

## CANADA

## Rethinking nuclear policy

*A contribution to Canada's nuclear debate has come from the head of the Science Council of Canada. David Spurgeon reports from Ottawa*

THE executive director of the Science Council of Canada, John J. Shepherd, has called for the federal government to set up a concentrated, focused, nuclear industrial strategy. The call, his most recent public pronouncement, indicates how much he has done to shape a new, bolder, more public and more independent role for the Council, something it has sought over this past concluding year to its first decade.

Shepherd came to the council from industry, where he was chairman of a successful high technology instrument firm, and he brought with him the vigorous, pragmatic approach one would expect from such a background. So his public statements tend to be hard-hitting and to the point. This latest, which was contained in an article in *The Financial Post*, was no different.

Shepherd acknowledged that there are serious matters still to be resolved regarding the nuclear power issue in Canada—like other industrialised countries, Canada has become locked in debate over questions like the safety and security of reactors and the disposal of radioactive waste. But it stated that nuclear power in Canada “is a fact—and it would be foolish not to take advantage of the opportunities it offers.” And it went on to point out that the size of the proposed nuclear power programme in Canada in future is very large: an estimate of 70 nuclear power units by the end of the century is decidedly conservative, which means the market will be an average of \$1,500 million a year for the next 25 years.



Bruce heavy water plant, Ontario

This means, said Shepherd, that “it is imperative that we devote a good deal of attention to planning.” Three sectors are involved in the Canadian nuclear programme: Atomic Energy of Canada Ltd (AECL), a Crown corporation that carries out research, development and engineering; the provincial electrical utilities, which operate the plants; and industry, which does the manufacturing. “It is painfully clear,” said Shepherd, “that industry has so far been unable to carry its weight in this arrangement.”

This comment was nothing new: as far back as the 1960s, AECL officials were saying the same thing. But Shepherd went on to say that industry's contribution has been rendered ineffective by cancellations or postponements in nuclear plant construction, lack of a steady stream of nuclear projects, low-volume ordering and low profit margins. Those wanting to break into the market, particularly in some of the specialised instrumentation areas, were frustrated by piecemeal orders. What is required, he added, is a “mixed nuclear consortium—comprising electrical utilities, AECL, and industry”, and for this to happen, several changes would have to be made.

Electrical utilities would have to alter their construction philosophies and permit others to play a greater coordinating role. AECL would have to hand over to the new consortium its Power Projects group, which carries out its engineering functions. And industry would have to accept new responsibilities. If AECL's heavy water production activities were also transferred to such a consortium, it would leave only its original research and development function. Under another name this could become the institutional focal point for a major thrust in energy research development, “for example, along the lines of the US Energy Research and Development Administration. Such an expansion of responsibilities might also contribute to the initiation of a national energy policy.”

Shepherd again made it clear he thought the domestic market for nuclear power station more important to Canada than foreign ones, and referred to losses associated with a nuclear sale to Argentina. Others have pointed to difficulties Canada has had with sales to countries like South Korea, India and Pakistan. If Canadian industry could not grasp the opportunities presented by the domestic nuclear market, “it should not complain when government fills the vacuum.” □

## IN BRIEF

## Nobel prizes announced

The \$160,000 Nobel prize for medicine will be shared by Professors Baruch Blumberg and Carleton Gajdusek. Dr Blumberg is professor of Medical Genetics at the Institute for Cancer Research of the University of Pennsylvania and Dr Gajdusek works at the National Institutes of Health, Bethesda; both men did their prize-winning work at the National Institutes of Health. Both prizes are for research in virology. Professor Blumberg's for discovering Australia Antigen, a particle associated with serum hepatitis (hepatitis B), and Professor Gajdusek's for the fundamental research on kuru, the slow virus disease that was prevalent in the cannibalistic Fore tribe of New Guinea.

The prize for physics goes to Professor Burton Richter of Stanford and Samuel Ting of MIT for their work on the  $J/\psi$  particle. The particle, discovered simultaneously and independently by the two researchers in 1974, has opened up new realms of investigation with the new property of matter known as ‘charm’.

The prize for chemistry is awarded to Professor William Lipscomb of Harvard for his work on boranes. The bonding of these compounds was long a puzzle according to conventional valency ideas; Lipscomb in the 1950s took the new multicentred-bonding theory, predicted borane structures and used elegant X-ray crystallography to show that some of these structures were actually cages, one even an icosahedron.

## 2,4,5-T production ended

Britain's only producer of 2,4,5-trichlorophenol, the chemical being manufactured at Seveso when the poison TCDD was accidentally released, has decided not to recommence production. The company, Coalite and Chemical Products Ltd, of Bolsover, Derbyshire, stopped production in August “to make 110% sure” of its safety measures. Coalite had operated with more stringent safety measures than the Italian plant, but after the Seveso accident UK Health and Safety inspectors recommended even more precautions. The company has blamed over-sensational publicity of the Seveso accident for its decision.

