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An Address

ON

AMERICAN METHODS IN MEDICAL EDUCATION.

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BY

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MONSIEUR LE PRÉSIDENT ET MADAME LA RÉVÉRENDE MÈRE SUPÉRIEURE: Dans cet Hôtel-Dieu, cet hôpital de Dieu, le foyer de la médecine au Canada, il y a trois siècles, sanctifié par la dévotion de vos sœurs et par la mémoire de Jeanne Mance, il peut se faire que l'esprit de ce milieu descende sur nous. Sous l'influence de cet esprit nous pourrions découvrir que la nature n'est qu'une expression casuelle de la volonté divine; que l'être idéal suit l'ordre de la nature, et vit en accord avec cette volonté; que le malade a failli,—corps et âme. Tout ce moderne tâtonnement scientifique pour trouver l'effet de l'âme malade sur le corps malade n'est que l'effort pour découvrir le secret que vous n'avez jamais perdu, le pouvoir de la religion. C'est un effort pour répondre à la question du Maître: *Quid facilius est dicere: Dimittuntur tibi peccata tua, an dicere: Surge, ambula.* Peut-être, au moins, apprendrons-nous en ce milieu, l'humilité d'Ambroise Paré: *Je l'ai pansé; Dieu le guarit.* Cela est la science définitive.

Gentlemen: I was merely saying a few words to the Reverend Mother Superior, who has left her cloister to honour us with her presence.

The principles of surgery I learned from a pupil of Lister. Operative surgery I observed under the hand of that first of modern English surgeons, at the time when he was perfecting the operation for perityphlitis, the term by which in those days appendicitis was described. In the intervening years surgical principles have not changed. Surgical procedure has developed; any change is one of natural growth. But education in those principles and in the methods of practice in surgery and medicine have so changed that we are now in a new world.

To restrict my theme within the compass of an hour, I have chosen to examine American methods alone. As I am speaking to the American College of Surgeons I shall further restrict my scheme mainly to surgery; and as you honour us with your meeting in Montreal, I shall consider those methods only in so far as they affect the development of our own education. To appraise their effect upon yourselves would be an impertinence: your institutions are sacrosanct to you, and not to be touched by an alien hand. The fate of Uzza shall be my warning.

Those methods invade this country by four routes. The American Medical Association, through the Council on Medical Education and Hospitals, inspects and classifies our medical schools; the inference drawn from that inspection has been published at irregular intervals. The Association of American Medical Colleges inspects all schools within its membership. Most schools have eagerly

sought, or accepted, an invitation to come within the circle. Few schools have had the hardihood to decline that jurisdiction, willing to incur the invidious distinction of standing alone. The Boards of many States will grant licences only to graduates of schools specified by the American Medical Association. Finally, the American College of Surgeons inspects and grades our hospitals, and so the influence is complete. There yet remains, however, the less official operation of the Carnegie Foundation for the Advancement of Teaching, and the Rockefeller Foundation; but these are not of pressing importance to our theme. They have spent vast sums of money upon us; but no further expenditure seems to be imminent, and never at any time did they seek to exercise sequential control.

Proceeding still further with these self-denying restrictions, I shall define the modern period as beginning in 1876, the year in which Johns Hopkins was founded, and more especially with the year 1910, in which the Carnegie Foundation brought us face to face with the revival of medical education in the United States. Up to that time we had been left free to develop our own inherited methods in native obscurity. In these sixteen years our medical education has been profoundly altered, and it is of this period I shall continue to speak.

In the year 1910, the beginning of this modern era, an exhaustive survey of medical education in the United States, which had been undertaken five years earlier for the Carnegie Foundation by extremely competent observers, was complete. Their researches were extended into Canada, and the results were published in Bulletin Number Four by Abraham Flexner with an introduction by Henry S. Pritchett, the President.

The necessity for such a survey in the United States was apparent. The President declared that certain facts were revealed—namely, that there was in that country “an enormous over-production of uneducated and ill-trained medical practitioners; that there was a very large number of commercial schools sustained in many cases by advertising methods, through which a mass of unprepared youth was drawn into the study of medicine.” With those conditions we in Canada were not especially concerned, but we are entitled to believe from a second report that they have been much altered for the better. We are even yet vitally concerned with the impressions formed upon the minds of those trained investigators by conditions in Canada.

According to their own account (p. 326) the high quality of instruction offered by McGill and Toronto “proves that

our trouble in the United States has been at bottom not less one of low ideals than of low standards. Indeed," they add in general terms, "where ideals are low" [as in the United States] "there are no standards, and where ideals are high" [as in Canada] "the standard, even though low, is at any rate so definite that it furnishes a sure starting-point towards a clearly apprehended goal. The low-standard school in the United States has had no such starting-point and no such goal."

With every desire to be polite, it is useless to pretend that the detailed appraisal of medical education in Canada met with universal acceptance. In so far as it assumed to describe conditions in the Maritime Provinces, the Medical Society of Nova Scotia declared formally that the Report was "prejudiced, inaccurate, and misleading." The answer was to be found in "the good standing and success of the practitioners who received their education" in the school that was condemned.

Without entering too closely into this controversy, it may be observed that when two sets of men, both equally disinterested and sincere, are in profound disagreement, they are thinking in different terms and dealing with different categories. To those American investigators a school meant buildings, equipment, and machinery, or "plant" as they themselves would say. To the medical profession of Nova Scotia a medical school derived its virtue from the quality of the human beings who taught and learned in the school.

This divergence of opinion is disclosed by the procedure of the examiners. They arrived in Halifax at about one o'clock of a Saturday morning by a train which in those days was punctually late. We are not informed what hotel they went to; but anyone who has had a similar experience in Halifax will readily understand that they must have been in a peevish mood. They were determined to leave by the only train shortly after noon. Otherwise they would be compelled to remain in Halifax over the Sabbath. In four hours they visited a university, a medical school, and two hospitals. Their research could not have been very profound; no officer of the school ever saw the delegates, or even knew of their arrival until after they were gone.

