U.S. faces shortfall of Doctorates in Natural Science and Engineering

February 16, 1989

Contact: Yvonne Baskin, (619) 534-3120

EMBARGOED FOR NOON (PST) RELEASE THURSDAY, FEB. 16, 1989

U.S. FACES DEVASTATING SHORTFALL OF DOCTORATES IN NATURAL SCIENCE AND ENGINEERING, UCSD CHANCELLOR WARNS

SAN FRANCISCO -- Devastating consequences await the nation's business, industry and universities unless government action is taken now to increase the supply of Ph.D.s in the natural sciences and engineering, according to Richard C. Atkinson, chancellor of the University of California, San Diego and president of the American Association for the Advancement of Science.

In remarks prepared for delivery Thursday to the Regents of the University of California, Atkinson said that state and federal programs of the scope initiated in the wake of Sputnik must be undertaken immediately.

If this is not done, "by the early years of the next century the annual supply of Ph.D.s in natural science and engineering available to the nation's workforce will be about 10,500 versus a demand for about 18,000," he noted. "This imbalance will have devastating consequences for colleges and universities and for business and industry.

"What might be called 'market solutions' via the private sector can play only a limited role, will be too late in taking effect and have the potential for undermining our economy and national defense."

Atkinson proposed immediate establishment of a National Fellowship Program for Graduate Students similar to the National Defense Education Act programs created after Sputnik. The fellowships would provide $25,000 per year for four years of graduate study. At least 3,000 new fellowships per year would be needed, at an annual cost of $300 million.

"This is a small investment for the United States, given the seriousness of the problem," he said. "Do we, as a nation, have the ability to address the problem in a timely manner, or will we delay until it is too late?"

The onset of this gap between supply and demand for Ph.D.s "will be rather sudden and will become apparent in about five years," he said. "Steps to deal with the shortfall should have been taken years ago. Since we are starting late, our efforts will have to be even more vigorous."

Atkinson, former director of the National Science Foundation, based his analysis on data and reports prepared by the NSF, the National Academy of Sciences and the National Academy of Engineering.

"Currently the country employs approximately 12,500 new Ph.D. scientists and engineers per year--approximately 5,000 in universities, 6,000 in industry and the rest in federal, state and local government," he noted.

By the year 2004, he projected, American business, industry and government agencies will need about 9,500 new Ph.D. scientists and engineers a year.

Demand for new engineering and science Ph.D.s in academia has been declining since 1977, Atkinson noted, but that decline "will reverse itself within the next five years, resulting in a sharp increase in demand for new Ph.D.s in the early years of the next century."

One cause for this upswing in academic demand will be the retirement of large numbers of scientists and engineers trained and hired in the post-Sputnik years.

A second factor is that college enrollments are also projected to jump starting in the year 2000 as the baby boom of the 1980s swells the population of 18- to 24-year-olds.

"Assuming that the percentage of the age group entering college does not change appreciably, and assuming current faculty/student ratios, academic demand for new Ph.D. scientists and engineers will almost double between 1988 and 2004 to about 8,500 per year," he projected.

Where will the supply come from to meet this overall demand for 18,000 new Ph.D.s a year? Since the boom in the college-age population will not begin until the turn of the century, the demand can only be met by encouraging an ever-larger proportion of students at all levels to choose careers in science, he noted. The young people who will be receiving Ph.D.s in 2004 are already in junior high school.

If graduate enrollments are not increased, the nation will be producing about 12,000 Ph.D.s a year in the natural sciences and engineering by 2004, and 5,000 of those will be foreign nationals. Even if 70 percent of these foreign nationals accept employment in the United States, Atkinson projects a supply of only 10,500 Ph.D.s a year by the year 2004. "The shortfall of 7,500 is greater than the number of U.S. citizens projected to receive Ph.D.s," he noted.

Although his analysis focused on the natural sciences and engineering, Atkinson said he believes a similar situation holds in the social sciences and humanities.

(February 16, 1989)