

decisively approved a motion disapproving of integration.

Shortly thereafter, the trustees reaffirmed their 1963 policy position, and last September the first two Negro students were admitted. The Furman administration and the trustees gained the faculty's confidence by this show of independence. According to a leader of the Furman chapter of the American Association of University Professors, faculty support for President Blackwell and the trustees continues strong to the present, even though the convention forced a compromise last November on the issue of facilities grants.

Blackwell says that he and the trustees—7 ministers and 17 Baptist laymen—were almost unanimously prepared to disregard any convention directive barring the acceptance of the grant. However, they found it impolitic to reject the proposal that emerged from discussions between their representatives, the convention leaders, and the leaders of those opposed to accepting the grant. The proposal was for the convention itself to provide the \$612,000 toward the science building. "It seemed untenable to say that we preferred federal dollars to Baptist dollars," Blackwell told *Science* recently.

Furman has agreed not to apply for another facilities grant during the next 2 years. By 1968 a convention committee now making a study of church-state relations and the federal grant issue will have reported, and, possibly (though this is a long shot), the convention will have agreed that the grants are not the curse it once thought.

If the college has grounds to hope that the convention will change its mind, they may lie in the fact that the convention is in a fair way to discover that raising an extra \$612,000, in addition to the collections needed for its regular commitments, is a troublesome endeavor. Such a sum was borrowed and given to the college; now a special drive is under way to raise the funds needed to repay the debt. The minister who was the most active in stirring up opposition to the facilities grant is leading the drive. At last report only \$39,000 had been raised and some qualified observers doubt that more than half the target figure will be collected. It is possible, of course, that failure of the fund drive simply would discourage more special gifts, without leading those opposed to federal grants to abandon their position. Indeed, some conservative churchmen among the Southern Baptists have been suggesting

that Baptist colleges should retrench, reducing their course offerings and increasing class sizes.

If there is to be an unshakable church commitment to progress at Furman and the other leading Baptist institutions, a large effort to inform Baptists of the needs of their colleges will have to be undertaken. That much is clear, for old prejudices among Baptists are slow dying, as evidenced by the fact that, even today, many Baptist institutions could bring down the wrath of their state conventions merely by lifting the ban against dancing on campus.—LUTHER J. CARTER

Ph.D.'s: Study Traces Their Path from Sheepskin to 25 Years Later

More Ph.D.'s in this country work in colleges and universities than in any other type of organization, according to a recent report by the National Academy of Sciences.* The report is the first in a series of scientific manpower studies NAS began in 1962 under contract with the National Institutes of Health. About 59 percent of the more than 10,000 Ph.D.'s represented in it are in academic positions. Of the rest, 15 percent are in business and industry and about 8 percent are with the federal government. The remaining 18 percent or so work for "all other categories" of employers; this includes the self-employed as well as those who work for foundations and other non-profit institutions, and the approximately 3 percent who have jobs in foreign countries.

Data on Ph.D.'s who had earned the doctorate in any field in specified years between 1935 and 1960 were included in the report. The subjects of the study were asked, in questionnaires, what they had been doing in every 5th year since graduation; they were requested to tell where they had worked, and at what, and to give their salaries, their place in the academic hierarchy, and an indication of their family background.

Their answers show that, since 1935, each new generation of degree-recipients has devoted more time to research than the preceding generation did. Ph.D.'s have always tended to specialize in teaching, or research, or administra-

tion, although they have generally divided their efforts among all three. But, except for the 1950's, when the flood of ex-servicemen into the colleges brought a call for more new teachers, the trend has been toward emphasis on research.

For example, people who received the Ph.D. in 1935 devoted most of their time (46.8 percent) that year to teaching, less time (35.8 percent) to research (the figures are averages). By contrast, the 1960 degree-recipients spent most of their time (48.5 percent) in research and one-third in teaching.

As their careers develop, Ph.D.'s devote less time to teaching and research and more to administration. The 1935 Ph.D.'s spent only 8 percent of their time in administrative work their first postdoctoral year. By 1960 these individuals were devoting more time (an average of 32.2 percent) to administration than to either teaching (31.5 percent) or research (26.5 percent). The 1960 degree-recipients spent 10 percent of their time on administration in their first postdoctoral year; within 2 years, the study found, they were devoting 12.5 percent to administrative duties.

Herbert Rosenberg, chief of the resources analyses branch in NIH's Office of Program Planning, commented on NIH's interest in the report's discussion of women in the sciences. Traditionally, he pointed out, emphasis has been placed on convincing and helping women who already have their Ph.D.'s to return to work after periods of professional inactivity. Yet, it is also important that an effort be made to keep women graduate students, at all levels, from abandoning their degree programs when they marry and start raising children. Although a significant proportion of first-year graduate students are women, the attrition is high, and women comprised only about 10 percent of the Ph.D.-holders included in the study. Rosenberg said a major reason for the women's high dropout rate is the difficulty of making satisfactory arrangements for the care of their small children. He said that the universities could help solve this problem by adding child care centers to their existing nursery, elementary, and secondary school facilities. Such centers would serve a double purpose—besides allowing mothers to attend class, they would be an ideal source of training for students of child development.

Women Ph.D.'s, single or married, spend more time in teaching and less

* "Profiles of Ph.D.s in the Sciences: Summary Report on Follow-up of Doctorate Cohorts 1935-1960," by L. R. Harmon, Director of Research, Office of Scientific Personnel, NAS-NRC. Available from the Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418. \$2.50.

