and Brentford Docks and Thamesmead, the new town now being built between Woolwich and Erith.

An important part of any future planning is the assessment of the river's existing qualities and characteristics—mostly provided for the conference by the *Thames-side Environmental Assessment* (GLC, 25*s*.). This assessment was made by a joint team from the Department of Architecture and Civic Design of the GLC and the riverside borough councils. This committee was set up by the GLC and the London Boroughs Association in 1966 and includes officers of the Port of London Authority and various commercial and amenity interests. Other working parties have been established by the GLC and the riverside borough councils, and the GLC has also recently set up a special subcommittee, the Thames Action Subcommittee, which will have the responsibility of encouraging increased use of the river within Greater London for leisure. Things do seem to be moving towards a more co-ordinated policy for the Thames—the test will be if all the interested bodies can pull together.

The fundamental problems of the river's tidal flow, flooding and pollution will have to be solved for the success of the elaborate schemes outlined at the conference, however well-intentioned they may be. The

The river Thames at Greenwich (*Fairey Surveys*).

river seems to be getting cleaner, which is cheering news, and the leader of the GLC, Mr Desmond Plummer, spoke of £20 million being spent on the extension to the sewage works at Beckton. The GLC also appears to be taking very seriously the question of a barrier or barrage across the river. This would not only solve the flood problem but it would also improve enormously the amenities of the river (see *Nature*, **217**, 800; 1968). The speakers at the conference gave the impression that they were in favour of a fixed barrage across the lower reaches of the river rather than a retractable barrier—Sir Alan Herbert was one who argued on behalf of this cause. The GLC has now taken over responsibility for carrying out a full-scale investigation of tidal flooding and its prevention, and models are being built at the Hydraulics Research Station at Wallingford. The support for a barrage was really the most enlightened aspect of the conference There was of course plenty of enthusiasm in other ways, but any new developments can hardly be attractive to Londoners and tourists alike until the tidal flow is controlled and the Thames returns to its former status as a river instead of its present one as a rubbish dump.

Intellectuals' Holiday Camp

THE University of Loughborough is already receiving encouraging response to its announcement last week of a new type of vacation course. Three weeks of courses are being arranged in July for technologists, scientists, managers, teachers and—here lies the novelty—for their spouses. Provision is being made for children so that families can be together while parents catch up on some mid-career training. The idea for family courses came from Dr Elfyn Richards, vice-chancellor of the university, and work started on the arrangement of the courses last autumn.

Twenty-four technical courses during the three weeks will cover such subjects as optics, ultrasonics, ergonomics, computers, statistics and management. Two educational courses are being organized, with co-operation from the Association for Science Education and the Schools Council Project in Technology. The first, on applications of knowledge, is designed for teachers of mathematics and physical sciences, and the second, on teaching materials science in schools, is being run with the blessing of the Northern Universities Joint Matriculation Board co-ordinating committee. Both will relate technology in industry to school work.

Cultural courses for spouses, which make up the third series, will cover industrial archaeology, music, drama and new techniques of food production. The idea is that they should be stimulating rather than requiring previous knowledge.

Accommodation is provided on the campus for families at reasonable rates. For example, a man will be charged £10 for accommodation and a course fee varying with subject from £9 upwards. His wife will be charged £13 inclusive of cultural courses and children will cost from £4 upwards. Films, bars and sports facilities will be available to parents, with baby-sitters, play groups and other forms of recreation on hand for the children. While hoping to provide all the facilities of a holiday camp, the university believes that its vacation courses will be more valuable than the description "intellectual Butlins" implies. The state of modern industry is such that scientists and technologists are continually being called on to travel and attend courses away from home. So it is not therefore surprising that these people are reluctant to give up their holidays for further study away from their families.

The courses at Loughborough this year are something of a pilot scheme, and if successful the idea will be extended to cover the major part of the summer vacation.

Hydrofoils at Leeds

A LARGE water tank which may solve some of the problems connected with high speed hydrofoils has been built at Leeds University. The tank is in the form of a channel through which up to 50 tons of water per minute can be circulated. In some respects it

resembles a wind tunnel in that the hydrofoil under test is fixed and the water flows past at speeds up to 15 miles per hour. Because scaled-down hydrofoils are used, the information gained will refer to hydrofoil boats travelling at up to 100 miles per hour. The behaviour of the hydrofoils is observed by high speed ciné photography through 'Perspex' windows in the side of the channel.

The research group at Leeds which is studying hydrofoils is led jointly by Professor Boris Cole, who is head of the Department of Mechanical Engineering, and Mr P. D. Swales. They are financed by contracts worth £27,000 from the Science Research Council and the Ministry of Technology.

