The Canada Lancet

VOL. XLI. **NOVEMBER, 1907.** No. 3.

PRESIDENT'S ADDRESS.*

By ALEXANDER McPHEDRAN, M.B., Toronto,
Professor of Medicine, University of Toronto.

IT is my first duty, as well as pleasure, to acknowledge my deep sense of gratitude for the honor you have done me in electing me to the chief office in this Association. I have experienced the unusual courtesy of an election for a second term. This, however, may not imply a compliment but rather a reprimand and an injunction—a reprimand for duty left undone, and an injunction to be more diligent in the discharge of duties of this high office, not to neglect the opportunities nor evade the responsibilities, pertaining thereto. If so I freely acknowledge the justice of the censure. The Presidency has been held by several of the ablest physicians this country has produced, and to succeed such men would be an honor to anyone. It would, however, have been in the interests of the Association, and much more in accord with my own feelings, had the by-law been observed which requires that the President be elected from the city in which the meeting is to be held. In justice to Montreal this should have been done, as then some of our difficulties would have been avoided, and such honor as pertains to the position would have been bestowed where it belongs.

However, under the circumstances it is my pleasing duty to gratefully acknowledge the cordial sympathy shown by one and all of our Montreal friends, a generous cordiality in keeping with their well-known character. I can only most sincerely thank them for their cordial goodwill and co-operation. I hope it will be my privilege to welcome one of their number as President at the next meeting held in Toronto, when I hope to be able to show evidence of my appreciation of the uniform kindness that has been extended to me here. I wish further to express my great appreciation of the work of the Executive and various committees; the results are evident in the excellence of this meeting.

I may be permitted here to give expression to the deep sorrow with which every member of this Association heard of the calamity which overtook McGill University and the Medical Faculty in the loss of their building last April. It is not necessary to assure them of our sympathy. The loss was not McGill's only, but was one also to medical education in this country and on this continent.

*Delivered at the Fortieth Annual Meeting of the Canadian Medical Association, Montreal, September, 1907.

We are glad to know that the cloud had its silver lining, and that now they are rather to be congratulated on the near prospect of a magnificent new building than condoled with on the loss of the old one, good as it was. We know that, "Phœnixlike," the institution would rise from its ashes, and be greater than ever. As we sorrowed with them so will we all now rejoice with them. We wish them "God-speed."

During the past year several members of this Association have gone "to the bourne whence no traveller returns." Among these were three of the most eminent in the Canadian profession, men of world-wide repute, to whose memory a brief reference is permissible. In this bereavement this city has to deplore the loss of Sir William Hingston and James Stewart, and Toronto, that of George A. Peters. All three had the common experience of being reared in a hard school, so that success could be attained only by living laborious days and practising the most rigid economy, conditions which often develop, as nothing else can, the best that is in a man. Each was a master in his own sphere, each possessed in an eminent degree "the genius for taking pains." Of each it may with truth be said that he was "the noblest work of God, an honest man."

Sir William Hingston was a distinguished type of the surgeon of the old school, a school in which it was essential to possess courage, decision and dexterity. Those of us who were not in close touch with his surgical work were attracted to him chiefly as the man. He was the embodiment of refined courtesy and of frank kindness. He was intolerant only of what was unworthy. We miss the tall, erect, courtly man whom we all loved, and among whose graces there was always such a charm. Canada, in these her yet salad and hoydenish days, can ill spare men of such culture.

James Stewart stood for all that is best in medicine. He was of such singularly quiet and unobtrusive nature that it was only those with whom he was closely associated who knew the riches of both mind and heart that lay hidden behind the simple and unassuming manner. His knowledge of medicine was deep and clear, such knowledge as comes only by living laborious day of self-sacrificing devotion to our Art.

George A. Peters was a type of the best in the modern school of surgery. Among Canadian surgeons, at least, he had no superior and few peers. Who could desire higher praise? He was a man of sterling character and rugged honesty, and fearless in his condemnation of whatever was unworthy of the highest traditions of his profession. His was a spirit that no difficulties or danger could make quail or deviate from the path of rectitude. How vividly in recalling his career we are impressed with the truth of the aphorism of the Father of Medicine, "Art is long and time is fleeting."

I have great pleasure in drawing attention to the fact that Dr. William Bayard, of St. John, N.B., a past President of this Association, completed seventy years in the practice of medicine on the 1st day of August last and that he is still able, at the age of 93 years, to meet the wishes of many patients by ministering to their wants. His Alma Mater, the University of Edinburgh, on this 71st anniversary of his graduation showed her appreciation of his character as a man and his work as a physician by conferring on him the degree of LL.D. The circumstance is perhaps unprecedented in modern times; it is at least so, I believe, in the annals of Canadian Medicine. Although I have already, in the name and behalf of the Association, extended to Dr. Bayard the greetings and best wishes of the Association, I would suggest that now in annual session you authorize me to telegraph the renewal of our high esteem for him and sincere hope that the "eventide" may be calm and without a cloud.

I. Reorganization.

It is just 40 years since this Association was organized. The first meeting was held in Quebec under the Presidency of Sir Charles Tupper, one who has since attained such eminence as a statesman. It is interesting to note that the first meeting was among the largest ones held by this Association—109 being present. At the second meeting, held in this city, there were 135, after that for several years the attendance never reached 100. Even of late years, compared with this first meeting, the Association has not shown the advance either in attendance or work that is founders were entitled to anticipate. However, history has but repeated itself—the higher life, intellectual and scientific, of young countries as of individuals, is always the latest to develop. It is quite possible that to the clear vision of the Fathers of this Association it was evident that its growth would be slow and subject to many vicissitudes, that it would only be after many years of painful struggling that much advance could be hoped for. They doubtless foresaw such advance could come only after the growth of culture, that is, after the conditions of the people became stable, and sufficient wealth accumulated at least to give ease, if not luxury, to many. For various reasons such a state has been slow in maturing in this country, but it may be said to have now come, at least in the older provinces. Such has been the history of the United States, where only recently science and art have made material advance, and even yet 'it is the day of small things" with them in comparison with the development of the natural resources, and the growth of wealth of that country. Our history will doubtless be similar to theirs, although the indications are that our material growth will be even more rapid in proportion to the population. It is said that, although our population is

only six millions, our immigration equals now that of the United States when her population was 40,000,000. Such great accessions, we have good reason to fear, are beyond our country's powers of assimilation.

As a national Association we have to bear our part of the great responsibilities imposed upon the country by these great accessions of foreign people, and the rapid growth of its material interests. It devolves upon us, as far as possible, to promote the medical and scientific interests of this country, so that they may be kept abreast with its material development. This responsibility rests on the older provinces chiefly, as in these there is more of leisure and culture. United action on our part will be necessary to cope successfully with these responsibilities and to enable us as a profession to attain to and maintain the status in the country to which we are entitled. This country's conditions are unusual. Its geographical extent is very great, and its population as yet occupies only its southern border, extending from ocean to ocean. Community of action as well as of interest will, consequently, be difficult to develop and maintain. It seems therefor urgent that all available means should be taken to harmonize the interests of the various parts of the country in order the more efficiently to apply our energies for the advance of general scientific and professional interests. The closer we are in touch with one another the greater should be the stimulus to do higher work, the increased zeal and enthusiasm should yield results which will enhance our reputation as a profession, and also redound to the credit of the country as a whole. Every scientific advance, however small, is an asset to the country, both in the intrinsic value of the work itself, and in the impetus it gives to farther advance. It is difficult to impress laymen, even the best educated, with the importance of this truth; but that is not a matter of surprise, seing that we ourselves are lacking not a little in appreciation of scientific achievements. This indifference to scientific and intellectual affairs is due to many causes, chief among which is the struggle for existence incident to a young country. This struggle has absorbed so much of our energy that little attention has hitherto been paid to purely scientific matters. Our training is almost wholly confined to the preparation for purely professional work, and so little research work has been done that our attention has not been seriously directed into scientific channels. The result is that thus far, with a few notable exceptions, we have been content with the discharge of the daily routine of professional duty. That such is the present status of the Canadian profession few I think will deny. The question arises—What is the duty of this Association in relation to such a state of affairs? No one can take exception to the view that, as the national organization, representing the profession of medicine, it should be the leader in all movements having

for their objects the elevation of the status of the profession, and the advance of the scientific interests especially of the country.

In the past the Association has been satisfied with a quiet existence, content to take by the way anything that was offered. Obeying in letter and spirit the injunction "to take no thought for the morrow." To many, especially of the younger men, living even at our doors, its existence is scarcely known. During the year I have asked not a few to present papers at this meeting who had almost forgotten the Association's existence, if they ever knew of it. It is surly time to awaken out of this Rip Van Winkle state and develop the power of the Association, so that its existence shall be known to the remotes corner of this land. How can this best be done? That the present constitution of the Association is inadequate to making any serious effort in this direction all will agree, and if anything is to be accomplished there must first be such a reorganization as will enable the Association to take effective action on the many important questions that must come before it from time to time. It is only by doing so that we can fulfil the objects which, forty years ago, its founders had in view. The very existence of this Association imposes on it the duty to consider all questions of national importance. It cannot make good its claim to a national character if it evades the responsibility. While the constitution of the Association at its organization was the best that could devised to suit the needs of the time, it is but ill adapted to the greatly altered conditions of the present day. The time seems ripe and the need urgent for a complete reorganization in order to fit the Association to meet the growing demands incident to a growing country, and enable it to occupy its place in the medical world. Even for the continued existence of the Association it seems necessary to make radical changes in its constitution.

These are some of the motives which, at Halifax two years ago, led the Association to take the preliminary steps looking towards reoganization. A committee was appointed with instructions to consider the whole matter. Its report is ready for your consideration. The committee in its recommendations has followed closely the constitution of the British Medical Association, the oldest of all similar organizations, and of the American Medical Association, which has modelled after it and which has, during the last few years, made such rapid progress in perfecting its organization and extending its usefulness. Our numbers are too small, and we are too widely scattered across the continent to permit of our following the plan of either organization in its entirety; we must adapt an organization to our own needs. I will leave the report of the committee to speak for itself. The general scheme has been highly approved of by the Provincial Associations of Ontario, Nova Scotia and British

Columbia, and by several local societies. It would have been wise to have had the scheme presented before every association and society in the country by some member of the committee.

One of the most important objects aimed at in seeking proper organization would be the effect that the existence of a vigorous association would have on general medical education. It would enable the profession to bring its opinion to bear on whatever might call for encouragement or amendment. The natural consequences would not only be an improvement in medical education, but in time a unification of the requirements for qualifications in the several provinces. This should furnish a good working basis for general registration for the whole country, a movement that has been so ardently and ably promoted by our distinguished colleague, Dr. Roddick. In view of the fact that medical education in Canada is wholly under the control and in the care of the universities, such a basis for registration should be acceptable to all the provinces. There is not a medical school in the country and therefore no private interests to be considered. I am sure all will regard this as a cause for congratulation. This is the only country in the Anglo-Saxon world in which such a desirable state of things exists. The Medical Faculties of Dalhousie University in the east, Laval and McGill in Montreal, Queen's in Kingston, the University of Toronto in Toronto, the Western in London and Manitoba in Winnipeg, are all under the control of University courts. This should be a guarantee both of the excellence of the work done and of the certainty of steady advance.

If this Association were well organized, embracing in its membership the great majority of the practitioners of the country, and actuated by high ideals, it is not too much to say that, in a few years, it could bring the necessary influence to bear on these universities, and on new ones that may be established, to secure such a general minimum standard of qualification that their degrees would be a passport to legal qualification to practice medicine in any part of the country. If this plan is feasible, and it should be, it is within the "sphere of usefulness" of this Association; this is, in fact, the only organization which can successfully promote the interest of the country as well as of our profession should be sufficient, if there were no other reason, to lead to a proper organization of our forces. This course would not be in the interests of the Universities as much as in that of the country, and of this Association as representing the profession. It is much easier to regulate and guide whatever pertains to the welfare of the country in this its early stage of growth, than it will be to gain control after it has developed into a populous country with fixed local interests. In the new western provinces there are some signs of a feeling of antagonism to the older parts becoming evident. There

seems to be a fear that that they may wish to dominate too greatly the policy of these newer parts. It will take wise management and judicious action to arrest the growth of that feeling and forestall any attempt that might be made to estrange the sympathy and co-operation of these newer provinces. Most of the western profession have but recently graduated from our universities, and should understand us so well that with ordinary judgment it should not be a matter of much difficulty to secure and retain their hearty co-operation in any scheme having for its object the highest interests of the whole country as well as of the whole profession. I say *country,* because we should see to it that the public recognize the fact that this and similar organizations exist for the promotion of what is for the general good as well as for the benefit of those more immediately concerned. The whole is but the sum of its constituent parts, and can be affected for good or ill only through the parts. Therefore what we, as a constituent part, do to promote our own true interests is of benefit to the country at large. It is highly desirable that the public should realize that the objects of this Association are not only to benefit the profession, but also, and chiefly, for the promotion of what is for the general good. It is not a "trades union," but a national organization which should have, and has, the nation's welfare for its chief object. It is apparently to all that the country stands in need of all the assistance which this and other agencies within its bounds can bring to its aid in its enormous responsibility of assimilating the vast number of peoples from all nations annually entering its domain, and of developing and maintaining a proper national spirit, marked alike by vigor and honor. That she is not coping quite successfully with the difficulties imposed upon her is a subject of common observation. Probably no country developing in population and resources with such phenomenal rapidity has ever been able to prevent, at least temporarily, some deterioration in public morals. It is almost a daily experience to hear some one remark on the decadence of the public conscience. With the large immigration from all parts of the world, and the intense striving after wealth incident to the development of a young country of such large resources it is doubtless inevitable that there will be some relaxing of the rugged honesty, private and public, of the pioneers of this country, but that there should be even a semblance of ground for the very general charge of moral decadence is much to be deplored. As loyal Canadians we have a profound interest in this matter. Public morals cannot be degraded without affecting unfavorably all classes, so that in our own interests as well as of this land we love, to which we return from our pilgrimages year by year with an ever-increasing affection and pride, and for which if need be we would yield our heart's blood, we should be constrained by duty as well as by loyalty to use our utmost efforts to stem the downward tendency. In such an effort the Association

has a part to perform; in order to perform that part effectively it will require to be furnished with every facility with which we can provide it.

Hitherto the Association has been content to minister to the wants of the general practitioner in its two sections of Medicine and Surgery, but we have reached the stage now in which it should afford facilities also for the encouragement of all classes of special work. The field of medicine is so broad as to render specializing necessary. While all should possess sound general knowledge none can be masters in more than a few branches at most. This year a first step has been taken in extending the work of the meeting by the formation of a section for laboratory work. With a more vigorous Association other sections will be necessary in order to bring out the best work in the various departments. An omnibus meeting never accomplishes much that is of the highest value. Men will not do their best work unless there is the opportunity of presenting it to such as are specially qualified to appreciate its value. While there are many questions in all specialties that the general meetings are quite able to discuss, and which should as far as possible be there presented, there are others that only those specially trained are able effectively to criticise and judge of their merits. The announcement is just made of the Eighth Medical Congress in Australasia to meet next year. It is to consist of eleven sections. With more than double their population we should be quite as capable of maintaining meetings with as many sections, in which the work presented would be of the highest order. I need not specify what additional sections should be formed. The wide-spread prevalence of contagious diseases indicates the necessity of directing ever increasing attention to sanitation. Regarding tuberculosis there is a great awakening on the part of the public, but as to typhiod fever there is still amazing apathy, both in city and country. The formation of a section of state medicine seems therefore urgent. Many other sections might be formed with great advantage to the Association's usefulness.

Another matter demanding the prompt and earnest consideration of this Association is the nostrum evil. Our friends to the south have been waging an increasingly active crusade against this evil during the last few years, and duty to the public no less than to our own interests demands that our action be prompt and energetic. The public do not understand the matter, and have no conception of the enormous injury done to their best interests. Those among them who gave serious thought to the matter hold us responsible for their education in this question. I scarcely see how we can ignore the responsibility without detriment to our own interests as well as to theirs. They will be ready, once they understand the matter, to aid in suppressing it, or mitigating it where it cannot be suppressed.

There are many other questions that might fairly claim attention, such as intemperance and the care of the inebriate, the physical training of the young, etc., and the medical inspection of schools.

The educational authorities of the United States have just issued a report stating that 12,000,000 school children, that is, one-third of the whole school population of the country, are suffering from some form of physical defect. Many of these defects are easily remedied, such as, malnutrition, defective breathing and vision, and enlarged glands. A similar condition of Canadian children doubtless exists. The nation has a vital interest in the condition, physical and mental, of its children, and it is for this Association to point out the way in which these matters should be dealt with. They are matters, however, that only a vigorous organization could, and, no doubt, would deal with in a way to command the attention and respect of the country.

II. A Journal.

The second great need of the Association is an official journal. It is essential for several reasons. In the first place the Association's constituency is a very large and sparsely settled one, and it appears necessary therefore that there should be a regular means of communication established in order to maintain a community of interest and an avenue through which the needs of all may be made known. Without such a means of communication it will be difficult to develop a truly national spirit, and unify the interests of the medical profession in Canada.

In determining on such a venture we would not be entering on untried grounds, as we have the example of the two great Anglo-Saxon associations to guide us—the British Medical Association and the American Medical Association. Neither of these associations could possibly have attained a tithe of its present usefulness without its own journals. In fact it is doubtful if they could have continued to exist, at all events they would not have been able to wield the power and influence they now possess. I do not forget that our numbers are relatively small. Still there are over 6,000 physicians in Canada, a constituency surely large enough to maintain a monthly journal of first-class character, second to none published either on this continent or in Europe. It should be elastic enough to admit all good contributions offered. Such a journal would in a short time attract the bulk of the best work done in Canada, and would thus become a medium to which other countries could turn to learn of the scientific medical work of this country. Hitherto all the work done here has been published through British or United States channels, and has gone to the credit of these countries. We are loyal Greater Britons. We must at the same time be loyal local Britons—that

is, Canadians. We cannot be truly loyal to the greater without being supremely loyal to the less, and it is by our loyalty to our own country that we can best show our devotion to that nation of which we are rightly proud of being a part.

It requires no argument to prove that, with a first-class journal, a great impetus would be given to scientific work, and that the position of Canadian medicine would be greatly improved in the estimation of the scientific world. The other sciences would also indirectly share in the benefit, because no class of scientific work can be improved without having the influence reflected upon others.

Such a journal should also be made to meet the needs of the general practitioner, the "bone and sinew" of the profession. A section could be devoted specially to their interests.

The expense has been regarded by some as an insurmountable obstacle. Australia with less than half our population has published for years a creditable monthly journal. Can we not do as well? If every member here investd a small amount in such a venture, to be paid back without interest when funds become available, say five or even ten years hence, it would be one of the best investments they ever made. Such an investment would bring an assured annual return; first, in enhancing the *esprit de corps* and improving the tone of the Canadian profession; second, in creating in us a greater appreciation of our own work and capacity, teaching us that the home product is equal to that of any other country, a lesson we sadly need to learn; and, thirdly, in stimulating all, especially the young men, to do work of ever increasing merit, and so add to their own and the country's reputation.

In advocating the establishment of an official journal I wish it to be clearly understood that no disparagement of existing Canadian journals is intended. However excellent these journals may be, each can only serve its own locality and special clientele. It is not possible for any private journal to reach all the Canadian profession, and even if it did, its influence would be much less than that of the Association's own journal. The interests of the private journal, being local and special, should not be infringed upon by an Association journal whose work would be identified with the general interests of the profession of the whole of Canada as well as the promotion of medical science. Anything like a monopoly of the journalistic field is not desired. The aim is not only to stimulate all to do better work and to promote the interests of medical science, but also to bring all the members of the profession into closer touch with one another, so as to further the national spirit and greatly increase their influence in the country, and so enable them to bring their united influence to bear on all matters of national importance. These interests are quite

apart from, and should not in any way conflict with, those of the private journals.

I am convinced that a journal is a necessity, if not to our existence at least to our success. I have full confidence in the ultimate success of our efforts, if steps are taken to establish such a journal, and that within a very few years at most we will have a journal equal in merit to the best, and in which our ablest men will be more than willing to publish their *best work.*

Some fear we cannot cope with the difficulties of developing and maintaining such an active organization as I have outlined, or of publishing a journal worthy of this Association and of the Canadian profession. That the difficulties will be considerable no one doubts; still these difficulties can be successfully met by the Canadian profession—a profession whose members are, it is no boast to say, physically and mentally the peers of the best in the world. A survey of this audience should be sufficient to convince any doubter, and this audience is but a fair representation of the great body of physicians scattered across this country from the Atlantic to the Pacific. Great as the difficulties will be, I have full faith in our own powers to overcome them. We need but united loyal action to attain success that will gratify ourselves as well as our friends.

Some will say that these views are chimerical, but to me they but feebly outline the possibilities which lie before us. A few years ago had any one said that this country would not be developing with the present phenomenal rapidity, that it possessed such extensive acreage for the growth of wheat and other grains, such mineral wealth, and that it could afford homes for the many millions of population which we now know it is capable of providing, his views would have been scouted as too visionary to merit serious consideration. The venerable Lord Strathcona, whose sagacity excels even his buoyant hope, and who knows this country as perhaps no one else knows it, has just been credibly reported as saying that he believed this country by the end of the current century will have a population of 80,000,000.

