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THE PRESIDENT'S ADDRESS.

BY

R. W. POWELL, M.D., Ottawa.

*Delivered at the Annual Meeting of the Canadian Medical Association,
Ottawa, Sept. 12, 1900.*

Gentlemen of the Canadian Medical Association :

When you did me the signal honour to elect me to the Presidential chair of this Association I naturally felt a sense of buoyancy and elation in my unexpected and newly found distinction, but as time wore on, the sense of elevation began to diminish until the date of the meeting came within measurable distance, when I gradually became but the shadow of my former self and have just escaped, I think, a total eclipse. If you know of any of our members particularly aspiring and thought to be suffering from that peculiar and subtle form of enlargement of the cranium commonly known as "swelled head," just elect him President of this Association for one year, and if he is not rapidly and permanently cured, my capabilities as a prognosticator must be weak indeed.

So far as I am concerned I found myself groping aimlessly about and trusting that a miraculous light would penetrate the convolutions of my fast waning mental faculties, and enable me to startle you with something novel and refreshing in the way of an address, but instead of this, gentlemen, you will, I fear, have to exercise a merciful forbearance for a very limited period of time while I endeavour to touch on one or two matters that appear to me to be of general interest to us as a profession in these days through which we are passing.

It is well nigh a hopeless task, gentlemen, to even begin to thank you

for the great compliment you have paid me in selecting my name for this position, and thus to place me in the long line of distinguished men who have preceded me in this chair since Confederation.

The honours which normally fall to medical men are few and far between when their lives are spent entirely in their professional calling, but the greatest of all honours are those which come at the hands of one's fellow practitioners.

Be assured, gentlemen, your generous and unexpected action towards me is especially gratifying, and will never be forgotten. Small wonder that I have in some measure attempted to requite you by using my best efforts to bring this meeting of the closing century to a successful issue.

This Association has in the past been presided over by painstaking and distinguished men, and it is to their past efforts and their unselfish devotion to our highest interests that we owe our life as a society to-day; and I would take this opportunity of according to them our deep sense of gratitude and admiration. This Association has gone through many and trying vicissitudes. Its path has not by any means been "*couleur de rose*," but on the contrary, has many a time and oft been beset with the briers and thorns inseparable from the early and struggling life of a plant of culture and refinement. After a nurtured infancy and successful and healthy early life, it had its disorders of childhood; its ranks were depleted by that scourge of "non-attendance," which in society life is so horribly contagious, and its very life has been threatened more than once; but like many a healthy and well born youth whose constitution and habits have been good, it has survived these storms and disasters, and has risen to matured life strong in its purposes, confident in its stability and determined to fulfil its high functions.

Last year in Toronto the society evidently took a new lease of life, owing to the able Presidency of Mr. Irving Cameron and the untiring efforts of the general Secretary, Dr. Starr, also a Toronto man, aided to the full by a most capable and zealous local Committee of Arrangements.

Some 242 members registered, and it seemed to be the general opinion that never again must the interest in, and loyalty to, this Association be allowed to flag. Do you wonder, gentlemen, that I have been anxious as to the successful outcome of the meeting for 1900. Ottawa loves the Canadian Medical Association and has endeavoured in the past to show her loyalty by 'affording a resting place for the annual meeting. We met here in 1871, 1881, 1889 and in 1893. With the exception of the first year mentioned, 1871, when, indeed, I was in swaddling clothes, I have taken a more or less active part in the neces-

sary arrangements; but I take the greatest possible pleasure in saying to you now that never before have I seen such a unanimous desire to maintain the good reputation of the city, as has been displayed by my confrères since I announced to them the Society's decision to visit the Capital again, in this the closing year of the marvellous century, through a part of which we have all been passing. No dissentient or croaking voice has been heard, but on the contrary, the utmost loyalty has been extended to me in this my hour of trial. It is thus my labours have been lightened, and if we have in any measure afforded you collectively and individually a pleasant visit, I trust that honours will be divided and my colleagues in practice in this city will receive at your hands their just quota. We are but a handful as compared with our sister cities, the great business centres of Ontario and Quebec, but our hearts are overflowing with welcome to the members of our beloved and honoured profession from the Atlantic to the Pacific.

Shortly after our return to our homes from the Toronto meeting the country was thrown into a flutter of excitement when the diplomatic correspondence between England and South Africa was suddenly terminated by the memorable and pithy note emanating from Mr. Kruger, which set all England aflame. There was nothing for it but to resort to force as a means of backing up her reasonable demands, and so enlarged preparations were set on foot to plant the flag across the Vaal.

The world is not likely to forget the events of the autumn of 1899. From far and wide, throughout the habitable globe, wherever Great Britain holds her mighty sway, came the same dutiful appeal to the Motherland. This appeal was strong in its simplicity and earnestness. It is summed up in a few words: "Allow us to show that we are in very deed and not only in name a part of the British Empire. Let us reciprocate now for the early fostering care received during the trying days of our early existence, when we were struggling to establish something more lasting than a dependent colony." This appeal was not in vain, but was eagerly heard and allowed, and so it was that a purely volunteer contingent was mobilized, equipped and on the sea in about three weeks.

It was well known that the British Army with its organization resulting from long experience would willingly and ably attend to the medical and surgical necessities of our men in the field, but the enthusiasm had spread beyond the rank and file of the combatants, and though the personal and pecuniary sacrifice was great, yet offers came pouring in from members of our profession, tendering their services to go with "the boys" to the front. It was known that the Royal Canadian Regiment would probably only require a modest surgical equip-

ment, yet offers came from 120 surgeons to be allowed to volunteer for active service. It is only fair to record also that, to their honour be it said, over 190 trained nurses offered themselves when it became known that a nursing staff would be permitted to accompany the regiment. Very soon it transpired that certain distinguished men in civil practice in England had offered their services to the Crown for purposes of the war, and that these offers had been willingly accepted in order that the sick and wounded should have the best advantages and the most modern and skilled advice at the base hospitals.

Our Canadian confrères were eager to be allowed to go and do likewise, and it is here, gentlemen, that a page of humiliation has to be written. "You are good enough to practise on Canadians, but having no registration in Great Britain, you could not legally practise in South Africa." Our loyalty and devotion to the Empire are smothered in the mazes of legal technicality, and when the question was asked in the British House of Commons as to what position the few Canadian surgeons who were permitted to accompany their own men did occupy, the far reaching and honest reply was given, by Mr. Broderick I think, that "he really did not know, and that the matter was too complicated to admit of discussion."

Our Antipodean relations were not so treated. Up to recently they were, as you know, self-governing colonies, each being able to treat direct with the General Medical Council, and to their credit and common sense be it said, that in the framing of their new Australian Commonwealth, they have taken a lesson from the unhappy position of their Canadian brothers and have seen to it that in matters pertaining to medical education and registration the central government has the control.

Gentlemen, it is my belief that we must make a step forward and do something to erect a bridge over the provincial boundary lines. I use this phrase advisedly as it explains what I mean, as against breaking down the barriers. This latter is what cannot be done, but the bridge can be erected by consent, and this without doing violence to the rights of any within their own domain.

Eleven years ago, in the preface to a little book I compiled, I wrote the following:—

"The B. N. A. Act having consigned all matters affecting education to the various Provinces of Canada, as distinguished from the Federal Parliament, these separate Legislatures have from time to time passed certain Acts governing the Profession of Medicine and Surgery, and it has often occurred to me that it would be a useful and interesting work to bring these various measures together into one volume for the sake of convenience, as well as of comparison, anticipating perhaps, the time when legislation governing our pro-

fession shall emanate from the central authority and thus from a one portal system of entrance. In saying this I believe I am only voicing the sentiments of a large majority of the profession in Canada who consider the method now in vogue to be cumbersome, expensive and unnecessary.

The majority I there refer to is now a vast wave, I verily believe, of the general profession, who, although the way is not yet perfectly plain, are hoping with a fervent desire that the obstacles may soon be overcome, and that those who desire enlarged pastures may have an avenue opened to them, whose lines will be sacredly guarded and whose examination hedges will be high enough to secure it from being scaled by any but highly trained provincial athletes. It is not to be inaccessible, but its dignity is to be secured by legal enactment, whereby it is not suffered to be lower in its requirements than the highest at any time existing in any province.

Surely this is fair. None are compelled to enroll upon its register, but those who wish to ought to have a way provided by which they can obtain a Dominion license, and so secure recognition in Her Majesty's Empire.

Provincial registration will still remain and it will still be for each province to fix whatever standard it pleases for its own practitioners. It is this very difficulty of securing uniformity in the standards of so many provinces that has up to now effectually blocked all efforts at interprovincial registration. I, for one, am glad that such a scheme has failed in its accomplishment, because no matter how perfectly conceived and organized, it would never do for the men of this country what Dominion registration will most assuredly do.

It is not for me to enter into details, but I consider a great responsibility rests upon us now in this matter. We are guardians of the higher interests of that army of young men forever pouring into our ranks. We must see to it that we give them the highest advantages. We must rise above all selfish interests and not allow personal prejudice to stand in the way of so great an advance, whereby our men can have thrown open to them so great an Empire at such a minimum of cost, time, and personal inconvenience.

A question that is demanding increased notoriety and importance each year, is that connected with the care and management of cases of tuberculosis, and especially that form of the disease commonly called consumption.

Science has demonstrated that we must no longer continue to regard such cases simply as objects of our solicitude, sympathy and regret, but that each one in its own sphere is a direct menace to the health and continued life of those with whom it comes into direct relation in the

ordinary walks of life. It is well established that hereditary influences, once regarded as so potent and far reaching, are but a predisposing condition of weakened vitality; and, further, that the chief reason for the continual occurrence of phthisis pulmonalis among the members of the human race is to be traced to an infection from a preëxisting case.

The quiet spread of this wonderful news is having its good effects in a miniature way, and the daily warnings and precautions of enlightened men to their patients and the patient's friends are slowly but surely extending this gospel over the whole universe. I have been struck often with the information possessed on the subject by even the ignorant and poorer classes, who with but a superficial smattering of knowledge, eagerly seize upon the good news and endeavour to carry out, even in a perfunctory way, the instructions laid down for their guidance. It took a very long time, gentlemen, to inoculate the marvellous news of vaccination, often into an unwilling public, but if ever anything was proved, it has surely been put beyond cavil that a community properly protected by vaccination is practically fearless about smallpox. It has taken a longer time still to influence the ravages of syphilis, but the patient efforts of our profession throughout all civilized countries is having its just reward, and the poison has become gradually attenuated as each decade has come and gone until now-a-days, except under unusual circumstances, we rarely see the revolting, disgusting and manifest lesions once so common and easy of daily demonstration.

Just so it will be, in my belief, with the white plague now a menace to the human race. The efforts of science, the revelations of the microscope and the patient work of the bacteriologist and the clinician, have given us sufficient information whereon we can base a practical standard of conduct, and even now we can observe the result of our earnest and painstaking efforts to prevent the spread of this dire malady from patient to patient. It is not for me on this occasion to weary you with details that are instilled into us all more surely and with greater vigor than our catechisms ever were, but I would take this opportunity to say that none of us are too humble or unknown to take, each one for himself, a fair share of this grand work.

The time has come when those of us who are connected with public institutions must steadfastly set our faces against receiving consumptives into our wards. Such a change of demeanour towards the sick and suffering cannot be carried out too suddenly, lest we unnecessarily shock the refined but untutored sensibilities of a philanthropic public; but the more we fight against this practice and the more we spread the knowledge, the sooner will philanthropists come to recognize the crying

need of their open-handed aid to their afflicted brethren, fast coming into dire straits for a place whereon to lay their wearied frames.

Shunned by their neighbours, yes, by their intimate friends to say nothing of their relations, passed on from hand to hand, refused admission here and there, strength fast waning, slender means and opportunities for replenishing their financial resources rapidly fading from their horizon, their condition is indeed pitiable, but beyond it all the stern sanitarian is forced to keep in view the greater problem—the protection from disease of the greater number. Self interests are beginning to tell; the home of the merchant prince or millionaire capitalist is not regarded as sacred ground by the tubercle bacillus, who expends his unmerciful ravages wherever he is an invited guest, and once granted an asylum, he is not easily dethroned or turned adrift by the forces of culture, ease, refinement or wealth.

The cry is now being heard to arise in the land: "Keep us free from contamination by this awful scourge which brings sorrow and disaster to so many of our homes. Do not allow consumptives to mix with well people."

Prohibit them from public places. Shut the doors of our churches, our theatres, our railways, our public conveyances to them. Do not allow them to expectorate on the public streets, to say nothing of such a practice inside the four walls of a building—in other words, isolate them from all mankind. The answer is simple. It is impossible to work so radical a change immediately, but if those who are revelling in the enjoyment of sound health and in the possession of this world's goods will come to our aid, we will gradually but surely bring about a wonderful amelioration of the conditions above referred to. Help us to erect sanatoria in healthy situations accessible to the vast majority. Place these patients under suitable conditions by the expenditure of some of your overflow of means, and even a moderate lifetime will not be by any means too short to witness a revolution in the death rate and in the altered relationship that these afflicted patients now bear to their more highly favoured brethren.

In a small way such institutions are beginning to raise their heads in this country. I believe their number will rapidly increase and not be really felt as a burden on the public.

The Ontario Legislature has passed a bill at its last session providing a way by which one or more municipalities may establish a sanatorium for the care and treatment of consumptives. The province offers to bear a reasonable share of the cost and, when in working order, will pay out of the public funds \$1.50 per head per week to assist in maintenance; and the Act also provides that a further like sum may become a

charge on the revenues of such municipality. This is a great step forward and shows at once the inevitable trend of public opinion on this subject.

One more question of importance to us generally as a profession and I am done. We continually have our attention drawn to the case of a brother practitioner being forced to defend a suit for malpractice or else submit to blackmail. I am sorry to say that, unfortunately, the conditions in certain individual cases are such that the latter alternative has to be accepted and rather than be ruined, or perhaps have a reputation blemished, a settlement is made out of court. Not so, gentlemen, in other cases. A man's honour is something very dear to him and cannot be rudely assailed. A firm consciousness of rectitude in his action over-rides all appeals to a so-called common sense, and so he calmly submits to an action, and is content to allow himself to be tried. Unhappily his jury is composed always of men who in the nature of things cannot appreciate the refinements and technicalities of medicine or surgery, nor are they trained in knowing the vagaries of the human frame when exposed to disease or accident. The plaintiff often induced by low or sordid motives, or animated by jealousy or spite, perhaps goaded forwards by a hidden enemy of the doctor, takes his course with nothing to lose and everything to gain.

The defendant knowing full well the disastrous results of defeat in the withdrawal from him of public confidence, which is his only stay, uses every means to win. He is forced to employ the best available legal talent to fight for him, and eminent counsel with handsome retainers become necessary. Legal technicalities arise, and he is taken from court to court while the bar and bench wrangle over abstruse questions of law and the original suit is a mere circumstance.

The case finally is disposed of, and may be won or lost; but who do you suppose has supplied the sinews of war? Why, the doctor of course, and it oftentimes happens that he is absolutely impoverished, and has spent the savings or earnings of years in fighting for a principle and to uphold the honour and dignity of himself as a man, and of the profession to which he belongs.

Gentlemen, this ought not to be so, we ought and we must in some way stand shoulder to shoulder. It must be understood and published broadcast that our profession is too sacred a thing to allow it to be trampled upon with impunity. Actions for malpractice will surely continue, and if deserved cannot be defended, but unrighteous and unholy suits of this kind must be fought unhesitatingly and unsparingly, and when the public know that they cannot frighten a doctor into paying up hush money, but rather that he will be backed up and supported by

his brethren and their action bring down on their own heads publicity and shame and redound in the long run to the credit of him whom they are trying to disgrace, such actions will be few and far between.

This is not the place nor the occasion to formulate in detail a scheme for a defence association. Whether it is to be purely local, or larger and more provincial, or whether it should emanate from this Association and be Dominion, are questions well worthy of your consideration and debate. An enlarged scheme, such as I have just hinted at, could be undertaken without any very great difficulty and an executive chosen for each province who would carefully investigate the merits of all cases submitted, and if defensible, bring into operation the forces at their disposal through the various provincial channels.

This is but a rude outline of much that could be said and urged on this question, but I have no desire to weary you with a prolonged argument, nor to attempt to thrash out the details of organization whether provincial or Dominion, but I want at this meeting to arouse in you a sense of its far-reaching importance, so that if it cannot be inaugurated now, some of you may feel disposed, on thinking it over, to initiate a movement in the premises.

Gentlemen, I thank you for your reception of me as your President and for your patient hearing, and I hope I may be allowed to take my seat and enjoy myself for the rest of the session.

THE ADDRESS IN GYNÆCOLOGY.

BY

WILLIAM GARDNER, M.D.,

Professor of Gynæcology in McGill University and Gynæcologist to the Royal Victoria Hospital, Montreal.

Delivered before the Canadian Medical Association, Ottawa Meeting, 1900.

MISTAKES IN DIAGNOSIS AND TREATMENT.

From the standpoint of a consultant of over twenty years standing, I have learned something of the mistakes in diagnosis and treatment made by myself and others. I have conceived the idea that some consideration of this subject might not be unprofitable before a meeting mainly of general practitioners.

It is a trite saying, that we learn more from our failures than our successes. It is, perhaps, equally true that we learn more from our mistaken than correct diagnosis. The lessons we thus learn are often painful and the experience bitter, but they are not likely to be forgotten.

Accuracy in the diagnosis of pelvic conditions depends mainly on education of the sense of touch. This can only be obtained by long and patient practice and much opportunity for making examinations. All teachers of practical gynæcology will bear me out when I speak of the difficulty in giving to the medical student more than a few opportunities on the patient. It is far other with the teacher of clinical medicine, who can in most cases allow an unlimited number of students to examine a chest or lung case.

Nevertheless, many fewer mistakes would be made if attention were given to a few simple details. In this, as in everything else in medicine, the grand safeguards against mistakes are system and method in case-taking and examination. As a rule a woman's pelvic organs cannot be satisfactorily examined if she lie on a bed or couch. The many advantages of a table, a firm surface, for the physician's comfort, have only to be experienced to be realized. I am well aware of the difficulty in getting many women to consent to this, especially if the practitioner be young. Suitable personality and tactful manners will, in most cases, lead to success.

The condition of the adjacent viscera, the bladder and rectum, is all important. The rectum must have been emptied before the patient comes to the examining table. With reference to the bladder, my own practice, learnt by personal experience, is to empty the bladder by

catheter after the patient is in position on the table. The advantages are that: (1) We may note the presence or absence of discharges, such as that of gonorrhœa, about the genitals, and their character, a very important kind of evidence which we should lose if we allowed the patient to pass water naturally.

