letters

Nuclear arms race

Victor Weisskopf in March (page 9) demonstrates two of the fundamental flaws that are frequently found in advocating a basic change in our approach to the problem of nuclear weaponry. First he makes strong statements as to what can be accomplished in the future. The statement "Effective anti-submarine detection, if it ever can be done, is several decades off" is reminiscent of Robert Andrews Millikan's 1937 published statement that "There will never be enough energy available to mankind from the atom to run a peanut whistle." No human being is so prescient that he can safely delimit what the ingenuity of all mankind can produce.

More serious, however, is the tacit assumption that the Soviets, or for that matter any other group of people, operate with the same value systems that we use. What we perceive as an advantageous course for them, may to them appear as anathema. We must indeed question the validity of the author's statement that ". . . there is a chance that they will change their posture in the same way as we do. It clearly would be in their interest to do so, and the Soviets have always served their own interests."

Indeed if we are to achieve a *modus vivendi* with the Soviets and other peoples in this world, we must first learn how they think so that we may understand what they mean by "good," "bad," "freedom," "peace," and the myriad value words that we know and understand and to which we mistakenly ascribe universal meaning.

CARL H. SAVIT
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Houston, Texas

4/83

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Most of the articles in March on nuclear war seem to be focused on the problem of *persuading* the nations of the world that they must avoid such a war. Very little consideration is given to what we should do if these efforts to persuade fail. And yet our past experience tells us that they may very well fail.

Those of us who remember the days prior to World War II recall the great lengths to which the British government went to persuade the Germans not to attack. Anyone who has seen the movie of H. G. Wells' story, "Things to Come," can realize how terrible war appeared in those days. I can recall a story in *Liberty* magazine about the wholesale slaughter of cities by poison gas. Despite all their efforts, the British and French were unable to avoid war.

Many of us had hoped that the terrible slaughter from fire and nuclear bombs in World War II would persuade the nations of the world that war should be avoided through cooperation in the UN or some form of world government. It was not long after WWII, however, that we were forced to fight the invasion of South Korea. Wars have continued despite the danger of escalation into nuclear war. The rhetoric of the nations in the UN makes it clear that they have no intention of giving up war. The US has a large industrial base, but this in no way implies that we can persuade other nations to avoid war.

I shall never forget the shock I received when the radio announced the news of the Japanese attack on Pearl Harbor. We were so convinced that our large navy, population, and industry would deter an attack that several hours passed before many of us could believe the reports. The lesson I learned then was that things that appear impossible to us do not necessarily look that way to others.

Given the possibility of nuclear war, we, as physicists, should be obligated to inform our countrymen how they can maximize their chances of survival. We should show them how to construct shelters that will save many tens of millions of them, and we should design ABMs and other forms of active defense to destroy incoming missiles.

These methods of defense are within the range of expertise of physicists. Persuading other nations to avoid war is not. It is surely our responsibility to inform the experts in foreign affairs exactly how destructive nuclear war is, but we cannot expect to beat them in the art of negotiation. Physicists were not given some divine understanding

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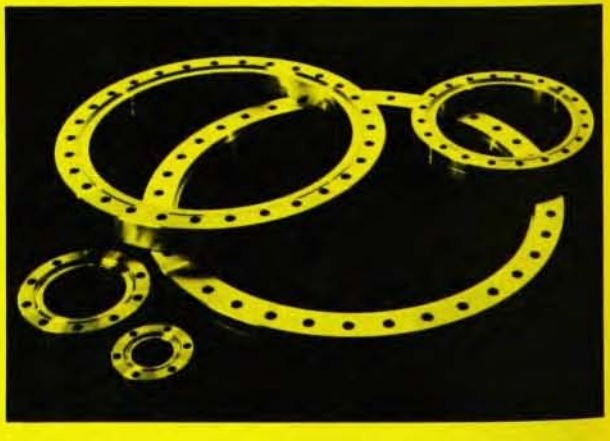

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that guarantees their success in other fields. We do not have a "corner" on intelligence.

