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AT THE ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION, HELD AT OTTAWA, SEPTEMBER 21, 1892.

BY JOHN L. BRAY, M.D., F.R.C.S.K.

Gentlemen,—Allow me in the first place to offer you my most heartfelt thanks for the great honour you have conferred on me in electing me President of the Canadian Medical Association; and while I appreciate your kindness and feel proud of the distinction, the high honour only makes me more conscious of my inability to fill the position with credit to the profession and satisfaction to myself. Following as I do my immediate predecessor, Dr. Roddick, only makes this more obvious. But I trust you will extend to me a helping hand, and at the same time shut your eyes to my deficiencies.

Now I am not going to deliver a scientific address on medicine or surgery, as that duty has been delegated to those much better able to perform the task than I am, but will take instead a review of Medical Education and the advances made in that direction since the birth of this Association twenty-five years ago; secondly, say something about Medical Reciprocity between the Provinces and the barriers that now exist to prevent this, and how they may be removed; and thirdly, the influence that this Association ought to exert, not only over the medical profession, but also over the public from one end of this great Dominion to the other. And what time could be more fitting or what place more appropriate for such a retrospect? We meet to-day to celebrate our silver

anniversary, in Ottawa, the capital of our country, on this the twenty-fifth anniversary of its birth. What memories are recalled by a few—and, oh! how few they are—that were present when this Association was formed a quarter of a century ago. What changes have taken place since then! The magnificent building we now occupy was not then erected. The City of Ottawa was only a city in name; and of the noble men in our profession who were instrumental in forming this society how many have gone to their long home, and are forever at rest from the cares and anxieties of this world! The reaper Death has year by year since that time been cutting down first one and then another of our members, without regard to age, ability or position. Since our last meeting we have to mourn the death of Dr. James Ross, who so ably presided over our deliberations two years ago, in Toronto, whose kindly smile and friendly greeting we miss to-day, from whose large experience we have all more or less profited, and whose wise counsels we would all do well to follow. But we have with us to-day Sir James Grant, Dr. Hingston, Dr. Fenwick, and perhaps a few more who were present at the birth of this Association.

When we see how our country has grown and developed since that time, it is sad to think that this Society has not kept pace with the Dominion, and I trust the remarks made by Dr. Roddick in Montreal last year on this subject will bear fruit, and that in the next twenty-five years this Association will rival in numbers as it does now in ability its great neighbour, the American Medical Association, and I hope before we close our labours some steps will be taken by the formation of a committee or in some other way to promote this object.

It will be in the recollection of some present to-day the condition of things as they existed prior to the formation of this Society in 1867, and the passage of the Upper Canada Medical Act about the same time. You will remember that there were three licensing bodies in old Canada at that time, independent of the medical schools and universities. The latter were degree-conferring institutions, but they virtually possessed the licensing power, inasmuch as the holder of a degree from any of these

bodies was entitled to practice medicine on proving identity, paying a small fee, and having a license signed by the Governor-General. All he had to do was to send his degree with an affidavit to the Provincial Secretary, when his Excellency, taking for granted that he was fully qualified, having secured a degree from some college or university in Canada or Great Britain, would attach his signature to a Provincial license, which enabled him to practice in that or, in fact, any other province, so that in reality we at that time had in Upper and Lower Canada, to say nothing of the other provinces now constituting the Dominion, seven or eight licensing bodies responsible to no central authority, each vying with the other who could turn out the greatest number of doctors independent of quality. The licensing boards in Canada consisted of the Upper Canada, the Homœopathic, and the Eclectic Medical Boards, all constituted by royal charter, and electing or appointing their members in different ways. The Upper Canada board was appointed by the Governor-General for life, or good behaviour. How the others were appointed I cannot say, but probably in the same way, on the advice of one or two of the more prominent members of these schools. You can imagine it was not so very difficult to become a full-fledged doctor in those days. The schools and universities fixed their own curricula both for matriculation and professional examinations, and the licensing boards, some of them at least, I believe, required no standard of matriculation at all, and almost none of a professional character, consequently the education required to become a doctor at that time was not of a very high order. So low had the requirements sunk that not only the profession but the schools as well began to think it was time to make some change, and demand a higher standard. I am speaking now more particularly of Ontario. The first step taken to remedy the then existing state of things was by the Act of 1865, known as the Parker Act, whereby a council was formed who had the power to fix the standard of matriculation as well as that of the medical curriculum. But while they had the right to make a standard, they were powerless to enforce it, no authority being given them to appoint examiners or conduct the examinations, which was left to the colleges as heretofore; and although the Provincial Board

was done away with by this Act, the Homœopathic and Eclectic Boards were not interfered with, which, instead of remedying, rather increased the evil, as the number of licenses from these boards for the next year or two amply testified; and while this Act was an improvement in some respects (being a starting point) it was found to be still very defective. It was felt that the plan of allowing each school to examine its own students, even although the council fixed a standard, did not prevent a great many unqualified men from getting into the profession; for if the curriculum was difficult, the examinations were in many cases made easy, and in the event of a student being rejected by his college (which was a rare occurrence) there was nothing to prevent him from going before one or other of the remaining medical boards, and I fail to recollect a single instance where a student taking this course was not granted a license to practise medicine, surgery and midwifery.

This state of affairs induced the council to consider what steps they should take to remedy this evil, and the conclusion they arrived at was a wise one. They thought if it were possible to unite all branches of the profession and bring them all under one law, they could then control and direct medical education. In order to do this it was necessary to give and take, and a compromise was effected with the Homœopathics and Eclectics, as well as the different medical schools and universities, whereby the whole profession was united and brought together, and became subject to one central authority, viz., the Medical Council of Ontario, made up of representatives elected and appointed from the profession, the medical schools and universities, and also from the Homœopathic and Eclectic bodies. This Act came in force in the year 1868, and gave the council power not only to make the standard of all the examinations, but to appoint examiners to conduct them; and I am happy to say that from that time till the present the standard of medical education has been rising year by year, not only in Ontario, but over the whole Dominion, until to-day in Ontario we have a curriculum standard equal to that existing in any country in the world, and a Medical Act to enforce it, which is the envy of the United States, and which England has tried in vain for years to adopt. I am sorry,

indeed, to find that a hostile feeling has arisen against the council through some clauses added to the Act in 1891, which feeling I would be glad to see removed. But while I am aware that a few faults are to be found, I am also aware that a great many virtues exist in the Act as it now stands, and it behoves the whole profession to see that no action is taken to impair its usefulness, detract from the dignity or lessen the influence of the Medical Council, which is the safeguard of medical education in Ontario, and which exerts an influence over the whole Dominion, for every province would suffer should the Council be done away with and a return to free trade in medicine follow, as it would most assuredly do, and if the Ontario Medical Council was abolished we would go back to the same position as we occupied prior to 1868. I cannot believe there is one who has the welfare of the medical profession at heart in this country who would wish to see us return to this condition, and for this reason I would ask those who are opposed to some clauses in our Act to pause and consider well before they do anything to embarrass the Council or vitiate the Act, and by so doing play into the hands of the charlatans both in and out of the profession. As it is we stand alone, looked upon by the general public as a close corporation and fitting prey for malpractice suits for large damages, who do nothing but increase the fees and legislate for our own pockets; and these views are encouraged by a certain class of men who have not the ability to obtain our license, or having obtained it, branch off in some disreputable way in order to make more money, and victimize the very public whom they profess to champion as against the regular practitioner. Fortunately for the profession and public we have a clause in the Act to enable the Council to purge the profession of such unworthy members, and to punish others who trade on the credulity of the public by fraudulent practices without being registered. Why it should be so I cannot tell, unless it is that people like to be humbugged. But it is a fact, nevertheless, that the sympathies of the majority of the laity are against the regular profession and in favour of quackery. Therefore I reiterate the statement that we must be careful how we interfere with the present law, by amending some minor clauses which may be objectionable, that we do not get

the whole Act wiped out ; and I would suggest here, as I have already done in another place, that the members of the profession in Ontario, who are aggrieved at some of the workings of the Act, meet the Medical Council, discuss the whole question, frame such amendments as may be in the interests of the profession and public, and then go to the Legislature as a united profession, asking for such alterations in the present Act as they have agreed upon, and I am sure the Legislature will grant them. I hope the Association will pardon me for this digression, but I speak feelingly, having the interests of the profession at heart and knowing something of the differences existing between some members of the profession and the Medical Council of Ontario.

Prior to 1867 the matriculation examinations in all our colleges was more a matter of form than anything else, and could be passed at any time before going up for the degree. At the present time it is quite different. Now it is equal to a second class teacher's certificate, with Latin, Physics and Chemistry compulsory, or junior matriculation in arts in any university, with the science course ; and the day is not far distant when it will become still higher and eventually reach a degree in arts ; and can anyone say that this should not be so ? A physician, above all men, should be thoroughly educated, for education is a great refiner, and in what calling or profession is this quality more essential than in ours ? What scenes we witness, what confidences we receive ? In and out of the family circle at all hours and under all circumstances, and always battling with pain, disease and death. And here it is that the refined physician shows the result of his early training, by soothing pain, curing or relieving disease, and sympathizing with the bereaved ; and, mark my words, it is only the man who thoroughly knows his profession that in the long run reaches the top of the ladder and who deserves and receives the gratitude of his patients and esteem and respect of his confrères.

I am indebted to Dr. Pepper of Philadelphia, and desire to return him my most sincere thanks, for a copy of his address, containing a vast amount of information on the subject of Medical Education, delivered by him a few years ago : In speaking of the system of medical education in the United States (and his

remarks would have applied to Canada a few years ago, although not quite to the same extent), he says if we would learn the truth and know the estimation in which our medical education has of late been held by other countries, it needs only to examine the changes which have taken place in their system of medical teaching, proportionate to the vast advances in medical knowledge, and then turn to the picture of our own position as drawn by those most competent to depict it. He proceeds to say in every country but ours, without, so far as I know, a single exception where a system of medical education can be said to exist, certain general principles will be found embodied in that system. These are, first, a matriculation examination; second, a sufficient length of time devoted to medical studies; third, a careful personal training of each student in all practical and clinical branches; fourth, careful grading of the course; and fifth, impartial examinations by disinterested individuals. On the whole, these are about the requirements necessary in the Dominion at the present time for a student before receiving the right to practice. Dr. Pepper goes on to say that there are some in this country who would cry out at once that so prolonged and elaborate course of study as I have mentioned is not necessary in America to produce good practical doctors, but that it can only tend to develop a class of over-educated, supercilious, impractical medical men, too good and fine for the average work of a physician. No frame of mind is more enjoyable than the self-complacent contentment of the optimist who holds the candle of his own excellencies so close to his eye that it dazzles him, and makes him blind to the broad sunlight of truth and progress flooding the world. Such objections as the above might be expected if the elevated system of teaching which I have sketched were adopted only in one or two very old and wealthy countries, for it might then seem to be due to a highly artificial state of society. But when we see that not only the older and more highly civilized and more densely populated countries, such as England, France and Germany, but in those whose state of civilization and the condition of whose people we should be slow to regard as favourable compared to our own, as Russia and Spain, in those such as Brazil and Australia, whose forms of government and social

system are younger even than our own, and finally, even in countries which, like Mexico and the Republics of South America, we are supposed to regard as only semi-civilized, and where the instability of government and the frequent convulsions of social order would seem to render any fixed and comprehensive educational policy impossible, when we see that in each and all of these, a thorough plan of medical education is held essential for the welfare of the community, for the development of medical science, and for the interests of the medical profession itself. It is surely time to consider carefully if we are not sadly at fault in this; and if, while elsewhere the requirements of medical education have been made to keep pace with the growth of medical knowledge, with us they have not been controlled by other and far less proper influences. Now if we consider the present state of medical science and note the vast advances that have been made during the past twenty-five or thirty years in all of its departments; if we reflect upon the enormous extent of accurate information, of minute technical knowledge and of special practical training which is now required to fit a man to practice medicine scientifically, and to render to those sufferers who seek his help the full measure of the benefits which the healing art is now capable of bestowing, shall we be surprised at the careful and prolonged course of study that we find is imposed in all countries but our own upon the applicant for the degree of medicine?

Surely no one can fail to appreciate the enormous importance of having thoroughly trained and skilful physicians.

When overtaken by serious accident or illness, all other means of relief fail, and the most wealthy, the most powerful, the most illustrious must, like the poor and unknown, cast their dependence upon the skill which, under God's guidance, the physician shall display in battling with disease and death. No other study presents difficulties and complexities so great as those which beset the study of medicine. In no other occupation in life are such varied culture of the mind and training of the senses demanded. Yet I learn on inquiry that the average time of apprenticeship to the following trades or callings is—for barbers, three years; for carpenters, printers, turners, plumbers, pattern

makers, at least four years; for machinists, five years; and for pilots, seven years. Can it be that the apprentice must practise five years before he is regarded as a skilled workman, fitted to mend or make machines of iron or brass, and that in this land of intelligence, progress and common sense one who has studied medicine less than one-third of that time may have his license to meddle with and make or mar that most wonderful machine—*man's body*—infinitely complex, gifted with boundless capacities, and freighted with the awful responsibility of an immortal soul? Can it be that seven long years of pupilage must pass ere the young pilot may be trusted in charge of a vessel to guide it through the crooked, narrow channel, where only the hidden dangers of sunken rocks or treacherous shoals beset him, while in less than one-fourth of that time we profess that one may qualify himself to pilot the most precious craft—a human life—through the long, dark, intricate windings of disease, where at every turn death lies concealed, so close at hand and so difficult to avoid that nothing but the most intimate knowledge of his profession and consummate skill can insure safety. A strange seeming contrast, and yet the following careful examination of the state of medical education as it exists in all the medical schools on this continent with a few honourable exceptions fully supports the paradox. He then goes on to give the curricula, course of study required, and methods of examination of most of the medical schools in the United States, and compares them with the colleges of other countries. But I need not follow him further in this direction, and have only introduced his remarks to show the state of medical education as it exists where there is no central governing power having supervision over the different teaching and degree-conferring bodies, as was the case in Canada up to the year 1868. But I am pleased to say that to-day Canada as a whole has one of the highest standards of medical matriculation as well as medical teaching to be found in any country but Germany, and what we want particularly at the present time is to assimilate the systems existing in the different provinces, thereby making one uniform standard for the whole Dominion. And this brings me to the second part of my subject, viz., the question of Medical Reciprocity between the Provinces.

In reading over the Medical Acts of the different provinces, I find that Ontario is the only one that has a central examining board appointed by the Council, before whom every student desirous of practicing in that province, no matter from what country he may come or from what university he may have a degree, has to pass. I further find in the Ontario Medical Act this clause: "When and as soon as it appears that there has been established a central examining board similar to that constituted by this Act, or an institution duly recognized by the Legislature of any of the provinces forming the Dominion of Canada, other than Ontario, as the sole examining body for the purpose of granting certificates of qualification, and wherein the curriculum is equal to that established in Ontario, the holder of any such certificate shall, upon due proof, be entitled to registration by the Council of Ontario if the same privilege is accorded by such examining board or institution to those holding certificates in Ontario."

I find in the Manitoba Medical Act that the University of Manitoba is the sole examining body for the Province, and in that respect comes nearer to the requirements of Ontario than any other, and I see no reason why, as long as this remains so, reciprocity should not exist between them. Now it appears to me there are just two ways whereby reciprocity between the provinces can be brought about, and these are, first, the repeal of that portion of the British North America Act which gives each province sole control over all educational matters, by taking from them this right and vesting it in the Federal Government, and the appointment of a Dominion Medical Board; or, secondly, the establishing of Medical Councils for each province, who shall appoint a Central Examining Board similar to that of Ontario, and when this is done let representatives from each Provincial Council meet, say in Ottawa, and fix one uniform standard of medical studies to be adopted by all the provinces. Now, as to the first, I think it is entirely out of the question, and can be put aside as utterly impracticable, as I feel sure the Local Legislatures would never consent to have the control of the educational system taken out of their hands. As to the second proposition, I see no good reason why it should not be adopted. In all the

Provincial Medical Acts, so far as I am aware, full power is given the Councils to fix the period of study, make their own curricula, and to conduct their own examinations in the way which to them may seem best. Now, all the colleges and universities in the Dominion, so far as I can learn, require four full years of study from a student before going up for his degree, but those of British Columbia, whose Council is satisfied with three. The teaching in all these institutions is very similar, so that it would not be a difficult task to make them uniform in this respect. Then all that remains to be done is to appoint a Central Medical Examining Board for each province, to examine and recommend for license all graduates, leaving the universities the power of granting degrees only. I shall make no more suggestions on this point, as committees from each province were asked to meet in this city to discuss this matter fully, and I trust their deliberations will result in bringing about the object we all so much desire.

