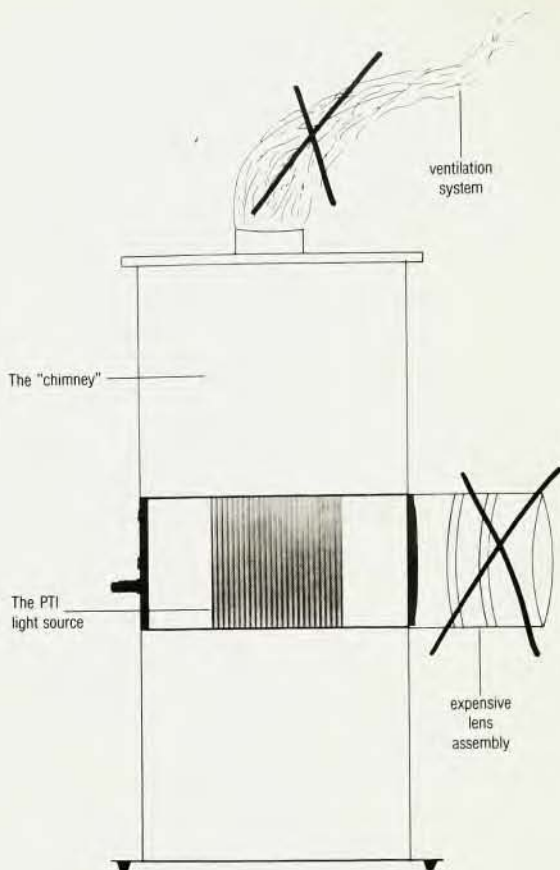




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letters

strength and breadth of solar lines. Since, then, astrophysicists have usually taken hyperfine broadening into account (when the patterns were known) in their analyses of solar and stellar spectra. Additional measurements of hyperfine patterns will be very welcome by the astrophysical community.

GEORGE WALLERSTEIN
University of Washington
Seattle, Washington

11/83

Scientific freedom

There is currently much interest in impending governmental restrictions on and censorship of scientific communication. A central item, in this regard, is that of controlling access to "nuclear information." Statements from within the scientific community appear frequently, along with commission studies, on the grave danger of restricting the openness of scientific exchanges.

In a related area of concern, declarations from within the scientific community have been formulated on the prevention of nuclear war. In the preamble of a document presented to His Holiness, Pope John Paul II, it is noted that "Science can offer the world no real defense against the consequences of nuclear war. There is no prospect of making defenses sufficiently effective to protect cities..." The same document, formulated by an assembly of presidents of scientific academies as well as other prestigious scientists, makes the appeal:

► To national leaders, to take the initiative in seeking steps to reduce the risks of nuclear war, looking beyond narrow concerns for national advantage; and to reject military conflict as a means of resolving disputes.

► To scientists, to use their creativity for the betterment of human life, and to apply their ingenuity in exploring means of avoiding nuclear war and developing practical methods of arms control.

It is by now widely recognized by those responsible for the formulation of governmental policy as well as to those within the scientific community and, indeed, to the citizenship at large, that the nuclear weapons build-up is a destabilizing process. It is a blatant lesson of recent history—deployment of multiple-warhead ICBMs being a case in point. Hans Bethe, in responding to the new initiatives in weapons research, stated in March 1983 (page 120) that "It would be absolutely tragic if we were to jeopardize the intelligence satellites in any way. We have, therefore,

every interest in preventing the deployment of antisatellite systems." Victor Weisskopf, in the same issue (page 9) writes, "The failure of this kind of 'classical' thinking comes from the underlying assumption that the more weapons you possess, the more secure you are. This is no longer true with nuclear weapons." The 8 April issue of *Science* quotes science adviser George Keyworth: "I think it is the prerogative of the American people, not the Defense Department, to ensure that the US does not attempt to achieve a first-strike capability." Such statements leave no room for mendacity.

The history of "scientists with a secret" stems from the experience of Leo Szilard, who very early realized the possibility of enormous energy release by a chain reaction of nuclear disintegration. His efforts contributed to self-imposed secrecy on the part of scientists (prior to involvement by governmental agencies) to keep the power of these ideas from the enemy. Today, the world faces a different situation. The enemy is well acquainted with the ideas. The escalation of weapons research continually produces destabilization and loss of security. The question is no longer one of secrecy, but rather is one of stopping the process of destabilization.

