

East, but this only points the moral that the way in which the nuclear powers should try to prevent others imitating them is one which requires special attention to all the special problems which exist. One of the mistakes of the past few years has been the ready assumption that everything could be done with a single scrap of paper.

The latest fuss about the way in which the governments of Britain, West Germany and the Netherlands have reached some informal understanding about the development of gas centrifuges for uranium enrichment is another illustration of this point. In reality, of course, the tripartite nature of the development work is as likely to be a brake on its use for military purposes as an opportunity for, say, West Germany to make nuclear weapons for itself. Indeed, on this issue it is hard to think that the three nations have chosen a prudent course of development for themselves. In the long run, the price of enriched uranium is likely severely to be undercut by the price of plutonium from fast reactors. This, too, is also the field in which old-fashioned diplomacy is likely to be more effective than formal agreements. If the nuclear powers seriously wish, however, to reach some further treaty on arms control, the best bet after an agreement on anti-ballistic missiles would be an extension of the test ban to explosions underground.

NUCLEAR INDUSTRY

Unhappy Risley

MR WEDGWOOD BENN believes that he has done a good job in reorganizing the nuclear power industry in Britain. Many of those more directly involved with the changes disagree, and the Risley Establishment of the Atomic Energy Authority continues to be the centre of discontent. The team there working on the design of the fast reactor, 350 strong, is expected to transfer to the company which has been given responsibility for the prototype fast reactor at Dounreay, the Nuclear Power Group. Originally it was intended that the Risley team should join the other company, British Nuclear Design and Construction (which was called Babcock English Electric Nuclear, BEEN, until the unkind jokes about its name persuaded it to change), but BNDC ultimately decided not to take over the fast reactor.

By and large, the staff at Risley are much happier at the prospect of joining TNPG than they were with BNDC. For one thing, TNPG gives a much more convincing impression of itself technically—it was easily the most successful of the three consortia before the reorganization—and for another the management of TNPG has been quite accommodating so far in the negotiations. “The situation is much better, because TNPG has taken a much more positive approach”, one Risley scientist commented this week. Despite this, there is unrest because the Risley staff feels, quite reasonably, that the new nuclear industry is little different from the old, and certainly no better. “It’s like a lot of staff being transferred to one of the consortia” seems to be a typical reaction. It is no secret that most of the staff employed by the AEA would have preferred a new industry based on one design and

construction organization, and there is reason to believe that Mr Wedgwood Benn himself favoured this solution until it became clear that forcing it through would be something of a struggle. Indeed, when Mr Benn visited Risley last year to implore the staff not to emigrate to the United States, he seems to have left the impression that there would indeed be one organization.

Unfortunately, there is still real doubt about how the development of the fast reactor will be financed. There remains a good deal of fairly basic research and development work to be done before the CEBG is likely to order a commercial fast reactor, and most of this is likely to be done by TNPG under AEA contracts. If the CEBG drags its feet, the Risley scientists are not sure just how keen TNPG would be to maintain the work at a good level. In any case, if the work is being done with AEA money, the team cannot see any great advantage in doing it within TNPG. These are fairly fundamental doubts, which could encourage at least a few of the team to emigrate. This time, Mr Benn’s pleas are likely to fall on deaf ears.

RADIOBIOLOGY

Feeling the Pinch

THE Medical Research Council’s Radiobiological Research Unit at Harwell looks like being the first MRC unit to suffer severely from the council’s current shortage of money and increasing emphasis on clinical research. Last week Dr J. A. B. Gray, the secretary of the MRC, went to Harwell and told the staff of the unit that the council has decided to run down the unit to roughly half its present size over the next few years. Apparently what Dr Gray said was sufficiently ambiguous to leave people at Harwell undecided as to whether the budget or the number of staff is to be halved, but, whatever the truth, most of the economies will have to come from a reduction in staff simply because wages account for 70 per cent of the unit’s budget. Dr Gray was equally vague about the time scale of the run down, but the general impression is that it will be achieved in the next five years.

The council took the decision at its January meeting after considering the report of an expert Committee of Council under the chairmanship of Professor W. D. Paton, professor of pharmacology at Oxford. The Paton Committee, whose report the MRC hopes to publish in due course, was asked to review the state of radiobiological research in Britain financed by the MRC and make some sort of projection for the future lines of development in the next decade. Two factors seem to have spurred the MRC into action at the present time. First, the council had apparently been growing increasingly concerned that radiobiology was taking too large a proportion of its budget at a time when the budget was being held more or less stationary and large commitments such as the new Clinical Research Centre were making themselves felt. Second, declines in the levels of radioactive fallout and international agreements such as the Test Ban Treaty have removed some of the urgency and most of the political pressure for fundamental research into radiobiology. At the same time, however, there is growing evidence of increasing political pressures on the MRC to devote more of its resources during the next decade to clinical research and to opening up new fields such as mental health.

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