Their escape from Queen's University in Kingston was not so easy. Their complaint is that its location "on an inconvenient branch-line greatly aggravates the difficulties due to the smallness of the community." They dealt with externals. Their especial grievance against the London medical school was that the janitor carried the key of the library; but they did not specify by whom, in their opinion, the key should be carried.

The contrary view that virtue lies not in plant alone was fully enforced by Dr. John Stewart at the meeting of the Nova Scotia Medical Society, when the Bulletin was under discussion. He was at that time, and is happily yet, the professor of surgery in Dalhousie, in peace and war the perfect physician, "a pattern" in the old Hippocratic sense. He brought comfort to his colleagues by reminding them that "it is the man more than the laboratory that is essential; that there were no pathological laboratories when Lister developed antiseptic surgery; Koch, a country practitioner in a lonely Prussian village, had no laboratory but what he could construct for himself; Trudeau, alone in the Adirondacks, demonstrated the main facts in our knowledge of tuberculosis." This same John Stewart had learned his surgery from the very Lister himself. We need not wonder that he refused the stigma "mercenary."

How, then, shall we account for those ideals in Canada, which the Bulletin commends, and their absence at that time from the United States, which the Bulletin deplored? We did not create those ideals; we acquired them by inheritance. They were brought by the military surgeons, French and English, who implanted them in our hospitals and schools, primitive as those institutions were. There they were nourished. They yet exist and grow.

Those surgeons in turn inherited them from the schools of Edinburgh, Dublin, and London, and by a collateral inheritance from Leyden, Vienna, and Paris. Those who are curious may trace the stream backward through the French and Italian Renaissance, to Montpellier, Padua, Bologna, and Salerno, even to Alexandria, and finally to

the ultimate Kos and Knidos, where those ideals for all time were enunciated by Hippocrates himself.

In the United States, on the contrary, the thread of history was broken in 1776, when those communities cut themselves off from European civilization. For exactly a century the tradition of medicine was lost. It was revived in 1876 by the founders of Johns Hopkins, and was enriched by influences emanating from this country. By the year 1910 these old ideals had so increased in strength in the United States that their new possessors were eager to bring them back in a modified form to us, who had never lost the originals.

They came to us with the demand that we accept the methods equally with the ideals themselves—and most of them arrived by way of Toronto. This dogma might be stated in alternative terms: The conditions were set forth; we were left free to accept or refuse. But the choice was a hard one. Refusal meant the exclusion of our graduates from those rich fields. From that comparatively recent date, 1910, American methods have dominated medical education in Canada, but those methods changed so swiftly that we found ourselves in possession of many of them after they had been abandoned as impracticable by their originators. Many of these American discoveries in medical education are not discoveries at all. Some were discovered long ago, and abandoned as fallacies; others are yet in common use. The out-call service for senior medical students discovered in Nebraska has been a compulsory part of the medical curriculum in Edinburgh for ninety-three years.

Again, the system of preliminary education in the two countries was different. In Canada there were few universities, but many colleges and grammar schools. In the United States there were many universities and few schools leading up to them. In those Canadian colleges, and even in some grammar schools, the teaching was quite as good and quite as comprehensive as in the first year of many universities, American or Canadian either. In the laudable effort to enforce some standard of entrance two years in a university were specified, and we were compelled to conform, else our graduates would be denied admission to practice in many of the States.

As a partial result the course in the Canadian medical schools fell into utter confusion, and many of the calendars still defy analysis or understanding. This confusion was due also to the impossible policy of making the medical faculty responsible for the preparation of students to enter the medical course. This policy has now been abandoned by all Canadian universities except one. I am bound to confess, however, that our obedience to these alien regulations is not so perfect as might appear from our calendars; but we had not far to go for a lesson in the evasion of those laws that do not meet with general approval.

In the best schools for forty years the course was four years in length, whilst in the American schools three years was the exception and two the rule. At McGill the course has never been less than four years for the last hundred years. In the effort to stretch out the course to conform with the new American standard, years called "pre-medical" and "post-medical" were added. The essential of these pre-medical years was that no medicine should be taught. For our students in those days, with their sound preliminary education already acquired in schools and colleges, these years were not so necessary.

For some time the two years in a college or Arts faculty was not absolute. The saving clause "or its equivalent" mitigated the rigour. That saving clause drops out, and a prospective student who wishes to graduate is faced with seven, or at least six years of college and university life. In Dalhousie a student entered the first year in Arts in 1924; last year he was a freshman in medicine; by these changing courses he is again a freshman for the third time. The boy has had no failures, and he does not play football; now he defies the faculty to find another first year for him, but his father gravely fears that technical academic ingenuity has not yet been exhausted. Even after seven years the student has not become a scientist; his aptitude for practice is dulled, his enthusiasm vanished. He has missed the training of a medical corporal, or a

boy scout, and the priceless experience of a nurse. When he begins practice he is too old to learn those homely arts. He is shy of the gift of healing, lest he might fall into the category of irregular practitioners. He thinks his duty done when he gives to the disease a name. According to returns from fifty-two American schools, 59 per cent. of the graduates in 1915 were from 35 to 39 years of age; none were under 30. In 1920 the number between 30 and 34 years of age was 59 per cent., but the average age was even higher.

In the United States it has been found necessary to erect certain barriers, and to segregate sections of the community according to colour, race, and religion. This practice is not new. In England Catholics and Presbyterians alike were at one time debarred from the universities, but all those restrictions were swept away nearly a hundred years ago. In Canada also the medical schools are free to all. As the American schools raise the bars, the surplus falls upon us, and it falls so suddenly that we find some of our classes largely filled with American students—not the average of American students, but many who are deliberately excluded from their own schools.

For four years Dalhousie had not a single American student. In the next year more than half the students came from the United States, and if one can judge by their names, they are precisely those who have been excluded from the American schools. Toronto is a Government institution and may quite properly restrict its students to the province by which it is supported. McGill is a private corporation and has no such obvious means of defence. In the medical faculty more than a third of our time and revenue is devoted to American students, who return to their own country as soon as they graduate.

On occasion students are exported wholesale into our schools. The General Medical College of Chicago was compelled to close six years ago. Through the good offices of the Council of the American Medical Association, students were exported in bulk to Dalhousie, where they were gladly received. They graduate this year and form one-half of the class.

