A Few Thoughts On Medical Education

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The editor of the Dalhousie Medical Journal called at my office recently and asked me to write something on medical education. I could still recall some of my own problems as editor of the same publication more than twenty years ago, and found it difficult to refuse. However, I pleaded a very busy schedule during the next month in an effort to gain at least a postponement. This attempt was dealt with firmly but pleasantly by the editor, who refused to accept no for an answer. I hope he deals as effectively with the excuses of the medical students!

May I make a plea to the medical students who read this article that you assist the editorial staff to raise the Journal to a level of excellence of which you can all rightly be proud. It is a good undergraduate journal now, but nothing is so good that it cannot be improved further.

Personally, I have always been very glad that I took an active interest in the founding of the Dalhousie Medical Journal. Dr. Roy Gold, formerly of Glace Bay and now of New York, was the first editor and I was an associate. When I first wrote for the Journal I had no idea that I would ever find myself in an academic position. I prepared an article and a few book reviews with no thought that the exercise would be of any value to me, and with the modest feeling that it would certainly be of no value to any reader. Looking back now, I realize that the experience in writing for publication for the first time was a very valuable one indeed. One of the skills required by a doctor is the ability to express himself with reasonable clarity. This is not only important to the man who is going into academic medicine, but to the practitioner in any clinical field. Every one of you will at some time in your career have gained experience or special knowledge which you should pass on to your confreres. Much valuable information has been lost, I feel sure, because doctors have hesitated to put their thoughts on paper or to speak at a medical society meeting. One of the first pledges in the Hippocratic Oath is that you will impart a knowledge of the art of Medicine to others. You also promise not to keep secret for your own benefit any remedies or skills which you may discover. Medical education is, therefore, the responsibility of every graduate doctor. A part of your undergraduate medical training should be directed towards fitting you to fulfill this responsibility as well as the many others which fall on the shoulders of a doctor.

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We often speak of "modern" medical education, but I think that few young doctors realize how recent most of the great advances have been. Progress in medical knowledge has been greater in the past one hundred years than in the preceding two thousand, and greatest of all during the last fifty. On this continent medical education probably owes more to Abraham Flexner than to any other individual. Flexner died only last September, and although he was a very old man—over 94—nevertheless, the fact that he was living when all of you began the study of medicine indicates that medical education, as we know it today, is of fairly recent origin.

The beginning of the healing arts and the methods by which these were passed on from one generation to another are hidden in the mists of time. From the earliest dawn of recorded history there had been men versed in healing, and there is even evidence of their work in prehistoric times. Most of the early healers were priests. The association between religion and medicine wes extremely close. Hippocrates is described as the Father of Medicine, not because he was the first practitioner of the art of healing, but because his teaching led to a separate profession. He and his followers began the emancipation of medicine from superstition, from the belief in malign spirits as the cause of disease and benign spirits as the healers. The priesthood had been trained "by precept and example" in the temple, and this system of apprenticeship continued in the newly separated profession of medicine.

Over the centuries, links were gradually forged between medicine and other branches of learning, and at least a few physicians acquired a basic fund of medical knowledge at the university. Medicine can with reason claim to be one of the oldest of the learned professions. Nevertheless, advances in medical education were very slow. For centuries, most doctors received their training by working with another practitioner, or were self-taught. It was only in the nineteenth century in Germany and Austria that most medical students began to receive training in the university in the

sciences of Physics and Chemistry and in the preclinical sciences of Anatomy and Physiology. A few physician-scientists then began to devote themselves to a life of teaching and research. It was not until the last quarter of the nineteenth century that the preclinical sciences were established in the medical faculties of Great Britain, the United States and Canada. Many medical doctors were still being trained as apprentices less than a hundred years ago. The neophyte was a sort of servant-student. He curried the doctor's horse and delivered the medicines, as well as studying the "Art and Science of Medicine"—chiefly the Art.

No doubt many good doctors were trained under this system, but the range from the best down to the poorest must have been extremely wide. It was generally recognized in America that doctors educated in the universities and hospitals of European countries, including the British Isles, were much superior in skill and knowledge to those trained as apprentices. Many of these European doctors came to Canada and the United States, and others from America were trained in Europe and returned to practice here and often to teach as well. It has been said that wherever two or more Edinburgh graduates got together they established a medical school. Many of the present-day university medical schools owe their establishment to European-trained doctors.