ARTHUR A. BROYLES
University of Florida
Gainesville, Florida
4/83

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Victor Weisskopf was correct to say that it is more important to consider principles than military numbers. The latter can be misleading, as is, for example, the number of warheads on B-52 bombers, older than their aircrews, that may not be capable of penetrating the Soviet air defense system—for which there is no US counterpart.

"Collapse of the dictatorships in Spain, Greece and Portugal" offers scarce hope for a "similar process" in the Soviet Union. The difference is between authoritarian and totalitarian regimes; the czarist government was easily overthrown.

"Demonstrating that our way of doing things is still vastly superior to theirs" is precisely the problem. They cannot stand the competition. So long as a portion of the globe is free, there will be people trying to reach it from the communist side. That accounts for such phenomena as the Iron Curtain, the Berlin Wall, and the Boat People (which do not compare with "our own moves in Vietnam and Central America"). The very existence of the shrinking free world (not its weapons) is a "threat to the existence of the opposite regime." (After all, we had the Bomb when they did not and we took no advantage of it. In fact, we stood by while they added Eastern Europe to their empire.)

So this is "where the risks come from"; one way "we can get rid of them" is to join the communist system. "There is indeed a way to avoid nuclear war": surrender. And that is a sure way. Another way is follow the Latin maxim *Si vis pacem para bellum*. This way is not so sure but, in my opinion, is better than the first or one that would lead to the first. I prefer the *risk* of nuclear war to slavery.

