

case for regarding planning problems as exercises in systems analysis by saying that "the railway system, underground, bus and taxi services, freight services, traffic interchanges, pedestrian facilities and even parking provisions all form together a total system. . . ." But why stop there? Why not inquire what the "total system" is for? To judge from the plan, the council's objective is freedom "to move about efficiently", almost as an end in itself. But are all city travellers really sustained through the hours they spend in traffic queues by the belief that it is better to travel than arrive? And is not the purpose of the "total system", like the purpose of city life as such, the mixing together of people, workplaces and public institutions in such a way that all concerned are stimulated and improved?

This is where the planners should have let their imagination loose. Perhaps the most obvious thing to say about the interaction between the population distribution and the traffic network is that a more widely distributed population must necessarily make greater demands on the traffic network. Los Angeles is a perfect illustration of that. But this implies that the council's passive acceptance—even encouragement—of the outward shift of population must necessarily exaggerate the problem of building and maintaining a traffic network which functions smoothly. So is it possible that the council in the construction of its plan has grabbed the wrong end of the stick altogether? Is it possible that it could have simplified the traffic problem without building roads on a vast scale simply by aiming at a distribution of population which would reduce the demands on the network of roads and railways? Certainly the co-existence of these problems should have persuaded the planning people to look again at the GLC's policy on housing densities in Greater London. As things are, the city is too thinly spread for comfort and efficiency.

Housing density, however, is only one of the parameters which determine the distribution of population in a city. With the opportunity with which the GLC has been provided for a thorough examination of the future of the city, a much wider range of possibilities should have been considered. The concept of a kind of cellular city should have come high on the list. London, like a great many other cities, has grown up by the agglomeration of separate districts with distinctive character. The result is that people say that big cities are nothing but loose confederations of villages, and there is no doubt that this flavour of individuality helps to make cities seem attractive. But the overriding need is that it should be possible to get from one village to almost any other in a reasonably short time—ideally much less than an hour. That is what makes a city. So would it not be a sensible strategy for the future development of London to give priority to the development of a fast transport system connecting the network of putative villages of which the future city should be made? With luck, it should be possible to aim at travel times which are much smaller than at present, and even to build a transport system

which competes effectively with motor-cars. To be sure, it would also then be necessary to design residential units in which people were more densely packed than they are at present in Central London, but one obvious benefit would be that the intervening space would be opened up for all kinds of developments which could quickly add to the sense of spaciousness which is one of London's present boasts. And such a strategy would have the great advantage that it could be made to work gradually, without the need artificially to impose networks of new roads on the existing fabric. It is earnestly to be hoped that the council will be compelled by circumstances and politics to think all this out again.

PARLIAMENTARY INQUIRIES

Programme for Select Committee

FOR the first time, the British research councils are to come under regular parliamentary scrutiny. The Select Committee on Science and Technology of the House of Commons has decided to start by investigating the Natural Environment Research Council, and it is likely that the examination of one of the research councils will become an annual event. The first investigation will be carried out by a sub-committee, while another sub-committee intends to spend the next few months following up the work already done on the reorganization of the nuclear power industry in Britain. The Select Committee seems to be far from happy with the way the industry has been reorganized, and it is clear by now that the Government is not following the advice the Select Committee gave in its first report on the subject a year ago.

Both these investigations seem well timed. The NERC is responsible for most British work in oceanography, a growing field which has not been taken up in Britain with the enthusiasm it has inspired elsewhere. Recently the unhelpful "policy statements" at the Oceanology Exhibition at Brighton and the formation of an interdepartmental advisory committee have encouraged people to ask what the Government's policy is, but no satisfactory answer has yet been forthcoming.

The committee's report on British defence research should emerge within the next six weeks or so, if all goes well. Mr Arthur Palmer, chairman of the committee, promises that the report will produce some shocks—"particularly in the Ministry of Defence". With its successful report on the exploitation of carbon fibres behind it, the committee looks stronger and more competent than it has ever done. Despite the closing down of the Select Committee on Agriculture, Mr Palmer's optimistic claim that the committee is now a fixture of the parliamentary scene is probably justified.