A recent writer, whose work is most favorably reviewed, who came from England as an immigrant and remained six or eight months traversing the country from coast to coast, mingling with the masses and working in forest and field, so as to make a thorough study of the country, says the country is quite capable of sustaining a population of 140,000,000. *May we not reasonably look forward to something like a corresponding* development in the literary and scientific interests of the country.

One of the most potent causes which have retarded the development of Canada in all her aspects—in population, industries, literature, science,

national sentiment—has been its proximity to the Motherland, and to the strong nation to the south of us. We have been overshadowed by both, perhaps a little overawed, so that we have feared to assert our manhood. But it is to inertia rather than fear that the slow growth of national spirit is due. We have had facilities of all kinds desired close at hand in these two great countries so that we have been saved the trouble of developing our own resources. But the dawn of a new development has come, and Canada is known the world over as the "land of promise." Are we to be laggards in this national awakening? No one who knows the Canadian profession will doubt the answer.

It is for us to consider whether the profession is to be provincial or national in its character and aspirations; whether it is to consider questions from the provincial, even a parochial, point of view, or occupy a higher plane and regard matters in a broad national spirit, and so take its place and assume its responsibilities as one of the forces moulding the destinies of the nation, feeling that it has especially committed to its care the development of medical science in its highest character. It may be said that this is too high an ideal. But we should not forget that the higher the ideals, if we endeavor to attain to them, the greater will be the success. However, I cannot regard the ideal as too high, but rather that it but faintly indicates all the future holds for us if we are but equal to the demands of the present and grow with the increasing needs of rapidly growing conditions. With a united and courageous association embracing the whole profession of this country, and actuated by high ideals of our duty and of the needs of the country, I have every confidence that the results would far exceed our most sanguine anticipations. Such success, however, can be attained only by earnest united effort. "In union there is strength." To the multitude, whether the nation or association, as to the individual, true greatness comes only by unremitting toil, energy, and intelligence, directed by the highest motives and ideals. To all who so pursue their vocation, whether crowned with apparent success or not, true greatness comes in proportion to their deserts. Ours will be no exception to the universal rule.

We are citizens of a giant young country of inexhaustible resources, entering on the threshold of its greatness and power, blessed with an invigorating climate which should produce a virile race such as no country ever excelled. Such is our heritage. You know that "to whom much is given of him also shall much be required." That we *can* so meet these our responsibilities so as to fulfil the requirements I have the fullest faith; that we *will* meet them successfully remains for all, especially the younger members of the profession, by their effort and work to prove.

SOME PROBLEMS IN CONNECTION WITH THE SUPRARENALS.*

By H. D. ROLLESTON, M.D., F.R.C.P.,
Physician to St. George's Hospital and to the Victorian Hospital for Children, London, Eng.

FIRST, let me express my sincere gratitude for the high compliment which you have paid me in asking me to give the address in Medicine; it was impossible to hesitate about accepting such an houor even had it not been conveyed through Professor Osler, who, hailing from McGill, is now Regius Professor in Oxford. The subject matter of an address in medicine must always be a source of some anxiety to those entrusted with the honor. It may either be on general lines and deal with the history, recent advances, future and relations of medicine, or it may be more special and deal with a single subject. Each course has its own disadvantages; but, after some consideration, I have decided on a special subject, and must beg your indulgence for the following review of some problems in connection with the suprarenal glands.

As is well known, the suprarenals are composite glands consisting of two portions which are distinct from a developmental and from a physiological point of view—the cortex derived from a cœlomic epithelium of the Wolffian ridge and closely related to the genital glands, and the medulla derived from the sympathetic and neuro-ectodermal in origin. These two portions are separated from each other in elasmo branch fishes, the cortical cells forming the single inter-renal gland and the medullary cells a series of paired bodies connected with the sympathetic (Swale Vincent). It will be convenient to discuss the cortex and medulla separately.

The Cortex.

The cortex is larger than the medulla and is composed of epithelial cells the structure of which suggests a high degree of functional activity; in Biedl's hands experimental removal of the cortex, the medulla being left intact, was followed by death of the animals; and it is stated that compensatory hypertrophy of accessory suprarenals, when this occurs, after excision of the main glands, is solely cortical. These considerations strongly suggest that the cortex has some important function and that it is essential to life, but in what exact way is as yet unknown. The most certain point about the cortex is that it is quite unlike the medulla. Its cells contain fat and lecithin, the significance of which is unknown, but do not give a green color with ferric chloride (Vulpian's reaction), or a brown color with chromic acid, as the (chromaffine) cells of the medulla do. Physiologically extracts of the cortex are quite inactive and do not

* The address on Medicine, delivered at the meeting of the Canadian Medical Association at Montreal, September 12th, 1907.

raise the blood-pressure. Our knowledge as to the function of the cortex is very imperfect, but some arguments can be adduced in favor of each of the three following views, namely, that it may be concerned (1) with growth and development, especially of the sexual organs; (2) with neutralization of poisons, or (3) in some manner with the internal secretion of the medulla—adrenalin.

1. *The relation of the cortex of the suprarenals to growth and development, especially of the sexual organs.*—It is now known that there is a definite group of cases in young children, the peculiar feature of the cases being that a primary tumor of the suprarenal body (hypernephroma, melanothelioma, Woolley)[1] is associated with excessive development of the organs of generation, hair, and fat. Bulloch and Sequeira[2] have collected ten cases, all but two under eight years of age, two in males and eight in females, showing this precocious development in association with a hypernephroma which, in some of the cases at any rate, was derived from the cortex of the suprarenal; future researches will naturally be directed to determining whether hypernephromas of cortical origin are, as suggested here, specially associated with exaggerated growth, while hypernephromas arising in the medulla of the suprarenal show no such association. Bulloch and Sequira have indeed collected twelve cases of hypernephromas in children who did not show any signs of premature development, and in some of these cases the tumors, described as sarcomas or lymphosarcomas, were definitely regarded as arising from the medulla of the gland. It must, however, be noted that in adults cortical hypernephromas, which are probably more often seen in the kidney (renal hypernephromas or adrenal "rest" tumors) than in the main adrenal gland, are not associated with the notable genital development, hirsuties, and obesity seen in children. As rare exceptions to this rule, attention may be directed to Thornton's[3] case of a woman aged thirty-six years, who was covered all over with black, silky hair and had to shave her face, and to a somewhat similar case in a female lunatic aged thirty-two years (Richards), in both of which hypernephromas were present. In passing it is interesting to note the rarity of renal tumors of adrenal origin in children as compared with the incidence of these tumors in adults and with the incidence of hypernephromas in early life. But, although excessive genital development and growth of hair in a child should always suggest the existence of a cortical hypernephroma, it must be remembered that these striking signs may exist without any such lesion in the suprarenals (Guthrie and Emery).[4] As bearing on the connection between exaggerated cellular growth of the suprarenal cortex and the development of the genital organs, a few cases are on record in which suprarenal hyperplasia has been found in individuals with such excessive size of the

clitoris that they were erroneously regarded as males. Further, enlargement of the suprarenals has been noted in animals during periods of sexual activity and pregnancy; and it has appeared to me that there is a close resemblance between the cells of the suprarenal cortex, on the one hand, and the luteal cells normally found in corpora lutea, and exceptionally in luteal cysts, on the other hand. This resemblance, both histologically and morphologically, has been insisted on by Mulon,[5] who, from observation on guinea pigs, speaks of the corpus luteum of pregnancy as a temporary cortical suprarenal. It is interesting to compare the developmental anomalies accompanying some cortical hypernephromas with acromegaly, which is usually associated with hyperplasia or adenomatous change in the anterior lobe of the pituitary gland. For, as Schäfer and Herring[6] point out, the anterior lobe of the pituitary and the cortex of the adrenal are alike in several particulars, namely, in the glandular character of their epithelium, in the physiological inactivity of their extracts, and in ensheathing collections of neuro-ectodermal cells (the posterior of infundibular lobe, and the adrenal medulla) which, on the contrary, possess extremely active physiological extracts. As bearing in a somewhat remote manner on the relation of the suprarenal cortex to the growth of the body it may be mentioned that evidence is accumulating to show that primary malignant growths of the cortex, like primary carcinomas of the thyroid, have a special tendency to produce metastases in bone (Scudder).[7] This association has also been independently noticed by Prof. Adami. This similarity of the thyroid is of interest in the light of the well-established influence of the thyroid on skeletal growth.

Conversely, hypoplasia of the suprarenals has been found in anencephalous monsters; but the relation between the two developmental abnormalities is doubtful, Zänder[8] regarding the lesion of the nervous system as primary and Alexander[9] considering the suprarenal defect as primary. Very possibly, however, the failure of development is concomitant, in any case this association is not a strong argument in support of the influence of the suprarenal cortex on the growth of the body, for the hypoplasia of the suprarenals appears to affect the cortex and medulla equally and not to be especially marked in the cortex. Hypoplasia of the suprarenals has been met with in a few cases of retarded sexual development, and in the case of osteogenesis imperfecta Lovett and Nichols[10] found the internal organs normal with the exception of the small size of the suprarenals. It has also been suggested, but in no way proved, that mollities ossium is connected with suprarenal inadequacy.

There thus appears to be evidence that in some instances pathological changes in the cortex of the suprarenal glands, whether in the direction of hyperplasia or of imperfect development, are associated with similar conditions of growth generally, and especially of the genital organs.

2. The question whether the *suprarenal cortex has the power of neutralizing certain toxins* is a subject about which very little is known, and on which it is dangerous though attractive to speculate. It was formerly thought that the suprarenal bodies destroyed effete blood-pigment, but this conception has been given up for want of proof. That the cortex may exert antidotal properties is suggested by Myers'[11] observations that cobra poison, after being mixed with an emulsion of the suprarenal cortex was no longer toxic, control experiments with emulsions of the suprarenal medulla and of other organs being negative. Experimental infections with various organisms, such as bacillus tuberculosis, slow diphtherial intoxication and lead poisoning (Gouget)[12] have been found to give rise to hypertrophy of the cortex of the adrenal glands, thus suggesting increased functional activity. It may be mentioned incidentally that according to Mulon [13] the histological evidence of over-activity (hyperépinéphrie) of the cortex is increased pigmentation and diminished fat in its cells.

Adenomas or nodular hyperplasia of the suprarenal cortex are found in a certain number of autopsies. In 6,200 autopsies at St. George's Hospital, London, adenomas were present in 11 cases, or 0.2 per cent. (Hodge), and at Guy's Hospital in 0.7 per cent. of autopsies (Richards). They are sometimes found in cases of chronic pulmonary tuberculosis, but special attention has been drawn to the association of cortical edenomas with granular kidneys and high blood-pressure, and it has been pointed out that they are rare in cases of chronic nephritis with low blood-pressure. There would therefore appear to be some relation between their presence and high arterial blood-pressure; as the cortex does not contain any pressor substance it cannot be held that the cortical hyperplasia has any direct influence in causing the increased pressure, and it has been suggested that the adenomas are evidence of an attempt on the part of the cortex to neutralize the toxins responsible for the high blood-pressure (Aubertin and Ambard).[14] As bearing on this it may be mentioned that it is stated that experimental lesions of the kidney lead to hyperplasia of the adrenals (Darré).[15] The main interest of the speculation as to the existence of an antitoxic function in the cortex of the adrenal glands is in connection with the pathogenesis of Addison's disease. The low blood-pressure and extreme asthenia in that disease can be satisfactorily explained as due to an absence of adrenalin or the pressor substance provided by the medulla, but the vomiting, gastro-intestinal disturbance, and the pigmentation suggest irritation of the sympathetic. This has, in the past, usually been attributed to invasion of the adjacent sympathetic by inflammatory changes, or adhesions or to mechanical stimulation of these nerve plexuses by tuberculous masses in the adrenal glands; but this explanation breaks down for cases in which the adrenals are only

atrophied. To meet this objection it has been supposed that the absence of adrenalin leads, by perverted metabolism, to a toxæmic state and that this toxæmia accounts for the irritative manifestations. On the other hand, Addison's disease might be regarded as the outcome of total suprarenal inadequacy, namely, of (*a*) medullary inadequacy which, by the absence of adrenalin accounts for asthenia and low blood-pressure, and of (*b*) cortical inadequacy, which accounts for the irritative symptoms by failure or an antitoxic function exerted by this part of the organ. It is conceivable that, owing to destruction or atrophy of the cortex there is no longer neutralization of toxic bodies, and that these accumulate and irritate the sympathetic. In this connection it may be pointed out that the widespread distribution of pigmentation is more readily explained by a general toxæmic irritation of the system in general rather than by a local irritation of the sympathetic. It may also be urged in favor of this hypothesis that it explains why suprarenal extract so commonly fails to cure Addison's disease in the same way that thyroid extract counteracts myxœdema; for, although suprarenal extract provides the waning adrenalin, the extract of the cortex, even when given, is not necessarily the equivalent of the activities of the living cells of the tissue.

3. *That the cortex is in some way concerned with the internal secretion of the medulla.*—Although it does not contain any pressor substance it is conceivable that the cortex plays an essential part in the early stages of the formation of adrenalin and that the process of elaboration is completed in the medulla, in which part alone the full activity of the secretion is acquired. In favor of this hypothesis Schäfer and Herring[16] point out the analogy between the pituitary and the suprarenal glands; in both, the glandular epithelial parts (anterior lobe and cortex) are inactive, while the neuro-ectodermal parts (infundibular portion and medulla) yield a highly active extract. The close anatomical relation of the epithelial and neuro-ectodermal parts in the two glands suggests that their physiological relation may be equally close.

We have seen that three views at least have been put forward as to the function of the cortex; (1) that it is connected with growth, especially of the sexual organs, (2) that it is antitoxic, (3) and that it plays some part in the elaboration of the internal secretion of the medulla. *A priori* it would appear improbable that the cortex discharges all these three functions, but from experiments on animals Marrassini[17] has put forward the view that the three zones of the cortex—zona glomerulosa, zona fasciculata, and zona reticularis—have different functions; this is little more than a suggestion, but it shows the need of waiting for further investigation. The most definite point about the cortex would appear to be that it is correlated with sexual growth.

The Medulla.

The cells of the medulla provide a pressor substance—adrenalin—which acts on the sympathetic nerve endings. These cells, called chromophil or chromaffine, from their affinity for chromic acid, are not confined to the medulla of the suprarenal glands, but are found elsewhere in contact with the sympathetic, as Zuckerkandl's parasympathetic bodies, the inter-carotid gland which has been described as an accessory medullary adrenal (Mulon),[18] Luschka's coccygeal gland, and some collections of cells in the pituitary body. The medulla of the suprarenals therefore forms the most conspicuous part but not the whole of what has been called the hypertensive glandular system. The importance of this conception is that it explains why cases with destruction of the medullary portions of the adrenals do not always manifest the symptoms of Addison's disease, the remainder of the chromaffine system being sufficient to supply the required amount of adrenalin; conversely in some cases of Addison's disease in which the medulla of the suprarenals is not obviously affected, the hypertensive system as a whole may conceivably be deficient.

1. *Alteration in quantity.*—(*a*) Complete absence of the internal secretion is met with in Addison's disease, as is proved by the inactive condition of the medulla when tested physiologically. It has also been shown that the suprarenal medulla may be devoid of adrenalin in patients dying from chronic exhausting diseases, and that though there is often obvious naked-eye change in the glands this is not an invariable accompaniment of the loss of functional activity (Mott and Halliburton). As bearing on the interesting question whether there is normally an equilibrium between the pressor or hypertensive internal secretions of the medulla of the suprarenals and of the other collections of chromaffine cells on the one hand, and the depressor internal secretion of the thyroid on the other hand, it may be pointed out that in Addison's disease a relative excess of the internal secretion of the thyroid might be expected on account of the absence of adrenalin. There is, however, no evidence of this in Addison's disease; there are no symptoms resembling those produced by overdoses of thyroid extract or thyroidism, and so far as this goes it would appear that if there be normally a balance between the internal secretions of the suprarenal and thyroid glands, this balance is partially maintained, possibly by diminished thyroid secretion or by some neutralization of the active thyroid secretion by the tissues of the body, when the internal secretion of adrenalin fails entirely. There is, of course, one manifestation common to Addison's disease and exophthalmic goitre, namely, pigmentation, but it is very difficult, in the present state of our knowledge, to explain this as the result of one and the same process in the two diseases; it is much more likely that in both cases there is over-

excitation of the sympathetic nerves, in exophthalmic goitre by an excessive and abnormal thyroid secretion and in Addison's disease by a toxæmia possibly depending on inadequacy of a hypothetical antitoxic function of the cortex of the suprarenals.

(*b*) *Diminution in the amount of adrenalin* may be considered under the heads of (1) chronic inadequacy; (2) acute inadequacy; (3) relative inadequacy.

(1) Chronic Inadequacy.—The existence of cases of larval or fruste myxœdema, or benign hypothyroidism, has now long been recognized. The most convincing proof of its existence in a given case is improvement after the administration of thyroid extract. Similarly, there is a condition of deficient adrenalin secretion. Possibly in some cases this defect of the adrenalin-secreting cells may be congenital; and it has been suggested that the status lymphaticus and hæmophilia are thus explained (Wiesel). A condition of deficient secretion of adrenalin or partial medullary inadequacy is probably more commonly acquired and the result of morbid changes in the medulla. These changes may be due to tuberculous, syphilitic, or cancerous invasion secondary to disease elsewhere in the body; or toxins conveyed from other parts of the body, for example, the lungs in cases of tuberculosis, may so act on the suprarenals as to produce degeneration and fibrosis; or again, as the result of acute infections, such as staphylococcal or pneumococcal, the suprarenals may be permanently damaged and suprarenal inadequacy be established; this sequence of events is analogous to chronic nephritis after an acute attack of nephritis. To this condition of suprarenal inadequacy the name Addisonism has been applied by Boinet,[19] who, in thirty-seven cases of pulmonary tuberculosis manifesting Addisonism, found the suprarenal bodies fibrosed in thirty, infiltrated with small tubercles in four, and with caseous tubercles in three. This conception has some bearing on the pigmentation which so commonly accompanies advanced pulmonary tuberculosis and often raises the question as to the existence of Addison's disease. Everyone is familiar with these cases, but as the symptoms are not sufficiently marked to justify a diagnosis of Addison's disease the tendency has been rather to put the factor of the suprarenals aside in attempting to explain the melanodermia of advanced phthisis. Since it has been shown that the suprarenal medulla may be devoid of adrenalin in exhausting diseases (Mott and Halliburton), there appears to be reasonable ground for the view that Addisonism may be present in these cases. Boinet recommends adrenalin in these cases; in order to determine whether there is or is not suprarenal inadequacy the effect of adrenalin on the arterial blood-pressure should be estimated, for O. F. Grünbaum[20] has shown that in healthy persons suprarenal extract has no effect on blood-pressure, but that a

rise of blood-pressure, after the administration of suprarenal extract indicates suprarenal inadequacy. This method of diagnosis and treatment deserves further trial. But it must be borne in mind that though low blood-pressure and asthenia may be counteracted by adrenalin, the pigmentation has not been proved to depend on want of the internal secretion of the medulla and hence it cannot be anticipated that the administration of adrenalin will remove the melanodermia, which may indeed depend on a concomitant lesion in the cortex.

Just as numerous symptoms have been referred to benign hypothyroidism, so it is not illogical to suppose that various conditions, characterized by low blood-pressure and debility, both of the involuntary and voluntary muscles, may depend on an insufficient supply of adrenalin. Thus, it has been suggested, but by no means proved, that cyclical albuminuria, and those forms of neurasthenia associated with low blood-pressure are manifestations of adrenal insufficiency.

