

half ago, "everybody" knew that the nation had a shortage of PhD physicists. In a letter to *PHYSICS TODAY* published in February of 1969 I pointed out that in fact there had been for some time a surplus, and within a few months the conventional wisdom had discovered that there was indeed a "job crisis." There is of course a connection between my present letter and the previous one. If my present arguments are correct the employment situation will become much worse than the "expert" projections indicate, and it will last until the output of physicists becomes commensurate with their value. This brings me finally to the attitudes of physicists themselves. Generally we are a skeptical group, and it is therefore a little strange that wildly inflated claims for our importance could be made so frequently without challenge. After all, most of us could assess such claims easily enough by looking at the publications of our colleagues. Of course there is a question of economic interest, but I really do not believe that this is the determining factor. The real cause, it seems to me, is that most physicists seem utterly incapable of assessing the importance of their own work. They toil day after day and year after year and seem to exhaust themselves as readily on the most trivial and useless investigations as on the most fundamental discoveries or the most revolutionary inventions. Whatever the reason, I believe that a more realistic assessment of ourselves and of our relation to the larger world will prove, perhaps, to be necessary in the difficult days ahead.

WOLFGANG ZERNIK
RCA Laboratories
Princeton, N. J.

Science exploited by business?

The naive pro-business bias of *PHYSICS TODAY*'s editorials is getting out of hand. Your comments on pollution and nuclear reactors are a particularly bizarre example of this trend—the public's suspicion and rejection of science and technology is blamed on those nasty scientists who criticize current practices of the scientific establishment. In this case it is the AEC's allowable radiation dose rate.

I would like you to know that I am

suspicious of science and technology because I believe that our results are exploited by American corporations for profit with zero regard for the welfare of the people. In particular, I have zero confidence in the willingness or competence of any corporation to truly evaluate the safety of any product, let alone a nuclear reactor. And if it be said that the AEC is responsible and not private enterprise then the AEC will have to convince me that it is not, in the final analysis, dominated by the economic interests of America's corporate enterprises.

JOSEPH SCHWARTZ
Richmond College, CUNY
Staten Island, New York

Inaccurate cancer statistics

The August issue was most informative and thoroughly enjoyable, and I was especially pleased that you included an article ("Nuclear Physics in Medicine" by Gordon Brownell and Robert Shalek, page 32) dealing with physical medicine and particularly the disease cancer.

It grieves me, however, that the authors' statistics were so imprecise. They state (page 34) that one human in eight dies from cancer. The accurate figure is one in six. I don't think even physicists should be allowed this margin of error, plus or minus 0.25. I'm sure their other data are much closer to the mark.

FRED M. LEARNED
American Cancer Society
New York, N. Y.

Working for the DOD

I am disturbed, not by the editorial position of *PHYSICS TODAY* or the establishment-controlled council of the American Physical Society, but by the goals and tactics of some within the physics community. As an example consider the ideas expressed in the "article" by Jay Orear in the May issue of *PHYSICS TODAY* (page 9) and the contradiction that arises.

I do not know anyone in the physics community who is for war, poverty or pollution. The US Government has departments that deal with each of these problems with the goal of attaining peace (freedom), prosperity and a

nonpolluted environment for ourselves and others. How these objectives are to be reached involves political decisions, and because of this there will be those who do not agree with or support the methods selected to obtain these objectives. Whereas one person may feel he is making a contribution to the problems of society by working on pollution problems, another person may desire to serve by doing DOD-supported research. After all, some people still feel that it is a privilege to serve their country whether in the military service, in DOD research, in the Peace Corp's, working on pollution problems, and so on. Of course each person should be able to make his own choice, and to my knowledge no one has been forced to work on DOD research. Also, why should a physics problem suddenly be off limits for academic physicists just because the results will be of interest to the DOD?

On the one hand we are to be forbidden, by a "Hippocratic oath," from helping one department of the government through our research projects, and on the other hand we are strongly urged by the same people who wrote the oath to help other departments. A contradiction? I think so.

