

No market for physicists?

I am writing to you as a representative of a technical employment agency because I feel that the physics community does not appreciate the magnitude of the current problem.

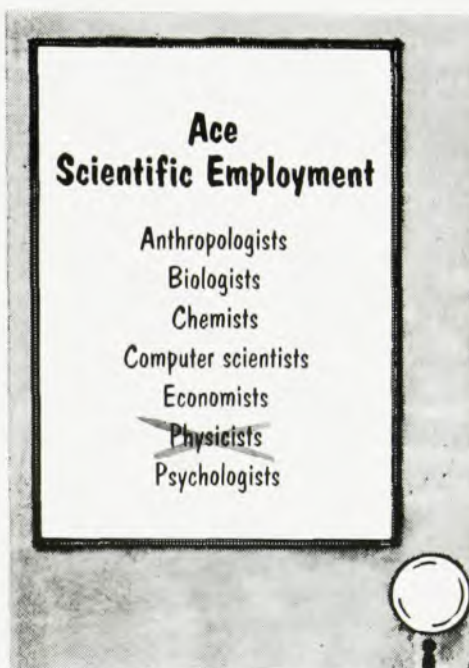
Until several months ago, our firm dealt exclusively in technical employment. We are associated nationally with about 100 other technical employment agencies, and we also subscribe to a computer service to find our technical applicants. At any one time, we have over 20 000 scientist and engineering applications nationally and over 400 job orders in the technical areas. Currently, we have over 60 physics PhD's and innumerable physicists on the MS and BS level who can not find employment. Furthermore, with current government funding policies, it is evident that these people will not find employment in the foreseeable future.

Seventy to eighty percent of all our applicants have between 15 and 20 years of experience. Most of these people stand little chance of ever being re-employed in a technical area or in any area for that matter. The few who do obtain technical jobs must take large cuts in salary. New people out of school stand as much chance of employment in teaching or research as a snowball in the Sahara.

Many physicists have come to us with a desire to switch fields. Computer programming is a popular choice. Client companies, in general, will not accept physicists in these positions.

The physics PhD who can not find employment in a technical area or in teaching is in deep trouble. We find that he is generally not accepted in other employment areas outside of research or teaching. One can realistically say that he is being penalized for possessing a PhD degree. I know of some who have ended up selling insurance, mutual funds, real estate, and so on. Non-degreed people stand a much better chance of finding employment than do degreed people.

The National Computer Service we subscribe to costs us a monthly service charge plus a split in fees. At this point, we can not break even on this service. Thus, we are planning to drop the use of the computer. We are switching our emphasis to secretarial and sales per-



sonnel in order to survive. Many technical employment agencies across the nation have gone out of business due to a lack of job openings to fill.

In my opinion, there will be no significant market for physicists over the next decade, and possibly beyond—for where the occasional rare job opening does exist, the engineer seems to be preferred over the physicist. I feel that unless physicists can cut their production rate upwards of 50%, they will be committing professional suicide. After all, how many new students will enter a profession with employment conditions such as I have described?

Stuart A. Silverman
Allen and Speth of Buffalo, Inc.

The editor comments: That the physics community is indeed aware of the employment problem can be seen from public statements over the past year made by officials of AIP, APS and others. The latest public statement was made at a specially organized session on the employment problem held on 23 November at the APS New Orleans meeting. Our report of the meeting (January, pages 91 and 112) mentions that the physics community is mobilizing its own resources to search out opportunities for physicists in other fields and other countries. APS has

provided funds that have enabled AIP to hire a special placement consultant to direct this effort. APS has also requested that AIP publish a special report on manpower. Such a summary report was distributed at the time of the New York APS-AAPT meeting in February. This report will also be mailed to all members of the American Physical Society, the Optical Society of America, the Society of Rheology, the American Association of Physics Teachers and the American Crystallographic Association. Individual copies of the report may be obtained by writing: American Institute of Physics, Box PT, 335 East 45th Street, New York, N. Y. 10017.

Accredit physics programs?