This large number of applicants creates in us a false sense of prosperity. At McGill we limit a year to 100, whilst 500 apply; but these same applicants may apply to several schools, as passengers will put down their names for a berth with several railway companies, and in the end choose the one they think the most convenient. More than half the American students accepted this year had applied to other schools. In the meantime, under this influx, the fees are raised to our own students also, for the university treasurer is human. It now costs a student eight thousand dollars before he begins to practise. That eliminates nearly all but the rich, for the heroic self-supporting student yet remains; it eliminates the son of the general practitioner; it eliminates finally the general practitioner himself, for a graduate who has spent that sum and seven years will not be content with a laborious life and a meagre return.

In the United States the medical schools have diminished from 162 to 79 in the last twenty years; the annual graduates from 5,747 to 3,962; the enrolment of students is 33 per cent. less. A study of 283 rural counties in 41 States by Dr. W. A. Pusey shows the average age of physicians to be 52 years; only 9 per cent. were graduates of the last ten years; no recent graduate has gone into those counties in that period. And the same authority discloses that in 162 of these 283 rural counties 431 non-medical practitioners have settled as against 197 physicians. This striving after an abstract ideal has imposed a choice between a moderately qualified physician and a practitioner with no qualifications whatever.

Few teachers in Canadian schools teach for pay. They are impelled to hand down the tradition of medicine unimpaired and enriched to those who are worthy to receive and willing to transmit that truth in their turn. We do not feel so strongly impelled to pass that tradition to strangers, who from lack of background are unqualified to receive it, who come to us not for love of the Art but for love of gain, and leave the country with what they have won.

This migration is controlled from the United States, and

various self-constituted bodies assume that control. They attempt to control our education by specifying what and how much we shall teach, under penalty of excluding our own graduates if we are recalcitrant. Up to the present year the control was even more specific. Inspectors were sent to our schools to ascertain that they complied with those regulations. They classified our schools. When they had filled the schools of the highest class, they raised another to first rank, and that school was promptly sought. If a school refused to be inspected, it was given no standing. American students would not come to it, since their future employment in their own country depended upon the inclusion of their place of graduation upon a technical list. Our own students would deliberate before joining that school, since they would be forever debarred from practice in the United States.

Happily, this control has been relaxed, and the inspection is at an end. Categories of Canadian schools are no longer published. All are presumed to be in the highest class. The event is now only of historical interest, and it is recorded merely as a warning against the future. This happy result, I surmise, is due to the persistency with which our own Dean has represented to you the impropriety of the procedure, and your willingness to apprehend a situation when it is fairly presented. Possibly the excellence of the Canadian schools is now taken for granted; and the increasing excellence of the smaller schools may in a measure be due to some good in that inspection, no matter how distasteful it was at the time.

The pressing demand by Canadian students makes foreign classification a matter of less concern. One Canadian school always seemed to do very well without membership in any American association, without foreign classification, without American students. Queen's classes are full to the limit with Canadian students alone. The Dean affects not to know in what category the school is placed, and his unconcern is so marked that he does not take the trouble to inquire. He surmises, however, that Queen's has been placed in the highest class, since this year he received application from one hundred American students, mainly from the city of New York. He accepted one only, on the ground that his grandfather had been born in Ontario.

The final weapon in your hands is your law that the graduates of Canadian schools which do not accept your methods will be denied the right to practise in the United States. Reprisal is dangerous; but we must, if we cherish our ideals, face that threat and proceed to examine its implications. In that event, we would be left free to bestow our education upon our own students. You would be compelled to educate your own. To educate your students is of no advantage to us. Each student costs us two thousand dollars more than he pays. And if our graduates are restricted to practice in our own country, in our own Empire, in the world at large to which they have now free access, we shall be the gainers. It is conceivable, too, that your people will come to us for surgical treatment. They are already coming in vast numbers for treatment of a much more trivial kind. From its special situation McGill remains free to all students, provided only that they come with a natural aptitude, industry, and love of the Art.

The value of any inspection depends upon the nature of the inspection and the persons who inspect. The inspectors of our hospitals are young persons without other experience. They have never taught, never operated, never come into living contact with the sick. They are in the precise category of employees of a commercial agency which gives a rating to commercial firms. They have their printed questions, their routes, their daily routine. They must report every night their whereabouts and their doings for the day; they are sharply checked by telegraph if there is any omission. "Accept organization"—that is their cry, with the fanaticism of a trade unionist or the fervour of an evangelist preaching salvation.

These inspectors will enter the Royal Victoria Hospital, for example, and demand that all the medical records be exposed to their view. And that great institution complies with the demand. Still more, these young persons undertake to inspect institutions and comment upon records conducted and written in a language which they do not

understand. From this it will be an easy step, in the name of uniformity, forbidding us to teach and record in French.

We in Canada have nothing to conceal. Our medical teaching and practice, English and French, is, and has been for a hundred years, equal to the best in the world. We never descended to the degradation of issuing diplomas for money. Those who desired such were compelled to go to the United States. We never had proprietary schools, save in the sense that the teachers taught without reward, and at the end of each year paid the deficit. But these schools have long since become an integral part of the universities as medical faculties—McGill in 1829, Trinity and Toronto in 1905, and Queen's in 1892. It was a settled policy to appoint professors who gave their full time to special subjects. Prior to 1910 McGill had nine such heads of departments; Queen's had a full-time professor of physiology in 1892, of pathology in 1894, of anatomy in 1903. The progress in other schools was equally marked, and therefore we might properly demand that inspection be performed under our own sanction and not by alien assumption. A man of honour will not object to having his house searched; but the search must be conducted under the warrant of law, and that law must be of his own making.

So that nothing be left unsaid, there is one thing more. The Council of the American Medical Association in Chicago maintains a register of all matriculated students. Each year they send to all American and Canadian schools a form upon which the record of every student is to be given. When these returns were first made the students received a generous supply of advertising "literature" from the United States. The system is now more perfect: the names of rejected applicants also are inquired for. Business enterprise may go too far.