D. J. HANRAHAN
Falls Church, Virginia
4/83

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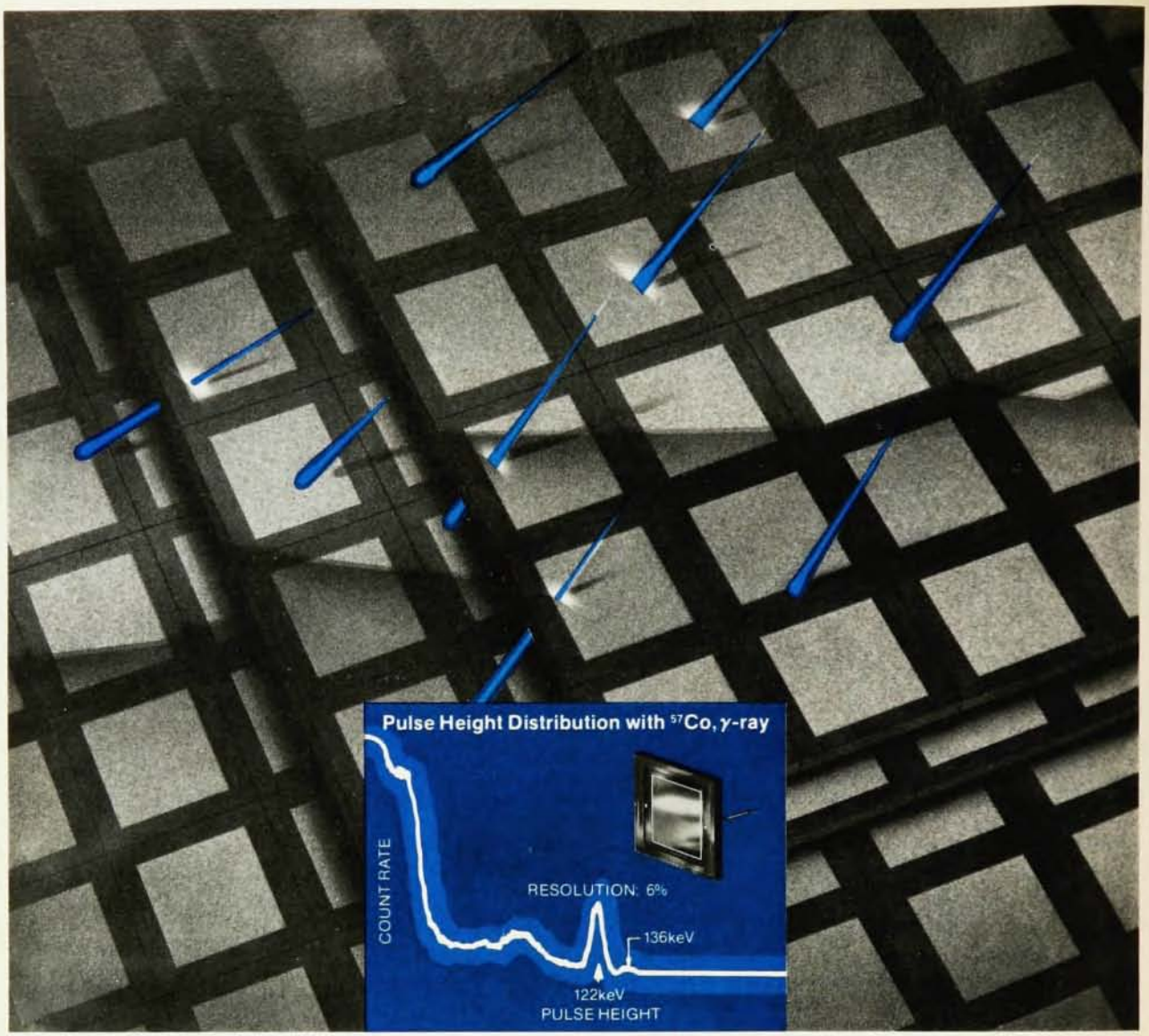
If a problem is falsely stated, it is a virtual certainty that the proposed solution to that problem will turn out to be no solution at all. So it is with the question of the arms race and nuclear war as it is usually posed. For the central problem of our time is not how to end the arms race, nor is it how to avoid nuclear war. Rather, it is this: How can we prevent a nuclear holocaust and at the same time maintain our freedom and independence and the freedom and independence of our friends and allies? The question thus stated presupposes that there exists a real threat to our survival as a free society above and beyond the threat of nuclear weapons; that the conflict between the West and the Soviet Union is not a trivial one based on mutual misunderstanding, territorial disputes, or commercial rivalry; and that a defeat of the West, either as a result of military weakness or loss of nerve, is a calamitous possibility. A sensible response to this question requires more than a count of warheads or a calculation of CEPs, important as these things may be; it requires a realistic assessment of the aims and ideology of our adversary and, above all, a refusal to substitute wishful thinking for serious analysis. Moreover, the two parts of the question—how to avoid war and how to preserve our freedom—are inextricably intertwined; one cannot try to solve the problem as though the system had only one constraint and suppose that the second constraint will somehow take care of itself.

None of the articles in the March issue made any attempt to come to grips with the larger, more complex, question. Particularly disappointing was the guest comment by Victor Weisskopf. The insight and ingenuity Weisskopf has brought to bear on the solution of scientific problems throughout his distinguished career were nowhere in evidence in his analysis of the arms race and the US–Soviet conflict.

Weisskopf appears to subscribe to the symmetry or mirror-image theory of US–Soviet relations. We fear them, but they fear us. They threaten us, but we threaten them. Their system has faults, but so does ours. According to Weisskopf, "the communist ideology is said to aim at the spread of its system all over the world. Certain acts of aggression and occupation are generally ascribed to it. These charges may be accurate. . . ." What is Weisskopf trying to tell us here? Is he implying that the Soviet Union may in fact not be occupying Eastern Europe as is commonly believed? Is he saying that communist powers may actually have no interest in spreading their ideology? It's not exactly clear. But what does seem to be clear is that Weisskopf's Soviet Union is not the Soviet Union that we read about or that our Soviet émigré friends describe to us. His Soviet Union is not an implacably hostile totalitarian power, armed to the teeth and menacing everyone in sight. It is instead a country, admittedly imperfect and sometimes guilty of repression and persecution, which builds weapons primarily because we do and which invades and subjugates its neighbors only out of fear and a



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sense of insecurity.