During the past year a fierce controversy has raged in the pages of *physics today* about the job crisis in physics. I should like to add another straw to the camel's back by analyzing some current viewpoints and presenting a program that would at least greatly reduce the likelihood of a recurrence of the present situation. That there is a job crisis I will not argue, since anyone who can still dispute the fact can hardly be susceptible to reason.

The unemployment situation not only affects physicists, it affects physics. It has placed the entire physics community under intolerable strain, and our work has clearly suffered.

For us to continue seducing students into graduate work is not only an exploitation of them as individuals, it is a waste of our most valuable human resource. Graduate students in physics were usually among the brightest graduates of their colleges. There are many areas in which intelligent young people are sorely needed, and a shift of top students into these areas would have enormous social benefit. The shift is finally occurring, but many physicists are trying to stop it rather than encourage it.

The frequent argument that exposure to physics education does not disqualify anyone from useful labor is valid but irrelevant. The apparent requirement that every computer programmer have a PhD in high-energy physics is absurd.

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We clearly must limit the number of physicists, and we can only do this by limiting the number of physicists produced. This means cutting down graduate enrollments. Let us look at what is happening in this area now.

Applications to graduate school are certainly dropping at a rapid rate; after all, physics majors are not stupid! Enrollments, however, are not as closely tied to applications as they are to support. While financial cutbacks have undoubtedly reduced enrollments somewhat, it is also apparent that admissions standards have often been lowered to compensate for the even more drastic drop in applications. Thus as the job market tightens, we actually lower the quality of our students. Some schools supplement their dwindling crop of applicants by importing quantities of foreign students, mainly from Asia. This is grossly exploitative, and I anticipate the day when some developing country will discover that it has more particle theorists than it has computer programs to write, or, more to the point, more physicists than competent engineers.

Even if financial restrictions and reduced applications do have a major corrective effect on the production of new physicists, it can hardly be satisfactory to predicate our year-to-year graduate policies on the vagaries of congressional support and the undergraduate rumor mill. If graduate enrollment in physics is to be controlled, let it be controlled by physicists, not by politicians and newspapermen.

I propose that the American Institute of Physics establish an accreditation board for graduate programs in physics. This board would set minimum standards for graduate programs, thereby greatly discouraging the proliferation of under-staffed and under-equipped programs that even now goes on. It could also set minimum admission and graduation requirements.

An essential feature of any such policy is that it ensure a degree of stability to graduate programs in a widely fluctuating era. This, and the need to control graduate student enrollments, can be accomplished by requiring a minimum faculty-student ratio in the accreditation standards. Doing so would also inhibit the tendency of some popular departments to admit more outstanding students than they

can possibly do justice to, while leaving the dregs to others. A particularly important feature of using a faculty-student ratio as an accreditation standard is that it is flexible; if needed, it can be adjusted to meet projected manpower needs, which is the only mechanism I know of that can affect graduate enrollments before, rather than after, the situation changes.

There is a common fear that this proposal, like any other, is sure to provoke; perhaps we will overcompensate and create a shortage of physicists. I think this would be virtually impossible. The number of jobs that physicists can fill is far greater than the number that only a physicist can fill. The number of physicists needed is much smaller than the number employable, a fact emphasized by recent articles in *physics today* that show how much further afield physicists have gone than the usual peripheral fields of engineering, applied math, and computing. That we, despite the fantastic flexibility of our field, have been able to generate a glut is ample testimony to the necessity of strong corrective measures.

William Silvert
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Lawrence, Kansas

Reply to Mumford

It is regrettable that in the face of an attack on physics and technology by Lewis Mumford, the editor of *physics today* in the December 1970 issue chose to surrender positions that can be easily defended. The malaise of our times is due to an almost complete lack of social and economic planning by our national leaders (none of whom are scientists or engineers). The supercilious attitude toward material things by humanists like Mumford is endemic with people who are themselves well fed, well housed, and have superior medical care that they take for granted, and none of which would be possible without modern science and technology. People like Mumford are also apparently incapable of understanding the simple fact that the primary drive of a scientist is for an understanding of nature, a spiritual and creative drive of the same kind that impels a humanist.

Regardless of the fact that describing Descartes as a positivist is simply incorrect, if the development of physics from Galileo to our day is positivism,

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