age of fourteen months.

On examination it became apparent that there were present the symptoms of tetany of the continuous spasm type. The fingers were

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

stiff and extended lying closely together, flexed at the metacarpophalangeal joints, the thumbs pressed in upon the middle and index fingers; the hands were flexed on arms, and the elbows slightly flexed, shoulder not affected and freely movable; the legs were also extended at the ankle, the toes pointing downwards and inwards, and toes flexed, resembling the position in talipes equino-varus, as some have aptly described it. The ankles and wrists were swollen and tender, and the child gave evidence of intense suffering if an attempt was made to move them. The skin was slightly reddened over the joints, the condition resembling acute articular rheumatism. No other muscles were affected. The child cried at intervals from pains in the limbs; doubtless caused by painful muscular cramps. Otherwise, unless moved, he appeared not to suffer. No abnormal condition could be discovered in any other part of the body. Temperature 101°. Urine contained traces of albumen, and excess of phosphates.

Tapping the course of the nerves or squeezing the limbs increased the contractions. This is analagous to Trousseau's sign in which in the intermittent variety, the spasm can, in the interval, be produced at will by pressure on the larger arteries or nerve trunks.

Chovestek's symptom could not be elicited in the facial.

The electrical irritability was not tested, there was marked hyperaesthesia of the limbs.

In the treatment of the case, bromide of sodium and salicylate of sodium with bicarbonate of potassium were employed. The condition improved after the second day, and by the end of a week all the symptoms had disappeared.

Tetany appears to occur under a variety of conditions. Among the causes we find mentioned diarrhoea, exposure to cold, debility due to lactation and rickets; it may appear during gestation, passing away after delivery; it has followed most of the acute infectious diseases; it sometimes occurs in the epidemic form.

The opinion is entertained by some that it is of the nature of an infectious disease. It thus classed by Osler in Dercum's Text Book of Nervous Diseases, by American authors.

Von Jaksch describes an epidemic form coming on in the spring, affecting men of the working class about the ages of 17 or 18, in whom the facial phenomena, or Chovestek's symptom was very constant; this is ascertained by tapping on the facial which causes tetanic contraction of the muscles supplied by it. Bernard Vaughan, in an article in the *New York Medical Journal*, December, 1893 propounds the following views in regard to its etiology:

“It may be doubted if a special organism exists, whose toxin has a selective action, as in tetanus, owing to the great variety of causes which may induce an attack; the view that we have here an unstable condition of the nervous system, either hereditary or brought about by debilitating influences, in which various forms of irritation either central or peripheral, mostly toxic and central, excite the attack would seem more in accord with our present knowledge.” The fact that in all cases there is an increased excitability of the nerves and muscles to mechanical and electrical irritation is interesting. This is better observed in the intermittent variety. Most observers find an increased excitability to the galvanic current as compared with the faradic, and that spasm is more easily excited with anodal opening and closing than with cathodal, as pointed out by Erb. In this case the child has a history of having had a similar attack to the present one while teething; we have also a well marked neurotic family history, and the child’s liability to convulsions points to a weak and unstable nervous system. The cause in most instances is probably some toxic condition of the blood, as in most of the exciting causes, such as diarrhoea, the infectious diseases, dilatation of the stomach, removal of the thyroid, &c., toxic substances are generated. Bramwell’s experience with thyroid extract in tetany, in which good results were obtained, is interesting in this connection, and the possibility of its being of use in the frequently associated condition of rickets and laryngismus stridulus is suggested by him; it has been noted that it is mostly in those cases associated with rickets that laryngospasmic attacks occur.

Von Frankel Hachwart has pointed out that the faradic irritability may be normal and the facial phenomena absent, and from experiments he has proved that Trousseau’s phenomena is dependent entirely on pressure on the nerve and not on the vessels.

The pathology of the disease is still obscure, no recent light having been thrown upon it, and the question is still open as to whether the seat of change is in the cells and fibres of the cord and medulla, or cortical; how the irritation keeps up a tonic spasm is still a problem, which possibly the recent views of Dercum, Wiedersheim and others as to the mobility of the neurons may make clear. If the neurons, whether peripheral, cerebral or in the cord, can separate so that one is isolated from the other in the various nervous arcs, it appears possible that a tetanic condition may be kept up by an abnormally continuous approximation of associated neurons.

STREPTOCOCCIC PUERPERAL INFECTION—INJECTION OF
MARMOREK'S ANTI-STREPTOCOCCIC SERUM—
RECOVERY.¹

BY

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Women's Hospital, etc.

Mrs. C., English, age 20, primipara, slight build, well nourished, married twelve months; entered the hospital July 7th at 2.30 a.m. in labour and was confined one and a half hours later. Labour normal; position L. O. A. throughout, lasting seven and a half hours; was delivered of a well-nourished child weighing seven and a quarter pounds.

The ordinary aseptic precautions were taken, such as are used in all cases in the hospital. The only abnormal thing to be noticed was an enlarged varicose vein at the inner side of the left labium near the posterior commissure. There was no laceration of cervix or perineum. Temperature first two days normal.

July 9.—Third day, temperature 100°, pulse 90. A dose of castor oil was given, which produced a good motion; patient feeling well.

July 10.—Temperature still remained 100°, pulse 90.

July 11.—Temperature 101°, pulse 90. No cause for the increase of temperature could be found in the pelvis or elsewhere; lochia normal.

July 12.—Patient had a chill and temperature rose to 104°, pulse 106, respirations 28. Tongue thickly coated with a heavy white fur; headache. On examining the vulva the varicose vein was seen to have burst and on its site a whitish membrane about half an inch in diameter was noticed. To the membrane was applied peroxide of hydrogen and an intra-uterine douche given of a solution of permanganate of potash and the vagina packed with iodocform gauze. Ten grains of sulphate of quinine internally and a tablet of two grains of pronuclein given every two hours.

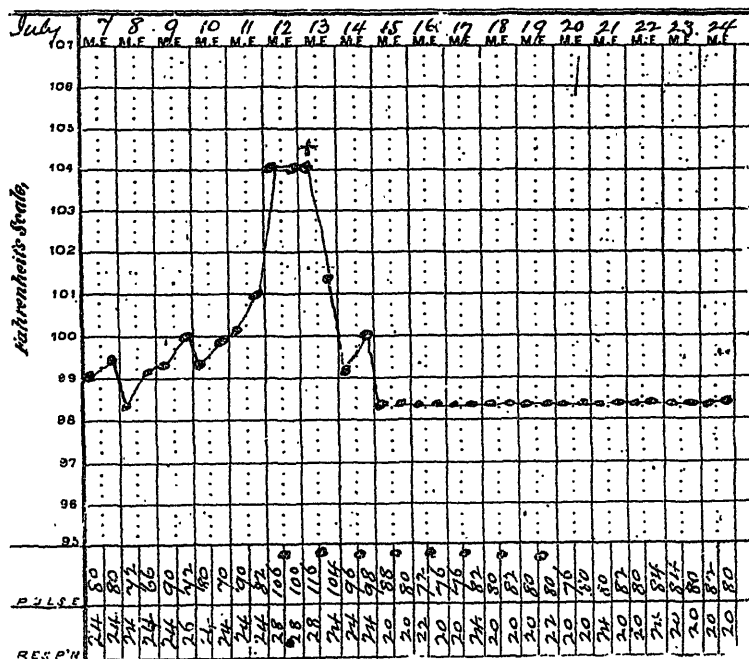
As she had hardly any milk, the child was stopped nursing and she was given Tait's mixture until it had freely acted.

I requested my friend Dr. A. J. Richer, who had just returned from a lengthened period of study at the Pasteur Institute, to make a cultivation of what I believed, and which proved to be, streptococcus membrane, and whose report on the matter I attach.

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

The intra-uterine douche was ordered every three hours, as well as an application of peroxide of hydrogen to the membrane, which had now spread to the right side, there being a couple of patches about the size of a quarter of a dollar each. Between the douches the vagina in the vicinity of the patches was packed with wadding soaked in peroxide of hydrogen, left *in situ* ten minutes and afterwards packed with dry iodoform gauze. The following is Dr. Richer's report:

"On the 12th July was asked by Dr. Reddy to make a bacteriological examination of a woman confined five days previously; temperature 104°F, pulse 106, face flushed, suffering no pain, who had



Dots represent the douches.

Cross shows when the injection was given.

received previously several vaginal injections of permanganate of potash, a local application of peroxide of hydrogen, and had been tamponed with iodoform gauze. Direct microscopical examination as well as inoculation in culture media gave negative results. The next day, after having the vagina thoroughly douched with boiled water, inoculation and direct microscopical examination showed streptococci in fairly large proportions, along with numerous colonies of staphylococci and streptobacilli, which appeared to be saprophytic. On the 13th of July an injection of 10 c.c. of Marmorek's antistreptococcic serum (obtained from a horse), was given on the right side, about the

middle of the abdomen, the ordinary precautions being observed. For forty-eight hours following the injection, there was numbness and tingling of the extremities, and no pain, with the exception of a little at the seat of the inoculation, which was quite free from swelling and redness. No rash was observed."

The injection was given at 1.10 p.m. on the 13th of July. Temperature at the time of the injection of the serum 103 $\frac{2}{3}$, pulse 116; two hours later temperature 104, pulse 110 full, well sustained. Patient complained of sharp pain on the right side of the abdomen, at the site of the injection, and tingling and numbness in arms, fingers and feet, which continued forty-eight hours. Urine, 23 ounces in amount, normal in character.

At eleven p.m. (two hours later), the temperature had fallen to 101 $\frac{2}{3}$, pulse 104. After 11 p.m. it fell a degree every two hours until six o'clock the following morning, July 14th, when it fell to 99 $\frac{1}{2}$, and the membrane on both the right and the left side of the vagina and labium had completely disappeared, leaving a raw surface.

July 15.—At 2 p.m. temperature rose to 100; pulse 96. On account of the character of the pulse, the patient was given 2 drachms of brandy every four hours, local treatment being continued. Hæmaturia appeared of a severe character. At eight p.m. the temperature fell to normal, where it remained until the patient left the hospital.

July 16.—Temperature normal. Hæmaturia continues, but is not so severe. Urine greatly increased in quantity.

July 17.—Brandy was stopped and five minims of tincture of digitalis given three times a day. The protonuclein was stopped and the patient was douched only twice a day. Patient feeling well, sleeping well, eating well.

On July 18, bowels moved twice with Tait's mixture, and as the urine drawn off by a catheter still contained blood, a linseed poultice was applied over the kidneys.

July 19.—Urine passed naturally without blood or albumen, 40 ozs. in twenty-four hours; patient sleeping well and good appetite.

July 20.—Patient stronger, feeling well, temperature normal, no blood in the urine.

July 21.—Patient sat up for an hour; steadily improving.

July 24.—Patient left the hospital perfectly recovered.

On examination before leaving the hospital no signs of the local lesion were observable.

It will be noted that the reaction after the injection was marked by tingling and numbness of the extremities which continued forty-eight hours.

Also that within 36 hours hæmaturia appeared as a direct result of the injection (and probably slightly affected the pulse, requiring stimulants to be given), and apparently as the effect of the poultices as rapidly disappeared. The severity of the action on the kidneys may have been due to one or both of the following causes: the serum was obtained from a horse, was the strongest so far made by Marmorek, and the dose was large.

The protonuclein, although undoubtedly of service in many cases, as I have proved at least to my satisfaction, aiding in lowering the temperature, probably through phagocytosis or leucocytosis, I do not think could be credited with the complete removal of the membrane in less than twenty-four hours.

The first attempt to get cultures after antiseptics were used failed, showing that they had affected the surface to a great extent, but had failed to reach the bacteria more deeply seated, and those who have had streptococcic infection know by experience that no antiseptics known to them can remove the membrane in less than twenty-four hours so that there shall be not the slightest return of it.

The douches as well as the protonuclein tablets were continued so as to aid in every way possible the recovery, and although for experimental work it might have been very interesting to have depended upon the serum alone, I felt that I should use every means to help the recovery of my patient.

There has as yet been comparatively little work done in obstetrical cases of this kind with serum, and with the literature on the subject you are all doubtless familiar. It seems so far to have proved of value in at least 50 per cent. cent. of the cases in which it has been used. This, I think, is sufficiently encouraging for us to give it a fair trial, especially as it seems to produce but trifling ill effects, which rapidly disappear in the majority of cases. In a large number of such cases we find that the streptococcus, if not alone the cause, is at least one of the most dangerous causes of a condition which unfortunately is present in nearly every country and which proves so fatal. If we cannot always prevent infection we should endeavour to promptly arrest it, which I feel may now be done if the condition is recognised early enough and anti-streptococcic serum injected.

I need hardly say in the majority of cases, in order to treat it scientifically, we should always have a bacteriological examination made.

Although one case would certainly not prove that we have at last found a certain remedy for so fatal a condition, still I believe that if sufficiently used there will be found to be such a measure of success that not to have given it a fair trial would lay one open to the charge either of ignorance or malpractice.

THE PLACE OF PESSARIES IN GYNÆCOLOGICAL TREATMENT.¹

BY

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During the last few years the opinions of many of the leading gynæcologists have undergone a marked change with regard to the value of pessaries in the practice of gynæcology. Many forms of pessary have been devised during the present century, and their claims have been advocated by many physicians of greater or less renown. To refer to them much time would be needed, and though such a survey might prove interesting, it would be of very little practical value.

Owing to comparatively recent researches, whereby we have acquired much accurate knowledge regarding the physics of the pelvis, the normal relations and movements of the various parts of the pelvic floor, and the real significance of their various displacements with a correct estimation of the symptoms caused by them, the employment of pessaries has been largely lessened. Of great importance also in bringing about this change are the advances which have been made in the operative treatment of some of the conditions for which pessaries have long been used.

I think it best to consider pessaries in reference to the conditions for which they have been employed.

Anteversión of the Uterus.—For a long time this term has been used to describe a supposed special diseased state of the uterus. In this condition the uterus is enlarged and its long axis more or less straightened, owing to the diminution of the normal slight anteflexion. The symptoms were related to this altered condition of the uterine axis. Such views must now be considered as absolutely untenable. They are incorrect.

There is no special disease of anteversion; nor does anteversion produce any symptoms. Anteversion is but one of the results of the thickening of the uterus, due to chronic metritis. Even in normal states the uterus may often be found with very little flexion. The treatment of anteversion is the treatment of metritis. Special anteversion pessaries, such as Gehrung's, Thomas' and Graily Hewitt's, were introduced when incorrect ideas as to the pathology of the condition prevailed. They were meant to lie in the vagina, and by

¹ Read before the Canadian Medical Association, at Montreal, August 28, 1896.

means of a projecting portion to press through the anterior fornix against the uterus, whose wall would thereby become bent over it. It was also believed that the pressure of the body would thus be taken off the bladder.

Now we know that no special influence can be brought to bear on the corpus uteri through the anterior fornix by such instruments. The bladder is being emptied and filled, and the uterus, therefore continually changing its position in relation to it and to the anterior fornix.

Such instruments must be abandoned. As I have already stated, the treatment is that of metritis. Sometimes in this condition it may be helpful to support the uterus for a time in order to relieve congestion where it is much enlarged, and tends to drag down. This support may be given by the use of vaginal glycerine plugs, which help to relieve the congestion, as well, in another way. A ring or Hodge pessary may be used for this purpose—without any reference, however, to the so-called anteverted condition of the uterus.

Anteflexion of the Uterus.—There is considerable difference of opinion as to the exact relation of anteflexion of the uterus to the causation of pain and sterility. It is extremely probable that excessive anterior flexion *per se* is rarely the cause of these conditions, for many examples may be found of healthy women in whom this peculiarity of the uterus may be found, unaccompanied by any symptoms. There is a considerable range of normal variation in the extent to which flexion is developed in the uterus. It is to pathological accompaniments of the anteflexion that we must look in those cases in which distressing symptoms are found. These are inflammation in the uterine wall or outside the uterus, or stenosis of the *os externum* or *os internum*.

The treatment of anteflexion is simply the treatment of those associated pathological conditions. For a long time uterine stem-pessaries have been used for the purpose of straightening the uterus. Their use is based upon a wrong understanding of the pathology, and they are dangerous, because of the injury they may cause to the uterine mucosa, and because they may lead to septic infection. All forms of this instrument should be abolished, whether simple firm stems like Amann's, soft rubber stems like Greenhelgh's, or firm stems combined with vaginal pessaries like Beigel's.

In cases in which the uterus is much enlarged from inflammation, support of the organ for a time by means of vaginal plugs, Hodge or ring pessaries, may be beneficial. Their use has, however, nothing whatever to do with the presence or absence of anteflexion.

