

components, chiefly nuts and bolts, by the carbon dioxide gas that transfers heat from the reactor to the turbines is certainly more serious than implied by the bland statement of the CEBG that the reactors, although working at reduced power, are still producing electricity at more than the prescribed 75 per cent load factor. The plain fact is that the failure, which is one of basic design, is costing the CEBG about £25,000 a day in extra generating expenses and the situation is unlikely to be remedied for many months ahead.

Why has such a basic design weakness only now come to light? Was the design team responsible for the Magnox reactors taking a sensible risk or a wild gamble in advocating the use of these mild steel components in an environment of carbon dioxide at the elevated temperatures of the Magnox system? And what would have happened if the CEBG had not smelt a rat in its inspection of Bradwell station last year?

The CEBG is, naturally enough, taking refuge in the experimental status of the Magnox programme when it was conceived. It was accepted practice, according to the CEBG, to assume that mild steel parts would endure the thirty year life-span of the reactors without corroding, and it was only when sample baskets were removed from the Bradwell reactor last year that the possibility of a serious defect was realized. A different mild steel was involved there, but attention soon switched to the other components and the corrosion was discovered. Of the seven Magnox reactors operated by the CEBG, only the one at Berkeley, which runs at a lower temperature, was found to have escaped unscathed.

Fears that the advanced gas cooled stations may be blighted by the same trouble are thankfully unfounded. Although carbon dioxide is also used in the AGR system, the operating temperature is so much higher that completely different corrosion resistant components had to be used from the outset. The Magnox reactors may now have to be fitted with components of the same design, although it appears that the engineering factors involved in replacing or modifying the bolts, clamps and nuts have not yet been clarified. The CEBG says that it is hard to find the exact temperature conditions which are critical for the steel components because each reactor has its own particular features, and it seems that the CEBG is still groping to find a satisfactory explanation of the mishap.

Although the commissioning of the Oldbury reactor in 1968 marked what must surely be the rounding off of the Magnox programme, the disclosure of the fault has come at an unfortunate time for the nuclear power industry. The new consortia are very conscious of the need to clinch a major export contract soon, and, although both the SGHWR and AGR systems differ markedly from the Magnox design, the lack of a clear explanation for the faults can hardly bolster confidence.

There is also some doubt as to whether the CEBG has been as forthcoming as it might have been about the corrosion faults. The costs of switching the generation of 400 MW of electricity from nuclear to coal stations, as required by this turn of events, may well mount to two or three million pounds, and such sums of money can hardly be swept under the carpet without treading on somebody's toes.

## UNIVERSITIES

### University Statistics

STATISTICS just published by the University Grants Committee indicate that the total number of full-time students at British universities rose from 184,799 in 1966-67 to 200,121 in 1967-68. In the same period, the number of staff rose from 23,609 to 25,353. The 8.5 per cent increase in student numbers was therefore accompanied by an 11.5 per cent increase in the number of teaching and research staff paid directly from university funds, and this maintained the student-staff ratio at about eight to one.

The percentages of students in particular disciplines remained approximately constant during this period, except for the proportion taking arts subjects, which, reflecting the swing towards the arts in the sixth forms, rose from 20.4 per cent of the total in 1966 to 21.3 per cent in 1967. However, the proportion of women in the total reached 27.4 per cent, continuing a slow but steady upward trend, and they showed a greater affinity for arts subjects than the men did—11.1 per cent of the women and 6.0 per cent of the men reading arts subjects. But the most striking comparison is that 22.0 per cent of the men read engineering subjects, compared with only 0.9 per cent of the women, and that this percentage has remained fairly steady for the past few years. The total recurrent expenditure by the universities increased by £17.1 million to £139.5 million, while non-recurrent expenditure fell slightly from £79.9 million during the 1965-66 academic session to £79.4 million in 1966-67. These figures represent total university expenditure, towards which the Government provided £220.8 million, the rest being supplied mainly by industrial research contracts and donations. Salaries swallowed up over one-third of the recurrent expenditure, and departmental expenditure met by research grants took a further 12 per cent.

Figures for university expenditure are now published two years after the session for which they apply, and those for student numbers are one year old. It seems that the reason why they are so late is because of the difficulty in gathering the necessary information and in subsequently compiling the statistics.

## HIGHER EDUCATION

### Talks on Universities

MRS SHIRLEY WILLIAMS, Minister of State for Education and Science, met the Committee of Vice-chancellors and the University Grants Committee last week to talk over the way in which higher education should develop during the next ten years. The talks, which took place at University College, London, were chaired by Mr Kenneth Berrill, chairman of the UGC, and are described as informal by the Department of Education and Science. They are on how the universities can accommodate the expected increase in demand for places in higher education.

Official projections indicate that if children at present in primary schools are to have the same chance of getting to university as the sixth formers now, the numbers of students in higher education, about 360,000, must double by 1980. Expansion of this order is 40 per cent more than that recommended in the Robbins Report, and the DES projections