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LETTERS

Career options

I understand the need to present an optimistic picture to recent graduates; but to cope, they need to know the reason why industry discriminates against physicists. Basically, the problem is management—most managers have been trained narrowly and inappropriately for their present jobs. They know it (as do their bosses) and act to protect themselves. Technology managers maintain their power mostly because the engineers working for them are even less able to put the facets of a complex program together. The last thing that such a manager needs is a broadly educated new hire visibly solving problems!

Unsolved problems are reasons to hire more engineers and extend the manager's span of control. In a big or middle-sized company, every "problem" is someone's meal ticket. Once a problem is solved, everyone is available for reassignment or downsizing. Thus, empires and management careers are built—not by solving problems—but by cultivating them.

What is a physicist to do? Well, he should begin by studying Machiavelli, Solzhenitsyn's *The First Circle*, "Dilbert," and other tracts on current management practices. A new hire has the choice of dumbing down and attending to a narrow agenda for which he might get some appreciation (without threatening someone better connected), or offering broader insights privately to a manager whose career might profit from them. The problem is that the manager is not likely to return anything of value for that support. Whatever he does, a physicist must never use his background to expose incompatibili-

ties between narrowly defined subprograms. Each subprogram has a manager who is being judged on his ability to complete his group's task. All of them hope to move up before the incompatibilities surface. Remember, those petty managers (not the corporate leaders) will decide whether your career continues or not! Industrial physicists need more background in theater, organizational psychology, and political science than typical science graduates. Above all, they need exit strategies for every job they accept. Sooner or later, they will have to use them!

Marc D. Levenson

Saratoga, California

PHM

I read your article in the December issue of *The Industrial Physicist* on prognostics and health management systems [p. 20] and found it very interesting. I am an R&D engineer in a Department of Energy facility. Our facility is responsible for processing and storing nuclear materials for DOE. As you can imagine, the cost of maintaining such a facility is typically 3 to 10 times the cost of similar non-nuclear facilities. The judicious use of PHM systems could produce a significant cost savings. I would like to further investigate the state of the industry and current research efforts in the field. Would you be so kind as to point me in the right directions?

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Superconductivity

With regard to the article on power applications of superconductivity in the December issue of *The Industrial Physicist* [p. 15]: Without wishing to appear critical, I think your article would have benefited significantly from a prior reading of the papers located at www.epri.com/staff_papers/sst. One of the great values of the Electric Power Research Institute is that we can look at aspects of all energy technologies with a view not influenced by government or private industry. Please feel free to contact me for background on any energy-related articles you may be writing for *The Industrial Physicist* in the future.

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Careers

I am writing in response to the article "The Future Role of FIAP" that appeared in the Fall 98 newsletter of the APS Forum on Industrial and Applied Physics. Let me first say that I applaud FIAP for its focus and priority on identifying and addressing the needs of its members. To that end, I would like to suggest what may be a valuable service that FIAP could provide to the physics community.

It is gratifying to see published statistics that show unemployment in the community at low levels and still decreasing. However, it is dismaying to see the small proportion of physicists who find positions in industry. I believe that permanent employment in industry is the ideal goal of many, if not most, of those graduating with degrees in physics. The employment demographics, though, show that a disproportionate number of graduates are still taking postdoc positions. For those grooming themselves for a career in academia, this is an essential step, but for a long time now postdoc positions have been a holding pattern for graduates unable to find industry jobs. The statistics would not look quite so good if this group of people were classified as "still looking," which I believe to be closer to reality than to call them "fully employed."

Speaking only from my own experiences, I considered myself very lucky to find a job in industry when I graduated in 1992, at the depth of the job crunch. The job market has improved somewhat since then, but as far as I know, it is still difficult for new graduates to find opportunities in industry. Further, I have found that the scarcity of positions makes for very low job mobility even after landing that first job, leaving one stuck in a position once found. How can this happen at a time when U.S. unemployment is incredibly low and hi-tech firms are in fierce competition for engineers and other technical talent, even staging job fairs in other states to raid their pool of technical professionals? I believe the answer is simple: most companies don't know what physicists can do, what they can offer, and how they can contribute to the bottom line. It seems, in fact, that the quickest way to get a resume pitched into the bone pile is to list a primary background in physics, even in companies where there are openings for which it seems a physics background would serve well.

By the nature of our training, physicists become jacks of all trades, focusing not just on the study of physics, but becoming adept at electronics, software programming, instrumentation design, generating funding proposals, managing teams of experimenters, etc. This is the ultimate in the sought-after "cross-functional" talent that companies look for. It would seem to make physicists ideal candidates for industry positions in new product development, technical leadership roles, engineering management, and systems design and engineering; and the list goes on. But companies don't make the connection, because they are not aware of the capabilities and talent that "physics" on a resume represents. They have a narrow picture of the physicist as a theoretical mathematician, and figure that they can't use a physicist because "we don't do physics."

I wish to suggest that FIAP could do its members a great service by undertaking to educate companies on the capabilities of physicists and the ways that they can use physicists to improve their operations, their

products, and their bottom line. In short, FIAP could promote the physicist in industry circles. This could be done through a campaign of networking; mass mailings of educational pamphlets; visibility and promotion at industry conferences, seminars, job fairs, and trade shows; and perhaps even a joint "Physicists for Industry" conference that companies which had no idea they could benefit from the physics community are enticed to attend.

I realize that this initiative focuses on jobs in which 10% of the job might be spent doing physics and 90% spent exercising talents acquired in close association with physics, and so it certainly does not serve the entire community. It is my belief and hope, though, that there are significant numbers of physicists out there like me who find such opportunities interesting, diverse, challenging, and satisfying. If my suggestion appeals to you and an initiative is under-taken, I would be happy to be the first in line to make a contribution to help defray its costs.

Name withheld on request
Nashua, New Hampshire
Forwarded by John Rowell
Chairman of FIAP

Y2K

David Pope writes in the December 1998 issue ["Combating the millennium bug," p. 9]: "In addition, some Intel 486 and Pentium microprocessor chips are not Y2K compliant." Oh, please. The world has created enough hype about this Y2K situation already. The last thing it really needs is more misinformation spouted by alleged experts. The microprocessor itself couldn't care less whether it was operating in the year 200, 2000, or 20,000. The operating system may know, but to my knowledge, the processor sure doesn't.

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