(2) *Acute adrenal insufficiency.*—It occasionally happens that death occurs suddenly in patients suspected to be the subjects of Addison's disease on account of some abnormal pigmentation, but without very definite constitutional symptoms; or that persons previously in fair health and certainly not known to have any disease, suddenly become acutely ill, often with convulsions, and die rapidly from collapse. In some of these cases tuberculous disease of the suprarenal bodies is found at the autopsy and death is perhaps certified as due to Addison's disease. Though this conclusion is in the main correct, it does not explain the fulminating character of the termination. It is probable that this is due to some form of acute infection attacking the suprarenal glands and leading to suppression of their functional activity, and it can easily be understood that this will occur more readily when the amount of suprarenal medullary substance available has been previously curtailed. In many acute infections, especially in diphtheria, the micro-organisms or toxins produce acute changes, such as cloudy swelling, necrosis, leucocytic infiltration, in adrenals previously healthy. In some instances the damage is so acute that hæmorrhage occurs into the glands; this acute condition of adrenal hæmorrhage has been specially studied in children and it has been suggested on the one hand that rapidly fatal hæmorrhagic small-pox explains some of the cases, thus of ten recorded cases seven were unvaccinated (Riviere),[21] and on the other hand, that the condition is due to food poisoning or an acute toxæmia of unknown origin and is possibly a distinct disease (Dudgeon).[22] Acute adrenal hæmorrhage may also complicate various fevers such as diphtheria, enteric, pneumonia, erysipelas. The hæmorrhages may be punctate, infiltrating or massive, unilateral or bilateral. The most characteristic

symptoms of these adrenal hæmorrhages are sudden onset with fever, violent pain in the hypochondrium radiating to the loins, convulsions, vomiting, diarrhœa, and later tympanites, collapse, and death within forty-eight hours from the onset. No doubt damage is done to the adjacent abdominal sympathetic by the hæmorrhage and thus clinical manifestations analogous to those of hæmorrhagic pancreatitis are produced. Cutaneous purpura is sometimes associated with hæmorrhage into the adrenals, as in variola, and it would, at any rate at first sight, appear probable that some underlying cause—toxæmia or bacteriæmia—is responsible for both sets of hæmorrhages. It has, however, been thought that the changes in the adrenals are primary and the purpura secondary (Loeper),[23] that purpura may stand in the same relation to acute destruction of the suprarenals as pigmentation does to chronic destruction (Dudgeon), and that the proper treatment is to give adrenalin. As arising out of this it is worth while to enquire to what extent the low blood-pressure and circulatory failure seen in acute febrile diseases is the result of temporary suprarenal inadequacy, brought about by the action of bacterial toxins on the cells of the medulla of the suprarenal bodies. The action of toxins on the heart muscle cannot be questioned, but it is conceivable that some of the loss of vascular tone in fever is due to a want of adrenalin and that it is not entirely the result of the direct action of toxins on the vascular system. This question is of practical importance as bearing on the advisability of giving adrenalin in acute diseases with threatened failure of the circulation. That the amount of adrenalin in the suprarenal glands may be greatly diminished by acute disease has been shown by testing the glands physiologically (Mott and Hallibuton).[24] In poisoning by diphtheria the medulla of animals is devoid of adrenalin as shown by the color reaction with chromic acid (Elliott and Tuckett),[25] and it had previously been found empirically that adrenalin was of great value in the cariac failure of diphtheria. An obvious objection to the administration of adrenalin in such conditions is that if it increases the peripheral resistance it will of necessity give the failing left ventricle more work to do, and so be harmful rather than beneficial. I have, however, for some considerable time been in the habit of giving adrenalin by the mouth in cases of pneumonia in adults, and in bronchopneumonia in children, and, I believe, with good results; it has appeared to prevent cardiac failure and has not given rise to any bad symptoms such as pulmonary œdema. Another objection raised against the use of adrenalin is that experimentally it produces arterial degeneration; as bearing on this I have examined the aorta in a few cases in which adrenalin had been given during life and have not found any recent changes. But I do not lay any stress on this for several reasons—my observations are quite insufficient, the amount

and duration of the administration of adrenalin were not comparable with those employed in the experimental degeneration, and even if recent changes were found it might be argued that they were due to toxins of the disease responsible for death. While I believe that adrenalin is a valuable circulatory tonic in acute infections, especially pneumonia, I am anxious that this point should be more thoroughly tested; especially as I have found but little increase in the blood-pressure of febrile patients showing apparent improvement while taking adrenalin.

(3) *Relative inadequacy of the internal secretion of the medulla.*—By this is meant that if there be normally a balance between the effects of the pressor and depressor glands, any excessive secretion (depressor) of the thyroid should lead, the pressor secretion maintaining the normal mean, to a relative deficiency of the antagonizing internal secretion. The question that arises here is whether the symptoms of thyroidism, of exophthalmic goitre, and the allied toxic manifestations which, as Sir Victor Horsley[26] points out, may sometimes be seen in ordinary goitre, are in any degree due to a relative deficiency in the secretion of adrenalin. It is clear from Janeway's[27] summary that the blood-pressure is not low in exophthalmic goitre as might be expected if the disease be regarded as due to simple hyperthyroidism, and that it may be very considerably raised as the result of psychical excitement. In the few cases in which I have taken the blood-pressure with a Riva-Rocci sphygmometer, it has been rather above than below the normal. It is true that in some cases of exophthalmic goitre improvement has followtd the administration of suprarenal extract; I have seen this myself. But it must be remembered that exophthalmic goitre often improves both spontaneously and after widely different forms of treatment, and that it has not been shown that suprarenal medication is a certain means of counteracting the symptoms of exophthalmic goitre. We have therefore no evidence that an excess of thyroid secretion produces bad effects by means of a relative deficiency in adrenalin.

(c) *Excessive secretion of adrenalin.*—Here again very little is known. The excess might conceivably be (1) due to an excessive secretion of adrenalin by the medulla, or absolute excess, or (2) be relative and depend on a diminution in the amount of the thyroid secretion.

(1) Since the demonstration that atheroma can be artificially produced in animals by the injection of adrenalin (Josué,[28] Pearce and Stanton,[29] and others), the question has arisen whether high arterial blood-pressure in man and its results—hypertrophy of the left ventricle, arteriosclerosis, atrophic changes in the kidneys and so forth—may be due to an excess of adrenalin in the circulation. As it is generally believed that in renal disease a raised blood-pressure is, within limits, useful, it might be

assumed that this compensatory process is brought about by hyperplasia of the suprarenal medulla. Let us see how the evidence available bears on this question. From some experiments on animals Marrassini[30] concludes that interference with the renal excretion increases the functional activity of the adrenal medulla. A case of parenchymatous nephritis with great hypertrophy of the left ventricle and manifest hyperplasia of the medulla of the suprarenals has been reported (Vaquez and Aubertin),[31] and might be taken to support this view. But as regards this special form of renal disease this would appear to be almost an isolated observation. Wiesel[32] has recorded a number of cases of high blood-pressure, arteriosclerosis, and granular kidney associated with enlargement of the suprarenal medulla and also of the chromaffine cells in the solar plexus. Here it might at first be thought that the suprarenal change was the cause of the high blood-pressure and the structural changes, as in experimental atheroma. It has, it is interesting to note, been suggested (W. Russell)[33] that certain foods, especially proteins, may lead to increased secretion of adrenalin. It would thus be possible to construct a hypothesis of dietetic excess, absorption from the intestine of toxic bodies which stimulate the medulla of the suprarenals to increased functional activity followed by hypertrophy, and that subsequently the cardio-vascular changes are produced. But Wiesel believes that the cardiac hypertrophy precedes the hyperplasia of the suprarenal medulla and is not due to it. This relation between the sequence of events must be somewhat difficult to determine and the subject is in need of further study. But it is clear that at present there is no proof of the existence of any disease due to excessive adrenalin secretion, and corresponding to exophthalmic goitre in the case of the thyroid, but on this point we must be content to wait for further information.

(2) *Relative excess due to a deficiency in the amount of antagonizing depressor internal secretion.*—It is conceivable that as the result of the atrophy of the thyroid which so commonly accompanies advancing years, the equilibrium normally existing between the internal secretions of the thyroid (depressor) and of the adrenal medulla (pressor) would no longer be maintained, and that an excess of adrenalin would therefore accumulate in the circulation and thus induce a correspondingly high arterial pressure. In other words, that the rise of arterial blood-pressure as life advances is due to a predominance of the pressor internal secretions. In support of this it might be urged that in myxœdema it is common to find arteriosclerosis and granular kidney, which are the results of long continued high blood-pressure; but too much stress must not be laid on this for the age of myxœdematous patients approaches that at which vascular degeneration is common, and in a certain number of cases of myxœdema the kidneys are healthy.

To return again to the question whether the hypothetical equilibrium between the depressor and pressor internal secretions may be upset by a deficiency of one, so that the other secretion has a paramount influence, Gioffredi's[34] conclusions are to the effect that normally certain organs and tissues—the liver, the blood, and to a less extent the voluntary muscles—transform adrenalin into an inactive product and so protect the body against the toxic results of an excess of adrenalin which might otherwise result. In order to exert this change the blood must be provided with oxygen and be alkaline, but those conditions are not necessary in the case of the liver and voluntary muscles. It is conceivable that such a compensatory mechanism might fail under the same conditions as those under which the thyroid secretion wanes, and that then a relative excess of adrenalin in the circulation would result. These considerations are highly speculative, but they may pe.haps be forgiven because they bear in a somewhat remote manner on an important practical point, namely, the prevention and reduction of the rising arterial pressure of advancing years. For they suggest that the administration of thyroid extract might have this desired result, and that it may prove to be the routine treatment. Iodides which are so widely given in clinical medicine in order to lower blood-pressure have been shown to have no depressing effect on the heart or blood-pressure (Stockman and Charteris);[35] but it is conceivable that they eventually lower blood-pressure by stimulating the thyroid to an increased secretion.

2. *Alteration in quality.*—Of alterations in the quality of secretions very little is known if we except the gastric juice, but it is reasonable to believe that in the future this factor will attract attention and be shown to have most important pathological bearings. The adenomatous changes in the thyroid in exophthalmic goitre and in the pituitary body in acromegaly may safely be assumed to lead to an altered internal secretion, and so to have a causal bearing on the associated diseases.

In the case of the adrenal medulla nothing is known as to any alteration in the quality of the secretion. It is somewhat wild speculation, but it may be mentioned for what it is worth that possibly intestinal toxins may so act on the cells of the adrenal medulla as to produce an internal secretion of such an abnormal character that the normal process of transformation of any excess into an inactive body, as suggested by Gioffredi, cannot be carried out by the tissues. The excess of such abnormal adrenalin might conceivably cause high arterial pressure, arteriosclerosis and the allied morbid changes.

Mr. President and gentlemen, my address is now at an end, and I feel as I have felt all along since I began it some months ago that I must apologize for its imperfections and for its speculative character. I have

tried to comfort myself by thinking that it is well from time to time to take stock of the current researches and hypotheses which sometimes become the working basis for the practice of to-morrow. But I must not excuse myself or make further demands on your patience, and must again thank you for an honor I shall never forget.

References.

[1]Woolley. *Trans. Assoc. Am. Physicians*, 1902, XVII.

[2]Bulloch and Sequeira. *Trans. Path. Soc.*, London, 1905, LVI., 189.

[3]Thornton, K. *Trans. Clin. Soc.*, London, 1890, XXIII., 153. Richards, O., *Guy's Hosp. Reps.*, 1905, LIX., 225.

[4]Guthrie and Emery. *Trans. Clin. Soc.*, London, 1907, XL.

[5]Mulon, P. *Compt. rend. Soc.: biol.*, Paris, 1906, LXI., 272.

[6]Schäfer and Herring. *Phil. Trans. Roy. Soc.*, London, 1906, Vol. 199, p. 27, Series B.

[7]Scudder, C. L., Publications of the Massachussetts General Hospital, 1907, Vol. I., No. 3, p. 82.

[8]Zänder's *Zeigler's Beiträge*, 1891, XI., 145.

[9]Alexander. *Zeigler's Beiträge*, 1890, VII., 441.

[10]Lovett and Nichols. *Brit. Med. Jour.*, 1906, II., 191.

[11]Myers, W. *Trans. Path. Soc.*, London, 1898, XLIX., 368.

[12]Gouget. *Comp. rend. Soc. biol.*, Paris, 1903, LV., 1659.

[13]Mulon, P. *Ibid*, 1907, LXII., 905.

[14]Aubertin et Ambard. *Mém. et. Bull. Soc. méd. des hôp.*, Paris, 1904, 175.

[15]Darré. *Thèse de Paris*, 1907, quoted by Beaujard. *Sem méd.* Paris, 1907, 230.

[16]Schäfer and Herring. *Phil. Trans. Roy. Soc.*, London, 1906, Series B, Vol. 199, p. 27.

[17]Marrassini. *Arch. Ital. de Biol.*, Turin, 1906, XLVI., 73.

[18]Mulon. *Arch. gén. de méd., Paris*, 1904, 2543.

[19]Boinet. *Arch. gén. de méd.*, Paris, 1904, CXCIV., 2324, 2525.

[20]Grünbaum, O. F. *Med-chir., Trans.*, London, 1907, XC.

[21]Riviere, C. *Trans. Path. Soc.*, London, 1902, LII., 368.

[22]Dudgeon. *Am. Jour. Med. Sc.*, Phila., 1904, CXXVII., 134.

[23]Loeper. *Clinique Médicale de l'Hôtel-Dieu*, Paris, 1906, V., 90.

[24]Mott and Halliburton. *Archives of Neurology*, 1907, III., 123.

[25]Elliott and Tuckett. *Journ. Physiol.*, London, 1906, XXXIV., 332.

[26]Horsley. *Clinical Jour.*, 1904, XXIV., 29.

[27]Janeway, T. C. *"The Clinical Study of Blood-Pressure."* New York, 1904, p 200.

[28]Josué, O. *Presse méd.*, Paris, 1903, 798.

[29]Pearce and Stanton. *Jour. Exper. Med.*, 1906, VIII., 74.

[30]Marrassini. *Arch. Ital. de Biol.*, Turin, 1906, XLVI., 82.

[31]Vaquez et Aubertin. *Compt., rend. soc. biol.*, Paris, 1907.

[32]Wiesel. *Wien. med. Wchnschr.*, 1907, LVII., 674.

[33]Russell, W. *Brit. Med. Jour.*, 1904, 1, 1299.

[34]Gioffredi. *Archivio de Farmacologia sperimentale*, 1907, 145.

[35]Stockman and Charteris. *Brit. Med. Jour.*, 1901, II., 1520.

ADDRESS IN SURGERY.*

By INGERSOLL OLNSTEAD, M.D., Hamilton, Ont.

MR. PRESIDENT and Gentlemen,—The honor of being chosen to deliver the address in Surgery at the meeting of this Association is one I had not expected. After looking over the names of the distinguished gentlemen who have filled this honorable position, I feel any words of mine quite inadequate to express my gratitude to you, and it is with mingled feelings of pleasure and anxiety that I attempt to speak of the advances which surgery has made during the last few years. Not having had the extensive clinical experience of many of the gentlemen who have addressed you in the last few years, I shall only attempt to draw your attention to some of the most important work which has been done in different countries.

In surgery, especially, has the English-speaking people contributed more than their share of good work, and America, particularly, should be proud to be favored by the visits of distinguished surgeons from abroad.

Great advances have been made in the surgical treatment of diseases, yet in many instances our hopes have not been realized. Thus when the tetanus bacillus was isolated and a serum prepared, it was thought a treatment had been found that would ward off the usual fatal termination of this disease. This has now been found to be erroneous, and, in fact, the use of antitetanic serum has almost been abandoned in the treatment of cases of tetanus. Fortunately, however, the serum is almost a certain preventive of the disease. Thus, in 1903 in the United States there were 406 cases of tetanus reported, following accidents received during the Fourth of July. In the present year, only 73 cases were reported. This marked improvement is attributed to more careful treatment of the wounds, and the administration of the antitoxin. In a recent discussion of this disease before the Surgical Society of Paris, Berger stated that during the last seven years all patients, with one exception, entering his wards with wounds in which there was a possible infection with the tetanus bacillus, received a small dose of antitetanic serum. The one patient who had not received the serum was the only one that developed tetanus.

It is now the rule in many hospitals in America to give the serum in all cases having wounds which could have become soiled by dirt, manure, or other foreign substance. The serum should be repeated, as a single dose will not always prevent the disease. Suter and James Bell have each reported a case where tetanus developed forty-seven days after a single prophylactic dose of the serum had been given.

* Read at the meeting of the Canadian Medical Association, September 12th, 1907.

Although hæmophilia is a comparatively rare condition, it comes to our attention at times in a very realistic manner. It is very disagreeable for a surgeon to be called to operate on some acute surgical condition, when the patient is affected with this interesting blood state. The use of calcium chloride and subcutaneous injections of gelatine, although at times very useful, fail to check the copious oozing in subjects of this disease.

Hæmophilia is presented in two distinct ætiological conditions, first accidental, and second hereditary. In the accidental variety there is no history of heredity, or injury, or previous serious disease. Its course is more or less benign and occurs at less frequent intervals, and requires a more serious injury for its production. In the hereditary variety, on the contrary, the tendency to hæmorrhage follows the slightest wound, owing to the fact that coagulation is very much retarded. Emile Weil has shown that fresh human or animal serum introduced into the system of patients affected with hæmophilia produces a marked increased coagulability of the blood in the hereditary variety, and in the accidental variety the coagulation becomes normal. This followed the intravenous injection of 20 cubic centimetres of animal blood serum. The change in the blood occurs about twenty-four hours after the introduction of the serum. Locally the serum has much the same action.

It appears that in the accidental form of hæmophilia there is an absence or diminution of the ferment which causes coagulation, while in the hereditary form there seems to be some anticoagulating substance.

If the antidiphtheritic serum be used, and this is the most easily obtained, it should be fresh. Numerous observers have confirmed the beneficial effects of this method of treatment, and it certainly should be given a trial. If the serum be given subcutaneously 20 or 30 c.cm. should be used.

With our present methods, the brain may be examined with comparative safety, yet there is still much to be desired. The unfortunate results which have formerly followed cerebral hæmorrhage in the newborn can, by the intermusculotemporal operation, be frequently relieved. In most of these cases the labor is protracted, and the child is asphyxiated as a rule when born. Even the most desperate cases should be given a chance. There are usually localizing symptoms, yet one should not hesitate to open both sides of the skull if necessary. This is also indicated in fracture of the base. Undoubtedly many cases have died from compression, which would have been saved had the skull been opened. The convalescence is much quicker, and the recovery better. I can recall several cases of fracture of the base with extensive hæmorrhage that were relieved by this means.

In cases of papillary œdema due to cerebral compression, a decompression operation will ward off the symptoms. In one case operated on for Dr. Osborne, the sight, which was rapidly failing, made rapid improvement after the operation. An early interference is necessary in order to forestall atrophic changes in the nerve, and a large-sized disk should be removed.

For severe cases of tic douleuroux, the evulsion of the sensory root of the Gasserian ganglion removes the pain, and leaves no bad after effects. Cushing has operated on 54 cases of this disease with only two deaths. This operation is simpler than removing the ganglion and the results are really better. Where the attacks of pain are not so severe, Charles H. Mayo exposes the nerves at the points of exit from the foramina, extracts them by slow evulsion, cuts them off, and then plugs the bony openings by driving in small silver nails. This is an operation devoid of danger and easy to perform.

The injection of 70 per cent. alcohol into the nerves is also very effectual in many cases of intractable neuralgia. In spasmodic tic, the facial nerve may be resected and anastomosed with the spinal accessory. The result in a case I saw, which Cushing had operated on, was extremely satisfactory.

Since operations on the thyroid have become frequent during the last few years, attention has been drawn to the importance of the parathyroid bodies. Although these structures were first accurately described by Sandstroom in 1880, their function remained a secret for many years. It was then found that when these bodies were removed a true tetany developed, which led often to a fatal termination. These parathyroid bodies are often difficult to distinguish during the removal of the thyroid, being situated usually where the thyroid vessels enter the gland. They get their blood supply apparently from the thyroid vessels, and hence, if a complete thyroidectomy be made, the main trunk of the vessel should not be ligated, but rather the branches as they enter the gland. Halsted usually leaves the upper pole of the thyroid where the superior thyroid enters. One of the dangers of this procedure is the liability of secondary hæmorrhage. Dr. Charles H. Mayo leaves the posterior capsule of the gland, believing by this procedure that the parathyroids will be uninjured. Halsted, who has had an unfortunate experience in one of his cases, does not think that Mayo's procedure will preserve the integrity of these important bodies. He has successfully transplanted parathyroids in the spleen of a dog, and also into the opposite half of the gland. Von Eiselberg had two cases of grave tetany following thyroidectomy during the past four years, and in both cases the administration of the dry parathyroids successfully relieved the condition. In one case of tetany of long

atrophic rhinitis among native Indians or South Sea Islanders or Zulus, but we have it with us, as they had it of old, in our civilized and cultured life, aggravated by the dry air of our homes. There are hundreds of thousands of little hot air furnaces, scattered up and down the land, heating the houses of the people. Each one is supplied with a little iron pot, placed low down by its side, and calculated to evaporate a few quarts of water in the twenty-four hours; whereas, to make the dry air properly breathable and sufficiently saturated with moisture, three or four times the amount should be evaporated in the same period of time. The more the moisture in the air the less will be the demand upon the serous glands and canaliculi of the nasal mucosa; the less will be the tendency to aridity in the atrophied mucous membrane; and quite possibly the less tendency will there be toward initial development of atrophic disease.

[N.B.—The writer particularly desires to acknowledge his indebtedness to the works of Jonathan Wright for much of the early history of atrophic rhinitis referred to in this paper.]

ELECTROLYSIS AND THE NERVOUS SYSTEM.

By Sir JAMES A. GRANT, K.C.M.G., F.R.C.P., London,
Consulting Physician, General Hospital and St. Luke's Hospital, Ottawa City.

IN 1854, when a student at McGill University, my attention was directed to the marvelous operations of the nervous system, since which time I devoted spare hours to the problems of this intricate structure. Tear and wear are the result of both mental and physical strain, at no time more marked than in the present century. For many years, I applied electricity in the ordinary way, frequently with beneficial results, without knowing exactly the why or the wherefore.

