

*Summer Recess*

time, our people will blame the national government. They will not look to the provincial governments. I say in all sincerity to all members of the House that we should be wary of this. There is a responsibility on the government of this country to provide an abundance of energy at an affordable price. Having said that, I again reiterate the great importance of conservation, which was one of the main recommendations of our committee.

We learned, on the committee, after about a year of study throughout the world, of the relationship between energy and such elements as the economy, population, conservation, food production, the North-South dialogue and the environment. In particular, we learned of the effect of the supply of energy and its use on the environment, which is very detrimental in many instances.

Early man lived in peace with his environment by fishing and hunting and foraging for food. For thousands of years, mankind on earth saw literally no environmental damage. He lived only by his own energy and that of his helpers in the group. The dawn of agriculture, in the history of mankind, was what Alvin Toffler, in *The Third Wave*, called the First Wave. In this era, one saw mankind live still in comparative harmony with nature. Energy sources, in addition to manual, were water, horses and oxen, forests, some coal for heating, and wind in some areas. Energy sources were such that the environmental damage was minimal.

Some considerable destruction took place over wide areas of the old world during the agricultural era. While the era extended over a period of several thousands of years, varying by area, it was only a glimpse when compared with the length of the previous era of which I spoke. For the first time, the agricultural era saw man experience the feeling that he had to conquer nature, that mankind was against nature. This idea was born in the agricultural era. Certainly mankind found itself in an uphill battle with nature and his environment.

The next era, which we call the industrial revolution, or the Second Wave, as Toffler referred to it, lasted less than 500 years; some would say 300 or just slightly over. The era was ushered in by the steam engine, and the history of this period, the industrial revolution, is well known to every one of us. We know that for energy during this period man turned to the steam engine, to electricity from water and later from coal, and hydrocarbons and uranium. Later during this period the internal combustion engine was the big user of hydrocarbons.

During the latter part of the industrial revolution, we had the use of nuclear fission. These energy sources, particularly hydrocarbons and nuclear fission, put our land, our water and our air at risk. The long-term effects of carbon dioxide on the atmosphere gives many people grave concern. The supply of hydrocarbons is diminishing. However, it is very important to note that many think the use of hydrocarbons will come to an end, not because of supply but because of the damage to our environment. That is why the recommendations with respect to this matter are found in this report to which I earlier referred.

The report, as basic recommendations, brings forth the idea for discussion of an economy based on electricity and on

hydrogen. We also see conservation as an important part of our energy picture in the short, medium and the long term. Electricity and hydrogen are energy currencies, not fuels in themselves. We see electricity and hydrogen from the water—hydroelectricity from Niagara Falls, for example. We see conventional hydroelectricity from conventional sources like that. However, we also see it from my former province of Nova Scotia, by the way, in tidal power. We see the use of wind in the future, photovoltaics, the continuation of nuclear fission. We see fuel cells, and in the long term we see nuclear fusion. I will have something to say about that later.

At this point, I want to say only this: I know that there are those who fear nuclear fusion. I understand and appreciate their concern. I think all of us do, from the standpoint of what will be done with the waste and the danger from the operation of the fusion reactors. However, I just want to caution all hon. members that the use of hydrocarbons has been very detrimental to the environment, and we must be able to give nuclear fusion an honest appraisal and not just close our eyes to what has happened from using hydrocarbons.

**Some hon. Members:** Hear, hear!

**An hon. Member:** Honest appraisal. We like that!

**Mr. MacBain:** The energy mix of the future will consist of a great number of fuels and technologies. To a considerable extent, and hopefully more and more as the years go by, the reliance will be on renewables; for example, alcohol, methanol or ethynol. As I stated, we are hoping, in the long run, that fusion will bring an abundance of safe energy. It will not be inexpensive.

Our report suggests that the hydrocarbons, so far as is possible, be reserved for the feedstock for the petrochemical industry. However, our report and our committee were wise enough to appreciate that it will be a considerable length of time before the use of hydrocarbons can be brought to an end or to anything like that. The consensus of the committee was that the environment cannot take or tolerate the use of hydrocarbons until they are consumed in full, even if such were advisable, which would not be the case.

The committee asks our citizens and our fellow members of Parliament, especially the ministers of the government, to take a careful look at where we have been and where we are going from an energy standpoint. We made 65 recommendations in the report, and of course some are more important than others. For example, we suggested that there be a minister of state for alternative energy and conservation. All hon. members appreciate, especially those who are more senior than myself, that this is a recommendation which comes directly within the authority of the Prime Minister (Mr. Trudeau), but the committee hopes there will be serious consideration given to a ministry of state for alternative energy and conservation who would serve under the minister of energy.