(2) There are many women who when asked to pass water immediately before a pelvic examination are unable from nervousness to do so.

(3) We get an uncontaminated specimen of urine for examination.

When from a suitable position of the patient, whereby the abdominal muscles are thoroughly relaxed, we may still have to contend with rigidity from nervousness or ticklishness on the part of the patient, this may be overcome by a manœuvre which I frequently practice with success. It consists in making a series of circular, frictional movements over the lower abdomen. These should first be in a circle of relatively wide diameter, the whole abdomen, but gradually narrowed to one much smaller. What do we gain by this manœuvre? If gently executed we overcome rigidity of the abdominal muscles and we displace gradually the intestines. These movements are the first thing done in the practice of the Thüre-Brandt method of pelvic massage.

Medical students and doctors of little experience have often complained to me of being unable to reach the structures at the upper and back part of the pelvis because their fingers were too short. The relatively long, posterior vaginal wall can be, in a sense, shortened by steady, gentle, continuous pressure on the perineum, whereby it is partially turned into the vagina.

In physical examination for pelvic diagnosis I would strongly urge caution in the use of the sound. Apart from the danger of inducing abortion in unsuspected pregnancy, unless strict asepsis be practised, the sound is a dangerous instrument. Many a woman has died of the uterine sound. In the great majority of cases it cannot be used without abrasion of some part of the uterine canal. Unless instrument, hands, and field of operation be sterile, there is great danger of infection, and this has often been the consequence, setting up more or less serious and sometimes fatal pelvic inflammation.

With all due respect to the great Sir James Simpson and others whose names are so intimately connected with the use of the sound, I am convinced that it is a much overrated instrument. In hands skilled in bimanual palpation it is rarely necessary, while in hands unskilled, it will hardly ever add to useful, practical understanding of the case. As a consultant I have learnt that the sound is a great deal too much used by the general practitioner.

Mistakes in the diagnosis of retroversion of the uterus, either way,

that is to say, mistaking retroversion for other conditions or mistaking other conditions for retroversion, are certainly amongst the commonest. But, indeed, accurate diagnosis in complicated conditions, (and complicated conditions are common and the most important) is often most difficult. A common mistake is overestimating the importance of retroversion, of the displacement *per se*, in a complicated case, as of pelvic inflammation directly inducing the displacement. Such an imperfect or mistaken diagnosis may lead to an attempt to replace the uterus by sound or repositor, and to its mechanical treatment by pessary, with, most probably, disastrous results.

This leads me to speak of mistakes in overestimating the importance of deviations of the uterine axis from the normal. No more fierce wordy wars have ever been fought than by gynæcologists over the relative importance and order of occurrence of displacements, and those changes in the circulation and nutrition of the uterus to which we apply the term chronic metritis. The transactions of the Obstetrical Society of London of about thirty years ago teem with the discussions. While most of us claim to have obtained a position nearer the truth, the consultant still finds in the body of the profession imperfect views, and inadequate conceptions of the subject. It seems often to be forgotten that the uterus in health is essentially a very movable organ. It is pushed backwards by a distended bladder, forward and upwards by a distended rectum, and by every act of respiration, especially by forced respiration as in coughing, vomiting, or violent effort, it is deviated from what may be considered the norm, and all such displacements, temporary it is true, are attended with relatively little in the way of symptoms attributable to the uterus.

I am next led to speak of another mistake which we have made in the past, but which we are, some of us at least, now rectifying, and that is in failing to recognize that in many women a displaced uterus is only one element, though certainly a very important one in a case of more or less general descent or sagging of abdominal viscera, the condition of enteroptosis. For many years I have in every case I examine made a point of examining for the position of the kidneys as well as other viscera of the abdomen. Displacements of these organs in gynæcological cases are of extreme frequency. It is true that descent of the kidney does not always cause symptoms. In other cases the symptoms are grievous. In the parous woman they are especially so. The commonest and perhaps the most important mistake here is in overestimating the importance of the pelvic condition and neglecting to take into account the rest. The repair of a lacerated perineum, the necessary colporrhaphies, and the performance of a selection from the various forms of

fixation of the uterus, may for these reasons be disappointing in their results.

In the management of displacements by many practitioners mistakes are often made in overestimating the usefulness of pessaries, in the selection of cases suitable for their employment, in the selection of a pessary for a particular case, and in the neglect of the very frequently necessary preliminary treatment of the patient and the parts against which the pessary will lie. Ofttimes too, there is lacking an adequate conception of the necessary care of a patient who is wearing such an appliance. The consequence is that appliances, which in suitable selected cases are undoubtedly most useful, suffer undue and unmerited discredit.

The sensations of the patient which suggest to her mind displacement of the uterus and which are apt to be accepted by the inexperienced physician, are often due solely to vaginitis. This condition, when of the fundus of the canal where it is often mainly or exclusively present, can only with ease or certainty be diagnosed and treated by the Sim's method of examination. This method of examination, it would appear, is learnt by only a small proportion of those who practice gynæcology. It requires the patient to lie on a table in the necessary position, to have her clothing loose, and to breathe quietly and naturally. All these conditions being fulfilled, the use of the Sim's speculum is merely an accessory, for the bent handle of a pewter spoon or even the finger will sometimes suffice to retract the perineum and posterior vaginal wall and expose the now distended vagina, the result of atmospheric pressure acting under altered relations of abdominal and pelvic organs. A careful examination by this method (which, I contend, should be practiced in every case with pelvic symptoms) will often lead to the discovery of a degree of vaginitis, which can be most satisfactorily relieved by a few applications of silver nitrate solution.

Perhaps no more common mistakes are made than in the diagnosis of pregnancy, and all will bear me out when I attempt to emphasize their importance. Of the effect of such mistakes on the reputation of the practitioner, I feel sure that some at least here present are prepared to bear me out. Failure in the recognition of existing pregnancy is rarely pardoned by a woman. Failure to discover that she is performing the supreme function of her sex, and to give her credit for it, is to her a grievous fault. Apart from this there is the obvious importance of early knowledge of the fact in order that plans may be made and necessary arrangements put in train. The cases are few in which a diagnosis cannot be made by a careful investigation of history, symptoms and physical signs, negative and positive. I must, however, not forget to admit that we are not always freely admitted to possession of each of

these sources of evidence. Many women are proverbially inaccurate as to dates and in the description of symptoms, and we must ever be on our guard against the designing woman, legitimately or illegitimately pregnant, who wishes to rid herself of the conception, and who hopes that by the use of the sound or other instrument incautiously used by the practitioner, her purpose may be effected. While history, symptoms, and the condition of the breasts are all important, the supreme value in the estimation of the various sources of evidence is to be placed on the bimanual palpation of the uterus. I am in the habit of impressing this on my students. If, with empty bladder and rectum, and everything else favourable in the position of the patient, you cannot easily define the uterine body, so distinctly firm in the nulliparous condition, then suspect pregnancy. It is thus soft in the condition of pregnancy, and comes nearly to the feel of the roof of the vagina and other structures in the pelvis. If the uterus can be defined, the value of the so-called Hegar's sign,—the sudden increase of size above the junction of the body and the cervix—is very great. It is in early pregnancy that mistakes in diagnosis are most frequently made, but I have known not a few in the more advanced stages. Cases are not unknown of all the arrangements having been made for operation for ovariectomy, and the patient meanwhile being delivered of a full term child. This has occurred to men of world-wide reputation, the authors of books and numerous papers on obstetrical and gynæcological subjects. In one instance which occurred to me, ovarian cyst had been diagnosed, and the woman being in great distress from the enormous distension, she had been twice tapped. She travelled over five hundred miles to reach me for operation, all the preliminaries having been arranged. I found her resting on her hands and knees in my waiting room and in that position she had remained during the night in the sleeping car. On examination, I was immediately able, through the cervix, to recognize foetal parts. The case proved to be one of twin pregnancy with hydramnios. The gravid uterus had been tapped and the liquor amnii drawn off. Beyond a doubt the true nature of this case would have been recognized by a careful consideration of history, symptoms, and physical signs, instead of by the mental attitude of taking certain things for granted. Recorded instances are by no means single of operators, when doing hysterectomy for fibroid, being surprised by the discovery of early pregnancy. It is safe to say, from what we know of the very human nature of our profession, that many more have never been recorded. It is doubtless true that operation was the best course in many such cases. The sudden increased activity of growth of fibroids previously unsuspected, in the gravid condition of the uterus, certainly in many such

instances, must have led to the experiences just alluded to. I venture to make the assertion that they are very rarely unavoidable.

So much for the diagnosis of uterine pregnancy, undoubtedly often beset with difficulties. The cases are rare in which there is a necessity for immediate action. In all cases of doubt or difficulty the doubts should be frankly stated and time and further opportunities for examination requested. The cases are few in which the practitioner will not by such a course retain the confidence of the patient and her friends, whereas a positively given, mistaken opinion will in most cases be disastrous to his reputation.

If the diagnosis of uterine pregnancy be difficult in certain cases it is vastly more so in the case of extra-uterine pregnancy, whether early or advanced. I venture the assertion that there is no operator of large experience in pelvic surgery who has not at some time or other operated for tubal pregnancy and found something else; or has operated expecting something else and found ectopic gestation. I have to confess having made such mistakes more than once. There are many deviations from what may be called the symptom-complex of this grave condition. In the early stage of extra-uterine pregnancy the conditions most apt to be confounded with it are the various inflammatory conditions of the uterine appendages, cystic adherent ovaries, hydrosalpinx, etc. In the rarer instances of rupture of the gravid tube with speedy fatal hæmorrhage (and the danger of this is much greater when the gestation is in the relatively indistensible and more vascular part of the tube near to the uterine end), the symptoms have in several instances given rise to the suspicion of death from poisoning or by violence. This suspicion was very strongly entertained by the friends of a patient whose case was reported many years ago to the Montreal Medico-Chirurgical Society. This woman, who sometime previously had been a patient of mine for office local treatment, ceased to attend, and the next thing I heard of her was that she had died seven hours after having been seized with violent abdominal pain and other symptoms. The nearest doctor had been called and, failing to recognize the real nature of the case, he had administered morphine. The death of the patient was attributed by the friends of the patient to the drug. An autopsy was demanded by the doctor and at first refused, but when threatened with a coroner's inquest they finally consented. The belly was found full of liquid and clotted blood which had come from the rupture of an expansion of the tube no larger than a small almond, situated one inch from the horn of the uterus. Even in this case a careful enquiry into the history and symptoms preceding the attack might have suggested the true nature of the case, for the woman had had pelvic symp-

toms which had been relieved by treatment, after which she had become pregnant. As Gaillard Thomas pointed out in a paper written by him many years ago, in the majority of the cases of extra-uterine pregnancy reported, the patient is pregnant for the first time or for the first time after years of sterility, during which she has suffered from pelvic symptoms and from which she has partially or completely recovered, spontaneously or while under treatment. My own experience amply bears out these observations of Thomas and others.

The correct diagnosis of uterine fibroids, while usually easy, is sometimes most difficult, and the history of the subject is fraught with mistakes. I have more than once opened the abdomen for operation to remove a uterine fibroid to find that I had to deal with the much simpler condition of intraligamentous cyst. So tensely filled are these cysts sometimes, and in their process of growth so closely do they lie to the uterus, that by position and consistence they now and then closely simulate the common, solid tumour of the uterus. The diagnosis of uterine fibromyoma from intrapelvic cancer, usually ovarian, in its early stages is by no means always easy. One mistake of this kind occurring a good many years ago mortified me very much. The physical signs were such that my diagnosis was multiple fibroids. In a few weeks, failure of flesh and strength and the appearance of peritoneal fluid aroused suspicions of malignant disease, which were confirmed by exploratory operation.

All ovariologists and abdominal surgeons of much experience have been disappointed and saddened by the appearance of intrapelvic and abdominal cancer within a year or two after a smooth recovery from the operation for removal of an ovarian tumour, apparently quite innocent in its characters. Lawson Tait used to remark something to the effect that every ovarian tumour had in it the elements of malignancy. His remark was doubtless the outcome of the experience I have alluded to. It would be more correct to say that if the whole of every ovarian tumour were submitted to careful microscopic examination by a competent pathologist, many which appear benign would show malignant characters. This fact is a strong argument, if any were needed at the present day, for the prompt removal of every ovarian tumour as soon as possible after its discovery. In malignant tumour of no other organ is radical cure by operation so hopeful.

Nothing in the experience of the gynæcologist is so saddening as that of cancer of the uterus. In the vast majority of the cases when first seen the only verdict to be rendered to the anxious patient is "too late" to do anything but make the last months of life as little miserable as possible. In by far the larger number the woman does not seek advice:

from her ordinary medical attendant, until her case is hopeless for radical cure. In rare instances even when opportunity for examination has been given, the true nature of the case is not suspected. In my experience the worst case of this kind was that of a woman who was sent to me by her medical attendant in the hope that I might be able to cure a vesico-vaginal fistula, the result of cancer of the cervix that had extended to and perforated the vesico-vaginal septum. This neglect of uterine cancer is due more than anything else to the delusions so universal in the popular mind concerning so-called change of life, delusions which I regret to say are shared by a small though I am pleased to say diminishing section of the general profession. Such are the prevalent ideas, that at the age of from forty to fifty women are subject to profuse and irregular discharges of blood, and that the essential symptoms of cancer are pelvic pain and foetid leucorrhœa. The experienced gynæcologist knows that, save in a few exceptions, menopause is not attended with menorrhagia or metrorrhagia, except when some form of organic disease exists, and that such symptoms demand prompt pelvic examination. If this be true of women who have not yet attained menopause it is vastly more true of those who have ceased to have discharges of any kind for months or years, and yet I have known a number of instances of women of fifty and over, one of sixty-five, in which the appearance of a bloody discharge was welcomed, and announced with pride to her friends by the woman as a return of the distinctive characteristic of womanhood,—as a renewal of youth. One woman said to her friends, "I am getting young again." In my experience the appearance of bloody discharge in a woman who has ceased to menstruate means malignant disease and nothing else in ninety-five per cent. of the cases. In the other five per cent. the source of the blood is that interesting form of vaginitis which the late Professor Hildebrandt of Königsberg proposed to call "vaginitis adhesiva ulcerosa." As regards the significance of pain and foetid discharge, I wish to say with all the authority I may command as a consultant, that while invariably present in the advanced stages, they are almost as invariably absent in the early and manageable stages, and yet it has many times been replied to me when I had announced my diagnosis, "why the woman has had no pain or ill-smelling discharge."

If there is one early symptom of cancer more suggestive, even significant I ought to say, of the early stage of cancer of the uterus, cervix or body, it is the appearance of a thin, serous, slightly turbid, sometimes pinkish at first, and for many weeks usually inodorous, discharge. This so-called 'meat-water' discharge at any age ought at once to arouse suspicion in the mind of the practitioner consulted and lead him to in-

sist on an examination with all the authority he can command. The reasons should be given if necessary, and if he is refused he should wash his hands promptly of all responsibility in the case.

Malignant disease of the body of the uterus is undoubtedly very rare as compared with similar disease of the cervix, but I have found that its frequency and the possibility of it are much underestimated by many practitioners. The symptoms in a given case have led to the suspicion of malignant disease, the patient has been examined, the cervix has been found smooth and healthy, and the uterine body normal in size and symmetrical. Then, too often, has it been concluded that there is no cause for alarm, and the fatal malady, which could only have been revealed by the dilator and curette, is allowed for a time to go on with its stealthy pace till other more prominent symptoms arise.

And now I come to another class of mistakes, very common, much less serious in their results it may be, but certainly of great importance from the point of view of their effects on the patient's prospects and the practitioner's reputation. I allude to an underestimate on the one hand and overestimate, more frequent perhaps, on the other hand of the influence of disease and derangement of woman's sexual system on her symptoms and health generally. While it is true that there is scarcely an organ or function of the body which may not be disturbed reflexly or sympathetically by diseases or disturbances of function, and in many instances even by the physiological performance of function of woman's sexual system, yet it is most necessary that in every individual case the symptoms should be studied in the light of heredity, early training, and any other influences which may have determined the type of nervous system. And for the rest, in studying a gynæcological case the same methods should be pursued as those by which every case of disease is or should be studied, every organ and function carefully interrogated. In this way only may be avoided such grievous mistakes as removing healthy ovaries for painful menstruation, when that disorder is merely a local expression of a morbidly sensitive nervous system, inherited, or, as it may be, in many cases, acquired.

I feel that I must not conclude my discussion of this subject without an allusion to a class of mistakes which concern and influence the sexual hygiene of woman. Such are the mistakes of omission of the family doctor who fails to urge the mothers or guardians of young girls to inform those under their charge of the important matters pertaining to sexual hygiene. No girl can know by intuition the significance and importance to her health of a normal performance of the function of menstruation. How many instances have we not known of fright from the appearance of the discharge, of the use of cold water to remove it as an

unclean thing, of its disregard or of its deliberate arrest so that the pursuit of pleasure might not be interfered with. Such is undoubtedly often the result of ignorance, though many times also from wilful disregard of warnings of the consequences. In my experience there are few mothers or guardians of young girls who instruct in the necessary way those under their charge in this most important matter. This often appears to be a mere question of neglect but I am certain it is also very often from a shame-faced aversion on the part of mothers to discuss such matters with their daughters, and so a most important source of influence and a bond of confidence between mother and daughter are never acquired. If the young girl has to learn of this matter from friends and companions of her own age, or from mature women other than her mother, she may also learn from them other things she had better not have known.

There would doubtless have been little difficulty in further pursuing this line of thought. Suffice it to say that I have indicated mistakes the most common in my experience, and the most serious in their results, and if it be thought by some who have heard me that something is due in self defense for the selection of such a subject as that I have chosen for this address, let it only be that it is in some measure a confession. I have included in the list mistakes of my own, humiliating enough they have been, as well as those of others.

THE ADDRESS IN MEDICINE.

BY

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*The Address in Medicine before the Canadian Medical Association,
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SPECIALISM IN MEDICINE.

When, under the influence of faulty metabolism or other cause pessimism gets the better of us, we sometimes quote with approval the remark of Solomon the Wise, that there is nothing new under the sun, without reflecting that Solomon himself was probably not feeling his best at the moment. Something in his internal or large domestic economy had gone wrong, I suspect. Possibly he had to write an address! However this may be, let us suppose him suddenly brought for a visit to one of our large cities. He would certainly find that advance in knowledge has brought about great change in our relation to things, be the things themselves never so ancient or immutable. Solomon was at the *fin* of his *siècle*, but the old sun looks down on a different world at the *fin* of this *siècle*. He could not fail to be impressed by the subdivision of labour of the present day in every branch of industry. Were the great king to be seized with sudden abdominal pain he would surely have the benefit of a surgical and a medical opinion. Another doctor would make a blood count, another a urinary examination, another, perhaps, would examine his vomitus or stools; another, use the X-rays. If his abdomen were opened the pathologist would report on cultures from the cavity, or on the structure and nature of any suspicious tissue. It would, in a word, be demonstrated to him that specialization has taken place in the science and art of medicine, as in other sciences and arts. And Specialism in Medicine is the theme which I have selected for brief and, I fear, inadequate consideration during the time your President has done me the great honour of delivering you into my hands.

