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THE LIMITS OF KNOWLEDGE,
THE INAUGURAL ADDRESS OF THE MEDICAL FACULTY OF THE MCGILL
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BY

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Such an honour as that which the faculty vouchsafed to me in the request to address you to-day led—as you may readily believe—to much searching of heart. At the first blush the prospect seemed too alluring to be foregone; second thoughts followed, burdened with doubts whether it would be possible to rise equal to the demands of the occasion; these, however, in turn faded before the feeling that the only fitting acknowledgement of your kindness lay in yielding to your wish.

It is indeed a source of much pleasure to be again amidst the fair scenes of this great Dominion, and to dwell upon the manifold beauties showered upon her by the ungrudging hand of nature. It is delightful to gaze once more upon the broad bosom of the silver river with its emerald jewels, reflecting the glowing tints of the woods in their winsome robes. It was amongst these lovely scenes that the thrilling pictures of Parkman first held me in thrall, and led me to understand, as would in no other way have been possible, the lives and works of those who, during two centuries of conflict, strove for the mastery of the new world. Here also was borne in upon me the full meaning of the charming tales of Parker, and amidst their natural surroundings the characters whose loves and hates throb in his pages took an even more living form.

Under the witching wand of these, and many other wonder workers who have lived in your midst, the ground is hallowed by thoughts of the past. What a marvellous vista it is! The brave stealthily gliding through the primæval forest: the pioneer pushing further into the western fastnesses: the seigneur struggling for the foundation of a new nation: the priest-labouring for souls, faithful unto death: the soldier

freely shedding his blood for the honour of his flag: the statesman spending his energies in work for the common weal—these and a hundred more scenes rise before our eyes.

Such thoughts fill the mind with vivid pictures of the past, and it is meet that we should dwell upon them. The eyes of the world were turned with warm sympathy to Canada while you recently celebrated the third centenary of the foundation of Quebec by Champlain. Well nigh four centuries have elapsed since Cartier called the beautiful ridge near which we stand Mount Royal, "and hence the name of the busy city which now holds the site of the vanished Hochelaga." A hundred years passed away before your city was founded—years of conflict with foes without and foes within; of undaunted labours for the creation of a new France; of success and failure in the great schemes of conquest. Amongst the great names which will for all time hold a place on the scroll of fame there will assuredly be none more free from fear or reproach than that of the intrepid and lofty being who planted your fair city. Well has the historian said: "The spirit of Godfrey de Bouillon lived again in Chomedey de Maisonneuve."

To turn from general topics to those which are more nearly allied with the object of to-day, a glance may be cast at the rise and growth of the University. Its far-seeing founder died in 1813, and eight years afterwards a charter was obtained for its erection. A teaching staff was appointed in 1832 and, although many of the posts were nominal, the healing art was, from the first, represented, Thomas Fargues, a graduate of Edinburgh, being elected in that year as Professor of Medicine.

The "House of Recovery" was opened for the reception of patients in 1818, when T. P. Blackwood was appointed Medical Officer. Three years later, in the same year which saw the foundation of the University, the Montreal General Hospital was instituted, and the first medical officers were, Robertson, Stephenson, Holmes, Caldwell, and Leodel, who organized themselves as a teaching body under the name of the Montreal Medical Institution, and began to give systematic instruction in 1824. The members of this teaching body entered the McGill University as its Medical Faculty in 1829, and that no time was lost receives abundant proof from the fact that in 1833 the degree of Doctor of Medicine was conferred upon William Logie, who was the first graduate of McGill University.

It is very pleasant to know that amongst the distinguished group of men who formed the pioneers of medical education in Canada, several were graduates of my own university. Stephenson, Holmes and Robertson studied and graduated in Edinburgh: the origin of McGill University, on its medical side, is therefore connected with "Modern

Athens," and its early teachers brought to Canada the methods of the sagacious Whytt and the philosophic Cullen as well as the spirit embodied in that wonderful academic succession furnished by the celebrated families of Gregory and Monro.

To one conning the memorials of your early past, it is a source of much interest to be able to trace the homes of medicine in this great Dominion. Thus it is that the drawing of the General Hospital, as it was in 1839, in "Hochelaga depicta" is to me full of interest, while the painting by Lamb of Burnside House, showing how it nestled at the foot of the mountain, in 1843, furnishes a historic link in the academic chain.

It would be tedious to you, who know the various steps by which the University grew from its picturesque birthplace at Burnside, till it finally reached the superb site it now holds near the old home of its founder, to follow the various steps; to those, like myself, pilgrims from the mother land, there is a fascination in tracing out the successive stages of its development, and in recognizing how similar the mode has been to that which may be seen in the old world. In the course of this development it is a very agreeable fact that the academic ties with the old country are becoming closer instead of weaker.

Without dealing with such as unite Montreal to the Universities of the rest of the United Kingdom, a word or two may be allowed as to the present links between Canada and Scotland. Your Chancellor holds a like position in the Northern University, situated between the Dee and the Don; there, as here, he has so fostered the growth of learning and inquiry as to merit the title of a modern Mæcenas. That many years may yet be vouchsafed to him in which he may continue his beneficent endeavours for the advancement of education is a prayer as frequently and as fervently offered on the shores of the North Sea, as on the slopes of the Mountain. And in this connection let me add that the kinsman and colleague of your Chancellor, who along with him not only founded and endowed the beautiful Victoria Hospital, but aided the development of the McGill University by munificent gifts, must be likewise regarded as a large-hearted benefactor on both sides of the Atlantic.

It is impossible to resist the impulse to make some reference in this place to the noble gifts of your most sincere friend, Sir William Macdonald, who has not only manifested his interest in the University by donations which are more than princely, but has also devoted his time and energies to the personal direction of many improvements which his generosity has made possible. The erection and equipment of magnificent laboratories, and the foundation and endowment of additional chairs are sufficient evidence of his beneficent exertions, but even these

have been overshadowed by the establishment of the most admirable Agricultural College which the world has ever seen.

Some years ago you carried away the head of one of the Colleges belonging to the University in the "grey old town" to preside over your labours, while we who are connected with that ancient seat of learning have, within the last few weeks spirited away one of the most brilliant of your younger colleagues. Such interchanges are fraught with far reaching influences for good. We have many other ties between us. The names of Osler, Roddick and Shepherd, to mention only those connected with the Medical Faculty, are inscribed on the rolls both of Montreal and Edinburgh. In the other Faculties there are also bonds of union with many of the Universities of the United Kingdom, and we are therefore not merely united by the ties of sympathy, but by those of personal connection.

The commonwealth of learning throughout the world shared the grief of the University in the loss sustained by the Medical Faculty through the lamentable fires which destroyed the results of many years of labour, but observed with delight the dauntless energy with which you at once set to work to repair the damage and replace what had been swept away. The new buildings which are now arising like a Phoenix, as the late Dean has well put it, from the ashes of their predecessors, are an evidence of the indomitable spirit with which the University is instinct.

That the good fortune which has attended the Faculty of Science may be extended to that of medicine, is the sincere wish of the many friends you possess on both sides of the Atlantic, who felt the deepest sympathy with you in your misfortunes. The hope has been universally expressed that some man of open mind with a large heart and a long purse will realize the importance of a good endowment towards the erection of a perfect medical school. While recognizing that a school is not necessarily created by bricks and mortar, and that imposing piles of stone and lime do not themselves form a university, yet we acknowledge that many departments of modern medical research can only be carried out in suitable structures, and we realize the mutual influence of beautiful buildings and a university spirit. It is matter for regret that only half of the new home of the Medical School, now in progress, can at present be erected for want of funds, and that years may elapse before it can be completed. Will you let me express the earnest desire that you may have the aid of friends in need?

It would not become me at this time to dwell upon the achievements of the University in the varied walks of knowledge. The special matter to which it is my wish to direct your attention will afford an opportunity of showing that, in those fields best known to me, yeoman work

has been done by her children. But there is one subject to which in common fairness you will allow me to refer.

About two years ago certain changes in the blood taking rise in affections of the intestines, which had till then, only been described by three workers in the Netherlands, were found by Carstairs Douglas and myself, to be not merely due to the presence of a bacillus in the bowel, whence toxins were absorbed into the blood, but were found to be produced by the actual entrance of the microbe into the blood, where it multiplied, and poisoned the very springs of being. We felt a little glow of pleasure in having, as we thought, added a new chapter to the life history of bacteria—one which held out, moreover, the promise of practical usefulness: our results, however, had been, unknown to us, fore-stalled by other observers. About a year before our work was done identical results had been obtained in the wards of the Montreal General Hospital by Blackader with the assistance of Gillies and Duval. In a group of symptoms similar to those which engaged our attention they discovered the bacillus coli in the blood. It is a bounden duty, as well as a sincere pleasure to make it quite clear that this discovery belongs to the banks of the St. Lawrence and not to the shores of the Forth. The reason of our ignorance of the Montreal results lay in the fact that those interesting observations were not placed on record until last year, and we had in consequence no means of learning the valuable facts before we published our own later investigations. In the light of what we know it is a great satisfaction to be able to award the palm to those who deserve it. Their researches form a fitting termination to the careful investigations carried out, in this University also, by Charlton, working under the supervision of Adami.

The comparison of the past with the present affords us the best means of guiding future advances. From the failures no less than the successes of ourselves, as well as of those who have gone before us, we are enabled to discern the most fruitful paths of inquiry, and are led to shun the pitfalls which have hindered effort in the past. In other words, our footsteps in the present require to be guided by the light of the past, so that the future may bring with it fruits meet for progress.

In looking about for some particular subject which might usefully occupy our attention to-day, it has seemed to me advisable to take some matter with which my own work has rendered me specially conversant. That now chosen is a subject pregnant with interest, showing how the grey dawn which we owe to the keen insight of the fathers of modern medicine has brightened into the morning light, and how both sides of the world have been engaged upon it, every civilized country in a spirit of generous rivalry doing something to aid the efforts to reach the noon-

tide of knowledge. It is a matter also full of encouragement, for it shows how much may be done by earnest men possessing apparently but small opportunities for original research.

To some of us it is only vouchsafed to spin the thread, and we have to learn to rejoice in cheerful vein when another weaves the web. To the loyal worker in scientific fields it is enough if he feels that he is adding something to the general fund of knowledge. He may not be able to see at the time whither his observations lead, but he knows that, when joined to the results of other investigations, they will be useful. They may not be fitted to enter into the warp and woof; the work of others may be of stronger stuff, for "the web of our life is of a mingled yarn, good and ill together." But even if they do not become woven into the finished fabric they have at least helped other labourers by the example they have shown.

Two of the great men who adorned Dublin during the first half of last century observed a group of symptoms which have in recent times been the object of close scrutiny. Adams, in one of the most remarkable of single contributions ever made to medicine, described infrequency of the pulse attended by apoplectic attacks in cases which presented the pathological appearances of fatty heart. He was followed by Stokes, who, in adding further observations, noticed a want of harmony between the movements of the veins in the neck and of the arteries at the wrist; he stated indeed that the number of the venous pulsations was more than double that of the ventricular contractions. Stokes further described feeble sounds heard between the cardiac impulses. The meaning of these facts will be clear to us in the sequel. Many years passed before the observations of Adams and Stokes received any additions. It is true that a brief mention is made by Skoda to the subject, but new interest was not aroused until the appearance of some investigations by Leyden. The subject was afterwards discussed by Roy, who ranged himself alongside of Leyden in favour of hemisystole as the cause of the want of harmony in the action of the veins and arteries.

To show how our various additions to knowledge are knit together, it may be mentined that almost immediately after the appearance of Roy's contribution, a paper was published by Malet and myself in which we described the sound of the auricles in a healthy heart. The case was one of sternal fissure. Little did we think when placing this observation on record how it might afterwards prove fruitful. Linking it with the observations of Stokes, these isolated facts, apparently of no great value at the time, were afterwards found to be of real importance.

Some five years after our observation was placed on record Chauveau described a case of heart disease in which, for the first time, a dissocia-

tion of auricular and ventricular rhythm was carefully analysed by modern methods. This was followed by an excellent study, in which Vaquez and Bureau still more clearly emphasized the lack of harmony between the movements of the auricles and ventricles. These investigations have been followed by the results obtained by a large number of observers who, by means of clinical methods, have been able to demonstrate in the most complete manner that a partial or total dissociation may take place. It may seem almost invidious to single out any names in this connection but it is only right that we should honour those who have been pioneers in this field and it is accordingly a pleasure to refer to the work of Moritz, His, Lichtheim, Mackenzie, Wenckebach, Hirschfelder, and Osler.

Besides obtaining such results in the investigation of the cardiac, arterial, and venous movements by the graphic method, it is full of interest to be able now to add that the sounds of auricular contraction have been over and over again heard by many observers in the intervals between the complete systole of the heart. These facts absolutely prove the correctness of Stokes' observations, and bring them into harmony with the physiological sounds described by Malet and myself.

Another addition to our knowledge of this interesting condition is due to Ritchie, Magee Finny, and Brouardel and Villaret, who, independently of each other, took advantage of the fluorescent screen in order to watch the movements of the heart. They published the interesting fact that the auricles can be seen beating in the intervals between ventricular systoles. During the last three years this observation has been frequently repeated by other observers, and is now well known.

Einthoven has taken advantage of the electromotive changes produced by the action of the heart, and by means of the string galvanometer has obtained beautiful tracings from cases of heart block, which demonstrate beyond the possibility of doubt that the electromotive changes caused by the action of the auricles may be seen entirely dissociated from those caused by auricular action. In ignorance of the important observations being made by Einthoven, the electromotive changes in heart block simultaneously engaged my attention. My investigations were carried out with Lippmann's capillary electrometer. The movements of the column of mercury, thrown upon the screen by means of a projection microscope, showed the ordinary oscillations caused by the electric changes attending the apex beat, but, between these, smaller waves were distinctly visible, and were undoubtedly produced by the contraction of the auricles.

One more clinical result obtained in this disease may be referred to before we pass on to the explanation of the condition. The arterial

pressure in such cases has attracted my close attention. Observations on a good many cases has now proved that the systolic pressure may reach a level of from 270 to 300, while the diastolic may, at the same time and in the same individual, be as low as from 70 to 80 mm. Hg. This must be regarded as a most interesting fact, showing that the long interval of time following each ventricular contraction allows the high arterial pressure to fall to a low ebb before the succeeding systole occurs. It need scarcely be added that in such cases there is no aortic incompetence, nevertheless clinical investigation of the arterial pressure yields results singularly like what we are accustomed to observe in that condition.

We have in this chain of investigations a really interesting illustration of the gradual evolution of clinical knowledge, and we must now enter upon the successive steps by means of which the different facts have been subjected to analysis and synthesis.

All of us who have sat on the upper forms at school must remember that the great epic poet of Rome tells of the happiness of him who is able to discern the causes of what he sees. The investigation of a series of appearances such as those that have now received our attention has furnished abundant interest, and therefore happiness, for all of us who have worked at the subject. Some points were found to be easy of explanation; others much more difficult. We have not merely to exercise the imagination in the search for these causes, but we may even invade with caution the realm of speculation. It is a subject which allows opportunities to "spin the gossamer as well as forge the anchors of the mind." Our thoughts are not all endowed with the possibility of soaring to the very roof of heaven, but it is within the reach of us all to contribute what we can to the general advance, and some of the suggestions, as well as many of the observations, are due to men deeply engaged in the hard work of general practice.

Until the last quarter of the previous century the heart was considered to consist of what might be termed distinct compartments, absolutely separated from each other and not united by any continuity of muscle fibres. The first light borne in on the subject came from the investigations of Gaskell, who showed that there was a direct and continuous connexion of the sinus, the auricle, and the ventricle. It is exactly a quarter of a century since this great work made its appearance. Every succeeding observation has only served to prove more thoroughly the accuracy of the views which he then expressed, and to show the remarkable foresight which he manifested in his analysis of the various functions which he described. His investigations, in truth, have permitted the esoteric explanation of the condition at pre-

sent under consideration. The facts unfolded by him formed, ten years afterwards, the subject of an interesting study by Stanley Kent, who, devoting attention more exclusively to the connecting link between the auricle and ventricle, showed the path by which impulses passed from one to the other. His, in the same year, published his anatomical researches by which he still further advanced the subject, and with these investigations the first chapter of the anatomical explanation terminates. Eight years afterwards Ewald returned to the link binding auricle and ventricle in the frog, and shortly afterwards Retzer, Bræunig, and Humblet extended the observations. These workers paved the way for the elaborate investigations of Tawara, who carried out a most valuable research, fully demonstrating the origin and ramifications of the structures by which the anatomical gaps separating the different portions of the heart are bridged over. Keith has more recently, in a manner as lucid as it is luminous, further extended these remarkable investigations.

The researches of Tawara have shown that the auriculo-ventricular bundle is only a part of a great system; it descends on the interventricular septum, ramifies throughout every part of the ventricular walls and is continuous with the system of Purkinje fibres. The papillary muscles are brought into especial relation with the system, and this very interesting point throws a vivid light upon the important observations made on the functions of these structures by Roy and Adami, to which the latter has again returned more recently.

Keith has illuminated the subject, as he usually does, by the brilliance of imagination as well as the result of labour. He described the musculature of the sinus as being freely continuous with that of the auricular canal and auricular appendix. In searching for a clearly differentiated system of fibres within the sinus, which might serve as a basis for the inception of the cardiac rhythm, he discovered a peculiar structure surrounding the arterial circle at the junction of the sinus and the auricle. The structure closely resembles that of the auriculo-ventricular bundle, consisting of an intimate network of pale, undifferentiated fibres with well marked nuclei. This structure contains numerous nerve cells and nerve fibres. Although the mass is undoubtedly muscular in its main structure, yet the nerves in the neighbourhood of the vena cava enter into very intimate connexion with it, so that Keith feels justified in stating that a peculiar neuromuscular junction occurs at this point.

As assisting us in understanding the functions of the heart, the researches of MacCallum on the muscular connexions of the two ventricles, of Keith upon the special anatomy of the heart, of Porter on the

relation of blood supply to cardiac activity, and of Henderson upon ventricular movements, are far reaching in their results and enable us more fully to apprehend the questions arising in connexion with this subject. The former has shown most distinctly that the ventricles are composed of a simple long band of muscle beginning and ending with a tendon. It has its origin in the connective tissue of the auriculo-ventricular junction on one side of the heart; it passes around the outer wall of that side and reaches the ventricular septum, whence it goes on to encircle the outer wall of the other ventricle, and finally terminates in the tendinous cords of that side. It is probable that the fibres of the auriculo-ventricular bundle enter into direct relation with the centre of this long scroll.

Some of the results obtained by Keith have already been referred to, but the observations which he has made from the standpoint of comparative anatomy deserve to be recalled. He has shown that the sinus venosus, the auricular canal, the auricle, the ventricle, and the bulbus, are all represented in the mammalian heart, and he has been able not merely to trace these primary divisions, but to show how in the evolution of the heart in the higher mammals these various parts have been modified to suit the requirements of development. The results of the investigations of Porter and of Henderson have been of the greatest service to us in our clinical work on disturbances of the heart muscle.

