

letters

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work the system. And soliciting an outgoing President's endorsement might be a good way to build momentum for the cause—but what all of that has to do with maximizing the scientific yield per tax dollar escapes me.

GEORG F. ALBRECHT
Livermore, California

4/87

Refusenik news

In May of this year we had the opportunity to visit the long-term scientific refuseniks in Moscow. These scientists, and their families, applied to emigrate to Israel during the 1970s but have still not been released. Although there are many promising developments in the Soviet Union, the tragic plight of these scientists has not improved, a fact that should be of special concern to their American colleagues.

The refuseniks are convinced that pressure from Western scientists has kept them out of labor camps, has allowed them to eke out meager existences despite the loss of their jobs and has permitted them to hold scientific meetings. It was therefore particularly distressing to learn that the refuseniks feel quite cut off from the US scientific community. Few American scientists are visiting them despite the enhanced level of contact resulting from *glasnost*. It is very important that physicists traveling to the Soviet Union visit the refuseniks; it is simple to arrange such visits, which are presumably monitored by the KGB—whence their importance! We can assure you that such a visit will add immeasurably to the significance of your trip.

Because of a new law, which came into force last January, emigration applications may be accepted only if the person has close relatives in Israel. (Thus the concepts of "open borders" and unfettered emigration have been rejected from the start.) Once an application has been accepted, however, "secrecy" is the *only* legal reason for rejection. It is here that the scientific community, as contrasted with the general public, has a special role to play.

The Soviets have stated that "secrecy" lasts only a few years, but in the application of the law they have denied permits to people who had their last contacts with secrets 10 or 15 years ago, and they have extended the limit of secrecy to the family members of the person in question. Minimal contact with the military establishment constitutes justification for "secrecy" in most

cases: Anyone who was in the army (remember that there is a draft in the USSR), anyone who worked on a computer that someone else was using for classified studies, and so on may be refused permission to leave.

Scientists can make it clear, and we urge our colleagues to speak out on this point, that essentially no one still has secret information after 10 years.

The long-term scientific refuseniks need our help. Let us not refuse it.

KURT GOTTFRIED
Cornell University
Ithaca, New York
ANDREW SESSLER

Lawrence Berkeley Laboratory
Berkeley, California

8/87

This letter is written to bring to the attention of the scientific community, once again, the case of Vladimir Kislik—formerly a resident of Kiev and now residing in Moscow—who has been a refusenik for 13 years. I was first made aware of Kislik's situation some ten years ago by a scientific colleague. At that time Kislik was interested in having some of his research on helium in metals published in a Western scientific journal. Since that time many unpleasant events have occurred in Kislik's life as a result of his simple desire to emigrate to Israel. Recently I received a copy of an open letter from Kislik to the secretary general of the Communist Party of the USSR, Mikhail Gorbachev. The letter, which speaks for itself, follows:

"Thirteen years ago I applied for the first time for permission to emigrate to Israel and I received a temporary refusal. The reason for the refusal was my employment by an organization that handled some classified projects on atomic energy. This position was terminated in 1966, that is, more than 20 years ago. Now these so-called secrets are well known to every college student and even to many high school students. However, the authorities still give my familiarity with this information as the reason why I am not allowed to emigrate.

"For 13 years I have been actively struggling to receive an exit visa and for 13 years the authorities have been actively persecuting me. They had me placed in a mental institution, and then sent me to prison for 'hooliganism' on charges that they fabricated. As a result I lost my qualifications as a scholar and engineer. My son, who emigrated to Israel as a small child, is now an adult.

"It goes without saying that your 'authorized organizations' can continue their repressive actions, they can put me in prison again, or they can arrange

for me to be in an 'accident.' However, believe me, there is nothing that will change my determination to emigrate to Israel.

"For 12 years I have been a citizen of the state of Israel and for all these years I have been struggling to be freed from Soviet citizenship. What do you need me for? As an example to intimidate the others? As a hostage? Believe me, it no longer works. On the contrary, an example of determination and stamina results in sympathy and respect from the population. That is not what you want, is it? You claim that you are a proponent of a new way of thinking and a new approach to solving problems. Hence, I suggest that the wisest way to solve my problem is to give me permission to emigrate to Israel.

"Vladimir Kislik, Moscow 123458, Tallinskaja Street, 24, Apt. 176."

