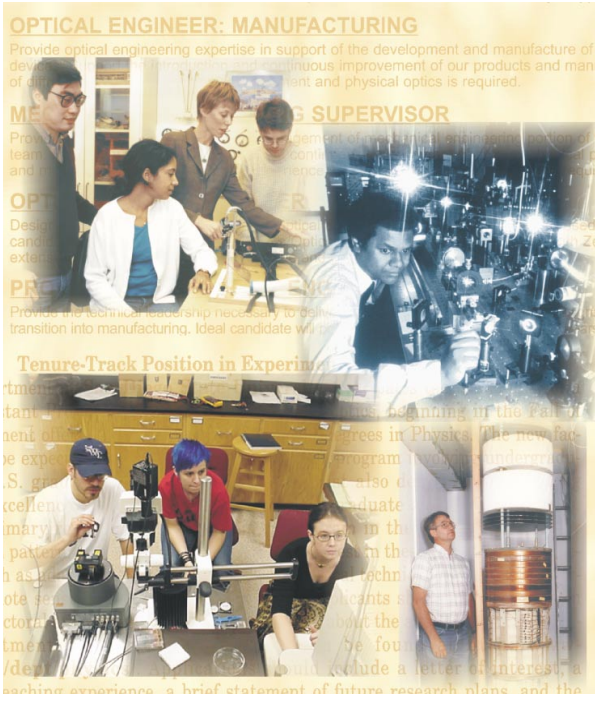

CAREERS FOR PHYSICISTS

Most of us became physicists because we found physics fascinating. We assumed somehow that, when our formal studies ended, we would find jobs in physics that would continue to reward us intellectually and, unlike our graduate work, would also reward us financially. Depending on what year we started job hunting, our expectations might have been fulfilled easily or might have been redefined drastically.

PHYSICS TODAY has covered careers in physics for many years. During the last downturn in employment, we launched a series, Career Choices, which ran from 1993 to 1998 (see http://www.physicstoday.org and visit the related articles archives). More recently, as the employment picture began to change again, two Reference Frame columnists conveyed their

Where to Learn More about Careers in Physics and Related Fields

Acoustical Society of America: http://asa.aip.org. This Web site contains job listings in acoustics.

American Association for the Advancement of Science: http://nextwave.sciencemag.org. This homepage includes an extensive array of career resources for scientists. These include forums, a fledgling postdoc network, and career advice articles.

American Association of Physicists in Medicine: http://www.aapm.org. This Web site contains a list of accredited medical physics programs. AAPM offers a career brochure and monthly job listings (for members only).

American Association of Physics Teachers: http://www.aapt.org. This Web site includes reports from the Physics Department Chairs conference series (click on the Programs link). The National Task Force on Undergraduate Physics Web page can be accessed here also.

American Astronomical Society: http://www.aas.org. This site has an extensive set of career resources, such as job listings and registers, statistics, and an industrial astronomers network. AAS is conducting an AAS PhD+8 Survey.

American Chemical Society: http://www.acs.org. This site contains an extensive set of career services that covers chemistry and the chemical industry, including physical chemistry.

American Geophysical Union: http://www.agu.org. AGU runs a job-listing service (for members only) and has published books by Peter Fiske on careers.

American Institute of Physics: http://www.aip.org. This Web site contains links to a vast array of sites relevant to physics careers. AIP runs employment centers, workshops, and produces job listings; provides up-to-date and accurate statistical information on employment and educational trends; produces an annual *Graduate Programs in Physics, Astronomy, and Related Fields*; produces a *Directory of Physics, Astronomy, and Geophysics Staff*; has a Society of Physics Students; and publishes PHYSICS TODAY, which occasionally runs articles related to careers; publishes *The Industrial Physicist*, a bimonthly magazine covering industrial and applied physics; and runs the Industrial Physics Forum and related workshops, which foster academic–industrial understanding and interactions.

American Physical Society: http://www.aps.org. This Web site provides links to APS career and educational outreach programs, including an archive of relevant *APS News* items; Committee on Careers and Professional Development; Career and Professional Development Liaison Program; Forum on Industrial and Applied Physics; Technical Network, a database of members willing to share their expertise; and the Faculty Industrial Fellow Program, which facilitates short-term placement of physics faculty in host companies. APS also maintains several lists of speakers (applied and industrial, women, minorities).

concerns about careers: Philip W. Anderson in "Why Do They Leave Physics?" (PHYSICS TODAY, September 1999, page 11, and Leo P. Kadanoff in "Changing" (December 1999, page 11). "Physicists in Finance" by Joseph M. Pimbley (January 1997, page 42) and "Career Opportunities in Optics" by Anthony M. Johnson and C. Breck Hitz (May 2000, page 25) were published as feature articles.