The power of the galvanic current to decompose water was discovered and first described by Nicholson and Carlisle in 1800. In 1806 Sir Humphrey Davy presented to the Royal Society a lecture on some chemical agencies of electricity and the following year announced the discovery of the decomposition of the fixed alkalies. The phenomena of electrolysis are due to a modification, by the current, of the chemical affinity of the particles through which the current passes, causing them to undergo decomposition and recomposition. In the electrolysis of inorganic substances, it cannot be expected to solve the mysteries of life and disease. As the body is largely composed of water, holding in solution salts of potash and soda, it thus becomes an excellent electrolyte. The current of a dry battery transmitted by an ordinary neurotone, is the simplest and most efficient method of electrical application. The umbilicus may be considered *the storm centre* as far as collateral influence

on the sympathetic system is concerned, as here the solar plexus approaches nearest the surface through its many filaments which in turn accompany all the branches given off the abdominal aorta. It also interlaces with the nerve fibres of the phrenic plexuses; gastric, hepatic and splenic plexuses; supra-renal and renal plexuses; superior mesenteric plexus; spermatic plexuses, and inferior mesenteric plexuses. Although according to Bastian a wide basis of positive knowledge does not exist, it is accepted that the sympathetic system of nerves, with its double ganglionated cord and great ganglionic plexuses is, to a certain extent, an independent nervous system, penetrating deeply by its roots into the cerebrospinal axis. Its fibres are conducted to and from the viscera along the course of the blood vessels. The peripheral ganglia are dominated by a still higher regulating centre, situated in the medulla oblongata, in relation with all the vasomotor nerves throughout the system. Although the nature of its relations with the medullary centre is still uncertain, the fact that the fibres of the sympathetic are mixed up on the vessels with those having a vasomotor function and have to do with the calibre of the blood vessels generally, take part in the activity of all the glandular organs, in the movements of all the hollow viscera, and in the nutrition of the tissues generally, places the sympathetic system in the front as a central motive power. These are the circumstances which count in the operations of the system. When the tear and wear can be so changed by electrolytic action as to afford the freer transmission of normal nerve force, the constitutional changes for the better become most marked.

CASE I. R. C. McC., aged seventy-one years, an officer in the civil service, Ottawa, was attacked fully seven years ago with a cough, shortness of breath, with a general sense of muscular weakness, and reduced ability to walk with usual strength of limbs, the gait being changed to a short and rather feeble step. There was no evidence of marked muscular atrophy, but rather of defective muscular power of locomotion, and of lessened normal vigor as to contractility. This condition continued more or less for a period of fully five years. In regard to sensory functions, there were no important subjective phenomena. In the entire body all kinds of skin impressions were perceived readily and with normal acuteness. Eyes were perfect as to vision, and there was no straining whatever; sight was acute, both as to form and color, pupils were equal and reacted perfectly to light. Motor condition was equal on both sides of the body. Knee jerks were normal, and not in any way exaggerated; there was absence of ankle clonus. Voluntary movements in face, arms and hands were tolerably well performed. The patient stood steadily, with no marked change, in closing eyes. As to faulty condition in the spinal cord

tion. Hoffmann, in an analysis of 665 cases received in the Mikulicz clinic, found that the patients were referred to the surgeon on an average of 10.3 months after the beginning of the disease, and usually they were treated by the physician three months before surgical aid was sought. This should not be. Unless an early diagnosis be made, the result must be unsatisfactory. Take a middle-aged patient with good previous history, or history of old digestive derangements, who begins to complain of stomach trouble, which is not relieved by the usual remedies, an exploratory incision should be made, and if a suspicious growth be found a radical operation should be done. A palpable tumor cannot be felt often where the growth has advanced to such an extent that a radical operation is impossible. Frequently when all of the enlarged hardened lymphatic glands cannot be removed, the operation should still be performed, since in many cases these enlarged glands are not carcinomatous. In careful hands the results are very good, and as a rule the shock is not great. The general practitioner must realize the gravity of these cases, and the necessity of consulting a surgeon before the symptoms are so marked that the diagnosis is evident. The successes of Kocher, Kronlein, von Mikulicz, Terrier, Hartmann, Robson, Mayo, Armstrong and many others, warrant, yes, I may say, demand an operation. When a small tumor is felt in a breast, the patient is almost invariably referred to a surgeon for advice, and why should a doubtful stomach case be left until a positive diagnosis be made?

There are some points in connection with surgery of the stomach, in which the surgeons are not in unison. It appears to me wise to excise an indurated ulcus, for in these cases a small cicatrix as left by an excision will give less chance for the subsequent development of carcinoma. In one case operated on several years ago by the Y method, there was a return of the symptoms, with hæmorrhage three years after the operation. The stomach was not enlarged, hence it may be deduced that the anastomotic opening remained sufficiently patent for its purpose. In a second case operated on for perforated gastric ulcer, the ulcer was inverted. About two years later this patient also had some return of his symptoms. In cases where I excised the ulcer, there has been no return of symptoms. Where a gastro-enterostomy is required in greatly debilitated patients, local anæsthesia will, I believe, greatly increase the chances of recovery. Four of my cases of cancer were bed-ridden and were much emaciated, excision was impossible, a posterior gastro-enterostomy was done under cocaine infiltration, all recovered, and gained flesh.

Hæmorrhage from the stomach occasionally occurs after appendicitis. This seems to indicate that toxines formed in the appendix, reach the stomach and cause glandular degeneration with perhaps the forma-

tion of an ulcer. Where there is catarrhal appendicitis, hyperchlorydria is frequently present, and thus, when an operation is being undertaken for gastric ulcer, the appendix should be examined if possible.

The treatment of disease of the gall bladder is now on a firm basis, and as time goes on I feel sure that we will meet with fewer cases of common duct stones, for the cases will be operated on before the stones get into the common duct, though of course there will be some cases where the stones form in the hepatic or common duct.

In cirrhosis of the liver the Thalma operation has been found of great value. In at least 50 per cent. of cases operated on, the symptoms are either entirely relieved or markedly improved. With a mortality of 35 per cent., great judgment should be shown in the selection of the patients. If this be done, the death rate will undoubtedly be diminished. I believe it is wiser not to employ drainage, as the danger of infection is thereby lessened. Where it is necessary to excise portions of the liver for neoplasms, the hæmorrhage is usually effectually checked by sutures of catgut carefully applied with large blunt needles. Only the largest vessels need be ligated. The liver heals quickly.

During the last year exception has been taken by many of the English surgeons to the removal of an apparently normal appendix during an abdominal operation, and I was amused to see opposite views expressed on this point by the editors of the London *Lancet* and the *Edinburgh Medical Journal*. I agree with the Scot, and would be very much disappointed if a surgeon closed my abdomen without removing the appendix. That some of the Germans favor this view may be gathered from an article of Pankow's, who, in referring to the work of Kronig's clinic, says, "wir bei unseren operationen die appendektomie nicht nur für erlaubt, sondern auch für geboten halten." Of course the appendix is useful in cases of mucous and ulcerative colitis. When brought through the abdominal wall it provides an excellent means of irrigating the colon. I have used it also as a safety valve in a case of obstruction of the transverse colon due to a band where the cæcum and ascending colon were tremendously distended.

A number of cases of chronic sigmoiditis causing symptoms of obstruction and closely resembling carcinoma, have been reported. Mayo considers his cases due to an acquired diverticulitis.

Last spring I operated on a case of acute obstruction due to an acute streptococcic infection of a segment of the sigmoid. An excision of the part with an end to end anastomosis six weeks later, gave a perfect result. This case is, as far as I can find, unique. There have been eight cases of phlegmonous enteritis reported, but none of phlegmonous colitis that I can find in the literature.

SOME LAMPS OF SCIENCE.*

By J. PLAYFAIR McMURRICH, M.A., Ph.D.,
Professor of Anatomy in the University of Toronto.

IN delivering an inaugural lecture it is fitting that I should address you upon a topic connected with my special subject. But this lecture is also the opening lecture of the session, and is therefore to be especially addressed to the students of the Department, among whom are some who are no longer novitiates in the science of anatomy, and others to whom the methods and principles of that science are as yet closed books. It behooves me, therefore, to avoid both what might seem platitudes to some and what might appear technicalities to others, and to offer the mental pabulum I have to present neither in shallow platters from which only the foxes may partake nor in slender-necked vessels suitable only for the use of storks.

It has seemed on due consideration that a vessel suitable for both the foxes and the storks might be found in the well-equipped stores of history, and that from a repast served therein some food for thought might be offered both to the tyro and to the expert. The history of anatomy and of medicine, for the two have always been intimately associated, carries us back, however, to the dawn of civilization, and it would be futile in the course of a single lecture to attempt even a fairly complete outline of so large a subject; indeed, the time at my disposal would barely suffice for the mere mention of the names of those who have contributed to the development of anatomy. But among these names there are several which stand preëminent, which mark eras of development and are the names of men who, with a rod of their own fashioning, have struck the rock until it gushed forth waters,—waters which in some cases have indeed been waters of Meribah.

Selecting some of these names, it may profit us to consider what they mean to anatomists, what were the services rendered by the men whom they designate, and what were the methods by which these men achieved preëminence. In the case of each one some quality or qualities stand out conspicuously and a study of these may yield us some clues to success in scientific achievement.

We may first look back to a period somewhat more than three hundred years before the Christian era, at which time a famous school of medicine flourished at Alexandria under the favoring influence of Ptolemy Soter. Among the most renowned teachers of this school was Herophilus, a native of Chalcedon and a pupil of Praxagoras, the last of the Asclepiads, the family of priest-physicians who traced their descent from Æsculapius. Little has come down to us concerning the details of the

* Opening Lecture to the students of the Medical Department of the University of Toronto, October 1st, 1907.

life of Herophilus, nor are any of his works still extant; our knowledge of his achievements is based upon statements made by later authors and especially by Galen. From these references, however, it is not difficult to perceive in Herophilus the founder of anatomy. Before his time anatomy, in the true sense of the word, can hardly be said to have existed. Not that his predecessors were entirely devoid of some knowledge of the parts of the body, but this knowledge was little more than such as might readily be obtained by the inspection of parts as exposed by the mere opening of the body cavities. Of dissection, the careful isolation of parts, there is little evidence in the works of Hippocrates, the greatest physician of classical times, and even from Aristotle, so rich in facts concerning the parts of animals, one seeks in vain for unimpeachable evidence of careful dissections of the human body. The religious beliefs as well as the mode of thought of the Greeks were opposed to such procedure. They were more inclined to theorize than to observe, their methods were deductive rather than inductive, and the failure of their philosophy from the standpoint of the scientist is well stated by Whewell. "They ought," he says, "to have reformed and fixed their usual conceptions by observation, they only analyzed and expanded them by reflection: they ought to have sought by trial, among the notions which passed through their minds, some one which admitted of exact application to facts; they selected arbitrarily, and, consequently, erroneously, the notions according to which facts should be assembled or arranged: they ought to have collected clear fundamental ideas from the world of things by *inductive* acts of thought; they only derived results by *deduction* from one or other of their familiar conceptions." From these words we may form a clear idea of the essentials which go to form the scientific spirit, and lacking these, it is little wonder that under the Greek influence anatomy made little progress.

It is the great glory of Herophilus that he emancipated himself from the Greek method of thought. His master, Praxagoras, had insisted upon the necessity of comparing the structures of the human body with those of lower animals, which were much more thoroughly known, and while opportunities for carrying out his own advice were for Praxagoras few and far between, yet we may believe that the teaching stimulated the pupil and when Herophilus found at Alexandria opportunities for observations on the human body, under the liberal and personal encouragement of the Egyptian king, he did not fail to take advantage of them. Galen tells us that he made a great many observations not only on the lower animals, as others did, but also upon the human body, and Tertullian speaks of him with condemnation as "Herophilus, that physician or butcher, who dissected six hundred human bodies." Indeed, it is even

asserted by Tertullian and by Celsus that he practised vivisection on criminals, but whether this statement may be accepted as reliable or whether it is not rather an exaggeration of an act unusual in itself and magnified by popular repetition, is uncertain.

From the few scattered notices we still possess of his results it is evident that Herophilus added greatly to the knowledge of the structure of the human body possessed by his predecessors, and it is interesting to note that some of the terms employed by him to designate certain parts are in use to-day after the lapse of twenty-two centuries. Thus he was the first to describe accurately the duodenum and to bestow that name upon it; he likened the posterior portion of the fourth ventricle to a writing pen (calamus scriptorius); he compared the confluence of the cranial sinuses to a wine-press (torcular Herophili); and he described the membranes of the brain as the arachnoid and dura mater. Furthermore, he recognized the brain as the seat of perception, correcting the erroneous Hippocratic conception of it as a gland which served to secrete moisture; he discovered the retina, which he regarded as the centre for visual perceptions; he traced the origin of the peripheral nerves to the brain and spinal cord; he distinguished arteries and veins by their structure and maintained that both contained blood; he recognized the pulmonary artery and veins, naming the former the venous artery and the latter the arterial veins, thus laying a foundation for the long-delayed discovery of the circulation of the blood; and, finally, he discovered in the mesentery vessels which did not pass to the liver but terminated in gland-like bodies, thus anticipating by many centuries the rediscovery of the lymphatics by Aselli in 1622.

All these were discoveries establishing the knowledge of the parts of the human body and their relations on an entirely different basis from that which they had held under his predecessors. And when we consider that these are mere fragments of his results, recorded by later authors, we cannot help regretting deeply the loss of his completed writings.

It was then the *lamp of observation* that enabled Herophilus so to enrich the science he professed. Casting aside what Bacon termed "digladiation over subtilties," that is to say, the dialectic and sophistic speculation of his predecessors, he lighted this lamp for anatomy and revealed a new world. Observation is the keynote of progress in science, and for you as future practitioners of medicine there is no faculty so necessary of cultivation. It is the possession of the power of keen observation that makes as well the productive scientist as the successful practitioner, and unless the lamp of observation be kept well lighted and trimmed the fulfilment of our responsibilities as scientists and physicians is impossible.

Before the second lamp of anatomy was lighted a period of four hundred and fifty years elapsed. Like Lief Ericssen, Herophilus discovered a great continent only for it to disappear, except as a tradition, and to be rediscovered centuries later; for with his death and that of his contemporary, Erasistratus, the method he followed fell into disuse and his successors were content to accept without question and without emulation the doctrines he had set forth. Actual observations upon the human body were practically abandoned for many hundreds of years, Galen himself, who is our second subject for consideration, confining his anatomical observations almost entirely to apes, dogs, and other lower animals. But while Galen contributed largely to the progress of anatomy by these observations, it is to another side of his versatile mind that I wish especially to direct your attention, considering chiefly the quality which made him the supreme authority throughout the middle ages in matters of medical import, just as Aristotle was the supreme authority in matters philosophical.

Galen was born A.D. 131 in Pergamos and had for his father Nicon, a senator of Pergamos, not without repute for his knowledge of the mathematical sciences and renowned for his acquaintance with the Greek dialects. Under his guidance Galen began his education and until the age of fifteen confined his attention to the humanities, mathematics, logic and grammar. His father, he tells us, made him read in his youth the good ancient authors who wrote in the Greek tongue, and he is said also to have become familiar with Latin, Ethiopian and Persian. From fifteen to seventeen he devoted himself to the study of philosophy, acquiring an interest in that study which he retained throughout life and which he valued highly.

Having thus prepared himself by a thorough grounding in the mathematics, literature and philosophy of his day, he entered upon his medical studies in his seventeenth year. He began these studies at Pergamos and continued them later at Smyrna, still later at Corinth, and finally at Alexandria, where at the age of twenty-eight he completed them, having thus devoted not four or five, but no less than eleven years to learning the principles of the profession of which he became so distinguished an ornament.

Like Herophilus, Galen laid great store by the lamp of observation, and several anecdotes of his keenness of perception as manifested in diagnosis have come down to us. He was an adept in the art of dissection and practised it extensively, thereby adding many new facts to anatomical knowledge. Unfortunately, however, he lacked the opportunities for the dissection of human bodies enjoyed by Herophilus, and was obliged to content himself with studies of the lower animals, choosing

especially those which bore the greatest general resemblance to man. This in itself was not so great a disadvantage, for many of the fundamental facts of anatomy may be as well worked out on the cadaver of a dog as on that of a man. But Galen fell into a serious error in that he assumed that the form and proportions of the organs of the animals he studied were identical with those of the corresponding human organs, and, indeed, he described his observations as if they had actually been made on the human body. This error led to grievous results, for, since Galen's writings became the accepted authority upon medicine throughout the middle ages, the anatomy taught in the schools for many centuries was not the anatomy of the human body. Similar errors have frequently been made since Galen's day, and they have ever led to unfortunate results. Let us be warned by these and ever remember that assumptions uncontrolled by observation and stated as actualities should have no place in scientific literature or thought. If an assumption must be made, let it be clearly understood that it is an assumption. "X equals y" is a very different statement from "let us assume that x equals y." Assumptions may frequently be necessary as working hypotheses to be profitably employed as guides for further observation, but, as we value our reputations and that of our profession, let us most carefully refrain from either stating or adopting them as facts. We must not allow our jackdaws to strut in peacocks' feathers.

But while Galen's contributions to the facts of anatomy are thus open to criticism, we must recognize that he gave to his successors through many generations an anatomy more compendious and accurate than any that had seen the light before his day. His osteology was far in advance of that of his predecessors, and although the bones are not described with that minuteness of detail which we find in modern text-books, yet they are described with intelligence and on the whole with accuracy, so much so that many of the names by which we know them to-day trace back to Galen's writings. He rediscovered the fact that the arteries contain blood, a fact already announced by Herophilus but denied by Praxagoras and Erasistratus; and he likewise demonstrated again the origin of the nerves from the brain and cord, the successors of Herophilus having forgotten his teachings and returned to the older view that the nerves had their origin in the heart, a view largely due to the inability of the older authors to distinguish between nerves and tendons. He recognized the relations of nerve to muscle much more accurately than his predecessors and extended greatly their knowledge of the nervous system, discovering the recurrent nerve, the extension of the vagus nerve to the abdomen, and some of the larger sympathetic ganglia, although he failed to perceive the ganglionated cord. But the enumeration of his

discoveries is not to my purpose just now. Let it suffice to know that he worked assiduously in the light of the lamp of observation and gave to the world an anatomy more thorough than had existed before his time and one which served as practically the sole guide to anatomical knowledge for centuries after his death, which occurred in A.D. 201.

The other characteristic that I wish especially to dwell upon was his broad general knowledge. It was the combination of this with highly trained powers of observation that made Galen the medical authority of the middle ages. He worked in the light of the lamp of observation reinforced by that of the *lamp of knowledge,* and it was this latter light that enabled him, the wisest man of his day and of many succeeding generations, to deduce principles from his observations and to place anatomy and medicine upon a philosophic basis. Knowledge was power to him, and it was the very breadth of his knowledge that made him what he was. We have seen that he devoted no less than eleven years in mastering the principles of his profession, and the numerous references in his writings show him to have been thoroughly familiar with the writings of the older authors. His example in this respect lasted throughout the dark ages, the physicians of those days showing a familiarity with medical literature which is worthy of emulation. Chaucer's picture of the "verrey parfight practisour," whom we may take as a type of the mediæval physician, showed him well versed in medical lore.

> "Wel knew he the olde Esculapius
> And Deiscorides, and eek Rufus;
> Old Hypocras, Haly, and Galien,
> Serapyon, Razis and Avicen;
> Averrois, Damascien, and Constantyn,
> Bernard and Gatesden and Gilbertyn."

But Galen's knowledge was not limited by the necessities of his profession, his was a broader knowledge and hence a greater power, and it is to this that Galen himself attributed his success. I have mentioned his continued interest in the study of philosophy; let us hear what he himself says as to its value. "I did not," he says, "begin yesterday or the day before yesterday to love and study philosophy; it has attracted me from my youth. After I had devoted myself to medicine, as the result of a dream of my father, I continued throughout my life to cultivate the two sciences. It is not, then, astonishing that having studied diligently while others paid visits in the town and supped with the rich, I should have acquired a knowledge of all that the ancients have discovered and should have placed myself in condition to profit from them in the exercise of my profession."

Even at the expense of repetition I must insist upon the combination of observation and knowledge as the source of Galen's extraordinary influence upon succeeding generations, and I would emphasize further the correlation of his power for good with the breadth of his knowledge. What was true for Galen is true for each of you, and if you keep the lamp of knowledge lighted and allow its beams to light for you not only the narrower field of your specialty, but also the broader pastures of general science and the humanities, you cannot fail to add to your success as physicians, your usefulness as citizens and your enjoyment of the better things of life. I know the amount and variety of information you will be supposed to acquire or be forced to acquire during your student days; I know that the dendrites of your cortical cells will be kept quivering from early morn till dewy eve—nay, until midnight or after, in the endeavor to seek out new association paths, but still I hold that you can and should find time, even as Galen did and many another has done, to cultivate both medicine and philosophy, using that word in its etymological significance. He who can find his happiness in

"A Book of Verses underneath the Bough"

without even the accessories demanded by the Persian philosopher-poet, has mastered the secret of happiness in this life, for he will have learnt to find interest in everything and everywhere.

I would like to dwell on the value, or rather I would say the essentiality, of breadth of knowledge for the "verrey parfight practisour," but there are other lamps to be considered. I shall therefore content myself by quoting to you the words attributed to Dr. Radcliffe in that delightful picture of the London physicians of the eighteenth century, entitled "The Gold-headed Cane," which I trust each one of you may some time read and enjoy. Radcliffe says, "As I have grown older, every year of my life has convinced me more and more of the value of the education of the scholar and the gentleman to the thoroughbred physician."

After the death of Galen evil days fell upon the science of anatomy and it was fated to languish for many centuries. With the decadence of the Roman empire and the irruption into intellectual Europe of the Goths and Vandals from the north and later of the Saracens from the east and south, there came a period during which the cultivation of the arts and sciences was practically neglected. The reign of Charlemagne forms a bright spot in the history of intellectual development in the dark ages, but the disruption of his empire which followed upon his death and new invasions of barbarians soon brought again days of gloom for the sciences. Then came the martial frenzy of the Crusades, which, though at the time fatal to progress in the arts and sciences, nevertheless brought in their train the revival of learning.

