

2. D. Ball, "Can Nuclear War be Controlled?" *Adelphi Papers*, No. 169, IISS, London (1982).
3. Martin B. Einhorn, Gordon L. Kane, Miroslav Nicić, "Strategic Arms Control Through Test Restraints: Principles and Case Studies," Office of International Peace and Security Studies, University of Michigan, to be published in *International Security*.

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10/83

AN AUTHOR COMMENTS: Alvin Saperstein suggests that a comprehensive test-ban treaty would be beneficial to world stability since an equitable decline in reliability of the the nuclear arsenals of both sides would reduce the temptation for a first strike. The assumption of an equal rate of degradation of weapons on both sides is crucial to this argument, and unfortunately the assumption may not be true. The American weapons labs are quite concerned about a possible asymmetry in the stockpile degradation of American nuclear weapons vs. those of the Soviets.¹ They fear that the Soviet weapons are simpler and more robust than the sophisticated American designs, so that after some years of a test ban the Soviets might be more confident of the reliability of their warheads than we are of ours. Clearly, no American government will accept a test ban until this fear is dispelled. I pointed out in my article that if the present sophistication of American weapons designs gets in the way of a test-ban treaty, then it is time to ask why the weapons labs have not come up with proven designs that can be dependably manufactured in the future. If the Soviets can do it, then we can, too.

Reference

1. J. K. Landauer, National Security and the Comprehensive Test Ban Treaty, UCRL-84848, August 1980.

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I find Robert Barker's primary arguments against a Comprehensive Test Ban to be somewhat disingenuous. In his discussion of reliability—his first argument, and thus presumably his strongest one—he states that the testing of nuclear weapons already in the stockpile is necessary when inspectors find evidence of unacceptable deterioration (through non-nuclear testing). He fails to note that suspected defects thereby uncovered could simply be fixed, and components remanufactured to their original specifications. Is he really arguing that a part that fails cannot be replaced with a working part with the same functional specifications?

Modernization as a reason for continued nuclear testing takes for granted that modernization (the development of new weapons systems with performance characteristics different from previous weapons systems) is a *sine qua non* for US defense policy. Indeed, if Barker were to accept the notion of a mutual nuclear freeze, the modernization rationale would also disappear. Thus, any modernization argument against a comprehensive test ban must also include an argument as to why the US needs the military capabilities provided by modernized nuclear weapon systems. Barker does cite future needs for a penetrating bomber and for long-range nuclear artillery, but he presents no argument for their military utility. The absence of such an argument leads me to suspect that perhaps one cannot be justified.

Perhaps unwittingly, he also makes a comment that illustrates a remarkably narrow vision of US security. He argues that nuclear weapons in which the US does not have confidence have the same effect on US security as weapons which have been removed unilaterally from the US stockpile. This argument completely ignores the Soviet viewpoint, which would quite naturally be that even US weapons that have not been tested may very well pose a potential threat to the USSR. Therefore, these untested weapons will enter into the perceptions of the Soviet leadership, and thus will be taken into account by Soviet defense planners. Barker apparently forgets that our nuclear arsenal does not exist in a vacuum, and that our adversaries may not necessarily share our perspectives.

I fully support Barker's call for an informed debate on a comprehensive test ban, and indeed on all aspects of US national security interests. However, an informed debate would call for a consideration of Soviet perspectives and an explicit justification for desired new military capabilities, as well as knowledge about the maintenance of complex equipment. Barker's piece seems somewhat lacking along these dimensions.

9/83

Appeal from India

I am an electrical engineer in India, the country of Mahatma Gandhi. His struggle against imperialistic forces to provide social justice to the common man will be remembered by all for centuries. We all are following his path and struggling peacefully to bring peace on this planet.

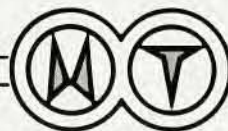
Gandhijee is also known for his instrument of struggle: "non-cooperation

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tion and disobedience." Each of us has to meet certain obligations—legal, social, ethical, religious and so on.

We have to do many things under compulsion even though our conscience opposes. It requires lot of courage to stick to one's conscience and refuse to act under compulsion. This is as true for people in independent countries as it is for those elsewhere.

As far as war is concerned, our society can be divided into three groups:

► Masses—peace loving, common man.

► Scientists and engineers engaged in invention, design and manufacture of weapons and military personnel using the weapons. At present this group seems indifferent to mankind even though their own families are included.

► Rulers and politicians, many of whom seem to be born without "heart" and who use others as mere puppets.

We are now trying to awaken millions, who hardly know anything more dangerous than firecrackers, to the dangers of nuclear war. We hope that a strong public opinion will compell our handful of rulers to instruct their respective scientists and engineers to stop the arms race. But the problem of making masses of people aware of these dangers is very great.

