

Research Council, the broadcasting authorities, British Telecom and satellite and telecommunications equipment manufacturers, suggests that it is intended to coordinate views from a variety of sources, a role that in other countries might be taken by a national space agency.

Mr Keith Marshall, Under-Secretary of State in the Department of Industry, who will chair the committee, said in parliament that it would also be investigating topics such as the future programmes of the European Space Agency in telecommunications and remote sensing satellites, a satellite communications system for the Ministry of Defence and the marketing strategy of British satellite and ground-station technology abroad. He also indicated that the government would expect industry to put up all the finance for promising projects.

The committee will shortly have before it the conclusions of two reports commissioned by the government. The report of the Home Office study on direct broadcasting should be published later this month and the conclusions of the report of the Central Policy Review Staff on Britain's future in space are to be made available to the committee.

Hopes that an abbreviated version of the review body's report would be published, however, were quashed at the end of last month by a statement in the House of Commons — the government apparently fears breaching industrial confidentiality by allowing open discussion of the report. So far the only conclusions to emerge have been rather bland, such as that the United Kingdom should continue its commitment to the European Space Agency. It is to be hoped that the committee will provide a focus for wider debate. **Judy Redfearn**

## European Parliament Nuclear ban debate

### Brussels

A moratorium on nuclear power in Europe will be the subject of a debate in the European Parliament this week. Also on the agenda is a motion on the Geneva Appeal which was launched as a protest against France's fast breeder reactor, Super-Phénix.

The moratorium debate will focus on a report by Sir Peter Vanneck (European Democrat) who is strongly opposed to the idea. The report was adopted by the energy committee by 13 votes to 7 following a resolution by three independent Members of the European Parliament in December 1979. The moratorium would be used as an opportunity to look into the problem of storing nuclear waste, harmonizing safety standards and promoting widespread public discussion. In his report, Vanneck concedes the benefit of these points but feels that the cure would be more painful than the disease.

Depending on how widespread the moratorium would be, Vanneck calculates that by 1990 it would leave the Community short of between 45 and 115 GW, equivalent to 76 or 170 million tonnes of oil a year. By 1990, 34 per cent of the EEC's electricity needs will be supplied by nuclear power. Vanneck also points out that in 1975 electricity from nuclear power caused no deaths in the United Kingdom, while maritime transport (of oil and coal) caused 86 deaths per 100,000 employees and coal mining caused 23.4 deaths per 100,000.

The underlying cause of public concern, says Vanneck, is that plutonium produced in nuclear power stations may be used for

military needs. This issue will certainly be linked with the debate on the Geneva Appeal. In October 1978, more than 30,000 French and Swiss, including a number of leading figures, signed an appeal asking the political community in Europe at large to consider alternatives to fast breeder reactors. The appeal reflects the fears of both Swiss and French living in the neighbourhood of the 1,250 MW Super-Phénix fast breeder reactor under construction at Greys Malville in France.

The Council of Europe had held public hearings on breeder reactors in 1979. The present motion, if adopted, would call on all governments concerned to suspend work connected with breeder reactor projects. The EEC itself does not directly contribute to any fast breeder construction programme. The European Commission, however, is preparing a report on the state of the nuclear fuel reprocessing industry.

Both debates, are nevertheless rearguard actions of the anti-nuclear group in the parliament. Most parliamentarians, as previous resolutions have shown, are firmly in the nuclear camp. But the anti-nuclear minority represents nearly a fifth of the members, who are effective in keeping up pressure on the Commission and member states.

**Jasper Becker**

## British countryside Ever onward

The British government's Wildlife and Countryside Bill — regarded as the last opportunity for major legislation on nature conservation matters this century — is likely to generate as much controversy during its passage through the House of Commons as it did in the House of Lords earlier this year. The Lords considered a record 560 amendments to the bill and defeated the government on seven of them. Many of the arguments thrashed out then, on numerous topics relating to nature conservation, will be raised again, with the government trying to reverse some of the Lords amendments and various lobbyists trying to introduce more.