There is one thing that must always be borne in mind, however, and that is, no matter how or by what means reciprocity is brought about, the standard of medical education must always be advancing. This is something we owe both to ourselves and the public, although the latter are slow to appreciate the sacrifices we are constantly making in their behalf. When will they understand that it is more to their interests than ours that medical men should be thoroughly trained and well educated? These same people would never think of retaining an uneducated and incompetent lawyer to conduct a case when only their money or property was at stake, nor would they employ a poor mechanic to build their houses, or hire a worthless labourer who was incapable of doing the work intrusted to him. Yet they do not hesitate to put themselves under the care of and intrust their health and lives to those travelling charlatans who are without the slightest pretence to a thorough medical training (or as Dr. Campbell, one of the homœopathic members and vice-president of the Ontario Medical Council, puts it, "those uneducated, incompetent and dishonest persons who prey on the misfortunes of the sick and distressed: parasites on the profession and plunderers of the people"), and pay enormous fees and those in advance: such

fees that if any reputable physician should dare to charge the one-half his bill would be disputed. He would be called an extortioner, and his neighbours warned not to employ him. This is no exaggerated picture, therefore it behooves us as members of the Canadian Medical Association, having the welfare of the public at heart, to work together not only to elevate the standing of our profession, but to enlighten the public as to who are worthy of their confidence, and to warn them against the incompetent, uneducated and unlicensed men, as well as the registered quack who sells his license to some foreign institution and robs the deluded people who employ him of both money and health.

In speaking of reciprocity it has always appeared to me the height of absurdity that in this young country, made up of the different provinces and territories, confederated together under one general government, that in each of these provinces an educated medical man (already registered in one) should be required to pass an examination before being allowed to practice his profession on entering another province, or else be humiliated by being dragged before a magistrate and fined, or sent to prison. What a spectacle it would be and how injurious it would prove were the chief medical officer of one of our trans-continental or inter-provincial railways like the C.P.R. or G.T.R. be made to pay a fine for setting a fracture or amputating a limb for some poor unfortunate injured in an accident on one of these roads, outside the province in which the medical officer was registered; or in case of a suit for damages being brought against one of these companies in any province beyond the limits for which the chief medical officer's registration extended, what would be thought by the public if the court refused to hear his evidence because he was not a registered practitioner in that particular part of the country? Yet as the law now stands in some of the provinces he, in the first instance, could be fined, and in the second his evidence would be of no legal value. Under these circumstances I think it the duty of the Medical Councils of each province to consider this matter fully, and not only consider it, but adopt some means to remedy the evil, injustice and absurdity of the present state of things,

Let us, then, as members of this National Medical Association,

throw aside all minor differences of opinion as to provincial rights and use our influence individually and collectively to attain this object, and like the two great political parties unite, as they did twenty-five years ago, for the noble purpose of bringing together under one government the scattered provinces under the British crown in North America into one great Dominion, in whose capital we now meet, so let us assimilate, unite and bring together the different systems of medical education as now existing in these provinces, and form one great universal system with a standard so high that it will carry with it not only the respect and admiration of the people of this country, but secure the recognition it would deserve from the universities and medical councils of Great Britain and the continent; and just as Canada is destined to take her place among the most progressive and enlightened countries of the earth, so her sons, who are graduates of her universities and registered by her medical councils, shall take their stand among their confreres from the older countries in the world's medical congress and feel proud to be called Canadians.

THE TREATMENT OF TUBERCULOSIS.*

BY J. E. GRAHAM, M.D.,
Professor of Medicine, Toronto University.

Notwithstanding the great discoveries that have been made in the etiology and pathology of pulmonary tuberculosis, we have not yet found a specific remedy, nor are we able to cope more successfully with the disease in its advanced stages. Under these circumstances it is of the greatest importance that we should enquire into the best means of preventing the spread of the affection as well as of checking its progress in the individual at the very earliest period. Fortunately, in both of these departments great advancement has been made. I shall therefore devote a great part of this paper to a consideration of the prophylactic and hygienic management of pulmonary tuberculosis.

In looking over the literature of the disease, one is again reminded that advance in any science is often made rather by fits

* The Address in Medicine at the annual meeting of the Canadian Medical Association, held at Ottawa, September 21, 1892.

and starts than by a continuous rate of progress. After a discovery there is often a stand-still or a little retrogression, then a second advance much greater than the first.

It is somewhat surprising to read that the contagiousness of tuberculosis was well known in the time of Galen, and that Valsalva and Morgagni exercised great care in the dissection of tubercular subjects for fear of becoming infected.

During the latter part of the last century a rigid law existed in the north of Italy, whereby the clothing and bedding of a patient who had died of tuberculosis were destroyed by fire. Even in Portugal a similar law existed at that time. In 1782 the King of Naples made an edict compelling all patients suffering from tuberculosis to be sent to hospitals used for that disease alone. In Florence and other Italian cities the public were warned not to visit tubercular patients. In Germany, in 1780, Wickman declared that consumption was contagious.

It is singular that all this should have been forgotten, and that only after the most convincing proof of contagion, the result of bacteriological observation, are we now seriously attempting to prevent the spread of the disease from one individual to another. When in the more recent literature there are so many instances of the great benefit of sanitation, it is surprising that we should still hesitate to adopt vigorous measures. When we know that tuberculosis carries off a seventh part of the human race, that its ravages are certainly greater than those of any known disease, we should put forth every effort to stamp it out so far as that can be done. In Russia, during the present year, where the cholera victims have been numbered by the thousands, the tuberculosis will cut off also its thousands, and continue to do so year after year.

The general prophylaxis I shall take up under two heads: First, the destruction of the bacilli outside of the body; second, placing the individual in such a condition that he can successfully withstand the onset of the disease.

While we still continue to believe in the possibility of the direct transmission of the affection from parent to child, a belief which has been confirmed by the recent investigations of Schmolz and Birsch Herschfeld, yet statistics prove that in the

great majority of cases the virus is conveyed either through the air, by food, or by direct inoculation, and that its transmission through the air in the form of dried particles of sputum is by far the most frequent way. The bacilli do not grow outside of animal products. The disease is rarely if ever communicated by inhaling the breath. It is therefore only necessary to properly dispose of the sputa.

Aronson stated that in the orphanage at Nürnberg there are a large number of children hereditarily predisposed to tuberculosis, but that by attention to cleanliness, ventilation, and outdoor exercise, not a single case of that disease has occurred during the last eight years.

In the Johns Hopkins Reports, an instance is given of a child four months old in whom tuberculosis developed after the family had lived in a room in which a tubercular patient died three weeks before.

One of the most remarkable instances of house infection is given by Engelmann, who relates the history of a dwelling which for eight years after its erection remained free of tuberculosis. Then two of the inmates died of that disease after some months illness. From that time onward for the period of twelve years the dwelling was inhabited by a number of different families in succession, and was scarcely at any time free from consumptive patients. Thirteen fatal cases occurred in the twelve years.

Marfour gives the history of an epidemic in an office in Paris. Thirteen of the clerks died in four years. He attributed the succession of cases to the practice of spitting on the floor.

A startling account of an epidemic of tuberculosis was given at the Paris Congress of 1890. Of 35 workmen in a certain factory, 27 suffered from tuberculosis; 4 had the disease previous to admission, and 23 became affected in the factory. The period of incubation was two months.

An illustration of the great benefit of attention to general sanitation is given in the history of the Laiback Prison as related by Dr. Keesbacker. The rooms were damp, badly ventilated, and overcrowded. The building itself was old and a favourable place for the development of tuberculosis. The prisoners were required to work hard and had insufficient food. Previous to

1884 a large number of the prisoners died of consumption. During 1884 the whole prison was cleansed and disinfected, and means for proper ventilation were introduced. The prisoners were compelled to use spittoons, which were plentifully provided and partly filled with a disinfectant solution. At the same time the work was somewhat lessened; and some improvement was made in the character of the food. The percentages of deaths during the following years afford a positive proof of the great benefits arising from the changes made. In 1884, 8.12 per cent.; 1885, 5.12; 1886, 2.98; 1887, 3.58; 1889, 2.18.

It is true that instances have been reported of prisons where improved sanitary conditions were not followed by a lessening of the mortality from tuberculosis. In these, however, some other circumstances may have influenced the result.

A consideration of these examples at once leads us to the question, Should not our sanitary boards take more decided steps in the prevention of this disease? Why should not all cases of tuberculosis be reported in the same way as scarlatina or typhoid fever? Why should not our health authorities inspect those houses in which consumptive patients live, to find out the cause of the disease, and to so instruct the family as to prevent the infection of other members.

An objection has been raised that if such measures were carried out the patient's life would be rendered intolerable, as he would be shunned by his own relatives. In my opinion the very reverse would be the case. There exists at present among the laity a very exaggerated idea of the contagiousness of consumption, as well as a good deal of unnecessary fear. If the public were made aware that with precautions easily taken there is little or no danger, such fears would be allayed.

Spittoons partly filled with a disinfectant solution should be provided in our public buildings, in street and railway carriages, and especially in the state-rooms of ocean steamers. The existence of dried expectoration upon the street does not seem to be a source of danger, as Cornet (6) has shown that the disease is not prevalent among those who work constantly on the streets. Pocket spittoons, such as that invented by Dr. Dettweiler, should

be carried by phthisical patients. The inspection of milk and other articles of food should be insisted upon.

The further discussion of these sanitary measures I shall leave to the department of public health, and proceed with the prophylaxis as it comes under the immediate attention of the general practitioner. We shall now consider the prevention of tuberculosis in those who inherit a predisposition to the disease.

As before stated, well authenticated cases go to prove that tuberculosis may be directly transmitted from parent to child. There are many instances of the presence of the disease in the brain, in joints, etc., when no avenue of infection from without can be discovered. The frequent presence of tuberculosis in sucklings, as found by Frœbelins, 416 out of 15,581, and the fact that Birsch Herschfeld was able to inoculate animals, and successfully produce tuberculosis, with a portion of the viscera of a fœtus in which no bacilli were found, are very significant. The statistics of Vignal, however, point in the opposite direction. At the Paris Clinique d'Accouchement, for eight years, post-mortems have been made in all cases of death of fœtus or fully developed children. Tuberculosis has never been found, and no successful inoculation has ever been made. The same results were obtained experimentally. The baby guinea-pigs of tubercular mothers were never found to be affected. I quote the following statistics as given by Dr. Osler in his recent work: "Although, in the Berlin abattoirs for some years past, 13 per cent. of the animals slaughtered were tubercular, out of 15,400 calves killed only four were found similarly diseased."

Taking it, however, for granted that in all of those cases of hereditary taint the disease is directly transmitted, a conclusion which is not at all warranted by the facts, we have still nearly half of the cases to be accounted for. Hereditary taint is found in a little more than half of all cases. To the former the disease must have been conveyed from without. The facts, however, prove that in the great majority of cases the tendency to the disease is transmitted and not the affection itself.

Although I am quite of opinion that there is urgent necessity for the adoption of such rules as will result in the destruction of

the bacilli outside of the body, or prevent them from being taken into the lungs, yet, from the very nature of the case, we cannot hope in that direction to be more than partially successful. It is therefore necessary to so strengthen and fortify the system that it can successfully withstand the attacks of the bacilli.

It is one of the most important duties of the family physician to thus shield predisposed persons as much as possible.

An individual is not able to choose his own parents, but he can very often so choose his occupation and place of residence as to remain free from the successful attacks of his great enemy. During childhood such persons should live in the open air as much as possible, should sleep in well ventilated rooms, and should eat good wholesome food which can be easily digested. In infancy they should not be nursed by their mothers. The dwellings should be bright, well ventilated, and free from emanations from the soil.

During convalescence after measles, whooping-cough, as well as all debilitating diseases, great care ought to be taken to avoid lung complications, and if these occur, to see that they quite disappear.

A regular system of lung gymnastics might be with benefit recommended. The apparatus made for that purpose in Boston, and which I saw in use in Davos, is the best. It is probable that the pulmonary apices are first affected owing to the lessened expansibility of the chest in that neighbourhood. Lung gymnastics are of no use, and perhaps do harm, when the disease is advanced. In latent cases, and certainly as a prophylactic measure, they have been found of great service.

Many of these directions, particularly as to out-door life, can be best carried out in a mild, equable climate, and persons predisposed to consumption ought, if possible, to make their home in such localities. Perhaps the most important question is the nature of the trade or occupation to be followed. Dr. Herman Weber, at the International Congress in Berlin, gave the history of a family which presents many facts of great interest touching upon this point. Many of you have no doubt already read this account. A teacher of languages and his wife both died of

tuberculosis while under Dr. Weber's care. Of the seven children, one had already died of tubercular meningitis. The other six were healthy with the exception of the youngest, who had rickets. Of eleven cousins of these children, nine died of phthisis before the twenty-eighth year. It will thus be seen that the prospect of these children could not well have been more gloomy. They were sent into the country and there brought up with great care under the doctor's instructions. Now, what was the result? The eldest son, up to his twenty-third year, so long as he lived largely in the open air, was healthy and strong. He then became a hard student, working night and day, having his meals in his rooms, and taking very little exercise. In eighteen months afterwards he died of rapid consumption. The second son was a farmer, and remained healthy until his twenty-ninth year. He then became tired of the monotony of country life and went into a mercantile house, where he was engaged for many hours each day in an office. He worked hard at his books in his own room during the evenings. After two years he had repeated hemorrhages, and in two years more he died of tuberculosis. The third son entered the cavalry service and is strong and healthy. The youngest son is now living and healthy, a farmer in Manitoba. The fourth, a girl, became the wife of a country clergyman, and is still quite healthy. The sixth, also a girl, lives with her brother in Manitoba. She is strong and healthy.

Could any statement of facts give stronger evidence of the importance of choosing a profession or trade? In these cases it does not matter which view is taken; whether the disease or simply the tendency is transmitted, the results are the same. The callings which are especially to be avoided are such as compel individuals to remain in close, ill-ventilated rooms, to work in a dusty atmosphere, or to live in a large, densely-populated city. To be chosen are those callings in which a great part of the time is spent in the open air, and which do not require too great mental or physical strain.

It naturally often occurs that those predisposed to tuberculosis are placed in special danger on account of one member of the family having the disease. Under such circumstances it may be feasible to send some of the more delicate ones away from home.

I had once a family under observation in which all the children except two died of consumption. These two left home after the first death, went on a farm in the northern part of Ontario, and still remain healthy.

The greatest care should be taken that proper spittoons be used, and that the sputa should be destroyed. It is said that six million bacilli exist in one expectoration, and according to Koch, eight hundred are necessary for a successful inoculation. During the past two years I had under observation a young girl suffering from tuberculosis. Her mother, contrary to instruction, washed the pocket handkerchief used by the patient for the expectoration. She thus contracted sores upon her hands which never entirely healed, no doubt due to local infection, and at the same time the lungs became diseased.

There is no doubt, too, that the patient can re-inoculate himself by carelessness in the disposal of the sputa, and this selfish consideration will often make him more careful when it is fully explained to him. The urine and fæces are seldom, if ever, the source of infection, but, for general sanitary reasons, ought to be properly disposed of. Bacilli have been found in considerable numbers in the perspiration. These adhere accidentally to the skin, as they are not found when the surface has been washed by a disinfecting solution. The frequent bathing of a consumptive patient is therefore of great benefit, not only to the patient himself, but also to those around him. He should occupy a bedroom by himself, which should be thoroughly aired and periodically disinfected. Kissing patients upon the mouth ought to be avoided. With thorough cleanliness, destruction of the sputa, and attending to the general measures spoken of, there is, in my opinion, little danger of the disease spreading from one to another member of the same family.

That nurses become under ordinary circumstances affected is strikingly shown by Comet's statistics. Of a hundred whose histories could be obtained, sixty-three had died of tuberculosis. Further, Comet's experiments of inoculating animals with the dust of hospital wards in which a large number of consumptive cases were treated, are also suggestive. He found that when spittoons were properly used and the sputa destroyed, he was

not able to make a successful inoculation, although he made over seventy trials, and that when no precautions were taken he was very frequently able to make successful inoculations.

This leads up to the question, Should tubercular patients be treated in the wards of a general hospital? Yes, if proper precautions are taken. They are, however, a source of danger to other patients when all sanitary regulations are neglected. Many fatal cases of tuberculosis have no doubt originated in the wards of the hospital.

Before proceeding to speak of the treatment of tuberculosis in the incipient stage, I shall refer to our definition of that disease. Are all cases of phthisis pulmonum cases of pulmonary tuberculosis? Can we have a disease accompanied by cough, fever, night sweats, and breaking down of the lungs, in which the bacilli are not found, and in which the pathological process must be due to some other agent. It is my opinion that such cases do occur, but they are so few compared with the whole number that their existence is not practically of great importance, certainly not so numerous as to lessen our belief that the bacilli are generally the cause of phthisis.

In recent lectures on fibroid phthisis, Sir Andrew Clark has fairly proved the existence of such cases. I was assured by the physicians at Davos and other establishments for the cure of consumption, that they occasionally met with such cases and that the absence of bacilli is an important point in the prognosis.

Dr. Gabrylowicz, a Russian physician of extensive experience, in an article on the cause and therapeutics of consumption, was able to give only nine fatal cases in whom no bacilli were found, either during life or on post-mortem examinations. He also gave five cases of apparently healed phthisis in which no bacilli were found in the sputa.