In particular, the channel will be used to study the behaviour of hydrofoils when air is sucked down behind the strut supporting the foil to form an air cavity around the foil itself. This phenomenon, known as "ventilation", has profound effects on the performance of the foil. Professor Cole's group has been awarded a Ministry of Technology contract to study the so-called surface-piercing hydrofoils under such ventilated conditions. Surface-piercing hydrofoils have V-shaped foils which rise or sink through the surface of the water according to the speed of the craft. Another class of hydrofoils has fully submerged horizontal foils, but there seems to be a wide diversity of variants.

The new facility at Leeds will also study another phenomenon affecting the performance of hydrofoils—cavitation. This is the formation of vapour-filled bubbles around the foil, and occurs under certain pressure and temperature conditions. The pressure in the new water channel can be altered to influence the extent to which cavitation and ventilation occur.

Tests on models have the drawback that it is sometimes uncertain to what extent the results apply to full-size boats. The large size of the equipment at Leeds means that the extrapolation to real conditions is fairly simple.

Welders Welded

LAST week the members of the British Welding Research Association and the Institute of Welding agreed to combine forces to set up a new organization, to be called the Welding Institute. The hope is to combine the technological strength of the research association with the professional functions of the institute. Both the research association and the institute see the move as a logical development, in which the welding technologist can be backed by the full resources of the scientific work of the research association.

For those with long memories, the merger will seem like old times. The research association began life in 1946 on the basis of work done by the research council of the Institute of Welding. Now the two organizations have come together again. The new organization will have a total membership of 1,500 industrial organizations and government departments, a professional membership of 5,500, and an annual income of £1 million. The institute is hoping to make a real contribution in education, through its school of welding technology, to the training of welding engineers at all levels. Ultimately the aim is to achieve recognition of the professional qualification of welding engineer. In addition, the institute hopes to provide better library and information services, and a continuing interest in welding standards and specifications. The first director of the institute will be Dr Richard Weck, who until the merger was director of the BWRA. The institute will be governed by a council under the chairmanship of Mr A. Robert Jenkins.

Animal Diseases 1967

THE statutory return of the Ministry of Agriculture for animal diseases in Great Britain during 1967 was published last week (HMSO, 1*s*.). The foot and mouth disease epidemic, although the worst ever in Britain, was not as widespread as the severe outbreaks in 1923 and 1924. Only eighteen counties were affected. Of the other three diseases covered by the report, outbreaks of fowl pest rose from 194 in 1966 to 198 in 1967, and outbreaks of anthrax rose from 222 in 1966 to 438 in 1967, but the incidence of bovine tuberculosis remained low. The cost in compensation for fowl pest and tuberculosis was £287,625. Apart from farm animals and a regimental goat, 52 cloven-hoofed animals for zoos were imported.

The Taste of Meat

PROFESSOR M. INGRAM, the director of the new ARC Meat Research Institute at Langford, near Bristol, said last week that meat probably doesn't taste as good as it did in grandmother's day, but that his new institute is going to try to put that right. High quality and mass production are usually incompatible and meat is no exception, but so very little is known about meat as such that research should make it possible to improve quality without sacrificing quantity.

The new Meat Research Institute has been built on the campus of Bristol University's Veterinary School at a total cost of about £1 million, and it now houses under one roof one hundred people, sixty of whom were doing research on meat at the SRC Low Temperature Research Station at Cambridge, the School of Agriculture at Cambridge and a Ministry of Food Laboratory in London. To some extent the organization of the institute reflects this. There are three divisions, the carcass and meat department, the biochemistry, histology and physiology department and the bioengineering and microbiology departments.

The carcass and meat department is basically trying to find new criteria for evaluating carcasses commercially. How much meat and how much bone is there and what is the quality of the meat? One group is exploring the anatomy of carcasses to see if any anatomical features, preferably in a commercially valueless part of the carcass, such as the shin bone, can be used as a criterion for the quality of the whole carcass. A second group is making measurements of the specific gravity of joints of meat, and another is using what is in effect a modification of echo-sounding to measure the fat and meat in pigs. Sound is reflected from fat muscle boundaries. Research is also going on into how best to slaughter animals, because a high blood content in meat might make it tougher; how to judge animals at agricultural shows—important in determining grading systems; and to decide whether carcasses can be butchered while still warm rather than waiting until rigor mortis sets in. (Hot butchering would save time and is used in salami factories in Hungary.) By far the most difficult job