

The forty qualified staff at Harwell, roughly a third of whom hold permanent MRC appointments, have by all accounts taken the news calmly enough; they may even feel relieved that the months of rumour are at last over. As one of them said, they do not feel—at least not yet—that there is a chopper hanging over their heads, and the council has assured them that the time scale of the run down is such that none need feel panic. Everything will be done to ensure that the staff are given time enough to find new jobs even if they cannot all stay in the employment of the MRC. And although the unit's director, Dr Loutit, reaches retirement age next year, he will probably have his appointment renewed on a yearly basis during the run down, for the MRC has made no suggestion of a successor.

But it is futile to pretend that the atmosphere at the unit, with its proud record, has not suffered. One observation in particular in the Paton report has hurt more than most; it is the suggestion that the universities would be better places in which to do fundamental radiobiological research. The MRC is quick to point out, however, that that is no disparagement of what the Radiobiological Unit has achieved but simply reflects the belief that the situation has changed greatly during the life-time of the unit.

By 1975, the twenty-strong unit will also have undergone a change in the overall direction of its work. As Dr Gray said, the emphasis at the unit will gradually be changed from basic to more applied radiobiological protection research. By all accounts, the space vacated as the unit contracts is to be allocated to a new Government organization to be known as the Radiation Protection Board, yet to be established. The intention is to amalgamate the Radiological Protection Service, which is currently financed jointly by the MRC and the Department of Health and Social Security and housed at Sutton in Surrey, with the Atomic Energy Authority's Health and Safety Branch. The board and the unit will then be able to work side by side, the board being responsible for all the Government's protection services, which range from the film badge service to advice on radiological problems. The Institution of Professional Civil Servants and members of the AEA's Health and Safety Branch have apparently been notified of this impending reorganization.

What about the MRC's other units working on radiobiological problems? For the next five years at least, the Environmental Radiation Research Unit at Leeds looks like being unaffected by the changes at Harwell, but thereafter it would not be surprising if there were some reorientation of its work. Now that the emphasis in the MRC has shifted towards clinical research, it would be natural if the MRC units at Hammersmith Hospital—the Experimental Radiopathology Research Unit and the Cyclotron Unit—were expanded or new units set up there, and it is certain that the new Clinical Research Centre will undertake some radiobiological research.

#### SHIPBUILDING

### Cunard Turbines Examined

THERE will be widespread relief that the affair of the QE2 has at last reached the stage of an independent investigation. The three companies involved in the dispute—John Brown Engineering, Cunard and Upper



Sir Arnold Lindley.

Clyde Shipbuilders—have all agreed to the appointment of Sir Arnold Lindley as investigator, but it is likely that rough seas lie ahead. Sir Arnold, as president of the Institution of Mechanical Engineers, is admirably suited to act as an independent judge. It will be a great achievement if he can devise an assessment of the turbine troubles to satisfy all three parties. The Minister of Technology, Mr Anthony Wedgwood Benn, has asked Sir Arnold to examine reports from all three companies on the faults which arose in the turbines during the recent trials of the QE2, and to assess the remedial measures that John Brown Engineering has since taken. Sir Arnold will start work immediately, and will have access to all the resources of the Ministry of Technology, including the National Gas Turbine Establishment and the National Engineering Laboratory. One complicating feature of the affair is that the turbines were originally designed by the Pametrada organization at Newcastle upon Tyne, which was disbanded just a year ago.

#### AVIATION

### Virtue from Necessity

THE British aircraft industry is in a somewhat delicate condition. Three projects—the BAC 3-11, the European Airbus and the multi-nation combat aircraft—await Government decisions, and the Ministry of Technology will also have to make up its mind about Concorde, and about two projects for vertical take-off passenger aircraft which have been put to it. On these decisions hangs the future of much of the British aircraft industry. Timing its publication with more than usual skill, the Society of British Aerospace Companies last week issued a pamphlet which sets out an unashamedly partisan view of the industry's success in the past few years, and produces proposals for the future.

The first part of the pamphlet proves to its own satisfaction that the British aerospace industry has done a remarkable job. This is done by first dismissing comparisons based on net output per man ("a poor measure of efficiency") or on annual growth rates ("meaningless, since the recent statistics are greatly influenced by Government policy towards military

procurement"). Indeed, by a logical twist of which Cardinal Morton would have been proud, it suggests that a low output per man (one third of the American figure) actually offers the British industry a "most powerful advantage" in a "skill-intensive" industry. Without going into any detail, it reports the results of a study which suggests that British costs are very much lower than American ones; on a run of fifty aeroplanes, the advantage is 40 per cent. An aircraft which in Britain would break even on a production run of 130 would need a run of 410 in the United States. "With anything like a comparable run, the British cost advantage is very great", it declares.