Destabilization is possible if great advantage is obtained by one side involved in the nuclear arms race. It is obvious that a new strategy is needed in which the process of destabilization can be stopped. Perhaps key to such a strategy is the above-quoted call "... to use their creativity for the betterment of human life..." Such an undertaking necessitates a policy of open science. (Weapons technology is not the item under discussion.) The scientific community should live by the rules that it calls for: open publication of new science, even the "important" items which, if kept secret, give great advantage to a select group, that is, those items that, if kept secret, are guaranteed to destabilize. It is within the reach of the scientific community to contribute to stability and thereby to facilitate peace.

The question then comes, can the other side, by keeping "scientific secrets," leap ahead? This question is central to the basic question of the superiority of a repressive, controlled system as opposed to that of a free and open system. It is at the heart of the debate that is currently being contested on economic and developmental fronts in the Caribbean basin. It has been the contention of very prominent scientists overseeing the weapons research establishment that open research is of unparalleled value to our country. The basic question needs to be faced.

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The personal costs to an individual scientist in attempting to face this question are severe. An unwillingness to keep power for a select group is met with great loss by the scientist in that his voice in such matters is ignored. Intense pressure is brought to bear on such an individual. He is isolated and denied the freedom and support that is necessary for his work. His personal life is monitored and he is subjected to professional and economic loss.

After a lifetime of service to his country at the heart of the weapons establishment, both in time of war and peace, and at great personal cost, J. Robert Oppenheimer arrived at the following position:

An indispensable, perhaps the indispensable, element in giving meaning to the dignity of man, and in making possible the taking of decision on the basis of honest conviction, is the openness of men's minds, and the openness of whatever media there are for communion between men, free of restraint, free of repression, and free even of that most pervasive of all restraints, that of status and hierarchy.

The choice facing us is at once both fundamental and profound, the questions being the nature of a free and open society and its place in the world and, possibly, the survival of humanity. The freedom and independence of the scientific community is a necessary item of a free society. Ensuring this freedom and practicing accordingly are both necessary elements.

RICHARD A. MCCORKLE
South Salem, New York

12/83

A death exaggerated

The Mark III collaboration at SPEAR would like to report that the news of its death is greatly exaggerated (December, page 18).

Bertram Schwarzschild's article on the free electron laser included the remarkable statement that SPEAR would be "fully occupied as the synchrotron light source of the Stanford Synchrotron Radiation Laboratory," implying the discontinuance of its high-energy physics program.

The Mark III detector occupies the major interaction region at SPEAR. This collaborative effort of SLAC, the California Institute of Technology, the University of California at Santa Cruz, the University of Illinois, and the University of Washington is alive and well, with plans for studies of ψ decays, ψ' decays, charmed meson production, charmed strange meson production, charmed Baryon production and τ production.

We hypothesize that Schwarzschild has been tuned too closely to the wishful thinking of some of the synchrotron radiation users, with whom we unfortunately must share the use of this very productive storage ring.

ROBERT F. MOZLEY
FOR THE MARK III COLLABORATION
Stanford University
Stanford, California

12/83
Humphrey Bogart replied when told there was no spa in Casablanca: "I was misinformed." We've checked with the SLAC directorate. They expect that high-energy experimentation will continue at SPEAR at least the next four years.

—BMS

Pay for students

The reason for the crisis in physics (math, foreign languages, and so forth) education is that we expect children to do what no adult would do, namely work hard for no payment. We expect students to work hard in school for a future payoff (a successful career). If we want them to learn hard subjects, pay them! That is the capitalistic system and it works! We can call it the Physics Olympics (math, French, English and so on). For each class from third grade and higher, have a list of 100 (300, 500 and so on.) questions and answers appropriate to the grade level. Students would take annual (semianual) tests and the top 10% would get awards of \$100.00 (bicycles, trips and so on), the next 20%, \$50.00 and so on. The prizes are a tangible answer to the question, "What is in it for me?" The goal, of course, is that as students study the questions and answers a percentage of them will truly become interested in the subjects, while the others will get a broad background. Status awards can also be given, junior master of physics, intermediate master of physics, and so on, as in bridge and chess. Incentives work! Why not try them?

ALLEN ROTHWART
Drexel University
Philadelphia, Pennsylvania

1/84

Research on Mideast

The letter by Vladimir Tamari (October, page 117) contains many allegations. I have spent some time researching them. Unfortunately, Tamari did not do his homework. The editors of PHYSICS TODAY have a responsibility to verify all political accusations before publication; unfortunately, they did not do so in this case.

Mohammed spoke favorably of the Jews and the Christians only when he hoped to convert them to Islam. When he failed to do so, he became fiercely anti-Semitic and anti-Christian. In the year 627, Mohammed and his army attacked the Jews of Qurayza in Arabia