It was not, however, so much the unrest of Europe that acted as a depressant on anatomy as it was the resulting unrest of the East. Europe had never fostered that science, but being under the influence of the intellectual methods of the Greeks had preferred the freedom of speculation to the more restraining practice of observation. It was to the East, as we have seen, that we owe the foundation of anatomy, and it was not until the close of the middle ages that interest in it was clearly manifested in Europe. In the four hundred and fifty years that elapsed between Galen's death and the conquest of Egypt by the Saracens, but two men stand out conspicuously as writers on medicine, Oribasius, the friend and physician of the Emperor Julian the Apostate, and Aëtius, who flourished at the Court of Constantinople about the beginning of the sixth century, and both these received a part at least of their medical education at Alexandria. Then came the Saracenic conquest, and it was interesting to note that it was this very people, to whom the unrest of the dark ages was so largely due, who kept alive an interest in the sciences and subsequently were the exponents to the Occident of the works of Galen and Hippocrates. From the tenth to the fourteenth centuries the masters of medicine were Arabian physicians trained in the schools of Bagdad, Herat and Cordova, but while they held anatomy in high esteem as the foundation of the healing art, its practice was forbidden them by their religion and they could but follow the teachings of Galen. No advance followed their supremacy in anatomy, they but kept alive an interest in Galen's teachings.

In the eleventh century, however, there arose in Italy, at the town of Salerno, the first European school of medicine. The Benedictine monks of the near-by monastery of Monte Cassino, founded by St. Benedict himself in 528, had always, in accordance with the rules of their order, cultivated the useful arts and sciences as well as theology, and had therefore practised medicine. Later, Saracen or Moorish physicians, trained in the Moorish college at Cordova, established themselves in the town, and thus the Cross and the Crescent combined in the establishment of the Salernitan school, which became as celebrated in its day as the Alexandrian school had been in earlier times. But the anatomy that was taught was the anatomy of the Arabians, and this, we have seen, was the anatomy of Galen. That the Salernitans dissected is certain, but it seems probable that the cadavers they studied were those of pigs; one Kopho, a professor of the school toward the close of the eleventh century, wrote a treatise on the anatomy of these animals.

In the thirteenth century rivals of the school of Salerno began to develop and soon its reputation as a seat of learning was eclipsed by the growing renown of the Universities of Bologna, Montpellier and Paris,

and at Bologna and Montpellier the dissection of human bodies was practised in the fourteenth century. Mondino of Bologna wrote a treatise on anatomy in the early part of that century in which he states that he had himself dissected the human body, and Guy de Chauliac of Montpellier in his Surgery written in 1363, describes the order in which his teacher, Bertuccius, was accustomed to proceed in demonstrating the parts of the human body.

This, you will note, was at the beginning of the period known as the Renaissance, when men began to think and observe for themselves. But the renaissance of anatomy was not yet. The supreme authority of Galen which had endured for so many years was not easily overthrown and men had less confidence in their own observations than in the Galenic traditions. I speak of them as traditions because at this time Galen had come to be more generally known through Arabian commentaries than in the original, and what passed for Galen was frequently Latin translation of an Arabic version of the original Greek. So great was the Arabian influence that in the works of both Mondino and Guy de Chauliac Arabic terms are frequently employed to designate parts of the body, while references to Avicenna, one of the most celebrated of the Arabian physicians, are frequent.

But the relighting of the lamp of observation was a great step towards the renaissance of anatomy, for even although theory and servile imitation continued to hold sway for another two hundred years, yet the leaven was working, observation was becoming both possible and popular and there was needed but a man who could feel sufficient faith in himself to cast aside the shackles of tradition and rely upon the evidence of his own senses.

I have treated thus summarily the history of anatomy throughout the dark ages in order to set before you in the greatest possible prominence the value of another lamp of science, the *lamp of independence*. That was *the* lamp of the Renaissance, and while it was shedding the full brightness of its light in the field of literature during the fourteenth century, the century of Dante, Petrarch, Boccaccio and Chaucer, and in the field of art toward the end of the fifteenth and the beginning of the sixteenth centuries, the age of Leonardo, Michael Angelo, Titian, Velasquez, Durer and Raphael, it was not until half a century later that it suddenly burst into flame for anatomy. Leonardo da Vinci, it is true, cutting loose the bonds of tradition, observing for himself and thinking for himself, as an anatomist as well as an artist, a sculptor and an engineer, worked out the structure of the human body in such a manner as to evoke from William Hunter the encomium, "I believe Leonardo was by far the very best anatomist of his time." But Leonardo's lamp of independence was lighted for himself alone; the book which he planned

and which he outlined with so broad a scope was never written and his drawings illustrative of his dissections remained unpublished until recent years. It was not until 1543 that the renaissance of anatomy was accomplished by the publication of the *De corporis humani fabricâ* of Andreas Vesalius.

Vesalius was born in 1514 at Brussels, and in certain respects his early years remind us of those of Galen. His father was a physician of repute and his grandfather had published commentaries on the works of the Arabian Rhazes and on part of the Aphorisms of Hippocrates. Like Galen, Vesalius was thoroughly grounded in both Latin and Greek and he also mastered Arabic; his zeal for study was boundless and even in his youth his powers of observation were trained by the dissection of animals. In his fourteenth year he went to Paris and there studied anatomy under Sylvius, devoting himself to his studies with such assiduity and ability that in 1537, that is to say, in his twenty-third year, he was appointed to the professorship of anatomy in the University of Padua.

His teachers, Sylvius included, were fast bound by the Galenic traditions, founded as we have seen upon the anatomy of the lower animals. Vesalius cast these traditions from him, freed himself from the constraining bonds of what good old Sir Thomas Browne has called "adherence to the dictates of authority," and relied upon his own observations. For him the lamp of independence shone brightly and he gave to the world a new era of anatomy. At first his assertions that there were errors in the anatomy of Galen called down upon his head the vituperations of the Galenists; but he had not lighted his lamp in vain nor hidden it under a bushel, it was not to be extinguished. A new anatomy had been created in which were combined the results of a keenness of observation like that of Herophilus, a breadth of knowledge like that of Galen, and an independence of tradition, which was the great contribution anatomy owes to Vesalius.

The value of the lamp of independence can hardly be overestimated. It is the lamp which has lighted the way to all great achievements in literature, art and science; it is the lamp by which both Shakespeare and Darwin worked. It is the lamp whose light has shown the way to progress and whose absence leads to retrogression. But yet, let me warn you that it is a lamp that must be used with circumspection. A healthy scepticism is one of the chief assets of a scientific thinker. But let us be assured that it is a healthy scepticism, that is to say a scepticism based on observation and controlled by knowledge. Without such basis and control scepticism is pernicious; without them the doubter remains for ever in subjection to the everlasting Nay, with them he passes through the centre of indifference and reaches finally the everlasting Yea. Far better is blind adherence to authority than wanton doubt. Vesalius

illumined his scepticism by the lamps of observation and knowledge and it became an additional light upon the path of progress.

"Insist on yourself, never imitate," is the advice of Emerson. But see to it that your self-reliance be not founded upon and magnified by ignorance. Vesalius insisted on himself and the renaissance of anatomy resulted; Darwin insisted upon himself and a new philosophy was given to the world. But in both these cases the insistence was based on observation and knowledge; it was not the empty insistence of a fallow mind. The lamp of independence must follow those of observation and knowledge or it may but intensify instead of illuminating the darkness. I have quoted to you the remarks of Dr. Radcliffe bearing on the value of the lamp of knowledge. In connection with the lamp of independence let me cite for your salvation the warning of another great physician, Sir Charles Bell: "Of all the lessons which a young man entering upon our profession needs to learn, this is, perhaps, the first—that he should resist the fascinations of doctrines and hypotheses, till he have won the privilege of such studies by honest labor and a faithful pursuit of real and useful knowledge."

The effect of Vesalius' emancipation of anatomy from the control of tradition led at once to an activity of investigation and an abundance of discoveries, without parallel in the earlier history of anatomy. The achievements of the century which succeeded the death of Vesalius are alone sufficient to stamp his work as the foundation of modern anatomy, for in that period discovery followed fast on discovery, and results were obtained which completely revolutionized the physiological ideas of the day. And two of these results are especially noteworthy as yielding two of the most fundamental conceptions of modern medicine, I mean the circulation of the blood and the absorptive function of the lymphatics.

A partial index of the results obtained in the century in question is furnished by our anatomical nomenclature, which still retains the names of several of its discoverers. Thus the name of Fallopius, one of the immediate successors of Vesalius, is well known to every student of anatomy; Eustachius, who died in 1570, in addition to many important discoveries among which is that of the tube which still bears his name, inaugurated the investigation of the minuter anatomy of organs, showing that their parenchyma, a name first employed by Erasistratus, was not a homogeneous substance as had been supposed, that of the kidneys, for instance, consisting of tubules; Aranzi or Arantius, a pupil of Vesalius, who subsequently became professor of anatomy at Bologna, demonstrated the independence of the maternal and fœtal circulations and contributed important facts concerning the structure of the fœtal organs; Varolius, also professor of anatomy at Bologna, by his observations upon the brain prepared the way for the future work of Willis; and Vidius, Spigelius

and Botalli have all had acknowledgment of their contributions to anatomy from our nomenclature.

But the discoveries of these men, important and suggestive as they were, are overshadowed by that of the circulation of the blood. For Galen the blood simply oscillated to and fro in the vessels, the veins as well as the arteries leading from the heart. Servetus, a contemporary of Vesalius, described the passage of the blood from the right to the left side of the heart through the lungs, his views, however, being still largely tainted by the Galenic physiology, and his views were essentially those recorded in the works of Vesalius and his pupil Columbus. How far these ideas concerning the pulmonary circulation may have contributed to the final discovery of the major circulation may be a matter for discussion, but it is generaly admitted that the demonstration by Fabricius, the pupil and successor of Fallopius, of the valves of the veins and their significance was much more important. Harvey, for whom was reserved the honor of the great discovery which he announced in 1628, was a pupil of Fabricius.

As regards the lymphatic system, we have already seen that it was detected by Herophilus, but was entirely overlooked by succeeding writers. In 1622 Aselli, professor of anatomy and surgery at Pavia, rediscovered in a dog the lymphatics of the mesentery and traced them to a group of mesenterial lymph-nodes, and in 1647 Pecquet, while still a student of medicine at Montpellier, traced the same vessels past these nodes to the thoracic duct, whose course up the thorax to its entrance into the subclavian vein he was able to follow. Later the observations of Caspar Bartholin and Rudbeck revealed the existence of other groups of lymphatics and the system became fully recognized, although it awaited the closing years of the eighteenth century for a full exposition by Mascagni. The great importance of this system from the surgical standpoint has, however, become emphasized in recent years, and it has been one of the tasks of the last decade, admirably fulfilled by Gerota, Poirier Cunéo, Most, Stahr and others, to elucidate systematically the regional anatomy of the lymphatics.

The discoveries recounted above are the most striking results of the century succeeding the death of Vesalius, and if one considers their number and importance in contrast with the sterility of the twelve preceding centuries, one can form a fitting estimate of the value of the lamp of independence as it was used by Vesalius and his successors.

There is yet another lamp to which I would refer were it not that I have already trespassed sufficiently upon your time and patience. It is the *lamp of thoroughness,* and with it I would couple the name of Jacob Henle, whose handbook of systematic anatomy, written half a century ago, is still a model of descriptive anatomy and a book to which the

anatomist still turns for information and inspiration. Henle not only worked in the light of the lamps of observation, knowledge and independence, but also employed that of thoroughness, which served to increase manifold the brilliancy of the others. The value of this lamp to all of us in whatever we may be called upon to do needs no comment; in making use of it we are but following the scriptural injunction, "Whatsoever thy hand findeth to do, do it with all thy might." Let me advise you to make thoroughness a habit and to that end practise it continually from the very beginning of your course.

Train yourselves, therefore, to observe, gather knowledge that you may be able correctly to interpret what you observe, cultivate independence of thought, but see that your independence rests upon observation and knowledge or woe will be to you, and, finally, develop the habit of thoroughness. With these four lamps to guide your feet your path will be sure, your goal evident and your success certain.

SUPPURATIVE MASTOIDITIS—ITS DIAGNOSIS AND TREATMENT.*

By GILBERT ROYCE, B.A., M.B., Toronto,
Lately Resident Surgeon of the New York Eye and Ear Infirmary.

THE relation that the mastoid bone bears to the very important structures within the cranium renders an intimate knowledge of its condition of extreme importance to the surgeon; for, should it become the seat of a suppurative process, he is confronted with the possibility of a serious complication that demands from him an accurate and timely diagnosis.

In many instances this is a comparatively simple matter, but cases occur now and again which puzzle even the most expert observer. This is due chiefly to the following facts:

1. Variation in the structure of the bone.
2. Variation in the virulence of the germ.
3. Variation in the symptoms, both objective and subjective, even when the pathological conditions are similar.

In the vast majority of cases, mastoiditis occurs secondarily to a purulent otitis media. Dench says that he believes 99 per cent. occur in this way. Many now claim that infective suppuration of the mastoid is a constant accompaniment of every purulent inflammation of the tympanum, and that it is only when the mastoid symptoms become predominant that our attention is called to it.

In forming our diagnosis we should first obtain an accurate history, for the longer the duration of the symptoms the more likely we are to

* Read at meeting of Ontario Medical Association.

have suppuration in the bone. The fact, too, of the attack being a second one also points to bone invasion, while, if the attack be an acute one on a chronic purulent otitis media, involvement of the bone is almost invariably the case.

The subjective symptoms, though valuable as aids, are not characteristic. Pain is probably the most constant one, and is complained of as radiating from the affected mastoid over the side of the head. It is dull and frequently throbbing in character. It must be distinguished from otalgia, hysteria, and otitis externa. Inability to sleep is an important symptom and is present in the majority of cases. A feeling of heat over the mastoid is complained of by many. The body temperature, though usually raised, may be perfectly normal. A *persistent* elevation of temperature, however, points to bone invasion.

In all cases there is a certain amount of prostration and indisposition to exertion. Such symptoms as chills, vertigo, nausea, vomiting, and sweating point to probable intracranial complications. The general appearance of the patient is not characteristic, and gives us no hint, except that, in cases of long standing, a typhoid or septic aspect is sometimes seen.

The appearance of the mastoid region may be perfectly normal. Swelling and œdema over the bone point to mastoid disease, especially when it occurs some time after the onset. It may, however, be due to swollen glands, otitis externa, or to periauricular phlegmon as the result of an invaded cartilage. The swelling caused by adenitis here is never extensive, is superficial and not especially painful. That of otitis externa is superficial and usually obliterates the post auricular furrow; besides there is generally marked swelling in front of the tragus, as the lymphatics from the external ear empty into these parts. Movement of the auricle, pressure in the canal with the finger tip, or pressure in front of the tragus is very painful in furuncular conditions.

The subperiosteal abscess of mastoiditis, on the other hand, is deeply situated, and does not as a rule obliterate the post auricular furrow, the auricle being pushed out as a whole from the head.

Pain on deep pressure over the mastoid bone is one of the most constant and important signs of mastoiditis. At the beginning of an attack it is usually most severe over the area of the antrum and from here radiates into the tip. It may be general over the whole bone and posterior to it, or extend down into the neck.

In eliciting this sign, care must be taken to compare both sides, a good plan being to place a hand on each mastoid and to press alternately, meanwhile watching the face of the patient for signs of distress. In nervous patients and children it is well to divert their attention in some manner during the examination.

Pain on pressure over the antrum occurs frequently in cases of middle ear trouble, for there is no doubt that the mastoid antrum is infected in the vast majority of middle ear suppurations. The pain of mastoiditis is not only found here, but is often most severe in the tip of the bone, and radiates to the parts below and posterior to it. Pain can sometimes be traced in a line posterior to the antrum area and is due to infection of the line of cells that run in this direction.

In bones of a cellular character, the so-called "pneumatic mastoid," pain is very severe, and extends over its entire surface. It comes on early in the attack and rapidly becomes general, so much so as to lead the surgeon to operate, expecting extensive suppuration, but only to find an extremely cellular bone with acutely inflamed cells filled with blood-clot.

Pain may be absent in those cases where the cortex is very thick and dense or in sclerosed bones met with in cases of long standing middle ear suppuration.

There is another class of cases where pain is very slight and sometimes absent. I refer to those caused by the streptococcus mucosis capsulatus. Dixon, the pathologist of the New York Eye and Ear Infirmary, first called attention to the insidious action of this germ in mastoiditis, and in a series of cases which the writer saw while at the Infirmary, and which were operated upon subsequently, the mastoids showed destruction quite out of proportion to the symptoms exhibited. In many of these cases pain on pressure was very slight, and sometimes absent.

Swelling over the mastoid tip extending down into the neck is seen in the Bezold perforation, where the pus has burrowed through into the digastric groove and found its way into the tissues below. The swelling in these cases rapidly becomes brawny, and is not readily mistaken for infected glands, besides, movement of the head causes considerable pain, owing to inflammation of the upper fibres of the sterno-mastoid muscle.

Discharge from the canal may be from furuncles in it, or from middle ear disease; if copious, it points to the latter, and the more profuse the more likely are we to have mastoid abscess to deal with. It may be thin, mucoid and stringy, or thick and creamy in appearance, the former is usually seen in recent cases of a comparatively mild character, the latter in cases of longer duration and of a more severe or chronic type.

It is in the examination of the canal that we find one of the most valuable diagnostic signs of mastoiditis. This is a sagging or prolapse of the postero-superior wall near the drum, and it indicates a suppurative process in the bone. It must not be confounded with circumscribed otitis externa, which often causes a contraction of the canal near this region.

True sagging or prolapse of the canal is soft and can be dimpled

with the examining probe, and is not especially painful. Furuncle, on the other hand, is brawny, hard and very painful.

In the pre-suppurative stage of mastoiditis, or in acute purulent otitis media, some narrowing of the lumen of the canal can be sometimes seen near the drum, due, doubtless, to an inflammatory process in the canal wall. If the case goes on to suppuration in the bone, this inflammatory condition assumes the character of a prolapse; on the other hand, if resolution takes place, the narrowing disappears.

True sagging of the canal wall should be recognized as such, for it is an important link in the chain of evidence that points to mastoid abscess.

The condition of the drum membrane only indirectly aids in the diagnosis. The longer an inflamed and bulging membrane remains intact, the more likely are we to have pus in the mastoid. Insufficient drainage also tends to this condition. How often do we see, in children especially, cases of subperiosteal abscess where the tympanic membrane is intact. From time to time cases of mastoiditis are reported that exhibited no symptoms of tympanic involvement, but operation having been performed, showed the bone to be diseased. The writer has not seen in a series of many hundred a single case in which there were absolutely no signs in the canal, and it must be indeed a very rare condition.

If the canal be so occluded with furuncles as to shut off any view of the interior, diagnosis is rendered very difficult, and it may be impossible to tell if a astoiditis coexists.

Should occlusion be not complete, the fork test aids somewhat in determining the coexistence of middle ear disease with otitis externa, as in the latter there is no change in the hearing, wheras in the former air conduction is lost, bone conduction prolonged, and the fork is best heard in the diseased ear.

Some investigators claim that a leucocytosis points to mastoid suppuration; others that it is of no value, but that an increase of the polynuclear cells proclaims a purulent focus. From the writer's experience, gathered from an observation of some few hundred cases while resident surgeon at the New York Ear and Eye Infirmary, leucocytosis was of little or no value. Increase in the polynuclear cells occurred in many cases, more especially in those that had been running along for some time, or where there had been considerable destruction of bone as shown by operation.

A polynuclear increase is of service from a diagnostic point of view when it is marked, and when it is placed along with other symptoms, but care must be taken to exclude intercurrent affections and purulent foci in other parts of the body.

Of the germs found in the discharge from the canal, streptococcus and pneumococcus appear to be the most malignant and are always present in cases of a fulminant type. The inflammatory process is severe and rapid, and does not readily yield to ordinary treatment, so that mastoid involvement is generally the case. The stapylococcus produces much milder symptoms, and the discharge is often watery, or mucoid and stringy in character, and not creamy.

Cases presenting staphylococcus infection or infection of a mixed character comparatively seldom go on to mastoid involvement when ordinary measures in treatment are carried out.

As stated above, the streptococcus capsulatus is a formidable germ on account of it producing symptoms of a very mild character, quite out of proportion to its activity, and on this account cases showing the presence of this germ should be watched very closely. A microscopic examination of the discharge from the canal should be made in every case where possible, as it reveals the nature of the infection and its probable virulence.

Other methods have been brought forward as diagnostic aids, viz., transillumination, percussion and auscultation of the bone, but they are so uncertain as to render them of little practical value.

Treatment.

In the pre-suppurative or early stage of mastoiditis such abortive measures as the application of cold, leeching, etc., are no doubt of service, but when once suppuration has become established, their benefit is questionable. Local blood-letting gives rise to a tenderness which may be confounded with that arising from the inflammatory process. Cold relieves the pain, but when discontinued the symptoms recur. Many advocate the application of heat in the form of a hot water bag or moist poultice. This, while it may favor germ activity, seems to facilitate discharge.

If there is an otorrhœa, a careful examination of the canal and drum membrane should be made, and measures taken to provide a free drainage, enlarging the existing opening, if necessary, with a blunt knife.

