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In the Presidential Address last year, some time was devoted to interesting aspects of early Nova Scotian science as recorded in the Proceedings of this Institute. In a great many cases, observations taken from this past history have found value in solving the problems which face us in the present, and, no doubt will continue to do so in the future. This will be true only if the problems we deal with continue to be purely scientific, and by "scientific" I mean seeking by experiment, the answers to questions concerning natural phenomena.

No one will dispute the fact that this is the field of science, but not all will agree that the scientist should devote himself exclusively to this field of activity. For upon the scientist of today, the scientist of tomorrow depends for growth and maturation. If the recording of ideas is important to the nourishment of scientists, then the communication of these ideas to young people is vital to the species if it is to flourish. It is perhaps not enough to observe and record, one should also explain and teach,—in short—educate.

Those of us who earn our livelihood by working in some branch of science would probably agree that one of the greatest contemporary problems facing the Western nations has to do with the education of young scientists. In a somewhat complacent fashion we have tacitly believed that scientists beget scientists and therefore, whatever else happens, the species is bound to increase in number. While this is no doubt true insofar as actual numbers of trained personnel is concerned, it focusses the attention on the quantitative aspect of the problem. Quality is the characteristic which has escaped attention.

No serious agriculturist who is interested in supplying eggs on a large scale production basis, can any longer afford to believe in the old saying "eggs is eggs", because the public knows very well that there are good eggs and bad eggs, large eggs and small eggs. The agriculturist solves his problem by careful selection and nutrition. His attention is focussed on quality for he has learned that quantity ceases to be the problem once the qualitative aspect has been established.

It seems to me that we have developed our Western educational program along the lines of a belief that "brains is brains" and that although we do not hold with the thesis that all men are born equal, we facetiously evade the issue by redefining the statement: "Although all men are born equal, some are more equal than others". Until we are capable of initiating a program of human development such as that pictured by Aldous Huxley in "Brave New World" we must face up to the fallacies and problems implicit in these statements. We must turn our attention to the quality of the product we, as scientists, are interested in, namely, young scientists. And perhaps this is something which this Institute might consider as a part of its scientific activity in the near future. A step in this direction was taken last year when Council decided to offer prizes for the best scientific essays submitted by students during the academic year.

But by merely encouraging young persons in University to continue their science training we do not solve the problem. There is a very much larger population of young people, perhaps not yet in University who must be convinced of the desirability of a career in science, most especially from the point of view of the prestige accorded the scientist by the community in which he lives. This is indeed a far-reaching problem, the solution to which leads us into the field of economics. It is unfortunately true that in our North American civilization, the sign of success in life is the dollar sign. Distasteful as it may seem, we must realize that science would appear an attractive career to many more young people than it does were the financial rewards greater. To argue otherwise, to insist upon the quality of dedication, is to bury one's head in the sands of idealism; for this attitude overlooks the fact that lack of financial reward turns many capable young people away from a career in science. Continued insistence on the quality of dedication can only result in either of two outcomes: greatly reduced numbers of graduate students, or graduate classes filled with students too stupid to do anything else.

Our consideration of the financial aspects of our problem goes deeper, for, were we allowed to make an attractive financial offer to the scientist-in-training, we will soon find that eventually the money to pay him must come from the taxpayer's pocket. Thus not only must we "sell" the career in science to the potential scientist, but we must "sell" the general public and government institutions the idea that science, and

that which accrues from being a scientist is a worthwhile commodity in which to invest. Herein lies one of our greatest difficulties.

In the last analysis, it is John Q. Public who must be convinced, because although government agencies may continue to dispense monies for research and training, they are, in theory, sensitive to public opinion, And as long as they remain sensitive to public opinion, they are not likely to lay out large sums of the tax-payer's money unless there is public pressure brought upon them to do so.

Just how sensitive government agencies are to public opinion, is difficult to decide, but it is fairly certain that they are not particularly prone to listen to the pleas of the individual. Last year your President wrote the chief officer of a large Canadian government agency pointing out that there was no enticement to continue post-graduate work in the fact that a fresh B.Sc. employed as a technician could earn as much as $300 per month, but directly he registered for a course leading to a higher degree, his salary would drop to $87.50 per month during the academic term and $200 a month during the summer. A plea was made for at least considering that this differential was too great. The reply received was, if nothing else, succinct: "I am afraid that our basic outlooks are so far apart that it would not be possible for us even to get into communication in anything as short as a letter".

If this is the attitude of federal government toward higher education (and I am not sure that it is) then there is still a good deal of wisdom attached to the action of the Fathers of Confederation when, 90 years ago, they placed education in the hands of the provincial governments!

Are these attitudes likely to change and if so, what or who is likely to change them? To answer the second question first, for it is easier, public opinion is the only force likely to be able to bring enough pressure to bear upon government so that public monies can be directed toward education. But having answered this question, a much larger one,—and one implicit in the first one asked above—now presents itself, namely, what force is likely to change public opinion?

A recent editorial appeared in Science (4 July 1958) entitled "To help improve quality" and in it the author reports on certain education bills which were to come before the U.S. federal government. The House Committee on Education

and Labor is expected to bring out a new bill emphasizing the need for improving the quality of American education. The bill will likely call for funds for "counseling and guidance programs, employment of counselors to help inexperienced teachers of science, mathematics and (perhaps) foreign languages, purchase of laboratory equipment, research in teaching methods scholarships and student loans . . ."

Now, bills of this nature have had wide support from education leaders and scientific institutions, but in order to provide some guarantee of their passage through the House of Representatives and the Senate, priority has been given, in the bills, to science and engineering students. Were this not so, the editorial points out, there would be small chance of them passing in the House for the simple reason that they could not be justified on the grounds of being vital to civil defence. This means that public opinion toward education (and in this case, one branch of education) is likely to change only when it becomes a political necessity to do so. It is indeed unfortunate that fear on an international basis, rather than pride on a national basis is the agency most likely to alter the public's opinion concerning quality of education.

This Institute alone can do nothing to bring about changes in public opinion, but it might, together with other scientific institutions accomplish more on a national basis. Meanwhile the Institute should consider ways and means of nourishing the small population of young scientists we already have. I firmly believe, however, that our attention should not be focussed solely at the University level. If it is our interest to conserve as many scientific brains as possible, we must do something about the loss which occurs, because of financial considerations, between High School and University. This action might well take the form of a scholarship given to a student with a scientific turn of mind who would not be able, for financial reasons, to enter University. Admittedly this is a small effort, but it is an effort in the right direction and this, together with whatever is done for the young scientist once he is in University, constitutes an activity just as valuable to science as the reporting of scientific papers. In closing I should like to express my thanks to the members of Council who carried on the affairs of the Institute during the past year. It was a pleasure to have been associated with them, and in their hands, under the new President, I feel sure that the Institute may look forward to profitable years ahead.