A line of cleavage appeared first perhaps between medicine and surgery, and it is curious to note that nowhere has the line, at least in name, in the past been so closely drawn as in England, where more minute specialization has met with considerable opposition. Toward this result the anomalous fact that the degree of Doctor of Medicine has in England been only a University title, must, it seems to me, have contributed. Practically everywhere else in the civilized world the practitioner is a

Doctor of Medicine. Although we have a fair working knowledge of the distinction between medicine and surgery, I, at least, find myself unable to frame a satisfactory definition of the distinction. Some thirty years ago, during my medical studies, I had the pleasure of meeting the late Mr. Holden, then of Bartholomew's Hospital, and was asked by him whether I meant to be a physician or a surgeon. On my reply that I looked forward to being a physician, he remarked, "Don't you do it; the surgeon can do all that the physician can, and more, too." When I repeated this remark to dear old Sir Henry, then Doctor Acland, he dryly remarked that he should be very grateful to Mr. Holden if he would come and teach him how to do some of his work. Much more recently I have heard of a very distinguished London surgeon defining a surgical case as one which paid him two guineas. Anæsthesia greatly enlarged the bounds of surgery, and yet twenty-five years ago there was not a pure surgeon in America. The surgeon did as much general practice as he could get, including midwifery. Surgical cleanliness has worked a great change in this respect, and the end is not yet in sight. We see men to-day, even in relatively small communities, confining themselves strictly to surgery. Without much exaggeration one can say that it is as hard to-day to live on medicine alone as it was twenty-five years ago to live on surgery alone. Belly-ache is now a surgical disease. I know of a child with pneumonic pain referred to the right iliac region being operated upon for appendicitis. A few years ago a woman was sent into the surgical wards of the Massachusetts General Hospital for operation, perhaps for extra-uterine pregnancy. The surgeon, who had had a large experience, noticed wrist-drop and a blue line on the gums, and transferred her without operation to my wards. So safe now-a-days is the use of the knife under proper precaution that there is temptation to use it for purely diagnostic purposes. Just when to yield to and when to resist this temptation requires good judgment and general knowledge. The heart is practically the only viscus which remains the exclusive province of the physician. That organ is more tolerant of insult than has been supposed, and who shall dare to say that, impossible as it now seems to us, a contracted mitral valve cannot be slit without causing death? The real line between medicine and surgery is one thing: the practical line is another. The last quarter century has seen them approximate notably, but they will not coincide until knowledge is perfect. The establishment of a German journal devoted to the borderlands of Medicine and Surgery is interesting.

Obstetrics, again, early became a specialty, though in rather a different way. For parturition is a physiological process, and in many countries a large porportion of births are under the sole charge of midwives. In

this country the general practitioner has clung to his obstetrics as a necessity for family practice, oftentimes bemoaning his hard fate and interrupted nights, meanwhile. Of late years we see in the larger centres a tendency of obstetrics, at least among the rich, to go into the hands of a few men, who, on the completion of the puerperium, withdraw, the family physician resuming his place. This is a practice which, for obvious reasons, can obtain only in large communities. With entire appropriateness we see these obstetricians also busied in diseases peculiar to women, many of which are the outgrowth of one or more previous pregnancies.

Gynæcology is of almost unique interest from the point of view of Specialization in Medicine, and a medical Gibbon could write a vastly interesting book upon its Rise and Fall. Not many years ago it was, I am tempted to say, the most in evidence of any specialty into which enterprising young men were ambitious of crowding themselves before the ink on their diplomas was scarce dry. The mills of the gods grind no less fine than they did, but, I think they grind quicker in these electric days. Pure gynæcology to-day scarcely exists. Many deviations from the normal in the female pelvis give rise to no symptoms until the general health begins to fail, from one cause or another. Such cases belong to and are best treated, ordinarily, by the wise general practitioner. If I read the signs of the times aright, what may be called pelvic tinkering, which has been so much practiced in the last decades, is suffering from a rapid decline. What is really necessary can safely and best be left in the hands of the obstetrician alone, or aided by the general physician: and major gynæcology, the great bulk of which involves laparotomy, seems to be going where it belongs—into the hands of the general surgeon. It may all have been a necessary sequence in the evolution of knowledge, or I may be ignorant or prejudiced, but I cannot look at the groping course of gynæcology as a triumph of human intelligence.

How many women have been unnecessarily deprived of necessary sexual organs? how many have had their attention fixed on these organs which in the male nature has left in evidence, but in the female has modestly hidden away, affording, like all hidden or veiled things, wide play to an awakened imagination. On the eve of reading these words I see the following, just from the pen of Prof. Howard A. Kelly* of the Johns Hopkins, certainly a competent witness: “. . . the general adoption of the principles of asepsis leaves the barrier between general surgery and gynæcology a purely artificial one, and one which must inevitably, sooner or later, be broken down. My advice, therefore,

* Philadelphia Medical Journal, Sept. 1, 1900, p. 391.

to all gynæcologists is to study general surgery and become general surgeons first."

Surgery and obstetrics seem likely always to hold their places as great divisions of medicine as a whole. Let me now turn to the subdivisions of medicine, as contrasted with surgery and obstetrics, and try to consider specialization in connection with its etiology. The first place among the causes for the increase in specialism doubtless belongs to increase in knowledge. A half-century ago James Jackson, than whom my native city has produced no wiser physician, said that there was more actually known in medicine than the mind of any one man could grasp. If this was true of fifty years ago, how much more true it is of the present day! The field is so large that no one man can possibly oversee and bring it to full productiveness. Each crop needs a separate head of the first class. But here perhaps as well as elsewhere, I may state that I trust nothing I say or shall say can be construed into any slight on the general practitioner, especially on the men who in small communities are liable to be called upon to deal with any emergency of any kind pertaining to medicine in its broadest sense.

All honour to those to whom all honour is due. Those of us who dwell in large cities and have the advantage of the presence of experts in every line at instant call are, I believe, keenly alive to the danger of one-sided development to which we are exposed, and to the lack of self-reliance and resource following from this, when we get off our narrower or wider beaten track. I simply mean that the highest excellence, knowledge and skill in all branches of medicine are simply impossible of attainment by any one man—a proposition which must command universal assent. The speciality of neurology seems to me a case in point. Great advances have been made in our knowledge of the anatomy and physiology of the nervous system in recent years, though there is still enough which is obscure. Neurology deals with a system rather than with an organ; has length and breadth; touches medicine at very many points; and thus involves less risk of narrowness of view to its devotees than do some specialties. A general practitioner once shrewdly remarked to me, "It takes a mighty big man to be a specialist." The neurologist must also have large knowledge of the diagnosis and therapeutic uses of electricity.

Diseases of the skin, with its appendages, accessible as they are directly to sight and touch, form one of the earliest of modern specialties. As coming under external pathology they were formerly considered rather the province of the surgeon than of the physician. The dermatologists have amply justified their existence, and have profited to the full by the impetus which bacteriology has given to all branches of medicine.

It is only in centres of population that the specialist can get a support. In the increase of these centres lies the second factor in the etiology of specialism. Not only are cities growing in number and size, but the means of rapid and ready travel are so multiplying that the hope of relief from mere inconveniences, perhaps, makes people everywhere intolerant of ills which, in earlier times, they resigned themselves to bear as best they could. I have often thought what a wonderful field London offers for the development of the highest and best specialism. Quite apart from her five million inhabitants, she is within relatively short reach of any part of the United Kingdom. Besides this, people bring back from the English colonies scattered over the world many kinds of strange ailments and all manner of climatic results. There one may lay his foundation broad and deep, can keep in touch with the larger aspects of medicine, and can be gradually converted into a specialist, even of an organ, if he wish. His consulting-room is a filter for thirty odd millions of people. He can legitimately be forced into a specialty,—quite a different thing from forcing himself into one. Other things being equal, the larger and wider his general experience has been, the better specialist and the bigger man will he be.

A third factor in the increase of specialism grows out of our first. Inventive talent is leading more and more to the possibility of direct examination of organs and cavities which were formerly closed to our eyes and touch. The proper use of many of these aids requires a long apprenticeship. The limits of physiological variation must be learned, and delicacy and skill must be acquired in the use of instruments more potent for harm than good in untrained hands. Manual dexterity, impossible to some, and attainable by any only with practice, is added to general knowledge and good judgment. Ophthalmology, demanding also a wide knowledge of optics, affords a good illustration. The otologist should know much of acoustics. The nose and throat are so intimately connected with the ear, and form the starting point of so many ear diseases, that it seems to me they should all be included in one specialty rather than in two, as is generally the case at present. The addition of the larynx would not seem to unduly enlarge the field.

I cannot see that there is now, at any rate, enough special knowledge and technical skill involved in the diagnosis and treatment of digestive disorders as to warrant their separation into a true speciality. Yet a National Association of Gastro-Enterologists has, I believe, been formed in the United States. Time is inexorable and will settle the real status of the matter, so I will refrain from prophecy, bearing in mind the adage, "Don't never prophecy unless you know."

So much training is required to attain the best results with the X-rays

that their use seems likely to fall largely into the hands of specialists, particularly where neither bones nor foreign bodies are in question. Y and Z rays may also be discovered, and broaden the speciality.

The three factors in the multiplication of specialties already mentioned—increase of knowledge, aggregation of population with rapid and frequent means of transit, and the invention of instruments requiring delicacy of use—may be regarded as inherent.

Besides these there are another three which I should class rather as accidental.

A man may, first, have a special aptitude or taste, leading him to limit his work. This may be dangerous to indulge, or, at least, to indulge too early. The director of a modern gymnasium searches out the weak points in a would-be athlete, and, by attention to them, encourages symmetrical development. Next is a desire on the part of some to escape the hurly-burly of general practice, its irregular hours, and what they deem its slavery. This desire may be based on delicate health, or indolence. The latter is no more likely to render good service to the community in a specialty than in general work. Thirdly, the hope of a greater emolument with less toil may be added. People will pay larger fees for what they consider special knowledge, and the number of persons who can afford indulgences of all kinds is large and rapidly increasing. The ophthalmologist gets more for removing a speck of dust from the eye than does the general practitioner.

Specialism divides up the organs and systems of the body, separates the sexes in a measure, and still insatiate, steps in between children and parents. Shall we see parents and grand-parents similarly set apart? Why not a chair in Medical schools for the Disease of Old Age, as well as for the Diseases of Children? It is a conservative statement that the pathology of old age is at least as peculiar as is that of childhood. Infant feeding alone affords scant material for a specialty, particularly if the profession as a whole would insist more on the use of nature's provision for young mammals, apparently sufficient for all of this class, save man. The number of women who can nurse their children is much larger than is that of those who do.

There are no instruments of precision or diagnostic procedures used in the diseases of children which are not in common use in adults,—at least as far as I know. Of course, pathology is modified by age, but the difference seems to me minor. It is pleasanter to float on a flood than to struggle against an ebb tide. This may partly account for the apparent lack of enthusiasm for association exclusively with the diseases of the aged.

All the specialties which have been thus far mentioned are followed

by men coming into continual contact with sick people; by men in active practice, so-called. The day is passing in America, and has indeed passed in the larger centres, when teachers of anatomy, physiology, and pathology can be also practitioners of medicine. These fundamental branches have become specialties as far as teaching and research go, and an increase in the number of their followers can confidently be expected. Bacteriology is, in a broad sense, merely a department of biology. But the methods of study involved in the minute size and other attributes of the forms of life with which bacteriology deals, and the vast amount we have still to learn with regard to these organisms, afford full occupation for a large band of special workers.

Biological chemistry, again, promises a large and productive field for a considerable number of special workers. Hygiene and Experimental Pharmacology also should be mentioned. The lines of cleavage between these more purely scientific specialties, just as between the practical specialties, are apparent rather than real,—a matter of convenience rather than principle. Increase of knowledge will bring rearrangement of some of these specialties at the same time that it may tend to increase their number.

We practitioners cannot be too grateful to the men who are willing to eat the bread of carefulness and devote their energies to the study and teaching of principles. We deal mainly with individual cases of disease. We try to cure or palliate the manifestations of disease in single cases as they come to us. Their aim is to make it possible, through determination of the causes of disease, to, in the first place, prevent them, and, in the second place, enable us to treat the disease itself when it does arise, rather than merely to treat the patient, as we still so often have to do.

Malaria and syphilis stand practically alone as diseases for which specifics have been stumbled on in the course of ages. Our recent gain in knowledge as to the causation and mode of transmission of malaria has not, as yet, at least, added materially to our control of its symptoms or origin. And we are still in dense ignorance as to the real cause of syphilis. But within a few years myxœdema, diphtheria, and, I think it is safe to add, hydrophobia, have been added to the list of diseases which we treat directly, and we seem to be on the eve of important further additions to this list.

Formerly, shrewdness, "horse sense," and knowledge of human nature were more important elements in successful practice than even medical knowledge. Hence our ignorance has compelled us to treat the patient rather than the disease. And herein lies a great strength of quackery. Suggestion may be a more potent therapeutic agent in the

hands of an unscrupulous and positive man, ignorant though he be, than in the hands of a highly trained and conscientious man, handicapped often by a painful realization of his ignorance. Just in proportion with the advance in exact knowledge are the main props of quackery weakened. And it is to special workers in special fields that we must look for this advance.

One is half tempted sometimes to think that the medicine of the future will be robbed of a charm which inheres in it to-day,—the charm, namely, which belongs to the element of uncertainty, and the stimulation which this should bring to thought. The impulse is strong to cut the Gordian knot of abdominal diagnosis, as has been already mentioned. Fine methods of research will gradually substitute certainty for uncertainty. But diagnosis is not likely ever to become a mere penny-in-the-slot affair, and the management of the patient—the art of medicine—will ever play an important though more and more subordinate rôle in the drama of medicine and human suffering.

Specialization is evident in hospital as well as in private practice. The ideal hospital is a place where the poor can have the benefit of the highest skill and attainment in every branch of medicine—a beneficent trust where specialists are associated and harmoniously working together. It must also be a centre of medical teaching and research, opportunities for which constitute the return from the inmates for the benefits received. It seems to me a question how far is it wise to encourage the establishment of special hospitals devoted exclusively to this or that age, sex, or class of disease. The isolation of the staff of a special hospital has its manifest disadvantages. The creation and support of the more minute special departments in a general hospital dependent for its maintenance on the public spirit of private persons, has its patent practical inconveniences and difficulties. The general hospital must follow, not lead, in specialization, and cannot afford the luxury of "fads" unless it is far richer than are the general hospitals of which I have knowledge. Although hospitals are not business enterprises, one of their sinews is money, another, the devotion and capacity of the medical staff. The same administration can, given the funds, run a general hospital formed of a congeries of special departments as well, and at less cost, than separate administrations can run a number of special hospitals.

It is all very well to say, "Take no thought for the morrow;" if our predecessors had acted literally on this precept we should be in a bad way. Progress will march and evolution go on in spite of us, doubtless. But we can have some influence over the rapidity of evolution, and it is our business to do what we can to foster right and to discourage wrong

tendencies. One fact stands out clearly,—that Specialism in Medicine has come to stay. Its advantages infinitely outweigh its disadvantages, and we have faith that all things work for good in the long run.

We study the past, and speculate as to the future. We all sometimes feel as did the late Dr. Hagen, the great entomologist,—“ I should like to be my own great-grandson.” We cannot greatly influence the amount of pity which our great-grandsons may feel for our attainments, but we can force their respect for our honest and unremitting effort.

PULMONARY TUBERCULOSIS: ITS TREATMENT AND PREVENTION.*

BY

A. P. PROCTOR, M.D., C.M., Kamloops, B.C.,

In bringing this subject before you, I do so with a good deal of diffidence, feeling that many will listen to this paper who are very much more able to do justice to the subject and interest you, than I. I must therefore ask your indulgence for much that will be said imperfectly, and for much that, from the largeness of the subject, must be left unsaid.

I lay claim to very little that is original, and have chosen the subject chiefly for two reasons: (1) That of all diseases, tuberculosis in some form is the most common, one-seventh of the total death rate of the world being due to pulmonary tuberculosis (Percy Kidd, in Clifford Allbutt's "System of Medicine," 1898, p. 156), our present subject, making it for that reason alone a subject of very general interest, almost every day bringing to our consulting rooms some victim of the disease. (2) My second reason was that in coming from a place where, owing to its reputation for dryness, large numbers of these cases are sent every year, I felt I might be able to give you some of our almost special experience, which might be of some small service.

Acute Pulmonary Phthisis.—Upon the acute or rapidly fatal forms of pulmonary tuberculosis I have little to say, because, while in some few cases they may take at some stage a more chronic form, in the vast majority of instances they are hopeless from the onset and go steadily downwards, in spite of all treatment, to a fatal termination. We can only alleviate and make the inevitable descent into the valley somewhat easier. This may seem to some a pessimistic view of acute pulmonary phthisis, but in the present absence of any specific or immunizing agent, I believe every authority, without exception, will bear me out.

With the *chronic forms of the disease* it is different. These are the cases where in many instances we can not only improve, but often arrest and cure, provided two things are given us:

- (1) That we get them and recognize them early.
- (2) That we are able to carry out the necessary treatment.

The most promising cases, the cases in which we can do most, are those in which the disease is incipient. *Early recognition is the great*

* Being the address opening a discussion on this subject at the first meeting of the British Columbia Medical Association, Vancouver, August 10th, 1900.

secret of a good result, and it is just here that we doctors sin against the patient and allow him to throw away his one chance of restoration to health. I could tell you of case after case coming into our dry climate with hopelessly advanced disease who, on questioning as to how long they have had trouble, inform us that for months they have had cough, fever, loss of weight, the melancholy symptoms that go to make up this disease, but only within a few days of their leaving were they able to extract a confession from their physician that their lungs were affected, when often it is too late.

I do not believe that these medical men do not know, but I do believe that they are not honest with their patients. I know that often these assurances are given out of the kindness of heart of the medical adviser who wishes to allay the nervous fears of the patient, but I bring these facts before you, gentlemen, because I believe it to be no real kindness. We are depriving the patient of the one opportunity of being saved from the peril of this death, and because I believe their great hope of salvation rests upon our recognizing the disease when it is incipient or even earlier, and not when it requires no medical man for its diagnosis.

