

own concern for the translation of the results of basic research into applied research in the fields of industry and commerce, because it is in this area that I think we are, as you have said, weakest.

It is understandable in a sense, because of the nature of our economy and our industries. Our economy and our industries are so similar to those of our neighbour, the United States, that it seems almost natural that we should copy what they have already produced, assuming that they have done the research and have tried it out on two hundred million people, as it were, so that we can save ourselves all the bother and cost and all the rest of it.

Despite that fact I do think it is one, and should be, one of our major concerns, as you have indicated in your report and your summary of your report.

In this connection I was very much interested in the statistics in Chart 2, in which you indicate that by 1973 you expect that there will be of the order of 11,500 Ph.D.'s at work; that 70 per cent of these will be in the universities; only 13 per cent in industry; and 17 per cent in government.

Now, I suspect that the majority, or the largest percentage of those in the universities will not necessarily be engaged in teaching, because there is likely to be a plateau in respect of the increase in student enrolment over the next five or six or ten years, but I would expect, and this is the question I put to you, whether I am correct in assuming that a goodly number of these Ph.D.'s in the universities will actually be engaged in basic and some near applied research work of their own in the laboratories that the universities provide and only the necessary numbers in the actual teaching of undergraduates and other graduate students?

Dr. Schneider: In reply to that I can only say at the present time there are virtually none in the universities who do not do some teaching, in other words who are doing research full time and not doing any teaching.

I think there are a few very unusual cases; I think on the whole, virtually all of the people in universities doing research also do a fair amount of teaching and the projections are that with the growing student enrolment they will need more and certainly I would say at the present time there are no plans that would set up large research institutes in

a university where people are doing simply research full time and not also engaged in teaching.

I think the other matter you raised about this question of transfer of research results to industry is a very serious one and one which not only the National Research Council, but the universities are very much concerned with.

If you are going to get a lot of this transfer there has to be first of all fertile ground in industry and there also has to be a much closer inter-relationship and communication between these sectors. This is something we are endeavouring to promote, all of the universities are endeavouring to promote.

This will certainly help, but I think unless, as I say, there is a fertile ground in industry that there is sufficient research and innovation activity so that they are receptive to this it is going to be very, very difficult. This is I think one of the problems that we have to face up to and try and find ways and means of improving the situation.

Senator MacKenzie: One of the illustrations of what I have said about the number of Ph.D.'s in universities for teaching was brought out a couple of months ago in the opening of the Frank Forward Building for Mining and Metallurgy at the University of British Columbia, where I gather that staff almost equals the student body, not at the moment, but it does provide a very high number of staff to students.

The explanation of this, of course, is that a lot of research is being done and will be done in that building.

Dr. Schneider: That is perhaps one of the exceptional cases and I might say that this has a history, a very interesting one. They have been doing a fair amount of contract research for industry and I might say very successfully and they are continuing this as part of the university activities.

So there may be some researchers there who are not immediately involved in teaching functions. I think this is not a large activity and I think this is virtually the only department at UBC that is so engaged.

Senator MacKenzie: Yes, I hope so, anyway in one sense, but a specific question, if I may, along these lines: If a person is full time employed on a provincial research organization can he be given assistance by the National Research Council for personal research that he is carrying on on the side?