One gets the impression that for Weisskopf the Soviet threat, apart from the threat of missiles, is not real, and that the apparently intractable problem of US–Soviet relations is a *Scheinproblem*, one which can be resolved through goodwill, compromise, conciliatory gestures and sincere efforts at mutual understanding.

Weisskopf is long on goodwill and short on realistic and pertinent analysis. He prescribes useless remedies for a disease that bears some resemblance to the disease in question, but is in fact not the same disease. He fills his essay with earnest and well-meaning exhortations which range from the platitudinous ("Everyone concerned must think about the sources of the problems and figure out ways to keep the peace") to the obvious and irrelevant ("We have to learn to live with and tolerate people who are different and whom we may not like") to the downright silly ("The spread of their ideology would be prevented more efficiently . . . by demonstrating that our way of doing things is vastly superior to theirs"). In the end, one is forced to conclude that Weisskopf simply does not grasp the nature and scope of the problem; hence he does not and cannot address the legitimate concerns of those who are unwilling to pursue ill-thought-out policies that just might turn their nation into another Poland or that might consign their grandchildren to a universal Gulag.

ROBERT H. KANTOR
Palo Alto, California
3/83

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After examining the March issue, I suggest that the American Institute of Physics change the name of the magazine to *Moral Issues Today*. This would more accurately represent the focus of the publication, while averting all confusion that the magazine might actually concern itself with science.

DONALD A. REAGO JR
University of Missouri
Rolla, Missouri
3/83

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I have long been impressed by the topical nature of the correspondence in PHYSICS TODAY and I was heartened by the March issue with its informative articles on the nuclear arms race and the Council's resolution on the need for the US and the USSR to limit and reduce significantly nuclear weapons and their delivery systems.

As a member of two AIP societies, I hope you will allow me to comment that it is encouraging to find physicists devoting attention to the danger of world-wide destruction by nuclear weapons—a danger made possible by physical discoveries and inventions. As one who was involved in the Committee for Nuclear Disarmament at its inception, I consider that success for its unilateral policy in Britain will facilitate agreement between the US and the USSR to restrict and finally ban their nuclear arms.

There are some who assume that a nuclear war will be mainly in or localized to Europe as in previous major conflicts. However, apart from the stupidity of this conception, I, with many other British people, have no desire to see their families incinerated and our country made a desert in either a local or world-wide disaster in which there would be no victors. The nuclear weapons owned by Britain are irrelevant when taken as part of the total nuclear arsenal but our Polaris submarines and the American aircraft stationed in our country make a tactical imbalance that will continue to militate against agreement as long as they exist. The presence of Britain at the conference table will be best served as a non-nuclear mediator.

Once again I will be demonstrating this Easter at Aldermaston with my wife, a grandmother who joined hands at Greenham Common, but this time the threat of mutual suicide comes from cruise missiles. I hope that the APS will continue its authoritive nuclear-arms education because escalating deterrence is a policy of fatalism containing a death wish.

L. HOLLAND
Sussex, England
3/83

THE AUTHOR RESPONDS: My answer to the above letters is this: I have not advocated that we should give up our nuclear deterrence. I said that deterrence should be maintained, albeit on a mor sensible lower level, but sufficient to scare off any nuclear attack or blackmail from the outside. The idea that the Soviet Union may conquer the US or Western Europe, or that it may force them into submission, is rather farfetched. Any attempt to do so would set loose a major nuclear war after which there will be no communism and no capitalism, but a ruined world on both sides. The idea of a world revolution by force may have been held by Lenin and Stalin, but not by the present rulers who know well that the existence of nuclear weapons has made it impossible. The danger is not the enslavement of the West by the Soviet Union, but the ruinous consequences of a nuclear war. Therefore, we must reduce this danger as much as possible. The nuclear arms race increases it, in particular if weapons are added that have first-strike capacity, such as the development of heavily MIRVed MX missiles.

