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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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5/90

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.[1] 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 nonprofit 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

and presenting their results as well as familiarity with the funding system. In some university research programs and industrial labs there are certainly funds available for such positions. However, this is not the case with most universities. Therefore, during the present period of tight funding (one of the reasons for which, ironically, is our own "*perestroika*" in DOD funding), the government can be looked to for help and leadership in the problem. My proposal is that any principal investigator who already has research funding from any government agency be allowed to submit a very brief addendum proposal to the same agency asking for 50%, but not exceeding a certain amount, of the support (basically, for salary, publications and travel) for an immigrant scientist doing research on the same project under the general supervision of the principal investigator, provided that the immigrant has at least a PhD (or equivalent degree) and appropriate credentials. The rest of the support as well as all the major equipment, space, computer time and so on would be provided by the university. The support would typically be granted for one year, with an extension of one or two more years based on performance and funding availability.

The proposed arrangement would not require a new administrative structure and would secure a proper scientific level of research and proper academic and financial control by the university. Money for this project could be earmarked and allocated among participating agencies in proportion to their funding for fundamental research. This way, the main purposes of the program would be served: It would involve some of the best active researchers in this country, benefit already existing research programs and help to orient the newcomers toward the problems regarded as most significant here. It would also provide them with state-of-the-art equipment, computers and firsthand experience in the organization of research, as well as direct their efforts toward the (mostly) fundamental research in which they seem to be strong.

The current quota for immigration from Russia is some 50 000 each year. Assuming the number of eligible candidates to be around 2% of this amount[1] (with say, about half of those meeting the academic credential requirements) and the average cost per person to be $55 000–60 000 (including an average salary of $30 000 a year, fringe benefits and indirect costs), the extra funding would come to $14–15 million annually. Furthermore, the government could stipulate that the universities waive their indirect-cost charges for the addendum grants (but not for the 50% costs charged to the main grants), which would put the total cost below $10 million for the first year. Such a national-scale investment with a very short expected period of recovery does not look terribly expensive or risky. A joint effort by our professional societies in lobbying Capitol Hill could secure the necessary funding for such a program.

Lastly, I think it would be appropriate to make the proposed program available not only to Russian emigrés but to any other refugee or immigrant research scientists (such as those from Eastern Europe or China) legally residing in this country.

At the end of this century this country will be about 9000 short of PhD-level researchers and faculty members in the "hard" sciences and engineering.[1] The proposed program could be a significant part of the solution to that problem. A mind is a terrible thing to waste, especially that of an active, accomplished researcher. By helping these professionals to reestablish themselves in this country, we can help ourselves and give American science and industry an extra push to become more vigorous and competitive in this rapidly changing world.

Reference

1. C. Holden, Science **248**, 1068 (1990).

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Physics Career Advice—and Dissent

Leon Lederman's column "Low Pay and Long Hours" (January 1990, page 9) is at odds with my experiences and those of my contemporaries. (I got my PhD in 1981.) Lederman's very successful career was built in an era of growth in science funding. The success is atypical; today, growth is an exception.

I have been involved with many technical organizations, including huge corporations, academia, government laboratories and several small technology companies, including a very successful technology startup that was actually engaged in securities fraud. Projects I have been involved in have covered the spectrum from wild successes to dogs with fleas. Herewith is my response to Leder-