

review the activities of foreign firms in Britain. Apart from that, he suggests that the Government should simply encourage British industry to become more competitive.

#### ENVIRONMENT

### Power Station Pollution

FEARS of creeping contamination of the environment by waste products from nuclear power stations have so far proved to be unfounded. According to a handbook published recently by the International Atomic Energy Agency (*Management of Radioactive Wastes at Nuclear Power Plants*, IAEA, £2 10s), the performance of the waste management facilities has been "excellent". "In no case has there occurred any exposure in the plant environs which has even approached, let alone exceeded, the recommendations of the International Committee on Radiological Protection", the report claims. It should be possible, given the same care in future plant design, to maintain this good record. The report does not, however, envisage any radical change in waste management, apart from relatively minor engineering modifications of existing systems, and it unfortunately does not attempt to guess how wastes from breeder reactors may be handled. These will present new problems, like learning how to deal with contaminated liquid metal coolants.

Apart from these anodyne conclusions, the IAEA report publishes four reviews, of waste management in Canada, France, the United Kingdom and the United States. These echo the general air of cheerful confidence, though the United States report by Morton J. Goldman of NUS Corporation of Washington does point to two areas which may pose problems in the future—the release of tritium from light water cooled reactors, and the possible contamination of the secondary water in pressurized water reactors by leaking steam generator tubes. The difficulty with tritium, which is a long half-life nucleide, is that it is hard to separate from other waste materials. But it is only likely to be a problem on "dry" sites where the cooling water is recirculated through cooling towers. In these circumstances, Mr Goldman says, it is conceivable that the tritium concentration could reach unacceptable levels. Finally, he says that steam generator leaks have occurred in most, if not all, operating PWRs, releasing contaminants into the secondary water, which is supposed to be perfectly clean. This could impose a shut-down of the station, "because of an otherwise relatively minor leak", according to Mr Goldman, unless there were facilities for decontaminating the secondary water. Such facilities, he says, may well be included in future designs.

Meanwhile, two American engineers have published an equally soothing report on the subject of so-called "thermal pollution" from thermal or nuclear stations. Wesley O. Pipes, professor of civil engineering at Northwestern University, and L. P. Beer, previously a senior staff engineer with Consolidated Edison, writing in *Electrical World* (February 10, 1969), say that concern about thermal pollution has been exaggerated. This conclusion is derived from a study of a thermal power station at Waukegan, Illinois, which has been discharging 760,000 gallons of warm water into Lake Michigan every minute for the last forty years.

Con Ed hopes to build a nuclear plant at Zion, seven miles from Waukegan, which would treble the amount of warm water being pumped into this part of the lake, which is probably why the survey was undertaken. The water from the thermal plant was at 57° F, 11° F above the ambient, but Pipes and Beer could find no evidence of environmental damage. No temperature difference could be detected 3,000 ft from shore, and the hot water had not affected the water chemistry in any significant way. Bottom living organisms vital in the food chain of fish had not been eliminated, and trout and Cobo salmon, even near the outlet, had suffered no apparent shock. Professor Pipes said that the combined heat inputs from the two power stations would raise the average water temperature by less than 0.1° F during one summer. "This increase", he added rather surprisingly, "would be nullified during the following winter". The Lake Michigan survey produced results similar to those reached by the Tennessee Valley Authority, which undertook surveys in lakes and rivers near TVA power stations. "Personally I am much more alarmed over organic pollution from sewage and from oil pollution", added Professor Pipes. "Oil pumped into Lake Michigan with the bilge from lake boats does a great deal more damage to lake life than any possible thermal damage." With that, even the most ardent conservationists would probably agree.

#### COMMUNICATIONS

### Discussing INTELSTAT

It is interesting, and perhaps significant, that the Soviet Union has sent a delegation with observer status to the current Washington conference directed to drawing up a permanent agreement on INTELSTAT, the international telecommunications satellite network. A total of sixty-three nations round the world have joined in the 5-year interim phase of INTELSTAT which ends this year, but the Soviet Union is not one of them. All members of the ITU (International Telecommunications Union) are entitled to attend as observers, however. In the Soviet communiqué announcing the attendance of its delegation at the Washington meeting, it was stressed that the country had offered to provide an international system "open to all nations" (*Inter-spunik*) at the Vienna conference on the peaceful uses of space last August. Is more going to be heard of this proposal at Washington? There is plenty of time for such developments. The meeting opened on February 24 and the first session is due to run for a month. Only the Americans show any genuine confidence that all the business can be concluded in one session. It is more generally anticipated that a second session will be necessary, preceded by a pause for delegations to return home and confer with their governments. So far the official head of the British delegation, Mr P. F. Hancock of the Foreign Office, has not put in an appearance at the Washington meeting but is being held in reserve for the more crucial stages ahead. So far the official opening speeches have been disposed of, and a series of working parties set up for detailed consideration of specific points.

The main points at issue are:

(1) Should the international network be "governed" in the same manner as at present under the Interim Agreement, which provides the US with more than