

## AFTER THE POSTDOC, DWINDLING PROSPECTS

I am a recent PhD in physics, in the middle of the first year of a two-year postdoc. In my conversations with postdocs who are completing their fellowships, I have discovered that the probability of getting permanent employment at a research institution (government, industrial or academic) is lower than I expected, even for young people with outstanding research records. This situation has also come as surprise to many of my peers, who entered graduate school six or more years ago, when the employment situation appeared to be much brighter. The purpose of this letter is to inform other young physicists of the present difficulty in finding permanent employment and funding, and to announce the formation of a group dedicated to the sharing of employment and funding information. This will allow us to plan our careers with realistic expectations of the demand for physicists in mind.

I have conducted an informal poll of 25 postdocs and recent recipients of PhDs in physics. I have found that all of them have been seriously hunting for permanent research positions for the last three to six months with absolutely no success. This apparent job shortage is not confined to branches of physics where employment is traditionally scarce (such as experimental high-energy physics) but extends to branches (such as experimental condensed matter physics) where reasonable numbers of research positions used to exist.

My conversations with representatives of industry and government have revealed that there are widespread hiring freezes in government and industrial laboratories. I have direct confirmation of freezes in five major industrial labs and three government labs. I am not aware of a single industrial or government lab that is actively hiring young physicists for permanent positions. My contacts in industry and government tell me that these same institutions are apparently trying to reduce the number of established physicists already in their labs. Thus permanent

employment in industrial or Federally funded laboratories is not likely, and prospects could get worse if reduced research budgets become part of the "peace dividend."

A quick scan of the ads in *PHYSICS TODAY* reveals that many academic institutions are looking for people with the ability to acquire external funding. To fulfill this desire, universities appear to be hiring the well-established physicists who are leaving industrial and government labs. Considering the present, well-documented difficulties in obtaining funding from governmental agencies in general, and for new starts in particular, those in the current generation of PhDs have little hope of acquiring external funding and thus gaining the status necessary for academic research.

We have all heard of the PhD shortage that is expected to occur in about five years. However, these predictions are based on growth in industrial positions as well as the mass retirement of faculty at universities. They do not consider the hiring freezes in government and industrial labs, the possibility of reduced research funding as defense spending declines, the immigration of physicists from other countries, or the desire and ability of most physics professors to work well beyond the traditional retirement age of 65. These studies also do not suggest what young physicists are supposed to do until the demand for physicists exceeds the supply (if it ever does).

On a positive note, there are plenty of postdoctoral positions available. There also seem to be plenty of permanent teaching positions at small schools, where research is not expected or significantly supported. Those of us who wish to teach should make the most of this opportunity.

Not all of my statements are documented well enough to make the best course of action clear, so the first step is to determine the severity of the hiring problem by conducting a rigorous survey. This survey should go beyond the usual American Institute

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of Physics survey of graduate students and poll all government, industrial and academic labs in order to determine more accurately the demand for physicists. Some of the questions that need to be asked of possible employers are:

- ▷ How many permanent research positions do you currently have available for PhDs in physics who have had their degrees for less than five years? How many permanent research positions for such new PhDs do you anticipate having in the next year?
- ▷ Rank the following in order of importance for tenure consideration: external funding, teaching ability, research quality, number of papers, other (please explain).

For positive changes to occur, we young PhDs need to start a politically active organization to present our case to government, industry and academia in a constructive, nonconfrontational manner. Toward this end I have formed a "Young Scientists' Network." If you are interested in joining or have information (good or bad) about the employment situation, please contact me.

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In the interview with D. Allan Bromley in the July issue (page 49), the interviewer stated that there are postdocs who have had difficulty finding academic and industrial positions recently. Bromley responded that the problem is overstated and that "one can't make a case based on a few anecdotes."

