

future of the aircraft will also be largely determined by the willingness of ordinary people to stomach the sonic boom which it will make. Professor John T. Edsall and Professor William A. Shureliff of Harvard were right to protest at the noise which supersonic aircraft are likely to create (*Nature*, 221, 694; 1969), although it was surely mistaken of them to imply that supersonic aircraft should never have been manufactured. The real moral to be learnt is, rather, that



supersonic aircraft should not be allowed to fly in such a way as to be a nuisance, which probably implies a ban on supersonic flight below 30,000 feet over land of any nationality and the possibility of even more stringent regulations. This is why it is unfortunate that the first supersonic flights of the Concorde will not come until the first months of 1970. On the face of things there is a strong case for asking that this part of the programme should be hurried along even if the orderly accumulation of data should thereby be interrupted. After all, the proof of this pudding is in supersonic flight, and the success or otherwise of the entire project may be seriously affected if it should turn out that commercial operations have to be restricted.

The imminence of supersonic flight is obviously relevant to the choice of a site for a third airport around London. If, as seems probable, the principal routes are those between Britain and the United States, there are obvious potential causes of delay in siting any supersonic airport near London and on the east of the British Isles. It follows that the four sites which Mr Justice Roskill has picked out should each be examined not merely for their local acceptability but also from the point of view of necessary links in a whole chain of communication between large cities in Britain and large cities in the United States. In particular, it would be sensible to acknowledge in advance that if it would take an hour for westbound passengers to reach the supersonic airfield from central London, a further half an hour to complete the formalities of flight and then the best part of forty minutes for the aircraft to clear the edge of Ireland, there may be much to be said for siting the supersonic terminal on the Shannon and using short-haul aircraft to bridge the gap. The truth is that even to reduce the travel time between London and the new airport to

an hour will require the building of a new fast surface link and in the long run it may be much cheaper to use some radically different alternative.

Such a failure to conceive of the third London airport as a part of an integrated transport system is one of the principal reasons why the site originally chosen at Stansted was so patently unsuitable (*Nature*, 217, 791; 1968). For what it is worth, the abandonment of that proposal can be counted a gain for common sense. The most obvious danger now, however, is that the process of patient and public inquiry on which the Roskill commission has embarked—the attractive site at Foulness will be the first to be considered in this way—will hide from public awareness the need for integrating the third airport, which London will sooner or later need, into a properly articulated air transport system.

#### ECONOMICS

### Modest Planning

THE British Government's latest planning document—*The Task Ahead—Economic Assessment to 1972* (HMSO, 10s 6d)—is a good deal more sensible a document than its predecessor, Mr George Brown's ill-starred National Plan of 1965. The latest document, published as a Green Paper, makes no immodest claims about the growth of the British economy. It suggests, in fact, that a growth rate of just under 3 per cent a year in Britain's productive potential can be achieved without undue hazard to the improvement in the balance of payments. Given a fall in levels of unemployment, this would provide a growth in output of just over 3 per cent a year up to 1972. To sustain this without balance of payments difficulties, exports will have to grow at a rate of 5.75 per cent per year, a distinct improvement on the historical growth rate of 3 per cent a year maintained over the past 10 years. It can be done, but is by no means easy.

On public expenditure, the document repeats the Chancellor's pledge to keep down the rate of growth for the next two years. This year the increase is to be only 1 per cent in real terms; next year it will go up to 2 per cent, and thereafter it is expected to follow the growth of the economy as a whole. To achieve this, defence expenditure will continue to take a smaller share of the total, and the forecast for 1972–73 suggests that defence expenditure then will be a little over £2,000 million at 1968 prices. One area to suffer will be defence research, which has to face a cut of £30 million in the projected programme for 1970–71. This cut, the Green Paper says, will affect "development projects as well as research done in Government establishments and in industry". Ingeniously, the document sees the cuts as "a special benefit to the important field of research and development", because they will "free qualified engineers, scientists and technicians, as well as other resources, for civil work". If that happens, it might indeed be of benefit to the economy, though it is wrong to see defence research as an entirely unprofitable activity. Previous defence research cuts, it is fair to add, do not seem to have produced a substantial civil fall-out.

The document says little about what may be the



most important factor in Britain's economic development—the rate of investment in new plant and equipment. For too long investment in Britain has been insufficient. Economic growth at the upper end of the scale—4 per cent a year or more—will be possible only if there is a substantial increase in investment, as the document admits. But it produces no recipe for encouraging investment by private industry, beyond what is already provided by the regional economic policy.

