

More foreign students enroll, but only some stay to work

For several years the enrollments of foreign students in US graduate physics programs have been climbing. The latest *Graduate Student Survey* of the AIP Manpower Statistics Division might quell anxiety about foreign competition in a declining job market. A new table demonstrates that many foreign students are not competing for jobs with US PhDs.

Each succeeding cohort of graduate students includes more foreign citizens. They comprised 40% of the 2630 first-year physics graduate students in the US in 1982-83, up from 37% the previous year. Noncitizens were over 30% of all (10 173) physics graduate students. They were almost one-quarter of the 912 new PhDs. They obtained, however, 14% of the 249 potentially permanent jobs reported in the US. Many foreign PhDs did not compete for positions in the US. Among them, 7% accepted foreign postdoctoral positions and 20% got permanent jobs with employers outside the US.

Employment opportunities for new PhDs dipped slightly. More graduates received no job offers: 3% in 1980-81, 5% in 1981-82. (In 1981-82, 4% of experimenters and 7% of theorists received no offers.) There was also a decline in the number of PhDs receiving two or more job offers. The proportion fell to 52% from 55% in one year. The subfield of the doctorate made a difference. The picture was brighter in optics and in mathematical physics, more gloomy in high-energy physics, astrophysics and atomic physics. Overall, starting salaries rose 7%. The monthly median for postdocs rose to \$1550, that for potentially permanent positions went up to \$2670.

The master's degree is becoming more desirable for both students and employers. More (637) were granted in 1981-82 than in the previous year (577). The proportion of masters receiving no job offers fell. Beginning median monthly salaries rose 12% to \$2140 over the last-year median of \$1900. The employment category that pays least, high-school teaching, attracted fewer master's graduates: 2%,



Foreign physics graduate students Luis Orozco (left) of Mexico and Ling An Wu of the People's Republic of China, working in the quantum optics lab at the University of Texas, Austin, illustrate a ten-year trend at US universities of increasing foreign enrollments in physics (up from 23% to 40%). Data from the AIP Manpower Statistics Division.

down from 3% the year before, and down from 5% two years past.

The Division's *Survey of Physics and Astronomy Bachelor's Degree Recipients*, also available now, likewise shows a decline in the job market for its respondents. In summer 1982, of new physics bachelors, 13% had no job offers, up from 10% the year before. The proportion with two or more offers meanwhile fell, from 35% to 30%. With the decline in civilian employment opportunities came a continuation in the increase in the proportion

of bachelors who took military jobs. It rose to 24%, double the 1976 percentage. Because military salaries are comparatively low, the median monthly salary for men rose only 2%, to \$1680. Women's salaries, scarcely affected by military employment, rose 12% in the elapsed year to a median of \$1860.

Both surveys are available, free, from their author, Susanne D. Ellis, Manpower Statistics Division, AIP, 335 East 45th Street, New York, N.Y. 10017.

East Coast gets summer physics center

Separated by an inlet from Lewes, Delaware, Beach Plum Island served as a home away from home this summer for more than 70 physicists, who gathered there to discuss theoretical physics. For the second summer, the University of Delaware ran the Lewes

Center for Physics, using facilities at its Marine Studies Complex, renovated especially for this purpose.

According to Arthur Halprin, director of the Center and a prime mover in getting it established, the Center was designed to promote collaboration

among scientists and the exchange of ideas. Its location, described by Halprin as "very close to the center of gravity of research physics on the East Coast," makes it less a competitor with Aspen than a needed East Coast version of it. The Center was able to extend its schedule from four to seven weeks this year with the assistance of three-year grants from the National Science Foundation and the Sloan Foundation. Halprin said that, finances permitting, the Center plans to extend the schedule further next year.

The focus at Lewes this year was on elementary particle physics and contiguous areas of nuclear physics, high-energy astrophysics, quantum field theory and statistical mechanics. Among the participants were: Evans Hayward (National Bureau of Standards), Kyunsik Kang (Brown University), Samuel Penner (National Bureau of Standards), Gino Segre (University of Pennsylvania), Charles Sommerfield (Yale University), Floyd Stecker (NASA Goddard Space Flight Center) and Joseph Sucher (University of Maryland).

Information about next summer's program can be obtained by writing Arthur Halprin, Physics Department (LCP), University of Delaware, Newark, Delaware 19711.