It is possible that in some of these cases the bacilli exist in very small numbers, as in lupus, and they are thus not easily detected. A case of some interest in this connection occurred in my own practice. An elderly lady consulted me with regard to her lungs. I found positive signs of extensive induration in the lower and back part of one side. On informing the patient of what I had found, she assured me that Dr. Howard of Mon-

treal had discovered a similar condition eight years before. A sad, but somewhat interesting fact is, that three years ago her daughter, aged 20, was attacked by tuberculosis and rapidly sank under it. It is possible that in this case we have an example of very chronic tuberculosis, and while the mother still lives, she has already communicated the disease to her daughter, or is it, on the other hand, a case of non-tubercular phthisis.

It is possible that some of these cases may be really of syphilitic character. Last winter a patient entered under my care in the Toronto General Hospital, in whom a diagnosis of tuberculosis was made, although no bacilli could be found in the sputa. After some weeks she was put under anti-syphilitic treatment, and immediately began to gain weight and steadily improved.

While at Davos this summer the history of a case was related to me of a young man who came there with every evidence of tuberculosis. Bacilli were found in great numbers in the sputa. The upper part of one lung as far down as the fourth rib was involved, and yet in four months the bacilli had disappeared; the lung seemed healed, and the young man went away apparently cured. This case may, perhaps, be partly explained on the supposition that a catarrhal pneumonia surrounded the tubercular deposit.

Then, again, we must remember that pulmonary tuberculosis is a mixed disease and not the single process which is seen by experimentally inoculating animals. As Comet has recently shown, in his paper read at Leipsic, several different forms of pathogenic bacteria are present in the contents of cavities and in the surrounding tissues. We have therefore to deal with a chronic septic condition in addition to the tubercular process.

Then, again, blood poisoning from the absorption of toxic agents and from imperfect æration must also be taken into account.

When we have discovered pulmonary tuberculosis in its incipient stage, the general regime should be our first consideration. If circumstances render it at all possible the patient should at once be placed under the open-air treatment. There are several methods whereby this may be accomplished, and we shall discuss them in the following order:—

1. High altitude resorts for winter and summer.
2. Special hospitals for the treatment of consumption either on the higher elevations or on lower planes.
3. Southern climates which have a fairly even temperature.
4. The open-air treatment as it can be conducted at home.
5. Sea voyage.

The main features of a mountain resort are (low atmospheric pressure) : (1) The rarity and purity of the atmosphere. (2) Freedom from winds. (3) Dryness of the air. (4) The great amount of sunshine. On account of the rarity of the atmosphere greater exertion in breathing is required as well as greater expansion of the lungs. If the patient does not take too much exercise at first, this extra draw upon the lungs seems to have a beneficial effect even in cases of active disease, and is only of disadvantage when there is not sufficient healthy lung remaining to perform the respiratory act without risk of rupturing the air cells and thus producing emphysema. From my observation, I think that patients are not always sufficiently guarded on this point, and take too much exercise at first. The rarity of the air facilitates radiation and permits the transmission of the sun's rays without intercepting them. In the winter snow does not melt so rapidly and the air is consequently drier. At the same time the heat of the sun is so great that patients can comfortably sit or lie for hours in the open air in mid-winter, so long as there is no wind. The radiating thermometer at Davos will show 100° to 110° in the sun when it is 16° below freezing in the shade.

1. The purity of the air on the mountains is well known. Scarcely a single microbe could be found in a cubic metre of air at the summit of Mount Blanc. This is a matter of great importance to consumptive patients. Foreign particles, whether germs or of inorganic character, increase the irritation in the bronchi. I was told by a gentleman at one of the health resorts of Europe, who had a very extensive experience in the examination of sputa, that he has examined the expectoration of a patient taken early in the morning and found no carbon particles, and that after the patient had taken a two hours' walk the doctor found particles of carbon imbedded in the mucus. All such foreign bodies, although they may not pass further than the

bronchi, lessen the resisting power of the cells. Again, the septic processes already spoken of must be set up by germs introduced from without.

2. The stillness of the air which is observed in sheltered mountain resorts is of great advantage, as on account of it patients can remain out of doors at a temperature which they could not endure if there was wind. It is noticed at Davos, as well as other places, that the occasional presence of wind completely changes the surrounding conditions.

3. The dryness of the air seems to exert a favourable influence. This, however, is not essential, for, as Dr. Osler asks, why should such good results be obtained at those resorts on the south coast of England? It is, however, generally admitted that, other things being equal, a dry air is more favourable than that containing moisture. The apparent discrepancy of views on this subject of the effect of dry and moist air has not yet been explained, at least to my satisfaction. The great amount of sunshine in mountain resorts is, without doubt, a very important feature. It has been shown that tuberculous rabbits will live much longer in the sunshine than in dark rooms. In this respect resorts on this continent ought to have a great advantage over those in Europe. Leysin-sur-Argle, in Switzerland, enjoys perhaps the greatest average amount of sunshine of any similar place on the Continent—over five hours each day in the winter time, and seventy-four clear days between December 1st and March 32st, 1887.

The composition and structure of the earth's surface has an influence upon the condition of the patient. It is generally conceded that those situations are the best where the rocks, granite, for instance, come near the surface, and where there is little vegetable mould.

It is safe to say that, as a rule, a consumptive patient in the early stage, when under strict medical supervision, has a better chance at a high altitude than under any other conditions. This is not on account of the bacilli ceasing to grow merely because of the high altitude, but that the surrounding conditions are the best for restoring the general health of the patient, and placing him in a position to overcome the disease. It has cer-

tainly been shown that the bacilli not only grow but are conveyed to previously healthy people at Davos, and tuberculosis has been found at much higher altitudes, as in Mexico and in the Himalaya mountains.

Now, the class of patients suitable for such treatment are those (1) in the earlier stages of the disease, when sufficient sound lung remains to perform the respiratory function with ease under the changed circumstances; (2) when the other organs have not been deranged by the toxic agents found in the blood of consumptives; (3) when there is sufficient vitality to withstand the greater strain. It is difficult in many cases to draw the line, and often nothing but a stay for a few weeks will demonstrate their suitability for such treatment. Then, again, the care with which patients are treated when in health resorts is a very important consideration. On this account I am strongly impressed with the value of the sanatorium, where the patient is under the immediate observation of the physician.

The cases which should not be sent are (1) those in the advanced stage, when the amount of healthy lung is insufficient for the respiratory function; (2) when the blood is, to a great extent, poisoned from septic absorption or want of æration; (3) when other organs have become affected, either from the toxic agents in the blood or from further invasion of the bacilli; (4) excessively nervous patients; (5) those having complications, as Bright's disease, diabetes, or cardiac disease.

Now what is the process of cure at high altitudes?

1. Digestion and assimilation are at once stimulated and the general nutrition much improved. It is remarkable how soon the appetite increases and the patient gains in weight after a few weeks residence at Davos. This is no doubt largely due to the great number of hours each day the patient is able to remain out of doors, as well as to increased oxygenation of the blood.

2. The rarity of the atmosphere causes greater expansion of the lungs, which, as a prophylactic measure, is excellent, and is beneficial even when the disease is somewhat advanced.

3. The dryness of the air has an excellent local effect, which has frequently been observed by physicians at such health resorts.

4. Owing to the thinness and clearness of the air, the sun's

rays are easily transmitted without losing heat. The rays, therefore, exert a greater effect on the body.

I will now take into consideration the utility of special hospitals for the treatment of tuberculosis, whether these are situated at high altitudes or near the sea level. Dr. Turban's sanatorium at Davos, and Dr. Dettweiler's at Falkenstein, are examples of each of these. The former is over 5,000 feet and the latter about 1,000 feet above the sea level. They are built and conducted in much the same way. These institutions are so situated that the front is towards the south, and they are protected on the north side by mountains and forests. A deep balcony or verandah runs along the whole front of the building, which is well supplied with curtains to be used in unfavourable weather. The patients are placed under a strict regime. The main features in the treatment are life in the open air, rest, and careful attention to diet. Each patient takes the full amount of food which he can digest and assimilate, and such articles are selected as will supply in full quantity each of the essential constituents. A regular course of douching and massage is also prescribed in suitable cases. The patients are expected to take exercise, at Davos, from half an hour to three hours each day. In the great majority of cases this is confined to walking on the level and afterwards along slightly ascending parts. At Görbersdorf, exercise is a much more important feature, while at Falkenstein very little is permitted. The patients spend the greater part of the day, from eight to ten hours, on the balcony resting, either partly sitting up or in a recumbent posture. The bedroom windows remain open all night throughout the winter. It will thus be seen that, except during meals and the hours of treatment, the patient really lives in the open air. The amount of rest enjoined at these institutions is often very trying, and, I think, might be modified to suit the various habits of the patients.

The sanatorium at Falkenstein was founded in 1877, and in 1886 Dr. Dettweiler published statistics of 1,022 patients. Of these 132 had been sent out as cured, and 110 as apparently cured. Of the former cases, 72 who answered the enquiries were all in good health from three to nine years after they left the hospital.

This plan of treatment is much more easily carried out at high elevations than near the sea level, but the success which has been obtained at Falkenstein demonstrates the utility of such an institution in an ordinary flat country.

Then, again, the sanatorium at Halda, Finland, proves that they can be conducted successfully in cold countries.

The success of the cottage hospital at Saranac Lake, as shown by Dr. Trudeau's reports, ought to encourage us in greater efforts in this direction.

My observations have confirmed me in the belief that in our own country, in a majority of cases, patients would be much more successfully treated in hospitals especially adapted for the purpose than at their own homes. I also think that if favourable situations were selected and careful meteorological observations made, some locality in the Western territories, for instance, possessing the necessary climatic conditions could be found.

I have noticed for years that during the summer months patients do exceedingly well in Muskoka, where they live most of the time out of doors. In fact, I have seen much greater improvement there than in many of the southern health resorts.

A question of great importance arises here. Can such hospitals be so conducted as to prevent the spread of the disease to the attendants, as well as the reinfection of the convalescent? From observation as well as from statistics, I am of opinion that such can be done. With the open air treatment, destruction of the sputa, bathing and periodical disinfection of the rooms and furniture, there is little if any danger of spread of the disease.

For charity patients a special hospital is, in my opinion, a necessity, if we ever expect to be able to check the progress of consumption. The advantages of hospitals are: 1. The patient is always under medical supervision, both with regard to food and exercise. 2. Any medical treatment can be carried out with greater regularity. 3. The patient is thus placed in the most favourable condition for recovery, and is at the same time no longer a source of danger to his relatives. If, however, such hospitals existed, fitted up for the wealthy as well as for the poor, one would naturally expect that a very large number would prefer to remain at home. Consumptive patients are, as a rule,

very fond of home, and often fret when removed from it. It has occurred to me that a somewhat modified outdoor treatment might be conducted, especially in farm-houses, which are, as a rule, in this province, large and comfortable. The patient could have a bedroom with a southern aspect, and sleep with the window open, so long as the temperature within was carefully regulated. A deep balcony might be erected on the south side, but not overshadowing the bedroom windows, where he could remain for hours together during the winter, as well as throughout the whole summer. At the same time a system of douching and massage could be adopted and the diet carefully regulated.

Perhaps, while listening to these remarks, those of you who have been educated in the Toronto School of Medicine will be reminded of the advice so emphatically given by Dr. Aikins upon the subject of fresh air. This system of treatment of tuberculosis which is now becoming more and more in vogue, both in Europe and America, is nothing more than the carrying out of methods for so many years advocated by Dr. Aikins.

Dr. Flint, in one of the older editions, speaks of patients sleeping in the woods in the open air in California, and the same plan has been pursued with benefit in Germany. The open-air treatment in warm climates, at or near the sea level, such as that of Florida, Southern California, Algiers, and the south of France, ought to be reserved for those patients with advanced disease, or of poor constitution, who cannot endure the strain of high altitudes or cold air, as well as for those in the incipient stage, who for other reasons cannot live on the mountain. There is a relaxation produced by the heat which is in strong contrast to the bracing effect of cold. In many cases, however, life is very much prolonged by residence in such climates.

Frequently too little care is exercised in sending patients away for their health. I have made it a rule not to send a patient away unless he can afford to procure the same comforts as at home. A tuberculous patient should not be sent alone unless he goes to a sanatorium. It is of advantage to send incipient cases to a country such as Colorado, where they may contrive to live after the disease has been checked.

The diet of patients ought to be carefully regulated so that

the amount of fats and carbo-hydrates should be somewhat increased in proportion to the albumens. It is often of benefit to consult diet tables showing the composition of the various kinds of foods, so as to choose that which is most nourishing. Milk and cream are always at hand, and in them the various principles are nearer the proper proportions than in any other.

It is, of course, absolutely necessary that food should be properly cooked, and here physicians experience great difficulty in the treatment of phthisis as of other diseases. It is sad to be compelled to confess that in our own country, both in rural districts and in cities, the preparation and cooking of food among the masses is very much inferior to what it ought to be. Prof. Goldwin Smith has truly said that pork and pie are two great hindrances to popular progress in Canada. I have no doubt that in many instances fatal diseases become seated on account of weakness of the constitution, the result of living on improperly cooked food.

No specific has yet been discovered for tuberculosis, and it is doubtful if at any future time a remedy will be found which will more than mitigate the effects of the disease when it is in an advanced stage. The treatment by Koch's tuberculin has now been almost discontinued. Dr. Leo Berthensar, of St. Nicholas Hospital, St. Petersburg, has given, in a recent number of the *Deutsche med. Wochenschrift*, the results of his experience in the management of thirty-five selected favourable cases. The treatment was continued five months. I shall quote some of the conclusions, as they are among the most recent given.

1. The diagnosis of tuberculosis by tuberculin is not always certainly made.

2. The possibility of curing tuberculosis by tuberculin has not yet been established, but there is often an increase in weight and an improvement in the chest symptoms.

3. There is no certainty with regard to the duration of the improvement.

4. It is a very dangerous remedy in cases of well-developed tuberculosis. It may increase the local conditions in the lungs, or produce inflammation and destruction of tissue, which may be dangerous to life.

5. On account of the danger attending the use of tuberculin in advanced cases, it should be limited to those in the incipient stages.

6. Even in the latter its use demands the greatest care, as it may produce local congestions in the internal organs.

7. It ought to be given at first in very small doses, and increased with great care.

8. He would not advocate its use by the general practitioner until its indications and contra-indications were better understood.

9. By choosing the patient and by careful administration, there is but little danger in the use of tuberculin.

My own experience with tuberculin is confined to about half-a-dozen cases which I had under my immediate care, and about a dozen under the care of my colleagues in the hospital. Of my own cases the results were not satisfactory. In two there was a temporary improvement.

Dr. S. Botkin of St. Petersburg has recently reported the result of his observations on the blood of patients who were being treated by tuberculin. He noticed (1) acute leucocytosis; (2) rapidly diminishing number of white corpuscles after the fever has subsided,—changes analogous to those found in pneumonia and some septic conditions.

Tuberculin is no doubt a virulent poison which ought not to be used under the present circumstances. That it possesses curative properties is well shown in some cases of lupus and incipient pulmonary tuberculosis. It is probable that after further investigations, tuberculin may be so modified as to be given with safety in incipient cases.

Dr. Carl Spengler of Davos reports cases treated with a mixture of Koch's and Klebs' modified lymph. Good results were obtained without the production of the reactionary fever. Some favourable reports of cases treated by Hunter's modification have also been published. Whatever may be the future of tuberculin, it is safe to say that it will never have a curative effect on advanced cases of disease. The bacilli being the chief cause of irritation, and existing so deep in the tissues, no remedy can be introduced to destroy them which will not be dangerous to life. In this respect tuberculosis differs from such diseases as tetanus,

in which the symptoms are produced by a toxic agent, the result of the local growth of bacteria.

A mere enumeration of the internal remedies is the strongest evidence of the obstinate and fatal character of pulmonary tuberculosis. The following agents have been recommended for use by inhalation: Sulphurous acid, sulphuric acid, carbolic acid, hydrofluoric acid, oxygen, ozone, calomel in finely divided powder, creasote, iodine, etc. The administration of sulphuretted hydrogen by the rectum, Weigert's system of the inhalation of dry heated air, Krull's treatment by heated vapour, have all had their day. Hypodermic injections of cantharidate of potassium, iodide of gold, serum of dog's blood, goat's blood, with Brown-Sequard's fluid of the testicles, cabinets with rarefied air and condensed air, have been tried and found wanting. The internal administration of cod liver oil, creasote, Ginarol's carbolic acid, carbonic acid, iodoform, and hypophosphites; the surgical treatment, disinfection of cavities, local injection of iodine, have all to a large extent failed.

In glancing over the literature of the therapeutics of tuberculosis, one is struck with the fact that, under every new plan of treatment, no matter how unreasonable, cases are reported at first in which good results have been procured, such as increase in weight and amelioration of chest symptoms. This is no doubt largely due to the effect made on the mind of the patient. Some years ago I treated several cases in the hospital by Bergeron's method—rectal injection of sulphuretted hydrogen. All the patients expressed themselves as feeling better.