Turning to the results of experimental physiology as directed more particularly to our subject, we have to acknowledge a deep debt of gratitude to certain distinguished observers. First again, physiologically as well as anatomically, comes the name of Gaskell, in the epoch-making work to which reference has already been made. He pointed out the existence of a natural block of the auriculo-ventricular junction, and further showed that a more or less complete stoppage could be produced either by section of the auricle or by increase in the natural block. In this way he was able at will to interrupt the passage of impulses more or less completely. His, from a number of experimental investigations, showed that interference with the conduction of impulses could be produced by section of the auriculo-ventricular band. It is, however, particularly to Erlanger that we are indebted for a study of this important subject. By his ingenious method of experimentation the auriculo-ventricular bundle can be subjected to varying degrees of pressure, and he has been able in this way, as is now widely known, to produce at will every degree of partial or complete blocking of impulses. From the experiments of Gaskell, His, and Erlanger, it is clear that the upper parts of the heart possess the

quality of rhythmicity in a higher degree than the lower; that the rate of the heart is determined by the upper and more rhythmical portions, and if the lower and less rhythmical are separated from the upper and more rhythmical portions, the lower part may assume a rhythm of its own. From two very interesting studies by Hering, and by Erlanger and Blackman, which have recently made their appearance, the relative rhythmicity, excitability, and conductivity of the different portions of the heart are most clearly brought before us.

Pathological evidence has not been long in following upon the heels of anatomical and physiological investigation. Stengel, Jellick Cooper and Ophüls, in America, and Keith and myself in Europe, in the same year, put on record instances of disease of the auriculo-ventricular band from cases of heart block. In some of these cases the structural alteration was a gumma of the interventricular septum; in others it was a simple fibroid change, without any very obvious cause. In one instance which aroused a most widespread interest, seeing that it occurred in the person of one of the most venerable and distinguished physicians of the British Isles, the change has been found to be of the nature of a calcareous infiltration.

Here again Montreal is going to help us. We await with lively interest the publication of a very remarkable case lately under the care of Professor Martin, in the Royal Victoria Hospital. The heart, which has been kindly shown me, with the permission of Dr. Martin, by Professor Adami and Dr. Klotz, shows a total destruction of the bundle by a sarcomatous invasion; the patient, notwithstanding, never showed any of the usual appearances of heart block. It would not become me to discuss the possible bearings of this remarkable case; we shall look forward with eagerness for the full details which Dr. Martin has promised.

Such then are the main lines of the explanation of these interesting appearances. When we seek to enquire which of the five distinct functions of cardiac activity are involved, we discover that it is easy to demonstrate the implication of two of them. Rhythmicity in itself is not disturbed, for the auricular pace-maker pursues its even tenor; contractility is in no way lessened, since the work of the heart may be in no degree diminished; tonicity, it hardly be said, is not a function necessarily involved in this group of symptoms, although undoubtedly, seeing we deal with senile heart in many instances, this property may be lessened. The cause of the appearance lies, as a rule, in diminished conductivity, the auriculo-ventricular bundle being so damaged as to diminish the function, or even abrogate it. Some interesting tracings from a patient long under my care have, however, shown that the function of excitability may be disturbed, and this may, therefore, be

partly responsible for the symptom. Hay has especially devoted attention to this aspect of the subject.

Is it possible to get beyond this point? Can we peer further into the darkness which surrounds the real cause of these varied appearances? In other words, are we able to say how the heart is endowed with such functions, and in what way they are disturbed?

We may fearlessly assume that the entire realm of nature is freely open to our enquiries. The Venusian bard, whose verses have, ever since the revival of learning, been the solace of such a multitude as no man can number, is assuredly astray when he sings:—"Nec scire fas est omnia." But while we claim the right to examine every natural phenomenon, we are led to acknowledge that some facts are within our reach, while others are beyond our ken. In the quest of truth it is wise to bethink ourselves of this distinction between the attainable and the unattainable. Above all, it is our duty not to be dogmatic as regards matters which we cannot know. It was Huxley who said that "the assertion which outstrips evidence is not only a blunder, but a crime." Some of the appearances which have been brought before you to-day have furnished an example of speculation in the region of the unattainable; of playing with words rather than working with things. Within recent years much time has been wasted in futile assertions that the five great functions of cardiac activity, recognized by Gaskell, are entirely due to inherent properties of the heart muscle, or, as it put, are of myogenetic origin. According to this view, or, as it would be better to put it, according to these views—for the opinions of the myogenetic school are often so contradictory as to cancel each other—the heart lives and moves and has its being independent of the wonderful and beautiful arrangement of nerve ganglia and nerve fibres, as also with their intimate connexions with the central nervous system. To suit these hypotheses the nervous system is allowed to interfere with, but has no part in, the production of cardiac action. Is this not a strange departure from the deep saying of Galen, that "Nature does nothing imperfectly or vainly"? But this is a matter with which on the present occasion there is no time to deal. Suffice it to say that there is no proof of these assertions. Last year the subject occupied my attention in the Oration of the Medical Society of London, and it was a sincere pleasure to be able to range myself beside your Professor of Physiology, who, a few weeks before, in an eloquent address, gave a powerful indictment of the fallacies of the myogenesisists. It is unlikely that any man of science with balanced mind will commit himself to the tenets, either of the myogenetic or of the neurogenetic school. We must wait for more light before we are in a position to

dogmatize on this matter. "Far more of our mistakes," says Matthew Arnold, "come from want of fresh knowledge than from want of correct reasoning." The intolerance which has been shown by the protagonists on both sides as regards this question makes many of us doubt whether the "tart apostle of sweet reasonableness" was right in his remark. New facts will be gained which will help us to reach more definite conclusions as to the esoteric meaning of cardiac activity, and until we are in possession of such facts we must keep our judgment in reserve. Hence the title chosen for this address.

A few words, addressed more especially to the undergraduates of the University may in the last place be allowed me. These must be taken as coming from an older to younger brothers. You will not expect me, in the terms of a certain school of theology, to "improve the occasion." If you do you will be disappointed. The purpose of the remarks which have been made is to bring some aspects of modern research before you, to hearten you in your studies, but at the same time to warn you of the dangers which may attend them. We have seen in one small field of the vast domain of medical study that many industrious labourers have been engaged upon the matter; that the gradual growth of knowledge has taken place by separate additions made by patient observers; and that it is within the power of each and all of us, to contribute to the store of information. In all this you have great encouragement for your work to come. The illustration chosen is only a single example of what you will find in every branch of science. The first aim of every one of us must be to strive after fitness for the task which each will find. Again one of the clearest duties lying to our hand is to discover in which direction practical usefulness may most likely be found. In the present age omniscience cannot be our foible, and a wise choice of study is an absolute necessity. To be able to grasp the real and eschew the unreal is the first requisite of him who is in quest of truth. You will be guided in your early footsteps by men of experience and distinction, who will help you to gain an insight into what is worth study. In this way you will escape the risk of resembling the dull pedant of whom the American humourist sings:—

"A reading machine ever wound up and going,
He mastered whatever was not worth the knowing."

In the search for truer interpretations of natural appearances we must train ourselves to build our foundations on the solid bedrock of fact. Blowing hypothetical bubbles will not avail. It would be foreign to the genius of my race to condemn philosophical reasoning, but it is nevertheless a duty to condemn baseless speculation. Imagination rightly used is of the highest value in science.

"But not for golden fancies iron truths make room."

The scientific method is, as Huxley has clearly stated, "nothing but trained and organized common sense, differing from the latter only as a veteran may differ from a raw recruit." No one can successfully dispute this statement, and probably few will make the attempt. There is no need for me to dwell on this theme, but it will not be out of place to add that this quality of common sense is not the possession of mankind in equal proportions. To some it has been granted in fuller measure than to others, but to most men a fair share has fallen. It is one of our first duties to listen for the whisper of this inborn wisdom or common sense which must be our final guide in all our work. May we not without any great strain apply to this gentle voice, the words of an early English poet, who died just four hundred years ago?

"The vertue of her goodly speche,
Is verily myne hartes leche."

Goethe long ago frankly said that in his old age he had found it hard to be as wise as he had been in youth. This is a brilliant paradox, the meaning of which is clear, so that he who runs may read. But there is another side to the shield. It is within reach of all of us to train this inherent quality by the discipline of experience. There is but one way in which this can be done; the way of hard work. In this age of strenuous endeavour it seems unnecessary to emphasize this gospel. It has been preached by many modern writers, from Carlyle to Kipling, and the nobility of work in every field is now universally recognized. Upon us, most of whom are or will be concerned with the practical duties of serving our fellow-men, it is incumbent to remember to what a high calling we are devoting ourselves. We have to enter into the lives of others in the fellowship of suffering as well as the brotherhood of happiness. "Man is the only book of life" says Pierre, and in this saying of Parker's interesting creation there is deep significance. It is our privilege, above all other men, to have the leaves of this book opened to us, and we must fit ourselves for its study.

In all our doings we must spend our lives in truth, faith, hope, love—clinging to that mood of mind, bent on winning to the very heart of everything; believing in real work as the means whereby in its own good time what is now hidden will be laid bare; trusting that the end of our quest will be the furtherance of knowledge and the good of mankind; and holding each of our fellow workers in such kindly thought as will lead us to be happy when any of them makes a forward step. May each of us be able to say in the words of a historic rascal, who yet had the elements of good in him, Francois Villon:—"En ceste foy je veuil vivre et mourir."

CENTRAL NEURITIS.

BY

ELBERT M. SOMERS, M.D.,

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Adolf Meyer in an article, "On the Parenchymatous Systemic Degenerations mainly in the Central Nervous System," published in *Brain*, 1901, proposed for this type of disorder the shorter term, "Central Neuritis," in which there was a parenchymatous degeneration of the nerve elements, but here pre-eminently of central distribution.

Clinically, the disorder seems to be an acute or sub-acute process lasting from a few days to several weeks, which occurs as a terminal disorder in a number of psychoses, particularly in certain asthenic conditions, frequently accompanied by diarrhoea and febrile reactions and characterized for the most part by loss of weight, progressive weakness, muscular tension and rigidity, incoordinate movements, and motor restlessness; the latter, at times, amounting to jactations of the limbs, with reflexes usually increased. The mental condition is usually that of an anxious, perplexed agitation or a stuporous and, at times, delirious state.

Anatomically, the gross changes are absent or those incident to the period of life; microscopically, a diffuse parenchymatous affection, especially of the largest nerve elements in the neural tube (most evident as a bilateral axonal reaction in the Betz cells) and decay of the myelin sheaths—the process involving the supra-segmental elements much more than the segmental ones.

This broadly defines the disorder which has doubtless come within the experience of many of us, but has not been given a place sufficiently apart from the terminal phases of delirious-stuporous conditions and unaccountable physical failures.

Aside from the cases of Dr. J. Turner and those reported and collected from the literature by Dr. Meyer, few cases have been recorded, and there still remains much in the etiology, onset, course and outcome of the disorder and the underlying anatomical condition which demands attention and study.

The object of this paper is to present nine additional cases observed in the wards of the St. Lawrence State Hospital. The diagnoses of these cases have all been confirmed by autopsy and by microscopic examination, the main results of which follow each case in summary form.

The disorder has so far occurred mainly in the 4th, 5th and 6th

decades of life in such psychoses as chronic melancholias, depressive senile states, or during the course of alcoholic delirium or hallucinatory depression, and in some other ill-defined infective-exhaustive conditions.

In my nine cases, five have occurred in infective-exhaustive conditions, with durations previous to the neuritic symptom-complex for two and a half to thirty-six months; two in dementia præcox of thirteen to twenty years duration; one in melancholia of three months' duration, and one in depressive-senile state of fourteen years standing. In the infective-exhaustive group the possible etiological factors were apparently—la grippe; in another, anæsthesia and operation for hæmorrhoids; in the third, profound anæmia; in the fourth, strumuous diathesis with prolonged ill health after alleged attack of la grippe; lastly, one with no well-defined etiology.

Relative to the two cases of dementia præcox, one had had tuberculosis for an indefinite period, but the neuritic symptoms seemed to follow soon after anæsthetic and operation for gangrenous toes. The other case was exceedingly filthy. The cases of melancholia and senility, one each, showed no definite etiology, otherwise than the general changes incident to their period of life.

The onset has not been clear or distinct; the peculiar motor reactions are apt to be charged up to psychic states or simple weakness. In my cases physical failure with weakness preceded the distinct evidences of muscular tension and jactations for one to twelve weeks. Weakness with a tendency to stumble or fall if up and about, or helplessness, if abed, attracts the attention. The brighter patients voluntarily complain of weakness in the lower limbs. Slowly and rapidly further prostration develops, accompanied or followed by increasing tremulousness, which, at times, may be of a fibrillary character, usually noted in the smaller muscles of the upper extremities. These movements may be recurrent and may appear as if due to delusional concepts such as fear or because of apparently being startled. A greater degree of muscular rigidity with distinct twitchings and sudden jerks of the limbs supervene. The limbs are apt to be semi-flexed, generally the arms first, and the patient's voluntary actions with the arms are noticed to be jerky, over-done, and quite ataxic. Strong tonic flexion of the thighs and legs is not infrequent. The ankles, and especially the toes seem less involved. The flexor and adductor arm muscles more decidedly, but the extensors and abductors, pronators and supinators are over-active as well. In well defined cases there is involvement also of the facial muscles resulting in a sardonic expression, peculiar grimaces, varied twitchings and occasional sidewise motions of the jaw.

The pectoral and neck muscles may participate and retract the head in the advanced stages. As muscular tension increases there are more frequent jactations, which seem to be worse on approaching or attempting to do anything for the patient. These jactations in severe and well marked cases seem electric-like, and in their character paroxysmal, and considering the slight causes that produce them, they are somewhat comparable to the jerks of strychnine poisoning. The muscular tension, relaxation and clonicity of the movements vary considerably. In some, the jactations slowly increase in frequency and severity until the arms, neck and jaws are in rapid play. Then there will be a gradual or sudden subsidence so that an episode might simulate in a measure an epileptic seizure.

The range of movements is not very wide, except when a voluntary effort is made to grasp something, or when the patient is disturbed. If a tense limb is released from one's grasp it often flies in unexpected directions.

Owing to the torpor or even stupor of the patient, tactile sensibility cannot be obtained, but pain sense is moderately reacted to. Manipulation of the joints in some cases causes the patient to wince or cry out as if in pain.

The tendon reflexes become increasingly exaggerated, and when the condition is well advanced, tapping of any of the limbs will produce grotesque and speedy jerks. Ankle clonus can be obtained in some cases. Babinski's reflex is apparently absent. The organic reflexes remain intact until the terminal stages.

Concerning the mental state of the individual, at the outset there may occur more or less mental dulness, which may become more marked until a stuporous condition is reached. However, quite a number of cases exhibit delirious episodes of acute or sub-acute type and eventually show increasing stuporous phases. The latter, however, are not profound until the terminal stages, for the patients seem to arouse and from time to time make observations, attempt to speak or reach out for something with tense and tremulous muscles. In the cases, reported in this paper, it appears that the stuporous-delirious episodes may also precede the characteristic nervous phenomena from a few days to eight weeks.

With the development of the case the facies of the patient is rather characteristic of a delirious or exhaustive condition, the eyes are rather wide open and there is frequent blinking of the eyelids. The comatose expression is applicable in some cases.

In the cases at this hospital, the duration of the characteristic mus-

cular tension and jactations has ranged from three to fifty days, and the outcome has been uniformly fatal.

The termination of the case is generally in profound stupor preceded by difficulties in articulation and deglutition; respirations become irregular, increased and laboured. The pulse is rapid. Duskiness develops and feeble jactations may continue to a few moments before death.

The sub-acute forms of Central Neuritis differ from the more acute in that the muscular twitchings are slower in development and may not reach the degree of jactations, which characterize the rapidly fatal types. In the acute process there is rapid loss of weight; in the sub-acute conditions, emaciation becomes marked.

My nine cases showed a history of diarrhoea in six during some period of the disorder, usually at the outset; and a similar number showed a decided increase in bronchial secretions. In but one case there were found albumen and casts in the urine.

Temperature records, which were kept in seven cases, showed an average elevation of two degrees, while in two cases the temperature was normal or sub-normal throughout.

The following cases herewith submitted show rather variable symptoms up to a certain point, after which time there seem to be similar symptoms in common.

Case No. 5775.

Admitted May 19th, 1905.

This man, aged 51, tinsmith, whose mother and sister had been insane, was well up to eleven months ago, June, 1905. He then had la grippe, but continued debilitated, and within a few weeks became erratic in his conduct. Two weeks before admission showed further prostration and remained in bed. Then expressed a few depressed ideas; said he could not eat or breathe or talk, though continued quite talkative; would laugh and cry; was uneasy, made delirious references, also intimated hallucinations of hearing, and complained that when he looked at objects he could only see half of them.

On admission, he was unable to walk; answered questions slowly; spoke of feeling exhausted and of having consumption. His nutrition was considerably reduced, though his temperature was normal. He complained of dizziness and would have a tendency to sink down when placed in an upright position. His tendon reflexes were considerably exaggerated and the pupils were irregular, but reacted promptly to light and accommodation. He had quite a degree of arterio-sclerosis and was quite autotoxic. There were rather coarse tremours of hands and tongue, but no muscular rigidity. Otherwise, physical examination was negative. Within two days he became restless, answered questions in a reckless and senseless fashion, giving but little account of himself; had a tendency to fabricate and was inattentive; would have periods of yelling loudly, and in a tottering way would try to walk away from his bed, but would fall; had increased aversion to food, saying that he could not swallow. He continued to show rather increasing ataxia and tremulousness of his arms, and twenty-eight days after admission examination showed quite a degree of muscular tension of arms and legs, with prostration to the degree that he lay flat on his back in bed, with eyes wide open, accompanied with winking of the eyelids and frequent involuntary jerks and jactations of his arms, face and neck muscles. There were occasional electric-like jerks of the sternocleidomastoid muscles. However, at this time he seemed to notice those approaching his

bedside. Then the facial tremulousness was quite in evidence, and would often terminate in peculiar spasmodic grins. He was able to move his eyes in all directions, but his pupils were still irregular, though responsive to light. He had considerable difficulty in articulation, and when requested to protrude his tongue did so in a jerky fashion, which effort brought out quite markedly jactations of his arms and facial muscles. When asked to take hold of examiner's hand, he obeyed the command, but markedly gross ataxic, jerky motions ensued, which seemed to quickly increase in rapidity, and, after a few moments suddenly subside. Otherwise, the position of his arms was in extension, accompanied with frequent jerkings, including some action of the pronators and extensors of the wrists and twitchings of the fingers. The lower limbs were tensely extended, and there were occasional quick hyper-extensions, with marked dorsal flexion of the ankles. His tendon reflexes were all markedly increased, the patellar reflexes being spastic. No Babinski sign elicited. At all times, he reacted promptly to pin pricks. During the last four or five days he was unable to articulate or swallow liquids, and had quite a degree of rigidity of the neck muscles. Respirations became much increased. Pulse became rapid, and muscular twitchings continued until death, when his temperature was 100.2°. On admission, lumbar puncture showed 27 white cells to the cm.

