

able to receive certain SIRA publications and make some contribution to the running of the association.

Some of the increase in exports which Mr Storey is looking for may well come through sales to eastern Europe, in view of the agreements for technological cooperation which the Ministry of Technology has negotiated. To encourage the sale of instruments to the Soviet Union, an Anglo-Soviet working group dealing with standards and metrology has been set up, with the British Standards Institution, the Ministry of Technology, and the Scientific Instrument Manufacturers Association (the instrument industry's trade association) responsible for the British side of the negotiations. The second meeting of the working group was held in Moscow recently, when the two sides devised ways of removing technical obstacles to the flow of trade, chiefly to do with the testing, guaranteeing and servicing of exported instruments. SIRA itself is not being slow to exploit the opportunities which seem to be arising, and is now hoping to set up some kind of relationship with the instrument industries in Hungary and Poland.

#### HYDROLOGY

### Another Barrage

YET another barrage—across the Wash—has reached the drawing board. It was announced last week that the Water Resources Board has been authorized to go ahead with a desk study, and a consulting firm of civil engineers, Messrs Binnie and partners, has been appointed to do this as a preliminary to a full feasibility study. The desk study should be completed by the end of next year.

The idea of a barrage across the Wash is not new. It received its biggest impetus perhaps, in 1966, when it was one of the recommendations in the Water Resources Board's report on *Water Supplies in South East England*. In this report the board described some schemes which could meet the increasing demand for water in the south-east—a demand which will probably have doubled by the end of the century. A barrage across the Wash turning the area into a huge storage reservoir was a project which the board suggested ought to be investigated before the early 1970s, when its strategy for the period after 1975 has to be decided. The board's plea for the investigation "to be put in hand immediately" could not be said to have been fulfilled, and planners must hope that not too much time has been lost for the barrage to be included in future planning of water resources.

Another major project under way is the study of the use of the underground water storage in the chalk of the Thames Valley to "top up" the flow of the River Thames in dry spells and so provide throughout its course the additional water supplies needed. A full-scale experiment on this has now completed the second of its three seasons of study and the final phase will be started next year. A second similar experiment was started this year in the Great Ouse catchment near Thetford.

Two other barrages for the storage of water that have received serious consideration by the board are the ones across Morecambe Bay, for which there is a full feasibility study in progress (see *Nature*, 217, 599; 1968), and the Solway barrage for which as yet there

has only been a desk study. More topical, perhaps, is the scheme for a barrage or barrier across the Thames (see *Nature*, 220, 111; 1968) which unlike the other two would have as its primary function the prevention of floods. For all the schemes, however, there are the same basic problems to be considered—things like cost effectiveness, tidal movements, siltation, ground water, ecology, and environment. The Greater London Council has started investigations into the silting of the Thames, and the effect the proposed barrage would have on ground water levels in the Thames Valley. There could be trouble if the level of the Thames were kept at a constantly higher level than the present low water mark. The GLC proposes, therefore, to drill about 100 boreholes at various points across the valley to investigate ground water levels and movement. Recorders will be installed in the bores to collect data for about two years and these will be analysed by computer. The Institute of Geological Sciences and the Building Research Station have wide experience of silting and ground water and they are cooperating in the project in advisory capacities.

#### RIVER MANAGEMENT

### Clearance by Carp

BRITAIN spends about £2.5 million a year on removing water weeds from inland waterways, and in 1964 the British River Authorities spent on average £69 per mile on weed clearance. In an attempt to cut these costs the Ministry of Agriculture, since 1964, has been experimenting with the grass carp, a fish native to China but widely cultivated for food in South-East Asia and Central Europe, as a means of biological control of water weed. Although the experiments are still at a very early stage, no major snags have occurred so far and the ministry's Salmon and Fresh Water Fisheries Laboratory is still optimistic that the method may work.

In 1964 several 7.5 inch fish kept in wire netting pens successfully cleared a Kent pond overgrown with Canadian pond weed. This spring 2,000 one and two year old fish were imported from Hungary and have been used in experiments in fenland ponds. Thirty-seven pounds of small fish introduced into one pond have increased in weight to 381 pounds in twenty weeks and consumed about 7.5 tons of weed in the process. The fenland drainage channels might well be kept clear in this way, using electric barriers to confine the carp as they graze successive strips of the channels. The ministry is, however, understandably unwilling to allow widespread introduction of the species until more is known about its biology in Britain for fear that it may breed, get out of control and completely upset the balance between plants and native fish. The chances are that the grass carp, which has only bred naturally in Japan and Formosa apart from in its native waters in China, will not become established as a breeding population in Britain, but it is not worth risking at this stage in the work. And even if it does not breed, the numbers introduced into waterways will have to be carefully regulated because water weeds are at the base of the food chain on which native British coarse fish, which are omnivores or carnivores, depend. Granted this, if the experiments continue to progress as well as they have done since 1964, the grass carp could well become