During the bill's second reading in the Commons last week, Mr Michael Heseltine, Secretary of State for the Environment, said that the government was still convinced that conservation would not be well served by compulsion. This is the chief bone of contention over clauses in the bill relating to the protection of sites of special scientific interest (SSSIs). In the Lords, the conservation lobby attempted — unsuccessfully — to amend clauses giving statutory protection to a few specially selected SSSIs to cover all such sites. The debate is likely to continue in the House of Commons committee appointed to debate the bill in detail.

The committee, which began sitting on 5 May, has 20 members, including Keith Hampson and Hector Munro for the

## East Germany banks on research

High technology will be the keynote of East Germany's economic strategy for the 1980s, First Secretary Erich Honecker told last month's Congress of the Socialist Unity Party. An intensive drive to modernize and automate industry, he said, should save the country some 2,800 million man-hours during the next five years, primarily through the application of microelectronics and an increase in the number of industrial robots to be introduced into industry during the period from an original estimate of 9,000 to some 40,000.

By 1985, the country should be virtually self-sufficient in the production of microprocessors and their components. Other priority areas will include fibre optics, laser technology, industrial applications of microbiology, hydrogen and biomass energy sources and the development of new sophisticated technologies to make the maximum use of raw materials at the minimum cost in energy. (The recent shortfall and

future uncertainty of coal supplies from Poland have caused planners to pay renewed attention to the country's own lower-grade fossil fuels, mainly lignite).

Although Mr Honecker's review of the work of research establishments, from the Academy of Sciences downwards, stressed the technological and applied aspects, he did pledge the party to a systematic development of basic research "as the source of new discoveries on logical relations in nature and society". The universities, including their extension and evening courses for full-time workers, came in for special commendation as did the preliminary training courses for students at their future work-places.

The situation in the lower educational echelons, however, seems less satisfactory. Too few young people seem to be interested in scientific and technical subjects, and Honecker urged teachers and the media to make science and technology more attractive. **Vera Rich**

government and Tam Dalyell and Stephen Ross for the opposition. As well as protection for SSSIs, other controversial topics include the banning of shooting on Sundays, allowing bulls on public footpaths and how to maintain marine nature reserves.

Judy Redfearn

## Reagan's cuts

### Handler objects

#### Washington

Dr Philip Handler, in his farewell address last week as president of the National Academy of Sciences, came close to accusing the National Science Board of cowardice in its failure to protest at the Reagan Administration's cut in the budget of the National Science Foundation (NSF).

The proposal is that the foundation's budget for 1982 be trimmed to \$1,033 million, more than 30 per cent less than Mr Carter's request for \$1,353 million. At its meeting in March, the board, which is formally responsible for the activities of NSF, approved a statement on the cuts in which it complained that it had been excluded from the budget decision.

The statement also mentioned "problems of serious concern" such as the need to upgrade university research equipment and its "limited capability to reprogram funds to take advantage of emerging research opportunities". There is, however, no direct criticism of the Reagan Administration's decision as such.

Dr Handler said plaintively last week "Would that that statement were not quite so subtle". Handler accepts that the board is constrained by its formal place within the Administration, but he told the academy that the board members' "statutory responsibility to establish the priorities and allocate resources had, in fact, been usurped". And he added: "In not saying so, in unequivocal language, they may allow this incident to become a precedent".

Handler admitted that for the members of the board to have been more forthright might have meant a confrontation with the Administration in which the National Science Foundation would be the loser. "But in crafting a statement in which protest is to be found only by sophisticated reading between the lines . . . the board seemed to be party to the actions of the Office of Management and Budget."

Handler also quoted the board's contention that it was difficult to be engaged in policy decisions about budget cuts in the light of the "economic emergency", which precluded the normal discussion with the board of NSF priorities. "Emergency? What emergency?" asked Handler. "The fact that NSF was given but 24 hours, when the board was not in town, to defend its right to support social science and science education, *inter alia*, is preposterous."