Autopsy seven hours after death. Marked emaciation. Pericardium adherent; aorta atheromatous; lungs showed focal pneumonic consolidations; recent as well as old pleuritic adhesions; congestion of the parenchymatous organs. Brain weighed 1345 grammes. Pia gray; somewhat injected; slightly, but diffusely thickened vessels and negative cortex. Microscopically, there was advanced axonal alteration of the Betz cells, and in a few of the larger pyramids, which showed poor preservation of the peripheral stainable bodies.

Case No. 6069.

Admitted March 19th, 1907.

This woman, aged 55, who had an insane uncle, was always considered eccentric and somewhat defective. At the age of 35 began to show mental traits, concerning which but little is known. She had various persecutory ideas, talked much about spirits, dressed in peculiar fashion, and was in an institution for a few years, where, it is said, she was hallucinated. She was discharged improved, and got along well until the early part of 1907, when she became irritable, threatening, talked much about voices, and expressed senseless ideas; wandered about in cold weather improperly clad.

On admission, she was very poorly nourished, and there was harsh breathing over the entire right lung. She was disinclined to talk, became irritable. Her recollections were unreliable and she made vague references to persecutions by neighbours, and also to hearing God's voice. A few days after admission, was given an anæsthetic and two toes amputated from her right foot because of former frost bites. She continued in bed, and in the following month had considerable diarrhoea, cough and expectoration; seemed much prostrated, unable to walk and had a tendency to lean to one side. Two months after entry began to talk in a delirious fashion, showed some muscular tension of her arms and legs with occasional twitchings. There gradually developed marked flexions of the arms and legs, particularly of the latter. The jerkings of her arms became more gross and in greater frequency, and were especially noticeable when she was approached or disturbed. They were confined mostly to the flexor group of muscles, although the extensors, abductors and finer muscles of the hands shared in the exhibition. She eventually developed, also, jactations of the jaw and facial muscles, had retraction of the head, difficulty of swallowing and articulation, and became increasingly stuporous, although, at times, was able to recognize her brother to within a day or so of her death. She was conscious just before death, turned her eyes to the nurse, and feeble jactations, especially of her face, were then noticed.

The duration of her hospital life was three months and ten days, and approximately the duration of the characteristic neuritic symptoms was about three weeks. Throughout the course of her attack her temperature had not been higher than 100°, and the respirations at the last reached 40 per minute.

Eight days before death lumbar puncture showed 13 white cells to the cm. Sub-dural injection of this fluid into Guinea pigs resulted in negative reactions; also cultures in serum and bouillon were negative.

Marked emaciation; tubercular consolidation of right lung; capsules of kidneys adherent; brain weighed 1050 grammes; moderate meningeal congestion. Microscopical examination showed typical axonal alteration of Betz cells with fair preservation of peripheral stainable bodies. The cell bodies of the smaller cells appeared somewhat granular and crumbly. Moderate increase in the free nuclei or satellite cells. Cultures from heart, spleen, liver and kidneys in serum and bouillon probably negative. A few long non-motile negative bacilli with rounded ends and occasional fine polar bodies were observed. Lack of certain identity with pathogenic material casts doubt, and they were doubtless of extraneous origin and due to faulty technique.

Case No. 4616.

Admitted November 17th, 1902.

This woman, aged 62, whose father was melancholy and suicided, was well until 44, when she had melancholia, from which she recovered after four years. For the past twelve years has used morphine, taking as high as ten grains a day, and, at times, was somewhat melancholy, but got along well until two months before admission, when she became upset over religious matters; then thought she was doomed to be burned; too wicked to eat, refused food, and said she had been dead for years.

On admission, rarely spoke, seemed puzzled, lay quietly in bed and made senseless reiterations; kept her head covered and fingers in ears. At times, was irritable, obscene, and gave vent to nihilistic expressions. Two years and a half after admission, failed in general strength, gait became unsteady and was unable to get out of bed. Soon became mildly delirious, and gradually developed marked rigidity of the lower limbs, so much so that they were firmly flexed, and she would cry out when efforts were made to move them. There were frequent twitchings and coarse jactations of the arms with quite a degree of flexion of the wrists, thumbs pointing toward the palms. Her tendon reflexes were active, especially the patellar, which were spastic, and for several days her bowels were loose. She had slight elevation of temperature and she became much emaciated. Difficulty of articulation and deglutition supervened, and she died two months and a half after the onset of her neuritic symptoms. At no time did she show sensory disturbances, pupillary changes or positive Babinski reactions. The course of her disease was sub-acute.

Autopsy three hours after death. Considerable emaciation. Abdominal viscera generally congested; evidences of old pleurisy. Brain weighed 1315 grammes; slight general atrophy of the cortex; large cerebral vessels atheromatous. Microscopically, there was a pure, moderately advanced axonal alteration of the larger pyramids with a fair preservation of the peripheral stainable bodies. The smaller nerve cells appeared unaffected. The Marchi reaction was very scanty.

Summary.

The recorded facts concerning nine cases of central neuritis at this hospital tally quite closely with those previously recorded. The disorder has occurred in both men and women in infective-exhaustive conditions, dementia præcox, melancholia and depressive senile states. The duration of psychic symptoms, previous to symptoms of central neuritis, has been from two and a half months to twenty years. In six the disorder has apparently had some relationship to possible etiological factors. Clinically, the onset has not been clear. Physical failure with weakness has preceded the symptoms of muscular tension, jactations and disorder of reflexes for a period of one to twelve weeks.

Delirious-stuporous episodes have also antedated the characteristic motor exhibitions for a few days to eight weeks and then continued to share in the picture. The terminal stages have shown themselves in increasing stupor, difficulty in articulation and deglutition and increased respirations. Throughout the height of the disease some elevation of temperature was noted where records were kept. Diarrhœa and increased bronchial secretion have occurred in six during some period of the disorder, usually at the outset.

Anatomically, the gross changes in these nine brains were, in the main, incident to the age and physical condition of the individual. The microscopic changes were essentially those of a parenchymatous nature in that there was a bilateral axonal alteration of the Betz cells, of the motor cortex and occasional ones of the larger pyramidal type outside this field. The reaction occurs so uniformly in this class of cases that it may be regarded as confirmatory anatomical evidence of central neuritis and sufficient upon which to base the diagnosis, the clinical symptoms having been observed as stated above.

Myelin sheath degeneration, studied in seven of the nine cases, was not constant, being almost completely absent in several, scanty in others and only well marked in one case.

The neuroglia showed no constant reaction incident to the process. There was a moderate increase in the free nuclei or satellite cells among the nerve cells and along the blood vessels. This material furnishes additional importance for the study of these elements.

The connective and vascular tissue appeared unaffected. The pigmentary changes of the cortex seemed excessive beyond the age of the individual and is of interest, inviting further investigation. The bacteriological issue in this type of disorder seems important, but lacks sufficient study, and is a field for further inquiry.

DISCUSSION OF DR. ELBERT SOMERS' PAPER ON "CENTRAL NEURITIS; A REPORT OF NINE CASES."

T. G. FITZ-GERALD, M.D.—I wish to congratulate Dr. Somers on the very capable fashion in which he has handled an extremely difficult subject. It seems to me also, that we are all indebted to him for bringing up and carefully going over a ground which is almost terra incognita, certainly to many engaged in psychiatric work in State and Provincial hospitals.

As Dr. Somers has pointed out, Dr. Adolf Meyer in the spring number of *Brain*, 1901, published an article entitled "On parenchymatous systematic degenerations, mainly in the central nervous system." Four

years previously, that is in 1897, Dr. Meyer had described certain changes in the giant cells of the paracentral lobules in a case of senile melancholia. He spoke of this change as an axonal reaction, meaning thereby, the cell alteration which could be produced experimentally by the section of the axone. Dr. Meyer said further: (*Brain*, 1901) "It is as it were, a focal disorder within the pericaryon, splitting up and dissolution of the stainable bodies, usually between the place of origin of the axone and the nucleus, not around the nucleus, swelling of this region, with involvement of the greater part of the cell interior, and dislocation of the nucleus towards the surface and even beyond the normal contour, persistence of a peripheral ring of lumps and of the spindles in the dendrites. Decay, or at least fatty alteration of the medullary sheath of the axone is a frequent accompaniment. When this alteration is combined with acute alteration the stainable bodies of the periphery and dendrites are also dissolved, and the dendrites showed the characteristics of the acute alteration." The same author says further: "The axonal reaction to us is an, as yet, unexplained complex of manifestations, which as far as we know now, seems closely related to the circumstances under which we recognize also myelin decay."

Lastly, Dr. Meyer points out that the pathological histology of this condition is characterized not by any general tissue involvement, but by the invasion of sets of cells, this distinguishing it from degenerations of a secondary or retrograde type. The typical changes found in brains of paralytics are absent.

At the time these changes were analysed the material used was from cases of end stages of depressive disorders in the devolutional period, various alcoholic psychoses complicating the senium, and certain exhaustive infective states, and lastly, cases of idiocy.

While the clinical features are fairly definite, still I do not feel that there is a clear and definite correlation of clinical signs and autopsy findings, and Dr. Meyer clearly recognized this when he said: "we must admit that we are still far from knowing all the possible histological steps in the process" (*Brain*, 1901), and he also admits that the symptoms are rather vague.

Bonhoeffer, Starlinger, John Turner, Worcester, Ballet, and Hoch have all described somewhat similar conditions, but there seems to be a general haziness in regard to the exact clinical features, and though it seems highly probable that there is a symptom-complex of a fairly definite character in which certain pathological conditions are found post-mortem, it would seem that we should endeavour to exclude all symptoms that might have a definite etiology quite apart from the symptom com-

plex. I do not know that any bacteriologic work has been done to discover, if possible, a cause for the presence of diarrhoea, or further, whether there was an examination of the bowel wall histologically to determine its exact condition. Again, it seems to me that, in all these cases the brain and cord, with the posterior root ganglia and sympathetic ganglia, should be examined micro and macroscopically. The examination of certain areas of cortex I do not believe to be sufficient when such an amount of uncertainty exists.

The value of such work is perhaps most apparent to the neurohistologist and pathologist, but it will also be of great value to clinical psychiatry, and I feel that Dr. Somers and others who undertake this work, in addition to keeping up arduous routine, deserve our warmest commendation, and the section on nervous and mental diseases of the Canadian Medical Association are fortunate in having had Dr. Somers show them the character of work that may be done by a busy first assistant in a large State Institution. I wish to again thank Dr. Somers for his paper.

CALCIFIED FIBROMA OF THE ORBIT.

J. N. Roy, M.D.

Ophthalmologist to the Hotel-Dieu, Montreal.

Case Report.—C. Edmond, aged fourteen years, was brought to the Hotel-Dieu on the 20th of February, 1907, for a tumour of the left orbit. His mother told us that from the beginning of the year 1904, her son had complained of slight pains in the left eye, as well as weakness of vision. This eye until then had always been straight, but from that time it had a tendency to diverge. The symptoms increased up to October of the same year when slight exophthalmos and limited movements of the eye were noticed. An oculist, who then had him under his care has had the kindness to transmit to me the following notes.

“On examination I found and removed a growth of the size of a hazel-nut, situated at the inferior external angle of the orbit. The operation was followed by considerable infiltration and insensibility of all the orbital tissues, and pronounced exophthalmos.”

“Some days later, neuro-paralytic keratitis came on, and as it was impossible to save the eye, excision was performed. The insensibility was so complete that this excision was practised without cocaine or chloroform and caused no pain.”

“After three or four weeks, the tissues had not regained their sensitiveness, or their normal size.”

"In presence of these trophic and vaso-motor troubles of the eye-ball and of the contents of the orbit, I inferred a serious lesion of some branches of the trifacial and of the sympathetic. These nervous lesions, however, not being definite, I preferred to wait before emptying the orbit."

"As the patient was poor, and could not afford the expense of living away from home, he returned to the country with instructions as to the necessary treatment, and a request to return later."

"The neoplasm was entrusted to a confrère, for histological examination but unfortunately, the report was never furnished me."

"During his first stay at the hospital, the patient was subject to attacks of coughing, tightness of breath and tachycardia, which I believed were of nervous origin."

During the two years that followed the two operations, the swelling of the orbital tissues, mentioned in the preceding report, constantly increased. The patient complained of sharp pains and a feeling of fullness of the orbit, which was complicated by daily headaches. There was always a sanious discharge from the wound, in spite of antiseptic washes repeated twice a day. The tumour in developing produced a considerable ectropion of the upper eyelid. During the last four months preceding our consultation, the parents observed that the child was nervous, pensive, wept for nothing, became angry easily, and was not as intelligent as formerly. The appetite was good, but the sleep was broken, and involuntary movements of the hands and feet occurred at times.

Because of these symptoms, and the slow but continued increase in size of the growth, they decided to have a second examination made.

The family of our little patient was composed of thirteen children, four of whom died young of infectious diseases, the others possessed excellent health. There was nothing of interest from a hereditary point of view, and no history of neoplasms of any kind.

The child had never been ill, but at the age of three years was scalded by boiling water on the eyelids and the left side of the neck. These burns however, healed without complications.

On examination, we observed a large tumor which more than filled the left orbit. This tumor extended about a centimetre above the upper rim and about two centimetres below the lower edge of the orbit. The eyebrow was pushed up, and a sero-purulent liquid escaped from the cavity. The neoplasm, which was slightly mobile gave on palpation a sensation of resistance. The eyelids had a violet tint, due to venous dilatation. All this region had preserved its sensitiveness.

An absolutely normal condition of the right eye existed. Refraction gave us $120^{\circ} - 0.75V-1$.



With the rhinoscope, on the right side we found a hypertrophic rhinitis, and on the left a small spur on the septum and a polypoid hypertrophy of the head of the middle turbinal. The patient had never had any discharge of pus from the nose. There was nothing to note concerning the pharynx, the tonsils or the palate. Some decayed teeth added nothing of interest to this observation.

The diaphanoscope allowed us to observe that on the right, the pupil was luminous and the cheek translucent. On the left the maxillary sinus was equally transparent which assured us that this cavity had not yet been invaded by the orbital tumour. Normal condition of the frontal sinus. Slight hypertrophy of the sub-maxillary glands, equally pronounced on both sides. The preauricular glands on the left were not increased in size. We found no organic disease, no syphilis or tuberculosis.

It was comparatively difficult for us to make a clinical diagnosis as to the nature of this tumor, which the microscope alone could do, whether it was bony, cartilaginous or fibrous, sarcomatous or benign. From a practical point of view, ablation remained the only possible treatment and the operation being decided upon, took place on the 23rd of February.

First Operation.—The patient chloroformed and the field of operation made aseptic, we made an external canthotomy the length of a centimetre, the incision being curved slightly downwards. The conjunctiva, which covered the entire extent of the neoplasm, was cut in the superior and inferior pseudo-culs-de-sac, and the eyelids and the skin of the temple were carefully dissected with the scissors. The tumor was then entirely exposed to view; we could raise it in part, after having detached it from the orbital rim, upper, outer and lower. By aid of the curette we finished the removal of everything that remained at the bottom of the cavity, going as deeply as possible in the direction of the optic nerve. These manœuvres, moreover, were facilitated by the presence of a very thin capsule which entirely surrounded the fibroma, and which is almost always met with in this variety of neoplasm. As the periosteum appeared totally invaded, we accordingly carefully took away all that had escaped our first curetting, and the orbital arch which was intact received our special attention. The tumour weighed 55 grammes. The operation was followed by a thorough cleansing of the orbit, some sutures at the outer canthus, and a light compress dressing. The results following the operation were absolutely normal. We were pleased to notice in the days that followed that the left eyebrow was in line with the right. The orbital cavity, cleaned daily with peroxide of hydrogen, suppurated a little, although the fungous granulations were removed by

curetting or cauterizing. Nevertheless, it gradually became covered with a solid granular bed which permitted us to consider our patient cured at the end of two months. All the symptoms shown before the operation had disappeared; the general health was better, and the intelligence developing. Although cured, we are not fully satisfied with our first operation, since it had been impossible for us to concern ourselves with the esthetic part. The neoplasm in developing had caused the eyelids to undergo a forced dilatation; and, as after the ablation everything sunk in the orbit, they had a tendency to retract to the point of leaving this cavity largely open. As, besides the ungraceful appearance, the patient would have been continually exposed to exterior infection, we performed on the 20th of April a partial tarsorrhaphy.

Second Operation.—Again chloroformed, we detached circularly the eyelids at their base, on a level with the bony circumference of the orbit, and we continued this separation on the forehead and cheek in order to be better able to mobilise them. After cutting the inner two thirds of their meibomian lips, and completing the hemostasis, we applied some sutures, exercising great care in the ciliary field. A protective dressing finished this easy little intervention.

During the following days, we gave antiseptic washes to the orbital cavity, passing by the part not sutured; and, as the secretion was dried up by the end of May, the patient was allowed to leave the hospital absolutely cured. We recommended, however, repeating the washings from time to time, by means of a syringe, in order to maintain the cure.

Dr. Dupont, who was kind enough to undertake the examination of the growth sent me the following microscopic report.

“Histological examination of a tumor of the size of a hen’s egg, developed in the left orbital cavity.”

“The sections were made of a muscle of the eye, and of the tumor, properly speaking. Particularly on those prepared by the Van Geisen and Weigert method, we observed that this mass was formed exclusively of connective tissue cells and bundles of fibres, which cross each other in every direction. These fibres were coloured by the fuchsin in a characteristic pink, and the nucleus of the cells a blue colour.”

“Numerous little centres of calcification were scattered through all its thickness. These deposits of calcareous salts had assumed a colouring of deep black from the ferric-hematoxylin.”

“A band of fibrous tissue, the greater part of whose fibres were arranged in parallel lines, separated them from the ocular muscle.”

“We found included in the tumor, a nerve, whose elements presented evident signs of degeneration, but it did not seem to be large enough to be the optic nerve. The muscle was also slightly sclerosed. On the

other hand, the arteries and veins in the neighbourhood did not appear affected."

"In a word, it is a fibroma of slow development with many centers of calcification."

For a long time, some ophthalmologists have denied, very wrongly, the possibility of the development of a genuine fibroma in the orbital cavity. In reality, all fibres carpeting or dividing the orbit can be the starting point for this tumor, which can originate from the periosteum, from the sheaths of the muscles, from the optic nerve, or from Tenon's capsule.

Although the fibroma of our patient was calcified in certain parts, this observation remains no less interesting from the point of its rarity.

The evolution of this neoplasm equally deserves our attention, as well as the nervous phenomena which accompanied it.

The exophthalmos, the decrease of vision, and the divergent strabismus, lead us naturally to believe that it had its origin in the fibrous bed at the bottom of the orbit, because, aside from this ocular projection, the eyeball had retained its normal position.

The lack of sensitiveness, and the swelling of the retrobulbar tissues which followed the first operation, and which continued even after the enucleation are also facts which we have never seen noted before.

We know that in certain cases the boundary line which separates fibroma from sarcoma is still very indefinite, however, in this case the very slow progress of the disease allowed us to foresee that we were in the presence of a benign tumour. Moreover, the microscope confirmed our opinion, and allowed us to observe that the histological preparation showed fibroma with islands of calcareous infiltration; and it was impossible to find any sign of sarcoma.