DAVID N. SEIDMAN
Northwestern University
Evanston, Illinois

1/87

Physics pro bono

In the November 1986 Reference Frame (page 7), Leo Kadanoff suggests that doing physics is analogous to building cathedrals: "One argument often used to justify society's support of pure science is that contemporary science is producing great and enduring structures that will be passed on to future generations as a major portion of the legacy of our age." Ah, yes, such structures as nuclear waste repositories, missile silos and the tens of thousands of nuclear weapons that are hidden about the landscape. Physicists do not make cathedrals, but many in our community contribute to the development of weapons, whether intentionally or not. If we are honest with ourselves, we must admit that it is the connection between physics and warfare that provides the strongest motivation for society to spend money on physics.

When testifying before Congress to gain financial support, some leaders of the physics community have tried to titillate the government with hints of quark bombs and other esoteric weapons. They needn't bother. Congress and the Department of Defense know full well who makes the best weapons and where the best weapon-makers get trained—in laboratories that do pure science.

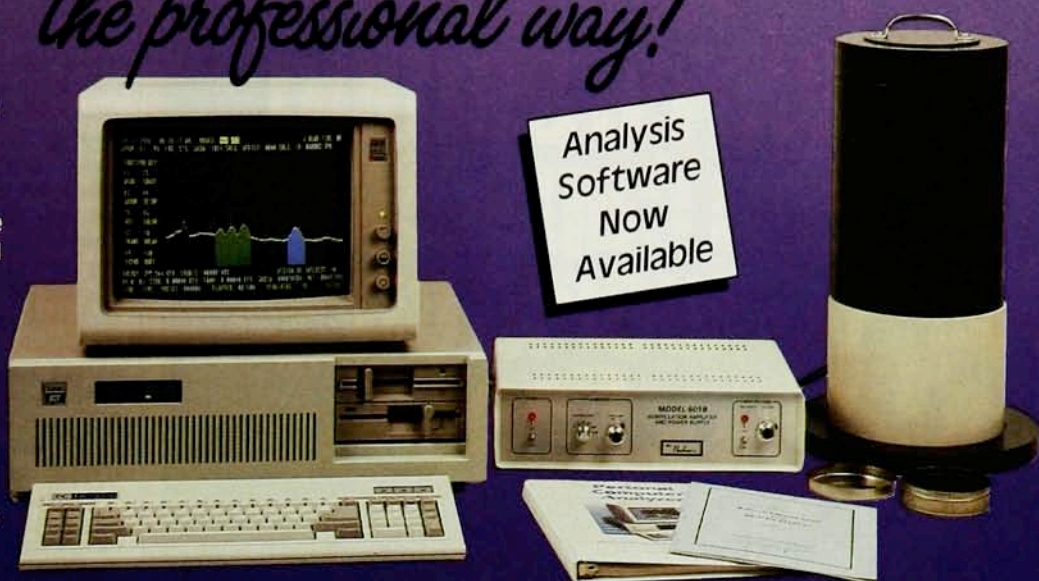
At some stage in our careers, most physicists, I suspect, have made a Faustian bargain with the defense establishment, either directly or indirectly. But even those who have not done so still face a dilemma common to all

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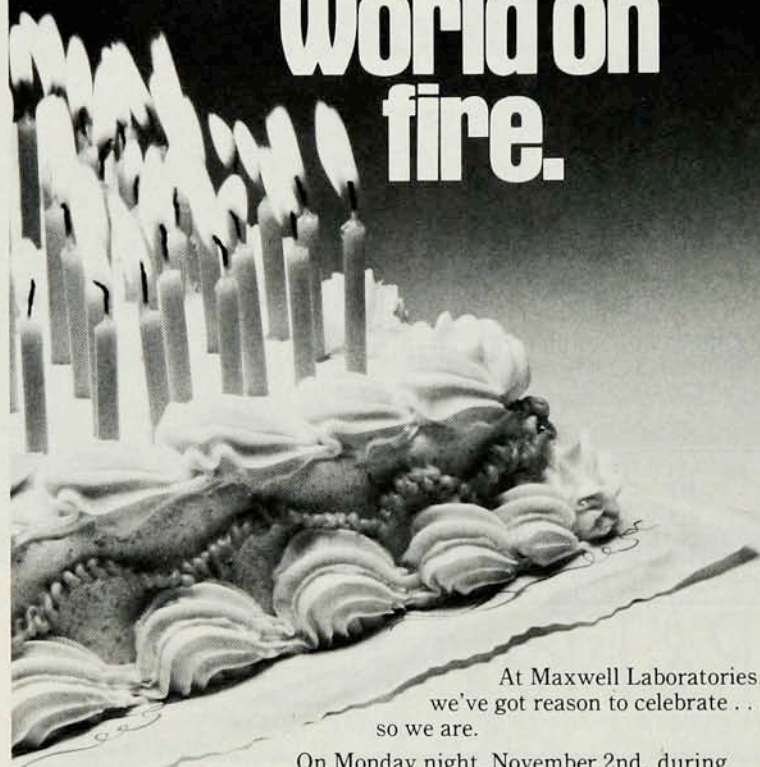


