

Table 2. Breakdown of unemployed by degree

Age	BS/BA	Rate (per cent)	MS	Rate (per cent)	PhD	Rate (per cent)	Less than BS or no report
24 and under	6	7.0	3	4.8			
25-29	134	7.6	195	8.7	14	1.6	3
30-34	71	5.7	161	6.5	64	1.7	1
35-39	36	4.9	60	4.1	53	1.8	
40-44	23	4.2	47	4.6	38	1.6	1
45-49	30	6.0	30	3.3	32	1.7	
50-54	20	5.7	19	3.5	26	2.6	
55-59	6	3.7	8	2.2	13	2.0	1
60-64	3	3.7	5	2.1	11	2.9	
65-69	1	4.2	1	1.1	2	1.0	
70 and over					4	7.3	
No report	2	12.5	1	14.3	1	6.7	
Average		6.0		5.6		1.8	
Total	332		530		258		6

seem to have less of a problem than young PhD chemists, for 3.8% of the PhD chemists in the 25-29 age group are unemployed as compared with 1.6% of this age group for PhD physicists.

Although the rate of unemployment is generally higher for scientists with lower degrees, this trend is especially pronounced for physicists. For while the unemployment rate for BS or BA-degree physicists (6.0%) and for MS-degree physicists (5.6%) is more than three times the rate of unemployment for PhD physicists (see Table 2), the unemployment rate for BS or BA chemists is 3.5%, for MS chemists, 3.5% and for PhD chemists, 2.1%; the unemployment rate for BS or BA engineers is 2.8%, for MS engineers, 3.2% and for PhD engineers, 1.9%.

Despite the low rate of unemployment for PhD physicists as compared to other scientists (as shown by the NSF results), the NRC survey indicates that the percentages of unemployed and underemployed among the 1970 physics graduates were both almost twice those

percentages for all sciences. The NRC survey, conducted in the winter of 1970-71, also surveyed 1969 graduates and found a sharp increase in the rate of unemployment and underemployment of the 1970 graduates over the 1969 graduates at that time. Of the 1287 PhD physics graduates in 1970, 2.1% were employed in positions where their skills were not being utilized, 2.3% were still seeking employment and 0.6% were no longer seeking employment. Of the 1104 graduates in 1969, only 1.1% were underemployed, 1.2% were seeking employment and 0.3% were no longer seeking employment. The larger rate of unemployment for 1970 graduates may indicate a tighter job market, but it is also an indication of the importance of an extra year in obtaining employment.

The AIP survey, conducted in November 1970, concurs with the NSF survey's findings that PhD physicists have less difficulty finding jobs than do physicists with lower degrees; for of the 2700 physicists having job difficulty that

were surveyed, 15% of those with MA degrees and 23% of those with BS degrees were still unemployed after six months of job hunting.

The survey, which focused on 1970 graduates, indicated that a large number of the employed PhD physicists only held temporary postdoctoral positions. However, the majority (214) of the 321 permanently employed PhD physicists who received their degrees in 1970 (and were having job difficulties), were employed in positions that require an extensive use of physics and only 14 did not use their knowledge of physics at all. This distribution was less true for MA physicists, where only 7 of the 44 employed physicists extensively used their knowledge of physics and an equal number did not use physics at all; for BA degree physicists, 18 of the 128 employed physicists extensively used physics and 49 did not use physics at all.

AIP is planning another employment survey to follow up these 1970 graduates and to examine unemployment among the 1971 graduates.

—MW

U of Washington to study science-society links

"Social Management of Technology," a research program at the University of Washington, has been initiated under an initial grant of \$158 000 from the National Science Foundation. The purpose of the program is to develop a model for the interaction of science and society and evaluate how scientific and engineering developments can be steered to meet the social and economic needs of the future. The principal investigator is Edward Wenk Jr, a professor of engineering and public affairs. Ronald Geballe, chairman of the physics department, is one of the co-investigators.

the physics community

Physics teachers find Keller-plan courses work

A recent conference at MIT's Education Research Center on the Keller plan attracted about 350 natural and social science teachers, including 75 physicists. The Keller Plan, a method of self-paced, mastery-oriented instruction has been gaining in popularity among physics teachers, ever since its popularization by Fred Keller, formerly head of the Columbia University department of psychology.

According to Ben Green Jr, staff physicist at ERC who organized the conference, several freshman courses in physics with large enrollments are using the Keller Plan and a greater number of

smaller courses are trying it out.

Under the plan, the coursework for a semester is divided into a number of units, typically 15 to 20, with a study guide for each one. The guide tells what the student is expected to learn in the unit and then suggests ways that he might go about it. Each student proceeds with his work at his own pace, but he is allowed to advance to a succeeding unit only after having passed a brief quiz on the material. Several tests are provided with each unit, and failure on a test is not counted "against" the student; he simply has to study until he masters the material.

At MIT there are Keller Plan sections in six courses. The first semester of a five-semester introductory sequence was taught in the Keller style. Robert Hulsizer coordinated the course for 500 MIT freshmen.

Hulsizer's course involved 14 faculty members, 7 graduate students and 32 undergraduate tutors, who worked for academic credit. The course work was divided into 17 units and students were required to pass tests on each one to get a passing grade in the course.

How did it go? "I'm completely sold on it," Hulsizer told us, "I think it's far more successful than a recitation section