Although the walls of the orbit were not altered by contact with the neoplasm, nevertheless it caused nervous symptoms which disappeared after the operation.

Of all the means at our disposal for the aesthetic repair of the orbital cavity, we believed it best to choose the partial tarsorrhaphy, which was completely successful.

As the cure has continued now for a year, we can hope that it is permanent.

COMPOUND COMMUNUTED FRACTURE OF THE SKULL: OPERATION: RECOVERY.

BY

WILLIAM J. DEROME, M.D., Surgeon to the Hotel-Dieu, Montreal.

The subject of the present paper is 30 years old. The personal and the family history are unimportant, with the exception that one of his maternal grand parents was an alcoholic.

On May 18, 1907, he came to see me, complaining at times, of very severe headaches in the right frontal region, accompanied by epileptiform convulsions. He stated that when 8 years of age, he was kicked in the head by a horse and was under the care of his family physician for six weeks, until recovery from his injury.

On examination, his skull showed in the front parietal region, an irregular depression, about four inches long by three quarters of an inch wide. On deep pressure, over this area, there was no pain, nor pulsation.

Up to the age of 15, development was normal, but the child showed no aptitude for study, complaining of fatigue at the least application to his lessons.

At 15 the headaches became more frequent especially during hot weather, while working in the fields. These headaches went on increasing in frequency and in intensity up to the age of 18, when in September, 1896, the first attacks of epilepsy manifested themselves. Initial cry, spasmodic movements, biting of the tongue, frothing at the mouth, loss of consciousness, such were the clinical features of the attacks, according to the story told by the mother of the patient. It was impossible to ascertain if the convulsions began in any group of muscles or one side of the body more than the other, as the facts were gathered from witnesses who were more than novices in the art of medicine. Nevertheless the possibility of Jacksonian epilepsy was thought of. During the two years following the inception of the epilepsy, the convulsions recurred at more frequent intervals, 3 or 4 a week.

From the very onset of the malady, the patient was put on large doses of bromides which diminished the number of attacks but not their intensity. After two years' treatment, there was an interval of eight months of apparent good health, but by degrees the attacks returned and became more violent.

The physicians previously consulted advised surgical intervention, only to meet with a persistent refusal, as the parents were satisfied with the results of the medical treatment.

In 1907, I also advised operation, but also met with the same determined refusal.

On the 8th January, 1908, the patient returned complaining of more aggravated and more numerous attacks. His mother who accompanied him, said that during these attacks, her son became uncontrollable and appeared to have gone mad. A great change indeed could be seen in the attitude of the patient, who seemed duller and more stupid, hardly answering questions and scanning his words. His eyes were staring and haggard. His occupation, that of carpenter, had become not only difficult for him but even dangerous. He had been threatened with dis-

missal if he could not be cured as his fellow workmen did not consider it safe to work with him on account of his strange ways.

I again counselled operation, as the only hope, this time with better results.

Some days later the patient entered the Hotel-Dieu of Montreal, the operation took place on the 18th of January, with the assistance of Dr. Eugene St.-Jacques, to whom I am very much indebted for his skilful co-operation.

A horse-shoe shaped incision was made over the fronto-parietal region and the injured area exposed. While dissecting the skin flap, two small openings were met with, in the angles of a depression, triangular in shape, measuring two and a half by one and a half inches, from which escaped in spurts, a clear transparent, serous liquid similar in all respects to the cerebro-spinal fluid, and about two ounces in quantity. A probe introduced into one of these openings, enabled us to map out a pouch outside the dura-mater of the volume of a large egg.

This cyst was strongly adherent to the skin and to the osseous border of the depression. Compressed by the scar tissue the cyst depressed markedly the brain substance of the fronto-parietal region. The skull was trephined at the upper angle of the triangular depression and at its base, and the two openings joined together by the means of a rongeur forceps. The edges of the traumatic area were thickened in parts, to a depth of three quarters of an inch, result of a *hypertrophic osteitis*, while the central portion was thinned out, *atrophic osteitis*, and showed a solution of continuity at two of its angles. In the lower frontal region there was found in the diploe a cavity communicating with the cyst: a *true cystic hypertrophic osteitis*.

At this point I removed small spicules of bone from the internal table of the skull. The adhesions were broken up, the dura-mater and the cyst resected the callus thinned out with the rongeur and the wound closed, without any attempt at compensating for the loss of osseous substance. A small idoform gauze drain alone was left in the wound during 48 hours.

The third day following the operation there was a marked improvement in the condition of the patient. He told all comers, his headaches were cured. Since then he made an uninterrupted recovery. He left the hospital on 29th January, twelve days after the operation and received his last dressing at my office, on the ninth of February. On the 15th February, as a result of fatigue and of overheating he had apparently an attack of *petit-mal.*, not losing consciousness. Since one month after the last dressing the patient has been able to work every

day at his trade, is happy, has had no further convulsions, nor does he suffer any more from headaches.

I would conclude:

1. That with rare exceptions, cases of injury to the skull, followed by late permanent nervous symptoms should be treated surgically.

2. That the statistics and my own limited personal experience tend to prove that in such cases surgical intervention is almost always followed by the happiest results.

3. The sooner the operation is done after the appearance of the nervous symptoms, the more favourable the outlook.

FRACTURE OF THE NECK OF THE RADIUS.

BY

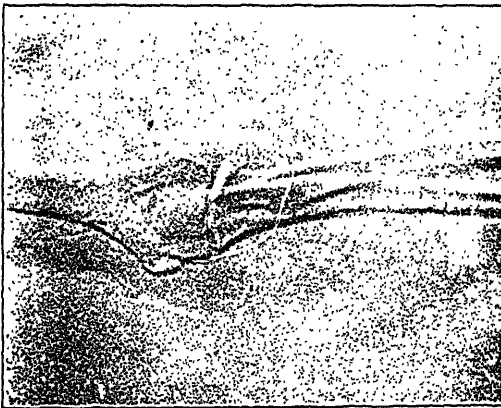
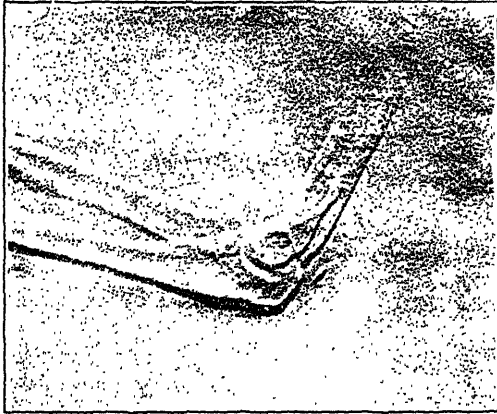
J. APPLETON NUTTER, B.A., M.D.

R. E. B., aged 18 years, was in June, 1907, doing a "hand stand" on the arms of a rickety chair, i.e. he was supporting his body in the air by his hands, which grasped the arms of the chair. The chair suddenly toppled and he fell to the floor. The left arm gave way as it touched the floor and the elbow was flexed acutely, the whole arm being twisted inward so that the lower arm was directed backward, the palm resting on the floor. In this position the radius and ulna were crossed and when, following rapidly, his body lurched forward, great pressure was brought to bear on the upper end of the radius. The hand was palm downwards on the floor, fixing the lower end of the radius; the upper end of the radius was lying across the ulna and pressure against it caused this to give way at the neck. A click was felt, and on rising the elbow was found painful but capable of being fully flexed and extended. Supination and pronation caused however considerable pain and there was great tenderness over the head of the radius.

An X-Ray was taken at the Royal Victoria Hospital, which revealed a fracture of the neck of the radius immediately below the head and a tiny chip of bone lying free, probably from the olecranon.

The arm was put up in full extension by plaster, apparently in full supination. This was kept on 19 days, and on removal very little motion was at first got; this improved gradually. A distinct ring of callus could be felt below the head of the radius.

On July 19th, the elbow was again injured. A second X-Ray at the Royal Victoria showed that some more small fragments had been knocked off the olecranon. A bandage was applied in slight flexion, and after a time motion gradually returned. The small fragment from the olecranon could be palpated in the triceps tendon at the back of the joint and caused some pain on extending the elbow. This was removed



through a small incision by Dr. Lauterman in February 1908, relieving the pain and adding somewhat to the motion. The arm to-day shows some thickening of the olecranon, 5-10° limitation of flexion, 15 to 20° limitation of extension, full pronation and supination, but with some roughness. It is still somewhat weaker than normal. The ring of callus at the seat of fracture has disappeared.

The subject of fracture of the head and neck of the radius has of late received considerable attention at the hands of orthopedic surgeons. It seldom occurs. Flörcker, in von Bergmann's *Festschrift* (*Deutsche Zeitschrift für Chirurgie*) claims that there are but 23 undoubted cases in the literature, and of these but 14 were unassociated with fractures of other parts. This association with lesions of the humerus and ulna has long been insisted on (Scudder), but it is thought that the fracture will before long be recognized as not very uncommonly occurring alone, and will be considered in the routine examination of elbow joint injuries.

The fracture is, as a rule, produced by indirect violence, a fall upon the palm of the hand being the commonest single cause, (Erving, in the *American Journal of Orthopedic Surgery* for April, 1908, which see for references to the literature). Hoffa, in his *Lehrbuch der Fracturen und Luxationen*, lays stress on direct violence, especially a fall or blow on the radial side of the forearm.

Symptoms and Diagnosis.—Pain and tenderness over the radial head, crepitus, difficulty with pro- and supination, with retention of flexion and extension, are characteristic. The head of the radius does not usually rotate with the shaft, at least not as it does normally. The X-Ray confirms the diagnosis, and later there appears a ring of callus just below the head.

The incomplete luxation of the radial head seen in children, fracture of the external condyle and sprain of the external lateral ligament are the three lesions with which fracture of the radial head and neck is most often confused. In their differentiation the X-Ray is of decided value, as it is often difficult to palpate the radial head on account of swelling of the soft parts.

Anatomy and Pathology.—The head of the radius is cupped to fit the capitellum of the humerus, against which it is braced by the capsular and external lateral ligaments and on which it pivots. About one-third of its margin is engaged in the lesser sigmoid cavity of the ulna, held tightly there by the orbicular ligament. It is thus seen that the head cannot be much displaced. In fractures of the radial neck the head generally remains fixed while the shaft is more closely approximated to the ulna. The supinator brevis and the biceps alone are related to this part of the bone. The biceps is inserted into the bicipital tuberosity,

while the supinator brevis is inserted into the posterior and external surfaces of the shaft between the oblique line and the head of the bone. It is obvious that when the neck of the radius is fractured we can have little control of the head.

The epiphysis appears at five, according to Gray, and unites at eighteen. Separation at the epiphyseal line appears to be very rare even in children, owing to the protection afforded by the orbicular ligament, which as it were bandages the epiphyseal junction. Backward dislocation of both bones of the forearm, and fractures of the external condyle and of the coronoid process are the commonest among complications. The posterior interosseous nerve, which winds around the radius close to the scene of action, is rarely injured.

Treatment.—Numerous methods have been suggested. In any case we cannot do much to influence the position of the broken-off head, short of an open operation. Fortunately its lack of muscular attachment and the presence of the orbicular ligament render it unlikely to be markedly displaced. In general the treatment advised (Erving) is that of right angled fixation for two weeks in plaster, the forearm midway between pronation and supination. Passive motion should then be begun, and should loss of function ensue from malposition or exuberant callus, the displaced fragment should be removed or the whole head excised. Excision of the head has been followed by excellent results. Without it, cases where considerable displacement exists have an unfavourable prognosis.

My thanks are due to Dr. Lauterman for permission to report the case, and to Mr. McNeill and especially Dr. Girdwood for their excellent radiographs.

THE OPHTHALMO-TUBERCULIN TEST: TWO SEVERE REACTIONS.

BY

HANDFORD MCKEE, M.D., R. P. CAMPBELL, M.D., and P. G. WHITE, M.D.,
Montreal General Hospital.

In reviewing the already extensive literature of the ophthalmotuberculin test, one is struck with the difference of opinion expressed regarding its use and dangers. While a large number of observers have practised it with no serious results, and unconditionally praise it, others, who have seen it followed by severe conjunctival and other ocular symptoms, advise caution in its use. Described first as a test for tuberculosis by instilling a solution of tuberculin in the healthy conjunctival sac, its use has been considerably widened. Especially as a diagnostic

measure in obscure ocular conditions the ophthalmic reaction has been used extensively.

Painblau reported a positive reaction in two cases of tuberculosis of the conjunctiva. Brunetière obtained a positive result in three cases of kerato-iritis, interstitial keratitis and exudative keratitis. Aubaret and Lafon employed it in seventeen eye cases and considered it would be of value in ophthalmology.

At the Ophthalmological Society of Paris, in October last, Kalt reported a case of long standing sclero-iritis where a transitory aggravation of the symptoms followed the test. Later, he reported the evil effects upon another case of sclero-iritis. The reaction was a severe one and the accompanying iritis and corneal opacity lasted one month. Terrien reported having seen a young girl with a marked granular condition of the conjunctiva. Three months previously the ophthalmic reaction had been tried in her eye. In the discussion of these cases Morax said, tuberculin drops could make noticeable a latent tuberculosis of the conjunctiva, but he would not go so far as to see in Terrien's case the ophthalmic test as the cause. In Kalt's first case Morax believed the severe aggravation of the symptoms to be a coincidence. For diagnostic purposes the subcutaneous method seemed to him more suitable, because the general reaction not only shows the presence of tuberculous foci in the organism, but the reaction in the eye shows the localization there.

At a meeting of the Berlin Ophthalmological Society in January of this year, Wolff-Eisner pointed out some contraindications to the ophthalmic test. He believed it was contraindicated in tuberculous eye conditions, as such eyes were highly sensitive. Where tuberculosis of the eye was suspected a solution of 1-100,000 should be used. Contrary to most observers, he did not believe light forms of conjunctivitis a contraindication. Collins expressed surprise that so few cases of injury to the eye, by this test, had been reported, and stated, where a patient had only one eye the test should not be tried. Aufrey applied the test in an eye with tuberculosis of the conjunctiva, but had experienced no severe reaction. Adams believed trachoma a contraindication, while Citron stated the test should not be used in eyes with high myopia, or in the eyes of scrofulous children. He went still further and stated the test had no place in ophthalmology, as it should only be used in sound eyes.

Brons, from Axenfeld's clinic, reported four cases where increase in severity of the symptoms followed the ophthalmic reaction: one was a case of parenchymatous keratitis, two of chronic iridocyclitis, and one

of scleritis. Brons, after some experience with the test, states, he would not, as Kalt and Pes, unconditionally condemn the test, but believes in it we have a very worthy measure of diagnosis, adding the important proviso, if it is used with caution. While he believes the test of value, he prefers the subcutaneous method. Later, Waldstein from Elsching's clinic, reported his observations. His conclusions are that in many cases of eczematous conjunctivitis, follicular disease of the conjunctiva, and chronic catarrh. there is no doubt the ophthalmic reaction runs a much severer course than in the normal eye, and that the reaction differs greatly in differently disposed people. The question of the therapeutic value of instillations of weak solutions of tuberculin he leaves without expressing an opinion.

Stuelp, in the same number of the *Monatsblätter*, reports in detail nine positive ophthalmic cases where the reaction was severe. From his experience he would go farther than most men who condemn it, and issues a warning against its use in ophthalmic cases.

Parker closes his paper with some conclusions which are rather sweeping:

- (1) The Calmette ocular tuberculin test is of as great diagnostic importance as any other single test.
- (2) A positive reaction is indicative of a tuberculous focus somewhere in the body.
- (3) The consensus of opinion seems to be against using the test in an eye not wholly normal.
- (4) The ocular reaction is especially valuable for ascertaining the tuberculous nature of cases of phlyctenular keratitis and conjunctivitis, episcleritis and scleritis, chronic iritis, iridocyclitis, interstitial keratitis and choroiditis.
- (5) The test in the hands of various observers has given such uniformly excellent results that its value is practically assured.

The discussion of this paper took the usual form of for and against the test.

Treacher Collins said he and his colleagues had had a good deal of experience with the Calmette test, and found it not altogether devoid of unpleasant symptoms. He had had one case (a muco-purulent conjunctivitis) in which the reaction lasted quite three weeks, and two of his colleagues had had cases of choroiditis follow such applications.

Whether the ophthalmic-tuberculin test applied even in normal eyes is wholly free from danger is a question. More information is needed.

That there have been serious results following the test cannot be denied, but whether those untoward results were the fault of the test or the way it was carried out remains to be seen. Ample evidence can be produced, both for and against the reaction. We have had an opportunity of following the test here and have found it, on the whole, reliable and free from danger. Our experience has been wholly with cases with normal eyes.

In over two hundred cases we met with only two where severe reactions were seen. One was a case of membranous conjunctivitis, the other a muco-purulent conjunctivitis followed by phlyctenular keratitis.

Case I.—F. O., aged four years, osteomyelitis of the tibia, received a drop of 1 per cent. solution of tuberculin in the right eye on May 19th last. Twenty-four hours later there was marked œdema of the lids, the conjunctival surfaces of which were covered with a membrane, with purulent discharge. Continued bacteriological examination failed to reveal any pathogenic organisms. This fact helped to relieve our anxiety in spite of the severe clinical condition of the eye. The eye remained in this condition for ten days. Upon May 29th cold compresses were applied and the eye began to improve rapidly. Three days later the eye was quite well. The reaction here, as may be judged, was a very severe one and for some days gave us a great deal of anxiety.

Case II.—M. L., aged 16 years, tuberculous hip, received on May 14th last a drop of 1 per cent. tuberculin solution in the right eye. Very slight injection of the palpebral conjunctiva followed. One week later the test was applied to the left eye. The day following there was a well marked reaction, which twenty-four hours later had increased with a muco-purulent discharge.

At the end of one week there was still a profuse muco-purulent discharge which began now to lessen. Three days later there was noticed at the corneo-sclerotic margin a well marked phlyctenule.

Under the ordinary treatment the conjunctivitis cleared up, and the phlyctenule disappeared, so that on June 18th, three weeks after the instillation of the tuberculin, the eye was quite well.

It will be noticed the age of *Case I* was four years. Bing reported the conjunctival reaction sometimes followed by violent inflammation and other unpleasant sequelæ, which have made him cautious in its use and in cases of scrofulous children to forego it absolutely.

The results of the ophthalmo-tuberculin test, on the whole, are as yet contradictory. Nevertheless, in the normal conjunctival sac in adults, uniformly satisfactory results from a diagnostic point of view may be obtained. With caution the severe conjunctival inflammations may be

eliminated, and then the practical value of the test will be assured. On the other hand, Wolff-Eisner's suggestion as to the strength of the solution 1-100,000 to be instilled in an eye where tuberculosis of the eye is suspected needs to be heeded. It seems, too, pretty well established that the test should not be applied in an eye involved in any process of disease, with a $\frac{1}{2}$ or 1 per cent. solution because of the danger of excessive reaction likely to follow.

ACCESSORY EYELID.

BY

GEO. H. MATHEWSON, B.A., M.D.

In October 1904 a young lady 21 years of age, consulted me in regard to a small tumour, which was situated at the inner angle of her left eye, between the margins of the eyelids.