Often these incipient cases come to us complaining of some symptom which is apt to point us away from the lungs, and we are betrayed into carelessness:—*e.g.*, anæmia or gastric disturbance. This latter I have found very common. There may be no cough, no expectoration, no fever, and only a careful examination reveals the true nature of the case. There may be an initial hæmorrhage with perhaps no physical signs. In other cases a very slight evening rise of temperature may long precede the development of marked physical signs. These are the cases in which much can be done, and the salvation of our patient depends upon the early recognition and treatment.

Treatment.—In coming to the treatment of pulmonary tuberculosis, we find ourselves up to the present time absolutely without a specific. While much has been done, while immense advances have been made in recent years, chiefly owing to the labours of such men as Koch, we are still looking for a specific. Up to the present, every remedy claiming to be such has been tried and, I believe, found wanting, and therefore our aim must be *to increase the resistance of the tissues of our patients by every known means* in the hope that they may win the battle against disease and ultimately overcome the ravages of the bacillus, and in this way effect a cure. With this end clearly in view the treatment may be divided into (a) climatic; (b) hygienic; (c) medical.

Climatic.—I have put climate first, because in spite of the statement by some, that climate does not matter, I am firmly convinced that climate does matter, that the taking of the tuberculous patient and placing him

in the climate best suited to him, the climate which will have the greatest tonic action in increasing the resisting power of his tissues, is the first and most important step in all treatment. I believe, too, that altitude is important and highly beneficial, the rarer atmosphere increasing metabolism and calling for increased expansion of lung tissue,—although in hæmorrhagic cases it may be advisable to move them slowly to high levels. I might mention three cases remarkably benefited by the climate of my district in the absence of all other treatment.

(1) Case one was that of a naval officer who came to Kamloops with an initial hæmorrhage. He recovered, and, contrary to the advice of his physician, returned to his ship. A second hæmorrhage followed; he again returned to Kamloops and again recovered, and was well as long as he remained there. He again insisted on going back to the coast, when, sometime later, he had a recurrence and died before he could get up country.

(2) Case two was that of a young lady with marked disease of both lungs. She remained in Kamloops three years, and was, while she remained there, comparatively well. On returning to Vancouver during the rainy season she died within a month.

(3) Case three was that of a young man who was sent to Kamloops some years ago from Victoria with well-established pulmonary tuberculosis. He has completely recovered and is wise enough to remain there.

Without doubt these cases would have proved rapidly fatal had they remained where they were. Too often cases are only sent away when too far gone for anything to be of any use, and this has done more to discredit the value of climate than anything else.

Hygienic.—In coming to the hygienic treatment of pulmonary tuberculosis, I might say that in many cases everything has been left to climate. Before sending a patient to any particular health resort, I believe it is of vital importance to know that he will have a comfortable place to stay and regular and good food. He should live as far as possible in the open air, being placed, however, under the care of a reliable medical man, on whose advice he should rely in the matter of exercise, breathing, sponging and everything that comes under the term hygiene.

Medical.—Under the head of medical treatment I would mention, first, the inoculation and serum treatments, not because I myself have had any startling results, or because I believe they have accomplished much anywhere, but because I believe that it is along these lines that some day a cure will come. The results of the present tuberculin in some hands may have been more favourable. I noticed a statement made by Prof. Brieger at the late Congress of Tuberculosis, held in

Berlin in May of last year, "that Koch's tuberculin in its first and later forms was a specific." I have not found this to be so. I have used both Koch's later tuberculin and also the serum for which Maragliano claims results (obtained by immunizing horses). In no case in which I have used either of these serums, have I seen the slightest result. In one case, I believe Koch's tuberculin did harm. Some men, I know, claim cures for this treatment. I can only give you my experience.

In the administration of drugs, I believe it is of great importance to get the digestive tract into a condition to make use of whatever we give. It is not sufficient to give a bottle of cod liver oil and creosote to a patient, whether he can digest it or not. From its tonic and stimulant action I have found strychnine the most valuable drug.

Symptoms must, of course, be treated as they arise, and cannot be discussed here.

Prevention.—Finally, I come to the prevention of this awful scourge which is sapping the lives of our people, depriving the world of many of its brightest lights, and which has been well called "The white plague." We live in an age of preventive medicine, an age in which our efforts are directed not only towards the cure of disease, but towards *the creation of conditions under which disease shall be impossible or rare.* A high ideal! some may say. Perhaps, but not too high for the profession which we have the privilege of representing. How, then, can we create these conditions for the prevention of pulmonary tuberculosis? With the discovery of the tubercle bacillus and the knowledge of how the disease is propagated, the answer is quite clear. We must spread as widely as possible an elementary knowledge of the modes in which the disease is propagated, and the means by which its spread may be prevented. It seems to me, gentlemen, that, in the light of the present knowledge of the disease, its infectiousness, the modes by which it is spread,—facts which are known to-day to almost every reader of our daily papers,—it seems to me, I say, a criminal thing that we find these patients covering our sidewalks with their expectoration, coughing, as someone said a few days ago, "in the faces of our children," infecting our hotels and dwelling-houses, and entailing untold misery and suffering upon the innocent men, women and children with whom they come in contact. In Kamloops we are fighting this battle by issuing pamphlets and striving to educate the people up to a knowledge of the danger, but even this seems hardly enough. Only a few weeks ago I visited such a patient in one of our hotels and found the carpet of his bedroom spotted with his expectoration. If these people do not know better, who are responsible? Most of them consult a physician at some period of the disease, and if they go from commencement to finish with-

out a knowledge of the danger to others and their responsibility, are not we surely to blame ?

I could give you many melancholy histories of direct infection because of the almost criminal ignorance and disregard of the consequences of neglect. Let me give you one. A healthy, recently-married, couple with absolutely no tuberculous family history had a child of some two or three months old. About this time they took to live with them a girl, a friend of the family, suffering from pulmonary tuberculosis. This girl used to nurse the child a great deal, and, I suppose, kiss it. At times the child actually slept in her room. In a few months the child developed tuberculous glands in the neck. These were operated upon and removed, but after five or six weeks, in which the child did well, she suddenly developed tuberculous meningitis and died.

As a first means of prevention we must give to everyone, old enough to understand, an elementary knowledge of the disease. Teach the men and women, the children in our schools, wherein the danger lies and the methods of prevention, instead of taking up their time with so much that is to them useless under the name of anatomy, physiology and hygiene. As the tubercle bacillus hates fresh air and sunlight, we must make our homes sanitary. We must urge upon our governments, Provincial and Dominion, the necessity of Sanitaria, where those afflicted may be isolated and treated, and in this way prevented from going through our streets and houses spreading the infection broadcast. At present, absolutely nothing is being done in this direction except to send these cases up to some place like Kamloops, where the climate is known to be favourable and where there is absolutely no accommodation for them, where the hotels and boarding-houses do not want them and where everybody is afraid of them. It seems a somewhat extraordinary thing that in a province where such elaborate and, of course, proper precautions are taken to guard against smallpox, and where almost a state of panic would exist if a case should appear, that this awful white plague, which is killing at least a thousand to every one victim of smallpox, is allowed to spread almost undisturbed. Surely we are not alive to this question. Every country is awaking; are we alone to remain asleep in this province ? I would urge, with all the earnestness of which I am capable, the immediate establishment of a sanitarium at some suitable spot where those with, and those without, means may be treated. I would ask this association to point out in the strongest possible way to the Provincial Government now in session, their responsibility in this matter, and urge upon them that this province be no longer left without a serious effort being made upon their part to eradicate the scourge.

I would further urge that some competent man be employed to inspect at least once a year, or oftener if necessary, the cattle which are giving to our people their milk supply.

By this means, and every means we know of, we must wage war against this awful plague, struggling perhaps through years of prejudice, for extraordinary as it may seem, some will resent precautions interfering with their liberty. Those interested will even object to having the cattle inspected, and still more so when some are ordered to be destroyed. In the face of all this we must struggle on until the battle is won, and the conditions under which pulmonary tuberculosis flourishes no longer exist and the disease, by direct infection at least, is impossible or rare.

OUR RACE AND CONSUMPTION.*

BY

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The problem of all others staring us in the face is what course of action is most judicious to stay the spread of consumption. So alarming are the present results that conferences are being held on this subject in the most enlightened centres of the world.

History points out that no race of human kind has yet obtained a permanent foothold upon this continent. The Asiatics trace back their life history so far that it is like a geologic epoch. Those who descended from the Ptolemys are still found cultivating the rich alluvial banks of the Nile. The race that peopled Northern Europe when Greece and Rome were in their infancy, still retains its hold, and exercises a powerful influence throughout the world.

An important fact, and one worthy of consideration is, that races have been born on this continent, lived and entirely disappeared, leaving as records of their past history, mounds in the west, vestiges in Florida, and traces in other directions, which give an undoubted indication of at least two extinct races. Thus far the information is wanting which would clear up the causes why these races have entirely disappeared. It now remains to be seen if the Anglo-Saxon race will prove itself equal to the occasion and be more fortunate in establishing a more lasting foothold on this continent. Climate and civilization require a physique and brain-power equal to the occasion, to meet successfully the trying demands of the present age.

The enthusiasm of the Canadian people to assist in the protection of British interests in South Africa, was placed beyond doubt by the rapid equipment of fully 3000 men, who entered the field and displayed bravery not surpassed in the history of the Empire. True, as a result, many valuable lives have been lost, by the sword and disease; but as to numbers, it is most appalling to reflect upon the fact that over 3000 deaths were recorded in the fair Province of Ontario, in 1898, by consumption alone, and yet our people are not aroused as to this great fatality, now assuming such alarming proportions. It is undoubted

* Read before the Canadian Medical Association, Ottawa, September, 1900.

that the seeds of this disease lurk in our country, our homes, our places of business, the food we eat, the water and the milk we drink, and frequently the very air we breathe, spreading disease, fatal in its results, and producing a most disastrous influence on the present generation.

As a profession, what course should we adopt under present circumstances? It is our duty to guide and direct public opinion as far as possible, in order to place the whole subject in a clear and comprehensive form, so that common-sense co-operation may be aroused, and an active interest taken by all classes of the community; fathers, mothers, councillors and legislators, to stay, as far as possible, the alarming spread of consumption now termed the "White Plague."

For many years medical opinion was divided as to the communicability of the poison of tuberculosis, but we are all contagionists now since the remarkable discovery of Dr. Koch in 1882, that consumption of the lungs was one of the most frequent forms of tuberculosis, and solely caused by the introduction of a living germ, the *Bacillus tuberculosis*, into the system of a previously healthy person. To-day his theories are accepted and verified, that tuberculosis is a *communicable* and *preventable* disease, two facts which cannot be too strongly impressed on the public mind. The question of heredity is the one which for many years was the accepted opinion, exercising, as it did, a soothing influence as to the prospect of escape from consumption under such circumstances. Nothing is more certain or conclusive than that no one does, or can inherit consumption. The offspring of consumptive parents receive the infection from without before they can become consumptives, thus giving fresh hope and spirit to the parents known to be consumptive.

In 1888 and 1890, two British Royal Commissions were appointed to make investigations, in regard to tuberculosis, and the result of their deliberations was as follows:—

- 1st. That consumption is a contagious disease.
- 2nd. That contagion is in the form of a living germ.
- 3rd. The living germ can grow and propagate only in the body of man, or some of the lower animals.
- 4th. The principal source of infection, is the dried sputa, from the lungs of persons already suffering from the disease; the sputa becoming dry, the tubercle germs float as particles of dust in the air, and are thus inhaled.

5th. The other source of infection to man is from eating the flesh and drinking the milk of tuberculous cattle. Cooked meat destroys infection and is not as dangerous as raw milk containing tuberculous matter, and more particularly if the animal has well defined, ulcerated udders.

Dr. Clifford Allbutt has published (*British Med. Journal*, Oct. 28, 1899) the opinion, that there are instances of prolonged use of tuberculous milk by many persons, old and young, without ill consequences, and this immunity depends on the constancy of the defensive machinery of the body.

In 1896, a third British Commission was appointed, composed of eminent medical men and veterinary surgeons, to enquire into the means most advisable and desirable for controlling the danger to man, through the use, as food, of the meat and milk of tuberculous animals. The housing and general sanitation of cattle requires special care and attention. Tuberculin is advised free from government, to all owners of cattle, so that their herds could be examined at stated intervals, by the "tuberculin test." The animals infected should be treated according to the most advanced principles, either as to isolation or killing of the same. Local authorities are to take samples of milk offered for sale within their districts, and venders required to give information of the source from which the milk is supplied. These methods are now in force in England, to assist in stamping out bovine tuberculosis, and to protect the public in so far as infection is concerned.

The *Tuberculin Test* has been the subject of considerable controversy, and the following facts should be kept well in hand.—Dr. Watson, President of the State Board of Cattle Commissioners, Concord, N.H., in the Public Health Report, 1898, vol. 24, p. 149, states: "We believe that a majority of the cattle reacting to the tuberculin test are not diseased to an extent that requires their slaughter for the protection of public health." The policy of slaughtering all animals that reacted to tuberculin has been entirely abandoned, as after the most careful enquiry, it is believed that a majority of the cattle reacted on by the tuberculin test are not diseased to an extent that requires their slaughter for the protection of the public health. Much depends on the careful and thorough examination by skilled veterinary surgeons, as thus the danger of infection from either tuberculous meat or milk would be reduced to a minimum. Tuberculin does not reveal the degree of infection and is actually not as reliable a test as was at first supposed. Solomon, in 1893 (*Transac. American Pub. Health Ass.*), admitted that tuberculin was a great aid to the diagnosis of tuberculosis, but not infallible and might lead to errors. There are instances on record where tuberculosis existed and the animals did not react to tuberculin.

In all such investigations, in order to promote health in cattle as well as in man, the opinion arrived at by the highest authority is, that *sanitation* ranks first. Dairy men should be registered and an inspector appointed for a specified area of country, to be under the control of the Local Gov-

ernment or a Provincial Bureau of Cattle Commissioners, to make reports at stated intervals as well as issue printed circular directions to dairymen, milk vendors and cattle dealers, for their guidance and general direction, and all animals for food supply, should be inspected before sold. Some such system carried into effect in Canada would reduce tuberculosis to a minimum, and do much to strengthen the belief that our Dominion is a centre of health, happiness and prosperity. Too much stress cannot be placed on these facts, in order that the public, as a whole, may be aroused to the great importance of a general knowledge of the subject, as such would in time give direction to governmental and special efforts, to scientists, who should not be single handed, in public health efforts.

In May, 1900, the Regius Professors of Oxford and Cambridge, spoke with all the responsibility of their office, on the communicability of consumption, and its prevention, fully impressed with the fact that from 65,000 to 70,000 die annually in Great Britain from the disease, more than double the fatality of the entire British force at present in South Africa. Clifford Albutt epitomized the preventive measures: an active crusade against 3 D's, *damp*, *darkness* and *dirt*. In clearing the board of these evils, the standard of general health would be raised to a higher level, and what is needed in Canada is thorough organization.

At the last session, Ontario, a permissive bill was unanimously passed as a result of the labours of the "Anti-Consumptive League," Toronto, providing for the erection and maintenance of a sanitarium for consumptives in each Municipality, or group of municipalities, in the Province of Ontario. This is a most progressive move, in keeping with the advancement of the day, and one which reflects much credit on the local authorities of Ontario.

The history of medical opinion as to the communicability of tuberculosis is somewhat remarkable. Villemin was ridiculed as to his ideas of infection, but we are all contagionists now, and Villemin's name stands out as one of the greatest men of his time—a true scientist in the widest and most comprehensive sense.

Considering the antiquity of the contagious belief as to consumption, it is remarkable the length of time that elapsed before active measures were thought of to stay the progress of the disease. The contagiousness of consumption was known to Aristotle, who stated that the breath of consumptives was poisonous to those about them. In the second century Galen announced the very same idea, and warned the people that it was dangerous to live intimately with sufferers from consumption. In the 15th and 16th century, Baillon, a celebrated French physician, and Montano, observed the frequency of consumption in those who attended phthisical patients. In 1682, the celebrated Morgagni expressed the

same opinion. At Nancy in 1750, the furniture of a woman who died of consumption, was publicly burnt, by order of the Magistrates. In 1754, the Grand Duke of Tuscany sought counsel from the Florence College of Physicians, as to the infectiousness of consumption, and a legislative enactment for the prevention of consumption was issued in 1782, by Frederick IV. King of Naples.

Thus, in the medical history of Europe, we are enabled by records to trace very marked activity in the line of defense against the infectious character of consumption. Not, however, until the remarkable discovery of Koch were scientists at rest as to the origin and precise nature of this disease, which has an average of about one-seventh of all deaths, of whatever nature, and a fatality about three times as great as all other contagious diseases combined.

At present, fully 12 years since Koch's discovery, we find tuberculosis recorded in tabulated lists of disease as contagious, and certainly it is high time so progressive a move should be made. The remarkable fatality from tuberculosis leads to the belief that its latent power is more active than generally supposed. The one great source of contagion is the sputa of the consumptive patient, and particularly in its dried state. Fortunately, all those who inhale or ingest tubercle germs, do not contract consumption. Much depends on a "lowered state" of the system, rendering it "fit soil" for its development. The very surroundings of the individual limit greatly the infectious character of this disease.

Much as to the immunity from consumption depends on the care, prudence and watchfulness exercised, to promote a healthy state of the system, and to counteract any disposition towards a lowering of normal vitality, by careful observation and action, both as to external conditions, or surroundings, and the *internal workings of the system*, the very fortifications set up by nature, to guide, direct, and preserve health.

All interested in tuberculosis should be alive to the fact that it is a preventable disease, and as a most desirable precaution against its spread, those laboring under the disease should use a metal sputa cup, which, with contents, can be thoroughly boiled, and thus act against infection. Strict quarantine should be exercised against the importation of foreign consumptives. Connecticut Medical Society Report, 1899, states:—
"Every building, where large gatherings frequent, becomes a source of danger, unless precautions are used; for where can a large gathering be found, that some consumptive does not frequent? Theatres, churches, school-rooms, with vitiated air and packed doors, our homes where consumptives live, the mill, the office, the sleeping car, hotel and cottages, in all health resorts, where consumptives congregate, and even

“the public telephone and drinking cup, may become sources of “infection.”

Shipowners should be careful that berths holding several passengers, should not have a consumptive. Once our people are aroused to the fact that thousands die annually, who might have been saved by preventable means, then timely care will be taken, and the necessary measures carried out, to reduce the death rate to the smallest margin possible.