This special issue presents four feature articles that take a broad look at careers for physicists.

Young physicists and other scientists and engineers had a tough time finding jobs eight years ago (see the article by Kate Kirby and Roman Czujko, PHYSICS TODAY, December 1993, page 22), but since then the picture has changed dramatically. In "The Physics Job Market: From Bear to Bull in a Decade" (page 36), Kirby, Czujko, and Patrick Mulvey provide employment statistics showing that nearly twice as many physicists are working outside of academia as in it. The authors observe that a large majority of new physics PhDs do find their jobs professionally challenging.

Although the job situation has improved, Barrett Ripin makes a case in "Preparing Physicists for Life's Work" (page 43) that colleges and universities need to provide a broader range of courses and find ways to better prepare students for a variety of careers. Some departments are doing business as usual, he says; others are changing in an evolutionary fashion; and some have even introduced career-skills courses.

Many recent PhDs still hope to make a career in academia, and currently these prospects are better than they've been for the past decade. Matt Anderson wanted to be in academia, and tells us how he succeeded in "So You Want to Be a Professor!" (page 50). Now on the physics faculty at San Diego State University, Anderson gives pointers on improving aspects of one's job hunt, ranging from the curriculum vitae to interviews to etiquette.

Many job opportunities exist in defense, including private defense contractors, US Department of Defense research labs, Department of Energy-sponsored national security labs, and colleges and universities. John F. Holzrichter, in "Attracting and Retaining R&D Talent for Defense" (page 56), stresses the importance to the US of continued high-quality defense R&D. But he is concerned that many bureaucratic obstacles are making it difficult to keep scientists happy and productive.

Below is a list of additional resources available through a number of organizations, and we hope you will find it useful.

This special issue is hardly the final word on careers for physicists. For example, many career opportunities are available in the software industry, in large industrial labs, and in small startup companies. "Physics," it has been said, "is whatever physicists are doing." It is in that spirit that PHYSICS TODAY will continue to cover the ever-changing job picture for physicists.

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American Vacuum Society: http://www.vacuum.org. AVS maintains a job-listing service.

Commission on Professionals in Science and Technology: http://www.cpst.org. The Web site offers useful employment, career, and other statistical data across the sciences and in engineering.

Institute of Electrical and Electronics Engineers: http://www.ieee.org/membership/benefits/careers.html. This site contains information about careers in engineering, a consultants list, and job listings.

National Academy of Sciences/National Research Council: http://www.nas.edu. The NAS/NRC holds workshops and produces publications on science education and careers. Among their recent publications: *Physics in the New Era: An Overview* (2001); *Enhancing the Postdoctoral Experience for Scientists and Engineers: A Guide for Postdoctoral Scholars, Advisors, Institutions, Funding Organizations, and Disciplinary Societies* (2000); *Careers in Science and Engineering: A Student Planning Guide to Grad School and Beyond* (1996); and *Reshaping the Graduate Education of Scientists and Engineers* (1995).

National Science Foundation: http://www.nsf.gov. The Integrative Graduate Education and Research Traineeship (IGERT) program, http://www.nsf.gov/igert, was created to establish innovative models for graduate education and collaborative research beyond traditional disciplinary boundaries. The Faculty Early Career Development program and the Presidential Early Career Awards for Scientists and Engineers are described on the Web site found at http://www.nsf.gov/home/crssprgm/career/start.htm. The Industry/University Cooperative Research Centers program, http://www.eng.nsf.gov/eec/I_ucrc.htm, develops industry–university research centers that focus on research topics relevant to industry. The Division of Science Resources Studies Web site includes employment information at http://www.nsf.gov/sbe/srs/stats.htm.

Optical Society of America: http://www.osa.org. All three OSA meetings held each year have large employment centers run by AIP. OSA has listings of jobs and consultants, and an online student forum that facilitates networking opportunities for students with OSA members.

Alfred P. Sloan Foundation: http://www.sloan.org. Sloan sponsors a number of programs to strengthen education in science and technology, including professional master's programs. The foundation also has developed the *Sloan Career Cornerstone Series,* which offers resources such as *Careers for Physicists* (developed with AIP), which is sold as a CD-ROM or video by the AIP education division; the e-mail address is sps@aip.org.

Many other professional societies also offer career activities.

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