The treatment by Weigert's method of having the patient respire heated dry air was instituted on the ground that bacilli cannot exist above a certain temperature, and he hoped to destroy them by heating the tissue in which they were imbedded. Koch has shown that bacilli grow best at 37.5°C ., are weakened at 38.5° , cease to grow at 42° , and cannot exist above that temperature. It has, however, been found impossible to raise the temperature of the lung tissue in this way to any appreciable extent, and that during exercise or forced breathing the temperature can be varied to a greater degree than by such form of inhalation. More can be accomplished by Krull's method of inhaling steam

heated to a certain degree. It is extremely doubtful if the temperature of the lung tissue can be sufficiently raised or maintained long enough to have any effect upon the life of the bacilli.

Cod-liver oil has no doubt been too often prescribed without reference to the conditions of the stomach, and has then in many cases done more harm than good. I cannot, however, agree with those who say that it is of no use except as a food, and that other fatty foods much more pleasant to the taste may be substituted for it. When it can be readily taken and digested, it exerts a beneficial influence in phthisis much greater than can be accounted for on the ground that it is simply a food, and notwithstanding all the measures which have of late years been recommended, it still, in my opinion, occupies a prominent place in the treatment of the disease.

The remedy which at present promises the best results is creasote. This drug was discovered in 1832 by Reichuback, and in 1877 it was recommended by Bouchard and Gunbert for phthisis. Dr. Summerbrodt of Breslau has recently confirmed his former views, and after thirteen years' experience is quite convinced that creasote exercises a curative effect upon pulmonary phthisis. He emphasizes the importance of large doses and a long continued use of the remedy. He prescribes capsules of $\frac{3}{4}$ m., creasote with balsam of tolu, or cod liver oil. Of these he at first gives three a day and increases the number to twenty. Very often when it does not agree at first, by perseverance the stomach becomes more tolerant. My own experience with creasote has been favourable. It is difficult, however, to maintain its continued use. I have not used guaiacol, nor have I tried the recent Shurley Gibbs' method of administering calcium hypsulphite.

My time does not allow me to consider palliative measures. Two circumstances ought to encourage us in the treatment of this obstinate disease. 1. The great number of cases of healed tuberculosis as demonstrated by the post-mortem room. Osler found evidence of such present in 7.5 per cent. of those persons who died of diseases other than phthisis. Bouchard makes the statement that in 75 per cent. of the sections at the Paris morgue some signs of previous disease had been found. In many cases,

too, there had been a complete cure, as no cultivation nor successful inoculation could be made from the nodules. It is also a common fact that in some instances where bacilli have been found, they will neither grow nor produce the disease in animals. 2. Many physicians of long experience can point to cases of complete cure. These facts ought to impress us with the importance of making an early diagnosis, so as to place the patient under the most favourable conditions possible, and at the same time ought to stimulate us in the discovery of new and better methods, so as to still further reduce the number of unsuccessful cases.

Retrospect Department.

QUARTERLY RETROSPECT OF SURGERY.

BY FRANCIS J. SHEPHERD, M.D., C.M., M.R.C.S., ENG.

Surgeon to the Montreal General Hospital; Professor of Anatomy and Lecturer on Operative Surgery, McGill University.

Angina Ludovici.—This disease is of somewhat rare occurrence, and although alluded to previously by various authors under various names, such as cynanche cellularis, angina externa, gangrenous cellulitis of the neck, etc., etc., it remained for Ludwig of Stuttgart to first give an accurate account of this very fatal affection. (*Medicin. Intelligenz Blatt.*, No. 4, 1836.) Ludwig called it "a new kind of inflammation of the cellular tissue of the neck." Mr. R. W. Parker, in the *Lancet*, October 18th and 25th, 1879, has an interesting account of angina Ludovici, an affection which is not alluded to in most of the textbooks on surgery, and not mentioned in such a complete work as Heath's Dictionary of Practical Surgery, or Buck's Reference Handbook of the Medical Sciences.

In Ludwig's original account, for which I am indebted to Mr. Parker, the disease is described as one setting in with high fever, rigors, much depression, and difficulty of swallowing; then "there develops sometimes on both sides of the neck, more generally on one, a hard swelling in the tissue surrounding the submaxillary gland." This cellular induration spreads first towards the chin even to opposite side, then down to the larynx

and back to the parotid gland, and at the same time the swelling increases considerably. It involves all the intermuscular planes and the muscles themselves between the mouth and hyoid bone. The tongue rests on a floor of hardened tissue, deeply congested, which lies like a bolster in the mouth. Opening the mouth is difficult, and the power of speaking and swallowing much interfered with. During the four to six days this is going on, the general health does not seem to suffer. The fever is moderate and the symptoms of no intensity. Now the skin over the swollen part begins to get red, and masses of phlogistic lymph appear in the mouth; the swelling gets softer and pits on pressure, then a spot softens either on the floor of the mouth or below the side of the jaw and discharges a stinking, greyish-red fluid. As soon as this breaking down process, which is a species of gangrene, sets in, symptoms of general constitutional implication quickly show themselves, the fever increases, profuse sweatings, with sleeplessness and slight delirium are a marked feature. The tension of the inflamed parts increases, swallowing is more difficult, and attacks of dyspnoea come on usually in paroxysms, calling sometimes for immediate tracheotomy. In four or five days the patient dies in a typhoid condition. The inflammation of the cellular tissue frequently extends into the anterior mediastinum. In many cases the duration of the disease is much shorter, the patient dying in three or four days. This affection is said to occur at times in an epidemic form.

As the inflammation is situated beneath the deep fascia of the neck, an early and free incision is the only treatment, as by this means gangrene is prevented and the disease arrested before it reaches the anterior mediastinum. The phlegmonous character of the inflammation has lately led some of the French surgeons to deny that this is a special disease, and they name it merely *sub-hyoid phlegmon*.

There has recently been an extended discussion on the subject at the July meetings of the Paris Société de Chirurgie. M. Simon (*Semaine Médicale*, 1892, pp. 212, 284, 292-298) reports a case where the disease spread to the anterior mediastinum and cure resulted from trephining the sternum. In the dis-

cussion which followed, M. Nélaton held strongly that all these cases originated from a septic focus, more frequently a diseased tooth, often from the wisdom tooth, and regarded all these cases as examples of severe sub-hyoidean phlegmon and not a special disease, as described by Ludwig. M. Delorme mentioned several cases which had been sent into hospital under him as sub-hyoid phlegmon in all of which incision in the median line failed to reveal pus, yet on incising each mylo-hyoid muscle a pocket of pus was found between this muscle and the lower jaw. M. Verneuil looked upon Ludwig's angina as a specific infective angina, and related three cases in support of his contention, two of which proved rapidly fatal, although free incisions were made early. All these cases occurred in previously healthy individuals, and were characterized by fixation of tongue, rapid œdema, and high fever.

The cases described by most of the speakers in this discussion were those usually seen following a carious tooth or an inflammation due to some difficulty in the eruption of the wisdom tooth. Every surgeon meets many such cases of sub-hyoidean phlegmon, but these are not the cases to which the name *angina Ludovici* has been given. In the latter the œdema is a marked feature, and there is early dyspnoea with profound constitutional disturbance. In making incisions, a foetid, thin, sanious discharge appears, but no true pus, and the patient, as a rule, rapidly succumbs to the profound sepsis caused by this disease. The dyspnoea frequently calls for tracheotomy, which affords only temporary relief. It seems to me that in this "fulminating" form of phlegmonous inflammation, and which is occasionally epidemic, we have a distinct form of angina, if not a distinct disease,—differing much from those phlegmons of the subhyoid region due to decayed teeth. The results of free and deep incisions in these latter cases are always favourable, and even if pus is not reached, relief is afforded.

Surgery of the Liver and Gall-bladder.—The most important surgical discussion which took place at the recent meeting of the British Medical Association was on the above subject. It was opened by Mayo Robson (*Lancet*, Aug. 6, 1892), who based

his conclusions on seventy cases of operation and on many others in which no operation was performed. In speaking of injuries to the liver attended by severe hemorrhage, he said they can be successfully treated by exposing the injury by abdominal incision and plugging the liver wound with iodoform gauze; afterwards a drainage-tube should be inserted and the external wound closed. When abscess has been found by exploratory needle, the liver should first be sewn to the parietal peritoneum before opening the abscess cavity, and where this is not possible, the abscess should be evacuated and carefully packed with iodoform gauze. Free drainage is here the secret of success. Subphrenic abscesses he opens through the lower intercostal spaces.

Mr. Robson had operated on no less than fifty cases of cholelithiasis with a mortality of three cases only, and each of these had been complicated by malignant disease. None of his simple cholecystotomies had died. He thought the operation where the gall-bladder was sewn to the external wound was a better operation than the ideal one in which the opening in the bladder was sutured and the bladder returned into the abdominal cavity. When it becomes necessary to open the cystic duct, suture of the opening to the parietal peritoneum or the introduction of a large drainage-tube are the best procedures.

Mr. Lawson Tait entirely agreed with the views enunciated by Mr. Robson. He said hepatotomy was a safe operation if performed early enough, but resection of the liver for cancer had no sympathy from him. In his operations for gall-stones, death had only occurred in those cases where cancer was present. Mr. Tait presented a table of cases which showed 21 exploratory incisions with 4 deaths, 18 hepatotomies with 2 deaths, and 71 cholecystotomies with 4 deaths,—about 9 per cent. of deaths in all operations.

Mr. Jordan Lloyd called attention to the importance of diagnosing before operation, not only the presence, but the exact locality, of the gall-stones, for the reason that the dangers of cholecystotomy depend more on the position than the size and number of the stones. It is a safe operation so long as the stones can be removed through the opening made in the gall-

bladder ; but if the common duct has to be opened, the risks of the operation are enormously increased. Hepatic colic without subsequent jaundice and without a tumour as a rule locates the stone strictly within the gall-bladder. Hepatic colic without jaundice, but with subsequent tumour, locates a stone within or at the mouth of the cystic duct. Hepatic colic with ague-like paroxysms, rigor, high temperature and sweatings, followed by jaundice, locates the stone in the common duct. If a tumour be not present, the gall-bladder is probably puckered up by chronic inflammatory changes. Persistent jaundice is generally the equivalent of malignancy.

Resection of the Liver for Hepatic Tumours.—Dr. W. W. Keen gives the results of analysis of 20 cases of liver resection (*Boston Med. and Surg. Journal*, April 28, 1892). The ages of these cases varied from 21 to 58 years. Sixteen cases occurred in females, which the author thinks may be due to tight-lacing. The tumours and portions of liver removed have varied in size from a small nut up to three fists. Of the 20 cases, nearly all were incorrectly diagnosed ; some were thought to be floating kidney, others tumours of the pancreas. The tumours were echinococcus and hydatid cysts, cancer, syphilis, sarcoma and adenoma. Dr. Keen thinks that, judging by experiments on animals, a large portion of the liver can be removed without much danger and without interfering with its function. Ponfick found that three-fourths of the liver could be removed, although prostration was very severe at first. The escape of bile into the peritoneal cavity is generally of no consequence. In preventing hemorrhage the base of the tumour should be severed by repeated small touches of the cautery point, the large vessels being all ligated. In the majority of cases the stump was returned into the abdominal cavity ; in six cases, however, it was sutured in the abdominal wound. Of the 20 cases, 17 recovered, two died, and in one the result is unknown. The mortality thus far has been about 10 per cent.—(Quoted in *Univ. Med. Mag.*, July, 1892.)

Czerny (*Deutsche Med. Woch.*, June 8th, 1892), in a review of the history of the surgery of the gall-bladder, divides the

cases into those with jaundice and those without. He summarizes as follows :

(1) Gall-stones call for operative measures when they give rise to long-lasting troubles.

(2) Empyema always calls for operation, and also hydrophora when serious symptoms arise.

(3) The typical operation for stone in the gall-bladder consists in incision, emptying and suturing the bladder, the abdominal wound being drained for a short time.

(4) When the cystic duct is occluded or the gall-bladder itself is inflamed, or when its contents are much altered, a temporary fistula of the gall-bladder should be made.

(5) Extirpation of the gall-bladder is only indicated by markedly inflammatory or carcinomatous conditions.

(6) In occlusion of the common duct, operation is always indicated when the strength of the patient permits. When it is not possible to remove the obstruction, a fistula should be established between the gall-bladder and duodenum.

(7) Access is best obtained in operations on the gall-bladder by means of an L-shaped incision, the longitudinal branch of which is made in the linea alba and the horizontal to the patient's right from a point immediately below the umbilicus.

(8) The danger to life of operations for gall-stones appears to be less than in that for removal of stone in the urinary bladder.—(Quoted in *Univ. Med. Mag.*, Sept., 1892.)

Spinal Surgery.—Dr. Rieder has lately, in the *Annals of the Hamburg City Hospital*, reviewed the cases of spinal surgery treated in that institution for several years past. He groups them under the heads—(1) Injuries to the spinal cord without injury to the bony envelope. (2) Tumours compressing the cord. (3) Injuries to the spine treated without operation. (4) Injuries to the spine operated upon. In the cases of spinal cord injury from fracture, thirteen cases were not operated upon, viz., five in the cervical region, seven in the dorsal, and one in the lumbar. All died excepting one of the dorsal cases, in which there was decided improvement, and in which Sayre's jacket was employed. In the operative series there are only three

cases, with one death, one unimproved, and one improved. In the case that died, the autopsy showed that the cord had been completely destroyed and the canal blocked by a fibrous mass; he was not operated on until a year after the accident. The second case was operated on a year and a quarter after the injury; his symptoms were increased for a time after removal of the arches, which was done with mallet and chisel: there was no improvement in his condition. The third case was operated on sixteen hours after injury; compression of the cord was found and relieved; he made an absolute recovery. Dr. Rieder says that these cases illustrate very forcibly the fact that if any benefit is to accrue from operative interference in this class of cases, it should be undertaken early, before degeneration due to compression had advanced and destroyed all hope of improvement. As yet we cannot certainly tell when the destruction of the cord has been complete and when the arrest of function is due to the effects of compression. In all cases where paraplegia, total anæsthesia and paralysis of the bladder and rectum cause a severe alteration in the cord, only an operation will afford a chance of attaining an improvement approaching a cure in favourable cases.—(*Condensed from Annuals of Surgery for Sept., 1892.*)

Temporary Resection of the Vertebrae.—Urban of Leipsic (*La Semaine Médicale*, No. 31, 1892), in cases of paraplegia from compression of the spinal cord following fractures of the vertebrae, recommends temporary resection. An incision is made on both sides of the spinous processes running vertically down to the transverse processes; then a certain number of laminae are cut through and left adherent to the soft parts; the vertical incisions are united by a third, and thus a large rectangular flap is formed, which gives free access to the vertebral canal. The cause of the compression being relieved, the flap is replaced and sutured. Urban has practised this operation several times with successful results. He cites the case of a young man who, in consequence of a fall, had suffered for six months from complete paraplegia. Six weeks after the operation this patient commenced to get up and about, and the paralysis disappeared little by little. And a young woman who was completely para-

lyzed in the lower extremities from a fracture of the lumbar spine, twenty-four hours after the operation a slight return of sensibility was noticed. In two cases of spondylitis the operation was successfully performed, the projecting part being resected.—(Quoted in *Annals of Surgery*, August, 1892.)

Excision of Rectum for Carcinoma.—Schmidt (*Berlin. Klin. Woch.*, June 18, 1892) discusses the present methods of dealing with rectal carcinoma, and points out that all the operative measures for resection fall under two headings—the sacral method and the perineal method. He then gives the results obtained in Czerny's clinic. As a general rule, the death-rate in cases operated on by the sacral method is greater, not on account of the severity of the operation, but because by this method many cases were treated which could not have been operated upon by the perineal method owing to the advanced state of the disease. In 36 patients operated on by the sacral method the mortality was 7, or 19.4 per cent. Out of 32 cases operated on by the perineal method the death-rate was 1, or 3.1 per cent. Hence in 68 cases of operation for cancer of the rectum the total mortality was 8. Out of 59 radical operations, 25 died during the last six years, and of 28 still surviving, 18 were operated on by the sacral method and 10 by the perineal method. Of 12 living two years after operation, 4 showed a recurrence of the disease. The longest survival after operation was five years and nine months.—(Quoted in *Sup. of Brit. Med. Jour.*, Aug. 8, 1892.)