Our existence as a profession, peculiarly protected by law, depends upon our service to the public at large, not alone to the rich, and the indigent who fill the hospitals. To honest men medical service has become a luxury. They are already doing without or drawing help from irregular channels. Partly as a result of professional propaganda, to the sick the proprietary panacea is denied; to the aged the comfort of alcohol; and to those dying in pain the solace of opium. In the end, they may sweep away those privileges with which we have surrounded ourselves; medical practice will be left free to all who care to engage in it, subject only to the restrictions of the common law; the public left equally free to choose the best they can afford. That is the remedy against the theoretically standardized hospital and medical school, and against any profession when it becomes a hieratic caste. It is an outworn convention that a profession is empanelled solely in the public interest.

I am well aware that American inspectors are making a resolute effort to enter upon our farms, dairies, and factories, to report upon costs and results. Upon their report will depend the duties to be levied on that part of their product entering the United States. Education, learning, and skill are not so easily assessed.

In the United States the supreme law is their own prosperity; and their people are under the delusion that their prosperity means the prosperity of the whole world. No man can live for himself alone; no nation either. Isolated though they are, their domestic legislation concerns the whole world. One of their domestic prohibitions bred a race of native smugglers who, in pursuit of their profession, broke our revenue laws, corrupted some of our officials, directly destroyed our Government, and precipitated a constitutional issue which gravely affects the whole Empire.

To meet the necessity of the moment, you framed certain medical regulations. The need passed. A new situation arose. But the rules in the meantime had become embedded in State or Federal law, and you were powerless to change them. We abandon our regulations when they have fulfilled their purpose, or when we discover we were mistaken. If we find too much difficulty in changing our laws, we change our Government. Last summer we had three successive Governments in eighty-five days. We refuse to be enslaved even by laws which we ourselves have made. You must not, therefore, be surprised if we should change the regulations

and laws by which our medical education and practice is governed. Still less need you be surprised if that change should not conform with the methods you have devised for us.

The American method in surgery is an application of the American method in business—uniformity; a single standard, mass production. The desired end is "efficiency." That also is our aim, but we do not believe that the terms of business are valid in the realm of mind and heart. We believe that success in surgery must come through individual freedom, fresh observation, natural aptitude, flexibility of technique, and adherence not to methods but to principles alone. This mechanical method would be, and now is, fatal to us. In the end it will prove fatal to surgery in the United States as well. It was method destroyed medicine in Alexandria, in the Byzantine Empire, in Arabia. The Galenical method lay like an incubus upon the world for a thousand years, until the surgeons of the Italian and French Renaissance discovered anew the principles of Hippocrates. It was finally destroyed by our own Harvey and Sydenham.

The simple answer to my protest is: the value of team work. It is proper to affirm that the value of a team depends upon the driver and the consent of the team to be driven. It also depends upon the foothold. I have watched a team of twenty-two mules struggling with a gun. The more they pulled, the further they sank in the mud—and the gun never stirred.

Under this inhuman system a new kind of physician and a new kind of surgeon have been developed. The physician studies only a part of the patient; the patient is to him nothing more than a series of microscopic slides or chemical solutions. The surgeon knows the patient merely as an arrangement of typewritten cards. He sees him for the first time unconscious on the table, when he comes like a masked executioner to complete the sentence of the judge. Physician and surgeon become sheer empirics, working upon a narrow experimental basis, without philosophical conceptions or even a scientific hypothesis of disease. In pernicious anaemia they will remove the spleen merely because the removal of the spleen appeared to give relief in other cases diagnosed as pernicious anaemia. This practice is far removed from the old injunction: to place the patient, and his friends, and *παρὰ τὰ ἔξωθεν* in train for his recovery. Surgery and medicine, science and practice, can exist only in one mind. When these are divorced, they become, as Mr. Squire said in another sphere, scientific mules condemned to a stupid sterility.

This domination of the Art by science is not new. Before the protest in Paris in the latter half of the fifteenth century, there was a powerful body of *médécins reclus*, who would not visit or see their patients. These scientists contented themselves with an examination of the patients' excreta, brought by a servant, and sent the proper prescription. They feared lest a look upon the sick man might disturb their diagnosis.

It may be true that "treatment can be logically based only on an accurate knowledge of the nature and cause of the disease"; but disease has a logic of its own that is deeper than the mind of the laboratory. It is a physician, not a logician, the patient demands. The clinical laboratory mind stops short when a manufactured name is given to a disease. The patient is not interested in diagnosis. There is not a drug in the Pharmacopoeia nor a method of treatment in all therapy which was not freely and successfully employed before modern methods of diagnosis were imagined. Artificial immunization, the destruction of one organism by another, the use of arsenic against trypanosomes, was practised by races which had not yet emerged from a condition of savagery. Diagnosis is merely a preliminary intellectual process in the mind of the attendant. Prognosis and cure is what the patient demands; and in the field of prognosis the quack beats us on our own ground. The *Prognostics* of Hippocrates demanded seventy editions in mediaeval times; the important work of Sir James Mackenzie in heart disease had to do not with the past or even with the present condition of the patient, but with his future career. Our own James Stewart possibly went too far in his teaching: never make a diagnosis unless you are compelled to. Professor

Oertel says the same thing when he suggests that the diagnosis be left to him, after he has finished his work at the *post-mortem* table; and that the physician concern himself with the cure.

An ideal may be transplanted; a system cannot. The one may grow: the other will perish on alien soil. And these two countries are alien the one to the other. The resemblance is obvious but superficial; the difference is profound. We both speak a language which is so similar that we understand each other when we converse, unless indeed we speak French, which one-third of us do. The difference is as profound as this: we are Europeans; you are Americans.

There is a Canadian surgery. For five years we put it to the test on European fields. In virtue of its flexibility it adapted itself to every need. Standard surgery is a civil surgery. It demands a wound made by the surgeon himself, at his own point of election, upon a surface which he prepares, in circumstances which he controls. When it becomes too rigid, it breaks down utterly at the first touch of war. It breaks down equally when surgical aid is demanded by the dweller in the country at the hands of the general practitioner.

