WHEN Myron B. Kratzer, Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs in the USA, spoke about international cooperation in nuclear energy in Stockholm recently, last week's agreement in London between the world's seven major nuclear suppliers had not been concluded. That was probably just as well. His speech was unrealistically optimistic as it was, without also voicing the official claims that the London agreement will probably precipitate: that the risk of the proliferation of nuclear weapons has been minimised.

Mr Kratzer was addressing the Atomic Industrial Forum on the Nuclear Fuel Cycle. His assessment that the International Atomic Energy Agency safeguards and the Nuclear Non-proliferation Treaty (NPT) have served their purpose well in stopping the proliferation of nuclear weapons can hardly be taken seriously in view of the disastrous results of last May's NPT review conference. Those signatories who attended were unable to agree on any of the major measures proposed to help stop proliferation. In general, the strength of the NPT has been sapped by the failure of the nuclear-weapon parties to the Treaty to fulfil the few obligations it demands of them. And, of course, France and China—as well as many near-nuclear states—have not even signed it.

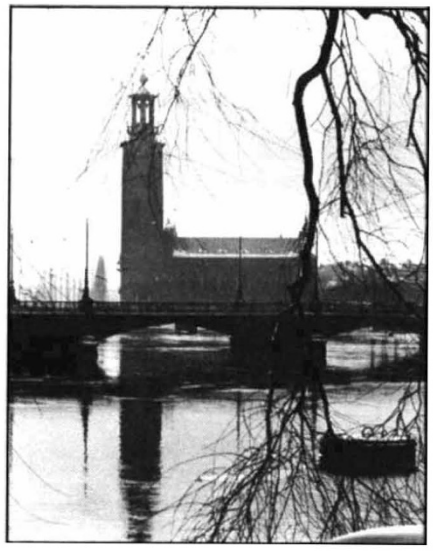
To maintain, with Mr Kratzer, that "the record of the past 20 years on international nuclear cooperation gives considerable basis for optimism that nuclear development . . . can take place without contributing to further proliferation" is to ignore the factors which will make the next 20 years different from the last: a level of technical sophistication which will enable many states to manufacture their own nuclear weapons, the really dramatic spread of nuclear technology, and the conviction of the non-nuclear states—fostered by the behaviour of those states possessing nuclear weapons—that such weapons are desirable for national security.

● Sweden's new International Energy Institute, scheduled to open at the beginning of 1977, might do well to consider some of the areas recommended for research by a recent gathering of international energy-oriented academics near the southern city of Gothenburg. The meeting was arranged by the Royal Swedish Academy of Science in conjunction with the Natural Sciences Research Council and the Atomic Research Council.

The research suggestions concerning energy in less developed countries sounded the more convincing for the inclusion in the group of the Sudanese Minister of Agriculture, Dr Hussein Idris. Pointing out that an injection of energy into an almost feudal society can widen the gap between rich and poor, the group urged

Letter from Sweden

from Wendy Barnaby, Stockholm



that research take into account the social as well as the biological aspects of ways of solving the immediate problems: the production of food and raw materials.

Other proposals to emerge from the meeting suggested a look at alternative ways of using energy, especially in industry. The academics called for the development of a clean method of burning coal, and advocated a study of the problems of the breeder reactor.

The group studying the side effects of energy production and use suggested that cost–risk–benefit analyses of different energy sources be undertaken, and urged that the side effects of each source be identified and used as resources in some other activity. This group produced a very wide-ranging and valuable list of research areas, including the effect of energy production and use on the Earth's climate, the ways in which scarcity of energy could lead to conflict and the effect of fast-changing technology on social relations. Also proposed were studies of the biologically disturbing effects of different energy systems on different levels of organisation (cell, organism, experimental animals, ecological systems) to determine the mechanisms whereby energy systems cause damage to health; analyses of the effects of energy use on man's health, using information from registers of cancers and birth defects; an examination of energy wastage; and an assessment of the harmful effects of energy production and use in nature.

● Changes in the climate of northern Europe have been blamed for the decrease in the number of eels in Swedish waters. Professor Gunnar Svärdson, working at a freshwater laboratory near Stockholm, has concluded that the usually cited local villains—pollution of the Baltic and overfishing—are not to blame.

Between 1964 and 1969, the average annual catch of eels in Sweden was 1,380 tons. Between 1969 and 1973, this figure dropped to 955 tons. The eels come to Scandinavia through the North Sea from the Atlantic, and on their arrival in Sweden are counted at collection stations and distributed throughout various rivers. As the 20 stations whose records are available all agree that the numbers arriving have decreased, Professor Svärdson turned his attention to the factors stopping their arrival, rather than the conditions they find when they reach Swedish waters.

One such factor is the temperature of the North Sea, which, with the exception of the past three years, has been falling steadily over the past three-and-a-half decades. Although the drop is not measurable in terms of degrees, it has nevertheless significantly decreased the amount of plant and animal plankton, an important food for eel larvae and young eels. At the same time, Arctic fish such as cod have increased their visits to the North Sea—and cod love to eat eel larvae. Meeting less food and more enemies, fewer eels survive their passage across the North Sea.

Like the water temperature, the pattern of prevailing winds has also altered. The westerly winds which sweep over the British Isles and help to point the eels in the direction of Scandinavia blow on only 80 days a year now, instead of 110 as used to be the case. Most of the newly calm days, moreover, fall just at the time that the eels are north of Scotland and would normally be turning towards Sweden.

● In the face of public and institutional protests, the mining company LKAB has withdrawn its controversial application to extract uranium from a 15-km² area around South Billigen (see *Nature*, **257**, 733; 1975). It will make another application next year, after revising its plans to take more account of the need for environmental protection.