SWEDEN

Reforming the Councils

Wendy Barnaby reports from Stockholm on proposals to reform Sweden's Research Councils

THE reform of Sweden's Research Councils due to go into effect on July 1 this year is basically an attempt to set up a structure which will accommodate both society's need for research that produces usable and useful results, and the scientists' traditional demand for freedom in conducting research. Of course, any attempt to fuse these two is only as good as the mechanisms whereby fusion is to be brought about—and the will of the people involved to make it stick. But the mechanisms, at least as explained

by Mr Jan Stiernstedt, Permanent Secretary of the Ministry of Education and chairman of the reform's organisational committee, look like a model example of the Swedish genius for balance and compromise.

Within the sphere of the Ministry of Education there are at the moment five Research Councils (Humanistic, Social Science, Medical, Atomic and Natural Science), with an average membership of eighteen plus a chairman. In the budget year 1975–76 they were allocated about 6% of the state's expenditure on research and development, which itself made up 3.3% of the total budget, so they are hardly financial giants. In fact, as far as research and development goes, they embody precisely that weighty mcagreness which is the essence of prestige

—and that they certainly have. Their various structures have resulted from haphazard growth reflecting the enormous post-war increase in the breadth and complexity of research; the reform aims to tidy them up organisationally as well as to make them more sensitive to public interests.

It envisages only three councils (Humanistic and Social Science, Medical and Natural Science), each with ten members who will hold office for six years, and a chairman. The actual number of members will thus have been reduced to a third of its present total, an attempt to make the new bodies more effective. At the same time, however, they are to be made as representative as possible of the views of the academics in each field. Seven members of each council are to be elected from the universities and institutes of higher education, where small assemblies will be elected by those members of staff who have a

USSR

● The recent announcement that the Soviet Union will sell 200 tonnes of heavy water to India for use in the Rajasthan Atomic Power Plant reveals a certain modification in Soviet policy, regarding both aid to India and the non-proliferation of potential nuclear armaments.

Although the first Soviet-Indian mutual cooperation agreement is now more than five years old, India has until now received relatively little technological aid from the Soviet Union, either as hardware or expertise. During the visit of Mrs Indira Gandhi to Moscow in June, 1976, the 'strengthening' of such cooperation was one of the main topics of discussion. The heavy water sale would appear to be one of the fruits of these talks.

Heavy water is, of course, a sensitive topic as far as India is concerned. Although she can produce a small amount of her own, this is not sufficient to supply an installation the size of the Rajasthan power station. Originally, India obtained heavy water from the USA and Canada; the connection with India's explosion of a nuclear device led Canada to cut off supplies, and later to make the ban permanent following unsuccessful negotiations on inspection and safeguards.

The Soviet Union has always shown considerable caution regarding nuclear exports. A recent *Pravda* article, while not referring directly to the Indian deal, emphasises the role of

the Soviet Union, within the IAEA, the "London Club" of nuclear suppliers and the United Nations, in "organising monitoring operations". The article stresses the need to increase the efficiency of such international control, and quotes the Soviet non-proliferation memorandum to the 31st UN General Assembly emphasising the "special responsibility" of the nuclear powers and the need for "strict guarantees that international cooperation in the peaceful use of nuclear energy should not become a channel for the proliferation of nuclear armaments".

The Soviet Union has presumably found some way to extract from India the kind of guarantees which, after two years' negotiation, Canada was unable to obtain.

● The filling of the Nurck reservoir on the river Vakhsh in Tadzhikistan has been halted at the 140 m mark on the 300 m dam, on the advice of a joint Soviet-US geophysical team now working in Tadzhikistan under the terms of the Nixon-Brezhnev co-operation agreement.

Commenting on the decision, the Academic Secretary of the Soviet Academy of Sciences, I. Ivanov, noted that the dam is situated in the only region of the continental part of the globe where as many as 2,000 tremors occur annually. Filling of the dam has produced a marked increase in seismicity and, according, further raising of the water-level will take

place very gradually. There is no suggestion, however, that the planned final capacity of the reservoir will be reduced.

● One of the anomalies of Dr Veniamin Levich's position as a *refusnik* is that although he is no longer permitted to work as a scientist he still retains his position as a Corresponding Member of the Academy of Sciences. The Academy itself still retains a certain autonomy, and according to its statutes requires a two-thirds majority vote in secret ballot for the expulsion of a member. When an Academy meeting to discuss draft changes in its rules was called for December 22, 1976, Academician Levich wrote to say that he wished to speak at the meeting, to propose a statement clarifying the moral responsibility of Academy members. He was informed in due course that the said meeting had been postponed until February 1977, "when this proposal will be entered".

In proposing the statement, Levich clearly wished to draw attention to the plight of dissident scientists. It should be noted, however, that the last time a number of Soviet Academicians made a declaration on 'moral responsibility'—as individuals, and not as a corporate body—was during the 1973 press campaign against Andrei Sakharov. They declared then that the first duty of a Soviet scientist was uncompromising support for the State.