● A list of 721 highly poisonous substances has been prepared by the Ministry for the Environment of the West German State of North Rhine Westphalia. Included are all chemicals with an effect similar to that of TCDD, some even more poisonous and some less poisonous but still potentially lethal.



## Argentinian release

Reports coming out of Argentina indicate that most of the employees of the Atomic Energy Commission who have been in prison since April (*Nature*, October 7, page 452) have now been released. Dr T. Victoria, whose brother highlighted their problems, is now in Belgium; the rest are still in Buenos Aires. There is, however, still no news at all of Antonio Missetich, a one-time MIT researcher.

## UK physicists' concern

The UK high energy physics community is becoming increasingly concerned at the prospect of financial setbacks to its research effort. This became clear last week with the emergence of attempts to organise its members for concerted action. These follow the Science Research Council's recent urgent request to large laboratories for

information on possible early cutbacks in expenditure.

One possibility being canvassed is that there should be a letter-writing campaign to ministers, MPs and the Advisory Board of the Research Councils, which has pursued a deliberate policy of squeezing big science. Another is that the most distinguished members of the nuclear and high-energy physics community might be able to agree on some form of corporate action to defend their interests.

The government's cash limits doctrine, which with a depreciating pound strains the SRC's international obligations, has precipitated the crisis.

## FBR decision postponed

Britain's decision whether to build a demonstration commercial fast breeder reactor, due this autumn, has been delayed to give more time for public debate. Mr Anthony Wedgwood Benn,

the UK Energy Secretary, has also indicated that the questions put last week to the Nuclear Installations Inspectorate concerning the fast breeder are designed to assess its margins of safety independently for the public's benefit. France's Phénix prototype fast breeder at Marcoule closed down recently for a period of weeks because of a leak in one of its heat exchangers.

## Ariel V's birthday

The UK's Appleton Laboratory celebrated the Ariel V satellite's second anniversary on October 15. Ariel V, launched off the coast of Kenya, is controlled from the Appleton Laboratory which rapidly transmits data to experimental groups at the universities of London (University College and Imperial College), Leicester and Birmingham; the Goddard Space Flight Center in Maryland also operates one of the experiments.

DOES science, or do scientists, have a special responsibility to society? A conference held early in October in Florence, Italy, and organised by the Fondazione Internazionale Menarini, considered this subject from a number of angles. Experts from many countries gave papers on the problems arising from genetic engineering, ecological contamination of the biosphere, world food shortages, safer drugs for better therapy, the specific needs of developing countries and population overgrowth. The speakers identified many fields in which scientific research and its application obviously have an important part to play. They suggested that the public and their rulers often underestimate the contributions that scientists may make. But the general conclusion seemed to be that though scientists should be more vocal about their possible value, they should generally advise their rulers and should not formulate policy. In fact, they should continue to be "on tap, not on top".

Most speakers stressed the importance of work aimed at solving practical problems of food and health, and the need of more support for such investigations. However, others suggested that the important and soluble problems might not be so easy to identify, and they justified their efforts in more basic fields. For instance, it was said (predictably, by scientists with world reputations in the subject) that we know so little about the processes going on in the oceans that all manner of apparently-academic studies are justified in the hope that we may, eventually, have the knowledge to control marine pollution. It was interesting to hear

views so reminiscent of the "Haldane principle" on which government-supported research in Britain was based until its recent reorganisation.

I could not help wondering how personally responsible were the scien-

## On responsibility



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tists who were discussing responsibility. I found it interesting to observe the behaviour of many of the participants at this meeting. They had been transported freely from the ends of the earth, to be lavishly entertained by their Italian hosts, not only to the best of the food and wine of the country, but also, between sessions, to the art and music of Florence. I regret to have to report that I have seldom attended a meeting at which such a substantial number of the

delegates put in such a poor attendance. Many appeared to feel that so long as they read a twenty minute paper (replete, in many cases, with material familiar to their meagre audience) and listened to a few of the other speakers at the same session, they were free to slip off to attend the "ladies" sightseeing tours or to go shopping or indulge in other non-scientific activities. This hardly seemed an example of scientific responsibility; surely delegates attending a conference at someone else's expense should be prepared to attend most of the meetings and contribute to the proceedings?

So is doing good work in the laboratory and attending meetings conscientiously the sum total of the scientists' responsibility to society? Our Marxist colleagues do not think so; it was a relief at the Florence meeting to be spared their diatribes urging the adoption of political dogmas as the acme of scientific fulfilment. I do not think I am alone in my belief that scientists are responsible not only for their own work, but for trying to ensure that this work, and that of their colleagues, is effectively organised and applied. If we are right in our views that many recent developments in scientific organisation have been harmful to both science and to society, it is our responsibility to try to have a better system adopted. We should do this no matter how unpopular it may make us with some of those in authority, and even though, under the present system, we depend on those same authorities for both support and (in the case of our younger members) the furtherance of our careers.