Retroversion of the Uterus.—There is some difference of opinion as

to the part played by a backward displacement of the uterus in the causation of symptoms, which are so often found accompanying the condition. Some hold that retroversion *per se* does not produce troublesome symptoms; they state that normally the uterus is constantly changing its position, according to changes in the condition of bladder and bowel, and that it may, when turned to the back, trouble the woman as little as when turned to the front. They state that the symptoms which are so often found along with retroversion—*e.g.*, pain and weakness in the back, menorrhagia, &c., are due to accompanying pathological conditions—*viz.*, inflammations outside the uterus, inflammations in the uterus itself, sub-involution, some prolapses of the organ.

In favour of these opinions may be mentioned the fact that cases are found in which, along with a retroverted uterus, no symptoms whatever are found. Moreover, the forward position of the uterus, as a whole, does not seem necessary to health, because, in certain cases, reposition of the uterus may exist along with perfect health.

Other authorities hold that the backward displacement *per se* may lead to bad symptoms.

As regards the use of pessaries, the former school hold that they should be used in a smaller number of cases. They state that the instruments act by supporting the uterus as a whole, relieving the congestion, and thus tending to an improvement in the pathological conditions accompanying the backward displacement.

The latter school hold that, whenever the uterus is retroverted, it should, if possible, be turned to the front, and kept there by means of a pessary. They hold that the instrument gives relief because it keeps the uterus anteverted.

It is not necessary to enter into a consideration of these two views. I would merely desire to point out that much more attention must be paid to the statements of the former school. I am inclined to think that the influence of the retroversion *per se* in causing symptoms has been greatly exaggerated.

Whatever views may be held regarding the pathology of retroversion, it may be stated that, as regards the treatment of the condition by pessaries, they are to be used with discrimination, and only when necessary.

VARIOUS CONDITIONS OF RETROVERSION IN RELATION TO TREATMENT BY PESSARIES.

1. Retroversion accompanied with fixation by means of peritonitic adhesions.

In such cases the uterus cannot be replaced—*i.e.*, turned to the

front. Pessary treatment is of no avail. The case must be treated by douches, baths, electricity and glycerine plugs. Stretching of adhesions by means of massage or by means of vaginal dilators, *e.g.*, Bozeman's, is recommended by some.

2. Retroversion of a freely movable uterus, not enlarged, unaccompanied by pelvic trouble.

In such cases there seems to be no necessity, as a rule, for the replacement of the uterus and the introduction of a pessary. When, however, women in such a condition are liable to the strain of heavy lifting or to chronic bronchitis, it may be considered advisable to use a pessary for the purpose of keeping the uterus anteverted. For, undoubtedly, the uterus may, when retroverted, show a greater tendency towards prolapsus under the influence of increased intra-abdominal pressure than when it is anteverted. In these cases the Hodge or Albert Smith pessary does well.

3. Retroversion of the freely movable puerperal uterus, unaccompanied by pelvic troubles.

It is now recognised that normally, in many women, during the involution of the uterus in the early weeks after labour, the uterus may be turned to the back.

When, in such cases, good health exists, no pessary treatment is necessary, unless it is known that the patient has suffered previous to her pregnancy, or unless she is subject to strains, which increase the intra-abdominal pressure.

The Hodge or Albert Smith pessary may be used in these cases.

4. Retroversion of the movable pregnant uterus in the early months. In every case the uterus should be replaced, and a pessary worn until the pregnancy has well entered the fourth month—*i.e.*, until all danger of an incarceration in the pelvis is past.

The Hodge or Albert Smith pessary may be used.

5. Retroversion of a movable uterus where pelvic symptoms are present, but where the ovaries are not prolapsed into pouch of Douglas, nor any special tenderness exists in the perimetrial or parametrial tissues.

In such a case the uterus should be replaced and a Hodge or Albert Smith pessary introduced.

6. Retroversion of a movable uterus where pelvic symptoms are present, and where one or both of the ovaries are prolapsed into the pouch of Douglas.

These are generally very troublesome cases to deal with. If the ovaries be inflamed as well as prolapsed, no pessaries should be used until glycerine plugs and the vaginal douche have been used. After

the uterus is replaced it is often a matter of difficulty to select a pessary. In a certain number of cases, owing to the sensitiveness of the ovaries, no form of instrument can be worn. In other cases a Hodge or Albert Smith pessary acts well and causes no pain, even though the ovaries remain prolapsed. Sometimes a Thomas' pessary with a thick soft rubber upper end may be more suitable than entirely hard instruments.

Often a soft rubber ring pessary may be borne when no hard instrument can be tolerated. In all cases where the ovaries are noticeably tender or inflamed, it is best, after the use of the douche and plugs, to use a ring pessary for a time before trying one of the hard instruments. Though the ring may not keep the uterus to the front, merely acting as a general support to the uterus, it has a beneficial influence in allowing congestion of uterus to be relieved.

In some cases of prolapse of one ovary only benefit may be obtained from the use of a hard instrument in which the upper angle on one side is absent to ensure non-pressure on the ovary while the pessary is in position.

7. Retroversion of a movable uterus, accompanied by pelvic symptoms, where old posterior perimetritis or some remains of cellulitis are present.

These cases are also very troublesome. The line of treatment as regards pessaries is the same as that laid down in the last section.

Retroflexion of the Uterus.—All that has been said regarding the use of pessaries in the treatment of retroversion may be stated with regard to retroflexion. Practically, wherever retroflexion exists retroversion is present, and the employment of pessaries like Hodge's and Albert Smith's, after the replacement of the uterus, is related primarily to the posterior version, not to the flexion. Disappearance of the flexion depends on the consistence of the uterus and its relation to the intra-abdominal pressure.

Downward Displacements of the Pelvic Floor.—The pelvic floor is liable to various downward displacements. The floor is to be regarded as a strong suspensory structure which closes the pelvic outlet. Its strength is mainly due to certain dense fascial layers, but also to several muscles.

The main conditions which are related to the formation of displacements are increase in intra-abdominal pressure, weakening of the structures which compose the floor, solutions in continuity of the floor.

The whole floor may be displaced downwards. This is a rare condition. It is sometimes found in early life or in cases of injury—*e.g.*, where a heavy cart wheel has passed over the abdomen.

Practically we have to deal only with partial displacements of the floor. In several of these forms pessaries may be beneficially employed.

1. The anterior vaginal wall (*anterior enterocele*), or it along with the bladder (*cystocele*), may alone prolapse.

In these cases a ring pessary, a diaphragm ring or a Hodge pessary with transverse bars in its lower half may be used with benefit. But in cases where there happens to be marked rupture of the perineal body, only the ring pessaries need be tried, and even they may not be retained. A plastic operation is of great value in this condition.

2. The posterior vaginal wall alone (*posterior enterocele*), or it along with the anterior rectal wall, may become prolapsed. In such cases the same forms of pessaries may be tried. Operative treatment is important.

3. *The uterus alone* may be prolapsed. In this condition the uterus usually lies retroverted.

As it becomes more marked it tends to drag down the structures attached to it.

It is only the slight degree of prolapse to which this section refers. In such cases a Hodge or Albert Smith pessary should be tried. A ring may also be used, but only where the others fail.

4. *The uterus* may be considerably prolapsed along with the *anterior* and *posterior vaginal walls*. In these cases a Hodge pessary may be used to keep up the parts, but if there be a bad rupture of the perineum, it will not remain in position. A ring may then be often used with advantage, or a Zwanck pessary may be servicable. Some prefer to use a ball-pessary.

Operative treatment is important.

5. The downward displacement may be so extensive that the uterus protrudes beyond the vulva.

In these cases, especially if of old standing, no pessary will remain in the vagina, unless it be held in position.

For these cases operative treatment should be carried out. Where this is inadvisable or is objected to, the cup pessary attached to an abdominal belt, or a T-bandage, may be employed. In dispensary practice one sometimes finds that women prefer periodic packing of the vagina with oakum. This should only be carried out after the the menopause.

Operative treatment in such cases is most valuable.

Fibroid Tumours of the Uterus.—In cases of small fibroids of the uterus giving rise to dragging down symptoms, the use of a Hodge or ring pessary may be beneficial in supporting the organ.

Mode of Action of Pessaries.—1. Pessaries of the Hodge type.—It used to be taught that when this form of instrument is in position the intra-abdominal pressure acts chiefly on the lower end of the instrument, pushing it downwards and thus causing the upper end to rise and move forwards in the posterior fornix, tilting the uterus forwards.

This explanation is not correct. When the pessary is in position it lies in the vaginal slit between the pubic and sacral segments. Intra-abdominal pressure acts at right angles to every point of the floor, and consequently acts with equal force on all parts of the pessary.

The instrument acts in two ways: (a.) It helps to keep up the uterus as a whole, thus tending towards the relief of the congestion of the organ.

(b.) The upper end of the pessary affords a support over which the posterior vaginal wall pulls on the cervix in an upward and backward direction, the body of the uterus consequently tending to be kept forwards. In fact this action makes up for the loss of function in the utero-sacral ligaments which, in the normal state, draw the cervix upwards and backwards, but which in cases of retroversion lose this power through the stretching to which they are subjected.

2. Ring pessaries act merely as a means of support. They lie between the pubic and sacral segments, stretching the vagina somewhat transversely. They tend to prevent the vagina and uterus from becoming prolapsed. The ring does not act in the posterior fornix like the Hodge pessary in the majority of cases. Sometimes, however, it may have this action, preventing the uterus from becoming retroverted after it has been turned to the front.

3. Zwanck's pessary acts through the width of its wings. Many patients prefer this instrument because it can be so easily introduced and removed.

4. Ball pessaries act merely by distending the vagina.

5. Vagino-abdominal pessaries keep up prolapsing parts by means of the suspension from an abdominal band.

Contra-indications to the Use of Pessaries.—Fixation of the uterus so that the fundus cannot be turned to the front. Interference with the mobility of the uterus as a result of some swelling—e.g., tumour of ovary, etc. Recent acute inflammation in any of the pelvic tissues or viscera. Tenderness of the vagina. Certain tumours of the uterus or vaginal walls.

Some Ill-effects of Pessaries.—Pain may result; the functions of the bladder or of the rectum may be interfered with; ulceration of the vaginal walls or cervix may occur; perforation of the rectum and bladder may take place; coitus may be made difficult.

These troubles may result from pessaries when they are too large, when misplaced, when not kept clean, when worn too long without change, or when some contra-indication has not been regarded.

VAGINAL FIXATION OF THE ROUND LIGAMENTS: A NEW OPERATION.¹

BY

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The subject which I have chosen is one upon which I have bestowed a good deal of attention for the past three years. It may be of interest to first give a brief sketch of the history of the different phases through which vaginal fixation has passed, and to state concisely the part your essayist has taken in the evolution of the operation.

In 1888 Schücking,² of Pymont, devised the method of fixing the uterus by means of a suture passed through the fundus of the uterus and the anterior vaginal wall and tying the two ends of the suture together. Although he claimed to have had good success with the operation, it never became popular owing to the unsurgical procedure of thrusting an armed needle blindly through important tissues. Theoretical objection was borne out by practical experience, for the bladder was frequently pierced in this step.

Sänger³ about the same time proposed that the fundus uteri be sutured directly to the anterior vaginal wall by incising it and pushing up the bladder from the uterus. He did not, however, put his suggestion to the practical test. This was left for Mackenrodt who, in a paper read before the Berlin Gynæcological Society, on May 27, 1892, described the operation afterwards known by his name. The steps of the operation consisted in making a longitudinal incision in the anterior vaginal wall, extending from near the urethral meatus to the vaginal attachment of the cervix, dissecting the two flaps thus made from the underlying bladder, making a transverse incision in the denuded part down upon the cervix, passing one or two sutures in the anterior uterine wall immediately above the internal os, carrying these sutures through the vaginal flaps and closing the incision with a continuous catgut suture. The peritoncum was not purposely opened in this operation.

On June 7th of the same year Dührssen⁴ described a somewhat similar procedure of vaginal fixation in which he, however, made a transverse instead of a longitudinal incision in the anterior vaginal

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

² Centbl. für Gynaek., 1888, No. 12.

³ Centbl. für Gynaek., 1888, No. 2.

⁴ Zeitsch. für Geburtsh. u. Gynaek., Bd. XXIV., and Centbl. für Gynaek., 1892, p. 924.

fornix, and sutured the body of the uterus transversely to the wall of the vagina. Then followed a bitter polemic battle between Dührssen and Mackenrodt as to the claim of priority. The operation was soon taken up by other gynæcologists, in whose hands it underwent several modifications, mostly of a similar nature, though the operators worked independently of one another. This circumstance furnished a striking illustration that the workers in this field experienced the same defects with the method, and were led to overcome them by similar procedures. The chief defects of the method this time were two. The first was, that the uterine sutures had to be passed mainly by the sense of touch, and the second was, that the sutures were carried too low down through the uterine wall, and, as a result, relapses were common. Other defects were revealed later.

It was in the beginning of October, 1893, that the writer first performed the operation, and he presented a short paper on it before the Obstetrical Society of New York, November 21, 1893.¹ In this communication he embodied the report of four cases, and stated that the above described technique differs from that given by Winter and Mackenrodt, (1) by preceding the operation by a curettage; (2) by anteverting the uterus to such a degree that the fundus presents at the vaginal wound. I deem this quite an advantage, in that it facilitates the passing of the uterine sutures and avoids the possibility of injuring the bladder; (3), in passing the sutures through the uterus nearer the fundus than do either Winter or Mackenrodt.

In the *New York Medical Journal*, for October 27, 1894, in a paper entitled "The Technique and Indications of Vagino-Fixation," I gave, with the aid of several illustrations, a full description of the operation, and described a knife and sound that I had devised for it. In order to test the indications of the operation, I had performed it in all cases of backward displacements with or without adhesions. In the cases (nine in number) of perfectly movable uteri without any appreciable adhesions, there were both a symptomatic and an anatomical cure in all. In the remaining seven cases in which adhesions to a greater or less extent existed, a symptomatic cure was obtained in some. In others the failure was complete, the uterus returning to its former faulty position, and the former symptoms recurring shortly after the patient left her bed. As a result of this experience, I expressed myself as follows: "The operation is indicated in mobile retroversions or retroflexions that are attended with symptoms, and which for one reason or another are unsuited for treatment by pessaries or tampons. In other words, it was contraindicated

¹ The New York Journal of Gyn. and Obst., January, 1894.

when adhesions were present or palpable disease of one or other adnexa."

While performing the operation on several occasions, it occurred to me how easy it would be to open the peritoneum and deliver the fundus entire through the vaginal incision, and with it the adnexa, which could be treated on the same surgical principles as through an abdominal incision. This I carefully did in a case operated upon on November 25, 1894, and ever after, in almost every case, I purposely tore or cut the peritoneal cavity with my fingers, breaking up any adhesions of the uterus or of the adnexa through the vaginal incision and treating the latter upon conservative principles, excising or puncturing small cysts in the ovary or amputating a portion of the diseased tubes, or if both tube and ovary were hopelessly diseased, ablating them as one would in an abdominal section. In the *New York Medical Record* for March 2, 1895, I published a short paper on this subject, entitled "Vaginal Coeliotomy," with remarks on the new field it opens up for the treatment of backward displacements of the uterus with diseased adnexa by vaginal fixation." The experiences gained with this method up to January of this year, were embodied in a paper entitled "Conservative Surgery upon the Uterus and its Adnexa through the Vaginal Route," read before the New York County Medical Society, on February 24th, and published in the *American Medico-Surgical Bulletin* for March 7, 1886. Forty-two (42) cases were reported, in thirty-two (32) of which vaginal fixation was done in addition to the conservative work upon the adnexa to correct an existing backward displacement. The results were good in all with one exception, and that was in the case of an unmarried lady of this city, a patient of my old friend Dr. A. A. Browne.

I do not wish it to be understood that all the other cases were perfectly cured. There was an anatomical cure in all with the above stated exception, and everyone experienced improvement, many being entirely freed of their former symptoms, while others were merely benefited. The failure to effect a perfect clinical cure in some of the cases, however, can not be laid to the fault of the operation. It was in my estimation due to the pathological condition present. When a uterus has been in retroversion for a sufficient length of time to bring about a marked structural change in its tissues, known as "chronic metritis," or avascular hyperplasia, correcting the mal-position is not going at once to bring about a disappearance of the pathological elements in the uterine tissues. We must not expect miracles from operative procedures, and if we always bear in mind the charac-

ter of the existing pathological changes, we will be in a better position to know how much we may reasonably expect from our remedial agents, be they medicinal, mechanical, or surgical.