The Treatment of Imperforate Anus.—In an interesting paper on the above subject (*Brit. Med. Jour.*, June 4th, 1892) Mr. Harrison Cripps says malformation of the anal outlet is rare, occurring about once in every 3,000 births. In this paper he deals with the two commoner forms. The first, in the male, where there is no trace of an anus at all, or where it terminates in a cul-de-sac a short distance from the surface; the second, in the female, where there is no anus, a small aperture existing in the posterior wall of the vagina communicating with the bowel. In the treatment of the first variety, the rectum may terminate so close to the surface that a simple incision is all that is required; generally the blind end of the bowel is some distance from the

anus, often well within the abdominal cavity. In three cases the position of the bowel and its relation to the peritoneum require careful consideration. The peritoneum is not merely reflected over the anterior surface of the bowel, as usually figured, but it is continued right over the blind end of the bowel, the reflection taking place close to the sacrum. This explains why peritonitis follows blind puncture with a trocar. To operate successfully the infant must be placed in the lithotomy position and an incision made in the middle line over the site of the anus to the tip of the coccyx; the edges of the cut being separated a careful dissection upwards should be made, care being taken to keep close to the sacrum; in this way the bowel may often be reached without opening the peritoneum. In some cases the operation cannot avoid opening the peritoneum, and then the bowel, after being pulled down through this opening, should be stitched to the edge of the skin, and the punctured peritoneum should then be stitched to its surface. The bowel cannot be easily brought down until it has been opened and relieved of the meconium which distends it.

The ultimate success of these cases depends largely on the after treatment, for the tendency to closure of the opening exists for a year or two, but the time comes when the contraction ceases, the opening remaining permanent and giving no further trouble. In order to avoid this contraction Mr. Cripps advises the wearing of a vulcanite plug two inches in length and made slightly conical. The diameter in the middle should be half an inch, and there must be a broad flange at the base to prevent its slipping in. This plug should be worn about a year. Mr. Cripps has never yet met with a case in which the bowel could not be found *in situ*; should he do so he would perform inguinal colotomy.

In the second variety of cases, if the opening in the posterior wall of the vagina be sufficiently large to give relief to the meconium, the operation may be deferred until by the growth of the child the parts are more developed. The operation here consists of passing a strong bent probe through the fistula into the rectum. There is generally a pouch of the rectum extending below the opening, and it can in this manner be made promi-

ment and cut down upon by an incision between the vagina and coccyx and then opened and stitched to the skin. At a subsequent period, when the natural outlet is well established, should the fistula give trouble, it should be closed. Mr. Cripps narrates five cases of imperforate anus in which he has lately operated. All the cases were reached from below, and all were doing well when last heard from. One child was four years old.

Extirpation of the Ileum for Tuberculosis.—Sachs (*Archiv f. Klin. Chir.*, 1892, Bd. 43) reports the following case. A woman, *æt.* 41, had suffered for a long time from constipation, and for two years had had loss of appetite and debility. On examination a hydronephrosis of the right kidney was discovered and also a swelling in the right iliac fossa which was supposed to be of a malignant nature. Laparotomy was performed, when the right iliac fossa was found to be filled up by a hard tumour the size of the closed fist. Surrounding the ileum was a band of contracted fibrous tissue, with tubercular granulations in places. The diseased parts were resected and the two ends of the intestine joined by enterorrhaphy. The patient recovered, and was quite well at the end of fifteen days. On examining the specimen, a large tuberculous mass, which extended to the mesenteric glands, was seen at the point where the ileum joined the cæcum. The mucous membrane of the cæcum was replaced by a nodulated membrane, the nodules of which extended into the muscular coat, and, on microscopic examination, were seen to consist of epithelial and giant cells. The author reviews 13 cases of tubercle of the ileo-cæcal region treated by resection. He says the diagnosis is very difficult, cases being diagnosed as malignant disease. Of the 13 cases, 11 recovered.—(Quoted in *Brit. Med. Jour.*, June 25th, 1892.)

Ligature of the Internal Iliac for Gluteal Aneurism.—Dr. L. L. Williams (*N. Y. Med. Jour.*, Aug. 20, 1892) reports the case of a man, *æt.* 35, who suffered from gluteal aneurism, which came on without apparent cause. Potassium iodide with rest in bed failing to have any effect, and as the pain was severe and the tumour rapidly increasing in size, it was decided to ligature the internal iliac artery. A median abdominal incision was made,

the artery reached through the peritoneal cavity and ligatured with silk, and the abdominal wound closed. There was still some pulsation in the tumour after ligature, but this gradually decreased, and a month later the aneurism felt like a "base-ball." A heart lesion developed, and patient died two months after operation, the pulsation in the tumour not having altogether disappeared. No autopsy was allowed.

Excision of Cirroid Aneurism of the Temporal Region.—At a meeting of the New York Surgical Society, held April 13th, Dr. Willy Meyer presented a man, aged 57, who, ten years ago, had been hit by a stone in the left temporal region, which resulted in the formation of a cirroid aneurism, for which operation was performed. Dr. Meyer first tied the right external carotid artery and then made an incision from the top to the bottom of the tumour. In spite of the ligature of the artery, the hæmorrhage was so severe as to require the use of Esmarch's bandage around the head, which at once stopped the hæmorrhage and rendered the operation easy. After the removal of the whole tumour and ligature of all the vessels the wound was closed, and healed in ten days under one dressing. The speaker said that in cases of this kind the whole tumour might be removed, or a large ellipsoid piece might be cut out of the mass of enlarged arteries. All the divided vessels should be tied and then the wound dressed before the elastic band around the head is removed.—(*N. Y. Medical Journal*, Aug. 20, 1892.)

Aneurism of Ascending Aorta unsuccessfully treated by the Needling Method.—Weir and Page (*N. Y. Med. Jour.*, vol. liv., No. 19) report a case of aneurism which was treated without success by the needling method of Macewen of Glasgow. This method Weir applied in three sittings. He used needles varying in size from one-half to one and one-fifth millimetres in diameter, their length being six inches. He found the larger needles more efficient, but only allowed them to remain *in situ* about forty minutes, as the walls of the aneurism were considered too thin for safely leaving them longer. The largest area scratched did not exceed, at any of the sittings, the palm of the hand. No serious symptoms were shown by the patient; there was slight spouting of blood after the withdrawal of the larger

needles, but it was easily controlled by the finger. There was also some coughing with expectoration of blood, probably due to wounding the lung posteriorly. The patient died two months after the last operation, the treatment being discontinued at the request of the relatives. The post-mortem showed but slight deposits of leucocytes and fibrin, and the results of the treatment were so far negative. The aneurism was $6\frac{1}{2}$ by 8 inches, springing from the ascending aorta, and its walls were extremely thin.

Such large aneurisms, it appears to me, would be better treated by Tufnell's method of rest, starvation, and the use of potassium iodide.

Aneurism of the Descending Aorta successfully treated by Bacelli's Method.—Bourget of Lausanne reports the case of a patient under his care (*Annales de la Suisse Romaine*, No. 5, 1892) in the hospital at Lausanne, Switzerland, suffering from pulmonary tuberculosis and also symptoms of aneurism of the descending aorta. It had gradually worn away the body of a vertebra and one or two ribs, and seemed to enlarge in the space between the scapula and the spinal column. In order to bring about a coagulation of the blood in the sac Bacelli's method was tried. A watch spring 2 mm. broad and 5 cms. long, with a spiral 5 cms. in diameter, was chosen. The extremity was sharpened, and it was placed in a boiling solution of hydrochloric acid in order to render it aseptic, and more to cover it with a film of ferric chloride. A small slit was made in the upper portion of the sac, and while an assistant held the spiral unwound, the end was introduced through the wall of the sac and the entire spring was introduced with the greatest ease, recoiling itself immediately; the slit was then closed. The patient did not complain of any painful sensations either during or after the operation. The temperature remained normal during the entire period of treatment. The tumour decreased in volume, the intercostal pains diminished in intensity, together with those along the spinal column. A month after, an exploratory puncture into the sac did not reveal blood in the sac, and the needle transmitted the impression of an elastic mass of some resistance. The pulsations were much decreased in extent and intensity, and

the patient gained considerably in weight. At time of writing patient was still improving.—(Quoted in *Annals of Surgery*, August, 1892.)

Treatment of Aneurism of the Arch of the Aorta by Temporary Ligature of the Thoracic Aorta.—M. Villar (*Jour. de Méd. de Bordeaux*, No. 27, 1892) has lately tied the thoracic aorta for aneurism of the arch, with, of course, a rapidly fatal result. The patient operated on by this bold and, I might say, rash young surgeon suffered from the usual form of aneurism of the arch, and had got to such a condition that his days were numbered; all kinds of treatment had been tried without result, so M. Villar decided to give the already doomed patient another chance by operation. In the left dorsal region, between the scapula and the transverse processes of the vertebra, a vertical incision about seven inches long was made from the 3rd to the 6th ribs; at the lower end of this incision another was made at right angles; two ribs were cleaned of their soft parts and five centimetres removed from each. The pleura was opened chiefly because it was adherent and the lung prolapsed; so the lung was replaced and the pleura pushed aside in order to reach the thoracic aorta. This vessel was easily found, but it was also found that there was a large aneurismal sac in the posterior mediastinum, and the operator did not think it prudent to go any further, so he satisfied himself with compressing the aorta against the vertebral column. His intention was to pass a ligature around the aorta and from time to time to tighten it so as to arrest the flow of blood through the aneurismal sac. The wound was dressed with iodoform gauze and antiseptic dressings. The patient died next evening. The results in ligature of the abdominal aorta have been equally fatal—eleven operations with eleven deaths. It seems to me that M. Villar's operation is not likely to be imitated, for the same results could have been obtained by compressing the abdominal aorta.

Dr. D. D. Stewart reports a case of *Aneurism of the Abdominal Aorta treated by Electrolysis through an introduced wire.* (*Amer. Jour. Med. Sc.*, October, 1892.) The writer states that but seven cases had been previously treated in this way, a good result occurring in two cases. In Dr. Stewart's case,

Tufnell's treatment with rest and potassium iodide were tried with good success, but patient going back to work the improvement ceased to be maintained. Pain was excruciating, and there was much bulging on the back from ninth dorsal to lumbar region. This swelling pulsated and the aneurism threatened at any moment to burst through its thin walls, so operation was undertaken more to promote prompt formation of firm protecting coagula than with the idea that a cure could be effected. Two and one-half inches of silver wire of good size were introduced through a cannulated steel needle, and two platinum needles introduced into the sac. The current was applied until seventy milliampères were reached, and was maintained at this strength for one hour. By the third day the pulsation in the swelling was much less and the tumour had become smaller and harder. There was, however, considerable pain, and on the ninth day he suddenly died from the bursting of the aneurism. At the autopsy the wire was found coiled up in the sac, and was engaged in several firm clots which were of a solid texture. The bodies of the dorsal vertebræ were much eroded and the ribs in parts had entirely disappeared. The rupture of the sac was at its upper end and extended into the base of the left lung. The case was a desperate one from the first.

Ligature of the first portion of the Subclavian Artery and Excision of a Subclavian-Axillary Aneurism.—Halsted (*Johns Hopkins Bulletin*, vol. iii., No. 24) reports the case of a coloured man, 52 years old, who for eight months had noticed a pulsating swelling below the left clavicle progressively increasing in size. The tumour was smooth, almost spherical, and measured sixteen inches in circumference at its base. Slight pulsation was visible and palpable. The mass appeared to be solid, but elastic. No pulse could be felt in left wrist or at any point below the aneurism. An incision was made from the sternal notch to the acromio-clavicular articulation, thence down the arm to the lower border of the great pectoral muscle, over the greatest convexity of the tumour. From the inner extremity of this incision a vertical incision upward was made, some two inches long; a third incision about four inches long was made vertically downward from the middle of the horizontal incision; and finally, a

vertical incision one and a half inches long was made upward at the acromio-clavicular articulation. The flaps of skin were laid back. The wall of the aneurism was found soft, thin, and inflamed. Two silk ligatures were applied to the artery as it emerged from the chest, and the vessel was divided between them; the aneurism was then removed in one piece. The axillary artery was ligated at the beginning of its second part. The operation took three and a half hours. The wound healed perfectly. Sixty days after the operation the patient had excellent use of his arm.

Chloride of Zinc Injections in Ununited Fracture.—At the recent congress of surgery in Paris, Ménard reported the following case (*Rev. de Chir.*, May, 1892). A man, aged 43, sustained an oblique compound fracture of both bones of the leg. Within half an hour of the fracture the leg was put up in plaster and an antiseptic dressing applied. Hemorrhage persisted for forty-eight hours, after which a fresh plaster bandage was put on and left for forty-seven days. On removing it, no attempt at union was found to have taken place. A plaster bandage was again tried for a month, without result. The limb was again immobilized, but five months after the accident there was no appearance of union. Remembering Lannelongue's experiments on the formation of bone in rabbits as the results of injections of chloride of zinc into the periosteum, Ménard then injected 1.25 grammes of a 1-10 solution of zinc chloride into the outer and posterior surfaces of the tibia and into the space between the fragments. The injections caused a good deal of pain, but after immobilization of the limb for a fortnight the swelling of the soft parts had completely disappeared, and the seat of fracture was surrounded by a firm callus. A month after the injection consolidation was complete and the patient was able to walk.

Resection of the Urethra.—Horteloup (*Sem. Méd.*, May 18, 1892) has performed resection of the urethra in eleven cases. He thinks the method inapplicable in inflammatory stricture, but useful in traumatic cases. Four years ago he presented to the Academy of Medicine a patient in whom he had removed $\frac{1}{4}$ cm. of the urethral canal, and the man was well ever since.

Two months ago he had operated on a boy of 15. A No. 16 catheter could now be easily passed. Horteloup does not advise suture of the resected urethra. Where there is an extensive stricture with fistulæ, suture is impracticable; in a recent case he removed 7 cm. of the urethra, and the case did well without suturing. Neither does he recommend tying in a catheter for a prolonged period of time. These operations, he says, always necessitate very large external incisions; these he does not completely close, but always leaves a small opening. He ties in a catheter for two days, after which the patient passes water through the perineal button hole, a bougie being passed every two or three days. Cure is slow, but sure and complete.—(Quoted in *Brit. Med. Jour. Epitome*, June 4, 1892.)

Treatment of Spinal and other Tubercular Abscesses.—Mr. Frederick Treves treats them as follows. (*Lancet*, May 21st, 1892.) An incision is made into the abscess at the most convenient spot, and, whenever possible, at the most dependent point. It should be so placed as to command all parts of the abscess, and to allow access of sound skin. The pus is allowed to escape, and the abscess cavity is then washed out with a hot solution of sublimate (1-5000). Many gallons of the solution are required. When the fluid returns clear the fingers are introduced into the cavity, and the caseous semi-solid matter which exists in such quantity in these abscesses, and which is not wholly removed by flushing, can be dislodged. By means of the fingers the septa in the cavity may be broken down, diverticula may be opened up, and by the aid of the finger-nails a considerable quantity of smooth, slimy, lining membrane may be removed. Repeatedly the cavity is flushed out with the warm solution. The lining wall of the cavity is now carefully and thoroughly scraped with a Volkmann's spoon until the whole surface has been laid bare. Every once in a while all the debris is flushed away. After the scraping and flushing have removed all signs of the lining membrane, comes the most important part of the operation—the rubbing of the abscess wall with sponges and the thorough drying out of the cavity. By means of sponges on holders the whole of the abscess wall is thoroughly rubbed, and

it is surprising what a quantity of inflammatory material in the form of slimy lining membrane, and even cheesy pus, comes away upon these sponges. The sponging process is tedious, but it leaves the cavity practically dry. The abscess cavity is now a raw space, almost comparable to that which would be left after the removal of a large adherent tumour. The oozing of blood, which is at first considerable, soon ceases, and the last sponge should be withdrawn practically unsoiled. The incision is then completely closed with silkworm-gut sutures. No antiseptic is introduced into the abscess cavity, and no drainage is employed. As far as possible the abscess cavity is obliterated by pads. An abscess which has become thoroughly septic may be treated in the same manner. In spinal abscesses certain difficulties arise, the chief of which depends upon obstacles in the way of the complete evacuation of the abscess and the complete removal of its lining membrane. The depth of the cavity, its great length, and its position within the abdomen, place difficulties in the way. In cases of recurrence of the abscess after this method has been employed, the cavity should be injected with a solution of iodoform, if it is so placed that aspiration may be safely performed.

A Critical Study of Renal Surgery.—Wagner (*Deutsch. Zeitschrift f. Chir.*, Bd. 34) devotes 32 pages to a casuistical study of the surgery of the kidney. Nephrotomy is advised instead of nephrectomy in cases of renal calculus. Wandering kidney is to be treated by suturing the organ in place. Nephrectomy is suitable for malignant growths, whether sarcomatous or carcinomatous. Benign tumours of the kidney are very rare, and generally only recognizable as such after removal. In cases of large solitary cysts, as well as in echinococcus cysts, nephrotomy is to be the primary operation, and nephrectomy is to be reserved for a secondary procedure if found necessary. An exception to this course is to be made in the case of a tuberculous kidney, in which the opposite kidney is healthy. Wounds of the kidney are to be treated by rest in bed and the application of ice, opiates being given if the pain is severe. The catheter is not to be used if it can be dispensed with. In

gunshot or shot wounds, the patient is apt to be in such a state of collapse as to prohibit operation. Eight cases of nephrectomy are recorded for this cause, with three recoveries. Statistics show that double hydronephrosis is much more common than is the single form, being in the proportion of two of the former to one of the latter.—(Quoted in *Univ. Med. Mag.*, Aug., 1892).

Reviews and Notices of Books.