Should the canal be dry, and a bulging drum present, a free incision should be made, extending from the extreme lower margin around the posterior circumference and up into Schrapnel's membrane, the knife being drawn outwards for a short distance in the wall of the canal. In this manner, at least half of the circumference of the membrane is incised and depletion is obtained from the incision in the canal wall. Gentle irrigation with warm antiseptic solutions, such as the bichloride of mercury, 1-5000, may be now carried out every two or three hours as required to keep the canal free of discharge.

An incision made in the above manner seldom or never closes so soon as to shut off the discharge, and can be most efficiently done under nitrous oxide gas or ethyl chloride. Should the discharge be thick and the pain in the bone severe, warm boracic fomentations may be applied for a short time and the effect watched.

Having carried out such general measures as rest in bed, fluid diet and catharsis, the patient can be held under observation for from 24 to 48 hours.

There is no doubt that many cases of suppurative mastoiditis get well with some such treatment as above, but, should the discharge become profuse, the canal wall show distinct prolapse, and the tenderness increase in intensity and area, operative procedure is necessary. It is also necessary in those cases of some days' standing, where marked tenderness is found in the tip, and posterior to it and to the area over the antrum, for it shows an extension of the diseased process in the neighborhood of the sigmoid sinus. A cessation of the discharge, with increased tenderness over the mastoid, are unfavorable signs.

In cases where there has been abscess formation under the periosteum covering the mastoid, or where pus has found its way into the tissues of the neck, the opening of the mastoid is imperative. It is especially indicated in cases where there has been an acute attack, upon a chronic discharging ear, for here the mastoid is sclerotic, and accumulated discharge is forced in towards the intracranial structures; the destruction of bone is also very rapid, and it is not uncommon to find exposure of the facial nerve with signs of paralysis, erosion of the semi-circular canal; or necrosis through the inner plate, and the formation of granulations on the dura, or a purulent focus in the sinus groove.

On account of the sclerosed condition of the bone or greatly thickened cortex, which is present in these cases, there may be absence of pain on pressure, and it is difficult to tell the condition of the interior; under such circumstances it is better to open the bone and be on the safe side.

Should operative measures be deemed necessary, the question arises, what kind of operation should one do, and how far should one go.

The so-called Wilde's incision is now almost obsolete, and justly so, as it is not in keeping with modern surgical practice. The modern mastoid operation, with its improved technique, exposes the patient to comparatively little danger and renders recovery more certain.

This operation, as performed by advanced surgeons to-day, aims not only to secure immediate and complete drainage from the antrum, but to remove as far as posible all softened and diseased bone.

The experience of the surgeon alone, will indicate to him how thoroughly this should be done, the condition of the patient, the duration of

the disease, and the gross appearance of the tissue all being taken into consideration. There are some surgeons who still claim that antrum drainage is sufficient and that the bone will take care of itself. Against this the writer's experience leads him to state that there are two, if not three, areas which seem prone to be invaded, and that rather early in the attack, more especially should the mastoid prove to be a cancellous one.

These areas are, the line of cells extending posteriorly from the antrum over the knee of the sinus in the angle between it and the floor of the mid-fossa, the cells in the root of the zygoma, and the cells in the median groove leading down into the tip. Any recurrences that the writer has seen have been almost invariably due to diseased bone occurring in one or more of these regions. They should be examined in every case, and the softened bone curetted away. The tip, also, being usually a very cellular part, and frequently infected, should be removed.

The whole interior of the cavity formed should be smoothed out, as it greatly facilitates granulation, and no pockets remain for the accumulation of discharge flowing from the aditus. The antrum itself is opened widely, and the tegmen examined for erosions. Should there be granulations blocking the aditus and preventing free drainage they can be readily removed with a small ring curette, care being taken not to detach the incus.

In acute exacerbations on chronic cases it is wise to explore the sinus groove, especially if the patient shows septic symptoms. If the abscess has gained access through erosion to the sinus or dura, producing a perisinuous or epidural abscess, the bone should be clipped away from the inflamed parts until normal sinus or dura is seen.

The advantages of this operation over the more conservative one are:

1. Skilfully done, it does not expose the patient to any more danger.
2. The probability of a recurrence is much lessened.
3. It provides a healthy basis for granulations to form, thereby promoting rapid and uneventful healing.
4. The drainage through the aditus is immediate and the discharge from the canal ceases in a few days.
5. It fulfills the demands of modern surgical practice in dealing with diseased bone.

It may not be out of place here to review a few points in the technique of this operation.

The primary incision should be made curved and parallel to the post auricular furrow, and not straight; the scar will then be well hidden.

Care should be taken in peeling up the periosteum not to lacerate it, and so preserve as far as possible its regenerative function.

The fibres of the sterno-mastoid muscle should be thoroughly freed from the tip. This can then be removed without tearing out the muscle fibres and leaving a ragged condition in the lower angle of the wound, where discharge can accumulate and infection take place. Neck abscesses often originate from lack of attention to this particular.

The primary groove through the cortex is safely made with a moderately broad gauge and the furrow widened, if necessary, with a rougeur working from below upwards, for the sinus is deeper here and not so apt to be injured. The remainder of the operation can be performed with the curette and rougeur, and the patient saved the shock which makes chiselling so objectionable.

Should the antrum be difficult to find, owing to eccentricity of position, care must be taken not to work too deeply; otherwise one is apt to go through the posterior wall into the tympanum below the external semicircular canal, and injury to the facial nerve result. In these cases the antrum will usually be found abnormally high, indeed in some cases above the level of the superior canal wall, and it is here it must be searched for.

In examining the root of the zygoma, it is well to remember that the floor of the mid-fossa dips here and it is easy to break through to dura.

In operating upon children and infants with post auricular abscess, the point of the knife should not be used in making the incision through the integument, for the sinus is superficially placed, and may be uncovered in the necrosing process. The bone in infants, too, is very soft, especially the diplöe, and care should be taken not to sacrifice this active reparative tissue, thinking its condition pathological.

In all cases the chief accidents to be guarded against are, wounding the sinus, opening the semi-circular canal and injury to the facial nerve.

In cases where the canal is almost or quite closed with furuncles, and one suspects the coexistence of a mastoiditis, the furuncles should be thoroughly opened and treated, meanwhile watching for signs of mastoid trouble.

Where there is a periauricular phlegmon and abscess formation, diagnosis becomes extremely difficult or quite impossible, the only recourse being to open down to the bone and examine its condition.

The post-operative treatment is important, as on it depends the rapidity of healing. Iodoform gauze is perhaps the best packing, as it promotes the early formation of granulations. The pain caused by the removal of the gauze at the first dressing led Whiting to suggest the use of perforated rubber tissue interposed between the gauze and the wound surface. The removal of this dressing causes little or no pain, as the writer can testify, but the wound surface presents a somewhat sloughy appearance.

Granulations are stimulated by Balsam of Peru or by repacking with iodoform gauze, care being taken to insert the gauze loosely in order to give the granulating surface all the encouragement possible. In regard to the employment of the blood-clot method, the writer wishes to state that, after having seen it employed in a considerable number of cases, the results have not been such as seem to him to justify its use. Every effort was made in these cases to perform the operation as thoroughly as possible, and with every precaution as regards asepsis. The result could never be predicted and, with the exception of a very few, all had to be opened up and the clot turned out. It appeared to have become infected from the discharge through the aditus as a purulent focus could be seen in this region. The discharge from the canal, too, continued for a much longer period than in those cases treated openly, a condition doubtless due to the limited posterior drainage.

In the majority of cases of suppurative mastoiditis opening the bone seems to be the most satisfactory and certain procedure, for, though many cases get well without it, they do not balance those that are lost through palliative treatment.

In support of the plea for earlier and more frequent operations in suppurative mastoiditis, three considerations have been brought forward.

1. The frequency of chronic cases.

2. The frequency of intracranial involvement.

3. The fact that all cases of middle ear disease mean involvement of the antrum if not the mastoid.

102 College street.

DR. HAMILL'S MEDICAL EXCHANGE.

The sale of a medical practice is an important matter when the interests of the vendor are considered. The utmost care must be used to prevent patients knowing the vendor's intention, and the offer should only be presented to very probable buyers who are morally and legally bound to secrecy, and to not offer opposition if a sale is not made. These features are embodied in the method adopted by the Canadian Medical Exchange conducted by Dr. Hamill, and every effort made to consummate a sale with a maximum of speed and a minimum of publicity.

PROVINCE OF QUEBEC NEWS.

Conducted by MALCOLM MACKAY, B.A., M.D., Windsor Mills, Quebec.

The universities being once more at work, it is interesting to see what effect the five years course has had upon the attendance at McGill. Unfortunately the fire has undoubtedly prevented many from entering the first year, men who would not have been deterred by the length of the course. It is very pleasing, then, to note that there are some fifty-six registered as freshmen. When the new buildings are completed there will probably be almost as many as there were previous to the change, if one may judge from the number now applying. The opening lecture of the session was delivered at the Royal Victoria College by Professor Macallum of Toronto, his subject being "The Scientific Spirit of Medicine." In the course of his interesting and instructive paper, Professor Macallum pleaded strongly for the need of further work in the laboratories, in connection with the usual training of the medical student. He insisted upon the need of accuracy and trained powers of observation in the student, and the necessity there was for him to pay as much attention as possible to laboratory work and the obtaining of a thorough knowledge of the sciences on which modern medicine was based.

The lecturer also spoke of the necessity of keeping in good physical condition. In the training of one's mental powers the plastic period was prior to forty, and in a sense these were the best years of one's life.

In accepting the invitation to deliver the inaugural address, Professor Macallum said that he was influenced not only by the compliment implied, but by the special nature of the occasion, claiming that between all universities there should be a sense of fellowship, while between Toronto and McGill there had not been hitherto that freemasonry of spirit he would like to see prevail. There had been alcofness where there should be comradeship. This did not imply that they should not be rivals. In all things of the mind there ought to be a struggle to excel. A competition aiming at intellectual excellence should always exist between the two universities, and it would be a sorry day for the higher life of this young nation if either went on its way careless of the ideals and intellectual ambitions of the other. His third reason was the desire to express how deeply the members of the University of Toronto felt for the misfortunes of April last. If they had seriously affected the future of McGill they would have been felt in Toronto not only for this year, but for future generations. Happily the disaster had not daunted McGill or her medical faculty, and in this one found an illustration of the saying that "it is not buildings that constitute a university, but men." The speaker then went on to pay a tribute to

McGill as the oldest medical school in the country, and expressed his approval of the five years course. Not only would the student obtain a fuller knowledge of medicine and surgery, but also of the sciences upon which they were founded. One qualification essential to the student, if he was to achieve the highest success, was the scientific spirit, and it was because of its importance and value to the student in training that Professor Macallum chose that qualification as the central topic of his address. Having defined what was meant by science, the speaker went on to discuss what was meant by the scientific spirit, explaining how it was misunderstood not only by the man in the street, but even by the professional man who regarded the scientific spirit as a thing apart, the average mind did not, except when there was a pecuniary industrial or commercial advantage in knowing. It was the attitude of mind that desired definite and only definite and accurate information that constituted the scientific spirit. To a certain type of mind it was a stigma to be labeled theorist. The extravagant theorist, however, declared himself as such, and so provided for his own effacement. The practical man, on the other hand, was just as much an obstacle to real progress, for he accepted popular explanations or theories, which in ordinary cases were either inadequate or wrong, or, in the words of Professor Ostwad, "the practical man is the worst of all theorists, for he has a bad theory." After dwelling on the misconception in the average mind of what constituted science, the lecturer said that tradition to-day with a large portion of civilized men counted for more than established facts and carefully established deductions. Theosophy, Christian Science so called, occultism and all the semiparanoic creeds that were having their hour, were founded upon this absence of correct information and clear conception as to what science was.

Having made clear that science was not a collection of facts, but the organization of our knowledge of them, Professor Macallum then discussed the scientific spirit in its relation to medicine. He traced the early history of medicine, and the development of the sciences on which modern medicine was founded and the influence that the natural philosophers had in breaking new paths, and in laying the foundations of astronomy, chemistry, physics, biology, anatomy, physiology and pathology. In consequence of the development of the sciences in the last half century there was an extraordinary stimulus to the development of the scintific spirit. He believed that progress was to be along chemical lines for the next two or three decades, and he emphasized the chemical causation of disease, because it was not allowed its right place in any survey of disease, and because it was in this line that medicine was to obtain its greatest triumphs.

At the close of the address Principal Peterson, who occupied the chair, presented Professor Macallum with a vote of thanks, and after a short speech by Dr. Roddick the meeting adjourned.

The first regular meeting of the Montreal Medico-Chirurgical Society for the session 1907-8 was held on October 4th, when the following officers were elected for the ensuing year: President, Dr. Wesley Mills; Vice-President, Dr. J. A. Hutchison; Secretary, Dr. H. H. Gordon; Treasurer, Dr. H. T. Bazin; Trustees, Dr. H. S. Birkett, Dr. Jas. M. Jack, and Dr. John A. Macdonald. Dr. Finley, the retiring President, gave a resumé of the work of the past year, after which Dr. White showed two pathological specimens, one of primary colloid carcinoma of the vermiform appendix, the other Richter's hernia. The paper of the evening was entitled "The End Results of Carcinoma of the Breast," by Dr. George Armstrong.

As a result of the deliberations of the Hygiene and Statistics Committee of Montreal, an amendment to the by-law concerning the registration of births is probable. Dr. Laberge submitted a tabulated statement of births registered at the Tutelles Office, showing that while about 4,500 were entered at the civic bureau, those registered from the various congregations of the city amounted to over ten thousand. Certainly some of the latter registration were adults, because in certain churches adult baptism was practised, but there was sufficient disparity to show that the by-law regarding registration at the City Hall was a dead letter to a considerable number of parents and physicians. Dr. Laberge also submitted a report on apartment houses, calling attention to the difficulties that may arise from the necessity of inspecting the sewers and water pipes in such establishments. In thirty-four apartment houses 747 families lived. If some one person should demand an inspection of the sewer or water pipes it would mean that seven inspectors must be put to work. The doctor therefore suggested that the committee should take some means to regulate the inspection of such apartment houses. The good work of the milk inspectors was commented on by Ald. Dagenais.

The first meeting of the District of St. Francis Medical Society for 1907-8 was held in Sherbrooke on September 11th. After the election of officers several important items of business were taken up. The committee on the revision of tariff reported some progress, and it was decided that a printed copy of the proposed changes be mailed to each member in order that at the next meeting some action might be taken for the establishment of the tariff. Many of the items came in for criticism, notably the fee for an anæsthetic in the case of dental operations, the present sum of two dollars was certainly inadequate, and many believed that one fixed sum of five dollars should be required for every anæsthetic;

others, however, considered that three dollars would be sufficient, and a lively discussion may be anticipated before the rate is fixed.

A notice of motion was made by Dr. Mackay to the effect that the meetings of the Society should be held every month instead of every two months. The question was asked whether this would not cause a falling off of attendance as the meetings were often small enough as it was. Answering for the practitioners out of town, the mover replied that an increase would probably follow, for at the present time if a country practitioner happened to be called out for ten minutes just at train time, there was a four months' interval between meetings, which was quite enough to make him lose interest in what was being done; further, it was probably just as easy for him to make an attempt to attend the meeting every month as it was to make it every two months, and the chances were doubled for his being able to get to the meetings of the year, which was really the important point. Dr. Edgar supported this idea and stated that when the meetings were annual they were not so well attended as now, and he thought that monthly meetings would greatly increase the interest and in consequence the attendance. The proposition was made that those practitioners who were in arrears with their dues be permitted to pay for two years with initiatin fee, and be reinstated. It was believed that the interest in the Society would be much increased by thus bringing in members who had fallen behind in their dues.

It was then moved that the committee find larger rooms in which to hold the meetings, as the present quarters were much too small.

Several interesting cases in practice were reported, after which the meeting adjourned.

HÆMORRHAGIC CASTS OF THE BRONCHI FROM A CHILD WITH CROUPOUS PNEUMONIA.

Dr. D. J. M. Miller (*Archives of Pediatrics,* July, 1907), describes the case of a child 4½ years old who was admitted to the Children's Hospital of Philadelphia suffering from pneumonia in the left lower lobe. On the fifth day she suffered from a violent paroxysm of coughing which was accompanied by cyanosis and great difficulty in breathing. She expectorated half an ounce of bright red blood and two large, irregular, cylindrical, pinkish white masses. Great relief followed and the temperature rapidly fell to normal, the crisis being fully established next morning. The casts, after careful examination, were found to consist of blood and not fibrin.

Hæmorrhage hemoptsis is not common in pneumonia and the author had never previously met with a case. He considers that the hæmorrhage originated in the air vesicles or finer bronchi and that the casts were formed in a medium sized bronchus on the left side, which was the side of the pneumonia.

CURRENT MEDICAL LITERATURE

MEDICINE.

Under the charge of A. J. MACKENZIE, B.A., M.B., Toronto.

THE CLINICAL HISTORY AND RECOGNITION OF TUBERCULOUS MENINGITIS.

In the *Jour. A. M. A.*, April 6th, Koplik discusses the diagnosis and course of tuberculous meningitis in the light of the experience of 52 cases in hospital service, in all of which the diagnosis was confirmed either by post-mortem, lumbar puncture or animal experimentation. The cases varied in age from 10 years to 6 months; 34 were under 2 years of age and 30 under 4, the average age 4 years and 4 months.

Mode of Onset.—In 86 per cent. of the cases the onset was insidious, in the other 10 cases there was lacking a history of slow onset, and in one or two it was stated that the beginning was sudden, but there is always the possibility that initial symptoms were missed.

Nervous System.—Rigidity was absent at all periods of the disease in 14 cases; in some it was slight, and in no case did it appear before the first week, a marked difference from the epidemic form. The patient as a rule lies stupid, and does not react to irritation, as in the epidemic form, in which as a rule there is hyperæsthesia. The Kernig sign was present in 22 cases, absent in the others, and so does not aid the diagnosis. The Babinski reflex was present in 23 cases; where present it is presumptive evidence of the tuberculous form, though it has been found in the other form. The general reflexes were present in most of the cases, unless they came in the last stages when they were absent.

Skin Eruptions.—The presence or absence of herpes or petechiæ is of little value as an aid; they are generally present in the cerebro-spinal form and often present in the tuberculous form. The tache cerebrale is present in most cases, not only of meningitis, but of other affections with cerebral symptoms.

The pulse rate is as a rule faster in the purulent forms of meningitis than in the tuberculous forms, but this is of little value as a distinction, and the respiration has the same characters in all. Vomiting occurs at the time when the ventricles are beginning to be distended with fluid; it is not persistent.

Temperature.—Exact observation of the course of the temperature in the early part of the affection is of the utmost importance; a persistently low temperature with the cerebral symptoms is very strong evidence. Where the temperature runs as high as 104 or 105 there is either a complication or approaching death.

Paresis.—Localized paresis only appears at the close of the disease, but then the evanescent character of the condition, passing from one side to the other over night, is of value in confirming a doubtful diagnoss, as it is due to fluid pressure, which is movable.

Blood.—Leucopenia—the absence of leucocytosis—is presumptive evidence of a tuberculous process. In 35 out of the 52 cases studied, the count was less than 20,000; in the remaining cases it varied from 20,000 to 29,000.

The Condition of the Eyes.—Forty-six of the cases were examined as to the condition of the eyes. Thirty-four per cent. of these were found normal at the outset, in 66 per cent. there was found some change in the disc, varying from optic neuritis to the presence of tubercle in the choroid. Choroid tubercle was present in 9 cases of the 46 examined as early as the second day of the duration of the active symptoms of the disease. In other forms of meningitis, the fundus as a rule shows little or no change.

Percussion of the Skull.—MacEwen was the first to apply this method of diagnosis to diseased conditions in the cranium. The patient should be upright, with the head slightly inclined to one side, and the persussion made over the pterion. There should be no tympany over the region of the lateral ventricle beyond the age of 2½ years; if there is it is suggestive of hydrocephalus. In 34 of the 52 cases it proved a useful method of diagnosis of this condition.

Lumbar Puncture.—The former points in the diagnosis have been given first, as they are, in the opinion of the writer, the means on which an early diagnosis should be made. Lumbar puncture should be used for the confirmation of diagnosis in a case already hopeless. In 66 cases in the past five years the bacillus has been found in 42; great care is needed to find it in some cases even in the centrifuged fluid. Puncture after death is generally successful, inasmuch as the bacilli settle down to the bottom of the spinal canal after the life currents are stopped.

In the greatest number of cases the lymphocytes predominate in the fluid from the puncture; in rare cases there may be a predominance of polynuclears, but the former condition was found in over 70 per cent. of the cases examined.

The diagnosis.—Slow onset interrupted by periods of irritability, the irregularity of the pulse and respiration, the low or normal temperature, the absence of hyperæsthesia, the lack of appetite, the discovery of hydrocephalus by percussion of the skull, will all lead to a diagnosis of tuberculous trouble in these cases, to be confirmed by lumbar puncture. In the epidemic type we note the abrupt and unmistakable onset, the high temperature, the rigidity, the constant presence of the Kernig sign, and the active hyperæsthesia.

LESIONS OF SPINAL AND CRANIAL NERVES EXPERIMENTALLY PRODUCED BY TOXINS.