As to the medical treatment, the opinion now prevails that we have no specific for consumption. Dr. Bodington, of Sutton Coldfield, England, was the first to advocate the open air treatment of consumption, and in this line of action, Dr. Henry Bennet, Edinburgh, advocated vigorously the open air treatment, Riviera. To the fresh air life, liberal feeding was added, and in this line, Hughes Bennet was quite noted, for the free administration of cod liver oil.

The Adirondack Cottage Sanitarium, for the treatment of incipient pulmonary tuberculosis, under Dr. Trudeau, has accomplished much good and practical work. In round numbers, the result from all sanatoria, the only safe method of treatment, is estimated at about one-third cured, of those who remained a reasonable term, from 3 to 9 months; and what can be more satisfactory than the fact that absolute cures do occur?

Sanatoria for consumptives are the order of the day, and we most earnestly trust that such action will be taken by the authorities in our Dominion, as will command the respect of the public and the profession. Marked increased activity is evident on this subject, indicated by the congresses held in various parts of the world. Last year, Berlin had a most successful meeting at which Canada was represented by Dr. Farrel, of Halifax, to whom we are indebted for an excellent report. This year, Naples has been up and doing, and next year (1901) the wisdom of the nation, and outside world, will assemble in London, under the presidency of H.R.H. The Prince of Wales.

If we inquire into the practical outcome so far, what have we to state, that many able speeches have been delivered, and much enthusiasm excited. Resolutions were passed, associations formed, and the state called upon, as to the requisite machinery, for carrying out the necessary sanitary measures. Lord Salisbury, at Marlborough House meeting, in 1898, said, “You must be content with preaching the salutary doctrine “you hold, and must not think of applying it with the secular arm.” So now, in England, the protection of the people, in these matters of health, actually rests with the municipal and local authorities. In Italy, fortunately, matters are somewhat different. Professor Baccelli, who is also an authority, as statesman and scientist, and as President of

the Congress at Naples, announced that the Italian Government prepared a law concerning the prophylaxis of infectious diseases, in which tuberculosis figures conspicuously. Persuasion alone is not sufficient, but compulsion as well. We shall look forward with much interest to the outcome of this progressive measure, under the guidance of so eminent an authority. The education of our people, as to the methods necessary to counteract the spread of tuberculosis, would assist materially all other efforts in the same direction. The school, the church, the councils, and in fact in every possible way, effort should be made to inform the masses, as to the vast moment of this serious malady, and as to the manner in which their united co-operation would prove of service.

Tuberculosis has become a really national disease, and is widely spread. The Provincial Bureau of Public Health, doubtless, will have an increased appropriation, and additional special experts on this disease, that every means should be taken to stay the progress of tuberculosis, without which our efforts would be futile, and the results anything but satisfactory.

A Central Bureau of Health cannot be thoroughly equipped without a chemical and bacteriological laboratory. Such are indispensable in the present advanced state of science.

The Dominion of Canada indicates a vigorous and healthy growth in this direction. Meetings like the present tend to strengthen and develop the power of public opinion in aid of the cause of science, and we trust that by judicious enterprise and intelligent energy the practical result will be, that the soil of tuberculosis will rapidly disappear, and cause Canada to be known as the Riviera of the North American Continent.

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ENTERIC FEVER IN CHILDREN.*

A COMPARATIVE STUDY OF ONE HUNDRED CASES.

BY

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Typhoid fever as met with in children under fifteen years of age, presents certain points of difference from the disease as met with in adult life. These distinguishing characteristics have already been referred to and described by several members of our Society.

During the past five years, several outbreaks of this disease have occurred in Montreal, due in two instances at least, to the infection being conveyed in milk. Quite a number of children suffered, but I am unable to draw a comparison between the numbers of children and of adults who were attacked, owing to defective registration of all the cases which occurred.

Extending through this period, I have the notes of twenty-nine cases of typhoid fever in children, the greater number of which occurred in my private practice; a few were in the practice of confrères, but were seen by me in consultation. I have also examined the records of forty-eight cases treated in the Montreal General Hospital during the same period, some of which occurred in my own wards, others I report by courtesy of my confrères; also the records of twenty-three cases admitted into the wards of the Royal Victoria Hospital, the notes of which were kindly placed at my disposal by the attending physicians; thus making a total of one hundred consecutive cases occurring in children under fifteen years of age. I have thought that a brief statement of the more important characteristics of the disease as manifested in these cases, and of the relative frequency of the various symptoms, with the results obtained by treatment might have some interest for the Society. Of these 100 children, four were under the age of two years, thirteen between two and five years, forty between five and ten years, and forty-three between ten and fifteen years.

In the four cases under the age of two years, one was received into the Montreal General Hospital under the charge of Dr. Finley; two occurred in private practice, and one was seen in consultation.

In the case of the one received into the Hospital, the diagnosis was

* Read before the American Pediatric Society at its meeting in Washington, May 3, 1900.

at first doubtful. The history was that of an infant of thirteen months, apparently healthy, with the exception of a perforated tympanic membrane, the result of an attack of scarlet fever seven months previously. A discharge from this ear persisted. Five days previous to its entrance into the hospital, diarrhœa set in, the infant became listless, fretful, and drowsy; and food was refused. Two days afterwards, it was seen by a medical man and recommended for admission into the wards. Its condition on entrance was described as follows:—The infant was restless, turning from side to side in its cot and moaning; the face had a cyanotic hue; the abdomen was slightly distended; no rose spots were visible; the spleen was distinctly palpable; and the lower edge of the liver could also be felt; a few moist râles were heard at the base of both lungs; the pulse was rapid and very weak; the heart sounds were normal; loose focal movements occurred four or five times in the twenty-four hours. The infant died in the morning of the fifth day after its admission. The Widal reaction was absent. The post-mortem examination revealed typhoid lesions and the presence of typhoid bacilli in the intestines.

Two cases occurred during the spring of 1897 in my own practice. In both cases, other children in the family were at the time suffering from well-marked symptoms of typhoid fever. Infection in these cases had been conveyed through the milk. The attack in neither case ran a severe course. The temperature ranged between 102° and 104° for the first week. In the second week, between 100° and 102°, but subsided to normal before the close of the third week. In both cases the spleen was enlarged; rose spots were distinct in one, absent in the other. In both, loose movements of the bowels were present, but the diarrhœa was not sufficient to call for special medication. The only treatment employed was tepid baths at a temperature of 95° F., reduced to 90° F. In the fourth case, I was called in to see an infant of eighteen months, suffering from cerebral symptoms which the attending physician regarded as probably due to tubercular infection. At the consultation, a few rose-coloured spots were discovered on the slightly distended abdomen, the spleen was found to be enlarged, and three or four loose movements of the bowels had occurred each day since the onset of the sickness. A probable diagnosis of typhoid fever was made, which I afterwards was informed, had proved correct. After an illness of sixteen days, an uninterrupted convalescence set in.

Typhoid fever in the infant is generally regarded as a comparatively rare affection. Marfan, (*Traité des Maladies de l'Enfance, Grancher, Paris, 1897, vol. I., p. 332,*) states that it is remarkable for the vague character of the clinical picture, and its difficulty of diagnosis. The more exact methods recently placed at our disposal for the determina-

tion of the presence of the typhoid bacillus will remove this difficulty, and all cases of continued—perhaps it would be better to say, remittent—fever in the infant, unaccompanied by any distinct localization of the disease, should be carefully investigated. My personal belief is that instances of this infection will be found more numerous than the facts elicited in previous discussions on the subject in our Society would lead us to think.*

The statistics of typhoid fever in infancy are still too meagre to enable us to draw broad conclusions. Thus far, only the more severe cases have been recognized. With the more accurate means of diagnosis now at our disposal, the typhoid fever of infancy may yet be shown to run a mild and frequently unrecognized course.

After a careful investigation of the records of those cases occurring over two years of age, I do not feel inclined to draw a dividing line at any special age. While in children over fifteen years, the disease generally assumes the characteristics met with in the adult, in my experience up to the age of fifteen, it maintains the type met with in childhood;

* Since writing the above, Dr. W. P. Northrup has kindly favoured me with a copy of his report of a case of Typhoid Fever in an Infant Nine Months Old; Recovery." (Presbyterian Hospital Reports, New York, Vol. IV., 1900). Dr. Northrup, in a very interesting paper read before the American Pediatric Society in 1892, and based on the post-mortem records of the New York Foundling Hospital for the previous ten years, stated that he was convinced that typhoid fever in infants under two years of age was very rare; swollen mesenteric and Peyer's glands, and enlargement of the spleen in infants, in his opinion, could not safely be interpreted in the same way as similar lesions in adults. In a second paper, read before the same Society in 1895, he stated his position as follows: "Typhoid fever is a disease to which there is little susceptibility in children under two years of age. In epidemics, children under two years of age though naturally little susceptible, may, in the presence of an overwhelming poison (multiplied exposures), acquire typhoid fever." He quotes in support of his views the widespread epidemic in Stamford, Conn., in which only four cases occurred in infants under two years. "In adults," writes Northrup, "typhoid is named something else; in infants, something else is named typhoid." The case described in his paper was the youngest undoubted instance in his experience; the symptoms were well marked, and were confirmed by a positive reaction with the Widal test—a reaction, however, which did not appear until the temperature had returned to normal. The writer states that he has now seen six cases of undoubted typhoid fever in patients under two years of age, and concludes his paper as follows: "(1) The diagnosis in all these cases was easily made on signs and symptoms characteristic of typhoid in adults. (2) The cases were all intimately associated with others in the family. (3) Scepticism should be encouraged concerning any diagnosis of typhoid fever under two years of life, not intimately associated with other cases. (4) The most common mistakes arise from misnaming as typhoid the following diseases: grippe, subacute catarrhal enteritis, central pneumonia, and malaria."

A case very similar to the one reported by Dr. Northrup was reported at a meeting of the Montreal Medico-Chirurgical Society (MONTREAL MEDICAL JOURNAL, Vol. XIX., p. 609), by Dr. F. R. England. The age of the infant was only eight months. As stated in my paper, the question of frequency is one which can only be solved by the careful observation of doubtful cases.

the symptoms are milder and the duration in the majority of cases is under three weeks.

In thirteen of my cases, the *onset* was sudden. Children apparently in good health, were suddenly taken ill so that within a few hours symptoms of the disease were well-marked. In every case in which I have noted this fact, the sudden onset was associated with a disturbance of the gastro-intestinal tract attributed at the time to an indiscretion in diet.

Of the well-recognized *initial symptoms*, headache was observed as present in 68 cases (or 83 per cent. of the children over six years of age), and is noted as severe in 16. Vertigo is noted in 19 cases. Anorexia is noted in 49 cases. While no distinct chill is reported, in twelve cases the patients complained of a feeling of chilliness. In 18 cases, vomiting is said to have taken place, but did not recur after the first day. Movements of the bowels, looser and more frequent than normal, were noted in 36 cases. Of these, ten cases were distinctly diarrhoeal in character. Six of these were children in whom the sudden onset was attributed to indiscretion in diet. In only four cases did the diarrhoea persist and require special medication. Constipation was present in a more or less pronounced degree in 59 cases, requiring rectal injections. Slight fullness of the abdominal parieties was noted at the onset in 48 cases. In 29, it is distinctly stated that no distension was present. Abdominal pain was noted as a complaint in 33 cases, while pain on pressure, a dubious symptom always in young children, is only stated to have been present in 15. Epistaxis occurred in 23 cases. Tonsillitis was present in six cases. A slight convulsion was stated by the mother to have occurred at the onset of the attack in an infant of two years and eight months, but as this was one of the instances in which, apparently, the sudden onset was precipitated by injudicious feeding, its occurrence must be regarded as accidental, and not as an indication of typhoid infection. The personal equation enters so largely into any estimate of the value of these initial symptoms that it is impossible for us to draw any conclusions from them as to the prognosis of the attack.

On investigation of the symptoms occurring during the course of the disease, the temperature range was found to present some peculiarities worthy of notice. A resemblance to Wunderlich's ascent at the onset was noted in only 8 out of the 100 cases. This small number is doubtless due to the fact that the temperature in hospital cases, and indeed in private practice, is rarely accurately recorded before the fourth or fifth day of the disease. Three of these eight were cases in which the affection appears to have been contracted in the hospital, and as the temperature records were systematically registered in them, the step-like

ascent is distinctly noticeable; in one for three, and in two, for four days. After the first week, in the large majority of cases, the temperature became in a marked degree remittent. In those who were admitted into the wards towards the close of the first or during the second week of the attack, the temperature was remittent from the outset; a fall of from two to four degrees being recorded in the morning, as compared with the record of the previous evening. During the third week, these extreme ranges (in 62 out of the 87 charts at my disposal), came to an end, either gradually subsiding or more or less abruptly ceasing; so that at the end of the 21st day, there was an evening temperature of not higher than 99 degrees. More frequently in the infant than in the adult do we find the temperature at the close of this period remaining persistently sub-normal for some days. In five cases it is noted that the rectal temperature remained between 96 and 98 for from three to four days. In one case, for four days in succession, it recorded 95.5° F. as a morning temperature.

Of the 87 temperature charts which I have been able to compare, in 19 the temperature on several occasions reached or exceeded 105 degrees, and the fever persisted for four weeks or more. In 37, the temperature on several occasions, reached 104 degrees, and the duration of the fever was about three weeks. In 15 cases, the duration of the fever was between two and three weeks, but the highest range of temperature was 103 degrees. In 16 cases, while the temperature may have occasionally reached a high point, the duration of fever was under two weeks. Of the remaining 13 cases, the temperature charts are either wanting or too defective to make use of them, but of these, four I have characterized as severe in my notes taken at the time, and nine as moderately severe. Taking the temperature curve therefore as some indication of the severity of the disease, I may refer to 23 of my 100 cases as being severe, 46 as moderately severe, and 31 as running a moderately mild course.

The pulse in the great number of cases was only moderately quickened, but in the few instances to which I will refer later on, it was rapid and dicrotic.

The spleen is noted as palpable in 70 cases, and in 8 additional instances, the area of splenic dulness is said to be distinctly increased in size. Tenderness on pressure in the left hypochondriac region is noted in 18 cases. Rose spots were noted in 55 cases. In three only are they said to have been numerous.* A diffuse erythema of the neck and chest

* Instances have been reported in which a very abundant eruption has occurred in infants as early as the fourth day. An interesting paper on typhoid fever in infants, characterized by a very abundant rash, has recently appeared in the *Journal de Médecine*, February 10, 1900, by MM. Weill and Lesieur. They state that an abundant eruption of lenticular rose spots indicates slight intestinal symptoms and a good prognosis.

is noted to have occurred during the first week in two cases.

In eight cases during the course of the illness, the abdomen is stated to have become distinctly distended. In five of these, diarrhoea was present. In two cases, rigidity and tenderness existed, which subsided on the application of an ice bag. In four cases, two of them under ten years of age, traces of blood were observed in the stools between the 18th and the 23rd day of the disease, but no severe hæmorrhage occurred.

In 19 cases, sonorous and sibilant râles are noted to have been present at the bases of both lungs. In one case, a child of seven years, is stated to have attended the out-patient department of the hospital for six days with symptoms indicative of an attack of broncho-pneumonia. The physical signs as observed were impairment of resonance at both bases with numerous sub-mucous râles; sibilant and sonorous râles over the upper portion of both lungs, and distant tubular breathing at the lower angle of the right scapula; temperature 103° F., pulse 112, respiration 44. After admission into the hospital, the spleen was found to be enlarged, and two days later an eruption of rose spots occurred on the abdomen. The temperature now assumed a remittent character, and the lungs cleared. Complete defervescence took place on the 16th day of the fever, followed by a relapse on the 23rd day of the attack, lasting eight days. The temperature then fell to normal and convalescence ensued.

At the onset of almost all the cases, and throughout the attack in cases of moderate severity running a regular course, the pulse remains slow even under the stimulation of a high temperature, indicating possibly some action on the penumo-gastric centre by the toxins of the typhoid bacillus; in sever cases, however, this action would appear to be more than counteracted by the effect on the muscular wall of the heart as indicated by the frequent development in children of a soft, systolic murmur heard sometimes in the mitral area, at other times both at base and apex. Its presence is noted during the second or third week in 22 of my cases.

A mild nocturnal delirium is noted as present in 18 cases. In only one instance was the delirium noisy. Restlessness in sleep or sleeplessness, occurring during the second or third week, is noted in 15 cases. In 12 cases, drowsiness is a marked feature of the first week; and in four cases, a condition of semi-stupor existed during the first few days after entrance into the hospital. In one case, with a dicrotic pulse, there was muttering delirium, picking at the bed clothes, and subsultus, with a temperature of 105.5° F. These symptoms, fortunately, passed off under free stimulation, continuous spongings, and the application of cold over the precordium. In a second case, in addition to the condition of stupor,

a course tremor of the fingers was noted, and abolished reflexes. When convalescence set in, a paretic condition of the muscles of the leg with dragging of the toes, was noted. I have no record of the occurrence of temporary aphasia, instances of which have been reported by other writers; but Dr. Finley reported to me one instance in which this condition had been present for two weeks, but passed off completely during convalescence. Of 21 cases of aphasia collected by Morse, only two had a central origin and were due to embolism. A paretic condition of the bladder, requiring the use of the catheter, was noted in three cases during the second and third week of the attack. On instance of tenderness of the toes was recorded.

In only five instances is it stated that a trace of albumen was present in the urine, in two of which a few epithelial casts were also found.

Otitis occurred in four cases.

A benign non-suppurative periostitis was noted in one case.

A tendency to subsequent furunculosis was noted in two instances.

Relapses have been noted in 15 of the cases. In one case, there were two distinct exacerbations. Relapses followed after both severe and mild attacks. It is stated (Marfan, *loc. cit.*) that they may be foretold by a persistence of the enlargement of the spleen, by the temperature failing to assume a normal and regular course, by the failure of the tongue to clean, and by the facial expression. I have failed to verify any of these statements, beyond noting that in five of the cases, the exacerbation occurred in the fourth week after a severe attack before the temperature had quite assumed a normal range.

In corroboration of the value of the Widal reaction in diagnosis, I would state that in 43 of my cases it was carefully sought for, with the following results:—

3 gave it on the 4th day.	1 gave it on the 14th day.
2 " " 5th "	1 " " 15th "
2 " " 6th "	2 " " 16th "
3 " " 7th "	2 " " 17th "
2 " " 8th "	3 " " 18th "
3 " " 9th "	1 " " 19th "
3 " " 10th "	1 " " 20th "
5 " " 11th "	1 " " 21st "
4 " " 12th "	2 " " 22nd "
3 " " 13th "	1 " " 28th "

We may simplify these figures by stating that 12 gave the reaction on or before the 8th day; 13 gave the reaction after the 8th but before the

12th; 12 after the 12th but before the 18th; and 6 after the 18th and before the 28th. In three cases the reaction failed.