Up to the beginning of this year no serious criticisms of the operation had been offered. Those that had heretofore been urged were merely of a theoretical nature, i.e., that bladder disturbances must necessarily follow—that the results could not be permanent, etc., etc. As a matter of experience, however, these charges were shown to have no foundation in fact. There were no bladder disturbances and the anatomical results were permanent with the improved technique that had been adopted. But, about this time, like a thunder-bolt from the clear skies, came disturbing reports from Germany of several cases in which serous difficulty had been encountered in labour as a consequence of the operation. The reports rapidly multiplied, and for a few months every issue of the *Centralblatt für Gynäkologie* contained a fresh report of the kind. In March of this year, I was enabled to collect nine of such cases in a short paper¹ read before the obstetric section of the New York Academy of Medicine. About this period appeared a paper by Miländer² on dystocia following ventro-fixation. A careful analysis of this report and of the cases of dystocia following vaginal fixation revealed the significant circumstance that they had very much in common, and that dystocia occurred in the cases in which a too firm and extensive union had taken place between the fundus and abdominal wall in the one instance and vaginal wall in the other instance. The lesson brought home by these cases was that they were the result of technique. No cases of dystocia had been met with in cases of ventro-fixation operated upon after the Olshausen's method, in which the round ligaments and adjacent broad ligaments were stitched to the abdominal wall, and no cases of difficult labour had been met with in vaginal fixation, in which a technique similar to that practised by the writer had been carried out, that is, when a longitudinal incision had been made, and the fixation sutures were not passed directly across the fundus, but about one or two centimetres below it. In my own cases, five pregnancies, to my knowledge, have occurred. One woman purposely brought on an abortion at the third month, and the other four went to full term, having a normal gestation and an easy and normal labour. In the last case forceps were used, but the gentleman who was called in to apply them, assures me that there was no strong indication for their use, but that the attendant had begun to administer chloroform

¹ Medical News, March 14th, 1896.

² Zeitsch, für Geburts u. Gyn., Bd., XXXIII., Heft. 3.

very early in the labour, and thus had brought about *acerta* in degree of uterine inertia in the second stage.

In spite, however, of this favourable experience with pregnancy and labour after my method of doing vaginal fixation, I deemed it wise, in the light of what had been observed in Germany, and in cases of ventro-fixation, to further modify the technique, so as to entirely preclude the possibility of dystocia following as a result of the operation. I have before stated that no cases of difficult labour have been met with in ventro-fixation where the Olshausen method of stitching the round ligaments to the abdominal wall has been employed. I reasoned why not do the same thing in vaginal fixation instead of suturing the uterine wall to the vagina, the round ligaments could be sutured instead, and thus the fundus and body would be merely suspended and would remain unfettered in the event of enlargement as in case of pregnancy. The same train of thought occurred to Wertheim,¹ of Vienna, who was led to a similar procedure to that which I had employed. In point of time my first operation and my publication² of the method preceded his, but our work was done independently of each other. I performed my first operation on February 2nd of this year. In the first case the round ligaments alone were used as the means of suspension. In the other cases, in addition, a suture was carried across the anterior wall of the uterus, about midway between the os internum and fundus. This suture can have no unfavourable influence upon gestation and labour, while it materially aids in securing a permanent anatomical result. It remains for me now to describe the technique which I will do as briefly as is consistent with clearness.

The patient is thoroughly prepared as she would be for vaginal hysterectomy, and as a matter of precaution the abdomen is prepared for a laparotomy, in the event of having to complete the operation from above. The cervix is caught by a couple of volsella and drawn well downwards and outwards. The interior vaginal wall is seized by a volsellum near the urethral meatus and is drawn upwards, thus putting it on the stretch. With a convex blade scalpel a longitudinal incision is made in the median line, extending from one to two centimetres below the urethral meatus to the vaginal attachment of the cervix. This incision is to be carried through the whole thickness of the vaginal wall to the underlying bladder, care being taken not to wound this important structure. It is wise to take the precaution before

¹ *Cent. f. Gyn.*, 1896, No. 10, March 10, 1896.

² The method was briefly described in a paper read by me before the Obstetric Section of the New York Academy of Medicine, on February 27th, 1876.

making the incision to pass a sound into the bladder to ascertain the thickness of the vaginal wall, and the level of the lower attachment of the bladder. The next step consists in separating the two vaginal flaps from the bladder partly by dull and partly by sharp dissection. It is well to make a free dissection and obtain a fairly wide flap on either side. The two flaps are now held asunder near the cervix by tenacula and a semi-lunar incision is carried down upon the cervical tissue in the already denuded portion. Having thus freed the attachment of the bladder to the cervix, the bladder is gently pushed up with the palmar surface of the index finger, as is done in vaginal hysterectomy. A short retractor is next placed in the anterior fornix, so as to hold the bladder well out of the way and to expose the lower part of the uterus. With a stout curved needle, a traction suture is carried through the anterior wall of the uterus with the aid of sight as high up as can be conveniently done. The anterior retractor is now removed and the cervix is pushed with the volsella downwards and backwards in the posterior fornix. This step, with the aid of the traction suture, brings the uterus well into the vaginal incision. If the peritoneum has not been torn through in pushing up the bladder, it can now be readily opened with scissors and the opening enlarged with the fingers. If the case be an easy one, that is, if there be no firm and extensive adhesions, the uterus can now be readily delivered through the incision by hooking two fingers behind one of the horns and forcibly anteverting it. In other cases it may be necessary to employ two or more traction sutures introduced one above the other. The body and fundus can thus be entirely delivered through the incision and made to present at the vulval orifice. The adnexa, if not too extensively and firmly adherent, can be drawn out one after the other with moderate ease, and subject to whatever surgical treatment their condition indicates. I must here emphasize what I have said on former occasions, that, as soon as the adnexa are delivered they can be treated on conservative principles, just as expeditiously and with the same degree of precision as through an abdominal incision. The one difference between the two routes resides in the fact that it is usually more difficult to deliver the adnexa through the vaginal than through the abdominal one. There is another point upon which I desire to lay stress, and it is this, when the adhesions are very extensive and firm, and where there is considerable infiltration and thickening of the broad ligament, it more prudent to close the vaginal incision and complete the operation from above. It is for this reason that I have my patient invariably prepared also for laparotomy. In those cases in which there is no affection of the adnexa, as may be

ascertained by direct palpation with the fingers in the peritoneal cavity, there is no occasion to deliver either them or the uterus. The operation is then much simpler and more easy of execution. After making the opening into the peritoneum and exploring the adnexa, the two fingers are hooked behind the broad ligament on one side near the horn of the uterus. In this way the round ligament on the corresponding side is brought to view. It is grasped by an artery forceps and thus held until a suture is carried around it. The suture should be passed about one to two centimetres from the horn of the uterus and may be made to include a portion of the adjacent broad ligament. This suture is then carried through the vaginal wall at a point corresponding to the lateral sulcus immediately below the pubic arch and tied moderately loosely. The same procedure is repeated on the opposite side. The slit in the peritoneum is then closed by a continuous catgut suture and the vaginal incision is closed also in the same manner, only stouter catgut is used. Before closing the vaginal incision, the single uterine fixation suture (the first traction suture can be made to serve this purpose) is carried through the vaginal flap on either side and is tied fairly tight at the completion of the operation. For the fixation suture of the round ligament I employed silkworm gut, and for that of the uterus, braided silk. In the event of there being a redundancy of the anterior vaginal wall or a cystocele, a strip corresponding in width to the degree of relaxation is excised from the flap, thus doing an anterior colporrhaphy. It is usually necessary to withdraw the urine for two, three or four days. The patient is kept in bed for twelve or fourteen days and the fixation sutures are removed at the end of three or four weeks. I have performed this operation thus far in ten cases, in seven (7) of which, more or less conservative surgical work was carried out on the tubes and ovaries—in the remaining three (3) cases these were found to be normal on direct palpation and were subsequently left intact. Eight (8) of the cases have been under observation for a period longer than three (3) months.¹ In all of these the anatomical cure has been perfect, and in all with one exception there has been a satisfactory clinical cure. One of the earlier cases is now in her third month of pregnancy. The gestation is progressing favorably and the uterus lies in normal position. The only symptom from which the patient is suffering is some frequency of micturition—a symptom that existed with much greater severity before the operation.

The advantages this operation has over Alexander's operation are :

¹ It has been my experience that when the uterus stays in good position for three or four months, it remains so permanently.

(1) it avoids two external incisions with their liability to suppuration ; (2) it precludes the possibility of hernia so common after Alexander's operation ; (3) it has a much wider range of applicability having for its field all backward displacements with or without adhesions ; (4) it permits direct surgical treatment of the tubes and ovaries ; (5) it is more certain in its execution as the round ligaments are often difficult to find at their external insertion and not infrequently break or tear out ; (6) it is more certain in its permanent results. All operators excepting Edebohls claim an anatomical cure only of from 80 to 90 per cent. with Alexander's operation ; with vaginal fixation of the round ligaments, after the writer's method, the anatomical cures thus far have been 100 per cent. and from the nature of the technique, it is safe to predict that this percentage or, one very nearly as high will be maintained in future cases. The only advantage Alexander's operation may have over this method is the certainty of freedom from disturbances during pregnancy and labour, but on theoretical grounds and from the experiences gained with the Olshausen's method fixation of the round ligaments ought to be attended with just the same immunity in pregnancy and labour as external fixation of the round ligaments in the abdominal wall. (Alexander's operation.) This method has the following advantages over ventro-fixation ; (1) it is a less serious operation ; (2) it avoids an external incision with its liability to suppuration ; (3) it avoids the possibility of hernia ; (4) it suspends the uterus in a position corresponding more closely to the normal one. The advantages of ventro-fixation on an abdominal incision in a certain class of cases has already been dealt upon.

Every gynæcologist should render himself equally expert in the vaginal and abdominal routes, and be ready in each case to perform the operation most suited to the case, with the least immediate and subsequent risks to his patient.

THE ELECTRO-MAGNET IN OPHTHALMIC SURGERY, WITH SOME ILLUSTRATIVE CASES.¹

BY

F. BULLER, M.D.,

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Since the electro-magnet has come into use in ophthalmic practice, we have a ready means of removing many foreign bodies from the interior of the eye which would otherwise baffle surgical intervention and ultimately destroy the vision of one or both eyes.

I do not mean to say that every piece of steel or iron can be removed from the interior of the eye by means of the electro-magnet, or that when removed the eye will always make a good recovery, but of this I am certain, viz., that with proper appliances many eyes can be saved which formerly would inevitably have been lost.

I have had no opportunity of using the large magnet of Baab, but can readily believe it might have a larger sphere of usefulness than the small magnet I have been in the habit of using for some years. This instrument is the Bradford magnet, and is fairly powerful in its action, since we have the means of attaching it to the electric lighting current. This is done by means of a somewhat formidable dynamo transformer of the constant current used in the hospital for lighting. The magnet is thus rendered much stronger and more reliable in its action than it used to be when attached to a Grenet battery cell.

I may say, to begin with, I have never yet been fortunate enough to extract a foreign body from the eye which I could not accurately locate before operating. But, on the other hand, I never failed to extract any fragment of iron or steel which I could see before making the attempt to remove it. I would infer from this that the point of the magnet must be brought very near to, or in actual contact with the foreign body, before it will exert sufficient magnetic attraction to withdraw it from the eye. If this be true, it is easy to understand why the chances of success are but slight when the exact position of the foreign body is unknown.

Small particles of metal which have not passed beyond the iris or lens can often be seen by the naked eye or with the aid of focal illumination, but those which have entered the vitreous chamber can only be seen with the ophthalmoscope.

There is one practical point which I wish to emphasize, namely,—

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

the sooner an expert examination can be made after the accident, the better will be the chance of making an accurate diagnosis. The transparent media of the eye are likely to become clouded, more or less rapidly, after such accidents, and a delay of some hours or days may make all the difference between success and failure.

I believe that a large majority of injuries to the eye occurring amongst metal workers are inflicted by quite small fragments of steel, chipped from the edge of hammer or chisel.

These commonly vary from two to four millimetres in length and are much less in breadth and thickness. Larger fragments, from a quarter to half an inch or more in length, are mostly derived from the metal being wrought upon. Such larger masses, when they penetrate into the interior of the eye, often inflict such extensive injury that the eye is obviously destroyed, whether the fragment can be removed or not. It is, therefore, the injury caused by small fragments which chiefly concerns us in our efforts to save the eye from destruction. Foreign bodies such as these when they pass through the lens do not usually cause much, if any, bleeding into the eye, and for some time afterwards the lens and vitreous may remain sufficiently clear to admit of efficient ophthalmoscopic examination which will often suffice to locate the intruder and thus render its extraction an easy task, if it consists of iron or steel. Fragments which penetrate through the sclerotic are apt to occasion more or less abundant extravasation of blood into the vitreous (a very important diagnostic point if the external wound be very small, since a small particle merely wounding the sclerotic would not cause intraocular hæmorrhage); but even then the ophthalmoscope will sometimes discover the position of the foreign body, and the magnet itself may be used to confirm the diagnosis, as in Case V.

The introduction of the small magnet point into the vitreous chamber does not, with proper care, seem to be followed by injurious inflammatory reaction, and although augmentation of existing opacity in the vitreous may follow its use, this soon clears up if there has been no septic infection.

The Operation.—Whenever a fragment of metal, such as can be attracted by the magnet, is discovered in the eye, we have to consider the best means of reaching it. The cases I now report are typical, showing as they do what may be done in three classes of injury:

- (a.) Where the foreign body is in the anterior chamber.
- (b.) Where the foreign body is still engaged in the sclerotic, though mostly within the eye.
- (c.) Where the foreign body is lodged in the vitreous chamber.

CASE I.—A healthy man about fifty years of age was struck in the eye with a piece of metal while standing near a blacksmith's forge. Two days later he came to the hospital with the eye very much inflamed and painful, the aqueous cloudy, the iris turbid, and vision reduced to counting fingers at four feet; tension = 1+. There was a small wound in the cornea, near its lower and external margin.

The lens showed no sign of injury, though the pupil dilated moderately with atropine. At the outer periphery the iris presented a localised swelling, in the midst of which a small, dark mass was dimly seen. The excessive reaction in the iris from so small a wound was sufficient ground for the belief that this must be the foreign body in the eye.

The eye was thoroughly cleansed and washed with perchloride solution, 1 in 5000, and then rendered anæsthetic by repeated instillations of a 4 per cent. solution of cocaine; an incision was now made as for an iridectomy at the outer corneal margin. As soon as the magnet was placed in contact with the incision a piece of metal about 3 millimetres in length sprang out of the eye with alacrity. In a few days the eye made a perfect recovery.

CASE II.—A man accustomed to do odd jobs about the house was removing an iron hoop from a barrel with a hammer and chisel, when something struck him in the eye. Shortly afterwards his family physician found a foreign body imbedded in the sclerotic near the outer margin of the cornea, but failed to extract it after prolonged manipulation. Two days later, the eye having become inflamed and very painful, he sent the man to me.

I attempted to remove the fragment with a curved needle and with fine forceps, but signally failed, and sent him to the hospital. Here the magnet instantly removed a spicule of metal about 4 millimetres in length, 3 millimetres of which must have projected into the interior of the eye.

CASE III.—A healthy young Swedish iron-worker came to my office on account of some dimness of vision five days after a slight injury. There was evidence of a small wound in the sclerotic, now healed about 6 millimetres from the lower and inner margin of the cornea. Vision 6/12. With the ophthalmoscope I discovered a small, bright scale of metal floating as nearly as possible in the centre of the vitreous. Having sterilised and cocainised the eye in the usual way, I detached the conjunctiva over a small area at the seat of injury and made a meridional incision about 6 millimetres in length, then fixing the eye with forceps held in one hand, while Dr. Birkett kept the foreign body in view with the ophthalmoscope, with the other hand I

passed the point of the magnet, towards the fragment. Presently Dr. Birkett said "You have it," and, sure enough, I had. In a short time the eye entirely recovered.

CASE IV.—A blacksmith was sent to me about a week after an injury, which had seemed trivial at first, but soon caused great dimness of vision with dark objects floating before the eye.

I found a small wound in the lower part of the cornea, a corresponding rent in the iris, an opaque streak through the lower part of lens, and a good deal of cloudiness in the vitreous, in which I also discovered a shining fragment of metal. After raising a small flap of conjunctiva between the internal and inferior rectus, I made a meridional incision through the sclerotic, passed the point of the magnet about half an inch into the vitreous, and removed the piece of steel without difficulty.

The eye recovered promptly, though vision remained defective on account of increasing opacity of the lens, caused by the passage of the fragment through its substance.

CASE V.—This was very similar to the last, except that there was rather more opacity of both lens and vitreous. Among the movable opacities in the vitreous I discovered one especially dense, and suspecting it might contain the foreign body, I applied the magnet to the sclerotic. With each closure of the electric current this darker opacity could, with the ophthalmoscope, be readily seen to make a distinct movement towards the magnet and sink down again when the current was opened. This was proof positive that the opacity contained the piece of steel.

A similar procedure to that in Case IV. resulted in its immediate extraction.

Here, too, recovery ensued with no other complication than the increasing lenticular opacity such as we nearly always see after small wounds of the lens.

