

scrapped as a result of CAFD's attentions.

CAFD is also examining the problem of what kind of information should be given in references. Should they contain only matter essential for an assessment of the research and teaching ability of the candidate, or are personal and political details relevant? And there are other matters, such as the need for confidential files, on which the council can comment legitimately and with weight.

CAFD's chief argument is that there is too little democracy in education, especially in the technical and college sectors, and that there is an indisputable need for an independent body to act as watchdog. It seems, for example, that junior members of staff in technical colleges and the like are unaware of their basic rights in matters of teaching and policy, and that there is a great need to publicize the principles of academic freedom. At present the aims and actions of the council seem wholly admirable. But it would be good to see a greater measure of liaison between the council and, say, the DES (which claims never to have received the council's publications), for there is always a need to watch the watchdogs.

## GENERATORS

### More 500 MW Setbacks

BREAKDOWNS of 500 MW generating sets still seem to be plaguing the Central Electricity Generating Board, in spite of some indications towards the end of last year that many of the problems had been solved (see *Nature*, 228, 1246; 1970).

The breakdowns during the winter of 1969-70 were the subject of an inquiry by the Select Committee on Science and Technology (HMSO; 20p) during which it was revealed that as many as twelve of the 500 MW sets were out of use at times near the end of December 1969, when the board was obliged to make 6 per cent voltage reductions on a nationwide scale and the total lost output was 3,670 MW.

More recent figures, for March 15, 1971, show that of thirty-five sets at some stage of commissioning or synchronization, eleven were not available for the delivery of power to the grid. In a few of these cases, the reason is probably a routine inspection, but even a conservative estimate suggests that between 20 and 30 per cent of the 10,000 to 15,000 MW which could be expected from all the sets (taking into account their differing stages of commissioning) was lost on that day, and there is no reason to think that this is atypical. This level does not seem very different from that reported at the end of 1969 and suggests that, far from

being solved, the problems may have become worse.

One crumb of comfort, however, is that the fully commissioned generators at West Burton, which figured among those out of use during the voltage reductions in December 1969, do not appear on the list of those out of use on March 15, 1971. On the other hand, commissioned generators at Eggborough, Ferrybridge (C), Cottam and Ironbridge (B) were out of action in both December 1969 and at March 15, 1971. Of the generators synchronized, but not commissioned at the end of December 1969, two at Aberthaw B still seem to be giving trouble.

The CEBG plans to introduce eleven more 500 MW sets by the end of 1972, and the larger 660 MW sets are to be incorporated into the Hinckley Point B, Hartlepool and Dungeness nuclear power stations. The fate of these larger sets will depend on the extent to which the CEBG has taken to heart the recommendations of the Select Committee which suggested, for example, that design contracts should always be placed for steam raising plant, and that plant should be tested whenever possible before attachment to the national grid.

The troubles with the 500 MW sets have also contributed to the £30 million bill for repair and maintenance, which the CEBG has had to foot during the past year, and were obviously an important factor in the estimated loss of more than £10 million which the board is thought to have made. It can only be hoped that continuing troubles with the 500 MW sets will not become, as seems possible, a permanent feature of the British electricity supply industry.

## NUCLEAR POWER

### Ship Comes Home?

THE British government's confirmed belief that nuclear shipping is uneconomic was repeated last week by a committee set up by the Department of Trade and Industry six months ago (*Report on the Nuclear Ship Study*, HMSO, 70p). The report itself is the work of a study group set up by the old Ministry of Technology after an approach from shipbuilders anxious to find out whether nuclear shipping would have a future. The nub of its essentially sceptical commentary on the question, consisting largely of a detailed calculation of the comparative performance of nuclear shipping and oil-fired vessels, is that nuclear reactors are by comparison with oil-fired turbines uneconomic and economically risky.

The report of the committee says that pressurized water reactors with low enrichment fuel are the best sources of power. Many readers of the report will

be surprised to learn that some of the most advanced studies so far available have sprung from the Anglo-Belgian Vulcain project, which has in particular suggested that the time to develop a 40,000 horsepower unit for driving ships will be comparatively short. Even so, it is reckoned to be 7½ years from the start of a development programme to the commissioning of a prototype ship, and production of commercial ships would follow two years later. The cost of a prototype development and construction programme is reckoned to be about £3 million spread over a period of several years—a calculation which assumes that a prototype ship of 40,000 horsepower could be made to earn some revenue as well as to consume nuclear fuel. Similar calculations for conventionally powered ships suggest that they are cheaper to build and operate than nuclear vessels, and in particular freight costs of nuclear shipping would be between 24 and 40 per cent greater than for conventional vessels.

That said, it is unlikely that the latest repetition of the conventional wisdom on nuclear shipping will banish for good and all the optimism of those who argue that in this economic study, it is pointless to compare like with like and that, in particular, the economic advantages of nuclear shipping are the ease with which fast ships can be built and the way in which, in operation, the turn-round time can be cut.

## BSSRS

### Roses On Their Way

HILARY and Professor Steven Rose this week announced their resignation from the committee of the British Society for Social Responsibility in Science. Mrs Rose, who has been chairman of the society for only a few months, and her husband were very much to the fore in laying the groundwork for the policies and progress of the BSSRS. Many aspects of the development of BSSRS have been coloured by their views and there can be no doubt that the society must change in many ways now they have given up the reins.

There have been whispers that the Roses and the rest of the BSSRS committee have not been seeing eye to eye on matters of policy, but Mrs Rose says that disagreements of this sort have played no part in her sudden resignation in mid-session. Having seen the society through the early and difficult years, the Roses say they now feel justified in off-loading some of their committee work to concentrate on writing and other chores.