

ment work that demands the large portion of the national scientific budget. Pure research is relatively inexpensive in the overall picture. In most countries only from 10 to 15 per cent of the total national budget for science is spent on fundamental research, so fundamental research, while of vital importance is neither a problem in overall financing nor government policy. People who can do fundamental work know what and how to do it, they know the needs. They should be given adequate funds and left alone to work out their own scientific policy.

When I talk about research and development today I shall talk only about research and development in the physical, biological and life sciences, and will lump together pure and applied science and industrial application.

Maybe I should hesitate a moment to say how pleased I am that this committee has been set up, because for a long time I have been feeling that there was a need for more informed communication between the parliamentary groups of the country and the scientific institutions of industry, government and universities, not to consider executive problems, but leisurely to look at long-term policy. Most executive arms of Government do not have time nor the continuity of personnel, necessary to build up a forum of well informed people interested in the broad impact of science on the country. This I think your committee can do, and it is the impact of technological developments on our political and social economy that needs study, not the specialized activities of science.

In considering such questions in England the House of Lords has been able to play a special part, because their lordships have the necessary time and knowledge to go deeply into broad scientific questions and provide a continuing forum for the discussion of these problems. As a result that body, without executive responsibility, has exercised real influence in connection with government policy.

Honourable senators, I hope you will not think me impertinent but speaking from long experience I would suggest that if your committee selects as its main purpose the holding of an ordinary inquiry—like that of a commission, hearing briefs and then making a final report in a few months—you will have done something but you will not have achieved that most important object, which

must be a continuing study. I do not mean that you should continue to study one specific problem. I mean that without continuity of interest your reports, excellent though I am sure they will be, will be like scores of other excellent reports of ad hoc commissions and committees. Such reports so often are left to gather dust as soon as the committee has dissolved. On the other hand, if your committee has a continuing interest in these matters, you will build up real authority and influence.

It is extremely difficult for me to envisage, in any precise manner, such a thing as a "scientific national policy". The words do not seem to make sense. When we come down to cases, we find we are dealing with national government policy on matters involving science and technology. Many years ago Lord Haldane—a very able man, a philosopher, a barrister and a perceptive statesman—was chairman of a committee investigating the "Machinery of Government" in England as it emerged from the war in 1919. His report referred to "the importance of research in the formulation of government policy," and there was no talk about national scientific policy.

About 25 years ago there could not be any government policy on atomic energy, although there was scientific policy in laboratories, where the nucleus was being investigated. When the release of atomic energy became a practical reality of enormous public concern, there arose an absolutely urgent need for government policy.

In Canada the Government decided on such a policy in 1945—namely, that we should take part in the development of atomic energy for peaceful purposes, but would not make bombs. That is the type of important and general national policy which only governments have the right to make and which governments should make. The Government did not state how or where developments would be done, as this obviously was a matter for the executive arm of government, after taking advice from technical experts. This is my distinction between broad "government policy" and "scientific policy" in carrying out projects.

All are agreed today that in Canada there are many other such policies that should be formulated in the light of the growth in scientific technology. There are, as we know, departments dealing with day-to-day policy on such matters as defence research, space