Pais wins AIP-US Steel science-writing prize

Abraham Pais, professor of physics at Rockefeller University, is the 1983 winner of the American Institute of Physics-United States Steel Foundation Science-Writing Award to a scientist for his book *Subtle Is the Lord: The Science and the Life of Albert Einstein* (PHYSICS TODAY, January 1983, page 81).

Pais was educated at the University

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of Amsterdam (BS 1938) and the University of Utrecht (PhD 1941). He worked with Niels Bohr at the Institute of Theoretical Physics in Copenhagen and came to the Institute for Advanced Study in Princeton, New Jersey, in 1946. There he had a cordial professional and personal relationship with Einstein until his death in 1955. Pais joined Rockefeller University in 1963. His work has clarified the behavior of strange particles and the nature of symmetry in particle physics.

He is scheduled to receive the award, which includes \$1500 and a Moebius strip, at the AIP Corporate Associates meeting on 25 October in Palo Alto.

AIP placement division offers "situations wanted" column

A "Situations-Wanted" column will appear in the *Summary of Open Positions* that the AIP Manpower Placement Division publishes, starting in October. The *Summary* is sent to heads of university and college physics departments, Federally funded R&D centers, graduate employment information officers, and some major industrial employers of physicists as well as registered job seekers.

Advertisements, running in two consecutive issues, will cost \$16 for North American candidates, \$20 for others. Ads longer than 50 words will cost an additional \$0.50 per word. To comply with equal-opportunity laws, no candidate will be able to specify or imply his or her age, race or sex. To ensure impartiality, box numbers will identify candidates rather than names and addresses. The Placement Division will forward any responses to candidates for up to ten weeks after their ads have run.

The ads and prepaid fees must be received by the Manpower Placement Division (Beverly Citrynell, Situations Wanted, AIP, 335 East 45th Street, New York, N.Y. 10017) by the 15th of the previous month for most issues of the *Summary*.

Nominations sought for new national technology medal

The White House Office of Science and Technology Policy and the Department of Commerce are calling for nominations to be accepted, until 30 November, for a new national medal of technology.

The medal will periodically honor entrepreneurs and others who have developed new industries or modernized old ones by putting new discoveries into practical use. According to George Keyworth II, head of OSTP, "the President is eager to recognize

innovators in technology who have helped America compete successfully in the international marketplace and who have improved the well-being of the United States."

Instructions and nomination forms are available from the Assistant Secretary for Productivity, Technology and Innovation, US Department of Commerce, 14th Street and Constitution Avenue NW, Washington, DC 20230.

Xerox and Spectra-Physics to market laser products jointly

Xerox Corporation and Spectra-Physics Inc. have joined forces to form a new company to move research developments in laser technology out of the lab and into the marketplace. Describing the new company, William J. Spencer (vice president and manager of Xerox, Palo Alto) said that it is one of the first times "a major research lab went directly into the market with a technology." Spectra Diode Laboratories Inc., the new joint venture corporation, will develop, manufacture and market state-of-the-art semiconductor laser diodes and laser devices, light-emitting diodes, and a variety of subsystems using such devices.

Spencer, describing the start-up situation, told us that the venture will require an initial investment of \$5-10 million, with each of the companies owning half of the new corporation. Advanced semiconductor laser technology developed at the Xerox Palo Alto Research Center will be licensed to the new venture; Xerox will provide the research and technology base, and Spectra-Physics will provide expertise in handling and marketing the laser systems and provide the bulk of the cash investment.

The principal thrust of the research will be on high-power laser diodes. Xerox has already demonstrated in the lab that these advanced laser diodes can supply over 2 watts of power, compared to typical laser diodes available today that run at 5-15 milliwatts, according to Spencer. Manufacturing such diodes for commercial use should permit replacement of many gas-laser diodes, with important applications in electronic printing, optical memory and communication technology. Spencer said.

Donald Scifres, of the Xerox Palo Alto Research Center, is the first president of Spectra Diode, and he expects to be working with a staff of about ten by the year-end. By 1984 the new corporation anticipates offering products for sale including medium-power infrared single-mode diode lasers, high-power infrared diode laser arrays, laser diodes operating in the visible spectrum, and high-speed light-emitting diodes. □