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letters

who work in science: New scientific knowledge can (and will) be used for bad as well as good purposes. The general response to this dilemma among physicists appears to be a collective washing of the hands, defended on the grounds that society, not the scientist, is responsible for the uses to which science is put. Alternatively, it is argued that on balance the good from science will outweigh the bad. There is certainly merit in this position, but shouldn't scientists try to tip the balance? Wouldn't it be reasonable to have in physics the equivalent of a Hippocratic oath that would obligate physicists to work to see that their results are not misused?

I admit that the actions required to carry out such an oath would often be unclear in regards to an individual's own work, for the negative possibilities of research, if any, are usually difficult to foresee when the research is first published. But the ambiguity in the oath could be removed by making a bargain, not with the Department of Defense, but with future generations of physicists. For instance, we could agree as a community to work (in our spare time if necessary) to alleviate current problems that have surfaced from past discoveries, with the understanding that the next generation of physicists will attend to the problems that will inevitably arise from our own discoveries.

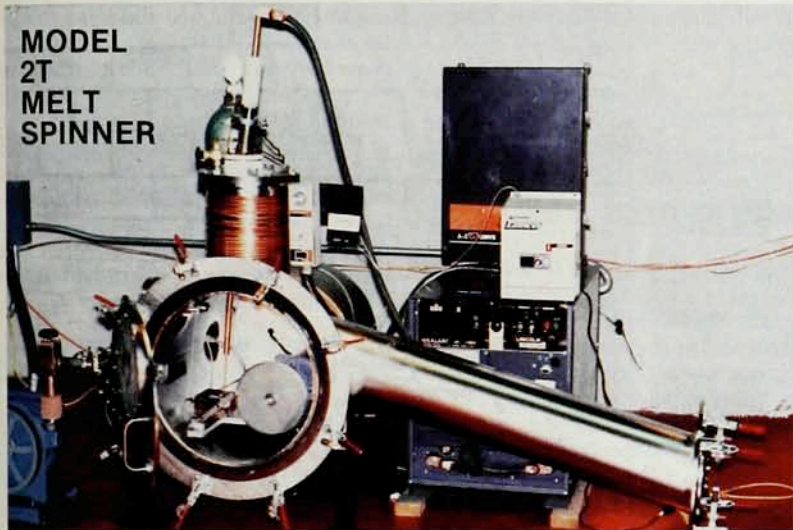
Such a bargain could be put in practice by following the example set by lawyers, many of whom routinely set aside time to provide free legal assistance, *pro bono publico*. Certainly, many physicists already do *pro bono* science, most notably in connection with the debate over nuclear armaments. But *pro bono* activities are not considered a communitywide obligation that every physicist should try to meet.

As a physicist and environmentalist who deals with the failures of technology on a day-to-day basis, I have come across dozens of technologically related environmental problems that could be solved if enough physicists focused on them. For example, a major obstacle to both the recycling of materials and the assignment of liability for environmental damage is lack of knowledge of the constitution of waste and of who made it. Could not products be impregnated with trace molecular "signatures" that one could read using atomic or nuclear resonance techniques—signatures that would carry, in standard code, information on the chemical makeup, date of fabrication and company that manufactured the product?

