SCIENCE

Publisher: Richard S. Nicholson
Editor-in-Chief: Daniel E. Koshland, Jr.
Editor: Ellis Rubinstein
Managing Editor: Monica M. Bradford
Deputy Editors: Philip H. Abelson *(Engineering and Applied Sciences);* John I. Brauman *(Physical Sciences);* Thomas R. Cech *(Biological Sciences)*

Editorial Staff
Assistant Managing Editor: Dawn Bennett
Senior Editors: Eleanore Butz, R. Brooks Hanson, Barbara Jasny, Katrina L. Kelner, David Lindley, Linda J. Miller, Phillip D. Szuromi, David F. Voss
Associate Editors: Gilbert J. Chin, Pamela J. Hines, Paula A. Kiberstis, Suki Parks, L. Bryan Ray
Letters: Christine Gilbert, *Editor;* Steven S. Lapham
Book Reviews: Katherine Livingston, *Editor;* Annette Theuring, *Assistant Editor;* Susan Randolph, *Editorial Assistant*
Contributing Editor: Lawrence I. Grossman
Editing: Lois Schmitt, Valerie Jablow, *Senior Copy Editors;* Douglas B. Casey, Harry Jach, Erik G. Morris, Christine M. Pearce
Copy Desk: Ellen E. Murphy, *Supervisor;* Joi S. Granger, Beverly Shields, Melissa M. Quackenbos, Kameaka Williams, *Assistant*
Editorial Support: Sherryf Farmer, *Supervisor;* Linda Dienavs, Carolyn Kyle, Michele Listisard, Diane Long, Jennifer Mattson, Patricia M. Moore
Administrative Support: Sylvia Kihara, Charlene King, Jeanette Prastein
Telephone: 202-326-6501; **FAX:** 202-289-7562; **TDD:** 202-408-7770

News Staff
News Editor: Colin Norman
Features Editor: John M. Benditt
Deputy News Editors: Tim Appenzeller, Joshua Fischman, Jean Marx, Jeffrey Mervis
News & Comment/Research News Writers: Ivan Amato, Christopher Anderson, Faye Flam, Troy Gately, *copy,* Constance Holden, Richard A. Kerr, Eliot Marshall, Richard Stone, Karen Fox, *Intern*
U.S. Bureaus: Marcia Barinaga (Berkeley), Jon Cohen (San Diego), Anne Simon Moffat (Chicago), John Travis (Boston)
Contributing Correspondents: Joseph Alper, Barry A. Cipra, Robert Crease, Elizabeth Culotta, Ann Gibbons, Virginia Morell, Robert Pool, Leslie Roberts, Gary Taubes, M. Mitchell Waldrop
Administrative Support: Fannie Groom, Jennifer Hodgin
Telephone: 202-326-6500; **FAX:** 202-371-9227

Art & Production Staff
Production: James Landry, *Director;* Wendy K. Shank, *Manager;* Lizabeth A. Harman, *Assistant Manager;* Laura A. Creveling, Scherraine B. Mack, Linda C. Owens, *Associates*
Art: Amy Decker Henry, *Director;* C. Faber Smith, *Associate Director;* Katharine Sutliff, *Scientific Illustrator;* Holly Bishop, *Graphics Associate;* Elizabeth Carroll, *Graphics Assistant,* Leslie Blizard, *Assistant*

Europe Office
Senior Editor: Richard B. Gallagher
Associate Editor: Jeffrey Williams
News Editor: Daniel Clery
Correspondent: Peter Aldhous
Editorial Associate: Belinda Holden
Business Manager: Julie Eastland
Address: Thomas House, George IV Street, Cambridge, UK CB2 1HH
Telephone: (44) 0223 302067; **FAX:** (44) 0223 302068

EDITORIAL

The Career of Scientific Exploration

In this issue of our journal, we feature "Careers in Science" with the forbidding subtitle "A Survival Guide." Except perhaps for a brief period in the 1960s, when almost every scientist could get a job and almost every academic scientist could get a grant, there have always been more individuals wanting to do science than there have been jobs or funding. The reasons for this imbalance are not hard to find. The lament that work is what you have to do and leisure is what you enjoy doing is usually not true for scientists, as many a spouse has discovered to his or her regret. Fortunately, most scientific work is very challenging. It is the internal desire of a true explorer that attracts individuals to science, and anyone easily disheartened by obstacles will not be much of an explorer. But any explorer is helped by maps that describe the terrain, and that is what this issue hopes to do for one segment of the scientific globe.

The discrepancy between job levels, funding levels, and the number of scientists available creates tension in careers, and no one should enter the field thinking that it will be a leisurely life or that competition is not severe. Scientists have, as a group, largely made their choice, deciding that the benefits of a scientific career outweigh the hazards. A survey of scientists who are completing their careers confirms that they have found the scientific profession rewarding and enjoyable [*Science* **257**, 1734 (1992)]. The initial decision to go into science does not, however, solve the problem of what science to pursue and where to pursue it. No one issue of a journal such as ours can possibly cover all aspects of this important problem, but this issue emphasizes special parts of social sciences and applied bioscience to complement previous issues that emphasized parts of physical sciences and biology in academia.

Science has always been international in its emphasis and interactions. Even in the midst of the Cold War, scientists in the United States felt a friendly sympathy for scientists in the Soviet Union trying to solve the same intellectual problems in a distant land, and it is always a pleasure at scientific meetings to meet a foreign scientist whose works have been read in previous years. The interactions become a little less friendly when foreign nationals apply for jobs in competition with natives, but the incentive for most universities, companies, and nations is to get the very best brains into their institutions, and those brains are not monopolized by any one country, any one color, or any one gender. Competition with foreign nationals is only a later phase of a general competition that starts in elementary school for a scientist and becomes more intense as a career progresses. Anxieties such as competition for grades, fellowships, jobs, and support affect many fields, but one beneficial aspect of a scientific career was job stability. Once the scientist had made the cut, he or she has been more likely to stay employed than most other professions, but recently funding problems and the down-sizing of companies and universities are generating more anxiety than they did in previous times.

An interesting feature in this issue is the controversy within the field of anthropology, which illustrates a conflict throughout the social sciences between those who want to take advantage of the latest developments in biology and those who wish to stay with more cultural approaches. New techniques, such as carbon dating, recombinant DNA, or computers, always generate hostility from traditionalists, but such temporary delaying tactics rarely survive as the new techniques usually lead to new discoveries that cannot be ignored. Young, or even old, investigators who bring a good new technique to a mature field are usually rewarded with new discoveries. This issue also emphasizes that willingness to be flexible in regard to learning new applications as well as new techniques is valuable in a career. Scientific offshoots of ecology, such as waste management, oil-spill cleanup, and biodegradable products, are increasing at the expense of more classical biology, and materials science is growing while classical defense industries languish. Biologists and physicists in these fields who can use their training but change their focus tend to survive the competitive pressure.

Science provides a primer not only on how to survive in science, but also on how to succeed magnificently, that is, by following the iconoclastic views of a Nobel laureate. This journal does not guarantee a Nobel Prize to anyone who follows Jim Watson's blunt and unconventional advice, but it does hope that his and this issue's panoramic views, developed so well by editor Constance Holden with the help of our able news staff, will help to further understanding of scientific careers with their joys and tensions.

Daniel E. Koshland Jr.