CASE VI.—The last case upon which I operated was one in which I could not locate the fragment of metal, though the history made it probable that the foreign body consisted of iron or steel. The wound occurred while the young man was working with hammer and chisel on the interior of an old boiler, and the scleral wound, though small, was attended with a good deal of blood extravasation into the vitreous. The operation failed to remove the foreign substance, and the eye having become sightless, soft and very sensitive, I performed an operation last Saturday. The foreign body, which you see here, appears to be a hard compound of sulphur and carbon, coated on one side with oxide of iron, and it is only slightly amenable to magnetic

attraction. This was very likely the reason why the operation failed to remove it.

This result does not score against the usefulness of the magnet in suitable cases, but it is an apt illustration of the difficulty in making an accurate diagnosis, not as to the presence of the foreign body, but as to its nature.

In testing the attracting power of the magnet on small fragments of steel in vitreous humor and water, respectively, I always found that the attraction was exerted through a greater distance in the former than the latter. I do not know the explanation of this, to me, an unexpected phenomenon.

CLERGYMAN'S SORE THROAT.¹

BY

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In using this pseudonym as the title of my paper, the intention is not to confine it to the two diseases, follicular pharyngitis and chronic laryngitis, commonly included in that ambiguous title, but to take that larger circle which will include the many varieties of disease producing sore throat to which clergymen are liable. I know that in doing so I may break one of the ordinary rules of medical nomenclature. It will, however, be for the simple reason that throughout this broad Dominion there are many medical men who, although enjoying large and lucrative practices, are only occasionally consulted by clergymen for throat disease, and it is highly necessary to look beyond the simple manifestations of pharyngeal or laryngeal trouble to get at the origin of the evil.

That the term "clergyman's sore throat" is both inappropriate and unscientific is proved by a comparison of the views of prominent authors upon the subject of chronic follicular pharyngitis, with which, as I said before, the former term is said to be identical.

Morell MacKenzie, in his issue of 1880, tells us that the majority of cases of follicular pharyngitis occur in adult life between the ages of 25 and 35 years, the larger number being males and voice users, clergymen being among the number, in their case the disease being entitled "clergyman's sore throat."

Sajous, in his work of 1888, says that follicular pharyngitis is found particularly among people of middle life—the old not being by any means free from it, and ministers being frequently the victims.

Seiler, in "Diseases of the Throat," published in 1889, accounts clergyman's sore throat as an entirely different malady. According to his view it is a form of chronic laryngitis. He says the symptoms are identical with those of ordinary chronic laryngitis, but the cause widely different, being a faulty use or abuse of the voice, congestion of the vocal cords with attendant soreness, hoarseness being the result.

Bosworth, in his elaborate edition upon the throat in 1892, says that follicular pharyngitis undoubtedly commences in early life, and that among adults it occurs far more frequently among women than

¹ Read before the Canadian Medical Association at Montreal, August, 1896.

men. As for the term "clergyman's sore throat," it is not even mentioned by him, probably on account of its ambiguity and unscientific meaning.

Hence, having no definite and distinct meaning, being ignored by some writers and differently defined by others, it would probably be better if both physicians and laymen would for the future consider the term obsolete. I hope, too, to add emphasis to this idea by the remarks I may make in reference to the distinct diseases, which patients suffering from so-called clergyman's sore throat have really been afflicted with.

It is now an acknowledged fact, well understood by the profession generally, and particularly emphasized by laryngologists, that the large majority of cases of chronic throat disease have their origin in nasal or naso-pharyngeal obstruction of one kind or another. Wherever we have nasal stenosis we have oral breathing, leading to throat irritation and other attendant evils. Voice users, of which perhaps clergymen are our most representative class, often suffer from this cause; and the soreness experienced in the throat, is naturally referred to by them as the disease itself, instead of the effect of disease situated in another organ.

During the ordinary act of respiration the nose, when in a normal state, performs a three-fold duty: 1st. It cleanses the air from impurities, as it passes through the vibrissæ, and over the ciliated epithelium. 2nd. It heats the air to a blood temperature by the time it reaches the naso-pharynx on its way to the lungs. 3rd. It saturates the air by the moisture thrown out as serous exudation by the venous sinuses of the turbinated bones. The nose can only perform this triple function when normally open enough to allow of free nasal breathing: and it is only of recent years that the importance of air saturation before reaching the naso-pharynx has been sufficiently recognized. The researches of Ashenbrandt, Kayser and Bosworth have established the fact beyond dispute, that the venous sinuses of the turbinated bones discharge by transudation from 12 oz. to 16 oz. of serum per diem for the definite purpose of saturating the air passages downwards. The venous sinuses discharge this fluid either by the tubular mucous glands of Zuckerkandl or by the minute serous canals of Chatallier, probably by both, as many believe the two to be identical. However that may be, the turbinated bones alone possess these venous sinuses and tubular canals, and consequently no other bodies can effectually perform their functions. The posterior pharynx is not supplied with this intricate apparatus for irrigation; and when nasal breathing is cut off from whatever cause, the small amount of mois-

ture in the throat is immediately picked up by the air in breathing, leaving the mucous membrane in a parched condition and producing to some extent the soreness of which clergymen so often complain.

Let oral breathing once become established, particularly when from any cause the voice requires to be used in an unusual degree, and follicular pharyngitis is one of the most frequent results. Thick, tenacious mucus will be secreted in the throat, with the resulting screatus to clear the parts of the viscid substance. Sometimes too, the palatal muscles are brought into such constant action, in the effort to procure relief, that the uvula becomes elongated and thickened. From its newly acquired size, it in turn becomes a foreign body on the tongue and induces efforts of unavailing deglutition.

Another effect, not by any means unfrequent, arising from this abnormal pharyngeal exposure, is catarrhal and follicular tonsilitis, with enlargement and hardening of these bodies. Still another result of obstructed nasal respiration, particularly so with clergymen, is hyperæmia of the vocal cords, accompanied by hoarseness, soreness and catarrhal secretion.

It is quite possible that these symptoms may sometimes arise from reflex action of the sympathetic and pneumogastric nerves, caused by an abnormal condition of the stomach and other digestive organs, and in which the nasal respiration is free and unobstructed : but the fact remains, that the majority of chronic throat affections, particularly in clergymen, owe their origin to nasal obstruction of one form or another. Hence, it should be our duty in every case, to examine the nose and naso-pharynx thoroughly, before concluding that the throat disease had its origin in the pharynx *de novo*.

I shall conclude by briefly detailing the history of a number of cases of throat disease in clergymen, the majority of whom were referred to me by medical confreres. A number of these, on presenting themselves, made the statement that they were suffering from clergyman's sore throat. Out of about 25 cases, whose records are found in my case books, I have selected 10 to report to you, inasmuch as all of these differ materially from each other in certain subjective features ; while in regard to throat symptoms there was in many respects a general resemblance.

CASE I.—June, 1890. Rev. A. W., of T., æt. 57. Has some soreness of throat with slight hacking cough. On examination, I found hypertrophy of left inferior turbinate at the anterior extremity with a large flat polypus behind it. The throat was catarrhal and the uvula elongated. On enquiry, I found that uvulotomy had been performed several years before ; but that the constant irritation of the throat

arising from nasal obstruction and voice usage had produced a second hypertrophy. The treatment consisted in removing the polypus and turbinal hypertrophy, followed by excision of the redundant portion of the uvula. He has preached twice a Sunday ever since and has had very little throat trouble from then until now.

Speaking of uvulotomy, it may be laid down as a general rule, not to excise more than half that organ, no matter what its length may be.

CASE II.—Aug., 1891. Rev. E. W. B., of C., æt. 40. Has been preaching for many years. Throat commenced to trouble him about a year ago; he thought from preaching three times each Sunday. Was under professional treatment, but two months ago his voice gave out, and he was compelled to cease preaching. The rest during that period had failed to relieve the hoarseness and soreness. On examination, I found the posterior end of the septum enormously thickened, producing partial nasal stenosis, although there was no turbinal enlargement. This, owing to the resultant oral breathing, had produced chronic pharyngo-laryngitis. Follicular granulations, however, were absent. Galvano-cautery operations removed the septal thickening. Spray treatment of the throat followed, and in a few weeks, his voice being restored, he resumed his ministerial duties. Two years later the septal thickening returned. He came to Toronto and it was again removed in like manner. One month ago he again came to my office, this time after an interval of three years, as soreness was returning. This time instead of cauterizing I curetted both sides of the post-septum. Once more he is practically well. This is a peculiar case, the singularity being in the repetition of severe attacks of catarrhal hypertrophy of the posterior end of the septum.

CASE III.—Sept., 1891. Rev. E. W. P., of S., æt. 49. This was a case of the old classical clergyman's sore throat. The nose and nasopharynx were in a normally healthy condition, so the origin of the trouble could not in this case be laid at their door. But the post-pharynx was covered with granulations and the uvula elongated. The treatment consisted of uvulotomy and galvano-cautery touching of the granulations followed by mild throat sprays. I believe he has had full use of his voice ever since.

CASE IV.—May, 1892. Rev. D. McL., of A., æt. 35. Has been a minister for six years. In early life had asthma. This disappeared as he reached manhood, being followed by foul nasal catarrh. This ameliorated somewhat, but for the last four or five years he has had hay fever every summer. Frequently of late he has had sore throat, with hoarseness and difficulty of articulation. On examination I found hypertrophy of right inferior turbinated, with deflexion of

septum to right; also hypertrophy of posterior end of left inferior turbinated. Throat catarrhal, but no granulations present. Relief was given and nasal stenosis removed by galvano-cautery operation, followed by spray treatment. In this case the operative treatment entirely removed the tendency to hay fever. This is a reasonable conclusion to arrive at, as he has had no return of it from then until now. This summer I removed a part of the right deviation of septum from him. His voice is always good and he performs his ministerial duties regularly.

CASE V.—Nov. 1892. Rev. W. P. B., of U., æt. 44. He says that voice and throat had been troubling him for seventeen years. Is often hoarse and cannot sing now. He says that pieces of bone were sawed out of each nostril several years ago, giving partial relief.

On examination I found a thickened catarrhal condition of mucous membrane extending down from naso-pharynx to larynx. Vocal cords were congested. The chief nasal trouble was a dislocated columnar cartilage. This almost completely filled the right anterior naris, producing stenosis on that side, and presenting an ugly appearance. Bosworth, in his recent work, recommends the removal of the whole columnar cartilage in cases of this kind. This I did not consider necessary, but excised the major part of it. The healing, though tedious, was perfect, and had a better æsthetic effect than it would have had if the whole had been excised. The throat symptoms soon yielded to local treatment, and he informed me recently that although he occupied his pulpit regularly his voice still continued to be clear and resonant.

CASE VI.—May, 1893. Rev. W. O., of M. M., æt. 36. Since January has been troubled with hoarseness and post-nasal catarrh, for which his doctor had given him a solution of chloride of zinc, to be applied with a swab twice a day. He told me that his wife had faithfully followed out the instructions by scrubbing it hard each time. For all that it would not get well. Examination.—Post-pharynx had a glazed and tanned appearance and seemed to be denuded of mucous membrane. Uvula was twisted to one side and elongated. Post-septum was thickened and there was a large spur on the anterior end of left side. Treatment.—Removal of obstructions and deformities by operation and the subsequent use of spray of albolene to nose and throat. Patient was in a short time enabled to resume his clerical duties.

CASE VII.—Sept., 1893. Rev. Prof. M. C., of T., æt. 60. Has sub-acute laryngitis with soreness and hoarseness. Examination.—Post-pharynx covered with granulations, also partial stenosis on right nasal

passage owing to pressure of long ridge spur on right side of septum. Removal of ridge by saws and touching granulations with galvano-cautery at intervals relieved the symptoms. Spray of albolene was used for some time, and he was enabled to deliver his regular winter course of lectures without difficulty.

CASE VIII.—March, 1894. Rev. Mr. H., of U., *æt.* 40. Has had huskiness of voice and weakness of vocalization for a year. Not much soreness, but a good deal of throat expectoration. Pulse 82, respiration 22, temperature 100°. On examination of the chest anteriorly nothing unusual; posteriorly, in right intra-scapular region, prolonged expiratory murmur and increased vocal resonance. Breathing through left nostril very difficult, owing to presence of large septal ridge. Larynx filled with muco-pus, particularly left side. Under cocaine I removed the ridge from septum. On spraying out the throat I found infiltration in the left hyoid fossa and some abrasion of surface. This was brushed with 33 per cent. solution of lactic acid, followed by spraying the larynx with menthol grs. xx. to alboline ʒi. For some time the treatment was repeated daily, followed each time by inhalation of creosote vapor. Internally the treatment consisted of syr. hypophos. co. one drachm three times a day and creosote m.v. three times a day. The removal of the nasal stenosis helped the throat a good deal. He has, however, required to use the atomizer with the menthol solution more or less ever since. Two or three times a year he comes to the city for a few days for more direct treatment than he can personally apply. I am glad to be able to say that for more than a year there has been neither infiltration nor abrasion. The voice continues good, though there is still a little throat catarrhal discharge. Respiration still about 20, pulse 80, but the temperature is normal. Weight does not vary. When we consider that it is two years and a half, since he first came for treatment, and that he is much better able to fulfil his ministerial duties now than he was then, the future is still hopeful for him.

CASE IX.—Jan., 1895. Rev. M.C., of B., at the foot of the Rockies, *æt.* 46. Has been preaching for 10 years. Soreness of throat commenced five years ago. Since then his voice has lost its resonance and speaking requires a good deal of effort. There is constant expectoration of thick muco-pus from the throat. Examination—Has large ledge-like spur on left septum. Hypertrophy of anterior end of right inferior turbinated. Also extensive hyperplasia of both faucial tonsils with thickened pharyngeal mucosa and congested vocal cords. By operations all the hypertrophies were removed. This was followed, as in the other cases, by mild soothing treatment of the nose

and throat until healing had taken place. Result was a very greatly improved condition, with return of natural strength and tone to the voice. This improved state of his throat has continued up to the present, though he writes that he thinks there is still something yet to be done.

CASE X.—June, 1896. Rev. W. M. K., of M., *æ*t. 54. This case, the last of the series that I purpose referring to, differs from all the others quoted. In appearance the patient is a strong, healthy, vigorous looking man, not past the prime of life. Family history good. Has been preaching three times every Sunday for many years and as several of his parishioners were deaf, and he himself had a strong voice, he has always done his best to make them hear. Winter and summer after morning service, he drove five or six miles for the afternoon preaching; and no matter how warm he was or how inclement the weather, he drove home again for the evening service. For several years his voice has been getting hoarse and this culminated one month before coming for treatment in being obliged to cease preaching. Examination—Nose was normal, also palate, pharynx and tonsils. On using the laryngeal mirror, however, the inner surface of the larynx was intensely congested. The ventricular bands were also thickened, and in attempts at vocalization, completely covered the vocal cords. After applying cocaine, the latter could be partially examined. They were red like beef and the left one was abraded in the centre. No glandular swelling whatever could be found in the region of the neck; and there was neither odynphagia nor dysphagia. By careful treatment with solutions of silver nitrate and zinc chloride, followed by sprays to the throat, the laryngeal congestion abated. The ventricular bands diminished in size so that the vocal cords could be more easily examined, and some improvement in the latter could be observed. The patient was under observation and treatment for about three weeks, but when he left the ultimate result was still doubtful. Throughout he was directed not to speak above a whisper, an instruction which he endeavoured faithfully to carry out.

The diagnosis in this case seemed doubtful. The age, the intense hyperæmia of the vocal cords, and the abrasion of one of them, all pointed to possible malignancy. While the family history, the vigour of constitution, the absence of glandular enlargement, the freedom from abnormal growth at the seat of disease, the lack of hæmorrhage and the absence of odour, all tended toward a diagnosis of chronic laryngitis. The cause, however, seemed very apparent. Violent and periodic strain of the vocal organ during many successive years had

been the primary cause ; to which might be added, the necessary exposure to the changing elements which his vocation demanded.

In conclusion, according to old parlance, the ten cases that I have reported might all be called "clergyman's sore throat," while in reality no two were alike, proving the name to be a misnomer. All had soreness and hoarseness in a more or less degree ; but these symptoms arose from widely different causes, and in several instances hypertrophies of different kinds were found to exist in the one case.

Briefly to epitomize.—In one there was a large polypus in one nasal cavity.

In one a dislocated columnar cartilage.

In one a twisted and elongated uvula.

In one hypertrophy of the faucial tonsils.

In one ulceration of the hyoid fossa.

In two there were septal ridges.

In two septal spurs.

In two catarrhal hypertrophy of post-septum.

In two pharyngeal granulations.

In three turbinal hypertrophies.

While in only one, and that the saddest case of all, was there entirely uncomplicated laryngeal disease.

NON-MALIGNANT TUMOURS OF THE TONSIL, WITH REPORT OF A CASE¹

BY

HUBERT D. HAMILTON, M.A., M.D.,

Laryngologist to the Montreal Dispensary, Assistant Laryngologist to the Montreal General Hospital.