Table 1. Percentages of Ph.D. holders in various geographic locations at three stages of their careers.

Career stage	Geographic location					
	New England	Middle Atlantic	Middle West	South	West	Foreign
<i>Total, all graduation years covered</i>						
Received doctorate	13.1	22.2	40.4	12.2	12.1	
First job	8.6	20.1	27.6	23.2	14.8	5.5
Present job	7.3	19.7	25.0	24.1	18.2	5.6
<i>1935 and 1940</i>						
Received doctorate	15.4	23.4	42.1	9.8	9.3	
First job	8.8	22.4	30.5	22.8	11.9	3.5
Present job	7.5	21.0	25.8	25.1	16.8	3.8
<i>1945 and 1950</i>						
Received doctorate	14.2	23.2	41.0	10.2	11.4	
First job	9.3	19.5	28.3	22.5	15.3	5.1
Present job	7.3	19.0	25.4	23.6	20.0	4.7
<i>1955 and 1960</i>						
Received doctorate	10.8	20.5	38.7	15.3	14.7	
First job	8.0	19.0	25.1	24.1	16.5	7.2
Present job	7.2	19.3	24.0	23.7	18.4	7.4

in administration than men do, the study shows. And single women, probably because of the greater continuity of their professional careers, do more administrative work than married women—over half of whom, the report says, do none at all. When women who have interrupted their careers return to their professions, it is usually to teaching or research positions, seldom to the teaching-research-administration combination more characteristic of men, or of women whose careers have not been interrupted.

In its treatment of job mobility, the report indicated a tendency for Ph.D.'s to work outside the geographical regions where they earned their degrees. Table 1 gives the U.S. distribution (in percentages of all Ph.D. recipients for a given pair of years) of Ph.D.'s at three stages of their careers—when they received the doctorate, at the time of their first job, and at the present time; it also shows the percentage who are now working abroad.

Besides job mobility, the report covered what it termed "social mobility"—the finding that each new student generation is drawn from a broader social base than its predecessor. Most Ph.D.'s, and most graduate students, still come from families that are above the educational level of the population as a whole and, in a large number of cases, from parents who are in the professions. As education has become more widely available, however, and the educational norm of the population has risen, people from nonprofessional and lower-income families have earned an increasing percentage of the doctoral degrees.

In a discussion of how Ph.D.'s financed their graduate education, the report stated that sources of support have "changed considerably over the past 25 years" and remarked on the "massive growth in federal support." The figures it used to describe this surge, however, seem startlingly low. In the biomedical sciences, for instance, government agencies (apart from the Veterans Administration, which was considered separately in the report because of its special position after World War II) provided, on the average, only 1.2 percent of the support in 1935 and 1940 to Ph.D. recipients in those years. Federal funds provided 13.7 percent of the support to biomedical sciences Ph.D.'s in 1955 and 1960. While this increase can certainly be described as "massive," the figures nonetheless indicate a surprisingly small total of government aid in those years. The same can be said of the increase in support for other fields. For example, federal aid to degree-recipients in the physical sciences grew from 0.4 percent to 16.3 percent during the 25-year period. And aid to mathematics Ph.D.'s increased from 0.2 to 12.8 percent. All the averages, of course, are based on the Ph.D.'s own recollections of how much he received and from whom.

Although the universities were cited as having given most aid, the report pointed out the possibility of a "confusion of sources"—that is, some of the money the recipients received from their schools may in fact have originated in government grants received, disbursed, and administered by the institutions. If there was confusion of

this kind—and if it was sufficiently widespread—it probably caused an inaccurate showing of university-versus-government support.

The statistics on postdoctoral training during the 25-year period quite expectedly show a decrease in university support from about 50 percent to 14 percent of the total and a drop in the foundations' share from 30 to 11 percent; these decreases were coupled with a tremendous increase in government aid. Support from the Public Health Service alone increased from 2 to 40 percent, and NSF's contribution jumped from 1 to 15 percent of the total awarded for postdoctoral education. Support from other federal agencies has also grown.

In the final chapter of the report, salaries of doctorate holders are discussed. As one might expect, each new Ph.D. generation starts out with a larger salary, gets raises sooner, and has a higher earning potential than its predecessor. In almost all fields and age groups covered, the Ph.D.'s who spent most of their time teaching received the lowest average salaries, those in administrative jobs were the most highly paid, and those in research or in teaching-research posts were somewhere in between on the salary scale.

—MARION ZEIGER

National Academy: Annual Meeting Includes Elections and Awards

The National Academy of Sciences, during its annual meeting this week in Washington, presented the following awards and medals:

U.S. Steel Foundation award for distinguished research in molecular biology: Norton D. Zinder, Rockefeller University

Public Welfare Medal, for eminence in the application of science to the public welfare: John W. Gardner, Secretary of Health, Education, and Welfare

Alexander Agassiz medal, for original contributions in the science of oceanography: Carl Eckart, University of California, San Diego

James Craig Watson medal, for noteworthy astronomical discoveries or research: Wallace John Eckert, IBM Watson Laboratories

The Kovalenko medal and award, for contributions to medical science, was presented posthumously to Rufus Cole, member emeritus of the Rockefeller University, who died 20 April.

Also during the meeting, Harrison