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"amendment," which says, "Your investigation must be made critically and in detail; take nothing for granted, believe no general statements, and above all, avoid brainwashing by university administrators and business managers." I would add though: Don't believe the conventional wisdom on this subject. Resist the temptation to blame the people who are closest to you for things you don't understand. Consider the possibility that the reimbursement system is faulty and no person or groups of persons (university administrators) are to blame. Entertain the notion, just as a hypothesis, that the universities are reducing their science faculties because they can not afford to subsidize their research programs.

D. H. DOUGLASS
University of Rochester

5/23/80

Failure of ex-physicist

A major goal of physics education is the training of generalists. Beyond the technical details we try to teach our students to look at problems from a common-sense point of view. The impressive computer output must be tested against the order-of-magnitude estimate.

I am reminded of all this by the recent spectacular failure of an ex-physicist (see June 1966, page 45) now in a position of great power. Following his computer output, he directed a disastrous adventure in Iran, which anyone with common sense should have known was absurd. I do not know whether this failure was due to the deficiency of his education or to a subsequent deterioration. In any case, it serves to remind us that we do our profession and our nation a disservice if we train pure technicians who lack a balanced perspective and a good leavening of common sense.

LINCOLN WOLFENSTEIN
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5/1/80

THE DEPARTMENT OF DEFENSE COMMENTS: The planning that went into the rescue attempt was thorough, the intelligence supporting it detailed, extensive and accurate. Training was exhaustive and painstaking, involving trials under conditions almost identical to those that would be actually encountered, and including tested provisions for a myriad of contingencies. It is certainly regrettable that a set of unfortunate and unforeseeable events combined to prevent a successful outcome, but it is grossly inaccurate to ascribe the failure of the mission to a lack of "common sense."

Far from being an "absurd" attempt, it was a carefully planned and operationally feasible effort to free a group of Americans who have been wrongly deprived of their freedom since November 1979. All concerned in the planning of the mission, or in the training for it—from the President and the Secretary of Defense to the commanders, pilots and crews—felt that it had a good chance of success.

THOMAS B. ROSS
Assistant Secretary of Defense
Washington, D.C.

High-risk proposals

I am the chairman of a task group established by the Advisory Council of the National Science Foundation to look into the adequacy of the process for funding research proposals that are highly innovative but also have a relatively high risk of failure. There seems to be a perception in some parts of the scientific community that highly imaginative proposals for research which are "off the beaten track" sometimes have difficulty in obtaining funding because scientific reviewers and agency officials are unduly conservative and tend to "play it safe."

We would very much appreciate having comments and views of the scientific community, including any knowledge of significant creative proposals for research that experienced difficulty in receiving funding from federal agencies, as well as suggestions for improving the mechanism for handling such proposals. We are also concerned about the possibility that some worthy proposals may experience difficulty because they fall between different disciplines or divisions of a discipline.

The task group is in no sense an appeal mechanism, nor does it have any possibility of determining the merits of individual proposals, but is involved in suggesting ways in which the procedures and policies of the National Science Foundation can be most effective in fostering highly creative science in our laboratories and universities.

HALSEY ROYDEN
Department of Mathematics
Stanford University
Stanford, California

5/27/80

Views of science

The report (April, page 42) of Lewis Branscomb's review of "Physics and the APS in 1979" may have conveyed the impression that we were not in full agreement in our view of science. There was no such suggestion in the text itself, but by some mischance the figures on page 47 acquired captions that implied a contrast between "Ziman's view" and "Branscomb's view." To

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show that there is no such cleavage between "theory" and "experience," we would like to point out that all the figures contained in Branscomb's report were simplified versions of "models" presented by Ziman at the AAAS meeting in San Francisco in 5 January.

L. M. BRANSCOMB
IBM
Armonk, New York
J. M. ZIMAN
University of Bristol
5/5/80 *Bristol, UK*

Nuclear waste stalemate

The following is a proposal to break the political stalemate concerning the location of a nuclear waste disposal site. Presently, politicians will not support the location of such a site in their state. Until they are able to see benefits to their state from the site and are able to explain these benefits in a form easily understood by their constituents, no politician is likely to support a nuclear-waste site in his state. My suggestion to change this situation is based on the following assumptions:

- Our present waste should be stored in the location best suited to contain it.
- The responsibility for waste disposal should be distributed equally to each citizen. Those who live in localities that do not directly receive electrical power generated by a nuclear reactor are receiving other fuels freed by nuclear power for their consumption.
- Storage in a state will hurt that state in some fashion.
  - **a.** There will be additional psychological stress in some part of the population.
  - **b.** Some new industry may locate elsewhere.
  - **c.** Transportation through the state to the depository has its risks.