It continues in the same vein, showing that Government money invested in the aircraft industry is well spent. The ratio between net aid and sales for the VC 10, the Trident and the BAC 1-11 series is 1 to 14.5. This would have been even better if the VC 10 and Trident had not been tailored so closely to British airline requirements—or even worse if the Concorde had been included. But it was omitted because, says the pamphlet, "it was realized from the outset that although it would achieve very large export sales, it was not a commercial venture in the normal sense". It is a pity that the SBAC did not share this realization with the public a little sooner.

This knockabout stuff sets the scene for the second half of the pamphlet, which tells the Government where it should spend its money next. The answer, unfortunately, is not very helpful, for the SBAC is in favour of supporting almost every kind of aircraft it is possible to think of. In the civil field, for example, it favours supersonic transports, short/medium range subsonic transports, V/STOL inter-city transports, medium size short take-off transports, turbine powered executive aircraft, and light transports for short-range freight and passenger operation. The military list is almost as comprehensive; about the only thing the SBAC fails to mention is the dirigible. In space, oddly enough, its heart and that of Mr Wedgwood Benn seem to beat as one; it favours fewer international obligations, more emphasis on applications satellites, and the development of a European launcher only as a long term project. As a declaration of self-confidence and enthusiasm the pamphlet is a complete success; but it leaves the Government to make the difficult decisions.

#### UNIVERSITIES AND GOVERNMENT

### Hand in Glove

THE University of Surrey and the Ministry of Technology's Royal Aircraft Establishment (RAE) have formally joined forces in research and teaching in a number of departments of both organizations. This is the fifth of a series of links formed between British universities and Government research establishments and is possibly the most far reaching in its arrangements for collaborative higher degree work.

During the five years for which the agreement will initially run, joint research programmes will be set up in which part of the work will be done at the RAE and part at the university. The projects will in general be selected from those areas involving long term interests to the RAE where the university has or expects to have special expertise—these include electrical and control engineering, civil and mechanical

engineering, materials technology and computing techniques. So far only about 60 per cent of the university has moved from the site at Battersea to Guildford, conveniently near the RAE, but, when the rest moves, departments such as the linguistics department, which offers intensive language courses, may become involved.

A joint RAE-university advisory board has been set up under the chairmanship of Mr R. J. Lee, the deputy director of RAE, and Professor D. R. Chick to initiate new joint projects and to carry out annual reviews of existing programmes. No attempt will be made rigidly to define the extent of the programmes.

RAE staff members will be able to work for higher degrees—M.Phil or PhD—from the university through any mutually acceptable research work, whether it is part of a joint research programme or not. They will also be encouraged to join the university Senior Common Room and any appropriate committees, while university members will be able to serve on the RAE planning bodies concerned with their work. Arrangements will be made for seconding members of staff of the university to RAE and vice versa for periods of up to a year. The RAE "will consider sympathetically" applications from research students to carry out their MSc projects at the RAE in areas of mutual interest. Some of the undergraduate sandwich course students will be able to spend their year in industry at the RAE. The university and RAE will cooperate in arrangements for holding specialist and refresher courses.

Schemes for forming links between Government establishments and universities go back to the early sixties. One of the first to be consummated was that between the University of Birmingham and the Royal Radar Establishment, Malvern, which brought about the exchange of three or four officers at a time. Much of the credit for that arrangement goes to Dr George MacFarlane, now Controller at the Ministry of Technology but then head of RRE. A link between the University of Southampton and the RAE was forged in 1966, and the following year the Explosives Research and Development Organization was linked with the University of East Anglia. The University of Surrey is anxious to make quite clear that the scheme now set up is more intimate than its predecessors. Whether it will be the first or the last of its kind is another matter. In spite of the platitudes of the Sutherland Committee, which reported on the relationship between Government establishments and the universities just two years ago, it is now more than likely that the Ministry of Technology is more anxious to have links with industry than with the universities.

#### PLANNING

### City for Learning

MILTON KEYNES, the new city planned in an area of north Buckinghamshire about midway between London and Birmingham, moved a step nearer reality last week with the publication of the interim report of the consultants to the development corporation, Llewelyn-Davies, Weeks, Forestier-Walker and Bor. The planners aim to create a city for 250,000 people by the end of the century on a 21,000 acre (8,863 hectare) site taking in the existing towns of Bletchley, Wolverton and Stony Stratford and some other small villages including the one after which the city will take its