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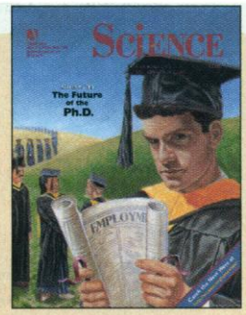
LETTERS

Career issues



The mail was heavy in reaction to the 6 October issue, "Careers '95: The Future of the Ph.D." Several letters expressed the belief that scientists should be in their professions for the sheer love of research, not for a job. Others suggested that those who pursue scientific careers should expect no guarantees about employment. Some proposed alternative ways that science Ph.D.'s could be employed—in business, government, law, or journalism, for example. One correspondent would like to see the position of "postdoc" eliminated altogether, to be replaced by permanent positions that would give a greater sense of security to new Ph.D.'s. The consensus was that a graduate degree in science should qualify one to contribute to society in a variety of useful ways.

Ph.D. Employment

Given the employment situation in science, I believe it would be in the best interests of our field, and of young and mature scientists, if the position of postdoc were eliminated. This could be done by universities, national laboratories, funding agencies, and accreditation agencies working cooperatively or independently. In a field with the economic prospects of ours, to suggest that a new Ph.D. needs additional education before he is really qualified to work is laughable. Naturally, a scientist's education never ends, and there are many ways a scientist could profitably spend time in different universities or national labs. However, such visits are best arranged as exchanges between employed persons.

Many universities have research staff positions, and many national labs contract out work. Universities may be able to use independent contractors also. This way the recent Ph.D. would be hired into what at least may be a permanent position. If he does not work out, he can be terminated, just like any other employee. On the other hand, as grant support shifts, the company or research staff might or might not want to retain the person.

It is probably true that with the available support more postdocs can be employed than permanent employees. However, this could be considered even more of a reason to eliminate the postdoc position. If the field cannot support a scientist, it is better that he should know it after he completes his Ph.D. than after he has bounced around the country for 10 years, completing five postdocs.

Wallace M. Manheimer
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I would like to propose a somewhat heretical solution to the career trauma facing young scientists: paying postdocs to embark on nonresearch careers. Individuals adventurous enough to leave research science should be assisted and encouraged. Call it a "G.I. Bill for Postdocs."

An appropriate mechanism would be a federally mandated requirement that all bodies funding research allocate 5% (or more) of their salary budget to fund postdocs seeking to leave research through higher degrees such as the M.B.A. (Small concessions such as this would greatly alleviate the sense of guilt that many principal investigators now feel when they train young scientists.)

Under such a system, a young scientist wanting to go into business, computing, government, teaching, or journalism would have the chance to obtain the formal qualifications and the contacts that are usually essential in such a venture. This would afford them the best possible chance in a new profession and would leave them with a rare combination of training that would enhance the range of contacts between science and other professions. This depth of contact would invigorate science and greatly enhance the "science constituency" within influential sectors of the economy, at the same time securing a brighter future for research and easier access to jobs for tomorrow's graduate students.

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It is reasonable for faculty to express concern that we are training too many Ph.D.'s. Individuals who aspire to obtain a Ph.D. are commonly enthusiastic about research and eager to channel their creative skills into productive work. It is counterproductive to dampen this enthusiasm with clouds of uncertainty about the future of academic research. The discoveries of tomorrow may improve job availability. Moreover, the intelligent, creative, and enthusiastic Ph.D.'s of tomorrow are quite likely to be the people to open new opportunities for research in academics, business, politics, or areas yet to be defined. It would be a significant loss to the progress of society to channel these individuals into less creative career paths.

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Many students embark on the study of a discipline because they love the discipline, and not because they regard it as a sure way to make a living. It is an avocation rather than a vocation. In many sciences, graduate students are needed by professors to accomplish their own research. This raises the spectre of exploitation: Is it just to encourage students to undertake graduate work because we need them in our laboratories, even though there is no prospect of all of them being our successors?

It is certainly unjust to mislead a student as to his prospects for employment. But it is not unjust to offer a student employment as a research assistant as a way of helping the student to follow his avocation.

It has been argued that too much education is a bad thing and that overeducated citizens are a source of unrest and dissatisfaction. It can also be argued that there is no such thing as an overeducated citizen: there are only those who have acquired false expectations in the pursuit of learning rather than true education. For that, I think, we may justly blame ourselves, and resolve to do our jobs better.