The only death which occurred in this series of 100 cases was that of the infant 13 months old, which was received into the hospital in a condition of profound depression of the circulatory and nervous system, and died on the 5th day after admission.

The treatment in the majority of these cases consisted in the systematic employment of cool or cold baths, every three hours, whenever the temperature rose above 102.6° F.

In 19 instances, the temperature of the bath at the onset was 90° F. to 85° F., afterwards lowered to 85° F. to 75° F.

In 25 instances, the temperature of the bath at the first was 85° F. to 80° F., and was afterwards continued at 80° F. to 75° F.

In 9 instances, after a few baths at higher temperatures, the bath was given at 75° F. to 68° F.

In 30 instances, systematic spongings were given with water of about 70°, every three hours.

In 3 instances, a cold pack was employed.

In 14, the treatment was symptomatic.

Stimulants in the form of either whiskey or brandy were employed cautiously in most instances, but freely in a few cases, regarding alcohol not merely as a stimulant, but as a rapidly and easily appropriated food. Strychnia was the chief cardiac stimulant employed. Milk formed the chief dietary, but a careful watch was kept on the stools, that the quantity given should not be in excess of the digestive powers of the child. Frequently it was more or less modified by the addition of some diluent.

I am convinced of the great value of the regular and systematic employment of the cool or cold bath in the treatment of this affection. In my opinion, it should be employed without too rigid an adherence to the rules laid down by Brand. A great fall in temperature, as the result of its employment, is not to be desired. As a recent writer has said:—
“Baths are to be employed for their action, not on the temperature but on the nervous system, and through it on the heart, respiration, and secretion, especially secretion from the kidneys. The nervous system of the child responds more quickly and energetically to the cool bath than does that of the adult, and the amount of the response, to some extent, has an inverse proportion to the age. It is unnecessary and undesirable that as low temperatures be employed in the case of a young child as in the case of an adult.

The duration of the bath, the temperature of the water, and the frequency with which the baths are employed, should be modified to suit

each case; in the same way as we modify the dosage of other therapeutic remedies. Sudden and severe shock is to be avoided. I believe it to be a great and unnecessary shock to a young child to plunge it into a bath of 68° , or even 75° , at the beginning of the attack. A bath of 90° cooled to 85° , and repeated regularly for the first few days of the attack, gives rise to neither resistance nor signs of shock or collapse on the part of the child. Later on in the disease lower temperatures may be employed, if found necessary to stimulate a flagging nervous system. Even after the pyrexia falls below 102° , I believe the regular use of the cool bath once or twice a day strengthens the heart action and tends to a more rapid convalescence.

RETROSPECT OF CURRENT LITERATURE.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Treatment of Varicose Ulcers.

BARDESCU. "A New Method of Treating Varicose Ulcers of the Leg."
Centralblatt für Chirurgie, 1899, No. 28.

The author reports two cases of chronic indolent and indurated ulcer of the leg which were cured by section of the internal saphenous vein and the stretching of the perineal nerve. Local anæsthesia resulted in the area supplied by the nerve, which was followed by absorption of the induration and a healthy ulcer, even by firm scar tissue.

A case with ulcers on both legs, which had resisted other methods of treatment for some years, became cicatrized in twenty-seven days, from the above method of treatment.

The portion of nerve stretched is dependent upon the site of ulceration.

Massage in Fractures.

GEP. WOOLSEY. "Massage in the Treatment of Recent Periarticular Fractures." *Annals of Surgery, Sept., 1900.*

The author, after quoting Champonnière's statements concerning the relative values of mobilization and massage instead of immobilization, in the treatment of fractures, says that:—"Certain fractures, especially the oblique fractures of both bones or the only bone of a limb, require a retentive apparatus to prevent the sliding by, or longitudinal displacement of, the fragments, and thus are not suitable for massage until some consolidation has occurred, requiring from ten days to three weeks. But when one bone of the arm or leg is fractured and is splinted by the other bone, massage may be applied in most cases from an early date."

He does not in any case discard splints, but uses them in conjunction with massage. Moreover, he advises, especially in Pott's fracture, when there is much posterior or lateral displacement, immobilization in plaster for ten days to be followed by massage and passive motion, and warns against vigorous passive motion in recent fractures, in which the

deformity readily recurs, as being a prominent factor in the production of non-union.

Better functional results are obtained by primary immobilization and subsequent massage, than when massage and passive movements have been first employed, but where, owing to persistence of deformity, immobilization had finally to be resorted to.

In the treatment of Colles' fracture by massage and without a splint, the author has had perfect functional results, and claims that the deformity is no greater than when the splint is employed.

Operation for Chronic Constipation.

WILLIAM J. MAYO. "The Ileocæcal Orifice and its bearing on Chronic Constipation, with Report of Two Cases Relieved by Operation." *Annals of Surgery, Sept., 1900.*

The author compares the circular fold of muscle fibres at the ileocæcal orifice with the pylorus, and believes that its chief function is to prevent the too rapid emptying of the small bowel, as well as to maintain some pressure against peristalsis, until the process of small bowel digestion is properly completed.

He points out that as the result of resection of this valve in eight cases for various conditions, that the bowel movements became looser and more frequent than had been customary previous to the operation.

In the first case, the clinical history and local symptoms led the author to make a diagnosis of chronic appendicitis. On operating, a few adhesions were found about the appendix, but a well-marked narrowing at the ileocæcal valve, with distended small intestines, in spite of previous free purgation, was noticed. The operation did not relieve the pain nor the constipation, and she returned to the hospital in five months when a plastic operation similar to a Heineke-Miculicz pyloroplasty was performed. This procedure was followed by relief of the local symptoms as well as of the constipation.

In the second case, a diagnosis of chronic appendicitis was made, but on exploration a normal appendix was found, though a similar narrowing at the ileocæcal orifice existed. A plastic operation, as in the former case, relieved the iliac pain and tenderness as well as the constipation.

Carbolic Gangrene.

FRANCIS B. HARRINGTON. "Carbolic Gangrene." *The American Journal of the Medical Sciences, July, 1900.*

Harrington again draws the attention of the profession to the danger of using moist dressing of weak carbolic acid, when applied to the fingers and toes. He deprecates the present condition of affairs, which enables the laity to procure the poison without a doctor's prescription.

During the last five years he has personally seen eighteen cases, and believes that many cases go unrecognized, as being due to the effect of the treatment applied to the pathological condition.

Transverse sections of the amputated finger, in one case stained with polychrome methylene-blue and eosin, showed that the skin and subcutaneous tissue stained diffusely with the exception of numerous large colonies of micrococci, which were found in the breaks on the surface and could be followed into the deeper tissues. The vessels in this area were thrombosed and colonies of bacteria were found in the blood-clot. Separating this from the deeper layer was a wide zone of round-celled infiltration, among which polynuclear leucocytes were present in large numbers. In places the tissue was liquefied and there was a distinct formation of pus. From this to the periosteum there was a diffuse infiltration of round cells, and many of the small vessels were thrombosed, with areas of hæmorrhage among the tissue.

Needless to say, gangrene does not always follow the application of this solution. Gangrene has followed the application of solutions varying from one to five per cent. The result would seem to depend upon the strength of the solution, the manner of applying it, the length of application, and upon the power of resistance in the individual.

The macerating effect of a frequently applied solution in loosening the epithelium, and allowing the ready penetration to the deeper parts, explains the strictly localized gangrene. Compression of the bandage would seem to be not an important factor, since cases are recorded where the terminal phalanx continued to bleed on being pricked, while the middle phalanx was undergoing necrosis.

Joseph Levai has shown that weak solutions of carbolic acid, as well as similar solutions of muriatic, nitric, and acetic acid, and of caustic potash, produced gangrene, when applied frequently as a moist dressing for twenty-four hours. The primary effect of these solutions is a loosening and an œdema of the epithelium, then ready penetration to the deeper layers of tissue, resulting in necrosis. Strong solutions, or the pure caustic are less likely to be followed by gangrene, since these produce eschars which resist penetration to the deeper tissues.

Superficial gangrene occurs on the trunk as the result of moist carbolic dressings, but the damage is not so disastrous because of the greater thickness of tissues and because the blood supply cannot be shut off as in an extremity since it is the enveloping of an entire part as a finger or toe with the dressing which causes the complete destruction of the part.

In conclusion, he advises the laity to employ a safer antiseptic, such as boric acid, and when carbolic solutions have produced superficial gangrene, to dress with sterilized water compresses. Total necrosis calls for amputation.

A. E. Garrow.

Pharmacology.

UNDER THE CHARGE OF A. D. BLACKADER.

A Comparative Study of Digitalis and its Derivatives.

In an interesting paper in the *American Journal of the Medical Sciences*, Dr. Arnold and Dr. H. C. Wood, Jr., detail the results obtained by them in a series of experiments made with the view of determining the relative clinical value of the tincture of digitalis, and its more important glucosides. The recognized proximate principles found in digitalis are: digitalin, digitalin, digitonin, digitin, and digitoxin. The last named, according to Schmiedeberg, is not a glucoside, although other writers state that it yields glucose. Of these digitin is inert, and digitonin belongs to the Saponin group; the other three have a very similar influence on the circulation. Unfortunately there is much uncertainty in reference to the strength and therapeutic value of these principles, as the names have been applied to impure products, a fact which has been explained by their liability to chemical change in the various manipulations required for their separation. The writers recommend *digitalinum*, Ph. Germanic as a stable product.

As the result of their experiments, they find that both digitalin and digitoxin closely resemble in their action the tincture of digitalis, and if given in equivalent doses will produce similar clinical results. The reason that digitalin has not gained the general confidence of the profession is that it has been employed in too small doses. Ordinarily the dose of digitalin is stated to be from one to two milligrammes ($\frac{1}{300}$ grain). Several years ago Dr. Beates* startled some of the more conservative practitioners of medicine by advising them to give digitalin in half-grain doses. The writers' experiments tend to confirm his statements. Judging from their experiments on dogs, it would require approximately $3\frac{1}{2}$ grains given intravenously to produce toxic manifestations in a man weighing 157 pounds (70 kilos). They say that it may be safely stated that 0.015 gramme ($\frac{1}{4}$ gr.) of digitalinum germanicum (Merck) about equals 1 cc. (15 minims) of tincture of digitalis or 0.15 gramme of the leaves. Digitoxin is insoluble, and has distinctly irritant properties. The results obtained in these experiments are epitomized as follows :

(1) Digitalin and digitoxin each represent the full circulatory powers of digitalis. (2) Digitalis, digitalin, and digitoxin stimulate the cardio-

* Jour. Amer. Med. Association, Vol. XXVIII., p. 1209.

inhibitory mechanism both centrally and peripherally. In larger doses they paralyze the intrinsic cardio-inhibitory apparatus. (3) They all cause a rise of blood pressure by stimulating the heart and constricting the bloodvessels. (4) Very large doses paralyze the heart muscle of the mammal, the organ stopping in diastole. (5) The digitalin of the German Pharmacopeia (Merck) appears to be a staple compound, one gramme of it being equivalent to about 70 c.c. of tincture of digitalis. (6) Digitoxin is not to be recommended for human medication on account of its irritant action, which makes it liable to upset the stomach when given by the mouth, or to cause abscesses when given hypodermically; it is also very insoluble, which makes absorption slow and elimination irregular; hence it is apt to accumulate in the system or act with a varying degree of power.

Cacodylic Acid, Sodium Cacodylate—A New Arsenical Preparation,

One of the most important of the compounds of arsenic with alcohol radicles is cacodyl, $\text{As}_2(\text{CH}_3)_4$, a colourless liquid with disagreeable, garlic-like odour, and very poisonous. Cacodylic acid, $\text{As}(\text{CH}_3)_2\text{OOH}$, is a white crystalline substance, soluble in water, odourless, and comparatively non-poisonous, although containing about 54 per cent. of metallic arsenic. For this reason cacodylic acid and its sodium salt have recently been recommended as a means whereby large doses of arsenic may be administered for prolonged periods. The arsenic, however, appears to be in a peculiar combination no longer poisonous, so that it must be regarded as doubtful whether its therapeutic action is comparable with that of other arsenical salts. The following are some of the more recent reports on the results obtained from its administration. Renant (*Medical Press*, February 14, 1900) speaks highly of its tonic action, on nutrition, and its non-irritating effect on the stomach, and recommends it in the failing nutrition associated with the onset of tuberculosis. The dose is from 2 to 4 grains, but a single dose of 15 grains has been given without unpleasant effects. Widal, at a meeting of the *Société Médicale des Hôpitaux*, March 2, 1900, stated that he had treated cases of tuberculosis and leucocythæmia with sodium cacodylate, and found that the appetite was increased, and the general condition in a marked degree improved. He administered the drug subcutaneously in doses of from $\frac{3}{4}$ grain to $1\frac{1}{2}$ grains. He also stated that there was a rapid increase in the number of the red blood corpuscles as the result of its employment in this way. M. Gautier also preferred the hypodermic method of administration of the drug. Given by the mouth, he thought the drug was decomposed in the stomach, imparting to the breath an

offensive garlicky odour and leading to the elimination of irritating products by the kidney. Zenner (*New York Medical Journal*, March 3, 1900), reports two cases of anæmia in which he administered cacodylic acid with successful results after other hæmatinics had failed.

The consensus of opinion thus far is in favour of the value of the drug when given hypodermically, and it has the great advantage over other arsenical preparations that when administered in this way it gives rise to almost no pain.

Prof. Gautier's formula for subcutaneous injection is :

Cacodylic acid, 5 grammes.

Saturate exactly with sodium carbonate ; then add

Cocaine hydrochloride, 0·08.

Creosote in alcoholic solution, ·30.

Boiled or distilled water to make 100 c.c.

Each cubic centimetre contains five centigrammes of cacodylic acid.

Sodium Metavanadate.

MM. Lyonnet, Martz and Martin report the results (*Lyon Médical*, February 26, March 5, 12 and 19, 1900) obtained by them after a careful and prolonged investigation into the properties of the salts of vanadium, especially the sodium meta-vanadate. They refer to the powerful oxidizing powers of the salts of this metal as indicating their probable mode of action in the tissues. As the result of their experiments they found the toxic dose of the sodium metavanadate to be about 80 milligrams per kilo of body weight. The drug did not appear to act directly on the blood; the corpuscles were not altered, nor the hæmaglobin changed; the heart and the general circulation were not much affected; it was eliminated to only a slight extent by the kidneys. Its chief action appeared to be on the nervous system.

Sodium metavanadate is a white powder, comparatively soluble in water up to 1 in 20. In their experiments solutions of 1 in 1000 and 1 in 10000 were employed. These solutions were quite clear and had only a slight metallic taste. One-half to one milligram was given twice a-day on an empty stomach. In healthy individuals no unpleasant effects were produced. In a series of patients to whom the drug was given and in whom the influence of suggestion was carefully avoided, a marked increase in the appetite with sense of improvement in strength and well-being was recorded; in several of them a considerable increase in weight was noted. These results were most marked in cases of anæmia and early tuberculosis. These investigators regard sodium metavanadate as possessing a distinctly stimulating action on nutrition, but think that it loses the effect rapidly if given continuously; so they

have lately given it intermittently, two or three days only in a week. Its action they regard as similar in some respects to that of arsenic, but clinically its superior; and they consider it as the remedy to be chosen in cases of cachexia and impaired nutrition.

On the Influence of X Rays on Healthy and Diseased Skin.

Dr. Valentin Zarubin of Kharkoff (*Monatshefte für praktische Dermatologie*, May 15, 1899, p. 489), gives a full account of the action of the Röntgen rays, with a copious bibliography. The general conclusions at which he arrives after considering what has been done up to the present are:

1. The X-rays have proved of use in dermatology, especially in lupus vulgaris; but they have done good also in chronic eczema, in the removal of hair in cases of hairy nævi, and in some cases of ulcers of the leg, acne vulgaris, lupus erythematosus, hypertrichosis, favus, psoriasis, elephantiasis, and freckles.

2. When X-rays are used, there is a good deal of risk of unpleasant and undesirable results. These take the form usually of dermatitis of various degrees of severity, complicated by sloughing, by abscesses, etc.; baldness may also follow, and very exceptionally darkening of the skin and desiccation of the epidermis have been observed.

The rays therefore are of great value in certain diseases of the skin, but much care is required in employing them.

A. D. Blackader.

Review of Treatment.

UNDER THE CHARGE OF A. D. BLACKADER.

On the Treatment of Pneumonia.

Two valuable papers on the treatment of croupous pneumonia have appeared lately. Professor Eichhorst, in an article in the *Therapeutische Monatshefte*, for February, 1900, reviews the different ideas concerning the treatment of pneumonia which have prevailed during the present century, in all of which there has been a seeking after some specific for the disease, a false and illusory hope. He refers to the treatment by bleeding, in the early years of the century, which was replaced after the third decade by an attempt to cut short the fever by the administration of depressants, such as aconite and veratrum. At present croupous pneumonia is regarded as a disease that tends to get well of itself, and any unnecessary administration of drugs is apt to upset the patient's digestion, and compromise his chance of recovery. The most frequent cause of death being failure of the heart, any treatment adopted should from the beginning aim at guarding against this accident. In those cases where there is danger from heart failure, digitalis may render valuable aid, but caffeine he regards as being frequently of more service. In very severe heart weakness he recommends the hypodermic injection of oleum camphoratum, every hour, or even oftener. When the patient is young, and otherwise healthy, Professor Eichhorst insists upon the inadvisability of giving any drug whatever. Alcohol should never be given as a routine practice, but only when the state of the pulse and the general conditions show that it is really required. As regards the use of narcotics, Dr. Eichhorst considers that their use requires much care and judgment. When bronchitis is severe, it is not desirable to employ an opiate; but in cases of acute delirium and continuous sleeplessness, morphia may save life. Professor Eichhorst has never found either the tepid or the cold bath treatment of service.

Dr. Dreschfeld, (*Practitioner*, March, 1900), draws attention to the necessity for prophylactic measures. The sputum of patients suffering from pneumonia should be disinfected. Weak and elderly persons, especially if suffering from bronchial catarrh, should keep away from the sick room. As the micro-organisms of the disease may persist in apartments or buildings in which cases of pneumonia have occurred, the disinfection of such rooms is advisable. Referring to the routine

treatment by large doses of digitalis, he states that he has in several cases given half ounce doses of a freshly prepared infusion every two hours. He found that it was well borne and reduced the temperature and pulse rate. In pneumonia following influenza and in all cases where there is much dyspnoea, Dreschfeld gives carbonate of ammonia, and digitalis with nux vomica. If the temperature rises above 103° F., he recommends the application of a cold or ice pack. Cyanosis with a small thready pulse and dyspnoea are indications for digitalis and alcohol. He regards strychnia, especially when given hypodermically, as a most valuable heart tonic. Philip (*Practitioner*, March, 1900), praises the subcutaneous injection of $\frac{1}{100}$ grain strophanthin. In alcoholics, and when the sputum is sanguinolent, Dreschfeld gives turpentine either in capsule or mixed with whiskey and hot water.

