

sponses from eighteen individuals and groups to its invitation to submit proposals for five year programmes of research in surface physics. The surface physics panel narrowed this number down to nine which it considers "timely and promising" and the physics committee has awarded grants totalling more than £200,000. Although the committee says that the door is not shut to other applications for support in surface physics, it is clear that the present level of support is considered to be sufficient.

The panel came to the conclusion that there is a particularly promising future for surface physics because of the many experimental and theoretical techniques which have been perfected during the past few years. Not least among these is the ability to produce and maintain ultra high vacua ($<10^{-10}$ mm Hg) in large metal systems so that surfaces can be

created and examined under extremely clean conditions. Two of the chief surface probing techniques now in extensive use are low energy electron diffraction and reflexion high energy electron diffraction which are used respectively for examining bulk surfaces and films.

The panel sees the detailed understanding both of clean surfaces and of the changes produced by the sorption of gas and the deposition of other layers as a vital basis for future interdisciplinary research in fields such as gas-surface interaction chemistry and corrosion studies. The last of these is particularly topical because of the recently published Hoar report (*Report of the Committee on Corrosion and Protection*, HMSO, 1971; 80p) which highlighted the costs of corrosion and the enormous savings which could quite easily be made (see *Nature*, 230, 6; 1971).

Parliament in Britain

Higher Education

MRS MARGARET THATCHER, Secretary of State for Education and Science, said in reply to a question from Mr David Lane, that the government has no intention at present of issuing a green paper on higher education. She had earlier told Mr Edward Short that she cannot yet say when the government will be in a position to issue a statement on the restructuring of higher education, but that the government is now considering the problem of co-ordinating planning in relation to the polytechnics.

Mr Judd suggested that a major social problem in Britain is that many of those who go through the higher education system find difficulty in communicating with the majority of the population. He wondered whether exposure to work before going on to higher education would ensure that students make better use of their education and that they might later become more useful leaders of society. Mrs Thatcher agreed that there should be as much opportunity as possible for spending some time in employment between school and university, but pointed out that it would not be possible to legislate for this. (Written and oral answers, March 4.)

Advanced Gas Cooled Reactors

MR NICHOLAS RIDLEY, Under-Secretary of State, Department of Trade and Industry, said that so far no advanced gas cooled reactors have been sold abroad. Licences for the system have, however, been taken out by German and Japanese firms. Mr G. Elfed Davies had asked what have been the benefits of development of the advanced gas cooled reactor in terms of overseas business. Mr Ridley assured him that development of AGR technology has been instrumental in securing overseas business in oxide fuel manufacture, reprocessing and ancillary equipment. (Written answers, March 1.)

Students' Grants

STUDENT grants are at present under review to determine the rates payable from September 1, 1971. But Mr David Clark and several other members asked whether there could be an interim increase to obviate the effects of inflation since the last increase. Mrs Thatcher replied that the review procedure for negotiating student grants is strictly laid down, and should not be broken. Mrs Thatcher also said that the review applies to first degree or equivalent courses at universities, colleges of education and technical colleges. (Written and oral answers, March 4 and 5.)

Miscellaneous Intelligence

It now seems that the age of a pilchard can be determined, from a measurement of the size of the bony structure known as an otolith found in its ear, as accurately as the age of a tree can be told from its growth rings. The Division of Sea Fisheries at Cape Town, which has a straightforward commercial interest in the pilchard fishery off the coast of South Africa, has been able to collect enough otoliths at different seasons of the year to show that this structure is increased in size by one layer each year. What seems to happen is that the otolith grows steadily, but that the material added during the winter months is transparent and that added during the summer is opaque. This all fits in well with the way in which the central region of each otolith suggests that it was formed during the winter, which is when the pilchards would have been larvae. As luck will have it, the correlation between the length of a fish and the length of its otolith is such as to warm the heart of a statistician, from which it follows that the length of a pilchard can be taken as a fairly unambiguous function of its age t in years given by $30.6(1 - e^{-0.2247(t+1.505)})$. On this basis, the length of the largest possible pilchard off the coast of South Africa should not exceed 31 cm in length. This is something for local fishermen to work towards.

THE bookshop at the Imperial College of Science and Technology is less mysterious than similar organizations elsewhere. It seems also to be thriving. Turnover increased between 1969 and 1970 from £39.6 thousand to £57.7 thousand. The price paid for the books sold for 1970 seems to have been 77 per cent of turnover, which suggests that

the bookshop has some way to go in extracting better discounts from its suppliers. The operation as a whole seems to have finished up with a profit of more than 10 per cent, something that even successful bookshops would be proud of these days. The various student unions linked with Imperial College benefited to the tune of £4,000 in 1970. In this as in many other respects, Imperial College seems to be doing well—indeed, the college as a whole managed to make a profit on most of its halls of residence and to increase its assets from £29.5 million to £32.3 million. At this rate, the college will quickly become what some consider it to be already—the tail that wags the dog.

THE Department of Education and Science, in the January issue of *Trends in Education*, has some gentle propaganda for the benefit of aircraft as a means of studying the environment. Mr J. C. Jennings, an inspector of schools who began life as a historian, argues the case for hiring aircraft at £3.00 per pupil hour to carry out a variety of observations from the identification of old patterns of agriculture and motte and bailey castles to the study of meteorology. On the principle that there is nothing new under the Sun, many past students of the University of Edinburgh will point out that the use of aircraft for student instruction was pioneered by the late C. T. R. Wilson, who was a great enthusiast for transporting students about Scotland in military aircraft. All those who travelled with him were aware that no amount of air sickness on their part would diminish his enjoyment of a journey.