During the nineteenth century conscientious educators recognized that laboratory exercises, including anatomy dissection, and clinical observation at the bedside, as well as lectures, were essential to sound teaching. However, many less ethical doctors began opening so-called medical schools where teaching consisted almost entirely of lectures. Groups of physicians banded themselves together into what they called a medical faculty. They secured a charter from a State or Provincial Legislature giving them the right to conduct medical training and to grant the medical degree. There were usually no entrance requirements. The course was often as short as ten or twenty weeks.Facilities consisted usually of a lecture room, a demonstration laboratory. and sometimes a few books called a library. There were more than 460 such schools during the nineteenth century in the United States and a few in Canada, without regulation of any kind. (At present there are 84 medical schools in the U.S.A. and 12 in Canada). The exchange of a diploma for a fee became a profitable business. Even more unsavoury were the aspirants who by-passed training of any description even in these proprietary schools and who practised medicine without any training whatsoever. In the early 1800's it is said that less than ten per cent of the physicians in the United States were graduates of medical schools and more than eighty per cent had never attended even a lecture. In the early 1900's the situation was very much improved, but it was still bad by present-day standards. Most of the recently trained doctors in Canada and the United States, at that time had attended at least a proprietary school and in many instances had taken apprenticeship training with a practising physician.

Efforts by the American Medical Association and the Canadian Medical Association had gradually led to the introduction of legislation requiring the licensure of doctors. Several states and provinces introduced such legislation in the latter part of the nineteenth century, but not all. Finally in the early part of the present century, leaders in medicine persuaded the Carnegie Foundation to undertake a thorough study of medical education in Canada and the United States.

Abraham Flexner, who conducted this investigation, published the report of his two year inspection of the medical schools of the United States and Canada in 1910. His report had the effect of a "block-buster". Only a very few strong university faculties of medicine withstood its blast. Most were rocked and torn, and the necessary repairs made them almost unrecognizable a few years later, so improved they were. Dalhousie was one of these. Others were permanently destroyed—to the great benefit of medicine and of the public health. Of the 135 medical schools then in existence in Canada and the United States, 29 were closed within the next four years and still more dropped out later. Only 66 were approved by the Council on Medical Education of the American Medical Association on the basis of the Flexner Survey. The stigma of a doubtful or B rating, or, worse still, a C or unacceptable rating was so effective that by 1927, 89 per cent of the medical schools in operation in Canada and the United States enjoyed an A rating, including Dalhousie. In 1948 all had received the full approval both of the Association of American Medical Colleges and the American Medical Association, and in Canada, the Association of Canadian Medical Colleges.

Dalhousie Medical School was one of the institutions which received a rude shaking on publication of the Flexner Report. It was already quite an old institution although it had not operated under the University most of the time, but as the Halifax Med-

ical College. The Medical Faculty of Dalhousie University had come into existence in 1868, fifty years after the founding of the University itself. It almost died of financial inanition in the first few years of life and the Halifax Medical College was established in its place in 1875. The Provincial Government apparently did not wish to provide a grant to the University, but could and did assist the private institution, the Halifax Medical College. However, the grant was only $800. and the institution had to depend chiefly on the fees of students and contributions of the Halifax doctors. The Halifax Medical College continued to operate until 1911, although shortly after its establishment a loose affiliation with the University was arranged, and the degree was granted by Dalhousie. Although this Medical College existed on a shoe-string budget, it nevertheless sent out a number of excellent physicians who brought credit to their school both at home and abroad. The clinical facilites were good for their day, and the Faculty had an intense desire to teach. However, Flexner considered the programme and facilities to be inadequate, and he was a man who was never satisfied with anything less than excellent. Some of the Halifax doctors criticized his survey as having been hurried and superficial. However, by the time he reached here, he probably had a pretty good idea of what to look for, and the Halifax Medical College did not meet the minimum requirements which he had laid down.