For delirium when noisy and active and occurring in young subjects, Dr. Dreschfeld considers the cold pack every four hours as very reliable; in alcoholics, cold sponging, and the administration of a full dose of paraldehyde. Low muttering delirium with subsultus tendinum is of evil import and requires free stimulation. With pleural effusion in pneumonia Dreschfeld states that if it is serous, paracentesis should not be performed, except, of course, when the amount of the fluid is large.

At the Wiesbaden Congress for medicine in the discussion on pneumonia, Naumyn recommended potassium iodide when the expectoration is very tenacious, and the subcutaneous injection of ergotin where collapse threatened.

In the *Medical Chronicle*, for December, 1899, Dr. Dreschfeld calls attention to the danger of allowing the patient to drink large quantities of milk, to quench his thirst. The indigestion which is apt to result, may give rise to a tympanitis, which by distension of the abdomen and pressure on the thoracic cavity, may seriously interfere with the heart's action. Large quantities of any fluid, in the latter stages of the disease, may put a greater strain on a weak heart than it can bear, and increase the tendency to cardiac dilatation.

On the Treatment of Aortic Aneurism.

In an article on the early diagnosis and treatment of aortic aneurism, *Medical Chronicle*, March, 1900, Professor Moritz Schmidt emphasises the value of potassium iodide in this affection, if given in doses of from 3 to 5 grammes daily. If the patient has previously suffered from syphilis, he combines with this treatment mercurial inunctions. As no exact observations have been made showing that the drug is of itself able to increase the coagulability of the blood, he associates with its administration the low diet cure, first recommended by Bellingham and

Tufnel. It has been well shown by observations on starving men by Senator and his colleagues, that underfeeding influences the blood pressure, apparently by direct diminution of the quantity of blood. The pulse becomes of lower tension, the blood becomes thicker, the number of the red blood corpuscles becomes apparently increased, and there is a proportionate increase of hæmoglobin. Tufnel's diet consists in the regular administration of 340 grammes of solids, and 240 grammes of fluids, corresponding to 1244 calories, about half the amount necessary at other times for an adult. It was almost always easy to reduce the fluid to 1200 grammes, but that is not sufficient. In one of his healed cases, the fluid was reduced to 340 grammes, and this restriction was well borne for three weeks. Then the patient became so nervous that Schmidt was obliged to increase the amount to between 500 and 600 grammes, and this amount sufficed for a long time. To successfully carry out this treatment great determination on the part of the patient is necessary, but through repeated representation of its great importance much may be attained, especially if the liquid be varied. A necessary part of Tufnel's cure is absolute rest in bed. Baumler calculates that through the diminution of the pulse rate from 96 to 66, produced by rest in bed, 43,000 pulse beats daily are spared, and thereby injury to the wall of the aorta diminished proportionately. It will depend on the course, and on the nervous condition of the patient whether and when more freedom can be again allowed. Dr. Schmidt found it advisable in every case to continue the limitation of the diet and the rest in bed for at least 8 weeks; in severe cases much longer. After this period, this part of the treatment is gradually relaxed. He also holds it to be important if the patient suffer from a catarrh either during or after the cure, that the cough should be checked as much as possible by opiates, and doses somewhat larger than usual may be employed. With reference to other methods of treatment, he states that he possesses no personal experience with attempts to increase the coagulability of the blood by injections of gelatine. He regards this treatment as not free from danger. Electrolysis has also been employed to produce coagulation in the aneurismal sac; and, from the results published, he considers that it should have a trial, in large aneurisms; but in small aneurisms, it would be dangerous to introduce a needle in an aneurismal sac not close to the chest wall. An attempt to obtain coagulation in a sac quite open is always questionable. Several very notable cures have been obtained by this method, in very large aneurisms. Balfour reports 3 cases of cure. Bacchi has cured 11 out of 38. Schmidt reports 8 cases, and states his conviction that if the treatment of aortic aneurism be conducted with confidence and rigidity as that of a curable disease, hospital physicians will obtain, in many cases, good results.

Pernicious Anæmia.

Hunter, in a series of papers in the *Lancet*, February, 1900, after describing the changes present in pernicious anæmia, states the indications for treatment as follows: The removal so far as possible of the cause, which he regards as an infection, whose chief seat is invariably the stomach. All gastro-intestinal conditions favoring such an infective catarrh must be removed. The result of his observations has been to locate the infection underlying the disease definitely in the stomach, and to trace its source either to infection from without, or to the mouth itself. In all cases of commencing anæmia, Hunter considers that special attention should be directed to the condition of the teeth, quite irrespective of any statements made by the patient as to the absence of discomfort arising from them. As a matter of fact, in no case was his attention drawn to the teeth by the patient, nor was any complaint made of them. Discomfort and pain arising from carious teeth indicate relatively healthy conditions, inasmuch as they denote that the local tissues still have the power to react more or less actively to irritation. Here, as in other forms of septic infection, the absence of local reaction is significant. In Hunter's opinion, the hygiene of the mouth deserves the most scrupulous attention, and all teeth that show any signs of commencing cario-necrosis should be either treated, or removed. But the chief seat of the disease is invariably the stomach, where the first infection shows itself as a catarrh, followed later on by deeper seated changes, in the nature of gastritis and glandular atrophy. To remove, or combat this catarrh, washing out of the stomach has been suggested, and may be carried out, in some cases, with benefit, especially in the earlier stage of the disease. In general, however, the gastric conditions are of too deep-seated a character to be affected by mere local washing. Hunter had better results from the use of local antiseptics, and the one which in his hands proved most successful was salicylic acid; although there are other antiseptics of the same character which may possibly prove equally beneficial. He states that he has hardly ever failed to get some improvement from its use. In cases where the symptoms point to intestinal, rather than gastric irritation, the use of intestinal antiseptics is recommended, such as salol, naphthol, and calomel. Where the symptoms are referred to the colon or rectum, these drugs may be supplemented by enemata containing salicylic acid. This local treatment should not replace, but should supplement the use of arsenic, the great value of this drug being now fully established. If once the infection gets firmly rooted in the mucosa, however, mere local antiseptic treatment, even when aided by the use of arsenic, may fail to arrest the disease permanently. The indication for treatment, in such cases is to

combat the action of the poison on the blood, after its absorption. To this end, Hunter proposes, in the future, to make a sustained and systematic trial of serum treatment; but the exact nature of the serum he reserves for later investigations accurately to determine.

William Ewart (*Progressive Medicine*, September, 1900), in reviewing this article states that a case of recurrent pernicious anaemia occurred in his own practice, which well illustrated the statement of Hunter that infection may originate in the mouth. His patient had had eight typical attacks, each ushered in by bleeding of the gums and stomatitis. He recovered completely under suitable treatment directed to the carious stumps and the stomatitis. Dr. Ewart recommends the administration in these cases of arsenic in the form of sodium cacodylate by the mouth and also subcutaneously. Iron, he states, has been regarded as useless, but in his hands it has proved of great service. It requires, however, to be associated with either arsenic or mercury, or with both.

A. D. Blackader.

Canadian Medical Literature.

UNDER THE CHARGE OF KENNETH CAMERON.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in this department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron 903 Dorchester street, Montreal.]

The Canadian Practitioner.

April, 1900.

1. A Case of Hysteria. J. T. FOTHERINGHAM.
2. The Successful Treatment of Three Important Cases of Disease of the Eyes by the Combined Method of Hg and KI Internally and Pilocarpine Hypodermically. G. HERBERT BURNHAM.
3. The Repair of Old Lacerations of the Pelvic Floor. M. L. HARRIS.

May, 1900.

4. Some Cases of Intestinal Obstruction and Strangulated Hernia and their Treatment. A. T. HOBBS.

June, 1900.

5. Gasoline as a Surgical Detergent. BRUCE L. RIORDAN.
6. Posterior Positions of the Occiput. K. C. McILWRAITH.
7. Use of Ergot in Obstetric Practice. CHAS. J. C. O. HASTINGS.
8. Notes on Chloretone. R. D. RUDOLF.
9. An Appreciation of Pryor's Method for Removal of Fibroid Uterus by the Abdomen, with Report of Ten Successive Cases. A. LAPTORN SMITH.

2. BURNHAM relates the histories of three cases as exemplifications in a most marked degree of the great value of the combined form of treatment for syphilitic diseases of the eye, viz., mercury and the iodide of potash given internally and pilocarpine hypodermically. One was a case of cyclo-iritis of both eyes, of long duration, with the other changes in the eyes usually associated with the long continuance of this disease; a second of iritis of both eyes, with typical diffuse scleroderma; and a third of complete paralysis of the left third nerve, from acquired specific disease.

4. HOBBS describes seven cases of intestinal obstruction and strangulated hernia that had come under his observation, during the past four

years, among insane patients, the employees of the asylum or their families. The four varieties usually met with were found: a volvulus, an intussusception, fecal accumulation, adhesive bands, and three cases of strangulated hernia.

5. RIORDAN was led to use gasoline first for the purpose of cleansing from injured parts what railway employees call black oil. He had found that it does not irritate fresh wounds or granulating surfaces any more than water does. It is best applied by wiping the parts with cotton or sterilized gauze. The gasoline immediately evaporates and leaves the surface dry and perfectly free from grease. His results, as far as early healing and absence of infection are concerned, had been most satisfactory, and had included the treatment of all classes of wounds. In after-dressings gasoline is of great value, as it dissolves iodoform and the exudation from wounds and then immediately evaporates, leaving a clean and dry surface. The microscopic appearance of the skin after scrubbing with soap and water, and after wiping off the skin with gasoline, showed that the cleansing effect of gasoline went much deeper and cleaned out the mouths of the hair follicles, sebaceous glands and sweat ducts much more perfectly than scrubbing with soap and water could do.

7. HASTINGS considers that the use of ergot is always attended with more or less danger with the fetus *in utero*; that it should be given twenty minutes before its action is required, and that it should always be given to secure tonic contraction. A reliable preparation should always be used.

8. RUDOLF reports on the results of the use of Chloretone in experimental work in the Physiological Department of Toronto University. He considers that the drug seems to be an ideal general anæsthetic for physiological work. There might be, however, some doubt about the recovery of the animal, and that would limit its use to where recovery is not desired. The preliminary use of chloroform or ether would increase the risk. It has little or no effect upon the pulse, respiration and blood pressure for hours, but eventually, if the dose be large enough, these become depressed and the animal dies, the heart stopping before the respiration. Chloretone has a most marked and profoundly depressing effect upon the body temperature, lowering it more than any other drug, with the possible exception of alcohol. It may be partially prevented by keeping the animal very warm. Any drug that can exert such an effect on the total heat of the body is one that requires to be used with great caution in medical practice. This is doubly important as the drug is very slowly got rid of, and we know of no antidote, with the exception, perhaps, of external warmth.

The Canadian Journal of Medicine and Surgery.

April, 1900.

1. On the Role of Primary and Secondary Osteoplastic Surgery in the Treatment of Complicated or Compound Fractures of the Extremities. THOMAS H. MANLEY.
2. Complications of Suppuration of the Middle Ear. J. M. MACCALLUM.
3. A Case of Jacksonian Epilepsy in which the Paroxysms were controlled by Chlorotone. W. T. PARRY.

May, 1900.

4. Medical Evidence. JOS. McDougall.
5. Disease in Korea. O. R. AVISON.
6. The Doctor of the Future. ALBERT D. WATSON.

June, 1900.

7. The Relation of Deformity of the Pelvis to Lateral Curvature of the Spine. P. H. GALLOWAY.
8. Clinical Notes on the Use of Eudoxine in Typhoid Fever. A. T. HARRINGTON.
9. Broad Ligament Cyst. CHAS. M. SMITH.

7. While accepting the usual explanation of the mechanics of many cases of lateral curvature of the spine, GALLOWAY is convinced that the primary mechanical fault in certain cases is one which has received scant attention in orthopædic literature. Several standard works on orthopædic surgery refer to deformity of the pelvis in connection with the subject of lateral curvature, but the authors regards the pelvic distortion as secondary to and consequent upon the spinal deformity. In the writer's mind it is much more reasonable to look for the primary fault in the foundation than in the superstructure. That it is unreasonable to suppose that a solid and relatively fixed foundation like the pelvis should fall prey to any distorting influence that could be exerted by such an unstable, jointed superstructure as the spine; while on the other hand, the inherent adjustability of such a superstructure must cause it to accommodate itself to a tilted foundation. Another point in connection with this subject is that most cases of lateral curvature present deformity in both dorsal and lumbar regions, but it has always been a disputed point, which should be regarded as the primary, and which the secondary curvature. If it be admitted that the pelvic deformity is the initial mechanical fault in certain cases, then in this class at least the lumbar curve is primary.

The Canada Lancet.

April, 1900.

1. Splenectomy. COLIN A. CAMPBELL.
2. Trephining and Neurectomy for a Case of Infantile Palsy. J. T. FOTHERINGHAM.
3. A Case of Intestinal Perforation in Typhoid Fever, Operation, Death. G. N. FISH.

May, 1900.

4. Sick and Wounded in War, and How They are Cared For. W. NATTRESS.
5. A Case of Perforating Gastric Ulcer with Infection by the *Bacillus Aërogenes Capsulatus*; with a Synopsis of the Literature on Infections by this Organism. C. A. PAGE.
6. Neurasthenia. D. CAMPBELL MYERS.

June, 1900.

7. General Cystic Degeneration of the Kidney. H. C. PARSONS.
8. A Case of Concealed Hydrocephalus. THEO. COLEMAN.
9. Cerebellar Tumor with Double Optic Neuritis. J. T. DUNCAN.

1. CAMPBELL relates the history of a case of splenectomy which was under the care of Dr. Nevitt, in the Toronto General Hospital. The patient was a married woman, aged 29 years, who had suffered from chronic pain in the abdomen and back, extreme weakness and pallor, and recurrent diarrhoea. There was no history of malaria. On admission to the hospital her appearance was that of a very much emaciated and anæmic woman. Her sclerotics were clear and pupils active, her tongue clean and temperature normal. Heart and lungs were healthy. On examining the abdomen, which was quite lax, a mass was found on the left side extending from the left costal margin almost to the pubes and forward to the middle line. The mass was quite moveable. The percussion note was dull over the whole of the left side of the abdomen and left flank. The urine was normal. A blood count showed 3,800,000 red corpuscles, 12,000 leucocytes, and 40 per cent. of hæmoglobin. A differential count showed the different varieties of leucocytes to be in about their normal proportions. An incision was made in the loin over the tumor and the kidney was found to be healthy, while the tumor could be felt within the peritoneal cavity. This was opened by prolonging the incision forward and the tumor was found to be the spleen. The vessels were ligated without difficulty, the pedicle then tied *en masse*, and the organ which was nowhere adherent removed. The wound was closed and drained, and the patient made a good recovery. A blood

count on the ninth day showed 2,900,000 reds and 8,800 leucocytes. She left the hospital on the 55th day after the operation, and then her blood showed 4,250,000 reds, 8,000 leucocytes and 50 per cent. of hæmoglobin. Four and a-half months after she showed a marked improvement in appearance, and her red corpuscles numbered 3,325,000, leucocytes 12,000, and hæmoglobin 40 per cent. No nucleated reds or unnatural forms of leucocytes had ever been noted. The lymphatic glands, at least the superficial set, showed no enlargement. The operation had been entirely successful in relieving the distressing symptoms which had reduced her to the condition of an invalid. The spleen showed only a general fibrosis.

2. FOTHERINGHAM reports the case of a man, aged 30, who had suffered from severe spasms, from the age of about one year. The spasms were on the left side affecting chiefly the muscles of the side of the face, sterno-mastoid, clavicular portion of the pectoralis major, upper part of the trapezius, the deltoid and biceps, the flexors and pronators of the forearm and hand; in severe spasms the rectus abdominalis; also the left leg showed a mild equinovarus, some contraction and spasm of the gastrocnemius. The spasm was clonic, exaggerated by excitement and disappeared during sleep. Bromides and iodides had no effect upon the symptoms. The motor area was trephined and the pia was found matted down to a dark and apparently sclerotic area of cortex surrounded by a softened area. The cortex of the motor area for the face and arm was removed for a depth of about one-half inch. The arm remained paralyzed for a few hours after recovery from the operation, but by the third day the spasm had gradually returned and was as bad as ever. Three weeks later an incision was made in the left axilla, and part of the median, musculo-cutaneous, musculo-spiral, and circumflex nerves were excised. An incision was also made from the mastoid process down the anterior border of the sterno-mastoid and a portion of the spinal accessory excised. The result of the operation was that motion of the arm, forearm and hand were entirely lost, the limb was cold and marked atrophy had taken place. No sensation could be elicited below the elbow except along the upper and posterior part of the ulna for about three inches. The gait was better than before the operation, and the strabismus hardly noticeable. His general condition of health was fair.

3. FISH reports a case of typhoid perforation, in which abdominal section was performed twenty hours after the first symptoms of peritonitis had appeared. The perforation was found ten inches above the ileo-cæcal valve. The patient died a few hours later.

4. NATTRESS describes in detail the organization of the Army Medical Service, and the requirements for the care of the sick and wounded in war.

5. PAGE describes the results of an autopsy performed upon a man who had died of perforating gastric ulcer. The scrotum was immensely swollen and crepitant. Emphysematous crackling was also felt in the thighs. From these localities a bacillus was isolated, whose description morphologically agreed with that of the bacillus aërogenes capsulatus. A synopsis of the literature of this subject is given.

6. MYERS discusses two of the most important phases of neurasthenia, spinal irritation and the question of the relation between neurasthenia and incipient mental disease. He considers that instead of the trouble being due to changes in the spinal cord or local structures, that it in reality is psychical. In almost every case of insanity due to the over-exertion of the brain, there is a fairly well-marked prodromal period indicating the diseased balance between nutrition and function. He considers that this prodromal stage in many cases is exactly what is termed neurasthenia, and that proper treatment at that period would avoid the disastrous results which would otherwise follow.

7. PARSONS describes a specimen of general cystic degeneration of the kidney, the so-called congenital cystic kidney, removed from a woman aged 25, and where, in an enlarged organ, cysts were found scattered throughout the cortex and medulla alike, and of varying size.