Case of lymphangioma of right tonsil in a man 22 years of age
—The patient applied for treatment in April, 1896, complaining of difficult breathing at night, for two weeks preceding his visit. Upon examination, a tumour could be seen springing from the upper segment of the right tonsil, by a narrow neck, and disappearing behind the base of the tongue. It was found to be 3 inches long, $\frac{3}{4}$ of an inch wide by $\frac{1}{2}$ an inch thick, and was somewhat pear-shaped. The colour was pale pink, much like that of healthy adenoid tissue; the surface quite smooth; consistence soft and doughy. A large vein coursed over its anterior surface, extending from the anterior pillar of the fauces by a separate pedicle.

The tonsils proper were not unusually large, nor were there any glandular enlargements to be found in the throat, nose, larynx, or cervical region. With a forcible expiratory effort, the growth came forward upon the tongue, reaching almost to its tip.

The accompanying reproduction is from a photograph taken by Dr. D. Patrick, House Surgeon in the Montreal General Hospital, and shows the growth very well.



By swallowing it, the patient could eat and speak without inconvenience.

While singing, a sensation of fulness had been noticed, quite recently, and the voice sounded as if the faucial tonsils were enlarged. Had it not been, however, for his loud snoring during sleep, and the

¹ Read before the Canadian Medical Association, Montreal, August, 1896.

anxiety caused his young wife by the sight of this supposed "second tongue," it is likely the patient would not yet have been referred for treatment by his family physician.

The general condition was below par. Of inflammatory affections of the tonsils there was no history.

The treatment consisted in tying off the vascular pedicle and burning off the two together, with the electric snare. By the aid of cocaine this was done almost painlessly, and without a drop of bleeding.

Since removal, the general health has improved in a remarkable manner.

Dr. George H. Mathewson kindly made the microscopical examination at the Royal Victoria Laboratory, and reports as follows:

The tumour on examination proved to be a lymphangioma. It is covered by several layers of pavement epithelium, and contains a great deal of fat, this accounting for its softness.

In discussing this rare condition of innocent growths of the tonsils, there are several general considerations worth noting.

The chief interest consists in the recognition of the growths clinically, for when once diagnosed you can generally put aside the fear of serious symptoms or fatal termination.

The symptoms are in fact, almost *nil*, unless the enlargement is sufficient to produce an obstruction to swallowing and breathing. Fatal terminations have then been met with.

Constitutional weakness very often accompanies this affection, and when treated these patients generally make very rapid progress and enjoy a state of health formerly unknown.

From an embryological point of view these tumours of the tonsils should not be so uncommon. Still the result of clinical experience proves the comparative rarity with which they are found in a region which marks the union of the two embryonic tissues—the oral epiblast with the intestinal hypoblast. This should be a perfect "hot-bed" for neoplasms.

This contradiction is explained by Dr. Bosworth, in pointing out that it is chiefly during the early period of life that the tonsils easily take on morbid processes, while with advancing age all lymphatic tissues tend to atrophy and even disappear.

This predisposition of youth is well explained in the case reported. The size of the growth became rapidly manifest after marriage. The influence of the sexual system upon the tonsils is very frequently seen in the production of inflammatory troubles; and cases of defective development of these glands are reported in individuals who are also peculiarly developed sexually.

The frequency with which different varieties of benign tumours occur is given variously, according to the collaborator quoted.

The papillomata are held by Dr. C. H. Knight to be the most common form. These growths are generally multiple and pedunculated. Next are mentioned fibromata, cystomata and lymphadenomata. The last named gives much difficulty in forming an early diagnosis, unless other glands are so affected as to bear out the symptoms of Hodgkin's disease. Very rarely lipomata and varicose angiomata are met with.

Mr. Lennox Browne, also writing in 1893, gives lymphomatous formations of the tonsils special mention, afterwards referring to fibromata.

Dr. Bosworth, in 1892, finds fibromata the commonest form and cites records of nine cases from different sources. One case each of the following varieties is also quoted: fibro-chondroma, fibro-lipoma and fibro-lymphadenoma.

Under the heading "Polyp of the Tonsil" are found records of cases by Frühwald, Julia, Koch, Lannois, Lejars and Rivière.

Dr. H. S. Birket, in 1893, reported a case of pedunculated polyp of the left tonsil in an infant of four months. This proved to be of the mucous variety; a rare condition!

Cysts of the tonsil have been observed upon two occasions by the writer. Lymphangiomata, however, are not easily found amongst the records of tonsillar growths.

The treatment of small growths, producing no inconvenience, is unnecessary. But when symptoms of obstruction and pressure appear, the mode of treatment must depend upon the variety, form and situation of the tumour. Ecrasement, hot and cold, is one of the most useful methods.

In some cases, this means has been supplemented by dividing the soft palate or by opening up the cheek.

Electro-puncture is needed in certain forms of growths, while interstitial injection of acetic acid was used with benefit by Sir Morell Mackenzie in a case of lymphadenoma of both tonsils.

RE-ORGANIZATION OF THE MILITIA MEDICAL SERVICE.¹

BY

W. TOBIN, F.R.C.S., Deputy Surgeon-General, Canadian Militia.

The re-organization of the militia medical service forms an integral part of that general re-organization of our local forces, the need for which every new war scare—and we have had many of them of late in the British Empire—renders more and more apparent.

The scheme of imperial defence throws on us as a self-governing colony the main responsibility of providing for our internal order and security and assisting in our own external defence.

The primary essential principle on which the system of imperial defence is based is British naval supremacy at sea, and on this postulate broad principles have been formulated for the guidance of the colonies in fixing the standard of their defensive measures. It has been laid down that while the imperial fortresses, as well as the principal coaling stations, may become the object of serious attack, no serious invasion by land of colonial territories need generally be apprehended. In the case of Canada, however, separated only by an imaginary boundary line extending some two thousand miles from the neighbouring, not always too friendly, republic, the situation is peculiar, not to say precarious.

Our local defence, till seconded by aid from Great Britain, depends altogether upon ourselves. How are we prepared to meet an emergency?

The local forces are administered, as we all know, by a Minister of Militia and Defence, who, I am glad to say, is at present a member of our noble profession and a military surgeon as well; associated with him is a small permanent department, a branch of the civil government. The forces are under command of a colonel or superior officer on the active list of the imperial service, appointed for five years with the rank of major-general, who is assisted by a permanent headquarter staff.

The present system of medical organization in Canada is that which prevailed in the British service from the days of the Peninsular war till quite recent times—the “regimental system.” This system originated with the first Director General, Sir James McGregor, Bart., and replaced a condition of utter medical chaos.

His idea was that every regiment should take care of its own

¹ Being an abstract of a paper read before the Canadian Medical Association in Montreal on the 28th August, 1896.

sick and in this way avoid the crowding of large numbers in the general hospitals. It served its purpose at the time and was maintained with various modifications (which we have not adopted) until 1858, when a royal commission sitting under the presidency of Sir Sydney Herbert brought about fundamental changes in the medical service of the British army—the remodelling of the department and the organization of a practical army medical school at Netley Hospital (which is still in existence); these led finally to the abolition of the “regimental system,” which was found incompatible with the development of the army medical service. This abolition took place in 1873. The “regimental system,” however, survived among the household troops till 1883, when their medical arrangements were assimilated to those of the rest of the army.

We still retain this antiquated and discredited regimental system in Canada. Our medical department consists of a Surgeon-General at Ottawa (during the Parliamentary session at least), with the scope of whose powers, duties, and emoluments I am not acquainted. He has however no administrative officers under him. During the late rebellion, it is true, the Hon. Dr. Sullivan discharged the duties of medical purveyor to the forces and did the work admirably and without sparing himself. Within the past year five officers having the titles of deputies of the surgeon-general have been appointed, but the Order-in-Council appointing them did not state whether the new rank was substantive or honorary, and as a subsequent Order-in-Council abolishing relative rank and assimilating the titles of medical officers to those of the present army medical staff corps does not include or mention them we are left in as great a quandary regarding their position as before.

In the permanent corps each battery of artillery, each company of the infantry school corps and the school of mounted infantry at Winnipeg has their medical officer and a small regimental hospital. The medical officer is irremovable, wears the uniform of his corps and has in his charge, I believe, a small field equipment.

Throughout the active militia each regiment of cavalry, each brigade of artillery and each battalion of infantry has two medical officers, a surgeon and an assistant surgeon. Each field battery has its surgeon, and the smaller independent corps, cavalry and infantry are similarly provided. These medical officers, as in the permanent corps, form an integral part of the regiment and wear its uniform. They remain in the corps on promotion and may not be detached for duty elsewhere. They have no hospital equipment, of course, and no field equipment but the ordinary field companion and water bottle,

carried when on the march by an orderly, and generally full of anything but water. A certain amount of field equipment for the use of the brigade is, however, stored in each brigade district. I am not aware that it is ever medically inspected as to its condition and fitness for service or that it is under the control of the medical department. At least such is the case in Halifax. I am speaking, of course, only of the active militia, not of the permanent forces.

I need not enter in detail into the arguments for or against the regimental system. Whilst it is still contended (principally by foreign medical military authorities) that some form of regimental sanitary organization is necessary, both in peace and war, in no army except the Russian is a permanent regimental *personnel* and equipment maintained at all times. In the British service, and in most other armies, medical officers are temporarily attached to each fighting unit under arms, who, with the regimental bearers, give first aid to the wounded in the first line of surgical assistance. But in the British service this is the sole attempt at regimental medical organization. In the Continental armies (the French and Swiss for instance) regiments are composed of three battalions and the regimental help is on a larger and more permanent scale. It is, however, a moot question with the best authorities whether the British system will stand the test of further experience and whether its regimental "first aid" may not require to be further extended. But the regimental organization as a general system for peace and war stands condemned and in our service must go. It failed in the Crimea, and in the Mutiny, and notwithstanding frequent modifications was abolished in the Queen's service in 1873. It failed most lamentably in the American rebellion.

Surgeon-General, Sir Thomas Longmore, our principal authority on these matters in Great Britain, writes: "The system of each regiment taking with it a hospital establishment of its own into the field is an impracticable one in a modern campaign. Independently of the waste in a system which leads to an unnecessary multiplication of articles when a less number would suffice, it has become impossible for troops moving in the field as quickly as they now do to take such bulky stores with them." The North-West campaign also demonstrated to ourselves the utter inefficiency of our regimental system on active service.

After the campaign was over I had an interview with the Minister of Militia and Defence and formally advocated reorganization. I again brought forward the question of militia medical reform in a paper entitled "Some Proposed Changes in the Canadian Militia Medical Service," which I read before the meeting of our Association

held in Kingston last year. The Society was then good enough to endorse my views and to order a copy of that paper to be forwarded to the Militia authorities at Ottawa.

I have since devoted a large portion of my time to a study of the military medical organization of various continental armies, to that of the United States and to that of the British service. In this study I must acknowledge the great assistance I have had from a series of valuable papers on this very subject of medical reorganization from the pen of Major John Van Renslaear Hoff, Surgeon of the United States Army, read before the Association of Military Surgeons of the United States, and republished in the medical press.

As the outcome of my study on the subject, three schemes for organization appear open to us.

First, the present system in use in the British service which may or may not be shortly modified ; secondly, a scheme similar to that of the Army Medical Department, which I suggested last year; or, thirdly, the system in use in the army of Switzerland, which seems in many ways admirably suited to our people, being cheap and concentrated in time of peace, elastic and expansive in time of war, with a splendidly organized transport service for the sick and wounded, and quite up to the times in the matter of granting substantive rank and purely military titles to its medical officers.

I will not, though I have the material at hand, trouble you with the details of these systems. For many reasons it appears to me that we cannot do better than follow the lines of our home service, modifying that organization to suit our peculiar conditions. But whatever system be adopted, it must be a *sine qua non* that the medical department, in all things medical, (except perhaps transport) should be supreme and autonomous.

It is for you, by a vigorous resolution, to again call upon the Government of this country to set its house in order. Should the Government concur with you that reorganization of the Medical Department is necessary, then it would be desirable that a committee, composed say of the Quartermaster General, the Adjutant-General, and a competent medical officer should be appointed to examine different schemes and select the one most suited to our people, and our finances, and satisfactory to our profession.

SUGGESTIONS FOR RE-ORGANIZATION.

The present British Army Medical Corps system (with modifications adapted to our conditions, social, political and financial) should be taken as the basis of our Canadian medical service.

On active service, in the British Army, a medical officer is attached

to each regiment, but only temporarily, and this is the only provision made for regimental surgical assistance. As I have already stated it is a moot question with continental military authorities whether this simple regimental arrangement will stand the test of further experience. In time of peace, there is no provision for a regimental medical service amongst the Queen's troops; trivial cases of illness are seen by a medical officer of the military station; in barracks, and there treated; if they are considered sufficiently serious the cases are sent to the hospital. One proviso therefore should be made an integral part of any scheme propounded, to meet the views of our militia medical *confrères*, namely, that the present medical officers should, if they desire it, be allowed to remain attached to their respective corps. But it is a question for consideration, whether future medical appointments should not made to the department (when organized) and not to any particular regiment.

It would be desirable also that a general Canadian Medical Staff should be formed. This should be an independent body under a medical head, a Director-General, or a Surgeon-General, attached to the headquarter staff of the Canadian Army. He should be a permanent and paid official, who would advise and deal with medical matters under the orders of the Commander-in-chief of the local forces.

With regard to bearer companies, which the Militia Department recognizes as desirable, I would propose that a bearer company and field hospital should be established at the headquarters of each militia brigade, presuming that for fighting purposes their headquarters would be located in some special centre, such as Halifax, Montreal and Toronto, amongst others.

Opportunities for special training and study should be given to militia medical officers as suggested by Dr. Farrell, of Halifax, in his paper read before the Maritime Society last year, and inducements for doing so might be held out to them as regards promotion, etc.

Courses of teaching and training might be established either in connection with the present schools of instruction or in connection with some of the leading schools of medicine throughout the country.

A course of military surgery and hygiene might be given yearly as a voluntary part of the curriculum and examinations on these subjects might be made obligatory upon surgeons seeking appointment to the militia medical service.

In England, where medical officers of voluntary regiments pass the prescribed examination, an additional capitation grant is given the corps to which the officer belongs.

The rank and file of the General Medical Service for employment in bearer companies and field hospitals might be either specially enlisted, or be obtained from the various militia regiments. In Halifax the commanding officers of artillery and infantry have generously offered to provide the men required to form a half bearer company, which will suffice for the wants of the station. For many reasons it would be preferable to obtain men (easily got in districts where medical schools exist) by special enlistment for the hospital corps, but the latter system is cheaper and is that which now prevails in England amongst the volunteers, where men are obtained by transfer from regiments of the brigade to which the bearer company is attached. In England no base or field hospitals are required by the volunteer forces. These establishments would be supplied in times of emergency from the medical staff corps in that country. On active service here we should want them badly and we may be called on when we least expect it, where, I should like to ask you, will we then find them? I will only repeat the expression of my friend, Surgeon-Major General O'Dwyer: "Medical any more than military organization cannot be evolved in a perfect state at short notice when suddenly required." We may conclude with the aphorism, *Si vis pacem, pare bellum*—If you wish for peace be prepared for war.

Society Proceedings.

CANADIAN MEDICAL ASSOCIATION.

TWENTY-NINTH ANNUAL MEETING, HELD IN MONTREAL, AUGUST
26TH, 27TH AND 28TH, 1896.

This meeting, one of the largest and most representative gatherings of the profession in Canada, was opened on the morning of August 26, by Dr. Roddick, Chairman of the Local Committee, who very briefly gave the visiting members a warm and cordial welcome to the city. In his remarks he referred to the fact that Montreal had been chosen as the next meeting place of the British Medical Association, and that he had been elected as its President for the year. This great honour he did not accept for himself personally, but considered both it, and the fact that the British Medical Association proposed for the first time, in its history, to leave its own country and cross the Atlantic to meet in Montreal, should be regarded as a special honour to the whole medical profession in Canada. The speaker briefly outlined the programme for the several sessions, and then introduced the President for the year, Dr. James Thorburn, of Toronto.

After reading the minutes of the previous meeting, a few visitors were introduced, including Dr. Cushing, of Boston; Dr. Robinson, of New York, and Dr. J. C. Webster, of Edinburgh.

The first business was the calling together of the Committee on Interprovincial Registration, the members of which immediately retired to take into consideration the report of last year.

The first paper presented before the general meeting was one by Dr. C. F. MARTIN and Dr. G. H. MATHEWSON, of Montreal, entitled

OBSERVATIONS UPON THE RELATIONS BETWEEN LEUCHEMIA AND PSEUDO-LEUCHEMIA.