In 1911 Dalhousie University Faculty of Medicine was re-established in place of the Halifax Medical College. The first full-time staff members were appointed in the pre-clinical sciences. The number of such staff members increased gradually over the following years. In the early 1920's the Rockefeller and Carnegie Foundations provided considerable funds for endowment. The Pathology Institute was enlarged by the Province of Nova Scotia and the University was provided with facilities in it for the Departments of Pathology and Bacteriology. At the same time the University built the Medical Science Building and the Public Health Clinic. The latter served as the out-patient department for all city hospitals as well as operating Public Health Clinics for the City Department of Health. With these new facilities and a good nucleus of scientists on the staff, the Medical School obtained its rating as a grade A medical school, and has never since dropped backward.

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It might be of interest to review the principles which were established as a result of the Flexner Survey as the basis for approval of medical schools in North America, and to comment on a few of the changes that have occured in Dalhousie in meeting these requirements:

1. Students entering medical school were to be required to have at least two years of college and a demonstrated competence in Physics, Chemistry and Biology. Prior to 1910 most medical schools admitted students directly from high school and a few students entered with as little as grade eight education. This premedical requirement was increased by Dalhousie to three years of college in the early 1950's. The agencies which accredit hospitals for residency training in the United States had delivered the dictum that a hospital would not be accredited, if it accepted graduates from medical schools requiring less than three years of pre-medical work.

2. There must be a full-time Faculty in the medical sciences, such as Anatomy and Physiology, with experienced teachers of attainment in those sciences who would also have the ability to do research. From a full-time staff of two at Dalhousie before 1920, the number was increased to about twelve in the 1930's, and since World War II has grown to twenty-six.

3. There must be a hospital and a dispensary or an out-patient department as an integral part of the medical school or closely affiliated with it, providing clinical services under the control of the Faculty. Dalhousie has been in an exceptionally fortunate position in this respect. Since the Victoria General became a provincially operated hospital in 1885, the teaching wards have been "closed", i.e. with an active staff appointed jointly by the University and the hospital. Teaching facilities in Obstetrics and Paediatrics have also been available in the Grace Maternity and the Children's Hospital. The existence of a closed teaching unit with all of the patients under the care of a limited number of active staff members who are teachers is a vital necessity to any medical school. It is the core of the whole structure of medical education in the clinical years. The medical student, the interne, the resident and the active staff members are a team responsible for the care of a group of patients. Varying degrees of responsibility are given to the members of the team, depending upon their training, ability and experience. Without such a unit with a small staff of teachers, the student may be given considerable opportunity for observation, but he cannot develop the educated judgement which comes from being given responsibility. Modern medical education, therefore, retains a certain element of the apprenticeship system, but the student is apprenticed to a teaching

team rather than to an individual doctor. Patients who wish to have the choice of a doctor other than those on the active staff of the teaching unit can do so in the semi-private and private accommodation of the hospital under a member of the courtesy staff. Nearly all doctors in the city are members of this courtesy staff.

4. Tuition alone should not be considered a sufficient and sole source of income for the operation of a medical school. There is little doubt that few who know anything about the subject today would dream of operating a medical school for profit. Deficits are the order of the day. The average cost per student per year in Dalhousie for 1960-1961 will be approximately $3,200. The student pays $500. for tuition and the remainder must come from endowments, gifts and Government grants. In addition to this undergraduate teaching budget, the research programme costs an additional $250,000 and various post-graduate programmes approximately $50,000. The total budget is well over a million dollars. Do I dare hint that you keep these figures in mind at some future date when the University or the Alumni Association asks you for assistance on behalf of the Dalhousie Medical School? Your education is costing us at least $16,000 in the five years you are with us and your tuition payments are slightly less than $2,400. When we go to governments for additional grants the hard-headed politician almost invariably asks: "Why do you not get more help from your own Alumni? There are few groups in the community who have higher incomes. Surely they should pay for their own education."

5. The medical school has to be integrated with the rest of the system of higher education as a faculty of a university. In most instances medical schools today are an integral part of a university in Canada and the United States, although not quite all. A few are independent institutions. In Dalhousie the Faculty of Medicine occupies the same status as other Faculties. Members of the Faculty of Medicine participate in the work of the University Senate and other Governing bodies.

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Up to this point most of my comments have been factual or at least my interpretation of the facts. Perhaps I might be permitted now to add a few comments which are largely personal impressions and opinions.