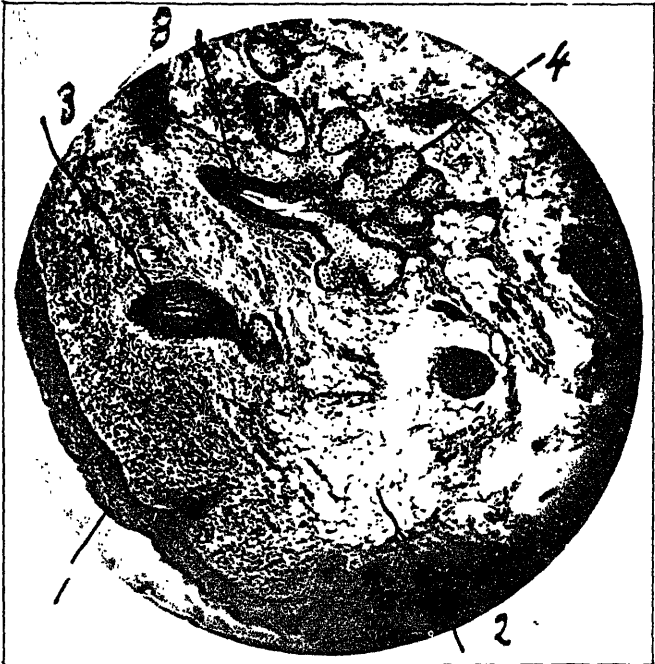
She stated that this tumour had been present from birth, and had grown but little since. It gave rise to no pain or discomfort, and it was simply because it was disfiguring that she had determined to have it removed.

On examination one saw that a small round tumour occupied the inner angle of the conjunctival sac of the left eye, completely hiding the caruncle. It was of the same colour and consistency as the skin. By means of a probe it was found to spring from the upper lid, by a somewhat slender pedicle, at a point just to the nasal side of the lachrymal punctum, so that it was freely movable in all directions. The pedicle was cut through close to the margin of the upper lid by a couple of snips of a fine pair of scissors, and in a few days the cosmetic result was perfect.

The tumour measured $\frac{3}{16}$ of an inch in diameter, and on histological examination proved to be of much the same nature as the eyelid. The epithelium which surrounded it was of the stratified pavement variety like that of the skin. The bulk of the tumour was composed of fibrous tissue and fat, with many large sebaceous glands and hair follicles. In some parts striated as well as non-striated muscle was found.

The accompanying microphotographs made for me by Mr. H. H. Wootton, show (1) the general structure under low power; (2) the striated muscle under high power.

A somewhat similar tumour has been described by J. W. H. Eyre in the *Trans. of the Ophthalmological Society of the United Kingdom*—Vol. XVIII, pp. 186.



1. Epithelium. 2. Fat. 3. Hair follicles. 4. Sebaceous gland.

MEDICINE IN CANADA.

BY

M. CHARLTON.

II.

Dr. Blanchet was one of the first doctors to publish a medical work in Quebec; it was called, "Recherches sur la Médecine ou l'application de la Chémie à la Médecine." This work was published in 1800. Another work "Is Typhoid Fever Contagious" showed great originality. He took much interest in education and was the father of the first law on education; he also published a pamphlet of forty pages, called, "Appel au Parlement Impérial et aux habitants des Colonies anglaises dans l'Amérique du Nord, sur les prétentions exorbitantes du Gouvernement Executif et du Conseil Législatif de la Province du Bas-Canada."

In 1806 Dr. Blanchet with four other French Canadians founded the first French newspaper in Canada, called "Le Canadien." All these men were active and somewhat troublesome members of the House of Assembly. It followed, therefore, that the columns of this newspaper were devoted to the French party and led the House of Assembly. Although the political tone of the paper was temperate and by no means aggressive, it certainly helped to widen the breach between the two races, which, unhappily, at this time was beginning to show itself.

The state of the Government was a particularly stormy one under Sir James Craig, and such complications arose at this time as were afterwards to find vent in the rebellion of 1837. Eight months after the arrival of Sir James Craig, Blanchet and his four friends were dismissed from the militia on the ground of being proprietors of a "seditious and libellous publication."

In 1810 their paper was seized by the Government, and two days later three of the proprietors, namely, Blanchet, Bédard and Taschereau were arrested at Quebec. This proceeding was due to the advisers who surrounded Sir James Craig; for although these men had given a great deal of trouble, they were by no means traitors. We find that in 1812 Dr. Blanchet was acting as Chief Medical Officer of the Province.

In the same year that the journal and the medical lectures were inaugurated, a medical society was formed at Quebec, and in one of the minutes at a meeting of this society, these three events were referred to as "remarkable in the scientific history of Quebec." This society was known under the name of the Quebec Medical Society, and its formation seems to have happily escaped the spirit of division which

so marked that of the Montreal Society, which was formed at a later date. The first president of the society was Dr. Joseph Morrin; Dr. C. N. Perreault was vice-president, and Dr. Xavier was secretary. The laws of the medical society were published in 1830. Dr. Joseph Morrin had taken his degree at the London and Edinburgh universities. He rose to the highest eminence in his profession; was twice elected Mayor of Quebec, and, as we shall see later, took part in establishing the Beauport Lunatic Asylum. Morrin College was founded by him. In 1831 he was elected honorary librarian to the Literary and Historical Society of Quebec, being the second doctor thus elected.

This Literary and Historical Society played an important part in the history of Quebec and was formed two years before the medical society. It was founded by His Excellency, the Earl of Dalhousie in 1824. The society's aim was to encourage literature and science, but in their transactions other curious and interesting matters found their way and, thanks to the "Ordinance" which was passed in 1790 at Quebec, by which all the ancient documents of the French *régime* had been preserved, many of these important documents appeared in the Transactions. From time to time many well known members of the medical profession contributed papers to this society. Dr. Joseph Skey, Inspector of Hospitals, was chairman of the Natural History Section. Dr. William Kelley, surgeon R. N., contributed several interesting and valuable papers. There is one "on the Medical Statistics of Canada." In another paper "On the Climate of Canada," he quotes Humboldt as saying, "Quebec has the winter of St. Petersburg and the summer of Paris." In one of the later numbers of the Transactions there is a paper by Dr. Archibald Hall, on the Georgian Springs. A great deal of attention was given at this time to the different mineral springs throughout Canada, and the analysis of the water was often published in full.

A very full account is also given of the epidemics which appeared between the years 1775 and 1786 at Mal Baie and then rapidly spread to other parts of the province. To a student of Canadian archæology the Transactions are fascinating, and one feels tempted to notice many other interesting details.

This society flourished for many years and then lapsed into obscurity, but was restored to its former place by Dr. Anderson who became its president and contributed many papers on Canadian history. Before coming to Quebec, Dr. Anderson was the Medical Officer of the Port of Pictou, Nova Scotia; during that dreadful summer of 1847, when typhus fever spread throughout Canada to such an alarming extent.

The earliest vaccination in Canada was performed at Quebec in the year 1768, by a Mr. Latham, Surgeon to the King's Regiment of Foot. This was just forty-seven years after the first inoculation took place in London. Twenty-nine years later the practice of inoculating had spread throughout Canada. It was not an unusual thing for several inoculators to travel together throughout certain districts, their arrival being announced by the local papers, and always the announcement was made that the poor would be inoculated free of charge. The inoculation was, as rule, performed during the winter or spring months. Although the introduction of inoculation into Canada was not attended with the antagonism it elsewhere created, yet at times letters appeared complaining of the practice. In 1812, a Mr. Freedling wrote to the *Kingston Gazette* complaining of a doctor who, having no one to practice upon, "induced one of his daughters to be inoculated for small-pox, by which, the disease devastated the neighbourhood." In 1815, A. Macdonald, Secretary of the Institution of Inoculation, published a pamphlet on "Instruction for Vaccine Inoculation." Some years later we find the newly established Maternity Hospital at Montreal, advertising in the local paper that they had fresh vaccine and that country physicians might be supplied with fresh vaccine by addressing a letter to Mrs. Buchanan, matron of the University Lying-in-Hospital, enclosing the sum of five shillings. The proceeds from these sales went to the support of the institution.

In those early days of the nineteenth century we were indebted to Quebec for the development of the sciences, literature, and art; nor must we forget that Quebec had the first hospital in North America, the famous Hotel Dieu, founded in 1639; the second newspaper in Canada which was established in 1764, the *Quebec Gazette*; and the first school in Canada, which was founded in 1632; and this brings us back to the French *régime*. This school was founded by Father Lejeune, and was the beginning of the famous Jesuit College. The first pupils were a negro boy and an Italian boy. The medical profession had established the first medical journal and the first Medical Society in Canada. Besides Dr. F. Blanchet others were bringing out medical works. Dr. Michel Underwood, who was a graduate of the Royal College of Physicians of London, and practised at Quebec, published a work on "*Traité sur les Maladies des Enfants*," in 1803.

In 1826 Dr. E. Pascal Taché published a work on "*Studies in Hygiene and the Development of Physical Strength*." The numerous diseases, or rather plagues, which at this time were sweeping over the country prompted Dr. Taché to bring out this work.

The Board of Immigration authorities published "An Act for the

relief of the indigent sick emigrants" in 1823. Such were some of the first ventures in medical literature in the beginning of the nineteenth century in the old city of Quebec.

In 1827 Dr. Charlton Fisher, who was at this time, editor of the *Quebec Gazette*, obtained the medal, which was offered by the committee of subscribers to the Wolfe and Montcalm monument of Quebec, for the most appropriate inscription, in the fewest words in Latin, French, and English.

The inscription prepared by Dr. Fisher is as follows:—

HUNC LAPIDEM
 Monumenti in Memoriam
 Virorum illustrium
 WOLFE ET MONTCALM
 Fundamentum
 P. C.

Georgius Comes De Dalhousie
 in Septentrionalis Americae partibus
 ad Britannos pertinentibus
 Summam rerum, administrans.
 Opus per multas annos praetermissum,
 Quid duci egregio convenientius
 Auctoritate promovens exemplo stimulans,

Munificentia fovens.

Die Novembris XV.

A.D. MDCCCXXVII.

Georgio IV Britannorum Rege.

John Charlton Fisher, LL.D., had been invited to Quebec by His Excellency Lord Dalhousie, to take charge of "The *Quebec Gazette*." He was secretary and afterwards president of the Literary and Historical Society of Quebec.

THE

Montreal Medical Journal.

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

EDITED BY

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No. 10.

WHAT SHALL BE DONE WITH THE CONSUMPTIVE?

Two months ago we referred in these columns to the necessity that meets us in Canada of caring for the advanced cases of tuberculosis, and we suggested there that a commission should be appointed upon the subject. That the question is a live one may be truly stated: two daily papers in Montreal reprinted the article, and laic comment upon it has reached our ears. We do not mean to assert that our suggestions were the best possible, but we do state with confidence that this is one of the most burning questions before us at the present time—the more burning because its solution is utterly overlooked. Sometimes, there is no place for an advanced consumptive to die, let alone live, unless the jails be accounted suitable. Even if the case be not as bad as this, in nine-tenths of the cases there is no place where he can die without being a menace to his fellows. If to-day the inhabitants of the Tracadie leper colony were scattered over the city of Montreal at random, what a holding-up of hands and what a shrieking there would be from a badly frightened city! Yet to-day there are, we dare to say, fifty people who are suffering from advanced tuberculosis in Montreal, who will, in the next month infect more people, and cause more people to die than would the Tracadie lepers. Each one of these advanced cases is a busy centre of production of tubercle bacilli; according to his social status and according to the care he and his friends exert, he infects none, few or many of the people within his reach. Can we flatter ourselves that more than three or four of the probable fifty are innocuous? The writer knows of one who is living in a house with ten

younger people; that is, ten people are sitting as it were "smoking on the gunpowder-keg," and nobody worries about it; if we kept kegs of gunpowder lying around at random, we would straightway build a powder magazine, and consider that the money so spent was wisely spent, but we have never yet attempted to collect those "kegs of gunpowder" (each one with the lid off), and put them safely out of reach of the children. If Canada wants good citizens, here is a way of buying many who are now growing up within her boundaries, who are fated to die in the next few years, *whose lives can be bought* by segregating the cases that will infect them. Statisticians have a queerly practical way of estimating in dollars the worth of a human being to his country: a man of twenty-one is worth some thousands of dollars to his community; if we must be "business-like," look at it merely from this standpoint, and every young life that is prevented from being lost, pays the interest on a hundred thousand dollars, more or less! It is the proud boast of the British subject that his country will expend the cost of a war upon him alone, if necessary: the outlay here required is less, will buy bigger results, and honour demands equally that it be made.

The idea of a Governmental commission seems to us best to meet the requirements. We are in the midst of commissions upon civil service, upon labour difficulties, upon lighthouse boards, and what not; they appear to the onlooker to be able to extract the information that is wanted, and a commission upon the housing of advanced consumptives could very quickly amass much information upon ways and means. The ideas to be kept before such a commission are: (1) Can the Federal Government justly undertake such a mission? (2) Is there any legal barrier in the way of their assuming such a charge? (3) If so, how can it be removed? (4) What would be the cost? (5) How should such moneys be distributed? (6) The construction of a central bureau to govern all such institutions, and so on. The consideration of these questions does not require medical men; the final technical details do, but until they are reached we would prefer to see two or three live men of affairs set at the task.

We recognize that municipalities and even provinces can undertake partially such a labour; but the municipalities that are willing to do most are generally enlightened enough to need it least; it is sleeping congregations like the city of Montreal that need most to be aroused.

THE EX-DEAN AND GOVERNOR.

On July 11th, at a meeting of the Board of Governors of McGill University, Dr. T.G. Roddick was elected a trustee for the members of the

Royal Institution for the Advancement of Learning and a governor of McGill University. The occasion of this change in Dr. Roddick's status was his retirement from the position of Dean of the Medical Faculty after a service of six years. This elevation to the governing board of the university is the highest distinction to which a graduate may aspire, and it came to Dr. Roddick, easily and naturally by reason of his long service in the cause of sound learning, in the profession of surgery, and a life-time spent in ameliorating the misery of his fellowmen. Nor may we omit to mention his public service as surgeon to our soldiers in the field, and representative for eight years in the Dominion Parliament.

Of equal importance was the management of his conduct in private and professional life, which always made—and still makes—for urbanity, good temper, and reasonableness. We are permitted to make public a copy of a resolution passed by the Faculty of Medicine of McGill University, at an adjourned meeting held June 8th, 1908: "The members of the Faculty of Medicine desire at this meeting to place on record their high appreciation of the services of Dr. Roddick to the Faculty and to the University, during the thirty-six years in which he has been connected with the teaching staff, and especially during the past six years when he has so ably filled the post of Dean. During his tenure of the deanship, among other advances, the Faculty of Bishop's College has been absorbed by this university, the faculty of medicine has assumed a closer relationship with the university at large; the dental department has been instituted, and the medical course has been lengthened from four to five years. In all of these Dr. Roddick has taken a very active part. During the whole period of his connection with the teaching staff the faculty desires at this time to recognise the great earnestness, capacity, and tact, which Dr. Roddick has invariably shown in forwarding the best interests of the faculty and of the university."

Dr. Roddick's long experience which has brought to him wisdom is yet,—and, we trust, for many years will be,—at the disposal of the university. In the more or less private life to which he has chosen to retire, he may look for a continuation of that affectionate regard which he has always received from all graduates and other friends.

INFANT MORTALITY IN MONTREAL.

For the first six months of the present year the death rate among children in Montreal under five years, instead of diminishing, is higher than it was last year. The total deaths of children under the age of five to the end of June last year were 2,021, being 44.96 per cent. of the whole city death rate. This year for the same period the deaths

were 2,358 and the percentage was 48.62 of the whole number of deaths. This gives an increase for the six months of 3.66 per cent.

It was thought that if anything the record this year would show an improvement, but in spite of the care taken to improve the quality of milk supplied, and notwithstanding all the advice given by the Board of Health, the death rate goes on increasing.

When classified into nationalities the deaths give the same results. The number of French-Canadian children under five years who died last year up to the end of June was 1,582, making the percentage 54.86 of their whole death rate. For the six months this year the deaths of French-Canadian children numbered 1,798, and the percentage was 58.49 of the whole.

As regards other Catholics of Montreal last year the deaths of their children numbered 200 for the six months and the percentage of the whole was 35.52. For the six months of this year the deaths were 229 and the death rate 37.05 of the whole.

Last year the report shows the number of children of Protestant parents who died during the six months was 183, and the percentage of their whole death rate was 32.91. This year for the same period the deaths numbered 242, and the percentage was 38.01 of the whole.

The death rate among children of Jewish parents is the highest of any nationality for Montreal. The figures for last year to the end of June show the deaths were 56 and the percentage of the total Jewish mortality reached the high figure of 56.56. The mortality is even higher this year. The number of Jewish children under five who died was 89, and the percentage, as compared with their total death rate, was 60.95.

The preceding information is contained in a return prepared by Dr. Ward, statistician to the Board of Health, and is not especially gratifying. Dr. Ward is of the opinion, however, that this excessive mortality is due in part at least to the illegitimate children who are born in Montreal, amongst whom the rate of mortality is notoriously high. There is nothing in the return to indicate the extent of this illegitimacy or indeed that it is higher than in other cities. The matter is well worthy of investigation.

Dr. T. G. Brodie, has been appointed professor of physiology in the faculty of arts and medicine of the University of Toronto. He will also have charge of the teaching of physiology to the students of the Ontario Veterinary College. Dr. Brodie, was educated at King's College School, London; St. John's Cambridge, and King's College, London, and has held the following appointments in London: Director of the

research laboratories of the Royal College of Physicians and Surgeons, professor superintendent Brown Animal Sanitary Institution, University of London; professor of physiology, Royal Veterinary College; lecturer on physiology London School of Medicine for Women; lecturer in physiology St. Thomas Hospital Medical School. Dr. Brodie has accepted the professorship. His coming to Toronto is a gain to Canadian Medicine.

We cannot but think that the British Columbia Medical Association acted wisely in declining to join in a proposal to form a Western Medical Association. Instead, the association decided to affiliate with the Canadian Medical Association, and a committee was appointed to deal with the details of such arrangements. Upon professional grounds as well as upon the wider ground of political expediency, it is desirable that all should be done which may be done to develop a community of sentiment and interest between the East and West.

Reviews and Notices of Books.

BIER'S HYPEREMIC TREATMENT, by WILLY MYER, M.D., and PROF. DR. VICTOR SCHMIEDEN. Illustrated. Philadelphia and London. W. B. Saunders Company. Price, Cloth \$3.00 net. Canadian Agents, J. A. Carveth and Co., Ltd., Toronto.

This book places Bier's teachings, which are of such far reaching importance, and great practical value, before the English readers in America. It is not a translation of Bier's work, but an independent description of methods and a statement of results obtained by the authors.

The subject is one of more than passing interest, and the present volume, in a thoroughly and practical way, answers those questions which might naturally be asked by the surgeon and the general practitioner.