Even the standard of measure varies with the thing to be measured. A microscopist uses the micro-millimeter; a land-surveyor uses the link and chain. Our surgeons have surveyed the field of war and the infinitely little field of the laboratory. They have operated in the shining theatre with more than Levitical scrupulosity; they have performed the most delicate and profound surgery in field ambulance and casualty clearing stations, upon trestles in huts or open tents, with only the heat from a brazier and not even running water. Their results were admirable, for all the world to see.

Those surgeons, trained by reality, are to be found in every village in Canada. Their virtue is within them. They bend their means to their needs. They have erected little surgical centres, where the surgery is of the first rate because it is done by a surgeon who is himself of the first rate. Suddenly he discovers that some outside power has decreed that his hospital is only of the third rank, and this decree is published to the world. He then in the public mind has become a third class surgeon. Persons who can afford an operation can afford to travel. They slip across the border, especially in the West, to an "A-hospital." This surgeon, himself, finding his practice destroyed, migrates to an "A-hospital," when he becomes first rate once more, and drives in a closed car.

In the East also, even from Montreal, patients slip quietly across the border for treatment, but for quite a different reason. The American method is one of publicity. We have forgotten the Hippocratic injunction, that things seen and heard at the bedside shall not be disclosed. We have become garrulous; the private concerns of a patient are now a matter of common gossip. A sick person is entitled to his own reticences. If he seeks surgical relief for a trivial ailment, the details are published on the bulletin board of the operating room for all the world to see and hear. A rich man is not now sure that the old confidence of a private consultation will be respected. Even a rich man may have creditors. Next morning his blood pressure, the diagnosis, and prognosis, are discussed in his bank, and by his associates and subordinates who may have designs upon his place. He cannot afford this publicity. He seeks advice where he is protected by the obscurity of a strange place.

Such obscurity will soon be difficult to obtain. Every standard hospital is in the way of being equipped with a machine for recording each stage of the operation, and doubtless a "close-up" of the operator as well. At this moment the main body of the American College of Surgeons is hearing how that may be done from "Will H. Hays," who is described ecstatically as the mogul, the czar, the dynamo of the moving-picture world.

Those little centres had their medical societies, which combined to form district meetings, which by further combination formed provincial societies, and these in turn a Canadian Medical Association. This blow at the small hospital, a blow struck merely on account of its smallness, strikes at the foundation of our whole medical fabric. This

is a new reading of the old fable: a well-meaning elephant who assists in the hatching of eggs; in more familiar terms, a vital child overlain by a stupefied nurse.

It has always been in the individual teacher, usually in the small school, in the small hospital, that medicine has sought refuge from the dead hand of a system. Boerhaave in a ward of only twelve beds at Leyden established modern clinical medicine in Europe. In addition, he gave four lectures a day on botany, chemistry, and the institutes of medicine. He was not a specialist. Sydenham was content with the simplest licence to practise; he belonged to no faculty and taught in no school.

It would be easy to imagine your president, W. W. Chipman, taking up his residence in Kentville—an equally famous surgeon has retired to that charming place. According to your method of reasoning he would automatically become lower than a third rate surgeon. Indeed, Clarence Webster, at one time assistant professor of obstetrics in Edinburgh, afterwards professor at McGill, and again in Chicago, had the good sense to retire to Shediac. Your inspectors would be compelled by your own rules to classify him with the local midwife. And if Sydenham came to practise amongst us, he would be refused a licence, although Hippocrates might be admitted to study on the ground that he had a preliminary qualification in Greek. Sir William Osler once congratulated himself on being admitted to Johns Hopkins as a professor. He could never, he said, have gained admittance as a student.

The inherent fallacy in the American method is the assumption that all graduates from certain schools are qualified for the highest posts, and that all graduates from certain other schools are equally disqualified. The relative classification of those schools by the present method of mechanical inspection is, and must be, defective. It is fatal. Therefore, the system must break down. It has broken down. Appraisalment there must be, but that appraisalment must extend beyond the school to the student, possibly even to the teacher; and it is the student himself who must make that preliminary estimate. In the same school there are students of varying capacity, depending upon their natures, physique, training, breeding, means, and culture. They should be left free, and encouraged to choose the field in which they will practise.

In every school the instruction must be up to the level demanded by the needs of the student who aspires to general practice. If it stops at that the school is a poor school. It must rise to heights which can be reached only by the rarer spirits. That level can be maintained and those heights disclosed by the same teacher in the same lecture—if he is a real teacher. Each student will follow as far as he can, and be stimulated by those who can go the farthest. I pause long enough to repeat a remark of your president,—that every practitioner will confess that he has no aptitude for certain forms of practice, but is never heard to confess that he has no aptitude for teaching.

In England there is one entrance into the general field of practice. From that field various paths ascend, and each path is barred by a rigorous and just examination. Here we hold all graduates of certain schools to be equally qualified. There is no further mark, unless it be the letters F.A.C.S. appended to one's name, but I have not sufficiently investigated the process by which that distinction is achieved.

The most modern scientist, I suppose, will admit that a medical school has something to do with qualifying young men for the practice of medicine. The right of decision has long since been withdrawn from the medical schools. For Canada that right has been conferred upon the Dominion Medical Council. Their examiners are experienced in every department of practice and teaching. From their last report it appears that the largest percentage of graduates considered to be qualified—that is, not a menace to the community—came from the four schools to which first class rank had been denied. The order of merit was in the inverse ratio to the equipment and size of the school.

In this race for magnitude and pomp the hospital, too, is wrested from its foundation, a place where simple charity is dispensed and the recipient properly compelled to bear the stigma of charity. To avoid that stigma is the greatest

incentive to providence, prevision, and self-reliance. The improvident poor and some of the parsimonious rich now demand free hospital treatment as a natural right. The profession is exploited; the stream of charity fails; the poor will suffer; it is the poor who always suffer in the end from new taxes, such as those which are now so glibly demanded for these elaborate hospitals. Those who imagine the "efficiency" of a "standard" hospital have never witnessed the real efficiency of an aid-post, a field ambulance, or a private dispensary.