The writers stated that it was more than probable that no disease could be diagnosed from a blood examination alone. Many of the secondary anæmias showed a blood condition similar to that observed in progressive pernicious anæmia. An examination of blood cells in grave chlorosis had been found to correspond to that found in pernicious anæmia. Sarcomatous growths sometimes induced a cellular ratio which was indistinguishable from that present in a typical leuchæmia. It was therefore impossible, from our present knowledge, to definitely diagnose a malignant condition, unless concomitant

symptoms, objective and subjective, were taken into consideration. Some years ago it was also decided that certain differences observed in the blood formed a basis of differentiation between the various lymphogenous diatheses. Recent observations, however, showed that this was not a correct basis. No one could distinguish between the forms of multiple glandular enlargements or the varieties of splenic tumours, for in both maladies the macroscopic and microscopic lesions were interchangeable throughout. Such a variable symptom as leucocytosis could not be relied upon as a basis of classification. Cases which they had observed had shown, both in the acute and in the chronic forms, not only wide variations in the cellular ratio of the blood corpuscles, but in many instances also the condition of the blood had been such as to render absolute differential diagnosis impossible, as so many stages of leucocytosis were met with in the multiple lymphomata, varying from a normal ratio up to an excess of the white over the red cells. It is a question whether those cases recorded by Ebstein and others, where leucæmia had followed Hodgkin's disease, are really to be looked upon as instances of one disease complicating another, or whether they are not rather to be regarded as the same disease in different forms. Furthermore, the morphological classification of leucocytes has been shown by Gulland, Saxer and others to be an extremely unsatisfactory basis of differentiation, and at present the various forms of granular leucocytes are scarcely sufficiently well differentiated to warrant an examination being accepted as of absolute pathognomonic significance. The tendency then should rather be to revert to the classification of older writers, especially the French, who regarded in "Adenic," or "Diathèse Lymphogène," one general form of disease.

At noon the members were taken by special electric car to the Montreal General Hospital, where a clinic was given by several members of the staff.

CLINIC AT MONTREAL GENERAL HOSPITAL.

Dr. F. J. SHEPHERD presented the first series of cases. The first case was a girl who had suffered from perforated gastric ulcer. The symptoms of perforation were well marked; there was great pain, tympanites and vomiting, with elevation of temperature and rapidity of the pulse and respiration. The perforation was found in the anterior wall of the stomach about in the line of the œsophagus. Very little of the stomach contents had escaped into the peritoneal cavity. Irrigation was not used, sponging being relied upon to remove the foreign matters. For three days rectal feeding was carried on; on the fourth day food was given by the mouth. This was

two years ago. The patient was now, as could be seen, hearty and well. The operation had been performed by Dr. Kirkpatrick.

The second case was a patient brought to the hospital unconscious on August 4th of last year. He had been bicycling down hill, when he lost control of his wheel and was plunged headlong against the curb-stone. On admission he vomited and recovered consciousness, but shortly afterwards became stupid again. There was paresis of the right side. The pupils were dilated. A diagnosis of meningeal hæmorrhage was made and the skull was trephined, sufficient of the bone being removed to trace the artery downwards to its point of entrance through the foramen spinosum, where it was found to be ruptured. The bleeding was profuse, and as the vessel could not be secured, the common carotid was tied, checking the hæmorrhage. At this point the patient was exceedingly weak; pulse 190, respiration 50. There was a little subsequent trouble from venous hæmorrhage, but this was successfully controlled. Patient has perfectly recovered.

Another patient was shown who had received a severe injury in the forehead from the bursting of an emery stone, the internal table of the skull being fractured to a greater extent than the external. The depressed bone was removed and the patient made a good recovery.

The fourth case was a young girl on whom he had performed excision of the ankle for tuberculous disease. He had gouged away the whole of the tarsal bones except the posterior part of the os calcis. He had also removed the ends of the tibia and fibula in the same way. This made a complete window through the place where the ankle-joint had been. The wound had healed kindly and the patient had a fairly good foot. This he considered better than amputation.

The last case shown by Dr. Shepherd was a man from whom he had removed a large epitheloma of the bulbous portion of the urethra. The patient had suffered for many years from stricture and the epithelioma had developed at this point. The case had caused some anxiety, as the man had an enormous hernia on the left side, which a few days previously had become strangulated. The patient was now progressing favourably.

Dr. BLACKADER presented several cases of disease in the nervous system. The first case was a man aged 40 years, who had entered the hospital a short time previously suffering from symptoms of progressive muscular atrophy. The patient had been a soldier in the Riel rebellion and since then had been engaged lumbering in the woods. No specific history was obtainable. Last May he first began to suffer from pains, chiefly in the legs, but shifting to various parts

of the body. His complaint on entrance was of loss of power in the arms and sharp pains in the muscles of the trunk. Examination revealed wasting of the thenar and hypothenar eminences, with inability to bring the thumb and little finger together. One was scarcely conscious of his grasp. There was marked wasting in the deltoids with fibrillar twitching on attempted movement. The extensors of the forearm were much weaker than the flexors. The nutrition of the brachial group was distinctly impaired. Pains were complained of in the muscles of the leg and tremor could be noticed in the peroneal muscles, but power was not perceptibly impaired. There is at present a slight tendency to stammering speech.

The second patient was regarded by Dr. Blackader as probably one of disseminated sclerosis, with degeneration in the lateral tract. His gait was spastic and to some extent ataxic. Romberg's symptom was present. Intention tremor was distinctly present in the left, less so in the right hand. The eyes showed a slight amount of nystagmus. Blurring of the vision, not accounted for by any optic changes to be detected by the ophthalmoscope, was complained of, but a diplopia on looking downward, due apparently to paresis of the fourth nerve was present. The deep reflexes were markedly increased and ankle clonus was present. The affection had commenced about two years ago with stiffness in the legs and difficulty in walking. A few months later the left arm became numb, and tremor of the muscles became noticeable. Gradually the patient lost control of his muscles and had to discontinue work a few months ago. The patient had been a brass finisher. The question arose as to whether his employment had had any influence in producing the present condition.

The third patient shown was a child aged four years suffering from multiple neuritis. There was the history of a distinct febrile attack in May, lasting four or five weeks, accompanied by much marasmus. From this it recovered, gained flesh rapidly, and was apparently doing well, when two weeks ago it was again confined to its bed with severe pain in the legs and inability to walk or even stand alone. On examination marked wasting was noticeable in both forearms and legs, and with this double wrist drop and foot drop. There was complete absence of the deep reflexes and tenderness on pressure over the nerves. The affection was quite symmetrical and the pain was persistent.

A patient suffering from lead palsy was then presented, of whom the interesting clinical feature was the extent of the paralysis, involving not only the anti-brachial, but also the brachial, the Aran-Duchenne group and the peroneal group of muscles. The various clinical features of the case were pointed out.

Dr. HUTCHISON presented two patients, the first recovering from a bad fracture of the femur, in which the periostenum had been denuded for several inches. The ends of the bone had been sutured. The second case was one of amputation of the forearm for gangrene, the result of destructive damage to the veins.

Dr. SHEPHERD presented a patient with a cervical rib, and a man suffering from urticaria factitia, who showed his back with the letters C.M.A., distinctly visible; also several cases of scleroderma doing well under thyroid extract.

Dr. C. W. WILSON presented a patient suffering from flat-foot, in whom he had corrected the position of the foot and used Whitman's plates, the construction and application of which he detailed fully. He also showed a case of Pott's disease.

Dr. G. G. CAMPBELL presented a case of scurvy. The patient, an Italian labourer, had lived for some months on a diet of pork and beans exclusively. Under this he became weak, and on arriving at the hospital, large extravasations under the skin could be seen in various parts of the body, and his gums were swollen, spongy, and bled readily on the slightest touch. Under an improved dietary containing lemon juice, and a large amount of fresh vegetables he was improving rapidly.

At the afternoon session, Dr. MEEK, of London, read a paper entitled,

A REPORT OF THREE CASES OF ABDOMINAL SECTION FOR CONDITIONS
COMPARATIVELY RARE.

The first case was that of a young woman, aged 28, single, and with good family history. In September, 1894, she received a blow on the right side of the abdomen which caused much pain. Soon afterwards she noticed about the site of the injury a small lump, which increased in size, but caused no disturbance of the general health till May, 1895, when her menstrual period became irregular. On examining the patient, the doctor discovered the presence of a tumour extending more to the right than to the left, and reaching about an inch above the umbilicus. The tumour was elastic and presented an indistinct sense of fluctuation. On examination by the vagina, the uterus was found in normal position, apparently surrounded by a cystic growth; the sound passed in, measured $2\frac{1}{2}$ inches. He diagnosed a thick-walled ovarian cyst, and an operation was advised. After opening the abdomen, as the tumour gave a distinct sense of fluctuation, a trocar was introduced, but only a small quantity of fluid was withdrawn. Both ovaries were found to be cystic. The tumour, which was found to be a fibro-cyst of the uterus, was lifted out with the appendages, a

wire thrown around the pedicle and the whole mass cut away; the stump was treated extra-peritoneally. The second case was one of a solid sarcomatous tumour of the left ovary. It was removed with little trouble. The third case was one of intestinal obstruction. The patient had had severe attacks of abdominal colic. He was the subject of inguinal hernia in the right side, and had previously suffered from an abscess in the right inguinal region. The present attack was attributed to an indiscretion in diet. He had been treated by the attending physician with opiates, while to relieve the constipation and nausea calomel, salines and other purgatives had been given, followed by enemata but without effect. On Dr. Meek's arrival he found the patient in great distress. There was slight dulness over the iliac region, and enemata of magnesium sulphate, turpentine and soap suds were ordered to be given. On the following day as the patient was distinctly worse, the abdomen was opened by median incision, and the region of the appendix and sigmoid flexure examined with negative results, but a large obstruction was found at the splenic flexure, consisting of a half twist of the bowel upon itself. This seemed to have been caused by old inflammatory bands in the mesentery. The patient did well after the operation for a few days, when acute mania supervened and the patient succumbed.

Dr. PROUDFOOT then presented a baby with imperforate meatus auditorius externus and deformity of the auricle.

The subject of

OPHTHALMIA NEONATORUM

was discussed by Dr. R. FERGUSON, of London. The doctor quoted European and American statistics showing the prevalence of this disease with and without prophylactic precautions. In 8,574 cases of labour conducted without preventive methods, Howe, of Buffalo, found 8.66 per cent. of cases of blenorrhoeal inflammation of the eyes in infants. Since the employment of prophylactic treatment the disease had fallen to 0.65 per cent. The paper then referred to the large number of cases of blindness following ophthalmia. The average was 20 per cent. at least of those attacked. The etiology of the disease was then discussed. The exciting cause, beyond doubt, was the gonococcus. Prophylactic measures consisted in frequent antiseptic douches to be employed in the case of all women with suspicious discharge, and the immediate cleansing and treatment of the eyes of the new-born. The use of a 1 or 2 per cent. solution of silver nitrate, as recommended by Credé, was an excellent precautionary measure. The question of treatment was fully described. The best results

followed the frequent cleansing of the eyes by careful irrigation with tepid water from a fountain syringe. Antiseptic solutions of bi-chloride of mercury or boracic acid may be employed after the cleansing. When the active stage was under control applications by a cotton mop of a solution (1 or 2 per cent.) of silver nitrate were of the highest value. The essayist contended that this disease should be classed with those under preventive legislation. He moved that the Association recommend that the Provincial Boards of Health place this disease on the list of contagious diseases. A number of members who spoke agreed with this proposal of Dr. Ferguson's, and his motion carried unanimously.

Dr. HARRISON, of Selkirk, read a paper on

SOME OBSERVATIONS ON THE HEREDITY OF CARCINOMA.

These observations had extended over a period of fifty years in families consisting of a large number of individuals. The Doctor referred to one particular family in which, for three generations, various members had been victims to carcinomatous disease in some part of the body. The Doctor detailed the histories of several cases where the disease had recurred after lying dormant for a long time. One question which his observation had thrust upon him in regard to these recurrent cases, was whether some of the cancer cells had been left from the first operation and remained dormant, or whether the cancerous diathesis remained and subsequent irritation lit up the disease.

Dr. HINGSTON said that the question in his mind was quite unsettled as to whether cancer was hereditary or not. He saw many cases which would lead him to believe it was; while on the other hand, many patients came to him suffering from cancer, in whom no history of heredity could be made out.

Prof. WESLEY MILLS said that this was one of the most interesting subjects that could possibly attract the attention of medical men. He commended Dr. Harrison's record of observations, and stated that very valuable contributions could be made to this subject by general practitioners if they took notes of cases of disease in which heredity was suspected to play a part.

Dr. CHRISTIE, of St. John, said that it was very uncertain, he thought, whether this disease was hereditary or not. He reported a case of recurrence after 22 years. In this case he had operated on the patient who was 72 years of age, and who afterwards lived to be 94. He said he thought if one life could be saved in a hundred, the surgeon was justified in attempting to operate.

Dr. H. P. WRIGHT, of Ottawa, said that his experience led him to

conclude that examples of heredity occurred most often in elderly people. It seemed to him that the longevity was hereditary, not the cancer. He could not refer to any cases of hereditary cancer.

Dr. H. V. MOORE, of Brockville, said that he seldom saw cancer recur in young people. Probably this was due to the fact that in young women, breasts were often removed where there was no cancer. The greater number of cancers that he had seen seemed to give a history of heredity. He would like to know something more of the relation of cancer to tuberculosis and insanity.

Dr. W. W. DICKSON, of Pembroke, said that he had come to the conclusion that heredity had some influence in producing cancer; there was not a heredity of disease, but a hereditary tendency in the system; cancer resulted from a degenerated inflammation in an inherited constitutional condition.

The evening session was opened with the President's Address, which was listened to with much interest by an unusually large gathering. After it was finished, Dr. Wyatt Johnston gave a demonstration on

SOME APPLICATIONS OF ENTOMOLOGY TO LEGAL MEDICINE,

the specimens of which were prepared by himself and Dr. George Villeneuve of Montreal. The paper referred to some observations they had made on the work of *Mégnin*, on the fauna which inhabit putrefactive bodies during different stages of decomposition. *Mégnin* had made some remarkable deductions as to the time which elapsed since death in obscure cases by merely being shown a portion of the body, a bit of bone it might be, and examining the forms of life upon it. Their observations had agreed with those of *Mégnin*. The first period of decomposition might be roughly placed at about three months, in which a body exposed to the air, was attacked by two varieties of flies. First, by the ordinary house-fly, and later, by the flesh fly, but as soon as the fatty acids began to form, these flies took a distaste to the body and left it, then the *Dermeestes*, a species of beetle, were found. After fatty acids were formed, a period of ammoniacal decomposition set in and the body began to liquify; there was then a period of from four to six months, in which various forms of insects were found. The next period, from the sixth to the twelfth month, is a period of drying, when the body becomes parchmented. It was now inhabited by the acari-mites, species belonging to the same order as the itch insect. Towards the end of this period another set of beetles made their habitat in what still remained—the *Ptinus* and the *Tenebrio*. In buried bodies the *Rizophagus* and the *Philontes* are found

On Thursday morning the Association resumed proceedings in the large lecture hall of McGill Medical College. Dr. G. P. Girdwood gave a demonstration of the Roentgen rays. Each member who interposed his hand between the fluoroscope and the rays could see the bones of his hand, wrist, or forearm very plainly.

Dr. PRICE-BROWNS, of Toronto, then read his paper on

CLERGYMAN'S SORE THROAT,

which appears in full in this number of the JOURNAL.

The Address in Medicine, p. 168, was now read by Dr. GEORGE WILKINS, of Montreal. It was much appreciated and the reader was tendered the thanks of the meeting for his very interesting paper.

A paper entitled

ETIOLOGY AND TREATMENT OF ACNE VULGARIS

was read by Dr. A. R. ROBINSON. The writer said that many men regarded acne as a constitutional disease and the eruption as a local manifestation, frequently a consequence of a developmental period in life, and incurable until youth had reached full manhood. Others regarded the affection as dependent upon functional or structural disease in such organs as the uterus, stomach, liver, etc., the eruption being either the result of reflex action, or the attempt on the part of the organism to remove deleterious substances from the body through the agency of the sebaceous glands. Others held that it was chiefly a local disease. His desire in this paper was to show that in the great majority of cases the disease was essentially a local one, and that in its treatment the local conditions demanded our principal attention. Only in a very limited number of cases does the condition of the general system or of some internal organ play more than a subsidiary part. He held that this affection of the sebaceous glands had as its direct exciting cause the presence of micro-organisms and that the principal predisposing and accessory factors were local abnormal conditions, whilst systemic conditions, except in a comparatively few cases, required only slight attention. The clinical features of the disease were then described and its pathological anatomy thoroughly outlined. Diagrammatic illustrations were given of comedones. The blackhead he held to be due rather to chemical changes in the sebum than to foreign matter. In all the cases he had examined the staphylococcus pyogenes albus was present, sometimes also the aureus, and upon these the suppurative process depended, and not upon the bacillus described by Unna. This latter, which was found in seborrhoeic conditions, might have much to do with the hyperkeratosis and comedo formation. In addition to these organisms

decomposing sebaceous matter also tended to increase the folliculitis. The treatment, when the disease is fully established, consisted in curetting and emptying the follicles, and in the use of a potash soap and hot water; glycerin should not be used. Care should be taken to have all the soap removed. The application of acids or lemon juice is serviceable in the case of blackheads. To lessen the keratosis resorcin, sulphur, and betanaphthol may be employed. These also acted as anti-parasitocides. Perchloride of mercury is also very effectual, but should be employed in very weak solutions. When boils are present, no matter how fat the patient, cod-liver oil should be given.