The three methods of producing hyperemia by obstructing the venous return by cupping glasses and by hot air are fully described, and the directions are given so plainly and the important points are so clearly put that anyone, after carefully reading this book, should be able to carry out the treatment in a correct and satisfactory manner. Every step in the different methods is fully illustrated, and finally, a chapter is added on conclusions and the results obtained are put very clearly be-

fore the reader, giving intelligent idea of the theory, its application and the results to be expected.

The treatment by hyperemia has not yet fully settled down into its proper place, that is to say, its real value is probably not yet fully determined. On the one hand are enthusiasts who see in it an easily applied "cure-all," and on the other hand there are those, who, after a brief trial or on theoretical grounds turn it down as of little value. The method, however, is being very widely tried. It is simple in application, painless and inexpensive, and would seem undoubtedly to be a therapeutic agent of value. It was first used in tuberculosis of joints chiefly. Its use has been extended by Bier and his followers to acute infected conditions, and, in many cases, with beneficial results.

This is hardly the place to enter into a discussion of its *modus operandi*. It might be mentioned, however that there are those who, while admitting its efficiency, question whether the good results are due altogether to simple hyperemia, and suggest that possibly they may be due in part to the development of anti-bodies in the affected area, which are the real cause of the good results obtained.

The authors and publishers have done their work well. We can heartily commend the book to every practising physician and surgeon.

HANDBOOK OF MEDICINE AND THERAPEUTICS, by ALEXANDER WHEELER and WILLIAM R. JACK, M.D. Third Edition. Edinburgh: E. and S. Livingstone, 1908.

This handbook is a favourite in the Glasgow school. In the preface to the first edition it is set forth by Dr. Jack, "that the chief aims which Dr. Wheeler held before himself were to enable the student to digest the main features of the various diseases in the most concise manner, and to enable the busy practitioner to see at a glance the principal points of each disease, which he can elaborate by his experience." This is a laudable intention, but it seems proper to remark that a man cannot have more than one aim at a time, that he cannot hold an aim before him, that features are not usually digested and never in a concise manner, and finally that points cannot be elaborated. Students who are insensible to these vices in writing will find the book a model of arrangement.

ADENOMYOMA OF THE UTERUS, by THOMAS STEPHEN CULLEN, of the Johns Hopkins University and Hospital, Baltimore. Illustrated by Herman Becker and August Horn, Philadelphia and London. W. B. Saunders Company, 1908.

This is the most recent and probably the most complete contribution to the literature of a subject which in recent years has been receiving much attention from gynaecological pathologists. The author is the

same who produced the well-known monumental work on Cancer of the Uterus eight years ago. That work stamped Dr. Cullen as a most patient laborious and conscientious investigator. Adenomyoma as the name implies is a variety of myoma or fibromyoma of the uterus, in which glandular elements are found in the substance of the growth, often quite remote from the surface of the myometrium. Previous to this book of Cullen's the most important work on the subject is von Recklinghausen's published in 1896.

In 1903 Cullen reported 22 cases of adenomyoma. That they are not rare is shewn by the fact that out of a total of 1,283 cases of myoma examined by him in 13 years, 73 or about 5.7 per cent were adenomyomata. That the glandular elements thus found in a proportion of myomata, and that sometimes quite remote from the endometrium, even in a subperitoneal relation, are really extensions, or an outflow from the uterine mucosa, Cullen has conclusively shewn by innumerable serial sections he has made of the tumours he has examined. This is not, however, the opinion of von Recklinghausen and many others who believe that in the vast majority of cases the glandular elements are derivatives of the Wolffian duct. The presence of blood in these gland spaces, sometimes thick, sometimes chocolate-coloured, proves that these displaced glandular elements, sometimes quite remote from their origin, the uterine mucosa, participate in the menstrual process.

The occasional development of adeno-carcinoma from these isolated glandular elements explains the supposed cancerous degeneration of uterine myoma.

In chapter XXIII the author relates and describes a most interesting and instructive case, and concludes his report as follows:—"We have in many instances been able to trace the extension of the gland elements in the adenomyoma from the uterine mucosa. In this case we have an adenomyoma of the uterine horn and the stroma-elements surrounding these glands have taken on a sympathetic decidual development—just exactly as does the uterine mucosa at times when tubal pregnancy exists. This is another point convincing us that even where we are unable to trace the direct continuity between the uterine mucosa and the gland elements in an adenomyoma, they are in all probability derived from the same source, because they react in precisely the same manner as does the normal uterine mucosa; and, furthermore, they pour out their quota of menstrual blood at the period, as is evidenced by the fact that many of the glands are filled and markedly dilated with blood either recent or old." Adenomyoma of the uterus is usually a diffuse thickening of the uterine muscle with glandular elements variously distributed through it. There may however, be at times isolated portions carried either to

the outer or inner surface of the uterus. It is not rarely associated with single or multiple fibromyomata. Clinically the author believes the diagnosis of adenomyoma of the uterus to be relatively easy; but when we learn that the symptoms are hæmorrhage and pain, this does not appear to be very clear. He however, emphasizes the fact that the bleeding is usually confined to the period, which may ultimately be prolonged and become continuous, that there is much pain, referred to the uterus at the period, and that there is usually no intermenstrual discharge of any kind.

The book is exquisitely printed in large clear type and is copiously illustrated with 68 beautiful reproductions of the exquisite drawings of Becker and Horn, the artists employed in the gynæcological department of the Johns Hopkin's Hospital.

W. G.

CLINICAL BACTERIOLOGY AND HÆMATOLOGY FOR PRACTITIONERS: By W. D'ESTE EMERY, M.D., B.Sc., London. Clinical Pathologist to King's College Hospital and Pathologist to the Children's Hospital, Paddington Green: sometime lecturer on Pathology and Bacteriology in the University of Birmingham. Third Edition, pp. XXIV+, 252, Demy 8-Vo. London. H. K. Lewis, 136 Gower Street, W. C., 1908. Price 7s. 6d. net.

The third edition follows on the heels of the second, which was produced but two years ago. The chief additions are in the preparation of bacterial vaccines; there are some slight changes introduced in the matter of blood cultures, with which we fully agree: the method described by the author, we know by personal experience, to be a very simple and very efficient one. Further details on lumbar puncture are added, and some few new illustrations. To those who do not know Dr. Emery's work, it may be said that it is just what it claims to be—a book for practitioners. To the trained laboratory man, there is a fulness of detail that may seem unnecessary; but it is not so, for it is written for men who may require to be told every slightest step in a procedure. Each process is minutely told in one, two, three order, and the point which will appeal most to the average reader is that it is not so much written from the standpoint of the laboratory to the ward, as it is from the outlook of the ward to the laboratory: in other words, the clinical side of the book and the clinical sympathies of the author are emphatic. With regard to the illustrations, the plates of bacteria are all of average, and some are of far more than average excellence—notably perhaps, plates III, IV and VI. It is a pleasure to commend Dr. Emery's book to anyone who has not previously made its acquaintance.

THE PRINCIPLES OF PATHOLOGY, Volume 1., General Pathology, By J. GEORGE ADAMI, M.A., M.D., F.R.S., Professor of Pathology in McGill University, Montreal. Octavo, 948 pages, with 322 engravings and 16 plates. Cloth, \$6.00 net. Lea and Febiger, publishers, Philadelphia and New York, 1908.

For several years this distinguished author has been known to be engaged upon a work on general and special pathology, the advent of which has been awaited with eager anticipation by a large circle of students and scientific workers. Professor Adami is widely known throughout the scientific world as an original thinker and a leader of progressive thought. He has been a prolific and suggestive writer. Among his many contributions to the advance of medical science his brilliant theories upon heredity, which were formulated at length in his article on this subject in Osler's System of Medicine; his constructive work in the confused region of the classification of tumours, and his thoughtful studies upon inflammation rank among the best achievements of the day. He is familiar to the large body of former students of McGill University, whose privilege it has been to sit before him in the lecture room, as a teacher of judgment and wide experience: It is gratifying to find that this volume more than fulfils the expectation of all. The first glance at its contents shows one that it meets a real need of the day. Here, as in no other work of which we know, there is unfolded in the light of modern research and in a simple logical and comprehensive manner, the whole story of those principles which underlie the causation of disease and the actions and reactions of the body in diseased states to which such a wealth of information has been added by the investigations of recent times. The originality of the author's treatment of his subject is equalled only by the scholarly breadth and fairness of the views which he expresses, and the book is written with a freshness of style that at once commands the attention of the reader. One passes from the account of the structure and chemistry of the cell to the romance of inheritance, from the causes of disease to the doctrines of immunity, from the theories of formation, to the enunciation of the laws of retrogression and death, with an absorbing interest, and with that feeling of delight which the mind receives from the focussing of scattered knowledge into orderly concepts. And one takes away from its perusal a general over-sight of the scientific advances of the day, and a suggestion of the avenues still untrodden that forms an inspiration to honest work.

In an admirable preface the key is given to the scope and general purpose of the work and of the many points of difference which distinguish this from books of its class. The author has felt that "what

is needed in a text book of pathology is not the mere record and description of phenomena, but the attempt to analyze those phenomena in an orderly manner." This text book proves to be a training in medical thought. "I knew of no recent attempt in our language," he writes "to place before student or physician in an orderly and reasoned manner, the principles of pathology, the science as distinct from the practice of medicine, the science upon which that practice is, or should be, based." Therefore, throughout the book, principles are first dealt with and under these the necessary details are grouped. Such a logical treatment of the subject brings one back in all cases to the cell and the changes undergone by it as the basis of all pathological study. Therefore an introductory section upon cellular physiology and pathology occupies the opening chapters. The enormous breadth that the subject of general pathology has assumed in recent times is touched upon, and the present hopelessness of any one man's being able adequately to keep abreast of all the sciences ancillary to medicine. The writer has but made the attempt to call attention to the intimate bearing of these kindred sciences upon medicine, and in addition to draw attention to the important work now being accomplished by English speaking writers. This last with the two-fold object of encouraging the student to apply at first hand to those sources of information that are available to all, and to stimulate him to original research by the knowledge that work of a high order is being done by others in the same hospitals and laboratories and with the same opportunities as his own.

The book is divided into three sections. The first is occupied with a prolegomenon, a detailed study of the histology, physiology, and chemistry of the cell and ultimately of the complex structure of the biophore or molecule of living matter with its unsatisfied affinities (diagrammatically expressed by the side-chains of Ehrlich), and ever changing dissociations with old, and combination with new ions, leads up to the explanation of the processes of growth and of reserve force, of cell multiplication and cell and tissue differentiation, of adaption, variation, and individual development, of fertilization, and finally of parental and individual inheritance. It is a fascinating recital, with much that is new in its pages, profusely illustrated with original diagrams, graphically and simply told, and prepares the mind for the difficult problems of the defences of the organism in infection and disease which occupy the later portion of the book.

The second section considers the causes of disease. These may be inherited or acquired. Under the causation of morbid conditions of uterine and parturient acquirement nearly sixty pages are devoted to the elucidation of the subject of monstrosities and abnormalities. A much needed classification is given, the clearest and the most logical in

the literature. Postnatal causes of disease are classified as exogenous and endogenous, the former being external noxæ of non-parasitic or parasitic origin, the latter poisons generated within the body, either through the internal secretions of thyroid, parathyroid, pituitary bodies, adrenals, ovaries and testes, the foetus (acting upon the mammary gland) etc., or through disintegrative intoxications, as in self-digestion, impaired metabolism from whatever cause, or obstructed elimination of the products of metabolism. Bodily states as direct and indirect causes of disease, predisposition and susceptibility, are also considered.

The treatment of the exogenous causes of disease well illustrates the broad lines on which the book is written. Thus chemical poisons are considered, not according to their actions as irritants, corrosives etc., (for this is the function of a textbook of toxicology) but according as they affect the organism into those acting upon the nervous system, those inducing vomiting etc. Again, the bacterian, the protozoan and metazoan parasites are not dealt with in detail (for this one must turn to a bacteriology or parasitology) but are described as a class, the more important varieties being described for illustrative purposes, but not in categorical enumeration.

The third and last section dealing with the morbid and reactive processes, occupies more than one half of the book. It is divided into two parts. The first, the morbid and reactive processes proper, treats of inflammation, the reaction of the system to infection, and the modern views upon immunity. An interesting historical introduction to this subject is followed by a description of the various orders of immunity, of the toxins, antitoxins, phytotoxins, enzyme-action, precipitins, agglutinins, cytolytins, opsonins, aggressins etc. The mechanism of cytolysis and bacteriology are reviewed, and Metchnikoff's views upon phagocytosis, and Ehrlich's side-chain theory of immunity are discussed at length.

The second part of this section is devoted to the subjects of regeneration and tumour formation, and the degenerations and necroses. In a book which is strong at so many points it is difficult, perhaps invidious to single out any one portion for special comment. Yet the chapters on new growths seem to us perhaps the most excellent part of the work. In spite of a new and rather difficult terminology, the classification proposed is simple and meets the confusion existing and the necessities of the case.

The book is well and profusely illustrated. It is completed by a good index.

The future of this work is already assured. The sections on heredity, inflammation, and classification of tumours are but elaborated re-editions of previous publications of this author which have already

made their mark and have stood the test of time. The book as a whole is epoch-making, and the need which it fills assures its immediate success. It should be on the shelves of every general practitioner as well as scientific student, in the collections of nursing institutions, and we may add, should form a part even of the general library; in particular, it will be a joy to every trained pathologist in the world.

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY, by LOUIS BATHE RAWLING, M.B., (Cant.), F.R.C.S. (Eng.), Assistant Surgeon Demonstrator of Practical and Operative Surgery, Late Senior Demonstrator of Anatomy at St. Bartholomew's Hospital: late Assistant Surgeon to the German Hospital, Dalston, etc. With thirty-one illustrations. Third Edition. Demy 8-Vo. pp. VII + 96, price 5s. net. London. H. K. Lewis, 136, Gower-Street, 1908.

The second edition appeared in 1905, so that it is evident that the book is a favorite one. It is always a pleasure to see work turned out by one who knows his craft, and everyone admits that surgical anatomy is one of the strong points of the English schools; thus Mr. Rawling's book bears the mark of a man who is conversant to the last degree with his subject, and the book is concise and definite. The paragraphs are short, and the information required is given as directly as possible. The plates are excellent, the markings are clear and arrest the eye at once, and too much is not crowded into one plate. The appendix contains a useful table of lengths of various passages, and tubes, a table of the weights of organs, both of which we think should be given also in the metric system, and a table of ossification and epiphyses of the limbs. We gladly commend this book.

Medical News.

BRITISH COLUMBIA MEDICAL ASSOCIATION.

The ninth annual meeting of the British Columbia Medical Association was held in Vancouver on August 20th and 21st. The president, Dr. J. M. Pearson of Vancouver, presided.

The meeting was well attended, some seventy-five in all signing the register. A large number of visitors was also present, including Dr. Joseph Price, of Philadelphia, Dr. G. S. Ryerson, of Toronto, Drs. J. B. B. Eagleson, A. E. Burns, Canfield, Peterkin, of Seattle, and Dr. A. H. Coleman, of Tacoma.

A very interesting programme was presented and fully discussed. Dr. Joseph Price read an able paper on the advancements of Abdominal and Pelvic Surgery, which was much appreciated by all present. The special committee appointed at the last meeting to report on school inspection and hygiene, particularly with regard to the manner in which it is taught in our public schools, presented an exhaustive and valuable report. Much credit is due to Dr. W. D. Brydone-Jack and the other members of the committee for their valuable contributions to this subject.

The question of the formation of a Western Canada Medical Association was fully discussed and the following resolution was passed:—Resolved, that in the opinion of this Association it is inadvisable, and the secretary be instructed to notify the promoters of the scheme to this effect; the feeling of the meeting being that the affiliation of this Society with the Canada Medical Association was desirable and that the multiplicity of the inter-provincial societies might interfere with the Dominion Association.

A letter was also read from Dr. Lafferty of the College of Physicians and Surgeons of Alberta. Subject,—the formation of a joint Board of examination for the four western provinces of the Dominion, whereby candidates for license to practice will be able to register in the Provinces of Manitoba, Saskatchewan, Alberta, and British Columbia, on passing the one examination. The following resolution was adopted; resolved—That this Association does not approve of the scheme of reciprocity with regard to registration with the Provinces of Manitoba, Saskatchewan, and Alberta.

The question of affiliation with the Canada Medical Association was also discussed and the idea was endorsed by the association and the executive committee was given power to work out the details and to carry it into effect.

Under the head of school hygiene it was decided to memorialize the Government, and request them to appoint a medical adviser for the education department, so that the question of hygiene and its teaching in our public schools might be carried out under the supervision of a person specially qualified on this subject.

A special committee which was appointed at our last meeting to revise the constitution and by-laws presented their report. The only important change was the making of the membership fees permanent, that is members to continue in good standing must pay their fees annually whether in attendance at the meeting or not.

The following were elected officers of the Association:—President, Dr. C. J. Fagan, Victoria, Vice-President, Dr. Glenn Campbell, Van-

couver, Treasurer re-elected, Dr. J. D. Helmcken, Victoria, Secretary re-elected, Dr. R. E. Walker, New Westminster.

In response to a pressing invitation to hold the next annual meeting in conjunction with the State Associations of Washington, Oregon and Idaho, the next meeting place will be Seattle, where a joint meeting of the above Associations will be held, the exact date to be fixed later, probably some time in August 1909.

MONTREAL GENERAL HOSPITAL.

At the semi-annual meeting of the governors of the Montreal General Hospital, Dr. F. G. Finley, the secretary, read the medical superintendent's report which stated that during the half year ending June 30, 1,572 patients had been admitted to the wards, as compared with 1,677 for the corresponding period of last year, while 1,561 had been treated to a conclusion as compared with 1,704 in 1907, and 153 patients had died, 75 of them within three days of admission as compared with 142 and 66 for corresponding period of last year. The slight decrease in the number of the patients treated was explained by the fact that in the corresponding period of last year the wards were much overcrowded. This year the work had been lighter, as evidenced by the fact that the average number of patients per day was 200.

Work in the out-door department continued to show the same progressive growth evidenced in the last few years; 7,360 new cases for treatment were presented as compared with 7,290 for corresponding period of last year. The total number of consultations had been 25,467, as compared with 25,388 for the same period in 1907.

In the president's report it was stated that the treasurer's report showed a revenue for the six months ending June, 30, 1908, of \$61,523, an increase over the same term of last year of \$328. The ordinary expenditure for the same period amounted to \$64,784, being over \$2,000 in excess of receipts, and an increase of \$862 over last year. Apart from this there was an expenditure of \$16,481 on account of the new power house and laundry.

The treasurer had also received in unrestricted legacies the following: From the estate of late Mrs. Grace Redpath, \$4,000; from late Mr. G. B. Carter, K.C., \$2,500; from late Hiram Rutenberg, \$100. He had also received \$2,000 in memory of late H. W. Thornton, for pathological research.

The endowment fund had also been increased by a donation of \$1,000

from Mrs. P. Caverhill, and by \$22,182 from estate late Miss Orkney, making the endowment fund at present \$160,365.

DENTAL ASSOCIATION.

At the annual meeting of the Dental Association of the Province of Quebec, it was resolved to ask the Legislature to permit members to vote by mail, and also to ask for an amendment of the charter by which dental students who follow their course at the dental school may or may not register with a dentist. Other proposed amendments were agreed to: One to have the dental examination in September, instead of October, and the other to ask for authority to have the annual meeting changed from September to October.