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PhD. These local bodies will together form a national assembly, which will then elect the council members. The other three members will be appointed by the government and will represent the various official bodies that exist here within each field: the Environment Protection Board and the Board of Education, for example, within the humanities and social sciences. The chairman will be appointed by the government. Each council is thus to embody the principle of scientific freedom by having members drawn only from within the field. The fact that a majority of members will be elected by active researchers will bend the councils in the direction of current interests.

But what happens if enthusiasm for current research interests solidifies into unwillingness to risk failure with newer or simply unfashionable ideas? This is a criticism made by one prominent Swedish medical scientist of the existing Medical Research Council. It is precisely to prevent the conventional

wisdom of the dominating group within any field from restricting other impulses that the reform was undertaken. And as the impulses to be encouraged are those which come from the broader society, the main innovation of the reform is the creation of a special body to give them a persuasive voice—the Research Councils Coordinating Board.

This will exist alongside the councils and have two main tasks: to co-ordinate administrative procedures amongst them and to promote cross-disciplinary research projects of interest to society in general and needing cooperation between the different councils, institutes and boards. It will consist of a chairman, to be appointed by the government, and twelve other members, one to be appointed from each of the three councils, the Agricultural and Forestry Research Council and the Board for Technical Development, and the other seven to be appointed by the government as elected representatives of the community. At

least four of them are to be members of parliament, and the others will come from local government and trade unions. In order to back up its suggestions, the Board will dispose of funds estimated to total at least Sk30 million (nearly US\$57 million) by the budget year 1979–80.

Attempts to involve parliamentarians in Swedish science policy have so far been remarkably dull. But they have never been underwritten with funds, and money, as Mr Stiernstedt points out, is to be the key to the new Board's influence. If the Board can offer to fund a project, organisational inertia will in many cases be overcome. The Board will be able to stimulate but not dictate; every council will retain the right to decide which projects it will participate in. Finally, then, the scientists—if they want to—will be able to discount the Board's suggestions. On the other hand, they could make use of its resources to widen not only society's outlook, but also their own. □

NETHERLANDS

Satellite plans

Casper Schuurin reports from Holland on the latest Dutch commitment to space research and astronomy

At the end of 1976 the Dutch government finally decided to finance a second astronomical satellite, to be launched by NASA with a Thor Delta rocket in the spring of 1981 from the Western Test Range in California. After the success of ANS, the first Astronomical Netherlands Satellite, in the field of soft and hard X-ray and ultraviolet radiation, the second satellite (IRAS) will do observations in the infrared.

The project started in January 1975 with a preliminary definition study. When contacts were sought for the scientific programme with NASA and the European Space Agency (ESA), there was an enthusiastic response, especially from the US community, at the prospect of stimulating this branch of astronomy. Following a NASA "announcement of opportunity" 13 proposals for experiments came in. A US study team consisting of 11 astronomers started discussions on the IRAS mission with their Dutch colleagues.

At the beginning of 1976 agreement was reached on the scientific programme and NASA expected a memorandum of understanding between the US and the Netherlands to be signed before July, 1976. The Dutch government agreed in principle to the project

in July, in spite of a curtailment of expenditure generally, and it took six months to find the necessary money.

The United States and the Netherlands will both have to pay around 110 million guilders (£1=DG 4.15). Out of the discussions with the ESA, moreover, a British interest arose, and the UK Science Research Council took an active part in the US-Dutch negotiations. Britain is contributing 10 million guilders, for the most part consisting of facilities for flight operations in the Appleton Laboratories in Slough.

The design and building of the satellite represents a challenge to Dutch industry, and especially Philips and Fokker-VFW, which hope to continue the industrial innovation which resulted from the ANS project. A British advisory group, General Technology Systems Ltd, provided evaluation of the possible profits of space activities for the Netherlands in the coming years and of the IRAS project in particular. The results of this study are said to be favourable and support the new project.

The great amount of data from IRAS will make higher demands on storage and retrieval than with ANS. Large scale integration techniques will be used in the on-board computer, giving it a maximum of calculating capacity (500 million bits per day). Also of an advanced design is the extreme cooling system for the tele-

scope and the detectors. Infrared observations are only possible if the instruments are cooled close to absolute zero. A special helium-cooled vessel has therefore been developed.

The results of the IRAS mission, the plan of which was set up in June, 1975 by a commission of 15 American, British and Dutch astronomers, will be received in time to be used for the detailed programming of the experiments with Spacelab in the 1980s. Over a six-month period a survey will be made of infrared sources in the Milky Way and infrared radiation from extra galactic systems. In the following six months more detailed measurements on different sources will be carried out. The astronomers hope to trace and map some 10 million infrared sources. The 925 kg satellite will fly in a circular polar trajectory: one earth orbit will take 124 minutes, so that a sun-synchronous trajectory on a height of 900 km is followed.

Not everybody is as enthusiastic as the astronomers, however. Dutch associations of scientific workers protested in 1974 against further Dutch space activities. At that time an agricultural satellite for underdeveloped countries was under study, as well as the IRAS. This project was not then as far advanced as IRAS, and the benefits for these countries from it were considered small because they lacked the necessary infrastructure. The associations were also against IRAS, as "this type of research would hardly contribute to solve the real problems in the world". □