Dr. SHEPHERD agreed with the reader of the paper in considering acne as a local affection. In his experience the skin of patients in this country would not stand green soap.

The President then read a telegram just received from Dr. John Coventry, president of the Ontario Medical Association, who had reached Toronto on his way to the meeting but was obliged to return, expressing regret at his inability to be present, and expressing the fraternal good-will of the Provincial Association.

A DEMONSTRATION BY PROF. WESLEY MILLS, ASSISTED BY DR. J. W. SCANE, followed, in which the former showed the results of some experiments on several animals which he had chosen as representatives of different groups; of birds, the pigeon was selected; of rodents, the rabbit; of the carnivora, the dog and cat. From the pigeon the whole of the cerebrum had been removed, yet it retained moderate control of the limbs, being able to flap its wings and fly a short distance. In the dog and cat it was shown that the limb centres were situated near the crucial sulcus. These, although removed unilaterally in one case, and bilaterally in another, interfered but little with the function of the limbs. In the bird, on stimulation of the cortex one can find no motor centre except that which concerns the eye. In the case of the rabbit, the motor centre can be removed with greater immunity than can that of the cat. The cat is less affected than the dog, and so on in the ascending series up to man. Dr. Mills thought that observers should recognize this difference in animals. Had this been done in the past many a heated controversy would have been avoided.

Dr. OSLER, in complimenting Dr. Mills on his demonstration, emphasized the importance of all facts which would tend to make our knowledge of localization in the brain more accurate.

A PLEA FOR THE ELIMINATIVE AND ANTISEPTIC TREATMENT OF TYPHOID FEVER,

was the subject of a paper read by Dr. W. B. Thistle, of Toronto. In his opening remarks Dr. Thistle called attention to what he held to

be a misapprehension of facts, owing to which the author of a recent article on typhoid fever made the statement that the eliminative treatment depended on the erroneous idea that the specific bacilli were chiefly confined to the intestine. The same author in his article stated positively that specific bacteria were not present in the intestine until the ninth day of the disease, and pointed out that they were found not only in the intestines, but also in the spleen and other parts of the body, leading the reader to infer that this method of treatment was founded on erroneous knowledge.

Dr. THISTLE stated that on the contrary the most recent researches proved the presence of the bacteria in the intestinal canal before the ninth day of the illness, and purgation, by hurrying the biliary and intestinal secretions out of the system, assisted in the elimination of toxins which were acting as a poison. After thus vindicating his position, the writer outlined the chief points in his method. There was a daily purge of either calomel or magnesium sulphate, and salol was administered as an internal disinfectant. His methods, he said, had been tried in the Toronto General Hospital with satisfactory results, and also in his own private practice.

Dr. WM. OSLER, of Baltimore, admitted that in his book, which he inferred was the unfortunate one referred to, he did state these facts and when the article was written those were the facts so far as known. He favoured elimination of the poison through the skin and kidneys by means of cold baths. The use of purgatives, especially in the doses referred to by the reader of the paper, he considered unsafe.

The members of the Association were then taken by the electric cars to the

HOTEL DIEU,

where they listened to an address by Sir William Hingston

ON DEBATABLE POINTS IN SURGERY.

He stated that he preferred to remove tumours of the nose by the mouth; as a rule he prefers lithotrity to lithotomy, but once he met with a stone which resisted a force of 250 pounds applied by the lithotrite. He does not operate by external opening for stricture. In cancer of the breast he operates as early as possible, and, if necessary, repeats. He does not fear leaving a gland as the return is generally in the cicatrix or muscle. He had operated in one case seven times, and the patient was made comfortable, but died from an irrelevant disease. He still hesitates to acknowledge that theoretical antiseptics is essential to good work. Cleanliness is very necessary, but he thinks antiseptics of little avail.

Dr. D. C. MEYER, of Toronto, then read a paper on
 HEREDITARY CEREBELLAR ATAXIA,
 presenting his patient and a complete history of the case.

The afternoon session was opened with the Address in Surgery, which was read by Dr. JOHN STEWART, of Halifax (see page 182). A very cordial vote of thanks was tendered to the reader by the members.

The Hon. Dr. D. MARCIL then presented a paper in French on
 THYROIDECTOMY.

This was a report of the successful removal of a one-sided goitre. The patient afterwards became myxœdematous, and was finally relieved by thyroid extract.

Dr. SHEPHERD had frequently operated successfully. Those cases in which the tumour could be shelled out were the most satisfactory for operation.

A paper on

ORAL SURGERY

was read by Dr. G. LENOX CURTIS, of New York. Physicians and surgeons, he said, were either unable or unwilling to deal with troubles in the mouth due to affections of the teeth. He advocated the teaching of oral surgery in medical colleges.

Dr. BULLER, of Montreal, criticised these statements, and considered that the reader of the paper made a poor plea for an unnecessary departure in surgery. Canadian physicians, he was convinced, were quite qualified to deal with this class of affections.

A paper entitled

THE ELECTRO-MAGNET IN OPHTHALMIC SURGERY WITH SOME ILLUSTRATIVE CASES.

was then read by Dr. F. BULLER, of Montreal, (page 236) and afterwards discussed by Dr. Reeve, of Toronto, and Dr. Phelps

In the evening the annual banquet of the Association was held in the rooms of the Windsor Hotel. Sir William Hingston presided and among the speakers were the President of the Society, Sir James Grant, Dr. William Osler, Hon. Dr. Marcil and Dr. Roddick.

The session on Friday morning was opened by the reading of the report of the Committee on Interprovincial Registration, by Dr. Roddick. This report was received with more than ordinary interest. It was as follows:

“Your Committee beg leave to report that, having examined the present requirements of the Licensing Boards of the several Provinces, with a view to obtaining by mutual concession a uniform standard of

matriculation, education, and examination, would recommend the following:

"I. Matriculation—The schedule of subjects shall comprise (1) English language, including grammar, composition and writing from dictation; (2) Arithmetic, including vulgar and decimal fractions, and the extraction of the square root; (3) Algebra, to the end of the simple equations; (4) Geometry, euclid, books 1. 2 and 3, with easy deductions; (5) Latin grammar, translation from specified authors, or of easy passages; (6) Elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, hydrostatics, and elementary chemistry; (7) History of England and Canada, with questions in modern geography; (8) and any one of the three following subjects:—French, Greek and German, the requirements being the same as in Latin.

"Fifty per cent. of the marks in every subject shall be necessary for a pass, and 75 per cent. for honours.

"In lieu of the above will be accepted a degree in arts of any university in Her Majesty's dominions, or from any college or university that may hereafter be recognized, but no matriculation in arts in any university will be recognized.

"II. Professional Education—The curriculum of professional studies shall begin after the passing of the matriculation examination, and shall comprise a graded course in the regulation branches of four yearly sessions of not less than eight months of actual attendance on lectures in each year, the subjects to be anatomy, physiology, chemistry, materia medica and therapeutics, practical anatomy, histology, practical chemistry, pharmacy, surgery and clinical surgery, medicine and clinical medicine, including diseases of eye, ear, throat and nose, mental diseases, obstetrics, diseases of women and children, medical jurisprudence, toxicology, hygiene, and pathology, including bacteriology.

"That at least twenty-four months out of the graded four years, of eight months each, be required for attendance on hospital practice, to begin with the second year of study. That proof of attendance on not less than six cases of obstetrics be required.

"III.—Examinations—All candidates for registration in the various Provinces, in addition to having fulfilled the foregoing requirements, shall be required to undergo examination before examiners to be appointed in each of the Provinces by their respective Councils, or by means of assessors, as in the Province of Quebec, or by the delegation of their authority to one central body, as has been done in Manitoba. Each examination shall comprise all the subjects of professional study,

shall be both written and oral, and 50 per cent. of the marks shall be required in every subject for a pass. The Committee make these resolutions merely as suggestions for the consideration of the Councils of the several Provinces as a mutual basis of agreement, and request that each report thereon to the next annual meeting of the Association, and also send one or more delegates to represent them at that meeting.

“In order that the Councils may be enabled to consider the question with a full knowledge of the facts, it is desired that each registrar should send to every member of every Council in Canada a copy of the statutes and of the regulations in connection with the Council which he represents.”

The report was signed by Drs. R. A. Pyne, R. S. Thornton, Thomas Walker, J. M. Beausoleil and Edward Farrell, representing five of the Councils of the Dominion.

A minority report from Drs. MacLeod and MacNeill, two members of the Committee, was also presented, in the absence of these gentlemen, by Dr. Roddick.

After a brief discussion, the majority report was adopted by the Association, and was ordered to be printed and sent to every member of the different provincial Councils in the Dominion.

On behalf of the Nominating Committee Dr. Roddick also read the following list of nominations, which were afterwards unanimously approved by the Association.

For President, Dr V. H. Moore, Brockville. Vice-presidents: Prince Edward Island, James Conroy, Charlottetown; Nova Scotia, J. T. Black, Halifax; New Brunswick, T. Walker, St. John; Quebec, J. M. Beausoleil, Montreal; Ontario, W. W. Dickson, Pembroke; Manitoba, R. S. Thornton, Deloraine; Northwest Territories, E. H. C. Rouleau, Calgary; British Columbia, D. Hanington, New Westminster. General Secretary: F. N. G. Starr, Toronto (re-elected). General Treasurer: H. B. Small, Ottawa (re-elected). Local Secretaries: Prince Edward Island, H. D. Johnson; Nova Scotia, A. T. Mader, Halifax; New Brunswick, G. A. B. Addy, St. John; Quebec, J. G. McCarthy, Montreal; Ontario, W. G. Anglin, Kingston; Manitoba, W. H. Smith; Northwest Territories, George Macdonald, Regina; British Columbia, A. Weld.

On the suggestion of the Nominating Committee, the city of Montreal was chosen as the next meeting place of the Association, it being thought advisable to meet there in 1897, since the British Medical Association will also assemble there during the summer of that year.

Dr. I. F. W. Ross of Toronto, then read the address on Midwifery, choosing for his subject,

ABDOMINAL AND PELVIC OPERATIONS FOR THE RELIEF OF CONDITIONS
INCIDENT TO THE PUERPERAL STATE.

The writer dealt with the subject of fibroid tumours complicating pregnancy. He felt that their degree of gravity varied according to their situation. When fibroid tumours were found in a young married woman, who had never borne children, prophylactic treatment consisted in the removal of the ovaries and tubes. In older women this procedure should also be followed. Several cases were reported, in which abortion had been induced to save the woman. In one case recorded, he had found the removal of the placenta, to be far more difficult than a complete hysterectomy would have been. The literature of the subject was then reviewed. The writer next dealt with pregnancy, complicated by the presence of an ovarian cyst. Where the cyst had become impacted, there was three methods of procedure: (1) An abdominal section on the mother; (2) mutilation of the child; (3) puncture of the cyst.

Hydramnios simulating an ovarian cyst with pregnancy was discussed and cases reported. With regard to pelvic contractions in pregnancy, the essayist held that craniotomy and cæsarian section if done early were equally safe to the mother, but not to the child. If done late they were equally dangerous to the mother but not equally dangerous to the child.

The subject of pregnancy and intra-abdominal disease was then spoken of, and a case reported in which a coil of intestine was found strangulated beneath a band. A case of rupture and perforation of the pregnant uterus was then related. In this operation there were two indications: 1. To remove the blood from the anterior of the abdominal cavity; 2. To drain the uterine cavity and site of the laceration. These he secured by thorough cleansing and then pulling a rope of iodoform gauze through the tear down to the vagina. The patient recovered.

Dr. J. C. WEBSTER, of Edinburgh, then read a paper on the
PLACE OF PESSARIES IN GYNECOLOGICAL TREATMENT (See page 221.)

He was followed by Dr. A. LAPHORN SMITH, of Montreal, whose paper treated of a somewhat similar subject, and was entitled a report on

ONE HUNDRED CASES OF RETRO-VERSION OF THE UTERUS,
treatment by ventro-fixation and Alexander's operation, with results.

Most of the patients had been seen and examined, not only by himself, but also by other physicians and students attending his clinics, while the few who had not been seen, had been heard from through the physicians who had sent them to him. The results of both opera-

tions had on the whole been very satisfactory, with the exception of two cases, in which the ligaments broke, partly owing to their being fatty, and partly owing to the method of operating, which he has since improved; in one of these cases he immediately performed ventrofixation with good results; the other was a complete failure, having declined further operation. In one of the Alexander cases the uterus remained in good position for six months, when it began to fall a little. The failures all occurred among his earlier cases, none having occurred among those operated upon during the last two years. So far no case of hernia had resulted from the operation. The ventrofixations gave even better results than those operated on by Alexander's method. They were performed for the most part upon women who not only had retroversion with fixation but the ovaries and tubes were at the same time prolapsed and bound down by more or less dense adhesions. In many of these also there was laceration of the cervix and perineum with cystocele and rectocele.

The disasters following ventrofixation were two hernias and one relapse, all of which were subsequently remedied by a second operation. At the present time Alexander's operation has no death rate, while ventrofixation, although it has not any death rate in simple non-adherent cases of retroversion, yet it must have a small death rate, at least when it follows the removal of very bad pus tubes.

He had performed both Alexander's operation and ventrofixation for prolapse as well as for retroversion, and as the results were excellent, provided the pelvic floor was at the same time repaired, he much preferred these operations to vaginal hysterectomy for prolapse, an operation which he had performed a few times and found easy, but which he hardly felt justified in doing.

Although several of the Alexander's had subsequently become pregnant, in no case did any untoward accident happen. He had heard that some one on whom he had performed ventrofixation had subsequently become pregnant and aborted, but he had so far been unable to verify it. He was not aware that any of them had even become pregnant. This was probably owing to the fact that he had in most of them removed the tubes and ovaries, while in those in which he had left one or both ovaries, they were diseased and unable to functionate. He was frequently asked which of the two operations he preferred. This was difficult to answer. Alexander's was safe, but he preferred ventrofixation, because it had given him the best results. He would probably continue to do Alexander's operation in young married or marriageable women in whom the ovaries and tubes were perfectly free from organic disease; while he would reserve

ventrofixation for women who were sterile or who had marked adhesions and who had suffered so much and so long in spite of treatment that the appendages had to be removed.

In the discussion which followed these two papers

Dr. CUSHING, of Boston, said that he had more experience in removing pessaries than in using them. He had not been satisfied with the results obtained from Alexander's operation.

Dr. GARDNER, of Montreal, thinks that pessaries are only very occasionally of service. He has abandoned Alexander's operation, but frequently does abdominal hysterorrhaphy, with much advantage to the patient.

CLINIC AT ROYAL VICTORIA HOSPITAL.

The members were now conveyed by means of a special electric car to the Royal Victoria Hospital, where a clinic was held by members of the staff.

Dr. JAMES BELL presented a series of brain cases. The first was a man, aged 29, who, in 1895, had suffered from otitis media, followed by mastoid disease. Dr. Buller had trephined but had found no pus. The symptoms increased in severity, there being intense headache and high fever. After three or four days, twitching of the left side came on, followed by paresis of the left arm. An abscess in the middle lobe of the brain was diagnosed and a small opening was made over this region. The dura was found to be bulging, and on opening it two or three drachms of pus escaped. The opening was enlarged downwards to provide for free drainage. A communication was established between this and the opening in the mastoid antrum which Dr. Buller had made. There was an immediate amelioration of the symptoms, the paresis disappearing at once, and the temperature falling to normal. The recovery was not permanent, and serious symptoms again made their appearance. Dr. Bell then reopened the wound and found a hernia of the brain containing a small abscess. Upon incising more deeply, it was found that the whole temporo-sphenoidal lobe was excavated by a large abscess, from which a considerable quantity of pus escaped. After this the progress was satisfactory, except that a sinus persisted and the patient was discharged. He was re-admitted two months later, having had a convulsive seizure the week before. The sinus was opened and was found to lead towards the cranial vault. It was drained and the patient was discharged in April. He has since been in good health.

The next patient was a boy, aged 12, who was admitted on the 11th May, 1896, suffering from thrombosis of the left sigmoid sinus. Dr. Buller trephined and a cord-like mass was found extending down the

side of the mastoid which was thought to indicate an inflammatory area about the mastoid process. It extended, however, and in about forty-eight hours, had reached the jugular vein. This vessel Dr. Bell ligatured below the omo-hyoid. An excision was then made over the mastoid and the clot removed from the jugular fossa. The symptom abated and the patient has since been perfectly well.