To break the stalemate on site location Congress could require all the states to set a value for the storage of their populations' proportion of the waste. The state with the lowest bid (in dollars per person-year) gets the job. The other states pay that state yearly an amount equal to one half the sum of their bid and the lowest bid, times the population of the paying state. States that do not offer a bid by the deadline pay at the highest rate. A time limit of about 30 years should be set for these agreements. The waste should be stored in a manner that allows it to be retrieved with a reasonable effort.

A plan such as this would share the responsibility for safeguarding our waste. It would make it possible for states with geological formations that appear to be favorable locations for depositories to look upon these formations as valuable resources of the state. Presently, many states consider these locations liabilities.

ROBERT D. MITCHELL
Jackson State University
5/27/80 *Jackson, Mississippi*

Sakharov poll

Hurrah for your editorial "Scientific freedom: Political hostage" and the APS stance on the humiliation of the US Science Community by the Carter White House. I am moved to ask: Can't APS *do* anything? Can we demand less at home than FAS seems to want of the USSR? I know that Frank von Hippel would want me to dissent, perhaps even honor me for it. While I respect him enormously for the informed dissenting role he has played in science and society matters, I believe the "Sakharov Poll" (April, page 9) was unnecessarily loaded. As a member of FAS, I approve of the no-boycott stance von Hippel has emphasized. However, there is a remnant tenor to the guest comment that suggests that those of us who believe that the entire non-cooperation strategy is ineffective and counterproductive are either less politically concerned, or possibly less patriotic, or both. The evidence: The poll offers five levels of "action," and the other titled "Scientists should not be involved," with an even less attractive description. The write-up gives none of the dissenting viewpoint; that the entire exercise is one of venting frustration by the US science community, and that by the test of effective help to Sakharov it is at very best a very long-odds gamble. No mention is made of the potential negative impacts of the more draconian options. Is a protest worth even a 1% increase in the chance of nuclear war?

If the FAS were better trained in the social sciences it could perhaps have had other options listed to give a less biased set. Here are some possibilities:

Scientists should get informed and involved. The political background and realities of USSR actions in Afghanistan, increased suppression of civil rights of outspoken critics of the regime (including scientists and clerics, and so on), and the increased threat of nuclear war, require the intense study of every scientist-citizen *prior* to any response.

Scientists should work for betterment of civil rights, starting with their home countries, but extending their concerns to wherever they can be effective. They should exclude grandstanding as vigorously as they exclude forging of data.

US scientists should strengthen existing ties with their colleagues in the USSR science community, encouraging and expanding exchange, as the most effective means of helping Sakharov (and Orlov and Scharansky, and so on). After all, detente and increasing exchanges did yield results: Thousands of Jewish emigres; Levich allowed out, Sakharov not expelled. Continued cooperation will give the USSR Academy the maximum positive leverage to exercise in their much better informed ways to effect some change. To expect to force the government of the USSR to its knees to officially retract on "SOS" in the full glare of publicity by threatening to withhold some paltry visits, flies in the face of history and human nature, and exposes a touching naiveté ill-suited to the complex science of political response by scientists.

There are some scientists, and I note in this connection, Kenneth Boulding among them, who said in his editorial in *Chemical & Engineering News* (14 April) that it is of "the greatest importance to sustain whatever contacts we can with the scientific community of the Soviet Union. We can certainly express our dismay and anxiety about what has happened, but we must endeavor to maintain whatever contacts we can." Unless more convincing evidence is forthcoming the null hypothesis must surely be that aggressive friendliness and cooperation and an accurate humility about the worldwide track record of our own government (even though we may be much better on personal rights) may be just as effective as an SOS campaign, as is the route of travel boycotts and exchange cutoffs.

RUSTUM ROY
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Frank von Hippel's Guest Comment in April (page 9), accompanied by his poll (in the name of the Federation of American Scientists), seems to me one too many of such write-ups in your journal. He is all worship for Sakharov and all curse for the Soviets. His poll provides one number to circle disagreement with his assessment and recommendation and five different numbers to choose for agreement. He will do the counting and publish the results, presumably in PHYSICS TODAY. To make doubly sure, he reminds the readers, "We citizens of the US have little to lose by speaking out in support of Sakharov. We stand to lose a great deal, however, if we do not come effectively to his defense." Not a very subtle way to intimidate me to vote right!

I happen to admire people such as Gandhi, Russell, Pauling, Sakharov, and so on who like to stir up the system now and then and enjoy the penalty for it. But von Hippel wants us, as physicists, to protest the Soviet way of dealing with Sakharov. That is precisely