This is the efficiency prescribed by W. G. M. Byers in his protest (BRITISH MEDICAL JOURNAL, July 1st, 1922), that a graduate must be able to do a certain number of things before he is let loose in the community. His fitness is to be judged by what he can do, not alone by what he can write or say. And he must complete the thing; fifty per cent. is not enough. What those things shall be does not pass the wit of a faculty of practitioners to specify. Beyond this limit, he may do and know as much as he can master. That is medical education.

We have developed a new dogma, *Ex hospitale nulla salus*: no corporeal salvation without the hospital; not even for the parturient woman, who is persuaded that conception is a calamity and parturition a disease. The general practitioner has fallen into desuetude, especially those admirable physicians rationally qualified and trained by experience, whose dispensaries were free to all for a fee that was within the means of every self-respecting person. They detected disease at its very first onset. The patient who has fought his way into the wards is already dead. We have forgotten our humble, though lawful, progenitors, the barber-surgeons.

Last year, in the Montreal General Hospital, the first hospital in America to admit students into the wards, the daily average number of patients was 329; the daily cost of each public patient was 3.68 dollars. If the items of taxes, rent, depreciation, and medical attendance were added, the cost to the community would be ten dollars. To serve these patients and those attending the outdoor department, a medical staff of 160 persons and 175 nurses is required. These public patients paid more than one-third the cost of their maintenance. In the Hôtel-Dieu the cost was less; in the Royal Victoria it was more.

In other days the pride of a hospital was in the number of indigent who were relieved; now the boast is of the amount of money that is extracted from them by a band of paid inquisitors, known as social workers. It does not appear from the last annual report of the Montreal General Hospital what was the daily average of beds occupied by patients from which the hospital received nothing from any source. The number is so small in every hospital that the idea of charity has practically disappeared. And if the claim is made that the hospital is now "run on a business basis," it is fair to remark that a business which expends upon salaries and wages the sum of 205 thousand dollars out of a total "turnover" of 607 thousand dollars, with an operating deficit of 235 thousand dollars, is a badly managed business.

I am not saying that this hospital is unique. It is merely one of those that have been standardized to American methods. There are not enough people in Canada to support this expenditure either by private charity or by public tax. In the United States it may be different—they have sources of revenue denied to us. We must return once more to the simple way of charity unless we are willing to assume these inflated hospitals as once we assumed the equally bankrupt railways.

There is between us a conflict deeper still, the ancient Conflict of Studies. The American method of teaching is the experimental. It assumes that the student can understand nothing he hears with his ears. He must be shown a picture or a thing, as if he were a deaf-mute. I speak with knowledge, for in the past ten years I was present, as a spectator, at four lectures. I shall give a summary of each:

The first was upon the structure of the Universe. The eminent physicist, when he had occasion to mention the term "water," held up a glass. As water is transparent, I was compelled to take his word for it after all. The second lecture was upon "Relativity." When the eminent

mathematician had occasion to mention "the man in the railway train," he drew a rectangle on the board with an upright line inside. At the end of an hour he had not come to the explanation, and I went home to read a book for myself. The third lecture was upon "Cults rival to Christianity." The eminent classicist had occasion to mention a place in Persia, but it was beyond the limit of his screen, and he pointed to a spot in the black void. At the fourth lecture the eminent astronomer came provided with the model of a planet, but he neglected to take it out of his pocket.

"Show me, not tell me," is the "slogan" of the experimentalists. This is the old and vulgar demand for a miracle. If students will not hear their prophets, neither will they be persuaded though one rise from the dead. Or, in the more homely words of Isaac Todhunter, from whose books I learned what mathematics I know: "If a student does not believe the statements of his tutor, probably a clergyman of mature knowledge, recognized ability, and blameless character, his suspicion is irrational, and manifests a want of the power of appreciating evidence, a want fatal to his success in that branch of science, which he is supposed to be cultivating." Under this experimental system it is folly to read, an offence to remember.

A real experiment is a valuable product of the human mind, requiring knowledge to invent and ingenuity in performing it. When Augustus Waller demonstrated at McGill for the first time that electrical currents are present in the skin of a dead codfish, he performed an experiment. The thing was done once and for all time. The teacher who repeats the operation before his class is making not an experiment but a repetition of an observation made a thousand times before. It is now pretty well understood that the air exercises pressure. To allow a student to work the handle of the air pump would impress his mind: to watch a professor work it is not so convincing. I doubt the educational value of the performance. The student may take more interest; he would take more interest in football; but the extent of his interest is no true measure of value.

For the true place of experiment let us ask of the mathematicians again. The marvellous power of modern computation depends upon a machine, known as logarithms, invented by Napier in 1614. Four years later, Gunther designed a still more mechanical "line of numbers." Immediately, Oughtred pushed the device to its present point of perfection. It is known as the "slide-rule." Of the machines for avoiding mental labour in computation no other is of equal value. And yet the inventor used it in secret for ten years. When he was finally reproached by a friend and pupil for concealing so useful an invention, he enunciated for all time the true relation between the machine and the mind: "That the true way of Art is not by Instruments but by Demonstration; and that it is a preposterous course of vulgar teachers to begin with Instruments and not with the Sciences, and so instead of Artists to make their Schollers only doers of tricks, and as it were Juglers; to the despising of Art, losse of precious time, and betraying of willing and industrious wits into ignorance and idleness; that the use of instruments is indeed excellent, if a man be an artist; but contemptible being set and opposed to Art. And lastly, that he meant to commend to me the skill of Instruments, but first he would have me well instructed in the Sciences."

The first claim on behalf of routine experiments is that they save labour. The real reason for their employment is that they save thought, and mental exercise is the severest form of work. But the student who has been taught to rely upon experiments alone becomes the practitioner who relies blindly upon instruments. He allows his mind to atrophy, and is helpless without them. He has become a mere mechanic, useless without his tools.

And yet this is the occupation in which students are compelled to spend two precious years in institutes, colleges, and even in some universities, watching routine experiments in physics, chemistry, and biology, performed by young instructors who may be only a little less illiterate than themselves, peering into microscopes, when the large world of nature lies outspread. They would be better occupied

in their own homes in contact with the great minds revealed in books, especially with the great minds of medicine from Hippocrates to Osler.

