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EDITORIAL

Where the Grass Is Rougher and Greener

To be a scientist involves extensive training, an insatiable curiosity, and a job. This issue of *Science* assumes the first two criteria have been achieved and examines the third criterion. Modern science no longer can be done by gifted amateurs with a magnifying glass, copper wires, and jars filled with alcohol. Computers, restriction enzymes, and cloud chambers give the modern scientist enormous power and breathtaking progress, but also grant requests, federal bureaucracies, and academic deans. In the Middle Ages a Ph.D. was declared by Charlemagne to be a scholar and hence exempt from income taxes for the rest of his life, but in the Middle Ages a scholar's income was well below the poverty line. A similar promise today would probably eliminate any shortage of scientists in the world. This issue of *Science* has a special section on careers that follows up on a similar issue last year and attempts to cover areas that our readers perceived were inadequately covered in the previous issue. The new findings, which are, of course, again incomplete because of the pressures of space, reveal not only the downsides of postdoctorals in holding patterns awaiting jobs and the anxieties of funding, but also the upsides of new found benefits of industry—for example, in the biotech arena—to those who had previously considered only academic science. Other upsides discussed include today's need for environmental scientists and the possibilities of fulfillment that can be experienced by scientists who are flexible in their choice of careers.

The world owes no one a living, and scientists do not expect to be an exception. The number of applicants for architects, farmers, president of the United States, and talk show hosts is in no more perfect register than it is for scientists. It is, however, particularly cruel for the individual and nonproductive for the nation when the disparity between jobs and applicants is seriously out of register, the training period is long and expensive, and the expectations of success are so easy to exaggerate. It is particularly frustrating that at a time when there is a need for scientists to help correct the pollution of the atmosphere and to create new industries for jobs Congress cuts the small increases in the National Science Foundation and National Institutes of Health budgets requested by the President. Because the training period is long, some consistency in funding would be desirable. The older members of the profession have a responsibility to keep the citizenry informed so that a younger generation can be assured of a level of funding that promises a reasonable opportunity of success for those who are able and willing to work diligently. That message can be conveyed in two parts: (i) that a developed country with high wages cannot compete in a global economy with developing countries by making old products but must have the new innovative products that science can provide, and (ii) that new societal problems such as environmental protection, drug-resistant strains, and waste disposal need research if they are to be solved and well managed.

For all the downsides of today's funding crisis, our careers reader response suggests that the levels of satisfaction for science as a profession are high (80 to 90% for the very satisfied or more than satisfied levels). Indeed, very few scientists really wish that they had chosen another profession. So the path to being a scientist is hard, the annoyances even after you've arrived are great, but the rewards must be well worth it. In moments of frustration scientists may fantasize that being the husband of Liz Taylor or the wife of Johnny Carson would be a better life, but the job security of an assistant professor at a research university is probably better.

This issue on Careers in Science is a potpourri: a combination of anecdotal information on funding sources, guesses by prominent scientists as to future hot areas, expressions of the difficulties in finding jobs and keeping funding, and professional advice such as interview techniques and flexibility in objectives that should help both the aspirant for a job and the well-established careerist. It is not a peer-reviewed, scholarly document because the immediacy and the opinion orientation were considered more important than exhaustive statistics (we wanted, for example, to find the level of satisfaction in other professions and could find no comprehensive survey). Despite the fact that it is far less than a scientific analysis, its message is clear: that science is a great and rewarding career opportunity fraught with hazards and frustrations. Only the brave and resourceful need apply. But those who succeed rarely find other fields greener.

Daniel E. Koshland, Jr.