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As long as the two superpowers are poised against each other in mortal fear that the other will use every opportunity to obstruct and destroy it, there will be no stopping an ever-mounting arms race. We may be convinced that our side will never try to destroy the Soviet Union, but how can you ask them to believe us if they are surrounded by our missile bases and our government calls them the absolute evil? Absolute evil requires absolute destruction.

The only hope to reduce the danger of a nuclear conflagration is to replace confrontation and threat by increasing interdependence, by more cooperation in various fields, by competition—not military, where they can and will do the same as we do—but in economic and social action and in human affairs. Our aim must not be the destruction of their economy and their system—this would lead them to desperate acts on their part—but to show them and the rest of the would how to do better in these fields.

Of course there is doubt as to whether the Soviets will also replace confrontation with cooperation. They certainly will not do so if we pursue the relentless confrontational stand of today. At present we are on a collision course that can only end with a final catastrophe. This course can and must be changed without giving up effective safeguards of deterrence.

As to Carl Savit's remarks about antisubmarine detection, I have not said it is impossible, as Millikan's remark did about nuclear power. I said it is several decades off, as most experts agree.

Arthur Broyles compares World War II and other conventional wars with our present nuclear danger. There is a deep qualitative difference. The world and our civilization recovered from those wars. There will be no recovery from a nuclear war.

I agree with Broyles' remarks about the duty of physicists to inform our countrymen about the chances of survival in the case of a nuclear war. But it is also our duty to tell them the terrible effects of a nuclear war and the inefficiencies of any civil-defense measures. The only protection is to prevent a nuclear war. It makes little sense to placate the fears of the public by proposing some futuristic ABM space technology that is supposed to protect us from annihilation, but that could be achieved only after several decades of continuing madness and increasing danger, if at all.

Let me end by quoting Andrei Sakharov from his book, *My Country and the World*:

> The unchecked growth of thermonuclear arsenals and the build-up towards confrontation threaten mankind with the death of civilization and physical annihilation. The elimination of that threat takes unquestionably priority over all other problems in international relations.

VICTOR F. WEISSKOPF
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5/83 *Cambridge, Massachusetts*

South American physics

I wish to congratulate Leon Lederman for his Guest Comment in August 1982 (page 9). His suggestion for the creation of an Office of Pan American Collaboration is an excellent one. It should be considered seriously by those in our government who worry about such things. I wish to take this opportunity to assure Lederman that his feelings are quite representative of those of us who have had the privilege of being involved in various types of scientific collaborations in South America, over a period of time. Let me relate a story of one such collaboration which might be of interest to your readers.

My involvement with South American began in 1962 when I arrived in La Paz as a technical assistance expert of UNESCO to serve as an adviser to Professor Ismael Escobar, the founder and the first director of Laboratorio de Fisica Cosmica of the Universidad Mayor de San Andres of La Paz, Bolivia. LFC is located at Mt. Chacaltaya in the Andes and is the highest High Altitude Laboratory (5200 m) in the world with year-round access. LFC was already famous then. Now it is hard to believe that LFC started in a very modest way in 1942 as a meteorological observatory. Five years later C. N. G. Lattes, G. Occhialini, and C. F. Powell exposed nuclear emulsion plates at Mt. Chacaltaya which led to the discovery of π-mesons. A slow transformation of LFC into an International Center for Nuclear Research followed. Lattes, U. Camerini, G. Moliere, M. Schein, K. Sitte, B. Rossi, V. H. Regener, G. Clark, V. Sarabhai, D. E. Blackwell, M. F. Ingham, N. Hazen, K. Suga, K. Kamata, E. Bagge, O. C. Alkofer, and a host of others with international fame visited and conducted experiments at LFC, thereby contributing to its worldwide fame. The remarkable influx of these eminent scientists proved very beneficial to the establishment and prosperity of the scientific enterprise in Bolivia, where none existed before! Several local students who were hired to help with the daily chores of running complex experiments went on to pursue careers in science. The govern-