

Dean Stewart's Address  
to Students' Med Socy

December 5, 1963

In addressing a group of medical students I think a suitable title would be "The Challenges of Medicine". I do not define a challenge as a call to battle between enemies, but as a bugle note to allies inviting participation in a great cause.

The striking fact of this twentieth century is change. The amount and pace of change. The population has been growing at a rate never before known. In the natural, the biological and the social sciences, the mass of knowledge has expanded in the past sixty years more than in all the previous millenia of human history. Technology - the ways men produce and distribute goods, services and ideas - has moved on the heels of science in a dizzying interplay. In the more developed countries, including Canada, the preponderant rural life of the past has given way to urbanism. The political face of the world has been transformed since the first World War.

If we are near the beginning of the final third of this twentieth century. You and the other young men and women who chose to enter the profession of medicine will have a great part in the shaping of this last third. I myself entered Dalhousie University as a medical student in 1933. My generation has seen the stultifying, deadening impact of the greatest economic depression the western world has seen, followed by the greatest World War of all times, and since that time, the most rapid advance in medical science every achieved. I would hope that you would escape the first two, but would participate actively and productively in the explosion of human knowledge which is changing the whole face of medicine.

It is difficult for me to appreciate the tremendous changes that have taken place in medicine within this generation and I am sure it must be even more difficult for you. I had an uncle who began the general practice of medicine in a small village in Prince Edward Island about the beginning of the century, I believe in 1902. Bacterial diseases were the great scourge of that time and the first practical application of the new science of bacteriology was just coming into the armamentarium of the physician. Diphtheria antitoxin was becoming available, but toxoid was not yet in practical use. Typhoid, diphtheria, tuberculosis and pneumonia were tremendous killers. The first third of the century saw the greatest events in the field of preventive medicine, the improvement of the environment by the removal of health hazards, the protection of individuals by active and passive immunization.

Modern surgery really began during that first third of the century also. The year that I entered Dalhousie University, 1933, was the year Dr. John Stewart, former Dean of the Faculty of Medicine, died. John Stewart was a young <sup>Capel Breton</sup> Pictou County student in Edinburgh when Joseph Lister first applied to his surgical patients the knowledge which had been gained in bacteriology so recently by Louis Pasteur. The infected wounds, the gangrene, the laudable pus of those days, which killed a huge proportion of the unfortunate victims who had to undergo surgery, was now changed by the simple introduction of the idea of bacterial spread of disease and its control by antibacterial substances and strict cleanliness for asepsis. John Stewart spent some time with Lister in Edinburgh and London and returned to Nova Scotia to practice surgery, to introduce the new

surgical knowledge into the Maritimes at the same time that another Lister student, Sir Thomas Roddick of Newfoundland, brought his knowledge as professor of surgery to the ill.

I am sure all of this seems like very ancient history to you. Even when I think of some of my own ~~w~~ experiences, they seem almost unbelievable in the light of present day knowledge. In the mid-1930's, while I was an interne at the Victoria General Hospital, the first clinical use of the sulfonamides was reported. These chemicals <sup>had been</sup> developed in Germany many years before but their application to bacteriology was not realized for a considerable period. I very well remember the first patient treated with protosil, a bright red dye which had to be injected and which in my hands frequently resulted in considerable staining of the bed linen.

(Description of first use of protosil) & later development of penicillin)

While you are in University I am sure you are greatly impressed with the tremendous volume of human knowledge, with the number of facts and theories which it is simply impossible to absorb, let alone understand. Unfortunately ~~however~~ our iniquitous system of examinations concentrates your attention too much in many instances upon the memorization of facts rather than an understanding of them and the development of the intellectual processes of reasoning with these facts and theories.

In the short time available to me, let me spend a few moments discussing the primary skill of the physician as I understand it. A few years ago, a prominent educator in another profession

told me that he considered arts and science to be the heart and soul of any university. He also rated theology at a high level and then he placed law, his own profession. He said that he rated law at a higher level intellectually because it was primarily concerned with the development of the mind, the intellect. On the other hand, he said, medicine must of necessity be much more concerned with technical skills. This is no criticism. It is essential that this be emphasis, but it does place medicine at a lower intellectual level than law and the other fields, including the pure sciences.

I was rather shocked to realize that a highly educated man had so misunderstood the primary skill of the physician and I have learned since that time in conversation with many other people that this is not at all an uncommon viewpoint. Perhaps some of you may be thinking that in medicine your chief job will be to learn how to tie<sup>a</sup>/certain surgical knot or how to hear heart sounds through a stethoscope, or how to see with the aid of an ophthalmoscope into the posterier chamber of the eye, so that you can look at the nerve ending of the optical nerve or examine the blood vessels in the retina. I would not for one moment suggest that these practical skills are unnecessary, but to say that a physician or surgeon is a technician and that the acquisition of the skills are the prime goals of his education is to me tantamount to saying that an archaeologist is someone who digs holes in the ground.

When a physician sees a patient who is complaining of a symptom he has to collect information of many types. He has to be careful not to miss any possible sources of fruitful data. Like the

scientist in his laboratory, he is collecting data with a purpose in mind, the making of a diagnosis and an understanding of the mechanism by which the symptoms have been produced. He goes into the patient's history of the present illness, learning the character, the timing, the onset, the many features of the symptoms that are described, their relation one to another, and goes into the previous history of other illnesses, the family history since some diseases have genetic or hereditary features. The possible contacts, if it may be an infection, must be explored. A complete examination follows not only of the areas which seem primarily subject to the symptoms, but a thorough investigation of all of the major systems on the basis of tentative hypothesis or hypotheses as to possible explanations. Further investigation may be set up of laboratory tests, x-ray, etc. These data must be analyzed and fitted into the whole picture excluding one hypothesis, strengthening another, throwing both out and starting the reasoning process over again. Eventually a fairly firm hypothesis is established which may be tested by additional investigation or by a trial of treatment. The program of treatment and the techniques of treatment are important but they are secondary. The judgment and reasoning come in the decision regarding the diagnosis and the prognosis or prediction as to the future course.

This is to my mind an intellectual process of the highest order, not second in any way to that of the pure scientist, the lawyer or any other intellectual skill. The greater difficulty is involved than in most sciences because one is dealing with people. It is not only the symptoms of disease that are of concern to us, but the reaction of the individual to his illness, his reaction to his environment,

to the people with whom it is associated may have a bearing on the cause as well as upon the outcome of the treatment.

My only advice to us is to consider medicine an extremely challenging field growing as rapidly as rocket engineering or nuclear physics, as one in which the huge volume of factual material is not barrier but a challenge, and not a challenge simply to memorize what other people think about something, but to develop your own reasoning powers, to think problems through in an orderly scientific fashion. The facts of medicine will change over the next third of a century and you will have a part in changing them, but the man or woman who in university has learned to develop his intellectual skills, to ask why or how, and to question even the greatest experts, is the one who will achieve success whether in medicine or in any other career that he may choose. You can become a medical technician and we have many of them in the profession. The cookbook-recipe type of performer. He can serve a very useful purpose, but he is, by any definition, a technician. I assume that you will want to be doctors and not medical technicians.

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Office of the Dean of Medicine  
Dalhousie University  
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