In the *B. M. J.*, April 27th, there are reports from the Science Committee of the British Medical Association. No. 99 is by Orr and Rows, and deals with experiments made by lesions of the nerves. The method used was that suggested by Professor Lorain Smith, consisting in filling a celloidin capsule with a broth culture of an organism of adequate virulence and placing it in apposition with the nerve to be studied, the toxins diffusing through the capsule and reaching the lympth stream of the nerve. The conclusons arrived at are as follows:

(1) Toxins readily travel up spinal and cranial nerves to the central nervous system.

(2) While these nerves in their extra-medullary portion possess a neurilemma sheath and are protected by its vital action, in their intra-medullary part, having lost their neurilemma, they immediately undergo degeneration.

(3) The first change is a primary degeneration of the myelin; axis-cylinders and nerve cells are evidently affected later.

The writers think that there is support in their findings for the hypothesis of the lymphogeneous origin of some nervous affections. Tabetiform and cranial nerve lesions in general paralysis, and even those in tabes, are not the result of nerve-cell degeneration, but are a primary affection of the nerve myelin sheath, commencing where the neurilemma is lost. In clinical cases similar lesions, starting at the same point, are found the result of absorption from a definite toxic focus situated outside the central nervous system, the toxins gaining access by the lymph stream. The diseases mentioned in the same way may be the results of diseases passing by the lymph stream to the cord, medulla and pons from some as yet unknown focus.

FUNCTIONAL ALBUMINURIA IN ATHLETES.

In the *B. M. J.*, January 5th, there is an article by Collier of Oxford on his experience with this form of albuminuria among athletes at the University of Oxford. He was called upon for many years to examine students who wished to take part in the various athletic contests, and he was struck by the very large proportion who showed the presence of albumin in the urine after severe physical exertion. Those who consulted him were advised that on account of this condition they would be unwise to undertake anything but the milder forms of sport, as he believed that this condition argued some degree of weakness in the renal blood vessels.

The Canada Lancet

VOL. XLI. NOVEMBER, 1907 No. 3.

EDITORIAL.

PRESIDENT FALCONER'S ADDRESS.

To no other profession is a high standard in university life of greater importance than to the medical. The installation of a new president in the seat of authority in the University of Toronto is a matter of first moment to the medical men of Canada, and especially of Ontario. Everything that makes for a high plane of thought, education and citizenship will be hailed with pride by the medical profession, from whose ranks come so many noble benefactors of the State in every sphere of life.

President Falconer, during his address, gave utterance to a number of expressions of far more than passing merit. To some of these we would invite the attention of our readers:—

"The university has a large part to perform in maintaining the ideal or spiritual element in life, and is a centre of the nation's chief wealth—its manhood.

"No true university can afford to yield to the superficial demand for what is erroneously called the practical.

"The recent expansion of the University of Toronto shows that it aims at meeting the requirements of modern life and is keeping in touch with the people.

"There is a great deal of native ability distributed among the people (of Canada), who, however, are prone to be self-sufficient, are in need of the method and discipline which the university can supply.

"The universities cannot be voiceless. From them our generous youth need the word of wisdom, lest they fall a prey to an unchastened optimism.

"We have our hardest task in dealing with the shiftless, those who drift into the professions. These overcrowd the professions.

"Within these halls an ideal should prevail in which national enthusiasm will be tempered by wider world interests and provincialities be toned by the broadest intellectual and moral purposes.

"We must still aim in our education at the production of the highest possible type of citizenship. I believe that the highest type of citizenship cannot be permanently trained apart from a sense of obligation to and

reverence for the moral order which is Divine. Religion is the crowning function of our manhood, for in religion we reach out to that which completes this fragment of the present.

"The university-bred man should not be simply a case-man, quick to detect what he had seen before, apt at reproducing experiments, ready to imitate, moderately efficient until his information is exhausted. A university man should have a reach beyond his grasp. We are true to the old university ideal in its essence when we insist upon the highest possible professional culture, many contributory interests and a finely-tempered humanity.

"Learning is a universal commonwealth, in which the universities of the world are, in some sort, the Provinces. . . . The universities of the world are silently humanizing the minds of men.

"But there is also a strongly national side to the university. Its training should, indeed, fit the student for life wherever he goes, but it is meant to equip him primarily for service in his own country.

"This leads me to say that I believe the nation should look to the universities for distinct help in the present social conditions.

"He who has ceased to penetrate into new regions loses the power of holding the respect of even the average student.

"*Aletheuein en agape.* 'Holding to the truth in love,' might well be taken by all universities to signify that true religion, science and culture may go hand in hand together.

"The besetting academical sin is an intellectual aloofness which occasionally makes the highly educated man unable to appreciate the outlook of the average man; and the aristocracy of intellect is as exclusive as any other aristocracy."

Such are a few of the many splendid expressions to which President Falconer gave utterance in his inaugural address. They stand out in bold relief to the platitudes and commonplaces with which we are too frequently deluged on occasions of this sort. It was Thomas Carlyle who once said that "a great man is as fire sent from heaven. The rest of men waited for his coming, and then they too became aflame." We trust that President Falconer may prove "a great man" in the sense that Carlyle used these words, and that, as the result of his coming, many other educationists, especially in connection with our higher seats of learning, may "become aflame."

President Falconer raised his voice in clear and ringing notes for the grand old idea of a university that it is a place for culture and the formation of true character. All will lend their hearty endorsation to the following ideal of university life and influence: "It should, therefore, fit him to observe the social and political situation, awaken in him human

sympathies and the desire to emancipate his fellows from the ignorance and prejudice which are breeding evil. The man must not be lost in the physician, the engineer, the clergyman, the teacher."

May the University of Toronto be a place of culture, truth, and character making, as well as one of higher learning. We hope it shall be the home of the humanities; and, as generation after generation of graduates pass away from her halls, they may ever be able to look back and exclaim in the words of Horace, *"Ille terrarum mihi præter omnes angulus redet."*

MEDICAL STUDENTS IN CANADA.

There is now no privately owned medical college in Canada. This, of course, is a commendable state of affairs. All the medical teaching bodies are departments of a University. There are at present seven universities in this country and eight medical colleges. Beginning in the east, we have Dalhousie University with its Medical College in Halifax, McGill University and its Medical College in Montreal, Laval University with a Medical College in Montreal and Quebec, Queen's University and its Kingston Medical College, the University of Toronto and its Medical College in Toronto, the Western University and its London Medical College, and the University of Manitoba with a Medical College in Winnipeg.

In the gradual evolution of medical education, the earlier condition was that of a medical school owned by several persons who gave lectures and paid the running expenses and remunerated themselves out of the fees collected. This state of affairs was the only one possible at one time, as public opinion had not reached that degree of advancement that would induce the universities to create medical faculties. But the times change and we change with them, said the old Roman writer.

The numbers of students attending the various medical colleges are about as follows: Halifax Medical College, 100; Laval, in Montreal 325, in Quebec 100; McGill, in Montreal, 425; Queen's, in Kingston, 325; Toronto Medical College, 650; Western, in London, 100; and Winnipeg Medical College, 100. This would give a grand total of about 2,000.

The standard of medical education in Canada is high. Two universities, Toronto and McGill, have adopted the five years' course. This will, no doubt, come into general use. The College of Physicians and Surgeons exact a five years' course before granting its license. The Councils for the other Provinces will likely soon follow suit. An attempt was made last winter to make the five years' course obligatory in Quebec, but it failed to meet with the approval of the Legislature.

The great need in this country is a common registration standard. This is the case in Britain. The standard of all the teaching bodies and examining bodies is high enough to be accepted by the Registrar. If the Province of Quebec had only seen its way clear to have adopted the provisions of the Roddick bill, there would have been a national board ere this. There is no good reason why Quebec should stand out. We have tried to show many a time that all the Provinces would gain, the profession would gain, and the people would gain immensely by the adoption of the system of a national standard of registration. Let us hope that it may soon come to pass that the profession in this country shall be brothers in the truest sense of the term.

May the watchword be for all, "One country, one profession."

THE FINANCIAL POSITION OF THE MEDICAL PRACTITIONER.

From various sources we gather that the medical practitioner is not likely to make much money over and above his living expenses.

In Austria there are 9,204 general practitioners, and of this number 6,388 pay no income tax, which means that they make less than £50 per annum clear of expenses. Of the remainder who do pay an income tax, only a comparatively small number pay on an income of £300 to £500 clear.

In France this condition is even worse. Indeed, this condition holds good for nearly all the countries of Europe.

In England it has been estimated, after a good deal of care, that the average income of the general practitioner is from £220 to £250, or from about $1,000 to $1,200.

In Canada things are not as bad as the foregoing; but the average income of the general practitioner is not as large as it ought to be, when one bears in mind the nature of the services he renders.

One naturally asks the reason for this state of affairs; and in answer to this we would summarize our views as follows:

1. The medical profession is not united in its own interests. It does not act as a unit in defence of its rights.

2. The keen competition for a livelihood has induced many to accept fees far below the value of the services rendered. This, of course, injures all in the district.

3. The fact that in few places there is a minimum scale of fees, below which the practitioner will not work, is an important factor in causing the reduced incomes of doctors.

4. The great prevalency of lodge and contract practice has a most serious effect on the standing and incomes of medical men, wherever such

practice prevails. Those who read medical journals from all over the world alone can fully appreciate the seriousness of the evils arising from lodge practice.

5. Another reason for the curtailment of the income of the general practitioner is the multiplication of hospitals. A large number of sick and injured persons now betake themselves to some hospital, where they select a bed in a public ward so as to secure free medical and surgical treatment. Even if they do not go into a public ward, if they go some distance from home to a hospital, the local doctor loses his connection with the case and some one on the hospital staff secures the case.

6. Still another reason may be advanced for the serious reductions that are taking place in the general practitioners' incomes. The number and variety of specialists are now greatly in excess of a decade or two ago. Every person who thinks his or her trouble the slightest out of the common, goes to a specialist.

Now for the remedies. In the first place, the doctors in a locality should cast aside all jealousies and work for each other's good. They should fix a scale of fees, they should refuse lodge practice except at proper remuneration, they should insist on the local hospital doing nothing that would deprive a practitioner of a fee, and they should form some system of protecting themselves against those who can but will not pay.

By these simple means, well within the reach of the practitioners of every district, town, or city, much could be done to improve the financial position of the medical practitioner.

FLIES AND INSECTS AND DISEASE.

That flies and insects now play an important role in the causation of disease is beyond any doubt. We have referred to this topic on a number of occasions, but as it is an important one we again call attention to it.

The relationship of the mosquito to ague and yellow fever is now fully settled. The science of medicine yields few more brilliant instances of reason and research going hand-in-hand than that which led Sir Patrick Manson and Dr. Ronald Ross to suspect and prove that the anopheles mosquito caused ague. The same might be said of the splendid work of Drs. Reid, Carroll, Lazear and others on yellow fever.

But another very fatal disease has been traced to the bite of a certain fly. The glossina palpalis is the means of spreading the sleeping disease by sucking on an infected animal or person and then wounding one who is as yet free from the disease.

The dread plague is all too frequently conveyed from the rat to man by the bite of the common flea.

It must also be remembered that the forms of relapsing fever are due to the bites of some variety of tick.

Anthrax has been known to have been induced by the bite of insects which had been feeding upon an anthrax pustule on an animal.

During the South African war it was noted that enteric fever was influenced very much by the prevalency of the house fly. When these were very numerous the fever cases were also numerous; but when the conditions did not favor the multiplication of the fly, the typhoid cases became correspondingly low. It has also been noted that in some places there would appear to be a connection between the presence of the privy pit, the fly and the existence of typhoid fever.

There is no doubt that other researches will lead to very important discoveries on this subject. It is quite conceivable that flies may carry to great distances the infections of smallpox, diphtheria, scarlet fever and other diseases. There is no reason why flies might not carry pus organisms from one patient to another, where preventive measures are not enforced.

THE BABINSKI SIGN IN GENERAL PARESIS.

That the Babinski sign and the knee jerk are dependent upon the same conditions and occur in the same pathological processes there is no doubt.

Dr. Alfred Gordon, in the *Journal of Nervous and Mental Diseases* for July of this year, goes to show by a study of sixty cases of paresis that the knee jerk is usually exaggerated, while the Babinski sign is usually absent, as well as the ankle clonus. He found that in 42 cases there was increase of the knee jerks in 39.

Dr. Gordon advances the reason for the absence of the Babinski sign, in most cases of paresis, as due to the fact that while the motor system is involved sufficiently to cause an increase in the knee jerks, the involvement is not enough to cause the Babinski sign.

In the *Medical Record* for July 2nd, 1892, the present editor of THE CANADA LANCET, in a lengthy study "On the Diagnostic and Prognostic Value of Tendon Reflexes," drew attention to the fact that the knee jerk was increased in nine out of eleven cases of general paralysis. This was the first time that this fact had been pointed out. In the two cases where the knee jerks were lessened or absent, there was degeneration in the anterior cornua in one and in the posterior columns in the other. Dr. Alfred Gordon states that "the first (the knee jerk) is present in the majority of my cases."

Since the article referred to in the *Medical Record* of July 2nd, 1892, a number of additional instances of general paralysis have been studied. These additional studies go to confirm the conclusions there arrived at that the knee jerks early undergo an increase in this disease. But since the date of the article referred to in the *Medical Record,* the Babinski sign has come in for its share of attention among the reflexes. In the study of these later cases the Babinski sign has only been noted in one case.

It would appear that the credit of pointing out the almost constant increase in the knee jerks in general paresis is due, in the first instance, to the editor of THE CANADA LANCET. He concluded his remarks on this subject by pointing out that the more marked and rapid the increase in the jerks the more extensive the disease of the motor cortex; and that when the knee jerks are weakened or lost, there is coincident disease in the cord of the anterior cornua or the posterior columns.

We wish to congratulate Dr. Alfred Gordon for his very careful study of the deep reflexes in general paralysis. He has done good service by directing attention to the frequency with which the knee jerk is increased, and, at the same time, the absence of the Babinski sign and ankle clonus. We think his explanation is correct, namely, that the motor disturbance capable of increasing the knee jerk will not induce the Babinski sign nor the ankle clonus.

"HUMANIZE THE HOSPITALS."

"Humanize the hospitals—they need it," was the indictment of Miss Jane Addams at the recent meeting, in Chicago, of those engaged in hospital work. Miss Addams, in her address, laid several severe charges at the doors of hospitals. Among other things she said:

"The patients should not be sacrificed to what may be termed hospitalization—the system of the hospital. The desire, for instance, to have everything about the institution ready for critical inspection as to outward appearances is well enough, but it should not supersede the attending to the needs of the patients. I know one hospital in Chicago where the nurses every week were required to devote considerable time to refolding the sheets after they came back from the laundry. The laundry's method of folding did not suit the hospital requirements, so the nurses were taken from the work of attending to the patients to fold sheets.

"What I mean by hospitalization is shown in another instance. A patient in a Chicago hospital, very ill and very restless, was arranged by the nurse one morning with her hands neatly crossed outside the clean sheets. 'Now, I wish you would stop moving around,' said nurse to patient, 'and just stay in that position until the doctor makes his rounds.'

"I know of another instance in a Chicago hospital where a woman suffering from a severe case of appendicitis was brought to the hospital at noon on a Sunday. It was agreed that an immediate operation was necessary, yet, owing to various surgeons being away and to the hospital system, no operation was performed until six o'clock that evening. The patient died a few hours later. During the afternoon, although she was in so terrible a plight, the patient was bathed and had her hair braided in two nice long braids—more hospital system. That woman did not have a square deal."

Miss Lathrop agreed with Miss Addams. "The humanizing of our hospitals is something that should go on. There is a gap between the hospital and the world—there should be same medium to help patients who are convalescent and yet not ready to take their part again in the battle for bread."

The criticism of abuses and the exposure of that which is wrong are always in order, and in the interests of the people. But it might be well to weigh carefully such statements as the above before they are heralded forth to the world. We have looked into the workings of hospitals in Canada a good deal, and feel free to declare that the interests of the patients are paramount.

It may be true that a nurse may neglect a patient, or fail to show that consideration which one would expect of her; but such a circumstance is so rare that it goes to prove the statement that nurses as a body are most considerate and humane in their work and conduct towards their patients in the wards of our hospitals. We have no hesitation in saying that so far as Canadian hospitals are concerned the remarks of Misses Addams and Lathrop have no place and are uncalled for. With an exception that is phenomenally rare, Canadian nurses are a band of high-minded women, who are equally loyal to their patients and their hospitals. We might say their whole lives are summed up in the word, Duty.

THE CRIMINALS IN THE MEDICAL PROFESSION.

The Toronto *Globe* has on several occasions taken up this subject in its editorial columns. In our issue for October we offered some remarks upon the attitude of the *Globe* and other newspapers. We again beg leave to return to this important matter.

The medical profession as a body regrets very much when any one of its number should fall into any form of conducting his professional work as would tend to bring discredit upon the profession. But it must be admitted that there are limits beyond which the medical profession cannot go in the way of interfering with such an undesirable member.

The *Globe,* in its issue of the 23rd September, gives utterance to these words: "If practitioners can be suspended, or have their licenses cancelled, because of their offence against professional etiquette in the matter of advertising, there surely is power enough in the Act and wit enough in the Council to deal with the half-dozen practitioners in Toronto and the one here and there throughout the Province who are known to the profession and are becoming notorious to the public as belonging to the list of 'medical criminals.' It must be done."

But the *Globe* will admit that before the Council can do anything it must have some evidence to go upon. When the Council has tried in the past to discipline members of the profession for what it regarded as highly improper advertising, the lay press and the Press Association denounced its actions in the most violent of terms. In these instances the Council had something to go upon, it did not suit the lay press, because there was likely to be some interference with the amount of advertising certain parties might make use of.

But the lay press should bear in mind that certain forms of advertising invites those who are in trouble to visit certain offices, or to make use of certain vaunted cures for their troubles. Much crime arises in this way, and the lay press has done what it could to defeat the efforts of the Medical Council.

The Medical Council cannot and dare not take action against any member of the medical profession on mere suspicion, or hearsay evidence. If a medical practitioner is convicted of a felony by a court he loses his standing as a practitioner. In like manner if he is convicted of infamous conduct in a professional sense, the Council can remove his name from the register. But all this is a matter of evidence and proof. Until the Council has evidence it cannot act.

The Medical Council has nothing to do with whether a practitioner has treated a patient wisely or not in any given case. This is a matter for the courts to settle if the patient or his friends think that he has not been properly treated. In such a case an action for malpractice can be instituted if the patient feels that he has been neglected or improperly treated. But this is not the work for the Council.

There are members of the medical profession who should be disqualified because of the manner in which they advertise themselves. Were the Council to attempt this, however, the lay press would be up in arms. We contend that the lay press should be reasonable in this matter, and, when the Council makes an effort to discipline one of its members, should uphold its action. By this means the Council would become a much more powerful body for good than it is. When it makes an honest effort to accomplish some good and finds that the entire lay press is violently

opposed to its course, the usefulness of the Council is seriously impaired.

If the lay press would only consent to have its medical advertisements censured by the Medical Council, we are strongly of the opinion it would go a long way towards lessening certain crimes now too common. If those members of the medical profession who do not wish to conduct their practice along proper lines cannot find newspapers willing to give publicity to their strange methods, much of their power to do harm would be taken from them. A doctor who advertises that he treats all forms of female irregularities is by this means inviting to his office those who wish to be relieved of the pregnant condition. Every doctor in the land is treating female irregularities, but without violating the code of ethics, or the criminal code of the country. There is, therefore, no need for the insertion of any such advertisements.

In the *Globe* of the 2nd October, the date of writing this, there are some sixteen advertisements of persons, or drugs, or compounds. Some of these contain statements that bring a blush of shame to the face of anyone who knows that these statements cannot be true, or that they are flagrantly indecent. It becomes a standing wonder how such advertisements, for the mere payment of so much money, can secure the light of day in the columns of a great daily. Did space permit, we could quote from these advertisements statements which we would like to argue out personally with the editor of the *Globe*. In the meantime we will conclude by stating that those who live in glass houses should not throw stones, and "first cast out the beam out of thine own eye; and then thou shalt see clearly to cast out the mote out of thy brother's eye."

THE INCREASE IN MENTAL DISEASES.

In England and Wales there is an alarming increase in the numbers of the insane. Since 1859 to the present the insane have increased from 36,762 to 123,968, or an increase of 237.2 per cent., whereas the increase in the population has only been 77.5 per cent.

Of those in the various asylums 46.1 per cent. is males and 53.9 is females. Of the insane males 41.9 per cent. is single, 47.6 married, and 9.7 widowed; of the females 38.1 per cent. is single, 45.0 per cent. married, and 16.5 widowed. Under 35 years of age more males become insane than females, but after this age the reverse is the case.

The returns for Scotland and Ireland show also a marked increase in the numbers of the insane. Such a state of affairs must be due to causes. These should be sought out and remedied as far as possible.

The same condition is showing itself in Canada. The numbers of the insane are increasing at a ratio considerably in excess of the growth of population.

Though a person may become insane as the result of some accident or disease over which he had no control, nevertheless the vast majority of the insane owe their misfortune to bad heredity or bad environments or still worse habits of living. The too strenuous life lands many a one in the asylum; while the fear of want, especially among the more aged, beclouds many a mind.

In this field of medicine there is much room for preventive work.

PERSONAL AND NEWS ITEMS.

ONTARIO.

There is some likelihood of the Jews of Toronto establishing a hospital of their own, or, at least, a wing to some of the existing hospitals.