David Dickson

## Nuclear power in Yugoslavia Staying independent

#### Belgrade

Core loading is now under way at Yugoslavia's first nuclear power station in Krsko. Formally, the station — based on a Westinghouse light-water reactor — is years behind schedule, but this is in part due to an over-optimistic target of five years for construction.

The station has been built jointly by the republics of Slovenia and Croatia. The leading physics institutes of the two republics, the Rudjer Boskovic Institute (Zagreb) and the Josef Stefan Institute (Ljubljana), have been training staff for the new station while building was being completed, and working out the final safety report for the reactor.

Yugoslavia's commitment to nuclear power is strengthened by the presence of uranium deposits at Zirovski Vrh in Slovenia. There are few dissenting voices, notably hotel-keepers on the Dalmatian coast objecting to the proposed siting of the country's second reactor near the tourist resorts, and veteran anti-nuclear campaigner Dr Ivan Supek. Most Yugoslavs apparently see nuclear power as a way to greater energy self-sufficiency.



The TRIGA II reactor at the Josef Stefan Institute, used for heavy metal monitoring.

Before uranium mining and milling operations begin, however, a group from the Josef Stefan Institute is making a detailed survey of background radiation in the area. And this survey forms part of an international project to map the radiocology of the Danube basin.

Also being measured in the survey are heavy metal trace elements, including cadmium, arsenic and mercury. The area has a history of mercury mining and once the price of mercury picks up again the old mine is likely to be reopened. The mine closed in the mid-1970s and there is evidence of considerable mercury poisoning in the mine-workers involved. But studies of the effects of mining are being hampered by shortage of finance for a much-needed survey of the non-mining population in the mining area.

This highlights a general shortage of funds for research in Yugoslavia. There is no longer any central planning of science, and funds come either from direct contracts with industry, or else from a

## Proton decay hunt

#### New Delhi

Indian and Japanese physicists have discovered three "candidate" proton decay events in a massive iron detector system set up 2,300 metres underground in the Kolar gold mines 100 km north of Bangalore in South India. Begun nearly five months ago, the experiment is to last two years during which at least six of these rare events are expected to be observed provided the proton lifetime does not exceed  $10^{31}$  years.

The detector system consists of 140 tonnes of iron: 100 tonnes for the detector elements and the remainder for shielding. The detector elements are 4 m and 6 m long iron tubes of cross-section  $10\text{ cm} \times 10\text{ cm}$ . The 1,650 proportional counters are stacked to make a giant 35-layer cake that is 6 m long, 4 m wide and 4 m tall.

The on-line electronics system and the detector configuration enable the total energy of the decay process, the decay vertex and a three-dimensional plot of the tracks of decay products to be obtained. There are some  $10^{32}$  nucleons in the iron and assuming a detector efficiency of 50 per cent, it is hoped to reach a proton lifetime limit of  $5 \times 10^{31}$  years.

The main background to the decay events comes from cosmic rays. Neutrinos and some muons created in cosmic ray events in the atmosphere can penetrate down to the detector; but the Kolar equipment is so deep most of the muons are absorbed in the rock above. Nevertheless, by the end of last week Kolar had recorded 223 vertical muons; 8 horizontal muons, probably coming from neutrino interactions in the rock beside the detector; three neutrino events in the detector; and three events which so far can be explained in no other way than as proton decays. However, all three events have a track which reaches (or emanates from) the edge of the chamber, so they may yet be false events, mimicked by a particle entering the chamber from outside. If the events are confirmed, the corresponding proton lifetime would be  $1-3 \times 10^{30}$  years, around the number being predicted by theories which unify the weak, electromagnetic and strong interactions into one grand "gauge theory with spontaneous symmetry breaking".

K.S. Jayaraman

structure of "Self-Management Communities of Interest for Science" which administer funds voted from profits of individual commercial enterprises.

The Josef Stefan Institute gets 40 per cent of its funds from the Slovenian assembly of such communities and 60 per cent from contracts. But neither source has shown much interest in studying mercury levels in their region and monitoring a control population elsewhere. Vera Rich