With this reserve, I am careful to yield full praise to that large chemistry learned from Harrington and Ruttan; pathology from Johnston and Adami; geology from the rocks, and botany from the plants of the field, as taught by Sir William Dawson and Frank Adams, and in Toronto by Sir Daniel Wilson, whose very whiskers suggested the immensity of his theme.

In this audience there are exquisite physicians and masters of surgery; yet I doubt if there is anyone here present, excepting myself, who can write on the board the formula for so simple a substance as phenolglycol; who can say if the sun goes around the earth or the earth goes around the sun; or can explain why the moon varies in appearance on successive nights. Why, then, should students be expected to know so much before they begin the study of medicine?

The next precept is, "Let the student solve his own problems." That was the way of Pasteur and Harvey—too hard a way for all but the chosen few; it means the abdication of the professor. Is teaching, then, of no value? And if a student is to solve his own problems, he can solve them at home without spending seven years in the university.

In the Bulletins of the Association of American Medical Colleges although you will find in them strange forms of expression and, as Maurice Hutton says of Plato, every kind of educational nonsense, you will find also a deep dissatisfaction with the rigid and uniform requirements of the two pre-medical years. They are looked upon as an ordeal, a penance, a penalty, a "barren stretch of wilderness" imposed upon the aspirants to the study of medicine. They are regarded also as "a failure to motivate prospective medical students."

In the Bulletin for July a resolution passed unanimously at the Charleston meeting of 1925 is quoted with approval. According to that resolution, the Association and the State licensing boards are to be asked to permit as an experiment "certain medical schools to modify the curriculum in any way they think desirable, in order to get loose from the bonds which now bind and hamper them." My plea is that Canadian schools be permitted to undertake that experiment. No one knows who it was that constructed this rigid curriculum. No one pretends that it is best for either country. The utmost claim is that it is identical for both. One may say of it, as Henri de Mondeville said of Galen: "I do not suppose God exhausted His power in creating him." The wisest of the Americans are also in revolt. That revolt began with us. My desire is to give it its direction and force.

Pushed to a conclusion, the advocates of the experimental method would content themselves by pointing out the professors and assigning their names as they walked in the university grounds. The experimental method may save mental labour. That is not the end of education. To a stupid person an experiment is as senseless as a lecture or a book.

These various American foundations, colleges, and associations by their very ruthlessness performed a task of incalculable good in their own country. They destroyed the mercenary schools and many other evils that were disclosed in the survey of twenty years ago. It is for them to decide when their work is done. It may well be that the time has come for them to take off their whips and restore freedom to the universities. In Canada, too, their operation has been of some advantage. They aroused us from our complacency; but the time is surely come when we must be left free to build according to our own needs.

Canadian medical schools suffer in turn from the various provincial boards. Their rules and regulations are nearly identical in respect of time and course of study. They imitate and copy one another until they have produced a mass of legislation in which no one believes, which not one approves. By a process of evolution and accretion they have created a fossil, which might be correctly labelled unreasoning, arbitrary, ultimate. And that is the dead hand under which the medical school and the medical student lie. This rigid curriculum is the death warrant

for any vital aspiration in the medical student or teacher. It emerged from the chaos of the scientific mind.

The origin of evil has always been a perplexing problem. The first instinct is to assign it a place without one's own borders. After yielding full credit to the United States as a possible nidus, let us inquire in how far it has arisen *de novo* amongst ourselves, or is the result of a universal cause. Let us begin with the valid experience that all practice has its origin in a pre-existing theory.

The theory of the macrocosm and microcosm devised by the Greeks, developed by the Arabians, and reaffirmed by Dante, was the central dogma of medicine so long as Graeco-Arabist influence prevailed. Even Darwin, when he attempted to assign a general term to the human body, could find no better term than "microcosm." The Arabist treatment of wounds by sanative compounds and coctions survived all the masters of surgery, Bruno, Hugh of Lucca, Theoderic, Henry of Mondeville, even Paré himself, and finally came to an end in the practice of Lister.

Parallel with this, from an even greater antiquity, ran the doctrine of the four elements, each composed of four primary qualities which had their corresponding qualities in the humours of the microcosm. Medical study then became an affair of rhetoric, metaphysics, logic, sophistry, and astrology. Even Vesalius could not free himself from those influences. He failed to discover the Galenical vessels between the ventricles of the heart. He was not bold enough to deny their existence; he described them as "invisible." Harvey made no such compromise. He followed where sound argument and ocular demonstration led.

In much more modern times, alternative and equally binding doctrines came into force. Governed by Newton's laws, a new Universe was constructed, like a model in the patent office or a glorified United States. Man himself becomes an automaton, or at best an internal combustion engine run by compressed animal spirits. This Cartesian man was too simple. With the new chemistry a chemical man was created, approaching very close to the modern conception of "a phenotype, gradually developed from the protozoön by mutation of ids and gens," but still composed of salts dissolved in water. One who now aspires to write on medicine must learn the jargon in which medicine is written.

By the premature application of such partial principles a new and scientific medicine is always built up; but medicine, just as it is at the point of becoming scientific, falls into ruin. On one occasion, Sydenham's was the hand that cast it down: "You cannot imagine how far a little observation carefully made by a man not tied up to the four humours, or sal, sulphur, and mercury, or to acid and alkali, will carry a man in the curing of disease." Sydenham began where Hippocrates stopped. He was not a scientist. He was a physician. The one is the antithesis of the other. He abandoned hypothesis. He was less concerned with explanations than with facts that arose from actual observation of the processes in health and disease.

Once more, and in our own time, the teaching of medicine has fallen into the hands of the scientists, who are so dominated by the doctrine of evolution that they have little thought for the thing that has been evolved, and less still for the process of devolution which is known to physicians as disease. In their own sphere they have attained neither to fixity of principle nor to permanence of indecision. They vacillate from moment to moment like a cow walking. They cannot teach, because their boast is that they do not know, that they are still learning. Their aim is to convert their students into agnostics like themselves. These are they who construct the curriculum for medical schools. Their mind is one. The result is the same. That is the ultimate origin of the evil. The laboratory is their temple, and those who sit in the temple soon come to show themselves as gods.