OCEAN ENVIRONMENT

Transformation and Growth

THE Natural Environment Research Council has now added another independent institute to its roster by the decision, with the University of Liverpool, that the fifty year old Tidal Institute and Observatory should

in future be a direct pensioner. From the beginning of the next financial year in April, the Tidal Institute will be rechristened the Institute of Coastal Oceanography and Tides, and will rejoice in the comparative luxury of a budget for the year of £140,000. NERC says that its object in these negotiations has been to establish "a new growing point for research in the wider field of coastal oceanography". Although everybody is agreed that the institute's links with the University of Liverpool will survive—the staff will continue to teach, and the institute will continue to accept post-graduate students—it does appear that NERC and the institute regard the new development as an essential preparation for a larger programme of work in what NERC describes as a field "which is now of major economic significance to many aspects of the commerce and welfare of the country".

Dr G. Rossiter, the director of the institute, said earlier this week that the new association would provide opportunities, inaccessible within the framework of UGC financing, of equipping the institute with the kinds of instruments which are now necessary in coastal oceanography. One prize will be a research vessel. There are also plans for new kinds of instruments—work is already under way, in association with the National Institute of Oceanography, on a serviceable permanent tide gauge. Evidently the new institute is hoping to supplement its present skills in the construction and exploitation of mathematical models for the prediction of tidal movements with a programme of well instrumented observations, principally in the Irish Sea. Extra people, particularly experimental officers, are also among the benefits which Dr Rossiter hopes will flow, but he may find that government establishments are not much more able than universities to compete with industry for skilled but unprofessional labour.

The formation of the new institute will augment what is now a substantial list of institutes working independently on oceanography and related topics. The National Institute of Oceanography is still the chief of them, but the Ministry of Agriculture's laboratory at Lowestoft, the Ministry of Technology's Hydraulics Research Station at Wallingford and the independent Marine Research Laboratory at Plymouth are only some of the other institutions now operating in oceanography. These developments inevitably raise two important administrative questions—what arrangements will there be for coordination among the several institutes and what influence will the universities command on the strategy of research? NERC seems to be hoping that steering committees with cross membership will prevent poaching, but the overlap between Wallingford and Liverpool is potentially troublesome. Whether the Oceanography and Fisheries Committee of NERC will be able to keep a hand on the tiller remains to be seen, but in any case there seems very little anxiety in the research council to fight the fashionable view that universities are for teaching, not research.

EURATOM RESEARCH

Budget Trouble Again

ONCE again, there has been a wrangle over the Euratom research budget, which for 1969 was not adopted by

the European Economic Community's Council of Ministers until earlier this month. For the first time, member states have had to be given an opportunity to opt out of research projects and for this reason the budget is split into two parts—a joint programme compulsory for all the member states and a supplementary programme in which states will only pay for items in which they are interested. The budget only takes Euratom to the beginning of July, by which time the organization hopes to have at last agreed on a research programme covering several years.

Euratom's research plans have been in disarray since the end of the second five-year research programme in 1967. Chiefly because of disagreements between France and the other member states, the organization made do with research budgets spanning only twelve months at a time for 1967 and 1968. When the joint and the supplementary programmes making up the six-month budget which has now been adopted are added together, the result is still marginally proportionately less than was available last year. The joint programme and the supplementary programme each make up roughly half of the total of \$48.9 million. Negotiations have not yet begun for the budget spanning several years which must be established before July, but the end result is likely to be a cut in research funds.

The largest item in the budget is research on heavy water reactors, which takes \$5.4 million of the joint programme and \$4.0 million in the supplementary programme. Next is fusion and plasma physics, with \$6.2 million entirely in the joint programme, and research on plutonium and the transplutonium elements with \$1.8 million in the joint programme and \$2.5 million in the supplementary. Fast reactors and high temperature reactors appear in both programmes, and gas reactors, including Dragon, are each taking more than \$1 million. Research both into condensed state physics and into nuclear physics is in the supplementary programme and both will cost about \$2 million in the current six months.

The way in which provision has had to be made for France to drop out of Euratom research is going very much against the grain. The other five members are showing their disagreement with the French attitude by continuing to finance parts of the supplementary programme in which they are not concerned, despite their right to drop out.

The Council of Ministers has also been concerned about redundancies in the research staff caused by the six-month budget. There is no employment under the new programme for 382 members of staff, but all will be retained at least until July, and some of them will be reabsorbed before then.

PATENT LAW

Once and for All

AFTER years of wrangling over which countries should be included in a European system for granting patents, the countries of the EEC have at last agreed on a memorandum on the creation of such a system which will be sent to interested non-member countries as a basis for negotiation.

At present, patents are valid for only one country, so that one invention may have to be patented in, say,