We should not force people to work on projects they can not support nor should we forbid others from working on them if they so desire—each person should be free to make his own choice. If, as academic physicists, we choose to work on problems that have political overtones, we should be exceedingly careful not to influence students with our own personal political beliefs. Students, especially undergraduates, are very impressionable and our influence could be regarded as a misuse of our academic positions. Universities should not be used as a political force since this would make them a primary object of legislation, which would be the end of the "search-for-truth" education as we now know it. As it turns out however, it is not the DOD researchers who are misusing their academic influence, it is those who oppose it, for they are the ones indoctrinating students with their own personal political views.

I feel that open discussion of ideas is essential (faculty indoctrination of students is not open discussion), and for this reason I strongly recommend that *PHYSICS TODAY* continue its present policy of publishing letters, articles, and editorials of interest to physicists even though they contain controversial ideas.

DONALD L. HARDCASTLE
Baylor University
Waco, Texas

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letters

can Physical Society being used for political purposes as the tone of the inflammatory resolutions proposed at the Chicago business meeting of the society indicated. No nation the size of the United States can remain free unless it is also strong, and those who would tear down our Defense Department would soon lose their freedoms if it did not exist. To try and place a stigma on scientists who do work for the Department of Defense is the first step towards repression of other groups with whom the vocal minority are not in sympathy. Radical students already control the kinds of work that can be presented at the Japanese Physical Society. Let's not let it happen here.

L. S. BIRKS
Naval Research Laboratory
Washington, D.C.

No ABM for Washington

I agree with your July editorial, but wish to register my objection to the reported proposal to protect only Moscow and Washington, D.C. with the ABM. Since men residing in those two cities have control over the infamous red buttons, it appears to me the likelihood of their use would be reduced if Moscow and Washington, D.C. were the last cities to be protected.

J. S. HUEBNER
University of California
at Riverside

No depletion of oxygen

I agree with much of what was said in the letter by Henry Knoll (July, page 11). However, I think it is unfortunate that he attempts to gain support for his position by citing the misleading comments by Lamont Cole regarding consumption of atmospheric oxygen by the burning of fossil fuels. The implication of Cole's remarks seems to be that we are headed for serious difficulties because of depletion of atmospheric oxygen. Actually, it is easy to calculate that if we were to burn in one fell swoop all available fossil fuels, we would consume roughly 1% of the oxygen in the atmosphere. We wouldn't even notice the loss!

There are many pollution problems to worry about. Loss of oxygen is not among them. Let's try hard to keep a rational perspective. We need nuclear power because we are eventually going to exhaust fossil fuels and because there are better uses for fossil fuels than burning them in central electricity-generating stations. However, fossil fuel will have to continue in this use for many years; so the pollution

problems associated with them must be solved, as pollution problems associated with nuclear fuels must also be solved.

It is not necessary to be against fossil fuels to be for nuclear power development, or vice versa. We need both energy sources.

HOWARD B. PALMER
Pennsylvania State University
University Park

Nonscience majors

Although applied scientists *may* be able to do all for nonscience majors that P. L. Walker Jr says they can, they frequently don't. (See his letter, July, page 17.) As Ernst Mach said, "Economy of communication and of apprehension is of the very essence of science." I was schooled both ways, and I regret the many hours wasted under teachers too far out on the applied end of the spectrum. More fundamental approaches covered the same material better in one-tenth the time.

BRADLEY F. BENNETT
Universities Research Association, Inc
Washington, D.C.

Nuclear-energy risks

I would like to say that I enjoyed reading the article by Walter H. Jordan (May, page 32) and also that his arguments on the risk of nuclear energy compared to other activities are well taken. However, his statements on the risk of private flying appear to be misleading.

Taking the figures given in the article, the fatalities per hour of exposure are 8.4 times greater for private flying than for commercial airlines, instead of the 20 times stated in the paper. In addition, the commercial time involves only the process of getting from point A to point B, whereas the private flying includes the considerably more dangerous tasks of learning to fly, specialized flying (such as crop dusting) and stunt flying.

RONALD L. FOX
Sandia Laboratories
Albuquerque, N. M.

Information-program questions

As I read the article "New Information Program for AIP" (December 1969, page 29), a number of questions and thoughts crossed my mind. The answers to all of them will have to be reached if your plans are to become completely effective. Assuming that I might have seen something that you didn't, I offer these thoughts to you: *Terminals*. Where would they be lo-

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