The election of officers resulted as follows: Dr. P. J. Berwick, Montreal, president; Dr. A. Landricr, Quebec, vice-president; Dr. Dubeau, Montreal, secretary; Dr. C. F. Morrison, Montreal, treasurer; Dr. G. W. Oliver, Montreal, registrar.

Members of the council: Dr. J. H. Bourdon, Montreal; Dr. J. W. Fournier, St. Hyacinthe; Dr. F. J. Broomfield, Sherbrooke; Dr. J. H. Springle, Montreal; Dr. F. H. Stevenson, Montreal; Dr. Scott-Ives, Montreal.

ROYAL VICTORIA HOSPITAL.

Monthly report for August, 1908:—Patients admitted, 328; patients discharged, 294; patients died, 15. Number of ambulance calls, 95. Medical, 96; surgical, 141; ophthalmological, 27; gynæcological, 45; laryngological, 19. Out-door department—Medical, 1,207; surgical, 688; ophthalmological, 294; gynæcological, 174; laryngological, 498; total, 2,861.

The annual meeting of the District of St. Francis Medical Association was held in Sherbrooke on Wednesday, September 9th. The officers for the ensuing year are:—President, Dr. E. J. Williams, Sherbrooke; 1st Vice-president, Dr. F. A. Gadbois, Sherbrooke; 2nd Vice-president, Dr. M. MacKay, Windsor Mills; Secretary-treasurer, Dr. W. W. Lynch, Sherbrooke; Council—Drs. Austin, Pelletier, M.L.A., Bonfill and Rioux.

Dr. J. F. Rioux presented a paper on "Medical Ethics," dealing with subject in a general way and bringing to the minds of the members present many important points which were too often ignored by many practitioners. A committee was appointed to draw up a programme for the year.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF DRs. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

WILLIAM J. MAYO. "Ulcer of the Duodenum." *Jour. A. M. A.*,
August 15th, 1908.

Mayo states that the surgical invasion of the upper abdominal region has gradually enabled us to replace theory with facts, and fallacious clinical observations have given way before actual demonstration of diseased conditions. One of the most striking illustrations of this newer knowledge is the discovery that three-fifths of all gastric and duodenal ulcers are situated in the duodenum. Until within recent years gastric ulcer has been considered the chief lesion, while reference to a duodenal location has been infrequent. He considers the differential diagnosis between duodenal and gastric ulcer and states that in duodenal ulcer the pain and tenderness, as a rule, extends from the mid-line to the right; aggravation induced by food comes on several hours after a meal, and the patients suffer from a peculiar "hunger pain" when fasting. Unlike gastric ulcers, duodenal ulcer rarely undergoes carcinomatous degeneration. Mayo has seen but four apparently primary carcinomas of the duodenum. In two of these the origin was uncertain, and in but one did it seem probable that the cancer had developed from an ulcer. In five cases, however, he has known gastric cancer to develop on the edge of a duodenal ulcer which involved the stomach at the pyloric ring. The surgical treatment of chronic duodenal ulcer will usually consist of gastrojejunostomy, preferably by the "no loop" method.

In regard to the curative value of operation for ulcer, he states that in his experience the surgical treatment has been most satisfactory. So far as possible, he has traced patients with duodenal ulcers operated on in 1906-7. These two years were chosen because this choice eliminated some of the early operations in which the diagnosis was doubtful and the technic imperfect, and it prevented the inclusion of the recent cases that the shortness of time since operation would render valueless to statistics from the standpoint of cure. One hundred and nineteen patients were operated on in 1906-7, and 106 were traced. Of these 87, or 82 per cent., were cured; 10, or 9.5 per cent., improved; and 6, or 5.7 per cent., unimproved, making cured and improved 91.5 per cent. The operative mortality in the whole number of cases was 2.8 per cent.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD

ANDREW MACPHAIL, M.D. "Health Resorts in Canada." London
Practitioner, July, 1908.

There are no "health resorts" in Canada which may be well compared with those in older communities. Life is not sufficiently organized, and Canadians do not fully appreciate the luxury of a leisurely convalescence. There is not yet a class of idle rich who require to divert themselves from their amusements by a period of illness. Occasional patients of this kind, who are attracted by the allurements of a health resort, prefer to obtain a change of scene and of climate at the same time. Accordingly they join the stream of travel to the United States and to European countries.

This is not to say that Canada is devoid of certain initial advantages, such as a dry, cold climate in winter, a dry, warm climate in summer, upland forests of pine, and foul-smelling springs of water. Whilst these resources might well be considered in any discussion of climatology, they are not in themselves, unless made available by art, sufficient to constitute a resort where health may be regained.

And yet there is much to attract and interest a visitor from England, who is not too ill to be benefited by a journey over seas. The voyage across the Atlantic is in itself a remedial measure. The best ships of the great transatlantic Canadian Steamship Companies are entirely satisfactory. There is a certain intimacy of life amongst the passengers, and the saloons are free from the turmoil which one finds in travelling to United States ports. There is also a trace of the old-fashioned kindness which used to be a feature of life on ship-board, when voyages were longer than they are in these days. Besides, the ocean passage occupies only four days, and after that there are a thousand miles of sailing up the still waters of the St. Lawrence before Montreal is reached.

Certain of the hotels in Canada have much to recommend them to persons who are more or less invalid; and it is common enough for Canadians to spend a week or two in them for purposes of recuperation. The reason is that these hotels are designed primarily for the comfort of travellers making long journeys, and are in reality part of the railway equipment. There is thus a continuity of management and a sense of familiarity with all the hotels belonging to the same system. For example, one of the Railway Companies owns hotels in Quebec, Montreal, Winnipeg, Banff, Vancouver, and Victoria, which are especially

reserved for the comfort of travellers and not for their exploitation. An infirm person is passed on from one to the other with a kindly introduction and mention of his peculiar needs.

The Château Frontenac, in Quebec; the Place Viger, in Montreal; the Royal Alexandra, in Winnipeg; the Hotel Vancouver, in Vancouver; the Empress Hotel, in Victoria, belong to the same system, which owns, in addition, many smaller places, chiefly in the mountains. These are mainly used as health resorts, and two of them entirely so, namely, Banff and Caledonia Springs.

Banff well deserves a place amongst the health resorts of the world. It is easily accessible by a main line of railway. The hotel accommodation is excellent. There are good sanatoria for the invalid. The elevation is 4,521 feet. There are few spots in the world with a more complete aggregation of scenic features, within so small a compass—snow-covered mountains, warm valleys, a river with falls and still pools, sweet springs, ice-cold, and mineral springs with a temperature of 123. Of the Banff Hot Springs, the official analyst supplies the following report:—

Fixed solids in grains, per gallon:—

Chlorine (in chlorides)	0.42 grains
Sulphuric Acid (SO ₃)	38.50 “
Silica (SiO ₂)	2.31. “
Lime (CaO)	24.85 “
Magnesia (MgO)	4.87 “
Alkalies (as Soda, Na ₂ O)	0.62 “
Lithium	A decided trace.

Each gallon contains dissolved sulphuretted hydrogen to the amount of 0.3 grains (equivalent to 0.8 cubic inch).

In the vicinity of Banff mountain-climbing is well organized. Swiss guides and sheltering chalets are provided, and a summer may well be spent amongst the various hotels. Throughout the Rocky Mountains and the Selkirks, at intervals of about 50 miles, the Canadian Pacific Railway Company has provided small but excellent resorts. Some of these are the Mount Stephen House, Glacier House, and Sicamous Hotel, at the entrance to the Okanagan Valley, which enjoys a climate much like the south of England. From all these points trails lead up the valleys, and living is made most agreeable for those who require to gain strength and health.

Caledonia Springs, situated near to Montreal, have been of good repute for more than a century in the treatment of rheumatism and its allied manifestations. A competent physician is in residence, and

every convenience is provided for invalids, including baths of all kinds. Analysis of three of the springs yields the following results:—

	Caledonia Springs, Ontario, Canada.		
	Duncan.	Saline.	White Sulphur.
Chloride of sodium	122.50	64.41	38.43
“ potassium	.31	.30	.23
“ calcium	2.87	—	—
“ magnesium	10.34	—	—
Bromide of sodium	—	.17	.10
“ magnesium	.24	—	—
Nitrate of sodium	—	—	—
Iodide of sodium	—	.01	Trace
“ magnesium	.02	—	—
Sulphate of sodium	—	.05	—
“ potassium	—	—	.18
“ magnesium	—	—	—
“ lime	—	—	—
Carbonate of magnesium	8.63	5.17	2.94
“ lime	1.26	1.17	2.10
“ soda	—	1.76	4.56
“ lithia	—	—	—
“ baryta	—	—	—
Phosphate of lime	—	—	—
Iron	Trace	Trace	Trace
Silica	.22	.41	.34
Alumina	Trace	Trace	.03
Carbonic acid	5.01	—	—
In 10,000 parts of water, grs.	151.40	73.45	49.41

In the same class as Caledonia Springs should be mentioned Ste. Catharine, near Niagara Falls. Of a less pretentious nature are St. Leon and Abenakis in Quebec.

Powerful forces are in operation to create a system of sanatoria in every Province for the care and treatment of patients suffering from tuberculosis. But these are more or less charitable in their intent; and they are not much frequented by the well-to-do. The Sanatorium of Gravenhurst in Ontario is the best known of these. For many years an attempt was made to establish in Ste. Agathe a resort for persons suffering from tuberculosis. This pretty village in the Laurentian Mountains is 60 miles north of Montreal; and at the same distance to the south is Saranac Lake, where Dr. Trudeau has his well-known sanatorium. The fame of Saranac Lake was rather too much for the Canadian village, and patients with tuberculosis are no longer provided for at Ste. Agathe. Dr. Kemp's sanatorium at Ste. Agathe has been converted into an inn, which is an admirable resort in autumn and winter.

St. Andrews in New Brunswick, on the Atlantic Coast, the Thousand Islands in the St. Lawrence above Montreal, and the Muskoka region in Northern Ontario are great pleasure grounds and favourite resorts

for the enfeebled. They are all easily accessible, and in the early autumn are at their best. The convenience of invalids has been fully considered in the travelling and hotel arrangements. Another place of note is Murray Bay, below Quebec, where is the excellent Manoir Richelieu. There one may have the advantage of sea air and mountain air combined in a place of much natural beauty.

For those who are unable to endure a long ocean voyage, there are the vast inland lakes of Canada, which are navigated by steamers as perfectly appointed as those which cross the Atlantic. These lakes are in reality inland seas of pure, cold water at an elevation of 600 feet. The effect upon the invalid is at once stimulating and sedative, and, as a result, rest, appetite, and sleep are promoted.

There are also peculiar conditions in the prairie country beyond the lakes, which make for recovery. From May to October the intensity of the sunshine, the long daylight, the rapidity with which the ground dries after rain, the cool and bracing afternoon wind are all of value in stimulating metabolism and eliminating waste products. The prairies run quite to the foot of the mountains, where the patient may obtain in a few hours the benefits of intense insolation at mid-day, a low relative humidity of the atmosphere, very rapid and great changes of temperature at nightfall, all due to the small rainfall and the elevation above sea-level.

Up to this point I have been speaking only of those places, which have acquired merit in virtue of their natural advantages, and the adaptation of them to purposes of health by natural means. It yet remains to make mention of one place, at least, where health is restored by means of miracles. The best known of these temples of healing is the shrine of Ste. Anne de Beaupré, or *La Bonne Ste. Anne*.

It is situated 20 miles below Quebec, and may be reached by a railway which was constructed especially for the accommodation of pilgrims and pilgrimages, and appropriately blessed by Cardinal Taschereau, upon the occasion of its opening in 1889. For 20 years the shrine has been visited by seekers after health, the average yearly attendance being 150,000 persons. There is no place in the United States where miraculous cures are performed on any considerable scale, and citizens of that country, who expect benefit from that method of treatment are obliged to come to Quebec, or go to Mexico. Many marvellous cures are reported as a result of a visit to the shrine, which are attested to by a monument of crutches and *ex voto* offerings. The most hopeful moment for a visit is on Ste. Anne's day, July 26th, which fortunately falls at a time of year when large pilgrimages are easily handled by the railway companies.

But much more important to the seeker after health than formal resorts are the devices which Canadians themselves employ. In the vicinity of Montreal are numberless small camps, owned by groups of men, where they are in the habit of going to recuperate. Life in the woods is extremely simple, and it is a sovereign remedy for disturbances of the digestive and nervous systems. Canadians are a kindly people, and any visitor with some slight introduction can easily gain admission to these silent places.

LABB AND SALOMON.. "Les Anémies Pernicieuses." *Revue de Médecine*, April and May, '08.

This paper, of sixty-four pages, which has recently appeared in the *Revue de Médecine*, is an exhaustive study on Pernicious Anæmia, and one worthy of careful perusal by all interested in clinical medicine. After a short historical sketch from Biermer's first description (1868) to the recent publications of Hayden and others of the French school, the authors conclude that pernicious anæmia is not a specific entity but a clinical syndrome of varying etiology.

Etiologically, the disease can be considered as "Phenerogenetic," or of evident origin and cryptogenetic or of concealed origin. Under the former he groups, (1) repeated hæmorrhage (gastric, uterine, nasal and vesical), (2) intestinal parasitism (*Bothriocephalus* and *anchylostoma*), (3) malaria, (4) bacterial infections, (5) tuberculosis, (6) syphilis, (7) cancer, especially gastric, (8) gastro-intestinal disorders and auto-intoxications, which are said to be the cause of the so-called idiopathic cases, (9) nephritis, (10) pregnancy, (11) lead, (12) carbon monoxide, arsenic and opium. The factors necessary for any of the above conditions to result in this syndrome are, (i) an excessive intensity of the morbid cause, (ii) the localization of the infection, (iii) the duration or repetition of the cause, (iv) an accumulation of the morbid condition, (v) predisposition.

To sum up, they conclude that "Progressive Pernicious Anæmia can be the final stage of secondary anæmias. . . . if there be an insufficiency of blood repair."

The anæmic symptoms—pallor, dyspnoea, œdema, etc., predominate. As pointed out by Kraus, the cardiac area may be increased on percussion and in the radiograph, due to a dilatation of one or both ventricles, or to a relative mitral or tricuspoid insufficiency. Attention is called to the "Pseudo-tabetic type," described by Lichtheim, Déjerine and others, in which there are paresthesias, less commonly hypo- or hyperæsthesias, paralysis or ataxia, a gait resembling that of a convalescent from a severe illness, diminished or absent tendon reflexes and retinal hæmorrhages; post-mortem one finds capillary hæmorrhages or sclerosis

in the posterior and lateral columns of the spinal cord. Other clinical types are, (1) Pseudo-cancerous with gastric symptoms, (2) icteric with symptoms of an angiocholitis, (3) hæmorrhagic; occurring in young adults with epistaxis and rheumatoid or scorbutic symptoms, (4) leukemic in which the blood picture is one of pernicious anæmia plus the leukemic formula.

After discussing Engel's and Vaquez' and Aubertius' classifications, they suggest the following one, based upon the blood picture and the findings in the hæmatopoietic system. I. Plastic Anæmia—the commonest variety in which there is a reaction both in the bone-marrow and blood. II. Aplastic anæmia—a rare form, with inertia of the blood and marrow. III. Hypoplastic anæmia—a transition type between the above, due to an insufficient reaction of the marrow.

In the plastic anæmias the blood as a whole is pale, and has a low density, small residue and diminished albumen content. The red cells often reach below one million. The hæmoglobin may fall to 10 per cent., but the colour index is above normal. There are also poikilocytosis, an increase in the average diameter of the red cell, polychromatophilic and basophilic granulations of the red cells. Further, the various forms of nucleated red cells are found; viz., normaloblasts, megaloblasts, microblasts and occasionally "metocytes," or cells with abundant protoplasm, sometimes taking the function stain, and a small eccentric nucleus. The nucleated red cells usually appear when the count is in the neighbourhood of 1,500,000, and may vary in number from 50 to 200 per c. mm. They are diminished in the terminal stages and their increase denotes an attempt at repair and precedes an augmentation in the red cell count and a remission of the anæmia. The white cells are diminished, especially in the severe forms, but there is a relative increase in the mononuclear leucocytes, while in all cases myelocytes are found. Blood platelets are normal or slightly increased.

The bone marrow of the long bones is red, and there is an absence of fat or sclerosis, while the cellular elements are grouped around the veins; the hæmoglobiniferous elements predominate in the form of normo- and megaloblasts; there is a greater proportion of polychromatophilic cells, karyopinitic figures, giantoblasts, neutrophilic and eosinophilic myelocytes, "mastzells," and numerous "transitions forms." The spleen, which is sometimes enlarged and sometimes diminished in size is firm, sclerotic, and brownish red. It shows a slight myeloid reaction in the form of a few myelocytes and normaloblasts in the pulp or in the periphery of the malpighian corpuscles. Further, there are hæmolytic lesions characterized by iron pigment in varying amount, contained within the macrophages of the pulp. Lastly, there is a more or less

advanced sclerosis. The liver shows all varieties of degeneration, including hæmolytic areas, as shown by the pigment in the macrophages of the hepatic cells.

Aplastic anæmia is very rare and has chiefly negative characteristics. The poikilocytosis, polychromatophilic, nucleated red cells and myelocytes are entirely wanting. The blood platelets are much diminished. The bone marrow of the long bones is yellow and pale and is entirely fatty, with few lymphocytes and red cells and an occasional mast cell, but no myelocytes, nucleated red cells or polynuclear neutrophils. The spleen and liver show no myeloid change, but are sclerotic and contain ochre pigment. The hypoplastic anæmias are forms intermediate between the plastic and aplastic types. Thus, the anæmia may be plastic at the onset and aplastic in its final stage, or there may be a discordance between the blood findings and the visceral. One cannot conclude from the blood as to the activity or inertia of the bone-marrow.

As to pathogenesis the chief theories are, (1) Grawitz's Theory of Hæmolysis or an exaggerated blood destruction, and (2) Hayem's Theory of Anhemato poiesis, or an insufficient production. Though the former seems the more plausible, the serum of pernicious anæmia has never been shown to be hæmolytic. Again, while the latter would account for the aplastic type, nevertheless, here, too, increased destruction is the chief factor, for it must be borne in mind that in the normal marrow the renovation of blood exacts very little work on the part of the hæmatopoietic organs, and, further, in this type the liver and spleen show signs of a severe cellular destruction. Hence, "pernicious anæmia is in the majority of cases, if not always, an anæmia by blood destruction."

The diagnosis is easy in most cases, the difficulty is to fix the point at which the "pernicious" character commences. Erlich says an anæmia of 2,000,000, or less, is pernicious. Labbé and Salomon have broader conceptions and include all anæmias with progressive loss of red cells, whether terminating fatally or otherwise, as of the pernicious type.

