

out considering also its hinterland. Additional tourist and recreational pressures were bound to result from the development of the M6 motorway and it would be vital to relieve congestion on the Lake District; for example, by improving road access around its southern and western edges and opening up parts of the coast that were at present under-used. It was suggested that increased pressures on the Lancashire coast further south might be diverted inland to new recreational schemes; possible recreational schemes were mentioned for Aintree and in the Trough of Bowland.

The conference could not forget that the Cumberland and North Lancashire coasts and Merseyside are all parts of development areas where the Government is encouraging the growth of industry. Among the major changes which could affect parts of the north-west are the 2,400 megawatt nuclear power station soon to be built at Heysham; a £530 million port development for 100,000 ton ships at Crosby at present being considered; and the Morecambe Bay barrage—now the subject of a feasibility study.

Apart from the digest of the conference, the report also contains land use statistics for the 257 miles of coastline in the area and a review of the movement of the retired population in the area. There is also a useful summary map in colour showing the main developed and protected areas along the coast together with some aspects of recreational use. One detail (included with all the other reports, too) is a diagram of the coastal eyesores; pillboxes and other war-time structures, rubbish tips, areas of barbed wire and abandoned barges and other vessels. The Ministry of Defence should be encouraged to take them away.

Computer Hook-up

THE British Post Office is beginning to consider how its existing Datel service for the transmission of data for computers over telephone and telegraph lines will need to be extended in the future. To this end, a unit is being set up to study data transmission networks, and may have some kind of preliminary report available in nine months to a year's time. Reduced to its essentials, the choice seems to be between improving the Datel system to keep pace with the demands made on it or to go in for an entirely new kind of network. The Datel system itself is based on the existing telephone system, with the addition of units called "modems" at the transmitting and receiving ends, which make the connexion between the line and the data handling equipment. In this way, users can be linked with large central computers and, with the introduction of multiple access machines, numbers of remote users can use the computer in a manner approaching a conversation.

Data transmission in the United States is at present based on the same kind of system as the Datel service in Britain. The difference in the United States is that the American Telephone and Telegraph Company, which runs the system, is allowed a monopoly only so long as it uses the existing telephone system. Otherwise data transmission services would have to be hived off into another company. This means that, to avoid losing the growing data business, the American Telephone and Telegraph Company has to show that the best way of handling data is to exploit the telephone network by adding modems at the ends of the lines.

Because of the Post Office monopoly of communications systems, this problem does not arise in Britain and the Post Office can consider the problem without being influenced by commercial necessity. As it is, the existing system has a number of drawbacks. For one thing, it makes poor use of telephone lines—a system designed purely for the transmission of data could carry more information at a greater speed. Another factor is that up to now the users of multiple access computers have had to be within a few miles of the machine, otherwise the cost of trunk calls makes use of the machine prohibitively expensive.

One of the alternatives which will no doubt be considered by the Post Office study group is put forward by a group at the National Physical Laboratory. This system is aimed at providing the remote user with a rapid response from the computer, so that a conversational type of interaction is possible. The system also uses existing telephone lines but with computers at the intersections of the lines which control the routing of messages and data through the system. This means that every message or block of data in the system carries some indication of its source and destination. Messages enter and leave the system by interface computers, connecting subscribers within a small geographical area to the main network. The advantage of such a system seems to be that it can handle data rapidly, making efficient use of existing telephone lines. The fear that such a system would lead to choking of trunk lines is not justified, according to the National Physical Laboratory. A network such as this linking twenty towns would perhaps cost in the region of £10 million and have a response time of less than 100 ms.

What is important is that to make the fullest use of computing facilities throughout the country a decision on what form the data network is to take should be made as soon as possible. As it is, a number of separate special purpose networks are already being set up, for the banks and airline bookings for instance, leading to avoidable duplication of facilities. Before this situation gets out of hand, the Post Office must announce its decision on how computer networks are to develop in the future.

More Civil Servants

DESPITE the air of uncertainty which has spread through the British Civil Service since the Fulton Commission was appointed to examine it, the Civil Service Commissioners, responsible for recruitment, report a successful year (HMSO, 6s.). In particular, entry to the Administrative Grade, from which the senior civil servants of the future emerge, continued at a high level. There were over 27 per cent more candidates who wanted to join this grade, and 149 were declared successful, against 112 in 1966. Some successful candidates, the report admits, declined appointment, and others preferred to do research work or voluntary service overseas before buckling down to work in Whitehall, but the number who did accept was enough to fill the vacancies.

Another of the commission's preoccupations is to increase the number of applicants who come from universities other than Oxford and Cambridge. Again they are cheerful about progress; in 1966, for the first time, applications from other universities made up