In case anyone out there is collecting statistics on the "rumored" employment problems in physics, you can add me to the list of those who have experienced some difficulty. I had worked at a major national laboratory on thin film physics for five years after getting my PhD, first as a postdoc and later as a contractor. Everyone that I have worked with at one time or another has expressed the opinion that I am well qualified, and I am quite confident of my own abilities. I started looking for an academic position in April of 1989. By April of this year, there had been no offers and no interviews, so I expanded my search to include industrial research labs. Again I received no positive responses. To make a long story short, after a yearlong search, six months of unemployment and the mailing of

probably 200 applications, the best I was able to do was a half-time, nonresearch position (contingent on funding) at a small consulting firm.

This has been very frustrating. I feel that my research career has been seriously damaged, and probably ruined, just at the time when I was at my peak. If I had known that this would happen, I would not have quit the position I had before this all started. But the fact is that there simply was no indication to me (until it was too late) that the supply of physicists exceeded the demand. It seems to me that for the past several years there have been at least a few articles in *PHYSICS TODAY*, *Science* and probably other publications that have stated just the opposite. It never occurred to me or to my immediate colleagues that I would have any trouble at all.

Am I just another one of "a few anecdotes"? I don't really think so. I think that there is a problem, but that unfortunately it snuck up on us somehow and there's little or nothing we can do about it in the short term. It would make sense to compile some statistics fairly soon by conducting a poll of *PHYSICS TODAY* readers, for example, to assess what damage, if any, there has been to the current younger generation of physicists. If a problem exists, as at least a few of us believe, then maybe we can do something to save next year's graduates and terminal postdocs before it's too late.

8/90 NAME WITHHELD BY REQUEST

## Integrating Immigrant Scientists

The Russians are not coming anymore; they are here. As a result of *glasnost*, a lot of Russian scientists are visiting this country now. They are attending conferences, on tour giving lectures and seminars, and residing for a few months at various universities; some (very few, though) are obtaining permanent positions here. This letter, however, is not concerned with them; its attention is on the other, much larger group of Russian scientists in this country—those who arrive as refugees and immigrants. A great many of these people are highly trained, experienced researchers in advanced fields such as mathematics, theoretical and experimental physics, chemistry, biology, computer science and electrical engineering. Many are true experts, with profound knowledge of fundamental science, who come from a research culture with rich scientific traditions unabated by Communist

rule. Most of them are accomplished researchers with good publication records whose names are known to the Western research community.

Most of these new arrivals cannot find professional positions here.<sup>1</sup> The reasons are many: insufficient proficiency in English, lack of understanding of how the American system works, different perceptions of research priorities, lack of experience in competing—especially for research funding—and so on. I immigrated from Russia 11 years ago, and although I consider myself successful in working within the US academic system, I have had my share of these problems.

Within a few months after arriving in this country (during which period they are supported by various non-profit agencies, in particular Jewish organizations), every one of these newcomers faces a tough decision: to stay or not to stay in his or her professional field. After receiving a negative response to their job applications (sometimes as many as several hundred) most of them decide to move on. They become programmers, accountants, cabbies; potentially highly productive researchers are lost to science or industry, usually forever.

One may say, well, such is life; this is what America is all about; it is a country of immigrants; it happens all the time. This is not quite so. Something similar has happened only once in this century, in 1930–40, when immigrants from Europe arrived in this country escaping from the horrors of Nazism. Among them were highly qualified research scientists and engineers. It is well known how much these people meant, for example, for American physics. Such events do not happen often. The Russian empire is falling apart; with freshly revived neo-Nazism, Russian style, the situation has become acutely dangerous for Russian Jews, and they are emigrating in great numbers. Even highly positioned members of the scientific establishment are looking for a way out. This is a once-in-a-lifetime opportunity.

I believe there is great potential for these newcomers to become a very useful and vigorous part of our research community. What they need most often is some kind of temporary position (such as a postdoc, research associate or visiting scientist) for one to two years, in order to have breathing space, to be exposed to the research community in their field, to prepare and publish their first papers in this country, to gain understanding of the US university system, and to acquire some experience in teaching