The prognosis is nearly always grave, nevertheless, there are a few undoubted recoveries reported. The gravity depends upon the cause; thus, pernicious anæmia from cancer is always fatal, while that from *Bothriocephalus* is curable. The immediate prognosis depends upon upon the degree of anæmia, though Quincke's case with only 143,000 red cells recovered! Vaquez and Aubertin believe that the aplastic type is always quickly fatal, while the plastic type with indications of a myeloid reaction can be cured by appropriate treatment. Contrary to Grawitz, Labbé and Salomon do not consider the presence of megaloblasts of necessarily grave significance.

The chief indications in the treatment are to remove the cause where possible and in any case to preserve the red cells and to aid the organism in the formation of new cells. The latter indication is best met by an alimentary régime. This includes the use of starchy and fatty foods, which cause less destruction than the proteid forms. Grawitz gives a vegetable diet with condiments and fruits. Eggs and albuminous foods are allowed with daily lavage of the rectum and stomach. Further, absolute rest is demanded and oxygen inhalations may be tried. Arsenic in its various forms is the only drug that is of benefit. Some authors recommend a combination of sweating, bleeding and diuresis. Metchnikoff advises very small doses of hæmolytic sera, but his results are questionable. Carnot and Delfandre have isolated from the serum of animals which have been bled, a substance which they call "Hæmatopietine," which appears to provoke and control blood renovation; it is more abundant in the bone-marrow, where it apparently originates. They administer the serum subcutaneously and the marrow per rectum. Others have reported benefit from specific sera, as the diphtheritic serum. Some have published cures from the use of bone-marrow of healthy animals. The Roentgen Rays are said to be beneficial and are considered worthy of trial by Labbé and Salomon.

Conclusions—(1) Progressive pernicious anæmia is not a morbid entity, but a clinical syndrome due to an excessive destruction and an insufficient repair of blood, (2) the syndrome has no precise limits; there are insensible transitions between mild, severe and pernicious types, and even in the evolution of a particular case, (3) according to its etiological and clinical evolution, pernicious anæmia appears to be the final stage of symptomatic anæmias and is an expression of the generally irreparable failure of the hæmatopoietic organs which cannot compensate for the loss due to deglobulisation." C. P. H.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The thirteenth regular meeting of the Society was held Friday evening, April the 3rd, Dr. Wesley Mills, President, in the chair.

PATHOLOGICAL SPECIMENS.

RUPTURED AORTIC ANEURYSM.

W. S. LYMAN, M.D.—

F. R. ENGLAND, M.D.—I would like to ask how Dr. Lyman explains the etiology of the aneurysm.

There is no history of syphilis but arteriosclerosis is present.

W. S. LYMAN, M.D.—In the presence of a general arteriosclerosis we regard the aneurysm as a part of this general change; hypertrophy first of the intima, then degenerative changes in the media, with weakening of the walls and gradual dilatation until the aneurysm was completely formed, then rupture.

VESICULAR MOLE.

W. GARDNER AND H. C. BURGESS.—These cases are really very rare, one writer estimating the frequency at about one in 2,000 pregnancies. The points in the diagnosis are of great interest. I was in some doubt as to the nature of this case until one day we were able to detect rhythmical contractions of the tumour. There was this, however, about the case, which is always suggestive of vesicular mole if one can be sure that the abdominal tumour is uterine; namely, that the rate of growth of the enlargement was out of all proportion rapid when compared with that of normal pregnancy.

The subsequent course of these cases is of great interest in view of the frequency with which they are followed by the development of chorion epithelioma.

DR. LAPHORN SMITH, M.D.—I would like to ask if this is not the second case which Dr. Gardner has had.

DR. WM. GARDNER, M.D.—This is only the third case which I have seen.

OSTEOMYELITIS OF THE TIBIA WITH DEATH OF THE WHOLE DIAPHYSIS.

J. ALEX. HUTCHISON, M.D.—

Dr. J. ALEX. HUTCHISON, M.D.—The history of the case is as follows:—H. L. aged 12 years, was admitted to the Montreal General Hospital about one month previous, suffering from a large fluctuating swelling in the front of the right leg, with swelling in the right wrist and forearm. He is a child of a delicate father who is thought to be tuberculous; the mother is dead, cause unknown. The child was always delicate but there is no history of rheumatism or of any of the diseases of childhood.

The onset of the present attack occurred about four weeks before admission to the hospital, in the form of pain and swelling of the right leg and wrist. This continued and grew progressively worse. On admission the child showed marked evidence of serious illness; was pale, temperature 103°, rapid, weak pulse, over 130, had a frightened anxious look, and was badly nourished. Examination of the wrist showed a large semi-fluctuating mass involving the lower part of the forearm and the back part of the wrist. The right leg was a mass of fluctuating swelling from the knee to, and apparently involving the ankle joint. Under general anæsthesia a linear incision was made from the tuberosity of

the tibia down to the ankle joint. The tissue was exceedingly thin, a little more than parchment-like in thickness. This was followed by a gush of thick, yellow, creamy-looking pus with some small blood clots.

When this was mopped out it was seen that the whole diaphysis of the tibia was free from periosteum in its entire length and circumference. It could be seen on examining the edges that the periosteum had retracted. The bone was completely bared. At the upper and lower portions near the upper and lower epiphyses there were evidences of regeneration of bone in a number of isolated patches. The bone was quite loose below but fairly firmly attached above. On closer inspection of the upper epiphysis it was seen that the whole of the front and sides and part of the posterior wall of the tibia were separated from the upper portion. With my fingers I simply lifted away the diaphysis from the lower epiphysis. The epiphyseal margins were covered with necrotic tissue and exudation. The periosteum was bright red and there were already evidences of granulation tissue over its entire surface. The part was cleansed out with a disinfecting solution and then packed with iodoform gauze. The ankle joint was not involved. The wrist was opened and the bones were found to be quite loose, in fact, the small bones slipped out when the examining finger was inserted in the incision. The second metacarpal was broken in its centre and practically disorganized so that it had to be removed largely with the curette.

A culture taken from the wound showed the staphylococcus aureus. This is the common infective medium in such cases. The removed bone was perfectly dry, showing a polished surface. The child was very ill for a few days but eventually improved, and about a week or ten days ago I made the attempt to close in the periosteum on the front of the wound, hoping that by so doing we might get new bone formation. To do this I used the method of Moorhoff. Unfortunately we have not in Montreal Moorhoff's complete apparatus for cleansing out such cavities. However, we attempted to thoroughly disinfect and dry out the membrane, and by bringing the parts together with a few interrupted sutures we made a channel or canal, and into this was poured the Moorhoff plombage, which consists largely of iodoform and paraffin, sterilized previous to being used and poured in in a heated condition, where it quickly solidifies. The success in its use depends entirely on the degree of disinfection of the space before its use; if this is successful the paraffin remains as a solid medium in which the periosteum will lie and is gradually disposed of during the next few weeks. Moorhoff's article refers to radiographs taken at intervals during convalescence, showing at first the cloudy area of the preparation, later its narrowing shadow, until it is practically disposed of. I have used it also in other cases of

myelitis and it has seemed to be of much service. I have never had a complete disposition of the paraffin such as Moorhoff himself has recorded so many cases of. Since this last operation the child has not shown any evidence of infection of the paraffin in as much as the wound looks fairly clean though there is a little suppuration from the ends. I have had no personal knowledge of recovery from so extensive a disease as the whole of the diaphysis of the tibia, and the progress of this case will be watched with interest. Dr. Elder has one case of old standing osteomyelitis of the fibula where the sequestrum has been taken away and the new bone formed, forming the typical hard eburnated tissue which usually follows this disease. I am indebted to Dr. F. Gurd, for the drawing shown.

DR. A. LAPTIIORN SMITH, M.D.—I would like to know what would become of this paraffin and iodoform where the periosteum will reproduce the bone; as the bone grows will the wax be squeezed out or will it be absorbed in any way?

DR. F. R. ENGLAND, M.D.—I would like to refer to a case presented to this Society by Dr. F. J. Hackett, where he had removed the entire clavicle for osteomyelitis. The periosteum was preserved, the part cleansed, and the wound allowed to heal by granulation. No wax was used. When the patient was brought before the Society it was evident that an excellent result had been obtained and a very serviceable clavicle had been developed.

DR. J. ALEX HUTCHISON, M.D.—In answer to Dr. Smith's question I would say that if the cavity is not thoroughly disinfected the plomage separates into small particles and is gradually washed out by the subsequent suppuration.

Where the cavity is thoroughly aseptic the plomage is gradually dissolved and gradually disappears, as Moorhoff has so well shown in his radiographs, the gradual narrowing of the shadow and its becoming smaller at different periods after the paraffin was introduced.

The fourteenth regular meeting of the Society was held Friday evening, April 24th, 1908, Dr. Wesley Mills, President, in the Chair.

FORCIBLE CORRECTION OF LATERAL CURVATURE.

J. APPLETON NUTTER, M.D.—Cases of lateral curvature suitable for forcible correction are not very common, hence I thought this of sufficient practical interest to bring before the Society. Lateral curvature may (Lovett) be divided into two large groups (1) postural, or functional, due to faulty attitude and without actual bony changes, and (2) structural, or organic, where an X-Ray would show definite changes in the spine. Postural scoliosis shows in 90 per cent of cases a curve to

the left, and the rule is for the prominence of chest or loin to be on the side of the concavity of the curve. Organic scoliosis, on the other hand, shows characteristically the prominence on the side of the convexity, as is well seen in the case before you.

In the greater number of cases of scoliosis the etiology is rather obscure, and we speak of it as the result of faulty habitual posture. In other and severer cases we can be more definite as to the causation. Among the more prominent factors may be mentioned torticollis, ankylosis of hip in adduction, inequality in length of legs, infantile paralysis, empyema and rickets.

As to treatment, that of the postural variety is to correct the faulty attitude, restore flexibility to the column, and then give a regular setting up drill. The prognosis is good for complete recovery. In the structural or organic variety we loosen up the spine and make an improved position possible by gymnastics, passive stretching of the spine, and forcible correction by plaster jackets. These are applied in succession, at intervals of a few weeks, until as much correction is got as seems possible, then a permanent leather jacket or other retentive apparatus is worn, removed only for exercise. In these cases the prognosis depends on the muscles being developed which maintain the corrected attitude.

The boy before you suffered an attack of infantile paralysis when one year old, leaving him with a greatly weakened right arm, and probably weakened trunk muscles. One year later it was noted that the spine was becoming crooked. He is now seven years old and presented, when first referred to me by the kindness of Dr. A. D. Aubry, a most marked right dorsal scoliosis with prominence of the thorax posteriorly on the same side. The right shoulder and left hip were both very prominent, and the boy looked dwarfed. He belonged evidently to the second class, organic or structural scoliosis. Following the usual treatment he was forcibly corrected by plaster jackets, which gave the most gratifying results. These were applied with the patient face downward in a hammock slung on a large gas-pipe frame. Three bands were applied to straighten the spine, two bracing it at the extremities of the curve (one in the left axilla and one over the left iliac crest) and one over the summit of the curve, pulling in the opposite direction. By their use the spine was very appreciably straightened and a jacket was easily applied which caused practically no discomfort. Padding was liberal over pressure joints. The boy himself was greatly pleased at the effect the jacket had in his carriage. Before, his right shoulder was much higher than his left; after the first jacket they were nearly level. He has now had three jackets at intervals of about a month. After two or three more he will be given a permanent leather jacket or other

apparatus to hold him straight, which will be removed to exercise the trunk muscles. If, as is likely, it is found that the deformity tends to reproduce itself with the jacket off, owing to paralysis of the trunk muscles, the leather jacket will have to be worn permanently. This, however, will be infinitely preferable to going through life with a grossly deformed spine and a consequently crooked body.

D. A. SHIRRES, M.D.—I would like to ask what the outcome here is likely to be. Is there likely to be any atrophic disturbance in the bone as well as in the muscles?

J. APPLETON NUTTER, M.D.—The spine can be very largely straightened and the outcome, as to the possibility of getting along later without any mechanical support, depends upon the development of the trunk muscles which maintain the corrected attitude. When he has received all the correction possible he will have a leather jacket which will be removed only for exercise. If the trunk muscles are intact they will be strengthened by exercise and he may be able to do without the jacket, but they probably are paralysed, so that to remain straight, he may be required to wear some form of mechanical apparatus all his life. As to bony change in the spine I do not look for any marked atrophic disturbance in the vertebral column as a direct result of his polio-myelitis, but only as a result of the continuance of the deformity.

BRACE FOR THE MECHANICAL TREATMENT OF LOOSE SEMILUNAR CARTILAGE.

J. APPLETON NUTTER, M.D.—The brace which I have the pleasure of presenting for your consideration to-night, was devised by Shaffer of New York, some years ago. Practically its sole object is to prevent rotation at the knee joint.

It is well known that when a semi-lunar cartilage is loose, flexion and extension of the knee are comparatively innocuous, but rotation is apt to cause a nipping of the loose cartilage between the condyles of the femur and the head of the tibia. If, therefore, we can absolutely prevent rotation, and the cartilage has not been displaced for too long, the loose piece has an opportunity of growing into its old bed and remaining there. The brace goes from the foot to high up in the thigh and is jointed at the ankle and knee. The foot is included for two reasons, to make rotation impossible at the knee and to have the weight of the apparatus borne on the ground. The brace consists of an inside and outside upright, jointed at the knee, to which broad leather cuffs are attached, which lace tightly over the thigh and calf. The outside upright is continued down to and under the boot and is jointed at the ankle.

The patient, who was referred to me by the kindness of Dr. Lauter-

man, has now been wearing the brace for some time. He prefers it infinitely to the plaster cast which he at first wore. As to results, under its use the knee has improved greatly and looks normal; there have been no fresh attacks since the brace was used but there is little doubt that the cartilage would break loose again if all support were now removed. In the autumn he will begin to do without it gradually and we hope there will be no return of the trouble.

J. M. ELDER, M.D.—I have had some experience with this condition of displacement of semilunar cartilage. The question of opening a knee joint is a serious one, inasmuch as the resistance power here is very low. The question is not a new one, and if there is any mechanical device that would obviate the open incision for this displacement, it is deserving of the utmost consideration. In the history of the literature of this subject some ten years ago, Launstein, of Hamburg, published a great number of cases in which he had opened the joint and sutured the semilunar cartilage down to the top of the tibia. Now it would seem that you could not get anything by means of mechanical support, which would improve upon this, providing, of course, one got healing by primary union. His results, however, showed that these cases almost invariably relapsed after three or four years, and the patient would again have a displaced semilunar cartilage. Either the adhesions would stretch or something would go wrong. His contention was that it was not so much the semilunar cartilage as the kind of joint that was at fault. Surgeons have therefore, pretty generally given this up, and instead of trying to suture the internal semilunar to its place, they found better results followed complete excision of this cartilage, and this has become practically the operation of to-day. That it is an operation without risk no one will say, and I should be very much interested to see what the result would be in cases under the proposed treatment, not in six months or one year after, but in three years after the patient has given up wearing this mechanical support.

M. LAUTERMAN, M.D.—I think that this brace has a distinct sphere of usefulness. One comes across quite a number of cases who decline operation and for these patients who have already gone through the discomfort incidental to wearing plaster bandages, etc., I think the brace offers considerable inducements. While every one of us will agree with Dr. Elder's remarks with reference to the seriousness of opening an important joint like the knee, his own statement with reference to the results is practically all the guarantee that one could ask for its continuing in favour. As I said before there are a number of cases who decline operation and the patient in question was one of these

and that was my reason for referring him to Dr. Nutter, who has taken great pains with him and the results so far are good. I met a confrère in Berlin last winter, who himself has worn such a brace for nearly two years, and three years had elapsed since he had abandoned it, and he had experienced no discomfort, incidental to the separation of his cartilage. Of course that does not say that it may not occur, yet here in this man who leads a very active life, there has been no recurrence during these three years.

J. APPLETON NUTTER, M.D.—I would not like to deny that the quickest way to be relieved of a loose semilunar cartilage is to have it excised, but many patients demand an opportunity of being cured without taking the risk of operation, and I think in these cases this brace is indicated. A number of cases have been reported cured by its use.

LARGE FIBROID TUMOUR OF THE UTERUS.

A. LAPHORN SMITH, M.D., and L. C. GILDAY, M.D.—This tumour was removed two weeks ago from a woman aged 45, single, and living at St. Therese. She only noticed the condition one year ago and for the last six months it has grown so rapidly that she was never able to lie down at night. Her only symptoms were the mechanical compression. On opening there was a good deal of free fluid in the abdomen due to the obstruction to the venous circulation. As a rule when we find a large amount of fluid in the abdomen with a small tumour, it is sure to be malignant but with a large mass, the mechanical obstruction alone is responsible for the production of the fluid. The patient has made a very rapid recovery. The tumour weighed thirty pounds. This is the second largest tumour which I have seen.

THE SPIROCHÆTE PALLIDA : ITS RELATION TO SYPHILIS.

(Illustrated by pathological specimens).

R. P. CAMPBELL, M.D.—

THE BIOLOGICAL POSITION OF THE SPIROCHÆTE.

JOHN L. TODD, M.D.—

SPIROCHÆTE CONCERNED IN THE CAUSATION OF RELAPSING FEVERS.

C. W. DUVAL, M.D., AND J. L. TODD, M.D.—

J. G. ADAMI, M.D.—We have had this evening a most interesting symposium on this subject and are to be congratulated in having brought before us so clearly by Dr. Campbell, its clinical significance in temperate climates where it is of immediate interest to us and to hear from Dr. Todd its significance in relapsing fever of the tropics, and from Dr. Duval the splendid intelligence that he has been able to get a definite culture of a spirochæte. There are a whole crowd of interesting points that have come up this evening, and first of all I should like to ask Dr. Todd about his view regarding the animal nature of these spiro-

chaetes. It seems to me from the description of the mode of growth which Dr. Duval has given that it does look as though we have growth in length, and very suspiciously as though such a long organism as that must divide transversely and not longitudinally, and that it must be vegetable and not animal.

WESLEY MILLS, M.D.—This evening has been a somewhat memorable one, not only because of the admirable papers brought before us, but because of this joint work. The subject of joint research is now in the air. At a recent meeting of the Association, the subject was thoroughly discussed and it was arranged that different people of different laboratories should join forces. The psychologists have already carried this out, and I do not notice that anyone has pointed out that medicine was in advance in this matter, though the clinicians and pathologists have long been doing this joint research. It is true it has not the definiteness of ideal science, but it did exist and does exist. We have heard this evening two scientists on different points of the subject and this has only to be extended between the different laboratories to start a world-wide chain. About fifteen years ago in Boston I attended a meeting of the physiological society, and read a paper on this subject of joint research but I am sorry to say there was not one single remark made upon that paper and I have had to wait these 14 or 15 years to find it becoming a reality among these scientific societies. I make these remarks in the hope that such joint action as we have had between these two scientific observers will be more common amongst us, and then that it will extend between all the laboratories in Canada, and still go further, until the world economizes its forces, and thus bring their various specialized talents to bear in adding to the sum of our knowledge of the world and happiness of the world, and preventing the misery of the world without all this dissension and waste. That some of this has been done here is a subject of congratulation and this has been done by young members of this Society.

J. L. TODD, M.D.—In reply to Dr. Adami, in reference to why you have these long forms which divide transversely, the fact that it divides in one direction is no reason why it should not divide in the other also.