In our own time, happily, teachers and practitioners have arisen who were strong enough to break those bonds, and bend the sciences to their needs. They did not disdain tradition and learning like Paracelsus, who began his career by burning his books and declaring that Galen was less to him than his shoe-buckles. Sir William Osler as a teacher,

and Sir James Mackenzie as a practitioner, will serve as examples of this new courage. Mackenzie, like Sydenham, fell back upon unaided observation, and disclosed heart disease in the strong light of experience. Nor did his courage go unrewarded. After twenty years of Burnley porridge, he eat turtle at the Athenaeum; claret crowned his cup in Harley Street; he himself had fished the murex up.

Looking more closely at the problem, the evil lies within our own Faculties. The scientist has gained too much control. In the intervals between the repetition of experiments, made by original investigators, to prove what every one knows, he has ample leisure to enforce his methods upon medical teaching. The physician is preoccupied with the sick and dying. The surgeon is devoted to his technique, and in the work of his hands forgets to employ his mind. Both are inarticulate. They allow the scientists of the laboratory, and of the clinic to dominate the course, and the student falls into the gulf that lies between science and practice. In lucid moments the laboratory mind is assailed by doubt of the possibility or wisdom of attempting to convert the medical student into an abstract scientist. It then falls back upon the "cultural value" of the process, but further doubt must be created by personal introspection into the recesses of that mind itself. Life is too short, the Art too long. The student is wasting his time upon preliminary sciences, as a carpenter would be wasting his time upon the botany of the wood he employs, as a chemist or a physicist might be wasting his upon the further antecedent sciences of alchemy and astrology.

The theme of the present thesis is a plea that the power of these associations, boards, faculties, laboratories, and elective colleges be broken; that freedom of teaching be restored to the universities and to teachers who have the precious gift of teaching; that the present curriculum be examined with that freshness of mind which, according to the scientists themselves, should be applied to all sacred writings. This is merely their own plea for experience in the face of authority.

But the authority of these various provincial boards is already shaken from within. The Canada Medical Act permits the provincial boards to dispense with examinations. One province, British Columbia, has eliminated the

local board, and depends upon the Dominion Council. Another province, without any formal self-denying ordinance, but unselfishly and for the general good, is sending medical graduates in increasing numbers direct to the Dominion Council for licence to practise. That body is growing in favour by reason of its professional strength and freedom from technical influences. It is a new creation; it is not entrenched; it is close to the wide scrutiny of Parliament, which has never been impressed by pedagogic assumptions. This Council may in time become an instrument of freedom to the universities.

The warning of my old master was: "Hesitate before you begin an operation; once you have begun you must not stay your hand." I am nearly done. You have borne in patience, without the anaesthesia of flattery. All nations are admirable in their own environment; they develop ideals and create methods which are inevitable for themselves alone. Their culture is powerful only so long as it remains free to the world. The attempt to enforce that culture, those ideals, those methods over their own borders creates hostility, always ends in disaster to themselves, and frequently in disaster to their neighbours. That was the fatal error into which the Germans fell—a lack of sensibility to the feelings, emotions, beliefs, and prejudices of other peoples—they themselves being like you, so naive, so amiable, so ingenuous, so convinced, and sincere.

Respect for boundaries, national, physical, social, and intellectual, is the prime condition of peace between friends, families, and nations. The more closely these units are related the more scrupulously must that respect be observed. Therefore, I beseech you, do not press upon us too closely American methods in our medical education.

And yet, it does so often happen that the evil we deplore never comes to pass. Nothing is so bad—or so good—as we expect. A pine tree does not grow up to the sky, nor a man's whiskers to the ground. Your president this year is a Canadian. Since I came into this room, I am informed that your president-elect is George Stewart, a Canadian too—that is, if for the purpose of my theme, and following immemorial usage, I may ascribe the glory of the Maritime Provinces to Canada at large. It may therefore be that after all nothing will happen; or, indeed, that we shall persuade and enable you to accept not our methods but those ideals which we have inherited.

The Profession of Medicine.

INTRODUCTORY.

THE main object of this Educational Number of the BRITISH MEDICAL JOURNAL is to be of assistance to prospective students and their parents. It is largely a guide to the steps that must be taken and the studies that must be pursued in order to become a registered medical practitioner. It contains also a section on post-graduate medical teaching in Great Britain, and other sections addressed more particularly to those who have just qualified and are considering what path in medicine they should follow. The details given are founded for the most part on official information, and are arranged along the customary lines. As in past years, we take occasion in this introductory article to review some aspects of medical study and practice to-day, in order to put the situation before those who think of devoting themselves to medicine, and thus help them to gauge their fitness for the calling and the prospects it holds out.

Our opening article this year is an address on American methods of medical education, delivered in Montreal last autumn by Sir ANDREW MACPHAIL, Professor of the History of Medicine in McGill University. While his outspoken criticisms apply for the most part to conditions in Canada and the United States, much of what he says has to do with medical education everywhere, and his words can hardly fail to stimulate thought among the wider audience to whom we now present them. His thesis, in effect, is

a plea for greater freedom in teaching, and for a thorough re-examination of the curriculum in the light of modern requirements and ideas. The problems of medical education are not quite the same on each side of the Atlantic; but it may be that we, too, would be the better for a few home truths about the "dead hand," and need a warning against "efficiency" and "standardization" when these are imposed upon a country from outside.

The intending student will find in subsequent pages an account of the course of training required of him, the places where it can be obtained, and the universities and other licensing bodies which test the knowledge gained and confer degrees or diplomas entitling successful candidates to become legally qualified medical practitioners.

THE GROUNDWORK OF MEDICAL STUDY.

"Three principles of all professional education seem to be fundamental," wrote Sir Clifford Allbutt: "First to secure a good general education; secondly, a good scientific education; thirdly, a good technical education." Upon the first of these the second and third largely depend. As for the second, no one can overstress the value to a doctor of a thorough grounding in the basic principles of science, for medicine is an art founded on science. The temptation to take short views and short cuts is very

¹ The Training of the Medical Student. BRITISH MEDICAL JOURNAL, September 2nd, 1922, p. 407.