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LETTERS

Equity and Economics

William D. Carey, in his editorial on budget cuts in science "The threshold of pain: Coping with frugality" (27 Feb., p. 879), is quite wrong in stating that "What lies at the heart of the whole matter is the question of equity." Few if any of our fellow citizens will ever ask that science be cut in the name of "equity." They have the common sense to know that the future of science is inextricably linked with both the national economy and the national security. Science is part of the solution, not the problem.

And if science were excessively funded, little enough could be saved in any case. Above all, these cuts have taken place without any consultation with a government science apparatus much less a science adviser.

If the Reagan Administration succeeds this year—or in the coming years—in pulling up important roots of science just to be "equitable," we shall all be the worse off for it. In such circumstances, scientists would be foolish not to defend science; they would betray not so much the interests of their colleagues as the interests of their fellow citizens and of their country. With this in mind, the Federation of American Scientists—which is not now and never has been a trade union for science—is planning to watch events closely and to react from time to time. Scientists are encouraged to write to us as events develop.

JEREMY J. STONE

*Federation of American Scientists,
307 Massachusetts Avenue, NE,
Washington, D.C. 20002*

AAAS will be heard from when rumors are superseded by fact and the danger can be assessed responsibly and with a sense of proportion.

—WILLIAM D. CAREY

The MX Question

I want to both commend and criticize Eliot Marshall's article (News and Comment, 13 Feb., p. 681) that resulted from his interview with me. Generally the article is excellent and quite accurately represents my views. However, in the discussion of the MX missile, there are two errors of fact. The first is the assertion by an anonymous "submarine fan" that I overstated the weakness of submarines and that the Navy got a retraction

of one of my statements. I have *not* retracted any statements that I actually made about submarine vulnerability, although I have occasionally corrected misquotes or misinterpretations of what I said. I challenge the "submarine fan" to produce the retraction he claims the Navy got. If I am going to be accused of being inaccurate and unfair, the person making that value judgment should be identified as well as the statements he is criticizing.

The second error is the bald assertion that I played the good soldier despite my private misgivings about the MX plan. I consider this a serious allegation, and yet it is offered lightly, almost as if it were a compliment, and without a shred of evidence, almost as if it were self-evident. It is, in fact, not true. I proposed the MX program to the Administration, and it is therefore a complete distortion of fact to suggest that my subsequent support of it was done only out of a sense of duty. I consider myself an "arms control advocate" and find that position perfectly compatible with being an MX supporter.

Marshall also suggests I have become "flexible" on the MX question, and that I now believe we could give up on land-based missiles and expand our submarine missile forces. My views on that question are the same as they have been for several years. I believe it is best to maintain a survivable land-based missile force. If for any reason that is not done, the second-best plan is to expand our submarine-based missile force. I have testified many times that there are no technical reasons against expanding our Trident force or adding a SUM-like system to our Trident force (although it is a delusion to think that either of these alternatives would be cheaper than MX). I prefer an MX solution because I am concerned that we cannot be positive that we can maintain forever the present invulnerability of the submarine forces, particularly if we allow the Soviets to concentrate on that problem. Thus I am neither an "MX fan" nor a "submarine fan." I believe our best security lies in maintaining a diversity of survivable land-basing and survivable sea-basing for our missile forces.

WILLIAM J. PERRY

*3645 N. Monroe Street,
Arlington, Virginia 22207*

I regret having understated Perry's enthusiasm for the land-based MX missile system, and I am glad he has taken the opportunity to demonstrate that his zeal was not that of a "good soldier" but of a true believer.

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BECKMAN

Readers interested in learning about the submarine debate are referred to the *New York Times* article of 5 October 1980 by Richard Burt: "Brown admits aides distorted MX issue: Pentagon sought to push missiles by exaggerating Soviet gains against U.S. submarines."—ELIOT MARSHALL

Science Funding in West Germany

In his recent letter about the federal government's role in basic research (16 Jan., p. 226), Senator Harrison Schmitt takes issue with Milton Friedman's concern about academic freedom being inhibited by excessive federal support of basic science. Senator Schmitt states that during the last decades, due to a drastic reduction in the proportion of private research funds relative to federal funds, the direction of such research has been channeled and prostituted in many instances.

A balance between government and private funding of research is important, but establishing exactly what that balance should be is very difficult and indeed depends on the science system being considered. In the Federal Republic of Germany, support for basic science depends almost exclusively on government funds. Out of a total of approximately \$2.7 billion spent by German universities on research in 1978, only \$50 million came from private sources, mostly from industry. A similar situation prevails in nonuniversity research institutions doing basic research. In spite of this seeming imbalance, there is no serious inhibition of academic freedom in my country. This may be partly due to the policy of the government to support basic research predominantly by financing the budgets of a few large, independent, scientific funding organizations, such as the Deutsche Forschungsgemeinschaft (the equivalent of the National Science Foundation, but without organizational ties to the government) and the Max-Planck Society. There is little government interference in the process of distributing these funds to research institutes and individual researchers.

The German scientific community is highly sensitized to any threats to this independence from the government. Also, the Max-Planck Society stresses the importance of the existence of some—very limited—private funds they can use without having to give an accounting to the government. Similar views are maintained by researchers from academic institutions.

These views probably reflect an emphasis on the principle of pluralistic sources for basic research more than a recognition of the monetary contribution private funds make in this area of science and technology. Nevertheless, private institutions continue to have an important complementary role in encouraging and supporting scientific research in fields which, for one reason or another, do not meet the requirements for funding or are not sufficiently supported by large funding institutions.

WERNER MENDEN
*Embassy of the Federal Republic of
Germany, Washington, D.C. 20007*

U.S.-Soviet Relations

No action on the part of American scientists affecting cooperation with their Soviet colleagues could be justified which increases the chances of nuclear confrontation with the Soviet Union. This far—but this far only—we are in agreement with William Carey (Editorial, 24 Oct. 1980, p. 383). In advocating resumption of U.S.-U.S.S.R. scientific exchanges and meaningful cooperation between U.S. and Soviet scientists, Carey appears to misunderstand the purposes and effectiveness of efforts like the moratorium on professional cooperation with Soviet scientists advocated by Scientists for Sakharov, Orlov, and Shcharansky (SOS). His editorial misrepresents the position of "leaders in science" in the United States on such actions.

At a press conference in Washington, D.C., on 16 October in which the five of us participated, we made it clear, as does the SOS pledge signed by 7900 scientists from 44 countries (including 33 Nobel laureates, 187 members of the National Academy of Sciences, and 82 fellows of the Royal Society), that such activities do not prevent and are not intended to prevent contacts between U.S. and Soviet scientists on such matters as arms limitation or other aspects of world peace. We are aware that such contacts played an important role in the test ban treaty and, while we doubt that scientists can play an effective role in ameliorating the current U.S.-Soviet impasse, we would support any actions by scientists in the search for peace and disarmament.

It is our firm belief that the moratorium advocated by SOS and, more generally, the sharp reduction in Soviet-U.S. exchanges, which have been valuable to us as well as to the Soviets, not only do not bring us any closer to the confronta-