The third patient was a girl, aged 6 years. While playing with a revolver she had accidentally discharged it, the bullet entering her forehead. No severe symptoms followed, but on examination under chloroform the bullet was found to have fractured the skull and gone deeply into the brain substance, at least two inches from the surface. Forceps were carefully introduced, but it was found impossible to remove the bullet. A skiagraph was taken of the head and showed the bullet clearly. (The skiagraph was shown to the members.)

Two cases of sutured patella were shown, in both of which the injury was caused by indirect violence. Silk was used for the sutures and the result was excellent. Dr. Bell stated that in recent cases his practice was to use gut sutures.

The next case was one in which a floating body, a piece of free cartilage, had been removed from the elbow joint. Two cases of excision of the elbow were shown. In the first ankylosis had followed a severe injury of the elbow, and the operation had given a useful arm. The other was a case of tubercular disease, and the operation had been followed by paralysis of the forearm, due, Dr. Bell thought, to applying the Esmarek's bandage too tightly. He reported a similar case which occurred in his practice four or five years ago. The lesson was to use a hollow rubber tube or a flat bandage. The next patient was a woman, aged 56, on whom he had done nephrotomy for pyonephrosis. This was followed subsequently by nephrectomy by the abdominal route.

A woman was presented on whom nephrolithotomy had been done and two cases exemplifying Esthlander's operation, in one of which 65 inches of rib had been removed. Another patient had suffered from caries of the lower jaw requiring complete removal of the inferior maxilla.

Another patient was shown on whom the speaker had operated for an immense glandular enlargement in Scarpa's triangle and the popliteal space, with destruction of the skin over the glands. In straightening the leg the popliteal vein had been torn.

The next case was a woman who had suffered from strangulated femoral hernia, in the relief of which he had excised eleven inches of small intestine. Murphy's button was used and was passed on the tenth day. No bad symptoms followed. A boy was shown whose

ankle had been excised for tubercular disease, a few months later he had returned to the hospital with a re-appearance of the disease in the bones of the foot when a modified Syme's operation was done. He was now suffering from caries of the vertebræ.

The next was a peculiar case in which a diagnosis had not been made. The patient aged 47, had come to the hospital complaining of a swelling in the submaxillary region, which Dr. Bell considered to be secondary to a primary cancer somewhere else. The swelling became less prominent but extended downwards into the cellular tissues in front of the vertebral column. This induced spasmodic asphyxia, probably from pressure on the recurrent laryngeal nerve. Tracheotomy had to be performed and the patient then gained ten pounds. Quite recently dysphagia had set in and brachial neuralgia.

The next patient was a boy who had suffered from multiple osteomyelitis. The diaphysis of one tibia was removed, but new bone had formed.

Next was shown a patient who had epithelioma of the right tonsil involving the right side of the tongue and jaw. A preliminary tracheotomy was done, and at a subsequent operation the diseased portions were removed.

Next was a little girl, 10 years of age, in whom he performed excision of the ankle and removed three or four inches of the tibia and fibula. The foot was a little unsteady, but he thought it was more useful than a stump.

Dr. JAMES STEWART presented six patients, three males and three females, suffering from intra-thoracic aneurism, giving a history of each. He also showed two cases of multiple neuritis and one of symmetrical gangrene.

The afternoon session was opened by a paper by Dr. J. E. Graham of Toronto, on

THE INFLUENCE OF MITRAL LESIONS ON THE EXISTENCE OF PULMONARY CONSUMPTION.

This paper appears on page 191.

In the discussion which followed Dr. Osler drew attention to the occasional presence of acute endocarditis with pulmonary tubercle and related a case in which a diagnosis of heart lesion had been made but which at the autopsy proved to be acute tuberculosis.

Dr. BLACKADER stated that while he was a resident in the Brompton Hospital for Diseases of the Chest, Dr. Powell had pointed out to him the fact that pulmonary phthisis seldom developed in cases of mitral disease.

Dr. TOBIN of Halifax, then presented a paper on

THE RE-ORGANIZATION OF THE MILITIA MEDICAL SERVICE.

(See page 252).

At the conclusion of the paper, Dr. T. G. Roddick expressed himself as in hearty accord with the scheme outlined by Dr. Tobin, and he proposed a motion which was seconded by Dr. Farrell of Halifax, and unanimously adopted, commending Dr. Tobin's scheme to the consideration of the Minister of Militia and Defence.

Dr. J. B. McCONNELL of Montreal, then gave the notes of an interesting case of

TETANY FOLLOWING SCARLET FEVER.

(See page 214).

Dr. F. J. SHEPHERD of Montreal, reported very briefly an excision of the scapula for a myelo-sarcomatous growth which had begun two years previously. Healing was rapid and the patient had good movement of the arm, without drooping.

A paper by Dr. H. L. REDDY of Montreal detailing the successful treatment of a case of

PUERPERAL INFECTION

by the injection of anti-streptococcic serum was read by Dr. Burnett in the absence of the author. Owing to want of time no discussion ensued.

Dr. A. L. DEMARTIGNY, of Montreal, read a paper on

ELECTRIC BATHS AND DYSPEPSIA.

The mode of giving a bath was first explained. The patient is placed in a porcelain bath tub filled with warm water, and the faradic currents applied by means of large carbon electrodes, only one of which is in direct contact with the patient. The doctor first uses a current of 90 to 150 interruptions, applying the electrodes over the abdomen, with the view of acting on the muscular system of the stomach and intestines. Afterwards the general nervous system is stimulated by means of a current interrupted 3,000 times a minute, the electrodes being applied, one on the neck and the other near the sacrum, or sometimes on the feet. The doctor reports the cure of several cases of very severe dyspepsia.

Many cases of dyspepsia are due primarily to some fault of the nervous system, and functional and organic affections of the stomach follow, as a sequence. Physicians have long recognized this fact, and in such cases endeavour to stimulate the nervous system by amusements, out-door sports, travelling, etc. Dr. DeMartigny thinks that

for those who are unable to avail themselves of such measures, electric baths may prove a pleasant and valuable substitute.

Dr. H. D. HAMILTON, of Montreal, reported the case of a

NON-MALIGNANT TUMOUR OF THE TONSIL

and showed a photograph of it. (See page 251.)

The following papers were read by title: "Sinus Thrombosis associated with Acute Suppurative Otitis Media in Scarlet Fever," by Dr. J. W. Stirling, Montreal; "Cold Air in the Treatment of Pulmonary Tuberculosis," by Dr. Edward Playter, Ottawa; "Early Atrophy of Muscles in Cerebral Disease," by Dr. Frederick G. Finley, Montreal; "Treatment of Otitis Media Purulenta," Dr. A. Proudfoot, Montreal; "Technique of Vaginal Hysterectomy," by Dr. L. Coyteux Prevost, Ottawa; "Actinomycosis," by Dr. J. A. Springler, Montreal.

Hearty votes of thanks were given to the profession in Montreal, to the President and to the Secretary and Treasurer, also the trustees of St. George's Church, and the railroad and steamboat companies.

The President-elect, Dr. V. H. Moore, of Brockville, was then introduced, and the meeting then closed.

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THE CANADIAN MEDICAL ASSOCIATION.

The twenty-ninth annual meeting of the Canadian Medical Association must be regarded as a most successful one, not only from the number of members who registered, nearly two hundred, a number which we understand considerably exceeds that of any previous gathering of the Association, and from the high standard of excellence which was reached by many of the papers read, but also from the great progress which was made in the important subject of intra-provincial registration, and from the good spirit and harmony which pervaded all the meetings.

We have endeavoured to place before our readers in this number the more important papers discussed, together with a full report, which we are sure will be read with much interest.

THE CARLISLE MEETING.

The Carlisle Meeting of the British Medical Association was a very successful one. Nearly seven hundred members attended and every one went away from Carlisle feeling that the meeting had been a very pleasant one, and that the sectional discussions had been of a high character and instructive.

The profession of Carlisle deserve a great deal of credit for coming to the front immediately after the great London Meeting in 1895 when many larger cities were rather inclined to allow a year or two to pass over and the memory of the great Metropolitan meeting to somewhat fade.

The whole organization of the meeting was very satisfactory. The reception room was conveniently situated in the vicinity of the sectional and general meetings, and the museums.

The Corporation and citizens of Carlisle seemed to vie with the medical profession in making the meeting a success. Garden parties were arranged for every afternoon and were as successful as the weather permitted.

The history of the city of Carlisle is largely that of the border counties. There are still to be seen remains of an old Roman wall. The country around is full of literary and historic interest. An excursion was arranged to take the members of the Association to the Lake Regions on the Saturday after the meeting had closed. Many members took this trip and all were delighted with it. The scenery cannot be surpassed and the day was perfect.

The museums were well filled and proved to be very interesting. The laity as well as the members of the Association apparently enjoyed the exhibition of patent foods and pharmaceutical compounds. In addition to these, there was an exhibition of the Roentgen rays.

The invitation of the Montreal Branch of the British Medical Association to the parent association to make Montreal the place of meeting for 1897 was put before the Council of the association by Drs. Armstrong and Adams. They invited Drs. J. H. Cameron, A. B. Macallum, Peters, and Doolittle of Toronto, and Dr. H. P. Wright of Ottawa to join them.

After the deputation withdrew the Council decided unanimously to accept this invitation and subsequently at a very largely attended general meeting the recommendation of Council to meet in Montreal, in 1897, was carried by a very large majority. Although the invitation was sent from a branch of the British Medical Association in Canada as must needs have been done, yet it was understood by the members of the association that the invitation really was from the medical profession of the Dominion of Canada.

It will be the first meeting of the association outside the British Isles, and Canada is certainly to be congratulated in being the first colony to receive a visit from that great and in many respects unique association of eminent physicians and surgeons, the British Medical Association.

It is now in order for the medical profession of Canada, but more especially of Montreal, to so arrange for the meeting that it may be one of the most successful, so far as scientific work is concerned of any meeting in the history of the association. It is an opportunity also of showing in a social way our regard and appreciation for many whose names are household words in every doctor's home.

It is understood that the meeting in 1898 is to be held in Edinburgh

SERUM DIAGNOSIS IN TYPHOID FEVER.

The Board of Health of the Province of Québec desires to call the attention of the medical profession and sanitary authorities of this Province to the fact that bacteriological methods seem likely to afford a rapid and satisfactory method of diagnosis in typhoid fever, which will compare not unfavourably in point of efficiency with the methods now so widely employed for the diagnosis of tuberculosis and diphtheria.

It was discovered by Widal, of Paris, that the serum obtained from the blood of a typhoid fever patient was capable of so acting upon pure cultures of typhoid fever mixed with it as to abolish the active motion so characteristic of that organism in fluid culture media and cause an agglutination of the individual bacilli into large groups or clumps, this change being easily recognizable under the microscope or in culture tubes, and usually occurs within a few minutes. With serum from the blood of healthy persons, or those suffering from febrile diseases other than typhoid, the motion of the bacilli is not arrested, but continues indefinitely when mixed with the typhoid cultures.

The method as originally proposed involved the somewhat difficult and complicated operation of obtaining pure and sterile serum.

It has been found by the bacteriologist of this Board that the fluid obtained by moistening with water a dried drop of blood gives equally prompt and satisfactory results, even after it has been dried for some days. This modification of the process facilitates materially its adoption in the work of public laboratory diagnosis, permitting a test to be employed in obscure typhoid cases somewhat similar to that which is made in the case of diphtheria, as a drop of blood can easily be sent to a laboratory and examined there. In this way the bacteriologist of the Board was able to diagnose correctly by examination drops of dried blood sent by mail from Montreal to Buffalo, N.Y.,¹ detecting those which came from typhoid cases and those which did not, using no other means than the method described above.

As the subject is a new one, the Board does not feel in a position to state exactly what degree of accuracy may be attained by this method when used for the routine diagnosis of typhoid fever on a large scale, but in order to test the practical utility of the method, the Board offers to examine and report gratis upon any samples of blood taken and forwarded by physicians of this Province as directed by the bacteriologist. A report will be sent by the afternoon of the day

¹ During the meeting of the American Public Health Association, held there in September, 1896.

following that upon which the sample is received, and will be communicated by telephone when the telephone address is given.

The Board wishes to obtain data upon the following points and earnestly requests the medical profession to furnish any information bearing upon them.

1. The degree of accuracy of the method and the proportion of cases in which a correct diagnosis can be made by the serum test.

2. The earliest period in the disease at which it can be expected; give indications.

3. The length of time for which this reaction persists after convalescence.

4. The existence of any relation between the intensity of reaction with the test and the course of the disease.

5. A study of the nature of the obscure febrile conditions, clinically termed gastric fever, continued fever, abortive typhoid, bilious fever, etc., which from the present standpoint of our knowledge in this subject are classed as typhoid by the sanitary authorities.

It is hoped that those who take advantage of the offer now made by the Board will do all in their power to aid this inquiry by not only carefully filling up the blanks sent with the samples, but by afterwards giving information when possible, as to whether the subsequent progress of the case confirmed the result of the serum test or not, and also by providing, when possible, temperature charts, etc., for study by the officials of the Board.

THE ROYAL VICTORIA HOSPITAL.

It is with great pleasure we record the princely gift of Lord Mount-Stephen and Sir Donald A. Smith towards the permanent endowment of the Royal Victoria Hospital.

They have placed in the hands of trustees securities having a par value of \$800,000, which it is expected will yield an income of \$40,000 per annum. This sum, together with the interest on \$250,000, the amount left from the original endowment of \$1,000,000, will place this great charity in a position to do a great amount of useful work in the years to come.

Altogether the founders of the Royal Victoria have contributed about \$1,900,000, a very great amount, even in these days of very great benefactions. They have given to Canada an hospital which is admirably fitted in every way to carry on the work required of modern hospitals, viz., the relief of suffering, the teaching and advancement of the healing art. There are very few hospitals anywhere better adapted in every respect to carry out such work.

We have just received the first volume of the second series of the Surgeon-General's Index Catalogue. This valuable work is being continued in another series of volumes, and gives a complete list of titles and authors on all branches of medical science to date. The present volume includes the letters A to Az. All workers in medical literature will find the new series as indispensable as the old. The work is one which should find a place in all medical libraries, and will prove of the highest value in lightening the labours of those engaged in literary work.

NEW BOOKS, ETC., RECEIVED AND NOTED.

Neuritis Complicating Dislocation of the Shoulder and Elbow. By M. A. Veeder, M.D. Reprint from Transactions of the Medical Society of the State of New York.

Curetage of the Uterus, History, Indications and Technique; reprint from the Edinburgh Medical Journal, March and April, 1896. Congenital Teeth, with three illustrative cases; reprint from the Edinburgh Medical Journal, May, 1896. By Jno. Ballantyne, M.D., F.R.C.S.G.

Tylosis Palmæ et Plantæ, with description of two cases, mother and daughter. By Jno. Ballantyne, M.D., and Geo. Elder, M.B. Reprint from Pediatrics, April 15, 1896.

Report upon two cases of Tumour of the Spinal Cord, unaccompanied by severe pain. By Pearce Bailey, M.D. Reprint from the Journal of Mental and Nervous Diseases, March, 1896.

Deformities in the Hard Palate in Degenerates; reprint from the International Dental Journal, December, 1895. Results of Thyroid Treatment in Sporadic Cretinism; reprint from Pediatrics, May, 1896. By Frederick Peterson, M.D.

A Manual of Clinical Diagnosis. By Charles E. Simon, M.D. Lea Brothers & Co.

A Manual of Materia Medica and Pharmacology. By David M. R. Culbreth, PhG., M.D. Lea Brothers & Co.

Food in Health and Disease. By J. Burney Yeo, M.D., F.R.C.P. Lea Brothers & Co.

A Manual of Venereal Diseases. By James R. Hayden, M.D. Lea Bros. & Co.

Ptomaines, Leucomaines, Toxins and Antitoxins. By Victor C. Vaughan, Ph.D., M.D., and Frederick G. Novy, ScD., M.D. Lea Brothers & Co.

Notes on the More Common Diseases of the Eye. By Robert W. Doyme, F.R.C.S. H. K. Lewis.

The Ready-reference Hand-book of Diseases of the Skin. By George Thomas Jackson, M.D. (col.) Lea Brothers & Co.

Minor Surgery and Bandaging. By Henry R. Wharton, M.D. Lea Brothers & Co.

A Treatise on Surgery. By American authors. Edited by Roswell Park, A.M., M.D. Vol. I. Lea Brothers & Co.

Disease & Defective House Sanitation. By W. H. Corfield, M.A., M.D., &c. H. K. Lewis.

Braithwaite's Retrospect of Medicine. Vol. CXIII. Simpkin, Marshall, Hamilton, Kent & Co.

The American Academy of Railway Surgeons. Second Annual Report. Edited by R. Harvey Reed, M.D.

A Manual of Infectious Diseases. By E. W. Goodall, M.D., and J. W. Washbourn, M.D. H. K. Lewis.

Feeding in Early Infancy. By Arthur V. Meigs, M.D. W. B. Saunders.

The Treatment of Syphilis. By E. D. Keys, A.M., M.D. D. Appleton & Co.