8. COLEMAN describes a case, in which until the autopsy was performed the diagnosis had been in favour of some form of cerebral tumour, but the autopsy revealed an internal and external hydrocephalus.

9. DUNCAN relates the history of a case in which he considers that there is a tumour in the right hemisphere of the cerebellum, that it presses upon or involves the right auditory nerve, producing deafness, and that it is probably a glioma. Operation had been advised.

Dominion Medical Monthly.

April, 1900.

1. A Case of Smallpox Recently Discharged from the Isolation Hospital in this City. J. G. LAMONT.

May, 1900.

2. Report of a Case of Addison's Disease. R. J. DWYER.
3. Something of Advantage to the Physician from a Business Standpoint. DR. GRAHAM.
4. How to Secure Pure Drugs at Less Cost. J. W. SHAW.
5. An Appreciation of Kelly's Method of Removing the Fibroid Uterus by the Abdomen. A. LAPHORN SMITH.

June, 1900.

6. A Group of Unusual Spinal Cases. B. E. MCKENZIE.
7. Presidential Address, Toronto Association for the Prevention and Treatment of Tuberculosis. E. J. BARRICK.

1. LAMONT reports a mild case of smallpox, and considers that the mildness of the cases that have been appearing of late, is entirely due to vaccination, and urges the rigid enforcement of the by-laws compelling vaccination.

2. DWYER reports a typical case of Addison's disease, with the characteristic phenomena well marked, viz., indefinite onset, increased mental and muscular asthenia, epigastric pain, vomiting, pigmentation of the skin and mucous membranes, and finally absence of marked emaciation or anæmia. Apart from the interest attached to the case, especial attention is due to the evidence of extensive but quiescent disease of the lungs. The *post mortem* findings showed a wide distribution of unsuspected and quiescent tuberculosis, and also the markedly acute inflammation of the alimentary canal, without there having been any clinical symptoms.

Canada Medical Record.

June, 1900.

1. Progress of Gynecology. A. LAPTIFORN SMITH.
2. History of the Formation of the Medical Faculty of the University of Bishop's College. FRANCIS W. CAMPBELL.

The Maritime Medical News.

April, 1900.

1. Headache. ANDREW HALLIDAY.
2. Placenta Prævia. J. D. LAWSON.

May, 1900.

3. Gastric Ulcer. MURRAY MACLAREN.
4. The Treatment of Post-Partum Hæmorrhage. J. Z. CURRY.

1. HALLIDAY discusses the subject of headache, and gives an analysis or criticism of the discussion on that subject in one of the sections of the British Medical Association at the meeting last year. In some connection he does not agree with Brunton, Haig, and others as to the cause of migraine, but considers that it may be the result of an abnormal quantity or quality of food, in which case it would be entirely due to

the local condition in the stomach, but where it is of a recurrent nature, outside of the local cause, there is probably also a general one, viz., a neurasthenia or weakness of the nervous system, inherited or acquired, in any case a trophoneurosis whereby the system is unable to supply the nerve energy requisite for the secretion of the necessary amount of gastric juice and particularly its chief constituent hydrochloric acid.

Kingston Medical Quarterly.

April, 1900.

1. Clinical Report of a Case of Infective Endocarditis. GEO. HODGE.
2. The Bubonic Plague. W. T. CONNELL.
3. A Case of Appendicitis. E. RYAN.
4. Eye Lesions in Paranoia and Paretic Dementia. J. C. CONNELL.

La Clinique.

Avril 1900.

1. Intérêts Professionnels.

Mai 1900.

2. Nos Députés : Le Bill Tellier.

Juin 1900.

Le Bulletin Médicale de Québec.

Avril 1900.

1. Un Cas de Chorée Aigue Grave. D. BROCHU.

Mai 1900.

2. De l'Allaitement par les Albuminuriques. P.-V. FAUCHER.

3. Y a-t-il eu Superfétation ?

Juin 1900.

4. Accouchement Gémellaire Avant-Terme Compliqué d'Hydramnios. Malformations Fœtales. J.-R. CHRETIEN.

La Revue Médicale.

Avril 4.

1. Diphtérie.

Avril 11.

2. Filles ou Garçons—à Volonté.

Avril 18.

3. De la Cystotomie Sus-Pubienne avec Drainage dans les Affections de la Vessie chez la Femme. M.-T. BRENNAN.

Avril 25.

4. Hernie de la Ligne Semi-Lunaire de Spigel. M.-T. BRENNAN.

Mai 9, 23.

5. Les Maladies Infectieuses:—Fièvre Typhoïde.

Mai 16.

6. L'Hypodermoclyse et l'Entéroclyse Appliquée au Traitement de la Toxicohémie Puerpérale. J.-C.-S. GAUTHIER.

Juin 20.

7. Traumatismes de l'Œil. JELIN PRUME.

Reviews and Notices of Books.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., assisted by CHARLES ADAMS HOLDER, M.D. Vol. 2, June, 1900. Lea Brothers & Co., Philadelphia and New York. Canadian Agents, J. A. Carveth, Toronto.

This volume contains articles on Abdominal Surgery and Hernia, by W. B. Coley, M.D., on Gynæcology by J. G. Clark, M.D., Diseases of the Blood, Diathetic and Metabolic Diseases, and Diseases of the Glandular and Lymphatic System by Alfred Stengel, M.D., and Ophthalmology by E. Jackson, M.D.

Dr. Coley, as the title of his article indicates, deals with a considerable variety of subjects. Gastric surgery, which at present commands so much attention, is treated in some detail. Richardson points out the difficulty of diagnosis in some cases of perforating gastric ulcer, quoting a case in which it was taken for appendicitis. In the Massachusetts General Hospital the surgeons have been particularly unfortunate in the results of operation for the relief of perforating gastric ulcer, losing nine out of ten cases, but it is only fair to state that no case was operated on in less than twenty-four hours after perforation. The brilliant results obtained by other surgeons in this operation do not receive much attention, and a perusal of the article does not quite convey the impression, which we believe should now exist, as to the excellent results of surgical interference in cases of this nature.

The articles on appendicitis and hernia are full of interest. Bassini's operation for the radical cure of hernia is illustrated by very clear figures, borrowed from the International Text-Book of Surgery, which render the successive steps of the operation so clear as to almost render the text superfluous.

Dr. Clark in his review of gynæcology deals with a number of topics in a clear and comprehensive fashion. His admirable summary of the use and abuse of saline injections will well repay perusal, whilst the section referring to the ultimate results after partial or complete removal of the ovaries and tubes cannot fail to interest either the gynæcologist or his critics.

Dr. Stengel's article on the blood contains some interesting observations, although no very striking advances have been made during the

year. The relations of gastric-intestinal infection and pernicious anemia receive some support from the clinical side from Hunter's observations, and from the pathological aspect Adami's views are of much value and interest.

Löwit has described an amoeba in the blood in leukæmic patients which he regards as the probable cause of the disease. This communication is, however, only a preliminary one, and even if the observations are correct there are several links lacking in the chain of evidence.

To the practitioner anxious to keep abreast of current knowledge on the different departments of medicine this annual forms a most valuable guide, and the present volume fully maintains the high standard already attained by the earlier volumes.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

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THE ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION.

The Thirty-Third Annual Meeting of the Canadian Medical Association, which was held at Ottawa, on September 12th, 13th, and 14th, was, as had been anticipated, one of the most successful gatherings in the history of the Association, both as regards numbers in attendance and work performed.

About two hundred members registered, the greater part from Quebec and Ontario, although the east and west were well represented by many prominent members of the profession.

The sessions were held in the Academic Hall of the University of Ottawa, and thanks to the care and foresight of the executive, the utmost harmony prevailed. The building chosen was particularly well adapted for the meeting, the hall being comfortable, well lighted and possessed of good acoustic properties, while the committee rooms and exhibitors' quarters were easy of access and commodious.

The President's address, which we publish in full in present number

of the JOURNAL, after briefly reviewing the history of the Association and especially of former meetings in Ottawa, dealt with three questions of general interest to the profession at the present time, namely, Dominion registration, the care and management of cases of tuberculosis, and the establishment of a medical defense association. The reports of the committees appointed at the meeting of 1899 in connection with these three subjects together with a detailed report of the proceedings of the Annual Meeting, will appear in our October number and will be there discussed.

The Address in Gynæcology, which we also publish, dealt with matters of great practical interest to every practitioner, "Mistakes in Diagnosis and Treatment," a subject on which Dr. Gardner from his wide experience as consultant for twenty years is eminently qualified to speak.

Specialism in Medicine, which was happily chosen by Dr. Shattuck as the theme of the Address in Medicine, we also print in the present issue. While many of his hearers would not agree with Dr. Shattuck in all his conclusions, all would agree with him in thinking that the tendency to increase in specialism at the present day is leading to some absurd divisions of medical and surgical work. One of those instanced was the National Association of Gastro-Enterologists, a society lately formed in the United States.

The Address in Surgery will appear in the October number. Mr. Owen's address emphasized some important points in the treatment of tuberculous lesions of the bony tissues and was characterised by brilliancy of expression and many witty illustrations.

The arrangements made by the local committee for the comfort and convenience of visiting members were most complete, and the entertainments provided for their recreation were delightful. The hospitality of the profession in Ottawa is proverbial, and they more than sustained their reputation in this respect. At the termination of the first afternoon session, the members and their lady friends were taken for a beautiful trip on the fine cars of the Ottawa Electric Railway to Britannia on the Bay, a charming little summer resort on Lake Deschenes, where a stop was made long enough to allow of a visit to the pier.

On Thursday evening a complimentary banquet at the Russell House was tendered to the visiting members by the Ottawa members of the Association. After an excellent repast and toasts of "The Queen" and "The Governor-General" had been honoured in the customary way, the toast of "The Parliament of Canada" was responded to by Sir William Hingston and Dr. Roddick, M.P., and that of "The Cor-

poration of Ottawa" by the Mayor. The toasts of "The British Medical Association" and "The American Medical Association," were responded to by Mr. Owen and Dr. Shattuck.

A luncheon at the Rockcliffe Rifle Range on Friday completed the programme of entertainments. The members were conveyed to the range in two large open cars, the route following the bank of the Ottawa river and giving a fine view of the river with the Laurentian Mountains in the background.

We cordially endorse the effort made by the members of the Publishing Committee to secure the continuous publication of the Transactions in the future. The plan proposed by Dr. Blackader to secure a guarantee to cover the expenses of publication for five years is to be commended, and we trust that every member of the association will respond loyally. During the thirty-three years this association has been in existence only twice has an attempt been made to publish the papers presented before the association in a volume by themselves. This can hardly be regarded as creditable to our association. We trust, therefore, that the members of the publishing committee will meet with much encouragement and be able at our next meeting to carry this proposal into effect.

A word of criticism may not be out of place here with regard to the papers presented. Where there are such a large number of papers to be read as in the recent meeting, the rule regarding the length of time allowed to any paper has to be strictly enforced. Fifteen minutes is in many cases too short a time to read a paper in which lengthy case reports or the details of a number of experiments are recounted, and although these may be necessary to the full understanding of the author's argument, to the establishing of his contentions or in drawing conclusions, an abstract would answer better than cutting the paper short in the middle, and the details could appear in the published report. It might even be well for the General Secretary to draw the attention of intending contributors to the rule referred to and to suggest to them the advisability of keeping this point in view in preparing their papers. Another suggestion we might make is that instead of ringing a bell when the time is up, the reader should be notified when only three minutes of his allotted time remains. This practice is followed in several other associations and permits the reader to use the last three minutes for what he considers of most importance, instead of, as is often the case, being interrupted in the middle of a sentence.

The next meeting is to be held at Winnipeg under the presidency of Dr. H. H. Chown.

KAMLOOPS.

It is appropriate that at the first meeting of the British Columbia Medical Association held last month in Vancouver, the subject of the treatment of tuberculosis should have been selected as a main topic for discussion, and this not merely because this is a topic of such immediate interest, but because British Columbia possesses a belt of region which, from every aspect save distance from Eastern centres of population, gives indication for being better suited for the climatic treatment of the disease than any other in the whole American continent.

This may seem a bold statement, especially at the present time, when it is being pointed out from all sides that incipient cases of phthisis are capable of cure even at home, or at least on the outskirts of our large cities. Undoubtedly that is the case, cure can be so effected. Undoubtedly again, the more allied is the "Kurort" in altitude and geographical characters to the district from which the patient comes, the greater the likelihood that the patient in whom the disease has been arrested will be able to return home and engage in work without return of the phthisical symptoms. But undoubtedly, also, climate is a factor in the production of a rapid arrest or cure of the disease: statistics are conclusive that improvement is more rapid in a pure mountain air and in an equable temperature than on the plains and where the temperature and moisture are variable. With equal attention to nourishment and rest the patient makes a more sure and more rapid recovery in Colorado than in the Adirondacks, in the Adirondacks than on the sea coast.

But, Colorado has several disadvantages: the great altitude renders it dangerous to transport hæmorrhagic cases thither, save very gradually: the climate is so dry, the air so rarified, that if patients who there maintain the best of health and activity return to the more humid East, they are peculiarly liable to relapse: and thirdly, though those who vaunt the advantages of this region say little concerning this, the clouds of dust brought about by the nature of the soil and the prevalent dryness of the air are most irritating, and not beneficial to the sufferer from pulmonary trouble.

The Adirondacks possess the advantages of pure, ozone-laden air, of a moderate altitude, which permits a return to city life in the East, and of relative nearness to the centres of population. The same is true of Ste. Agathe and the Laurentians and the Muskoka district, though the proximity of the Great Lakes renders the atmosphere of the last resort somewhat more laden with moisture. But all these districts are relatively at a disadvantage because the climate at none of them can be called equable. The frequent great diurnal variations in temperature, the rains, winds and clouded skies which are liable to occur in November and December

and during the period of slowly ending winter, are all unfavourable to the rapid progress of the tuberculous patient, although they are not so unfavourable as the climatic conditions prevailing at the same periods on the plains and nearer to the sea.

The Kamloops district is remarkably, nay, extraordinarily, free from the various disadvantages here enumerated. Situated in a rolling plateau between the Gold and the Coast ranges, the altitude is moderate, from 1200 to 1500 feet, herein resembling and possessing the advantages of the Adirondack and Ste. Agathe districts; the mean annual temperature is a degree higher than that of Toronto, *i.e.*, it is 46.3° F.—although the latitude is 7° higher; the rainfall is only 11 inches per annum, as compared with 45 inches in Montreal, and 37 in Toronto. Whereas at Gravenhurst in the Muskoka district there are 15 rainy days in November, 12 in December, with a minimum of 9 in April, at Kamloops there are 4 in November, 1 in December, 2 in January and February, 6 in March! Throughout the winter months, that is to say, the climate is remarkably dry and sunshiny. Its position protects this district from high winds; at no time is there extreme cold or extreme heat, and even in the middle of summer the high latitude coupled with the moderate altitude give to the atmosphere a tonic quality, which at the same period is largely wanting in the Adirondacks and Laurentians. Indeed, to quote Dr. P. H. Bryce (to whom we are indebted for these statistics):—“In Kamloops we have a climate which possesses in a degree, probably not excelled in any climate in the world, the several elements which theory, as well as the experience of hundreds of persons, has proven to be of the greatest importance in the reconstruction of tissues and the rapid restoration to health of those persons suffering from consumption and other diseases due to defective nutrition.”

Judging from the accounts of cases mentioned to us by Dr. Tunstall, of Vancouver, Dr. Jones, of Victoria, and other leaders of the profession on the West Coast, Dr. Procter, in the paper which we print in this number, does not nearly do justice to the remarkable recuperative effects of the Kamloops climate. It will be noted that the cases he mentions of relapse are both cases which transgressed the rule about length of stay in a pure atmosphere. It is generally admitted that where there is marked disease of both apices three years is insufficient to ensure against relapse. Vancouver during the rainy season, and the interior of a modern ironclad, would be recommended by no one as places of immediate return for old tuberculosis patients. But the very frankness and modesty of Dr. Procter's statements is in itself a strong support of our contention.

It is, however, one matter to have a favourable climate to recommend to our patients, quite another matter to advise them to take advantage

of that climate. At present the only class of patients, whom we can send to Kamloops are young, adult males in the earliest stages of tuberculosis, who can without difficulty stand plain food and plainer surroundings. For Kamloops is as yet completely undeveloped as a health resort: there is no sanitarium; what hotels there are are second class; there are but one or two farm houses offering comfortable accommodation and sound healthy food suitable for an invalid. We urge most strongly upon our British Columbia confrères to utilise all means in their power to remedy this state of affairs. Theirs, we firmly believe, is the opportunity to raise the Kamloops district into the position of one of the great health resorts of the world. Situated as it is along one of the great routes of world travel, they should be able to attract to it invalids from the far West and from the far East, nor should they find the provincial government and the great railway corporations most affected by the prosperity of the district unwilling to aid them in their endeavours.

THE PLAGUE IN GLASGOW.

The outbreak of an epidemic of bubonic plague in Glasgow, Scotland, brings this dreaded disease as near to us here in Montreal as it can well get, unless it becomes established elsewhere on this continent. A line of ocean steamers running between Glasgow and Montreal forms a direct communication between the two ports, and at first sight it would seem probable that if the disease, as now appears likely, should obtain a firm hold in Glasgow, the danger of infection from this source would be great.

On looking at the matter a little more closely, however, and studying the various ways in which infection could reach us there is less cause for alarm.

That an individual boarding a ship at Glasgow in the incubation period of the disease could pass the quarantine station at Grosse Isle, is rendered almost impossible by the fortunately short incubation stage, the extreme limit of which is one week. Thus, in a vessel leaving Glasgow with a clean bill of health, all cases in the incubation stage would have developed the disease long before this side was reached, and should be easily detected.

That infection can be conveyed by means of infected objects is doubtless possible, though rare, and this method of conveyance can practically be excluded, when we remember that we have to do, not with a locus of infection from a port where the disease is endemic, but with one from a port in which every possible means is being taken to control its spread.

There remains, however, yet another source to be considered, and one against which it is perhaps, the most difficult to guard. We refer to conveyance of the disease by means of the rats which infest every ship. These animals are, as is well known, peculiarly susceptible to plague, and infection spreads among them with great rapidity. Should a ship become infected in this way, it would vastly increase the danger of the disease obtaining a foothold here.

How then are we to guard against the introduction of this pest? The means by which the disease is recognized and the preventive measures to be enforced against it, are fully described in an article by Professor Adami in our April number, to which we refer our readers. We wish, however, to again emphasize what is there stated,—that in the past the disease has obtained its strongest hold in the foul and unhealthy portions of communities, and to urge that our city authorities be not lulled to sleep by a false sense of security, but at once “seek out and remove the weak spots in our hygienic defenses.”