Materia Medica and Therapeutics. By L. F. WARNER, M.D., Attending Physician, St. Bartholomew's Dispensary, New York. Being Vol. V. of the Students' Quiz Series. Pocket size, 224 pages. Philadelphia: Lea Bros. & Co.

Genito-Urinary and Venereal Diseases. By CHARLES H. CHETWOOD, M.D., Visiting Surgeon, Demilt Dispensary, Department of Surgery and Genito-Urinary Diseases, New York. Being Vol. VIII. of the Students' Quiz Series. Pocket size, 178 pages. Philadelphia: Lea Bros. & Co.

Obstetrics. By CHARLES W. HAYT, M.D., House Physician, Nursery and Children's Hospital, New York. Being Vol. XI. of the Students' Quiz Series. Pocket size, 190 pages. Philadelphia: Lea Bros. & Co.

These handy little volumes are intended for the use of students, although a perusal of them would not be waste time for many practitioners. They are written in the form of question and answer, and are clear and distinct in their statements. The one on *Materia Medica* is based on the U.S. Pharmacopœia, and therefore the preparations and doses are not in all instances the same as used in Canada. They are handy for reference, but do not take the place of standard books on the various subjects.

The Student's Handbook of Surgical Operations. By FREDERICK TREVES, F.R.C.S., Surgeon and Lecturer on Anatomy at the London Hospital. In one square 12mo. volume of 508 pages, with 94 illustrations. Philadelphia: Lea Brothers & Co.

This work is abridged from the author's large "Manual of

Operative Surgery," and merely concerns itself with the most essential and commonly performed operations. It will be of use as a handbook to students preparing for examination or for a course of practical surgery upon the cadaver. Further than this the usefulness of the book does not extend, for the value of various operations is not discussed, nor are any details of treatment or descriptions of instruments given.

Selections.

ON THE DIGESTIVE FERMENT OF THE CARICA PAPAYA IN GASTRO-INTESTINAL DISORDERS.

BY DR. FRANK WOODBURY.

During the past year, having devoted considerable attention to the clinical applications of papoid, especially in digestive disorders, I have had the satisfaction of witnessing a number of very interesting results, to which I wish briefly to direct attention. The successful application of physiological data must be my excuse for again directing attention to a remedy which has been studied by such eminent investigators as Wurtz and Bouchet, Finckler, Roszbach, Roy and Wittmach, and one, furthermore, the physiological and therapeutical actions of which, at the present day, may be regarded as pretty fully established. If I have little of novelty to offer as regards the agent employed, I may at least point out very briefly some of the clinical uses and the conditions of its successful employment. If I accomplish this modest task the labour will not be in vain, since success in therapeutics depends upon the pharmaceutical preparation and mode of administration, in many instances, as much as it does upon the selection of the proper remedy.

There were two considerations that especially led me to study the clinical applications of the juice of the Papaw to disorders of digestion. The first was the relatively large number, both in private practice and clinical service, of patients otherwise enjoying good health, but complaining of digestive disorders. The

second was the following statement of Lauder Brunton's, which I encountered some years ago :

“ In the West Indies a tough beefsteak is rendered tender by rubbing it with the juice of a fresh papaw fruit, which contains a ferment, having an action very much like the trypsin of the pancreas.”

The line of argument that would naturally be followed by the mind after receiving such a statement would be this : “ A tender beefsteak is more easily masticated and digested than a tough one ; consequently an agent possessing the power of making this change must be of considerable value as an aid to digestion when weakened from any cause.”

Before considering the therapeutics of this unique remedy, however, I may briefly summarize its physiological actions and other properties.

Papoid is a fine cream-white powder, almost devoid of odour and taste, freely soluble in both water and glycerine, and claimed to be of uniform digestive activity. The physiological actions of papoid as a digestive agent have been thoroughly established. It acts upon albuminoids, hydrating them and converting them ultimately into peptones, as fully demonstrated by George Herschell. It converts starch with great promptness, the ultimate product being maltose. It emulsifies fats. Moreover, Herschell declares that it has a direct tonic action on the stomach, stimulating the secretion of gastric juice or pepsinogen. Papoid, according to the same authority, is distinctly antiseptic in its action, and prevents abnormal fermentative processes from taking place in the stomach and intestines. An important point is, that it can be given in conjunction with true antiseptics, such as salol, when necessary, without its digestive action being checked; even corrosive sublimate in dilute solutions does not interfere with its digestive powers. It acts at all temperatures, but attains its maximum activity at a temperature of about 130°F. In several important points it differs from pepsin. Papoid acts best in an alkaline solution, but also can work in fluids with an acid or neutral reaction ; pepsin requires an acid solution. Papoid is freely soluble and is most active when in concentrated

form ; pepsin requires free dilution. Herschell also points out the greater digestive power possessed by papoid than either pepsin or pancreatine, and states that "it can be used when pepsin is contra-indicated or powerless." Finally, it should be stated that papoid has no action upon living tissues, and is positively innocuous when swallowed in any quantity that is likely to be administered.

Therapeutically, confining these remarks strictly to digestive disorders, papoid is useful when digestion has been overtaxed, or when the secretion of gastric juice is absent or deficient. Experiments of my own and others have satisfied my mind of the remarkable digestive activity of papoid. For instance, in one of the experiments referred to, portions of the constituents of a hearty dinner of bread, meat, potatoes, peas, mince-pie, and other substantials were placed in a large test-tube and treated with papoid and bicarbonate of sodium and a small amount of water. The result was very satisfactory indeed ; the meat rapidly softened and the other ingredients gradually disintegrated, forming a pultaceous mass which finally separated into a grumous sediment and an overlying albuminous, dark-coloured liquid.

Since papoid acts in alkaline solutions even better than in acid media, it is evident that it is specially useful where there is indigestion due to deficient secretion of gastric juice or of hydrochloric acid (achlorhydria). In such cases, the administration of an alkaline solution of papoid favours gastric digestion both directly and indirectly,—first, by digesting albuminates and softening masses of food ; and, secondly, by the action of the papoid in stimulating the secretion of the pepsin gland, while the alkali induces the secretion of a more acid gastric juice. Moreover, it retards the fermentation of the undigested masses of food in the stomach and prepares them for intestinal digestion. In fact, in such cases a compressed pill of papoid, bicarbonate of sodium, and extract of nux vomica has given me excellent results. In the contrary case, where there is an excess of hydrochloric acid, and where the stomach contents poured into the duodenum are so acid that they prevent the action of the trypsin, papoid

CHEESE

MINCE PIE

MIXED CAKE

TAPIOCA

ROAST BEEF

FRIED SAUSAGE

LIMA BEANS
& PEASWHEAT, RYE &
GRAHAM BREAD

POTATOES

DRIED BEEF

COD FISH

CRACKERS

SALMON



ILLUSTRATING ARTICLE
BY PROF. WOODBURY
ON PAPOID.

prevents duodenal indigestion by taking the place of the pancreatic ferment. As Herschell points out, it is obviously of no use to give pancreatin by the mouth, as it is at once destroyed by the action of the stomach, and it is practically impossible to administer sufficient alkali to neutralize the excess of acid, and it would, moreover, be unwise, because it would stimulate still further the secretion of the acid. Papoid is of the greatest use here, because its activity is not materially affected by contact with acid.

In gastralgia, which often accompanies the condition just named, papoid, with bicarbonate of sodium, gives immediate relief. On account of its well-marked sedative action, it is also useful in irritable stomach, nausea, and vomiting. In sea-sickness, I have not had an opportunity as yet of using it, but I would anticipate decided relief from its administration. In gastric catarrh and the catarrhal conditions of the intestinal tract, popularly known as biliousness, papoid administered in hot water fifteen minutes before meals, or upon rising in the morning, cleanses off the mucous and places the mucous coat of the digestive organs in a good condition for secretion. Constipation, especially in children, is often caused by imperfect digestion. In infants, for instance, the fæcal masses consist largely of casein. Here, a digestive agent is the rational remedy to administer, and, in fact, I have used papoid with good results in just such cases, even in very young infants. On account of its sedative action, it is very efficient for the relief of colic in infants, as well as persistent vomiting. Its antiseptic action and its ability to digest in the presence of antiseptic agents makes it useful in the treatment of irritative diarrhœa in young children, to whom it may be given in combination with salol or salicylate of bismuth. In aepsia of young children, or in that form of deficiency of the gastric juice in adults due to atrophy of the gastric follicles as the result of chronic catarrhal processes, the glycerin solution of papoid (1 to 20), is especially effective. It is permanent and retains its activity for a long time, whereas watery solutions should be freshly made or they will not keep their digestive power. (This may possibly be explained on the ground that in the presence of water, papoid, being an albuminoid

body, partly undergoes hydration and digests itself). Furthermore, as already stated, watery solutions of papoid, like other albuminous fluids, are apt to become attacked by bacteria and undergo decomposition after standing for several days.

The uses of papoid in treating disorders of the digestive organs may be summarized somewhat as follows:—

1. In actual or relative deficiency of the gastric juice, or its constituents.

- (a) Diminished secretion of gastric juice as a whole.
Apepsia.
Anæmia and deficient blood supply.
Wasting diseases.
- (b) Diminished proportion of pepsin.
Atonic dyspepsia.
Atrophy of gastric tubules.
- (c) Diminution of hydrochloric acid.
Achlorhydria.
Carcinoma.
- (d) Relative deficiency of gastric juice.
Over-feeding,

2. In gastric catarrh.

- (a) Where there is a tenacious mucus to be removed, thus enabling the food to come in contact with the mucous membrane.
- (b) Where there is impaired digestion.

3. In excessive secretion of acid.

- (a) To prevent duodenal dyspepsia.

4. In gastralgia, irritable stomach, nausea or vomiting.

5. In intestinal disorders.

- (a) In constipation due to indigestion.
- (b) In diarrhœa, as a sedative.
- (c) In intestinal worms. (This claim the writer has not personally verified, but as the intestinal mucus which shields the worms is removed by papoid, it is easily understood that their removal would naturally result after its administration.)

6. In infectious disorders of the intestinal tract.

- (a) Where there is abnormal fermentation; by its anti-septic action, which may be heightened by combination.

(b) Where there are foreign substances present, its detergent effect may be utilized in cleaning out the débris from the intestinal contents by digestion.

7. In infantile indigestion ; here papoid not only readily peptonizes cow's milk, but the resulting curds are also soft and flocculent, resembling those of breast milk.

The dose of papoid, ordinarily, is one or two grains, but five grains or more may be used, the only objection being that of useless expense and waste except where very prompt effects are desired, in which case even larger doses of the remedy may be administered. In case of obstruction of the œsophagus by an impacted piece of meat and gristle—such as has been recently reported—a paste of papoid and water with some soda would produce softening in a very few minutes.—(*New York Medical Journal*, July 30th, 1892.)

New Method of Artificial Respiration.

—M. Raborde reported two cases of apparent drowning in which he had excited the respiratory action by employing forcible rhythmic traction upon the tongue, backwards and forwards. A spoon or the finger is used to keep the mouth open and fix the base of the tongue. At the same time the thorax is enveloped in cloths wrung out of hot water, care being taken not to scald it. This idea was suggested to the author by laboratory experiments upon animals asphyxiated by chloroform, he having noticed that when the tongue was pulled out to straighten the air-passages before commencing artificial respiration, respiratory efforts were frequently excited. This led him to investigate, with the result that he discovered this method which he believes is superior to all others. “In all cases—and this is my conclusion—never despair, no matter how probable death may appear,” is the advice with which he closes the communication which was made to the Académie de Médecine de Paris.—(*Le Bulletin Médical*, July 6, '92.)

Society Proceedings.

CANADIAN MEDICAL ASSOCIATION.

The twenty-fifth annual meeting of this Association was held in the Parliament Buildings, at Ottawa, on Wednesday, Thursday and Friday, 21st, 22nd and 23rd September.

The meeting was called to order at 10.30 A.M. Wednesday, 21st, the past President, Dr. Roddick, in the chair, who introduced the President, Dr. Bray.

The minutes of the previous meeting were read and confirmed.

The following addresses and papers were read during the session :—

President's Address, Dr. J. L. Bray, Chatham.

Tubercular Cirrhosis of Liver; Encysted Tubercular Peritonitis Simulating Hydatid Liver—Dr. A. McPhedran, Toronto.

Appendicitis—Dr. H. P. Wright, Ottawa.

Discussion in Medicine, "The Treatment of Pulmonary Tuberculosis," Dr. J. E. Graham, Toronto; followed by Dr. L. C. Prevost, Ottawa.

Lupus Erythematosus—Dr. Bulkley, New York.

Cases Illustrative of the Influence of Diseases of the Female Generative Organs upon the Visual Apparatus—Dr. S. Ryerson, Toronto.

Discussion in Surgery, "Observations on the Progress of Surgery in our own Day," Dr. D. MacLean, Detroit; followed by Dr. V. H. Moore, Brockville.

Administration of Chloroform and the Dangers incident thereto—Dr. J. D. Balfour, London.

Intussusception and its Treatment by Operation—Dr. F. J. Shepherd, Montreal.

The Dependence of Abnormal Eye Conditions upon Uterine Disease—Drs. T. Johnson Alloway and F. Buller, Montreal.

Gunshot Wound of the Abdomen—Dr. M. J. Abern, Quebec.

Discussion in Obstetrics. In absence of Dr. Cameron, it was taken up by Dr. T. S. Harrison, Selkirk.

Note on Sympathetic Ophthalmia and Evisceration of Eyeball—Dr. R. A. Reeve, Toronto.

Enterectomy for the Cure of Fæcal Fistula—Dr. H. H. Chown, Winnipeg.

Prostatectomy—Dr. G. E. Armstrong, Montreal.

A Rare Case of Spina Bifida with an Unusual Termination—
Dr. C. E. Cameron, Montreal.

Case of Gunshot Wound—Dr. T. S. Harrison, Selkirk.

Notes on Eye Lesions consequent on Nasal Affections ; Traumatism of the Labyrinth—Dr. Geo. Baptie, Ottawa.

Punctured Wounds of the Eyeball—Dr. A. J. Horsey, Ottawa.

The following papers were accepted as read :—

Treatment of Abortion—Dr. K. N. Fenwick, Kingston.

Management of Goitre—Dr. T. R. Dupuis, Kingston.

Phlebitis of the Left Femoral Vein caused by an Embolism, coming on three weeks after Hysterectomy ; Missed Abortion—
Dr. J. D. Balfour, London.

An Epidemic of Morbilli Hæmorrhagici—Dr. C. J. Edgar, Sherbrooke.

Radical Cure of Hernia, with a report of seventeen cases of operation—Dr. J. Wishart, London.

Observations on a few cases of Supra-pubic Cystotomy—Dr. Edmund E. King, Toronto.

Clinical Notes—Dr. R. W. Powell, Ottawa.

Hemorrhage in the Newborn—Dr. F. A. Lockhart, Montreal.

An Epidemic of Scarlet Fever with an Anomalous Eruption—
Dr. R. E. McKechnie, Wellington, B. C.

Dr. Shepherd exhibited a case in which he had sutured the nerves of the brachial plexus.

Dr. Machell (Toronto) exhibited a specimen of narrowing of the cæcum, removed for obstructive symptoms.

THE CHOLERA.

The CHAIRMAN—We have the Minister of Agriculture here, and I would ask now that Dr. Bryce come forward and begin the discussion on cholera. The Hon. Mr. Carling does not wish to make any remarks now, but will do so afterwards.