## UNIVERSITIES

### Expansion Slowed Down

BRITISH universities can expect an average annual growth rate in the next few years of only three per cent—just under a quarter of that enjoyed over the past five years. The University Grants Committee reveals this in its *Annual Survey for 1967–68* (HMSO, 2s 3d), the first year of the new quinquennium. In 1967–68 there were 200,121 full-time students, which was more than the emergency expansion target of 197,000 set by the Robbins Committee in November 1963. This means that in the past five years the universities have expanded at an average rate of 13 per cent a year, but between now and 1972 the Government has agreed to an increase of only 20,000–25,000; the crash expansion programme is over.

The survey gives details of the supplementary allocations of funds made to twelve universities from reserves set aside during the initial distribution of the quinquennial grant, and of the £286,400 spent on “pump-priming” projects involving collaboration between universities and industry. Up to October 1968 the UGC's Sub-Committee on University/Industry Collaboration had received twenty-six applications and approved seventeen of them, ranging from the appointment of an industrial liaison officer at Oxford and Surrey to the initiation of a new type of interdisciplinary PhD course at Aston.

The effect of inflation on university recurrent grants, which are decided five years in advance, is particularly serious at times of economic squeeze. As a result the committee has decided to adopt a procedure for considering each year the extent of inflation so that it can if necessary ask the Government for further funds. After consultation with the Department of Education and Science, the committee has agreed to review the situation each September, relying heavily on the Index of University Costs (now maintained by Professor J. A. C. Brown of the University of Bristol) so as to be able to make submissions to the Government at the beginning of the academic year in October.

The distribution of departmental expenditure derived from the returns for 1966–67 is shown in the table. Since the 1966–67 academic year the UGC has also asked the universities to show the apportionment of academic staff time between undergraduate and postgraduate teaching, research and administration. But because of the misgivings of the Committee of Vice-Chancellors and Principals about the reliability of the returns, the UGC has agreed in principle to drop this line of enquiry. Instead it will accept the vice-chancellors' suggestion of a much more thorough enquiry addressed periodically to a sample of Britain's academics. During the year the UGC and the vice-

PERCENTAGE DISTRIBUTION OF DEPARTMENTAL EXPENDITURE

	1966–67			
	U.g. teaching %	P.g. teaching %	Research %	Other %
Arts	50.9	10.5	27.5	11.1
Social studies	44.7	15.9	27.1	12.3
Education	9.7	55.3	21.7	13.3
Physical sciences	33.2	20.8	35.2	7.8
Biological sciences	38.8	17.5	35.3	8.4
Engineering	43.9	19.7	28.1	8.3
Pre-clinical medicine and dentistry	39.7	13.9	38.7	7.7
Clinical medicine	21.2	19.6	33.8	19.4
Clinical dentistry	51.7	9.1	26.0	13.2

chancellors also reached agreement about setting up a central record of all university students and staff. By 1973 it is hoped that the University Central Council on Admissions will have a computerized record of all students and most staff. A policy group consisting of representatives of the UGC, the DES and the vice-chancellors will consider requests for access to the record.

The painful results of the Government's cutback in capital expenditure are saved to the end of the report, which is Sir John Wolfenden's swansong as chairman of the UGC. In January 1968 the Government announced a reduction of £3.25 million spread over the academic years beginning in 1968 and 1969. To effect these savings the UGC deferred by a year £5.5 million of building work. Then in July 1968 the UGC was asked to prune capital expenditure yet again. As a result of its letter of August 1 to the vice-chancellors, £10 million of work was deferred for a year, and as a consequence the projects scheduled to begin in 1969–70 had to be completely revised to keep below the limit of £29 million set by the Government; in the three academic years from 1967–69, capital spending will amount to £79.6 million instead of the £95.1 million originally expected.

## RESEARCH COUNCILS

### Growth Rates Confused

THE Vote on Account, an annual exercise in confusion organized by the British Treasury apparently for its own amusement, has once again contrived to give the wrong impression. The figures published last week for research council budgets in *Nature* (221, 790; 1969) are not directly comparable; the 1968–69 figures are

	1968–69 (£ million)	1969–70 (£ million)	Increase in real terms (per cent)
Science Research Council	42.127	45.844	3.8
Medical Research Council	15.311	17.141	6.6
Agricultural Research Council	13.483	14.663	0.8
Natural Environment Research Council	9.193	11.725	20.4