

Science and Technology

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The same can be said of the National Research Council. The work it does is amazing, yet information it is uncovering is hard to get because its members follow the same philosophy. You have to go to them and ask them for information; they will not come to you.

I suggest that in introducing a good science policy, government members should take the lead in establishing a mechanism for making available to the public information which our scientists and technicians are acquiring. Although I am not an authority on scientific knowledge, I know that there is more than enough knowledge available from Canadian scientists, technical people working for government departments in Ottawa, universities, corporations and private individuals to give the Canadian people a significant advantage. The problem in a nutshell, as Senator Lamontagne has put it, is that of going to the second stage, of making scientific knowledge available to ordinary people so that they can use it. This holds true of scientific knowledge pertaining to the field of agriculture and to other fields as well.

Tonight I shall speak about basic problems. I hope the minister will take the hint embodied in our remarks and use his authority on behalf of the people of Canada in seeing to it that scientific knowledge is made available to our people. My remarks will centre largely on the current problem facing the world, that is to say, the problem of finding new modes of energy.

My first point is this: all the work in this field will not be done by governments. If we are to develop renewable forms of energy, or forms of energy which are less expensive than present forms, it is the individuals of Canada who must do the job. The government must help them. It must make it possible for individuals to know what forms of energy are available. Also it must do the costing work for them. That is my first point. Let us see what can be done to put information which is currently available here in Ottawa into the hands of individuals so that they can make the right decisions.

I shall talk about new modes of energy under two main headings. The first mode, which is the most important and which I shall discuss at greater length at the end of my remarks, has to do with the use of biomass. When the twenty-ninth parliament first met in 1972, I asked the two ministers responsible for scientific matter to promise me that they or their departments would provide me with copies of letters they had received from the people written on behalf of the biochemists of Canada. I wanted to know what research work had been done in the field of biomass. Both ministers promised that they would make such letters available. To my knowledge, that was the first occasion on which the word biomass was used in this House.

According to available literature, we know that biomass, or the process of biomass, is capable of producing renewable forms of energy. When a plant dies, when an animal dies, the matter of which it is composed goes into the earth in the form of water, salt, minerals, etc. This matter is collected in the earth. This process went on two billion years ago and now, two billion years later, we have discovered the remains of living organisms, in the form of oil. Such deposits laid down two billion years ago make up our present fossil fuels. Scientists say that within the next 50

years they will be able to take waste material and turn it into clean oil with low sulphur content, clear gas, or into any form of energy or nutrient you want. They will be able to produce proteins, imitation steaks, or almost anything you want. That this is possible has been known to our universities for a long time, for as long as I recall. Now that the world is facing a challenge, the work of these biochemists will come to fruition. Their knowledge is available to students; it must be taken out of the laboratory and put to practical, everyday use.

In some fields rapid progress has already been made. The Bureau of Mines at Pittsburgh, Pennsylvania, has costed the development of techniques for utilizing waste from trees, manure, bark and so on. Its information is available to the peoples of the world. As well, I should mention a paper which was delivered in Winnipeg three years ago on a subject in which the Biomass Institute has been involved but in which the government has not been involved. The institute attempted to disseminate the information available to it to the public. I encouraged a group of men interested in this field to hold a conference in Regina last November. They published a paper entitled "Food, Fuel, Fertilizer", which is available to anyone who has \$7.50. It should help farm groups utilize waste as fertilizer.

Ontario, not to be outdone, sponsored a conference on the agricultural economy in April. Many of the best men in North America attended, including the head of the Agricultural Research Centre here in Ottawa. The papers that conference produced will be available to the public. That conference discussed problems of basic research on how our people could utilize waste in order to provide food, fuel and fertilizer.

I shall conclude this part of my remarks by saying that in a few years a large proportion of the energy requirement of North America, indeed of the western world, will be supplied by renewable, non-polluting forms of energy which will be available at lower cost than the oil we are using today. The information regarding such energy production is available and should be disseminated to all our peoples.

Let me mention something else that is important. When the energy panic hit the United States three years ago, the president immediately announced that the U.S. government would spend huge sums of money in the search for new energy sources. The program announced went far beyond the sorts of programs the parliamentary secretary mentioned not long ago. The president asked for a team of scientists from the NASA group, which sent men to the moon, to study all possible new modes of energy. Within four months they reported. All the information they had collected was condensed in one little pamphlet. That was in December, 1972. Following that, the congress of the United States gladly voted \$20 billion, not for a continuation of programs available to agriculture, mines, and so on, but for research into new modes of energy, most of them renewable and non-polluting.

As I say, the NASA group was able to make its first report within four months of being asked to look into the problem. I am not suggesting that we should spend anything like \$20 billion, or even \$2 billion in this field. The United States is spending \$2 billion a year on research in

[Mr. Hamilton (Qu'Appelle-Moose Mountain).]