DR. BRYCE—I have only to remind you that it is not six weeks yet since we had an official notice of cholera being present in Hamburg, that we have had the subject brought before us from that point to England, through the United States ports and to our own various localities to an extent which has created an extreme interest, which epidemics of cholera invariably have done since their first appearance here

in 1842. In the limited time at my disposal I shall only refer to two particular portions of the question of what this continent has to do to protect itself against cholera, in view of the fact that we have with us the Hon. Mr. Carling, the Minister of Agriculture, who has to deal especially with the two particular parts of the work to which I will specially address myself. We might speak very naturally in this association of the medical treatment of cholera. I shall say nothing on that point. We might, as some of us are health officers, speak with regard to our duty as local health officers, but there are other questions that have come before me in connection with my work as secretary of the International Health Commission, which I shall specially take up in the few minutes I have before me at my disposal. You remember the International Conference is simply a meeting of executive officers, and after deliberation the president selected a commission of some ten gentlemen, four of whom made the eastern trip to inquire exactly into the border defences against the introduction of the disease into this continent. We started about the first of the month and visited the Grosse Isle quarantine, and from there, the day after the disease appeared in New York, we hurried as rapidly as possible to New York harbor, and there saw, what all of you have read about, the detention of thousands of passengers in the middle of the harbor on infected ships. We went from that point to Boston, to Halifax and St. John, and back again to Philadelphia, Portland and Washington. I may state the general conclusions, and I would say here that if, after discussion, this association think them reasonably practical and well founded, they should in some way or other pass a resolution which will give the Minister some support in his endeavors (which I know are honest) to protect this country, as far as he is concerned, from the introduction of the disease which we all apprehend next year. I may say, in brief, that we have found this—that, assuming the disease to be brought to the continent in ships, there is a great lack at all points generally of provision for the removal of the healthy from infected ships. That is the very thing we found in New York harbor, and it seemed to us absolutely inhuman to see the large ocean ships, with millionaires upon them, lying there for nearly two weeks, exposed every day in most cases to sick members of the crew passing through the ship

continually. The first thing we said was, "Get these people off the ships." It was finally done, but after great difficulty. At Boston we had good places to take them to; but this brings up the next point, the insufficiency of means to remove the well from the sick on infected ships. At our own station this was noticed just as at Boston, and still more at New York, where there were thousands lying in the harbor. We likewise concluded that at all points where immigrants are received there must be means for immediate removal to islands, if islands are used for quarantine. The next danger is that at New York—it is not so now at Philadelphia—I think we can say Philadelphia is safe—but at New York and Boston, at the time of our visit, and at our own ports, there was a very great lack indeed of any modern facilities for rapidly and thoroughly disinfecting the baggage which might have been infected before it was packed up and brought on board at Hamburg. That, then, is the next absolute necessity—that we must have modern disinfecting appliances that can rapidly and with certainty destroy any germs in the baggage or effects of immigrants, and next we must have at these points such facilities as shall rapidly and completely disinfect the ship which may have been infected. Now, at no place on our whole tour from Grosse Isle to the port at Washington (that is near Baltimore) did we find any sufficient apparatus for that particular part of the work. So you can see that there is in that direction a very grave question facing us—how much can our Government afford to spend, how much can the Federal Government and the State Governments of the United States afford to spend for this purpose, what shall be its character, and, next, where shall they make their main point of defence? If we have not money to do it at more than two or three points, then it is possible to require all ships with passengers to come to those points. What is demanded is, that here and in the United States, at those points, there shall be absolute defence against ingress. The other point I shall simply refer to, because it belongs to the hon. gentleman's department—it is a question which has arisen with the members of his own Cabinet and with our Government and the various transit companies—what action shall our Government and the United States Government take with regard to bringing in immigrants next year. We know we are to have a great world's

fair, and we know there is a large influx certain of a very doubtful class of immigrants from European countries. The immigration to the States last year was over seven hundred thousand. The Grand Trunk Railway brought in nearly forty thousand, mostly from the port of New York, during the last eight months, and our other great railway has brought in some sixteen thousand by way of the St. Lawrence. That indicates that the danger to us is greater via New York than it is to the United States, and it indicates that the United States are not in any way exposed as much to us as we are to them. The question then arises what can we, as medical men, viewing the situation broadly, recommend to all the health authorities with regard to next year? Our opinion is that of many gentlemen in the United States, that excepting, probably, immigration from Norway and Sweden and the British islands, we shall urge that for a year at any rate—that is, next year—there shall be a complete embargo put upon that kind of immigration which comes to this country, especially through the port of Hamburg. You all know what it is, I need not describe it. If any of you have any doubt about it, let him look at the returns at ports of entry. If it once gets into New York and begins to spread, with the people coming out by twenty or thirty lines of railway, you can readily understand what we would be exposed to. The only fight we can make of a real character is the external fight. If, after that, we have to fight it in our individual towns and cities, I trust that with the work done in the present winter by local health organizations, cleaning up everything and making the most positive health regulations, then we will be comparatively free from danger if it gets through our frontier. I trust the gentlemen will continue the discussion as I have indicated, and if possible formulate some broad conclusion that will be useful to ourselves and health officers, and, I have no doubt, of equal use to the Hon. Minister of Agriculture.

DR. ROGERS—What would Dr. Bryce consider as the most rapid and thorough way of disinfecting the baggage and the passengers on ships?

DR. BRYCE—Of course it is a question with a great many details in it, but I may say briefly this—it can be illustrated by one single reference on this continent. At New Orleans,

as we all know, every year they suffered greatly from yellow fever from 1876 to 1878. The district during those years was semi-decimated. They introduced a very simple process, putting the infected material into a long cylinder which could be supplied with live steam, rapidly driven in under pressure by a long tube, and kept there until everything in the inside was disinfected. It has been improved upon, and we have now in the one at Grosse Isle one of the most effective that I have seen on the continent. It is about twelve feet long and four feet in diameter. This is for the baggage itself. The other point is, after the persons have been removed they are handled in this way at Philadelphia in an apparatus which was completed last week. They fitted up a ship complete in its details, so they could run out close to the infected ships. They take off fifty or sixty passengers an hour, and put them in large bath-rooms, where they can wash them in an hour, and put their clothing in a superheated room where it can be disinfected. The next hour they take as many more, and in that way disinfect the whole of the passengers. That is the ship of observation. Then they take the baggage off the lighter to the shore and disinfect it in a superheated chamber there. The difficulty is, they cannot at Philadelphia or at New York yet, and we cannot at Grosse Isle yet, bring the ship alongside of a wharf where it could be cleaned. In order to clean the ship they have adopted a plan of placing on a barge, or some sufficient vessel, large chambers in which sulphur dioxide can be generated and rapidly distributed through the ship by means of fans. If that is done thoroughly and the ship stands under sulphur for twenty-four hours, they have found, in New Orleans at all events, that it does disinfect the ship, not only in cases of small-pox but also of yellow fever. That is, I think, an answer to the question.

DR. PLAYTER—I think we should consider hereafter, as medical practitioners, another aspect of the question. We know there are factors in the causation of all diseases of an infectious nature, and Sir Andrew Clarke has recently brought the question to a fine point in regard to tuberculosis. He said there are necessarily two factors in the causation of tubercles; one the bacillus, and the other the soil on which it grows. It is most desirable that everything should be done through quarantine to prevent the infection reaching this con-

minent, but I think attention should be directed to the other essential more than it has been. Not at all that we should neglect the first, but the infection will escape the best quarantine and the best disinfectant. There will be less danger in the future, but we should prepare for a certain amount of outbreaks on this continent next summer. Our present facilities for instructing the people, I think, are insufficient, and a good deal might be done in the way of enlightening the people in the way of the soil. We all admit that if the digestive canal is in a good condition there will be no infection, and the general functions of the body should be kept in a vigorous condition. It seems to me very clear that unless there is a want of acidity, or rather an alkaline condition of the intestinal canal, the cholera bacillus will not develop there. I think there should always be a thoroughly clean condition of the digestive organs. If there is fermentation going on there, from recent experience with regard to the typhoid bacillus, we know that the disease assumes a more malignant condition than it would otherwise. I would just say briefly that I think practitioners might do a good deal in the way of suggesting means to prevent the development of the disease from infection, and if the infection should reach Canada, as it probably will next year, that by keeping the digestive organs in an acid condition and the system in a clean state, there will be no epidemic of cholera, even if we do have a number of outbreaks, if there is no soil for the disease to spread. I would like to draw the attention of the association to this point, as I think it has been too much neglected.

DR. F. W. CAMPBELL.—I do not think that, with all the goodwill that the Hon. Mr. Carling has, he will undertake to keep the digestive organs of the people of Canada in good order. That is a matter which comes under the cognizance of the provincial authorities. I should like to ask, for information, those who are health officers, if it is not a fact that the statistics give the following—that 70 per cent. of epidemics escape quarantine and 30 per cent. only are successfully kept out, even under the best system of quarantine?

DR. J. H. CAMERON, Toronto—I have listened with great pleasure to the remarks of Dr. Bryce. I might say that quarantine of the old-fashioned kind is an exploded idea. The old-fashioned idea of putting people away for twenty or thirty

days until the disease dies out will not meet the idea of life in the nineteenth century. Quarantine such as Dr. Bryce has outlined will be all sufficient. Proof of that exists in the circumstance that although the British ports have been exposed for some time to cholera, very few cases have occurred in the United Kingdom. By the prompt destruction of the germ in the way Dr. Bryce has suggested the spread of cholera will be greatly prevented.

Dr. A. J. AHERN, Quebec—The reason why quarantine has not hitherto been effective is that it has not been thorough. Disinfecting the baggage of the immigrants and the ship does not constitute the whole of quarantine, because there is a means by which the disease may come from an infected ship past quarantine, and that means is this. The people that are kept in quarantine must be fed. They are obliged to get their food from the neighboring town, and the parties who bring in that food are not surgeons, because if they were they would be antiseptic surgeons and pay attention to all the little details and be careful. Very frequently from quarantine a passbook is taken and orders are put in the passbook, and these pass-books are in contact with the diseased person. They are sent to the town, the provisions are brought from the town and are handed over to the persons who are sick, and thus the germs may pass quarantine, although quarantine may be effective otherwise. There is another point. The ship arrives in quarantine and the baggage is disinfected and the ship disinfected, and the passengers are put out on shore. Then these passengers are suspects for a time to see if the disease will break out among them. In the meantime another ship arrives, and the first passengers may not have gone. The new passengers are disinfected and put ashore. These may not have the disease, but it may break out on shore among the first lot or amongst the second lot. So there should be a place where the passengers under observation would be completely separated from others, and there would be no chance for their contracting the disease again if it should break out among them. There is another question with regard to immigration. Dr. Bryce has stated that if immigrants were prevented for a year from coming to this country, except from Norway and Sweden and the British

ports, we might keep out the cholera, but there is nothing to prevent immigrants coming from infected ports to Liverpool and taking through tickets from Liverpool to this country. A steamer arrived at Quebec yesterday, the "Sardinian"; she came up after being forty-two hours in quarantine. On board the Sardinian was a man coming from an infected port, or at least a port in which there has been recently some cases of cholera. I have a personal knowledge of that, and how many among the six hundred immigrants came from infected ports nobody knows.

DR. J. W. MILNE, Vancouver—I am a health officer in the city of Vancouver. You must discuss not only quarantine of the individual himself, but disinfection in every particular. To illustrate, although I do not wish to condemn anyone at this time, either the Government or its officers, I will show how we were unprepared for small-pox in British Columbia. During the first week of June the "Empress of India" arrived at Vancouver; she is one of the finest ships of the C. P. R. line. She brought over a large number of immigrants, chiefly Chinese and some Japanese and other passengers. A Chinaman was found ill with the disease. He was quarantined at the station, eight or nine miles from Victoria, and the ship was disinfected. Only the Chinamen were detained. The Japanese and other passengers were allowed to go to Vancouver and everywhere. When that vessel left Japan small-pox was epidemic there. Now the Japanese should have been quarantined. The Japanese passengers went out through the country, and we have had small-pox there to a great degree; and to show you that our apparatus at that time was inoperative and not sufficient for the case, in the city of Victoria we had only one case for six weeks after the arrival of the ship, and within ten days after that we had forty cases. You can understand what a panic it caused. Although I have never made it known there, and though I have never asked for a commission to see how the disease came to spread so rapidly, I will show you one point that I believe was the cause of that disease spreading. Within three days there were, I think, six grocers taken down with small-pox. Two or three of these grocers died, so you can understand the feelings of the people on that occasion. I believe the Japanese teas were one mode of infect-

ing the people of the city of Victoria. If we had had the proper apparatus to disinfect the cargo at the time, I do not believe we would have had one-half the number of cases that we had there. Forewarned is forearmed. The Government have since taken steps to have a proper disinfecting apparatus there, which should be, and I hope will be, sufficient. Dr. Bryce has pointed out that at the ports of the East every precaution is being taken. I hope the Government will take the same precautions in the Far West. The fact is, there is a class of immigrants coming to British Columbia, such as Chinamen, a class who are likely to disseminate diseases, a class, to use the remark of my friend behind me, whose alimentary canals cannot be kept in right condition. They will eat rice, and you cannot keep them clean. If we can only check them from coming into the country as soon as any epidemic is made known to us, we will be quite willing, as far as the Chinese and Japanese are concerned, that the immigration should cease at once. That is a point worthy of consideration by the Government of this country, if they find cholera is likely to come in here. I think that, as far as we are concerned in the Far West, we could well do without the Chinese immigrants. I hope the remarks of Dr. Bryce on this matter will be considered, and the Government will take proper steps to procure the right disinfecting machines for the Pacific as well as for the Atlantic coast. We have no conception how soon that disease will break out in China and Japan, and I think the rapid means of transportation that we have will help its spread. I hope the Government will take every means to prevent the disease coming in, not only through the Eastern ports, but also through the ports in the Far West.

DR. BEGGIN, Cornwall—I have listened with very great attention to Dr. Bryce's remarks. As far as he has gone, I think the means he proposes for the prevention of cholera coming into this country are means that will be most effective. If only preventive means are to be used, I quite agree that everything would have been done if we acted on the suggestions of Dr. Bryce. But we must go very much further than that. A gentleman behind me touched the very core of the subject. Cholera, when it visited this country in 1832 and 1854, was confined principally to two main lines of travel, the rivers and the lakes and the line of the Grand Trunk Railway,

but there is an entirely different condition of affairs now. These two lines of travel form but the minimum of the great lines of travel to-day. We have not only the great C. P. R. in addition, but we have the hundreds of lines that herring-bone this country in connection with the Grand Trunk Railway and the C. P. R., all built since 1854, so that the possibilities of cholera spreading have been magnified many hundredfold since 1854, and therefore the means to be taken to prevent the spread of cholera in this country by the Government, and the responsibility necessarily resting upon the Government, have increased many hundredfold also. Speaking of Grosse Isle, it is looked upon as the quarantining ground—the only quarantine station, in fact, in the Gulf of St. Lawrence—the only station at which we now stop ships coming into this country, and I think we might ask ourselves what has been done and what is being done to prevent cholera coming into this country. Dr. Bryce has told us that there you have a small apparatus constructed upon the best known principle to-day, an apparatus capable of thoroughly and efficiently disinfecting the clothing of the passengers who come to that island upon the ships, but it is quite manifest that if that instrument is to be of any use it must be enlarged many times. We must have more than one of a larger size, should there come any number of people to this country upon these ships. I avoid at this moment discussing the question whether we should prevent immigrants coming into this country at all during next year; but suppose five or six ships with, as they usually have, from six hundred to a thousand passengers, are lying at Grosse Isle to-day, what are you going to do with those vessels? Where will you put them? What means have you of landing the passengers on the island, and what provision has been made for their comfort and protection, and their clothing and provisioning, at that island? It is a question that is not likely to be called much into consideration to-day, but it is a question which we will have to consider very seriously before next spring. You will require to provide protection, in the shape of dwellings or tents, for next spring at Grosse Isle. You will require to see that you have also, after these people have been disinfecting, other buildings in which they shall be placed before they are removed from the island, and these buildings should be isolated from the building in which the suspects or

the passengers that follow those who have been in it the day before will be placed. You require to thoroughly disinfect those buildings, after the passengers leave them, before you introduce new passengers, and those new passengers must be disinfected before they are put in that building. You must see that the clothing they receive is not infected in any way before it is given them. You must see that when being moved from the island they are not exposed to contact in any way with anyone who may be suspected or whom we have any reason to suspect. You must see that the vessel in which they go is thoroughly disinfected, so that they may carry nothing further with them. When we have provided them with shelter, clothing and food, what provision is made to give them pure, wholesome water at Grosse Isle? Have you any means of providing pure, fresh water in quantity to accommodate five or six thousand passengers at Grosse Isle? If you have not, it is one of the duties that you must perform during the coming winter. Now, I think it is unfair to the Minister, and unfair to the country, that we should conceal anything that we think is absolutely necessary to be done to secure immunity in this country from cholera. Dr. Bryce has pointed out that he is merely outlining the general features of what he thinks necessary to be done at Grosse Isle; for all these things must be done. None of them can we afford to overlook if we would secure the country from cholera. Now, I should like to ask, as Dr. Bryce has lately visited Grosse Isle, what provision has been made for disinfecting the buildings there after the immigrants leave them and before the passengers are introduced into the new buildings? I am asking this in the interests of the Government and in the interests of the country. I am asking this more than all in the interests of the Minister, who, not being a specialist, has asked us to give him the fullest and freest information to-day. I am asking him whether we are provided with the best and most thorough material for disinfecting the ships, whether we have it for disinfecting the cargoes as well as for disinfecting the clothing? I ask what means we have—and Dr. Bryce has incidentally directed attention to it—what means we have of reaching the ship with the necessary material for disinfecting it? I would ask what means we have for removing the passengers safely and comfortably from the ships to the island? I would ask

what means we have for thoroughly disinfecting the ships before the passengers are returned to them, or whether it would not be better for the Government to provide such a vessel as Dr. Bryce has spoken of as being in use in Philadelphia, and whether it would not be, in the emergency, the better means to take for using the apparatus I have mentioned? I know that it has been suggested that a long wharf at Grosse Isle is a necessity. Now, that brings up two questions: Whether the long wharf, if constructed, would be required for many and many a long year to come? Supposing it were in existence to-day, would it be required for a long period? We seldom get through the St. Lawrence any disease that causes general alarm beyond cholera. Since 1848, when we had that unfortunate visitation of typhus fever, I might say we have had nothing except cholera to cause widespread alarm. The estimate, as I understand, for the construction of that wharf is two hundred thousand dollars; but that two hundred thousand dollars, I think, might be devoted very much better to the purposes of which we have spoken. There are other points on the St. Lawrence where a quarantine as effective as that at Grosse Isle could be found, and where it would not be necessary to construct a wharf of that kind, where there is deep water and plenty of shelter, and where the facilities for landing and transporting the passengers would be better than they are at Grosse Isle. This is a question which I pointed out to the Minister as one to be considered during the coming winter. I am not proposing to pronounce dogmatically upon any of those questions. I am throwing them out as matters which require consideration, and which, when the country finds they are being thoroughly considered and that the Minister is giving to them, and will give to them during the winter, that care and attention which he has given to them during the last two or three months, will go a long way to do away with that dread which has so much to do with the mortality of cholera when it once appears in the community. We all know that if we are in the best of health, and if we have also the fullest courage, we are not likely to succumb to attacks of disease; but if we are overpowered with fear and our vitality has left us, when the dread destroyer comes, destroy us he will, and therefore I think it is desirable that the country should have the fullest assurance, and it is having it every day, that all

the scientific bodies in this country are devoting their attention to this question; that we have our health officers all through the country, as you know from what you have heard from Dr. Bryce to-day and from our friend from British Columbia; that we have the very ablest sanitarians of the day at the head of the department, and it gives confidence that the administration of the health department is alive and active, and all that, under God, can be done by human means to prevent the introduction of cholera into this country will be done, and there its mission ends. After that comes the duty of the provincial officers, the duties of which Dr. Playter has spoken, and which we have the best evidence will be fully done by those provincial officers.