First, regarding the quality of the medical graduate of today, I think too much pessimistic tripe has been written on this subject. I do not know why so many people in our profession are determined to "cry havoc" and bemoan the supposed deterioration of the medical profession. I am quite convinced that the classes who have graduated from Dalhousie University in the last ten or fifteen years have been of a calibre that would equal, if not surpass, any class that has ever passed through the portals of this institution. A study of the academic record of our students gives a clear indication that there has been no deterioration, and I think the students would be prepared to accept my statement that the high standing of today's graduate is not due to the fact that the examinations have been made easier. The outstanding success of our graduates who have gone on to residency training in the major centres of education on this continent and in Europe is a strong indication of the accuracy of my evaluation.

Much of the uncertainty concerning the future of medicine seems to have stemmed from statistics which purport to show a serious decrease in the number of applicants for admission to medical schools in Canada and the United States during the last four or five years. Like many statistics these are rather hard to interpret and a superficial examination may lead to a wrong conclusion. As most of you know, I am rather critical of statistics, or at least critical of the people who misuse them. In the first instance, no one knows how many people applied for admission to medicine in all Canadian and American medical schools in the period immediately following World War II. There was no central agency which cross-checked the applications to determine how many duplications there were. Veterans were crowding the medical schools, and it is well-known that almost every candidate applied to a large number of institutions in the hope that he would be selected by at least one of them. We used to have five or six hundred applicants for admission to the sixty places in the first year of medicine at Dalhousie, but I am quite sure that most of them had applied to twenty or thirty other medical schools as well. The fact is that we do not know how many people were seeking admission to medical schools in North America. There has certainly been a decrease, as one would expect after the backlog of veterans were trained, but there is little indication that the interest in Medicine has fallen below the pre-war level.

The question that has produced even more concern has been the supposed deterioration in the quality of applicants for admission to medical schools. This view, which is widely held, is based largely on a

study of the students admitted to medical colleges in the United States classified according to their average academic standing in the pre-medical course. During the years 1950, 1951 and 1952 approximately thirty-five per cent of the students had an average rating of A in their pre-medical courses. In 1953 this fell precipitately to approximately eighteen per cent and has continued at this level since that time. The conclusion of the writer who first reported on this phenomenon was: "We are getting only half as many good students in medicine as we formerly did." This conclusion is a very dubious one, as any one associated with medical education should have realized. During the period 1945-1950 practically no one except veterans was accepted into a medical school in Canada or the United States. The younger men who had not seen military service simply had to wait until the veterans passed through. While they were waiting they continued their education, most of them receiving a Bachelor's Degree and some a Master's Degree. The student who had a poor academic record was very hesitant to wait several years because his chances of ever getting into a medical school were not very good. The better students continued their studies with the assurance that they would eventually get into medicine. The result was that in the years 1951, 1952 and 1953 the cream of the crop of several preceding years came into the medical schools. It is completely unrealistic to use this as the average base line for comparison with the academic standing of the present-day students.

Those of us who have not been so pessimistic about attracting an adequate number of students into medicine had predicted that the increased enrolment in Arts and Science would eventually mean an increase in the number of applicants to the medical schools. The first indication of this is the fact that there has been a thirty-five per cent increase in the number of applicants for admission to medicine at Dalhousie University for September, 1960, as compared with September, 1959.

In conclusion, I would express my belief that medical education has never been better than it is today, that the quality of medical students is as good as, if not better than, it ever has been and that the opportunities in medicine are infinitely greater than was even dreamed of twenty-five years ago. The last quarter-century has witnessed many changes in the practice of medicine and in the methods of medical education. The next quarter-century will no doubt see even more extensive changes. Developments in research are taking place so rapidly that changes in medical education must be frequent, if we are to keep up to date. No medical school today can do more than aim at helping a student obtain an education which will enable him to develop certain basic skills, to learn how to think and make reasoned judgements, and to develop the habit of continuing his education for the rest of his life. You have entered upon a life-time study of medicine, not a short course of four or five years. You are fortunate indeed that you have come into the profession when medical education is changing to meet the needs of the times, and when you will have unparalleled opportunities to assist in making these changes. A judicious mixture of idealism and hardheaded realism will be needed to steer medicine on a proper course in future years. My one prediction for medical students of today is that you will not find life dull in your chosen profession.