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 Schuuring 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 telescope 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". □