HON. MR. CARLING—I can assure you it gives me very great pleasure indeed to meet the Canadian Medical Association. This discussion shows that you are fully alive to the interests of the country, and prepared to do everything you can to prevent anything like an epidemic of cholera in this great Dominion of ours. I can assure you that the Government is fully alive to the importance of having everything that can be done (as has been said by my friend Dr. Bergin) by the Government of the Dominion to prevent cholera appearing in Canada attended to before next spring. Of course, as you are aware, we have perhaps not taken the precautions heretofore that we are taking now, because we have not been troubled by anything like cholera, and, in fact, other countries have taken perhaps no steps greater than we have. I believe that no quarantine was established at ports in either England, Ireland or Scotland; that patients are taken to the hospital—so I am informed; that they have no disinfecting appliances at Liverpool or the chief towns, cities or seaports, except at the hospitals, which are provided either by the Government or the municipality or locality, and I believe now that the city of Portland, the city of Boston and many other cities of the United States have not provided any more appliances for the prevention of cholera being introduced into the country than we have in Canada. But we are determined, as far as we are concerned, that we will use every effort and introduce every appliance that can be suggested to prevent cholera being brought in at Grosse Isle, or at Victoria, or at Halifax and many other points. Nearly everything that has been spoken

of and nearly every suggestion that has been made to-day is now being put into operation. I may say to you that in New Orleans they have steam disinfecting appliances which I believe have been most successful, and I have been informed on good authority that since the appliances at New Orleans have been in operation no cases of yellow fever have passed the city of New Orleans up the Mississippi River. The appliances they have there have been most effective. They have appliances in the city of San Francisco which are equally effective. We have had reports from our quarantine superintendent at Grosse Isle, Dr. Montizambert, recommending certain appliances similar to those at San Francisco and also similar to those at New Orleans and other cities in the United States, and I might say to you that the appliances we propose introducing at Grosse Isle will be similar to those that we have now. We sent to Toronto, and the authorities at the Isolated Hospital there were good enough to let us have for use at Grosse Isle a disinfecting steam apparatus that they had constructed, at the price they paid for it, and they are now having a new one constructed. We are using that to the best advantage for this autumn, but for next spring we have plans and specifications and are receiving offers for the construction of steam disinfectors to be made and placed in position this autumn, so that there will be appliances to disinfect any vessels that come up the St. Lawrence. I believe the largest vessel that comes up the St. Lawrence can be disinfected inside of twelve or fourteen hours with these appliances. I may say to you that this steam disinfecting apparatus at Grosse Isle is very simple, and it was the best we could get. It is only nine or ten feet long by some four feet in diameter, and three men are constantly kept there to use it to the very best advantage and to put through it every article of clothing, luggage and bedding as fast as it can be done. But the appliances that we intend putting there next spring are three large steam disinfectors, each twenty-four feet long and eight feet six inches square. We will have three of these, with steam boilers for each one, and vacuum pumps, and no matter how many vessels come in, with those appliances, we expect to be able to disinfect the whole ship-load inside of twenty-four hours at any rate. That is being done at the present time, and we have given positive orders to the Public Works that

those appliances must be in place before December, 1892. Then, in regard to the water, we have now wells which have been deepened and enlarged, and I believe there is a good supply of pure water both at the eastern and the western ends of the island. We are now taking steps to have large condensers, and instead of taking the water from the south side of the island, where it is inclined to be muddy, we intend to pump it from the north side of the island, where there is no sewage or dirt, into a reservoir, from which we can supply any quantity of water for washing, or closets, or baths, or anything of the kind. So I can promise you there will be an abundant supply of water at the quarantine station before the winter sets in. Then, with regard to the buildings, we have large sheds there. Perhaps they were not in the condition they should have been. I fancy it was overlooked through the officers on the island not asking for it, but we have had a staff of carpenters sent down there with instructions to do everything that is required or asked to put the buildings in good condition, furnish them with chairs and tables and cooking stoves, and all the appliances that are really necessary to make the people that are unfortunate enough to be brought there comfortable. All these appliances are being provided at Grosse Isle; and with regard to the deep water wharf, Dr. Montizambert has urged the deep water wharf over and over again, and my own impression is that it should be built, unless there is some serious objection that we have not foreseen; but it has been suggested by some gentlemen that the water in the channel going up to the wharf is not sufficiently deep for a vessel drawing some twenty-five or twenty-six feet of water. That is something that has been mentioned lately, and must be considered if we were going to build a large wharf, which is estimated to cost not so much as Dr. Bergin has stated (I know it has been estimated to cost half a million), but Mr. Coste of the Engineering Department has made an estimate that to extend it into deep water, so that the largest vessel coming up the St. Lawrence would be able to touch at it, the price would not exceed one hundred thousand dollars. We are taking steps to ascertain the depth of the channel to see whether, if a wharf is built, the channel will be of sufficient depth and width to allow the largest vessel coming up the St. Lawrence to go to the wharf. If it is not, we are ascertaining

about other places that have sufficient depth of water and whether they are suitable for quarantine; but in the meantime, as we have not the wharf and as we have the whole Dominion at our back, there are plenty of vessels to be procured. The "Druid," a steamer belonging to the Marine Department, has been kindly offered for our service, and it is used at the present time. We have the "Challenger," and if it is necessary to use another vessel, or to have two or three vessels, money shall not stand in the way. We will have all the appliances there that are necessary until we get a wharf; and the question now is whether the wharf will be abandoned or commenced immediately, or other means adopted, or another place selected. But Grosse Isle is a very suitable situation, and I think one of the best we can get. It is about thirty miles below the city of Quebec, and with all the buildings and appliances we have there now, it would be a mistake to change the site if it can be made as we expect it can. Then, with regard to other places, we are taking the same steps at Albert Head, in British Columbia, which is on the Strait of Fuga. We have a quarantine ground there, some ninety acres, I think. We have a building there which was rented some eight or ten years ago. We have applied for and put on board a small vessel a di-oxide blast to be used for disinfecting the baggage. In addition to that we will have two large steam disinfectors, similar to those to be placed at Grosse Isle, placed at Albert Head during the winter, and we are bound to make the quarantine at Vancouver, which is the port for the vessels coming from China and Japan, and Honolulu, and San Francisco and different places in the United States—we are bound, without any delay or without any regard to cost (we are not going to throw money away, but the Government gives me full power to complete those stations in a thorough and effectual way), to meet the wishes of the people of the country. No stone will be left unturned to make every quarantine station as complete as it is in any other country in the world, not excepting the United States. Our buildings at Halifax had been used for a barracks. The troops were withdrawn some years ago, and since then they have not been needed, but now we do need them and we are putting the buildings in thorough repair. We are urging the Public Works Department, and they have instructed their

officers at Halifax, and Chatham, and St. John, N.B., and other points to put the buildings in repair, and the proper appliances are being got ready to put them in order during the present month, so that should cholera happen—though I hope it will not—to be brought to Canada next spring we will be prepared to meet it at all outlying ports, east and west. In addition to those steam disinfectors we are making smaller ones. We may not require large ones at all the different ports, but we think at Grosse Isle and British Columbia they are really necessary, and perhaps at St. John, though there is no great number of immigrants coming in there, but we will not require as large a steam disinfecter as at Grosse Isle at Pictou, nor at Charlottetown, P.E.I., nor at Chatham, N.B. All those different points are being looked into at the present time, with a view of having them put in a thorough condition by next spring, and there is no hesitation on the part of the Government to provide means to put them in proper condition. They have given full power and authority to spend whatever is necessary to put them in the condition they should be in. I do not think I have anything more to say to you at the present time. I shall only be too glad to answer any questions that may be put to me. As you will see, we have issued a proclamation to quarantine our inland ports along the frontier. Our good friends, the Americans, a short time ago talked of calling out fifty thousand soldiers to guard the frontier against cholera, which they expected would be introduced from the great Dominion of Canada. I think if there is to be any calling out of soldiers, we will have to call them out in this country to prevent cholera being brought into Canada from the United States. We have taken, and are taking, all the precautions that we can. A proclamation has just been issued to all our Custom House officers along the frontier appointing them quarantine officials, with authority to call in medical aid at every one of these ports when required, and to do all they can to prevent cholera coming into Canada. What has been done in the maritime ports has been done at the inland ports, and not only in Ontario and Quebec but all along the lines from the Atlantic to the Pacific, wherever railways come in and wherever there are Custom House officers, and we have a good many all the way from Victoria in the west to Sydney in the east, we are taking

steps to prevent anything like cholera coming into these ports. I do not know that I can say anything more. I am exceedingly obliged to you for giving me a few moments to speak on this subject. I am very glad to meet you all, and to hear the discussion that has taken place, and perhaps it will be a benefit not only to the members of the Cabinet but also to the country generally to let them know that we are fully alive to the importance of preventing cholera coming into the country. It would be unfortunate if we were to do anything to frighten the people. I think that there are many that are frightened, and we ought to try to allay that fear as much as possible. When they know that so many medical gentlemen from all parts of the Dominion have been here discussing this question and have given their views on the subject, and when they find that everything is being done that can be done by the authorities to meet their views, it should satisfy the public mind throughout the Dominion from one end to the other.

DR. BERGIN—There are two or three questions that I would like to put to the Minister that I think possibly he would like to answer, as the public are very anxious over them. One question is as to what disposition is to be made of discharges from the patients who will be in hospital at Grosse Isle? Another is as to how the clothing of the dying and of the dead will be treated? And another is as to the dead themselves—what disposition will be made of their remains, whether they shall be interred at Grosse Isle or whether their bodies shall be cremated, and if so, whether preparations are being made for those purposes?

HON. MR. CARLING—I am very glad to hear the questions from my honorable friend, Dr. Bergin, but really at the present moment I am not able to answer them, as we have left matters of that kind to our superintendent at Grosse Isle. I know that he has full authority to do whatever he thinks is best, but he, of course, makes his reports to the Department, and every question of that kind will be fully considered. A very large number of people were buried on the island when the cholera broke out before.

DR. BERGIN—That is the very reason that I asked that question.

HON. MR. CARLING—I am not prepared to give an answer to the question, but I am very glad that it has been asked; it

will give me an opportunity of ascertaining the views of Dr. Montizambert as to what is the best to be done under the circumstances.

DR. BERGIN—The object of my question is this, that so many have been buried there who died of malignant diseases that if we were obliged to bury a very large number again we might possibly disinter typhus fever.

HON. MR. CARLING—I should like to know from the medical gentlemen here what their view is as to the best means of disposing of the dead. Perhaps they would suggest that they should be cremated or buried away from the island. It is an important subject.

DR. BERGIN—Dr. Wright has suggested, and it is a suggestion full of truth, that these wells on the island might absorb, from so many bodies and drains filled with the dead as there are on Grosse Isle, the germs of disease, and through the water they might be communicated to those who had been disinfected of cholera and who might be supposed to be perfectly free from any danger of the disease. One of the most important precautions that have been taken in England and France is to provide everywhere filters of smaller or greater size which are known to be germ proof.

HON. MR. CARLING—The well that has been there for a number of years has been very much enlarged and deepened, and the officials report to me that the water is first-class. We have considered the question of sinking artesian wells through the rock to a great depth, or if we should not do that, to get the water from the north side of the island, pump it into a large vat or cistern that will be made, a settling tank, and then have the most improved condensers that can be found to condense the water and make it pure. All that is under consideration, and nothing will be left undone to provide plenty of water and as pure water as can be procured.

DR. W. W. DICKSON—I think the meeting should give an expression of opinion as to the disposal of the bodies and clothing of those that die of the disease. We should not go on burying the remains of those who die of such diseases as small-pox, cholera and typhus. The bodies and the clothing should be destroyed by fire. It has been suggested that a committee should be appointed to prepare resolutions offering

suggestions to the Department as to the proper means of carrying out the idea which I have just been endeavoring to express. It would be well to allow Dr. Cameron to ask for this committee. However, we might express an opinion by carrying this motion—"That in the opinion of this meeting the excreta from the dying and the clothing of the dead and dying and the bodies of the dead should all be cremated in the most efficient manner that is possible, but with the least possible delay."

DR. J. A. MULLIN—I think the committee should deal with the question as a whole.

DR. CAMERON moved that a committee be formed for the purpose of drawing up resolutions embodying the suggestions of this meeting on the subject.

The motion was agreed to.

DR. HENDERSON, Ottawa—In conversation with Prof. Webster of Virginia on the subject of cholera, he asked me to mention to the Association that during the late epidemic of cholera in the United States he made inquiry as to the effect of occupation on the disease. He wanted a pointer as to prevention. He found that the mechanics employed in workshops of copper almost entirely escaped the disease. He thought that this fact might be of value and wished it brought before the Association. His suggestion was that vaporized copper might be used as protection. If the vapor of copper in workshops prevented the comma bacillus from thriving, why should not the same vapor be used for the purpose of protection against cholera?

(To be continued.)

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THE CANADIAN MEDICAL ASSOCIATION MEETING.

The twenty-fifth annual meeting of the Canadian Medical Association was held in the Parliament Buildings, at Ottawa, on September 21st, 22nd and 23rd, Dr. J. L. Bray of Chatham, the President, occupying the chair. In all respects it was a most successful gathering. In point of numbers it was nearly equal to the meeting held in Montreal last year, when upwards of one hundred and fifty members were present. Montreal, Toronto, Hamilton and Kingston were well represented. An unusually large contingent of the profession from the Ottawa valley were present.

The papers read were of more than ordinary merit, the discussion in nearly every instance being well sustained. During the course of the next few months we intend to publish the leading papers together with the discussion held.

During the first day a discussion of more than ordinary interest was held on cholera. The Hon. Mr. Carling, the Minister of Agriculture, was fortunately present at this session, and partly as result there has been an awakening among the federal authorities, and we are now promised for the future quarantine methods not inferior to those of other civilized countries. Had no other result been attained than the awakening of the Ottawa Government to its duty in the matter of public health, the meeting would have been a great success.

On the evening of the 21st of September the profession entertained the visiting members to a conversazione at the Russell House. This proved a very enjoyable affair.

On the evening of the 22nd a public dinner was participated in by over one hundred of the members. Sir James Grant, who occupied the chair, was more than usually eloquent on this occasion.

The presence of Dr. McLean of Detroit and Dr. Bulkley of New York added much to the interest and profit of the meeting.

Dr. Bray is to be congratulated on the able and pleasant manner in which he presided at the various sittings. The efficient secretary, Dr. Birkett, pleased everybody. The great success of the meeting is owing to its efficient executive officers and to the energy and progressiveness of the members of the medical profession residing in the city of Ottawa and immediate vicinity.

THE CHAIR OF PATHOLOGY IN MCGILL UNIVERSITY.

We are greatly pleased to be able to announce that a full chair of Pathology has been instituted in McGill University, and that J. G. Adami, M.A., M.B., has been appointed professor of this subject. Dr. Adami has for some time acted as Demonstrator of Pathology in Cambridge University. He is recognized as one of the leading younger English pathologists. McGill University is to be congratulated in having secured the services of a man so fully competent to fill about the most important chair connected with the Medical Faculty.

Medical Items.

A FATAL CURIOSITY.—A weaver in Accrington, England, put a turpentine stupe over his abdomen for the relief of a severe colic. It did not seem to burn as much as it ought, and he struck a match to see what was the reason. The match ignited the turpentine and the man was burned to death.

A DENSE POPULATION.—There is a block in New York city, bounded by Ridge and Pitt, Houston and Stanton streets, in which 2,985 people live. This is at the rate of a million people to the square mile, and this block is probably unsurpassed for density of population by any other block in the world.