Why do not we scientists and engineers engaged in the manufacture of nuclear weapons take the initiative in solving the problem? We can adopt Gandhiji's tool of non-cooperation and disobedience against our respective governments concerning the policy of the nuclear arms race. Irrespective of the consequences one has to face for this bold step, if one visualizes his beloved family directly affected by nuclear arms, he will be able to show this courage.

I am sure that scientists and engineers can stop the arms race and reverse it using the tool of non-cooperation.

Going one step further, I appeal to the family members of scientists engaged in the manufacture of nuclear arms to stage non-cooperation at the family level to persuade them to boycott this crime against humanity.

- Cooperation among scientists
- Non-cooperation with imperialists
- We want peace for everybody, not pieces of soul and body.

SURESH P. KHEDKAR
Nagpur, India

10/83

Physics and politics

On two recent occasions—George Keyworth (May, page 101) and Robert

Marshak (in a 1983 membership dues message)—it has been suggested that APS members make known their opinions on the political and public-affairs activities of APS.

I wish to enter my objection to the political and social advocacy of the APS leadership in the name of a Society whose purpose—the pursuit of physics—should serve members of all political persuasions. There is an adequate choice of other forums for APS members to express their political and social concerns.

As examples of the continuing and increasing involvement of the Society in political and social questions, I mention the previous ERA issue, the currently expanding Washington lobbying endeavors, and now the "crisis in science education" which APS has rediscovered and to which it is currently giving great attention. I suspect that this "crisis" is as artificial as was the previous one, in the 1958 Sputnik era. The sought-for increased Federal aid to education is clearly a political question—and it is a marvelous occasion for all political candidates to garner votes by outbidding each other in their proposals. The extent of the political polarization on the issue of Federal funding of education is evident in the letter (April 1982, page 96) by Lincoln Wolfenstein characterizing some proposed cuts as Hitlerian anti-intellectualism and the suggestion that a physicist could support a reduction as a "gratuitous insult to the physics community." I, for one, favor such a reduction.

Furthermore, it is a social question whether the running crusade of APS and allied societies to eliminate "scientific illiteracy" is appropriate. Although such zealous effort is an opportunity for self-enhancement of physics organizations, the ultimate effect for physicists and for physics may be rather negative—as it was after the previous crusade. When the inevitable reaction sets in and the resulting unemployed physicists are out in the cold, APS will have yet another public-affairs activity: It can reactivate its unemployment studies and grind out more manpower projections. But, as pointed out by Vladislav Bevc (December 1982, page 90), there will be no distant consumer paradise to which the surplus physicist can emigrate or from which he can get seminar visits or gratis journals. But maybe by then he will even have his degree revoked, as proposed by Byron Hall (May, page 15) and so mercifully declassified from the physics profession—as allegedly already occurs in the Soviet Union [*Nature* 297, 4 (1982)].

I believe that APS should confine itself essentially to the physics activities of journal publication, organization of meetings, award of prizes, and inter-

action with other (foreign) physics societies, including the so-called science and technology transfer to the third world—in general, *the business of keeping physicists informed about physics*. I think it should not inject divisive public and social policy advocacy into its curriculum.

It has become customary for candidates for APS offices to claim that the great impact of technology on our lives makes it necessary for science and in particular physics to be involved in public policy. Is this connection obvious? In the realm of public affairs there is ample room in the technical studies that APS does on reactor safety and on solar photovoltaic energy and so on for informational, objective and non-political activity. But what except hubris leads a physics organization into public policy? The fact that the functioning of a nuclear weapon is based on physics doesn't mean that a physics organization (as opposed to individual physicists) is any more called upon or obliged to speak on nuclear strategy, tactics or defense than is the Chamber of Commerce. And it seems more than a little arrogant for PHYSICS TODAY (Editorial, June 1982, page 112) to comment on issues from nuclear war to evolution vs. creationism.

One way for APS members to express disapproval of the Society's expanding political and social activism, short of resigning their membership, is to delete the "normal voluntary contribution" which is assessed annually with the membership dues. Since it is stated that this contribution is needed to finance the many "new programs," for example in public affairs, then maybe a reduced contribution return would induce the leadership to stay closer to physics.

In a message accompanying this year's membership dues and subscription renewal invoice, Marshak said he welcomes members' views on how APS can best fulfill its mission. The latter term is appropriate for one of the qualities I am criticizing: I think that the organization is too missionary.

WILLIAM MEOLLERING

9/83 Cincinnati, Ohio

COMMENT FROM APS: William Meollering's suggestion that "one way for APS members to express disapproval... is to delete the "normal voluntary contribution..." is quite appropriate. Indeed, one purpose of this voluntary contribution program is to provide APS members this opportunity for tangible comment on Society activities. Members may also express approval by making a special contribution. I am glad to report that many members do so in a very heartening way.

JOSEPH A. BURTON

Treasurer

The American Physical Society

New York, New York □

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