

## CANADA

**Science Policy in Canada**

from a Correspondent

DR ALEXANDER KING of OECD, regarded by some as the father of National Science Policy Studies, has commented on the Canadian effort in that field, saying that "In no country has the legislative branch undertaken such a thorough and detailed job." The recently released third and final volume completes the 837-page report of the Senate Special Committee on Science Policy with sweeping recommendations for restructuring government science. Since the Committee demonstrated in earlier volumes that basic research is dominated by in-house work of government laboratories, their restructuring has wide implications for all science in Canada.

The Committee examines four possible approaches that can be used to determine overall organisation for science policy: pluralism, coordination, integration and concerted action. From the experience of other countries, the Committee comes out heavily in favour of the concerted action model for which it finds an example in France. Convinced that coordination by discussion and advice does not work without either a stick or a carrot, the Committee recommends that the Ministry of State for Science and Technology should become a super science ministry responsible for vetting the programmes and submissions of individual departments and then justifying the whole science budget to the Treasury Board.

With the new, expanded role for the ministry would come a reorganisation of the Science Council. This lively, erudite and well informed body was established in 1966 to advise the government on science policy. It seems that its advice has not made much impact. Following the proposed reorganisation, the council's mandate would be extended to cover the social sciences and humanities; it would establish closer links with the Economic Council and there would be a number of changes in the membership. If the government does not form a super science ministry then the Science Council should be abolished. "There is no need for two frustrated advisory bodies."

The report stresses that there is no continuum from basic to applied research to innovation. It is admitted that most Canadians do not agree with this point. The reason for stressing it is to support the Committee's prescription for reorganisation of federal activities with basic research at the National Research Council (NRC); applied institutional research at Industry, Trade and Commerce, and other mission-orientated research in departments which are also responsible for policy formulation. The

NRC would be thus transformed into an institution for intramural basic research in the physical, life and social sciences. It would do "university-style" work, partly on a fee basis, for government agencies and private companies. Its industrial research would be transferred to a proposed Canadian Industrial Laboratories Corporation. According to the report, NRC would abandon its "disguise" or "false image" of performing a practical mission. Many, who feared a total abolition of NRC after the publication of earlier volumes of this report, can now breathe a sigh of relief.

The report includes a number of other recommendations:

- Special status and federal financial support for the Royal Society of Canada and the Association of the Scientific, Engineering and Technological Community as the two major representatives of scientists and engineers in Canada;
- A federal-provincial committee on science and technology;
- A Crown corporation to develop more adequate French terminology in science and technology;
- International scientific missions to keep the government informed on science policy and technological advances in other countries; and
- A series of awards to be given to Canadian industry for significant inventions and technological innovation.

When all is said and done and 837 pages of report have been put to rest, one is left with two feelings: respect and even admiration for the breadth and thoroughness of the Senate Committee's investigation; and a question as to whether the effort was worth it at all. It is just possible that the internal mechanisms of self regulation, peer review, internal consistency and mutual respect are the best possible methods for directing the science towards the socially desirable goals. With a 300-year tradition, science just might find the best possible direction if left alone.

## ENERGY

**Conserving Energy**

by our Correspondent

WHILE the United States Federal Government is struggling to meet the long term challenge posed by the energy crisis, the American Association for the Advancement of Science has been organising a series of workshops to discuss what can be done in the short term by individual states. The first of these, held in Chicago on October 11 to illuminate the problem in Illinois, cast into relief a combination of technological sophistication and total absence of political or practical common sense which has more than parochial implications.

This was nowhere clearer than in the

first session, which was concerned with building design and management. New York architect Richard Stein used as an example of false economy a large building in Michigan in which the lights are left on for twenty-four hours a day, to prolong the life of the bulbs. The irony of this policy is that although twenty-four hours of continuous switching on and off would undoubtedly use up the bulbs faster than twenty-four hours of continuous illumination, a pattern of ten hours of light and fourteen hours of dark gives an average life to the bulbs of four years, but bulbs in continuous use fail after an average of eighteen months.

Both the lighting and the ventilation standards laid down by the building codes are in any case, according to Stein, well in excess of physiological needs. He compared the IBM recommendation of 70 foot candles of illumination (apparently set by the somewhat archaic criterion that the fifth carbon copy be as legible as the original) with British classroom standards of 10 foot candles. The British, Stein claimed, discovered that to raise reading efficiency from 90 to 95%, it would be necessary to raise the light level by a factor of ten which did not seem worth the foot candles.

Somewhat more radical proposals for energy conservation in buildings were tackled by Gerald S. Leighton, of the United States Department of Housing and Urban Development. One obvious need now apparently being met is that for a detailed economic analysis of the total energy system—a method of storing waste heat for re-use in supplying energy to buildings.

Industry, Leighton believes, should resign itself to the use of high-sulphur coal—an energy source that is not in short supply. The Clean Air Act has made such a solution impractical for the individual home owner; but industry can afford to develop and install the "clean-up technology" to cope.

The kind of measures proposed by industrialist Gerald S. Bataille and economist George S. Tolley of the University of Chicago, were unappealing, although probably realistic. Industry could best be induced to conserve energy, Bataille asserted, if the savings could be expressed in dollars. Tolley applied the same principle to the private individual, with a simple equation. His investigations have led him to conclude that if fuel were made 10% more expensive, the individual would use 10% less of it. The increase in the use of electricity, he believes, is a simple function of the reduction in its cost over the past decades. There is no reason to believe that consumption will continue to increase at the same rate; and there is a simple way of stopping it.