

Of more immediate concern to the AEC, however, is the possibility that electricity companies will file a suit for losses caused by construction or licensing delays, or for the installation of expensive equipment such as cooling towers. In that case, the AEC would undoubtedly be on very sticky legal ground, for the companies have all proceeded under licences or permits issued legally by the AEC under its old regulations, but they now face the possibility of having those licences modified or revoked because the commission now regards them as inadequate for the protection of the environment. The AEC's policy switch has therefore put both the commission itself, and the industries it regulates, in an extraordinary position, but while the courts are being kept busy, environmentalists can take heart that the new chairman of the commission is not deaf to their pleas.

EMPLOYMENT

**Unemployed PhDs**

by our Washington Correspondent

MORE evidence about the tight job market for those holding a PhD in science has been published this week by the National Research Council. A survey, conducted between December 1970 and March 1971, of scientists who received their PhD degree in 1970, showed that 1.6 per cent were out of work, and that a further 1.2 per cent held jobs for which their academic training was unnecessary. Moreover, there are signs that many more PhDs are looking towards postdoctoral training as an escape from the realities of the job market, but the indications are that they will fare no better when they finally leave the groves of academe, for the National Research Council has discovered that of the PhDs that had been engaged in postdoctoral training

in 1970, 2.2 per cent were unemployed in the following winter and 0.9 per cent were employed in an "inappropriate position".

The results of the survey, which in many respects bear out the findings of an employment analysis conducted by the National Science Foundation (*Nature*, 232, 150; 1971), are a clear indication that the prospect of a dire shortage of PhDs that was predicted for the 1970s has not materialized, and that the universities are already turning out more PhDs than the market can absorb. The Office of Education, for example, predicted in 1964 that there would be a desperate shortage of PhDs by 1974, and a great drive was undertaken in the universities to make up the predicted shortfall. Last year, for example, 29,436 scientists received PhDs—an increase of 14 per cent compared with the previous year. Although, compared with the national unemployment rate, which has been running at about 6 per cent for the first half of 1971, the unemployment rate for PhDs is small, prospects for the rest of the decade look grim. The 1970 figure, for example, showed that the number of scientist PhDs out of work is increasing at an alarming rate (the 1970 figure was double the 1969 total), and the NSF has recently predicted that by 1980, at present rates, there will be about 45,000 more PhDs in America than there are suitable jobs.

The NRC survey has also brought out the fact that physicists are the worst hit single group of scientists, with 2.9 per cent of the PhDs and 3.3 per cent of the postdoctorals out of a job. Mathematicians, geoscientists and social scientists, on the other hand, reported lower than average unemployment rates, with 1.2, 0.7 and 0.5 per cent of their PhDs out of work in 1970. Even these subjects, however, reported greater unemployment rates for 1971 than for the

previous year. There was also a sharp increase in the number of foreign-born scientists unemployed in the United States—the figure rose from 0.9 per cent in 1969 (the same as for US citizens) to 2.3 per cent in 1971 (compared with 1.6 per cent for US nationals)—a figure that can only be partly accounted for by the fact that fewer foreign-born holders of the PhD left after completing their academic training in 1971 than in 1969.

One of the most significant findings in the survey is that the number of new recipients of the PhD who went on to postdoctoral work in the universities in 1970 increased by 4.5 per cent over the 1969 figure. This fact undoubtedly hides much of the unemployment, and disillusionment among PhDs fresh from the university production line, but with few prospects of appropriate employment outside the universities. Moreover, the situation will probably be made considerably worse by the fact that predictions made two years ago by the Office of Education, that graduate enrolment would have risen by 99 per cent by 1980, now seem to be vast overestimates—the NSF, for example, now predicts that the expansion may be nearer 45 per cent—thereby reducing drastically the predicted number of jobs for PhDs in the universities themselves.

The National Research Council itself concludes from the survey that "various market accommodations are undoubtedly responsible for preventing what would otherwise be a gross oversupply". Nevertheless, with an eye clearly on the mandarins in the Office of Education, the NRC says "any deficit of jobs must . . . be a matter of national concern, and reliance solely on market adjustments to an oversupply would be both callous and unwise. The large investment in graduate education and the valuable human resources at stake demand that any underemployment or unemployment of doctorate recipients be corrected".

Percentage Distribution, 1971 Activity of 1969 and 1970 Graduates, by Citizenship, by Gross Field Categories

1971 activity	Citizenship	1969 graduates				1970 graduates			
		EMP*	Bio.	Soc. Sci.	Total	EMP	Bio.	Soc. Sci.	Total
Postdoctoral training	US	8.8	20.8	1.8	9.9	12.4	30.9	3.0	14.4
	Foreign	8.0	15.3	0.4	8.7	13.6	22.1	1.6	13.5
Appropriate jobs in USA	US	82.8	69.8	89.0	81.4	78.4	58.7	88.5	76.5
	Foreign	51.8	31.0	36.7	44.6	47.6	23.7	42.5	41.6
Employed in inappropriate work	US	0.6	1.0	0.4	0.6	1.3	1.2	0.8	1.2
	Foreign	1.3	0.4	0.0	0.9	1.3	2.6	0.8	1.5
Unemployed, total	US	0.7	1.1	1.0	0.9	1.4	1.6	1.2	1.4
	Foreign	0.8	1.3	0.4	0.9	2.7	2.0	0.8	2.3
Left US	US	1.6	2.5	2.4	2.0	2.0	2.7	2.3	2.2
	Foreign	28.8	48.8	54.9	37.4	30.5	44.2	48.5	36.4
All other	US	0.7	0.8	0.3	0.5	1.0	1.1	0.6	0.9
	Foreign	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Unknown	US	4.8	4.0	5.1	4.7	3.5	3.8	3.6	3.6
	Foreign	9.2	3.2	7.6	7.5	4.2	5.3	5.8	4.7
Total No. in sample	US	5,262	2,208	2,296	9,766	5,740	2,429	2,477	10,646
	Foreign	1,190	471	275	1,936	1,420	493	365	2,278

\*EMP, Engineers, mathematicians and physicists.