

whether to build the first (stage 1) reservoir in time to produce water in the early 1980s when the central area of south-east England will need a major new source of supply. The best position for this reservoir would be to the west of the outfall of the Great Ouse; it would cost about £23–£25 million to build, would hold about 14,000 million gallons of water and it could provide up to 100 million gallons a day, depending on the flow in the river.

The reservoirs together would cover about 15 per cent of the total area of the Wash (about 100 square kilometres), and would be at a height of about 9 metres above sea level. But after preliminary consultations with the Natural Environment Research Council, the river authorities and other interested bodies, the board considers that banded reservoirs would have very little effect in the long term on the environment of the Wash. This aspect and more detailed costings and technical details would, however, be investigated more fully in the feasibility study.

The Wash scheme for estuarial storage of water is not the first in Britain. Preliminary studies of the possibilities of estuary storage in Morecambe Bay, the Dee Estuary and the Solway Firth were published in 1966–67, and reports of the full feasibility studies of the first two are expected next year. The board has, however, ruled out a barrage across the Solway Firth, at least in the foreseeable future.

## EXHIBITIONS

### Bio-medical Engineering

“THE advancement of medicine is the most exciting—and in the long term the most important—of all the prospects opened up by the contemporary explosion of knowledge in science and technology.” With these words, and with obvious enthusiasm for applying engineering techniques to medicine, Dr J. M. Lenihan, director of the department of clinical physics and bio-engineering, Western Region Hospital Board, Glasgow, set the scene for the Bio-medical Engineering Exhibition held in London this week. Dr Lenihan’s enthusiasm is certainly justified by the impressive display of sophisticated medical equipment, and interest shown by the medical profession in the exhibition—the sponsors expect at least 6,000 visitors—leaves little doubt about the commercial attraction in manufacturing specialized medical equipment.

Among the techniques aired at the exhibition, the measurement of deep body temperatures and its use for diagnosing and pinpointing disorders such as thrombosis, varicose veins and breast tumours was prominent. The technique of thermal imaging—picking up infrared radiation from the human body and displaying the resulting thermal image on an oscilloscope—is already firmly established, and it has been used to map the flow of warm arterial blood into, for example, tumours and varicose veins. But research being carried out at the UKAEA Atomic Weapons Research Establishment at Aldermaston may help to speed up the application of the technique. What the Aldermaston team has done is to feed signals from an infrared detector directly into a temperature-calibrated readout system which effectively converts the instrument into a fast-scanning thermometer. An

area 41 cm × 30 cm can be scanned in one second by this machine.

An instrument which could prove valuable for psychological research, a miniature transmitter for EEG, ECG and EMG measurements, has been developed by Smith and Nephew Research Ltd. The transmitter, which measures only 16 mm long, 13 mm wide and 5 mm deep, has already been tried out by Dr G. K. Wallace of the University of Reading. The chief attraction of the new transmitter is that it is much less bulky, and therefore more unobtrusive, than conventional transmitters, and it can be used for research on animals and children without itself affecting the results.

Among the exhibits which are already commercially available, cardiac resuscitation equipment caught the eye and a pneumatic blanket which gives automatic warning of cessation of breathing in premature babies was impressively ingenious.

## SUBMERSIBLES

### Diving with NERC

IMPRESSED with American advances in the design of submersibles, the Natural Environment Research Council hired a two-man craft from Vickers Ltd for a week last November, to see how useful it might be in marine geology, oceanography, ecology and fisheries research. The submersible, *Pisces II*, was sent to Scotland with its support vessel and went through an intensive series of dives in the open sea off Oban and also in Loch Fyne, a long inlet further south. There were teething troubles, engine failures and even difficulties in recovering *Pisces* from the sea bed, but now that the NERC scientists have reported on their impressions of the week (*NERC publ. series C, No. 2, 1970*), the advantages of exploring the underwater environment at first hand seem in general to have outweighed the snags.

The manoeuvrability of *Pisces* was valuable, and although some of its functions could be replaced by underwater television and sampling from the surface, phenomena on a small scale could be studied in detail in relative comfort. One particular success was in exploring the floor of Loch Fyne, when it became clear that the manganese nodules found in samples obtained by dredging are in fact exposed on the loch bed, and that shell fragments found there represent a living fauna and are not transported debris.

A project to study sea currents by following trails of dye revealed some of the limitations of *Pisces*. On the way down it lost track of the blocks of dye which had been released beforehand, and while manoeuvring at the bottom to look for the lost dye, it churned up so much mud that nothing at all was visible from the ports. The oceanographers felt that apart from search and recovery operations, the value of a submersible is limited. Its potential in marine geology and ecology is considerable, however. Scientists and their equipment can be brought in close contact with an environment that could previously be explored only from the surface, and sampling can be achieved safely and efficiently.

A further series of twenty dives was carried out in June this year at the edge of the continental shelf by the Outer Hebrides under the aegis of the Institute of