Toronto did fairly well at the recent meeting of the Canadian Medical Association, there being about thirty Toronto doctors present.

Dr. H. S. Birkett, of Montreal, was elected President of the American Laryngological Society.

Dr. Allan Kinghorn, whose people live in Toronto, has gone to Africa to study the sleeping disease.

Dr. Russell, lately Medical Superintendent of the Asylum at Hamilton, has settled in that city, as a consultant in nervous and mental diseases.

Dr. J. H. Elliott, for some years medical superintendent of the Gravenhurst Sanitarium, has commenced practice at 611 Spadina avenue, and will devote his attention to diseases of the chest.

Dr. John L. Bray, formerly of Chatham, and now Registrar of the College of Physicians and Surgeons, has taken a house at 260 Avenue road, Toronto.

Dr. C. A. Hodgetts, Secretary of the Ontario Board of Health, was elected Second Vice-president of the American Public Health Association at its meeting recently held in Atlantic City.

Dr. Newbold Jones announces that he has opened an office at 42 Prince Arthur avenue, Toronto, and will confine his attention to ophthalmic and aural practice.

Recently Oakville has had an outbreak of smallpox. There were at one time 21 cases of the disease in the town. Dr. Johnston was sent out from Toronto to take charge of the cases, and Inspector Black was charged with the duty of enforcing the quarantine regulations. There were sixteen houses affected.

Dr. Agnew, of Clinton, and Dr. R. L. Stewart, of Bluevale, have gone to the West; Dr. G. C. Richardson has been appointed Sheriff of Carleton; Dr. T. C. Gilday has gone for special study to Europe, and Dr. Hamilton, of Belgrave, is spending a coupl of months with the Mayo brothers.

St. Michael's Hospital, Toronto, is making good progress, and has recently opened a maternity wing. Some property adjoining the hospital has been secured and fitted up with every convenience for public, semi-private and private ward patients. The hospital will now have accommodation for about eighty patients of the maternity class.

Drs. Willoughby, Clarke and Ryan have returned from their visit to Europe, where they went to study the methods of treating the insane. It is probable that a system of treating acute cases for some time in a special hospital wing may be adopted. Such cases as prove to be incurable will be sent to the asylum.

Dr. W. B. Geikie, of Toronto, and formerly Dean of Trinity Medical College, was honored by Queen's University on 16th October, when the degree of LL.D. was conferred upon him. Dr. Geikie's many friends will congratulate him on this high recognition of his great services to medical education in Canada. The honor is freely bestowed and worthily received.

Chancellor A. C. MacKay, of McMaster University, Toronto, in his report to the recent convention in Woodstock, said: "Our work is to develop men. We must not confine it necessarily to any one branch of training. If each year we could bring under our influence a large number of students preparing for the medical profession, it would evidently be our duty to undertake the obligations involved, provided that this might be done without the possibility of its becoming a charge upon our endowment."

Dr. W. S. Harrison, one of the Controllers for Toronto, is in the right direction when he is moving for a better method of disposing of the city's sewage than the one now in force. The water supply of Toronto is in constant peril of pollution under the present system of pouring all Toronto's sewage into the Bay. Dr. Harrison dealt with the questions of the water tunnel, the sewage purification plant, a sand filter on the Island, and a trunk sewer. Dr. Harrison will receive the support of the citizens in his efforts along these lines.

QUEBEC.

The officers of the Montreal Medico-Chirurgical Society are Dr. Wesley Mills, President; Dr. Alex. Hutchison, Vice-President; Dr. A. H. Gordon, Secretary; Dr. A. T. Basin, Treasurer.

The Sisters of Providence have installed a magnificent operating room in the Fullum street house for the use of the members of the staff. The room is supplied with the most modern appliances.

Sir Lauder Brunton, the distinguished English physician, was taken ill in Montreal on his way home to England from a tour of Canada, and underwent an operation at the Mount Royal Sanatarium.

At a recent meeting of the Medico-Chirurgical Society of the District of Joliette, it was agreed to express the satisfaction of the Association with the insurance companies which had agreed to pay $5, and also that all companies would consult their interests by paying a proper fee to their examiners. It was agreed the friendly societies should pay $2.

The Dominion Government has erected a modern and up-to-date detention hospital at Quebec, to take the place of the one destroyed by fire. The hospital is on a site of several acres, and has a good operating room, a number of airy wards, and family apartments. It has been suggested by Dr. Page, Medical Superintendent, that the hospital might be used in the winter months for tubercular patients.

Dr. James C. Fyshe, who has been for the past two years medical superintendent of the Alexandra Hospital for Infectious Diseases, Montreal, has been appointed assistant superintendent of the Department of Hygiene in the Kingdom of Siam. Dr. Fyshe is 28 years of age. He graduated in Arts at Harvard and in medicine at McGill in 1904. He is a grandson of Mrs. Leone Owens, who, when the present King of Siam was a child, was chosen by the British Government to act as his governess.

MARITIME PROVINCES.

Dr. S. L. Walker, of Truro, N.S., has started an organization for the purpose of spreading useful information on the subject of tuberculosis. Such an association will do a vast amount of good.

The following gentlemen have passed the recent examinations of the Provincial Medical Board of Nova Scotia: Zadok Hawkins, M.D., C.M., McGill, Sussex, N.B.; Purdy Alvan Macdonald, M.D., C.M., McGill, Alma, N.B.; John L. McIsaac, M.D., Baltimore, Antigonish, N.S.; R. J. Monahan, M.D., C.M., McGill, Montreal; L. T. W. Penney, M.D., C.M., McGill, New Germany, N.S. The license entitles these to practise in Great Britain in accordance with the regulations arranged some time ago between the Maritime Provinces and the Old Country.

WESTERN PROVINCES.

In Brandon, with a population of 12,000, there were 178 births and 136 deaths from January to August of this year.

Winnipeg last year had 192 cases of typhoid fever and 12 deaths. This year there were 43 cases and 2 deaths.

The energetic work of the Medical Health Officer for Saskatoon has practically brought typhoid fever under control. The place is now almost free from the disease.

The butchers of Saskatoon have refused to comply with the health by-law passed by that town. They will not take out the licenses nor allow inspection of their shops.

Medicine Hat has carried a by-law granting $10,000 for an Isolation Hospital, and $5,000 for a wing to the General Hospital.

Dr. Tolmie has been chosen as the Medical Health Officer for Waskada, Manitoba.

Dr. and Mrs. MacKid have gone on an extended trip to Europe. They will visit France, Germany, Austria and Britain.

Dr. Frank Irwin, of Hartney, who was ill for some time in Toronto, has returned much improved.

Dr. D. G. Revell has entered upon his work as Provincial Bacteriologist for the Department of Agriculture, Edmonton.

The Manitoba Act regarding the inspection of meats and canned goods went into force in September. Forty men will be employed to carry out the provisions of the Act, and $75,000 has been appropriated for expenses.

The City of Regina proposes to take over the management of the hospital. The new Isolation Hospital at Edmonton was opened a few weeks ago. The hospital erected by the Dominion Government at Saddle Lake has been opened for the reception of patients.

The members of the Manitoba Medical Council are: Portage, J. J. McFadden, Neepawa; Selkirk, D. G. Ross, Selkirk; Souris, R. S. Thornton, M.P.P., Deloraine; Provencher, M. C. O'Brien, Dominion City; Dauphin, J. W. Harrington, Dauphin; Marquette, R. P. Crookshank, Rapid City; Macdonald, H. C. Cunningham, Carman; Winnipeg, A. W. Moody, J. N. Hutchinson and T. N. Milroy; Manitoba Medical College, James Patterson, William Rogers and J. S. Gray; Homœopathic representative, C. W. Clark.

BRITISH COLUMBIA.

Dr. S. Petersky, of Sandon, B.C., is secretary of the B. C. Interior Medical Association.

Dr. and Mrs. McKechnie, of Vancouver, are spending a few months east this fall and winter.

Dr. and Mrs. Stirling, of Victoria, have gone for a few months' sojourn in England.

Dr. A. T. Watt, of the quarantine station at William Head, B.C., has ordered the fumigation of all vessels from San Francisco arriving at Victoria, on account of some cases of the plague at the former place.

Dr. James G. Davidson, who has been engaged in research work in the University of California, has taken up similar work in the British Columbia branch of McGill University.

Dr. Underhill, of Vancouver, has been inspecting the milk supply of that city. He found many instances of adulteration. Already marked improvement has been effected.

It is probable that the Government of British Columbia will erect an asylum at Coquilan, at a cost of $200,000, and with accommodation for about 200 patients.

Dr. Kerr, who has had charge of the hospital work of the C.P.R. line, in the Nicola Valley, has settled in Vancouver till the work of construction is resumed.

Dr. Tory, of McGill, has been organizing in behalf of McGill University. It is expected to establish a branch of McGill in British Columbia, and about $250,000 will be required for buildings and $40,000 for maintenance. McGill is expending $100,000 on the buildings.

St. Paul's Hospital, Vancouver, has opened a training school for nurses, and doctors in that city will take an active part in its management and give the requisite instruction. The Hospital is under the control of the Catholic Sisters, but the school is to be non-sectarian.

FROM ABROAD.

The Natal Medical Council is moving for legislation to enable a practitioner in one State in South Africa to practice in another State.

The Natal Medical Council is also putting forth an effort to restrain the native medicine men from practising. Many of these hold licenses issued by the Government.

The various Medical Societies of South Africa, namely, Cape Colony, Natal, Orange River Colony, and the Transvaal, appear to be in a flourishing condition and doing good work.

It is proposed to collect money and erect an institution in Berlin bearing the name of Robert Koch. A committee has the work in hand and has appointed Dr. Paul von Swabach as treasurer.

The Red Cross Society of France has received a gift of lands, terraces, gardens, villas, and money equal to 4,000,000 francs. The Society will use the property as a convalescent home for sick and wounded officers. The anonymous donor gives 100,000 francs for the upkeep of the place.

It is a national usage in Spain to disinfect and redecorate the rooms occupied by one who has died of consumption. It is almost impossible to let such rooms to anyone. Consumption in Spain is regarded as very infectious.

There is a movement on foot to establish a Supreme National Health organization for Britain to unite the interests of the various local health authorities. Dr. H. E. Armstrong, Medical Health Officer for Newcastle, is urging the scheme.

The Minister of Instruction of Austria has issued an order that women may enter the medical departments of the universities on the same terms as men. They may hold the positions of clinical teachers, assistants to the professors, and give clinical lectures.

The subject of eugenics is coming to the front in Britain. Professor Karl Pearson gave the Robert Boyle lecture at Oxford a short time ago, and chose this topic. He dealt at length with the laws of heredity and how they may be modified.

In accordance with recent legislation in Britain, a medical department of the Board of Education has been formed at Whitehall. In this way it is hoped that some attention will at last be paid to the whole subject of medical inspection and physical education.

Dr. William W. Ireland, the well-known authority on nervous diseases, read a paper at the International Congress of Alienists in which he emphasized the increase in the numbers of the grosser forms of nervous diseases, the increase of suicides, and the increase in insanity.

The Diet of the Lower House in Austria has resolved that doctors who have acted as public vaccinators or health officers for thirty years shall be entitled to an annuity of about $300 a year. Half of that sum shall be paid to the widow.

Dr. A. K. Chalmers, Medical Officer of Health for Glasgow, and Dr. R. M. Muchanan, bacteriologist, have shown that the meningococcus is found in the naso-pharynx of at least 26 per cent. of those who are in close contact upon cases of cerebro-spinal meningitis. This would justify strict measures of isolation.

Dr. Janet, of Paris, at the International Congress of Psychiatry, took strong ground that hysteria is a mental malady and came within the domain of psychiatry. He drew attention to the fact that victims of hyseria acted frequently under the dominancy of fixed ideas. Hysteria belonged to the large group of depressive psychoses.

Dr. Garrod and Mr. Fairbank report from the wards of the Hospital for Sick Children, Great Ormund street, London, a most interesting case of appendicitis due to the presence of oxyuris vermicularis. When the appendix was removed and opened it was found to contain several thread worms. No other cause for the attack could be found and the boy made a good recovery.

The Local Government Board for England has issued orders to sanitary officers to watch carefully that diseased animals be not sold so as to

be used as food. It has been observed that for some time dealers have been disposing of meat from unsound animals among the poorer districts of the larger cities.

The patent medicine trade in Germany is passing through its tribulations just now. In 1903, the Government enacted a law compelling all makers to give their formulæ. Now it has gone a step further and enjoins that all printed or written praise shall be forbidden, and all public advertisements. Unless the formula for a mixture is given a chemist dare not sell it.

The Transvaal Medical Council have had to deal with the colored race question. A negress applied to be admitted to the examinations entitling her to register as a midwife. She had been educated in the United States. The opinion of the Colonial Secretary was sought and obtained to the effect that there could be no objection to granting the certificate, provided she could pass the necessary tests. It was then decided to admit her to the examinations.

The annual meeting of the Sanitary Association of Scotland was held recently. Much attention was given to the importance of preventive medicine, and emphasis laid upon the fact that in Scotland there was a lack of sufficient accommodation for the isolation of contagious cases. It was also pointed out that steps should be taken to lessen the spread of consumption. With regard to cerebro-spinal fever, a clear-cut declaration was made that the best way to cope with this disease is to observe the principles of sanitation.

In France lately the subject of obesity has been much discussed, and a general expression of opinion to the effect that the same derangements of metabolism as cause emaciation may cause obesity. It has been observed to occur frequently after an acute infection, or during a chronic infection. Thus it has been noticed in such varied diseases as typhoid fever, suppuration, tuberculosis, syphilis, and even in cancer. Such eminent teachers as Carnot, Banchard, Lemoine, Ferrand, Quinquaud, Laennec, Sarda, Daremberg, etc., have taken part in these investigations.

Full of years and honors, Mr. Timothy Holmes died a few weeks since. He was some twenty years ago one of the best known surgeons in Britain. He was the editor and in part the author of Holmes' System of Surgery. He held the position of Hunterian lecturer on surgery for several years at the Royal College of Surgeons, and was at one time vice-president of the College. He was also a fellow of Pembroke College, Cambridge. During his professional career he was connected with St. George's Hospital and Medical School. His university career was a very brilliant one both in Arts and Medicine. He was an excellent teacher, a fine surgeon, a finished writer, and successful man of affairs.

There has been of late a very active discussion of the alcohol question in the Italian journals. The leading medical teachers of that country have expressed their opinions to the effect that alcoholic stimulants, especially wine, in strict moderation, are not hurtful, most of the writers contending that the moderate and proper use of such beverages is even beneficial. Professors Lombroso and Morselli, the eminent psychiatrists, are among the most conservative, and advise abstention whenever the amount cannot be strictly regulated.

The following figures go to show that the lunacy problem is becoming a very serious one in Britain, as they show the numbers per 10,000 of the population in the three portions of Britain:

	England.	*Scotland.*	*Ireland.*
1871	30.4	34.0	30.5
1881	32.5	38.5	35.6
1891	33.6	38.4	45.0
1901	40.8	45.0	56.2

These figures are very significant and demand the attention of those interested in the public welfare of the country.

Dr. Forbes Winslow, an eminent British authority on insanity, recently said: "I have no doubt, not only that there is a great increase in lunacy, but also that, if science does not check the increase, there will be in years to come more insanity in the world than sanity. The most prominent among the factors which produce mental degeneration are unfit marriages, and stringent regulations should be made by the State to prevent these. I suggest that those who have once been insane should not be allowed to marry. It may be stated as a certainty that many women who had had a first attack of lunacy would have been exempt from a second attack had they not married. Marriage by habitual drunkards should be prohibited, and paralytics should not be allowed to marry. Further, marriages should be made illegal where hereditary insanity exists on both sides. I feel sure that if these suggestions were carried out insanity would show a decrease."

OBITUARY.

J. L. PEPPARD, M.D.

Dr. Peppard, a well-known physician of Great Village, N.S., went into his office with a friend to have a drink of fruit syrup and water. He took down the wrong bottle, and in this way both he and his friend partook of a fatal dose of strychnine. He died in about an hour and his friend the next morning. He leaves a widow.

HUMPHRY EWING BUCHAN, M.D.

Dr. Buchan died at Owen Sound on 17th October, 1907. Medical men throughout the country who were students in Toronto some thirty years ago will recall to mind Dr. Buchan, as one of the most painstaking of clinical teachers. Many years ago he entered the asylum service of Ontario, in which capacity he rendered excellent service. For some time past he filled the position of assistant medical superintendent of the asylum at London. He succumbed to an attack of apoplexy, the second he had suffered from. He leaves a widow and grown-up family. He was a brother of Colonel L. Buchan and Ewing Buchan, manager at Winnipeg of the Bank of Hamilton. He was in his 66th year. His remains were interred in Toronto from the residence of Sir John Boyd.

CLAUDE KILBOURNE, M.D.

Dr. Kilbourne, of Winnipeg, died on September 9th, 1907. He was taken ill with typhoid fever just as he was preparing to go to the medical mission in China.

THOMAS BRUNSKILL, M.D.

Dr. Brunskill died recently at his home on Wellesley street, Toronto. He graduated from Victoria University in 1868. He was in his 62nd year.

C. H. BRERETON, M.D.

Dr. Cloudesley Herbert Brereton, who had practised for some years in Chesley, Ont., died at his father's home in Schomberg, in the latter part of September. He was a graduate of Trinity and was in his 34th year of age.

MISCELLANEOUS.

THE COLLEGE OF PHYSICIANS AND SURGEONS OF QUEBEC.

The result of the elections of Governors for the triennial period of 1907-10 is as follows:

Old members re-elected: R. Boulet, Montreal; M. D. Brochu, Quebec; F. X. P. Dolbec, St. Casimir; Hon. J. Girouard, Longueuil; J. L. M. Genest, St. Bernard; A. Jobin, Quebec; J. E. Ladrière, Lotbinière; J. A. Laurendau, St. Gabriel de Brandon; J. A. Lessard, Granby; J. A. Macdonald, Montreal; A. R. Masolais, Montreal; L. M. Moreau, L'Islet; L. P. Normand, Three Rivers; C. O. Ostigny, Valleyfield; L. A. Plante,

Louiseville; J. A. Rouleau, Montreal; A. Simard, Quebec; L. J. O. Sirois, St. Ferdinand d'Halifax; A. Thibault, Watton.

The new Governors are: E. G. Asselin, Montreal; L. A. Beaudry, St. Hyacinthe; H. W. Clagdon, St. Phillippe de Néri; S. Boucher, Montreal; C. E. Côté, Quebec; J. E. D'Amours, Papineauville; F. X. De Martigny, Montreal; C. J. Edgar, North Hatley; J. F. Gauvreau, Rimouski; E. Laberge, Quebec; W. Lamy, Sherbrooke; C. R. Paquin, Quebec; F. Plourde, St. Jerome; H. Prevost, St. Jerome; A. L. Smith, Montreal; I. Sylvestre, Sorel.

The officers are: President, Dr. Normand; Vice-Presidents, Drs. Lafleur and Simard; Secretaries, Drs. Paquin and Macdonald; Registrar, Dr. Boucher.

THE ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA OF CANADA.

This Association, which was first organized in 1892, has been revived and reorganized. All medical officers of the militia, A.M.C. and regimental, are *de facto* members without election. The objects of the Association are the development of departmental *esprit de corps,* the discussion of military medical subjects, the reading of papers and discussions thereon on military medicine and surgery, hygiene and equipment. The following officers and committees were elected: Hon. President, Hon. Sir Frederick Borden, K.C.M.G., M.D., Minister of Militia and Defence; Hon. Vice-Presidents, Col. E. Fiset, D.S.O., Deputy Minister of Militia and Defence; Lt.-Col. G. Carleton Jones, D.G.M.S.; President, Colonel G. Sterling Ryerson, M.R.O., Toronto; Secretary-Treasurer, Lieut. T. H. Leggatt, A.M.C., Ottawa; Vice-Presidents for Military Districts—No. 1, Capt. D. H. Hogg; No. 2, Lt.-Col. Hillary, 12th York Regiment; No. 3, Lt.-Col. Duff, P.A.M.C.; No. 4, Major J. D. Courtney, M.R.O.; No. 5, Major McTaggart, 1st Regiment, Prince of Wales' Fusiliers; No. 6, Lt.-Col. A. N. Worthington, A.M.C.; No. 7, Lt.-Col. Grondin, 87th Regiment; No. 8, Lt.-Col. McLaren, A.M.C., No. 9, Lt.-Col. Sponagle, A.M.C.; No. 10, Major Devine, P.A.M.C.; No. 11, Lt.-Col. J. A. Grant, P.A.M.C.; No. 12, Lt.-Col. Johnson, A.M.C.; No. 13, Capt. W. S. Hewetson, A.M.C. Executive Committee—Capt. H. A. Kingsmill, 7th Regiment; Major G. A. Rennie, A.M.C.; Lt.-Col. K. Cameron, A.M.C.; Capt. M. Lauterman, Duke of Connaught's Hussars; Capt. E. A. Lebel, 9th Regiment; Major G. J. McNally, 71st Regiment; Capt. G. M. Campbell, Nova Scotia Regiment; Lt. J. W. Manchester, 90th Regiment; Capt. F. C. McTavish, 6th Regiment; Lt.-Col. Warburton, 82nd Regiment; Lt. T. A. Hislop, Headquarters Staff. The next meeting of the Association will be held at Ottawa on February 26th, 1908.