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In answer to Don S. Doering's question (Editorial, 18 Aug., p. 903), "How do we fix a system that . . . has produced many more Ph.D.'s than the market can bear?", William Lockeretz (Letters, 13 Oct., p. 219) proposes a scheme of rationing to be executed by scientific research professors whose students become the Ph.D. scientists. Although he offers an essentially quantitative goal for the scheme, Lockeretz makes no suggestion as to how the selection from among potential Ph.D.'s is to be effected. About half a century ago there had for at least a decade been in place, as described below, a self-regulating system for producing Ph.D.'s in science that required no selection process and no rationing; and in light of external circumstances, that is, the job market, it was successful. I am convinced that a like system would be successful in our time and beyond.

A single addition to the present mode of producing Ph.D.'s in science should be sufficient to reestablish the old system's essential equivalent: Every student embarking on a scientific education must be made unequivocally aware that there is no guarantee of employment in a field of one's choice as consequence of one's studies—not even with a Ph.D. Let each become imbued with the spirit of the following injunction: "Study this field because you love it. If eventually you are sustained by a career in it, so much the better; if not, the career's failure to materialize must neither surprise nor bruise you. Bear no resentment, but cherish the experience and insight your education will have brought you."

In the late 1930s, physics majors knew of no guarantees of eventual employment in physics. Nor was a particular group of graduate students surprised in 1941 on being informed by its department chair that "this is a physics department, not an employment agency."

Research professors must be—compelled to be, if necessary—persistently frank with their students with regard to career prospects. What has evidently long been a practice of sustaining unjustifiedly sanguine future-career illusions in graduate science departments must be halted. Establishment of a rigorous "no-career-guaranteed" understanding within each graduate science department would likely entail (i) a reduced, if not eliminated, production of many more Ph.D.'s than the market can bear; (ii) a greater proportion of Ph.D. candidates who are in the pursuit for the love of it; and (iii) a lowering of the number of bruised, resentful science Ph.D.'s among those who are obliged to seek employment outside their fields of preference.

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I share with Doering and many other investigators the panic over future employment opportunities within academia. Not only do

I worry about the future of my own graduate students and postdocs, I have even more worries about the implications for the country as a whole.

Doering seems to suggest that we train Ph.D.'s for three reasons. The first is to obtain cheap labor to get our science done. The implications here are beyond comment. I would hope that kind of attitude does not exist, and if it does, we should wipe it out. The second justification given for training Ph.D.'s is that we need cheap labor to instruct undergraduates. Again, the implications about the morality of the academic community are disturbing. If this is happening, we should be working to change the structure of undergraduate education. Why do we need so many graduate students to teach so many undergraduates if the market is dictating a need for fewer people trained in science? The third reason, and in my opinion, the most disturbing one of all, is that we train people so that they can take jobs. I am not convinced that this should be a major goal. People can pursue learning for many reasons, only one of which is to secure employment.

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Academic Expressways

I was taken aback by the headline "Scientists enjoy life in the not-so-fast lanes" (Karen Celia Fox, Careers '95, 6 Oct., p. 141). It is true that my colleagues do very much enjoy their lives. It is also true that they are very much in the fast lanes, but on an expressway that is different from those where faculty at research universities are found. Faculty at many undergraduate colleges must run very hard to achieve excellence in both instruction and research. Their product, their students, are the graduate students, business leaders, and educated citizens upon which our nation depends. My institution is often the leading producer of B.A./B.S. chemistry majors in the nation. In the past 10 years 11 graduates have earned one of the 50 National Science Foundation (NSF) graduate fellowships granted annually to graduates of 4-year colleges. All of my colleagues hold or have recently held peer-reviewed research grants, and most have substantial publication records. They are also excellent teachers and some are national leaders in curriculum reform. Nearly all have been awarded grants by NSF for instructional equipment or curricular development. Three members of our chemistry faculty have been awarded the Catalyst Award of the Chemical Manufacturer's Association. As the article indicates, faculty at undergraduate institutions have different goals, and they have chosen a different route; there is substantial evidence that their work in the fast lanes contributes in an important way to the nation.

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What Is Excellence?

The Careers '95 issue raises the spectre of the "versatile Ph.D." Definitely, broad experience enables a committed and restlessly curious graduate student to attack a lifelong research question from many angles. But I suspect that what is meant is conferring on those graduate students who do not have a burning curiosity the ability to provide skilled hands for any of a variety of employers. If our programs are versatile, we will still need a focused program for students who have always known they wanted to uncover mysteries. We already