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-

tion which Carey dreads but are, indeed, effective means to create a climate in which progress toward peace will again be possible. What Carey proposes is just what the Russians rely on after the jailing of an Orlov or a Shcharansky, or the exiling of Sakharov, namely, a brief period of Western protest followed by détente as usual. We are convinced of the necessity of a consistent, long-term commitment to the position espoused by our French colleagues on 16 October in Paris that "scientific cooperation is only morally acceptable if fundamental liberties—freedom of expression, of movement, of association and the freedom to work—are effectively guaranteed." Nothing less will serve when the most basic human rights of our colleagues in the Soviet Union are being violated. Moreover, precisely because of the fact that Soviet scientific elites are "extraordinarily valued professionally," as Carey says, and because contacts with the West are eagerly sought and encouraged, curtailment of such contacts may induce Russian scientists to bring pressure to bear on Soviet authorities, causing them to relax their rigid control of scientists and to moderate their brutal treatment of dissidents and refuseniks. In the words of Sakharov, "It will be totally unforgivable if the West fails to use this leverage" (*1*). Unlike Carey, we think there is some evidence to support our view. Of course, this policy has not helped "the besieged defenders of Afghanistan"; none of us ever expected it would. But Sakharov is in exile rather than in jail, others are in jail rather than dead, and a considerable number of Soviet scientists have emigrated. The strongest evidence favoring this position is the virtually unanimous support of our activities by Sakharov and other dissidents and refuseniks within and outside of the U.S.S.R.

We must also register our dismay at Carey's call for a "reopening of scientific traffic" with the Soviet Union purely on the grounds of "expediency." We are not naïve idealists; rather it is clear to us that to ignore Soviet violations of the human rights agreements they formally entered into at Helsinki can only support the Soviet belief that they can with impunity violate any agreement not convenient to keep. To reinforce this belief is a sure road to the confrontation Carey wished to avoid. And we reject the view that "The quarantining of Soviet science, however principled, defeats the chances for engaging . . . in a dialogue of reason." To the contrary, Sakharov asserts, out of deep concern and profound in-

sight, that " . . . the fear in the West that . . . defense of human rights may harm arms negotiations is unfounded" and that "the human rights issue is . . . a paramount practical ingredient of international trust and security" (*1*).

Where human rights are concerned, principle, sound policy, and the best chance of achieving meaningful détente are congruent.

CHRISTIAN B. ANFINSEN
National Institutes of Health, Bethesda, Maryland 20205
ERNEST D. COURANT
Brookhaven National Laboratory, Upton, New York 11973
PAUL J. FLORY
Stanford University, Stanford, California 94305
MORRIS PRIPSTEIN
Lawrence Berkeley Laboratory, University of California, Berkeley 94720
ANTHONY RALSTON
State University of New York at Buffalo, Amherst 14226

References

1. A. Sakharov, *Alarm and Hope* (Random House, New York, 1978).

As three scientists who participated in an extended botanical exchange program in Siberia during 1979, we wish to commend *Science* on the conciliatory and understanding view of intellectual and cultural exchanges between the United States and the Soviet Union as stated in Carey's editorial.

During our visit, we talked to scores of scientists at all conceivable levels and found genuine concern for mutual understanding as well as fear of the attitudes of many American factions toward the Soviet Union. A true desire for peace was overwhelming among the Russians we met, most of whom had lost family during World War II. They were not, as we are sometimes led to believe, simply parroting propaganda on the advice of superiors.

We hope that Carey's thoughtful editorial will help reverse the antagonistic trends of the last few years and will lead to increased person-to-person contact between scientists of the United States and the Soviet Union.

HUGH H. ILTIS
Department of Botany, University of Wisconsin, Madison 53706
JANICE C. COFFEY
Department of Biology, St. Mary's College, Raleigh, North Carolina 27611
MELINDA F. DENTON
Department of Botany, University of Washington, Seattle 98195