

Because this is not an area in which science and technology can offer much help, or where a mobilization of scientific and technological resources will make for a better solution, the expenditure for science and technology as a proportion of the total would be expected to decline. This does not mean that we are of necessity following the wrong course, that as we increase expenditures on transfer payments we should automatically increase expenditures on science and technology. The two are unrelated. This is the difficulty about saying we should have some magic number as a proportion of our total expenditures under the heading of science and technology.

The total expenditure in this field is the sum of a great many individual expenditures, each of which is justified in its own right. By way of example, if we take larger numbers, under the heading of what might be called big science we have been going through a period of development of a technique for producing electrical energy by nuclear fission, known as the CANDU system. This has now reached a stage at which large expenditures are being made in the production and installation of hardware, and actually operating it, which means that in relation to nuclear fission the period when the proportion of the total expenditures devoted to research and development were dominant is now over, and consequently they are declining as a proportion of the total. One would expect that; it is logical.

At the same time, we have entered into a new field, on quite a massive scale, of communication satellites, where fairly substantial expenditures are taking place on the research and development side. We have not yet got to the production costs. During this subsequent period one would expect the research and development proportion of the total to decline. This sequence indicates the problem of saying that a proportion of total expenditures must go to science and technology in every case. In a sense, we have to look at the sum of a whole lot of individual expenditures, which gives the total expenditure.

I do agree that when we do the arithmetic—and we have got the means of doing this arithmetic now, thanks to computer systems—the experience of our own and other countries indicates that if of the total of national effort no expenditures on science and technology are being made, this is not the apparent formula for a successful industrial society, which we are, so that it is an indicator without, however, being a target.

The Chairman: Since the minister does not have too much time available this morning, I wonder if the questions could perhaps be a little more specific and the answers a little bit shorter.

Senator Grosart: Let me take a specific and see how this philosophy is working out. Let us take this whole question of the funding of R&D or science activities in industry. I recall that many years ago the committee quoted you in our first report. In October, 1967 you said, referring to government policy, that our "first obligation" is to ensure that technological innovation activity in our industry is brought to a competitive level in the shortest possible time. That, of course, was said in 1919 in more or less the same language at the time of the Cronyn Committee. This is announced government policy, and it has been restated by yourself and others over and over again.

The fact of the matter is, in spite of that policy being announced and being reiterated over and over again, the percentage of government funding in science activities in industry is declining. You ask us in your presentation to

look at the publication "How Your Tax Dollar is Spent". Perhaps I might comment that I find your reference to that extraordinary. In this document it is one chart and half a page. This is the overview we are to look at. We are told this is the evidence that there is this real assessment and analysis going on. That is the statement made. It also tells us that in 1970-71, two or three years after your statement, the percentage of federal budgetary expenditures on science in Canadian industry was 18.5; in 1971 it was 17.1 per cent; in 1972 it was 16.5 per cent; in 1973 it was 16.7 per cent; in 1974 it was 15.6 per cent; and, projected in the main estimates this year, it is 15.7 per cent. In your presentation we have a great deal of talk that you have really carried out this policy because you have set up the make-on-buy policy—and I will ask a question about that in a minute.

Can you explain why, when this has been stated over and over again as government policy, that the government has not in fact been able to break through whatever it is, this monolith of resistance, so that the actual funding in industry today is declining, and has been declining for years? How do you reconcile that with the approach that you have just given us as the ad hoc type of approach that you think is better than an overall planned approach?

Hon. Mr. Drury: I am sorry if I have conveyed the notion that the approach is ad hoc rather than planned.

Senator Grosart: I think that is exactly what you said, because you said that we take each department and let it do its thing; that then we add up the figures afterward and publish them in "How Your Tax Dollar is Spent". That seem to me to be ad hoc. I do not want to be unfair. I was not using "ad hoc" in a pejorative sense, but I was using it in a descriptive sense.

Hon. Mr. Drury: Mr. Chairman, on the particular table, which I haven't in front of me, are those percentages of federal budget or what?

Senator Grosart: They are budgetary expenditures as a percentage. There is nothing new in this. You say this over and over again. We have statements over and over again here that it is declining. I can refer you to some others, if there is any doubt about that one.

Hon. Mr. Drury: Well, without trying to make clear what figures we are talking about, it is a fact that, in the past some four years, Canadian industry has been spending a lower proportion of its own resources on research and development than it did at an earlier period shortly following the introduction of industrial incentives for this, about which I was talking the last time I appeared here as Minister of Industry. These did produce a growth in the proportions of total industrial resources devoted to research and development within Canadian industry. Since then it is quite clear that the attraction or the effectiveness of these incentives has declined, with the result that the proportion of total resources devoted by Canadian industry to research and development has gone down in relation to their total expenditures.

As the government incentives become less attractive, government outlays in paying for these incentives decline. One would expect that. The demand has gone. We are currently not only aware of this, conscious of the fact that this is undesirable, certainly in the long run, but are reviewing in depth—and this is one of the jobs MOSST has—the whole gamut of assorted incentive programs designed to increase the proportion of total resources devoted by Canadian industry to research and develop-