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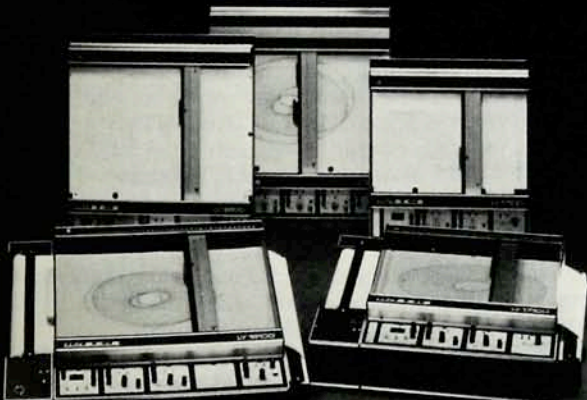
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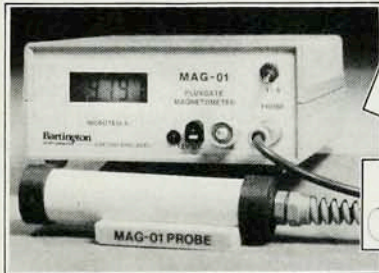
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letters

I am compiling a list of problems that physicists might attempt to solve that are related to the side effects of scientific discoveries. I invite readers to peruse the list in its present form and to assist in its development and distribution. Most of us would agree that we do physics because it is the purest pleasure that we experience. Such pleasure demands compensatory *pro bono* work, out of symmetry considerations, if nothing else.

JAN BEYEA

National Audubon Society

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Clearing up optics credit

Writing the AIP year-end *Physics News* special reports must surely be a thankless task. Those physicists whose work is featured are certainly gratified, but numerous others who are not mentioned are undoubtedly disappointed and dissatisfied. Which topics to include and what aspects to emphasize are, of course, left to the judgment of the reviewer who prepares and signs the report, and there is little point in airing complaints as to why this or that area was not covered. The situation is totally different, however, when a particular aspect of a given topic is chosen for discussion, but credit is given to only one of two identical, independent contributions.

In his review on photon localization (January 1987, page S50), S. James Allen explicitly discusses three of the four experimental papers in this area that have appeared in *Physical Review Letters*. The fourth paper, inexplicably omitted, is ours. The first two papers Allen discusses, by Meint P. van Albada and Ad Lagendijk¹ and by Pierre-Etienne Wolf and Georg Maret,² describe weak localization in coherent backscattering of light from polystyrene spheres suspended in a fluid medium. Although there is a difference of two months in received date for these two papers, Allen quite properly gives equal credit to the two groups for making independent, nearly identical and equally important contributions. In rigid media the scattered light is dominated by large-amplitude fluctuations that completely swamp the coherent backscattered peak. However, this peak is still there and can be recovered by ensemble averaging. This was shown by both Shahab Etemad and coworkers³ and by us,⁴ but unfortunately Allen fails to mention our work. In this case there is also a difference in received dates (only six weeks), but our

paper was received almost two months before publication of that of Etemad and coworkers, and a comparison of the two papers makes it perfectly clear that they are independent, equally important contributions that lead to the same final result.

I'm sure that Allen's oversight in omitting our paper was simply due to the impossibility of being aware of every significant contribution to the vast field of optics. This difficulty might have been alleviated somewhat for the work of Etemad and coworkers since they and Allen belong to the same organization, Bell Communications Research. Having myself spent six years at Bell, I know that the management is extremely sensitive on the matter of ensuring that proper credit is given to work done outside that institution. Accordingly, I'm sure that Allen is as interested as we are in seeing to it that the record is set straight.

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3. S. Etemad, R. Thompson, M. J. Andrejco, *Phys. Rev. Lett.* **57**, 575 (1986).
4. M. Kaveh, M. Rosenbluh, I. Edrei, I. Freund, *Phys. Rev. Lett.* **57**, 2049 (1986).

ISAAC FREUND

Bar-Ilan University

Ramat-Gan, Israel

2/87

ALLEN REPLIES: Isaac Freund's indignation at not being cited in the *Physics News* in 1986 article on photon localization is well justified but unavoidable. The deadline for contributions for 1986 was in fact 1 August 1986. Since his work was published in October 1986, I was unaware of it at the time of submission. Otherwise it certainly would have been cited in the article.

For the record, Freund is correct. He and his coworkers recognized and documented the importance of ensemble averaging essentially at the same time as Shahab Etemad and coworkers, and they should share the credit for this important contribution.

S. JAMES ALLEN

Bell Communications Research

Red Bank, New Jersey

7/87

Aiding Latin American physics

On 1 July 1984 the International Physics Group of The American Physical Society obtained a two-year, \$300 000 NSF grant devoted to the Latin American Assistance Program. That program supported physics programs in Argentina, Brazil, Chile, Mexico and Venezuela. The funds offered help