

main business of a scientific meeting is science. There are many brilliant physicists in the Soviet Union and it is nonsense to assert that there is little we can learn from them. It is however important that these brilliant people attend the scientific meetings. Obviously standards, which I need not spell out here, must be rigorously applied.

The freedom of communication between scientists is a right the scientific community has stubbornly defended since Galileo. This is certainly not the moment for us to relax our vigilance.

HERMAN FESHBACH

President

5/12/80

American Physical Society

Women in physics

Thank you for Vera Kistiakowsky's exceptionally fine article on women in physics (February, page 32).

It will be an invaluable resource for all physicists who are concerned with young people and the future of our profession.

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3/18/80

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Nuclear misinformation

The science section of the Italian newspaper *Il Tempo* (Time) of 5 January published a short note entitled "Le Armi Nucleari" (Nuclear Weapons), which had been taken from a letter on "Nuclear Weapons Disposal" published in the August 1979 issue of *PHYSICS TODAY* (page 13). I feel that a few comments on this letter are appropriate.

In the first place the author of the letter, Richard McDonald, refers to the catastrophe that would befall Mankind if the superpowers should unleash their nuclear weapons against one another, and then he adds that, though less catastrophic, the dangers of nuclear reactors are still serious. The message that an uninformed reader gathers from these words is that the hazards of nuclear reactors are somehow comparable to those of a nuclear war, even though less catastrophic.

Such a statement is certainly disconcerting, because I don't think that the risks of a nuclear war have ever been equated to the risks to the population from the operation of nuclear power stations. It is true that the writer admits he is neither an expert in nuclear weapons nor is he familiar with the nuclear fuel cycle (so that one wonders why he should speak out on these matters), but the public opinion has still be impressed because of the authority of the magazine that published the letter.

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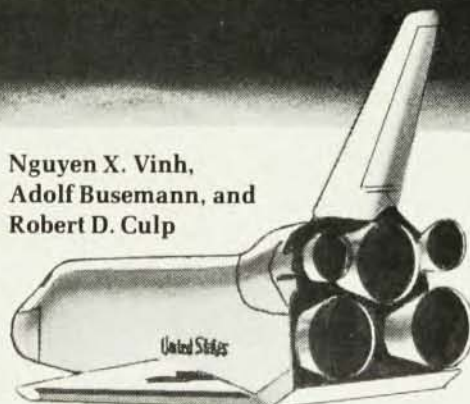


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letters

sive scientific experimentation, nuclear technology is now in full deployment, and it has led to successful projects whose importance for contributing to the solution of the energy problem cannot be overstated. Today, more than ever in the past, the energy crisis has reached such dramatic proportions that it is a major, if not the largest, factor behind the looming danger of hostilities—the very danger that McDonald describes in gripping terms.

In the twenty-five years since the first Geneva Conference on the peaceful uses of nuclear energy, sponsored by the United Nations, no injuries arising from nuclear power reactor operation have been suffered by populations or by the station staffs. The nuclear safety standards go far beyond those adopted in any other human activity, and this was so even in the early years when the bulk of information and experience in nuclear technology was much more limited than today.

Furthermore, when it comes to nuclear energy, in a dispassionate evaluation of the risk-benefits ratio one cannot overlook the substantial contribution that it can make to ease the oil crisis, which, as every one can see, has reached appalling proportions and may worsen to the point of catastrophic consequences.

McDonald speaks of the hazards of nuclear reactors with reference to core meltdown. A disastrous fuel meltdown has never occurred in any reactor in over twenty-five years of nuclear plant development, and the probability of such an occurrence is very small, and possibly smaller now that the safety measures have been extended after the Harrisburg incident where, at the most, only a very small part of the core melted without any disastrous consequences.

McDonald also addresses the disposal of radioactive wastes. The seriousness of this problem has been exaggerated. Several reliable methods have been developed that give full assurance for the present and exclude the possibility of danger from wastes into the remote future.

He also mentions the chronic effects of exposure to radiation; here again, it is a fact that in the immediate neighborhood of nuclear stations the dose absorbed is generally much less than that absorbed in many other activities, including flying at high altitudes. Indeed, pilots add up many hours of flight during which they are exposed to much more radiation than that due to a nearby reactor station, and yet there are no records of their having suffered adverse effects. Many other examples could be provided if it were not for space limitations.

A brief comment on the author's answer to those who ask for dismantling both nuclear reactors and nuclear weapons. He suggests that the only means to get rid of nuclear weapons once and forever is to convert the fissile material into reactor fuel. This statement conflicts with his previous statements, and it seems to suggest that, even in his own mind, nuclear reactors are not so dangerous after all.

It is to be hoped that anyone who wishes to discuss such important and delicate matters will take the trouble to acquire correct information before expressing conclusions that will confuse the public opinion and impede the proper and balanced assessment of such complex issues as the energy problem and the nuclear option.

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2/11/80

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THE AUTHOR COMMENTS: Angelini seems to have missed the point of my letter, which was that people who simultaneously oppose nuclear weapons and nuclear reactors are logically inconsistent because nuclear-weapons materials (uranium or plutonium) can only be truly destroyed by a nuclear reaction, as in a power reactor.

Perhaps the misunderstanding came from the fact that *Il Tempo* quoted an incomplete translation of my letter, omitting, specifically, the final paragraph.

However, I am more concerned about Angelini's contention that I should not comment on these matters. As a nuclear physicist I feel quite qualified to comment on general issues regarding nuclear materials and radioactivity. I wrote my letter since I had not heard this particular argument before. Also, I feel the letters section of *PHYSICS TODAY* is quite an appropriate place to express my opinion. Like Angelini, I feel nuclear power is important both for the present and for the future technologies that may succeed it. The best way to guarantee success for the anti-nuclear movement is for scientists such as myself to keep quiet.

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5/12/80

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Global priorities

As a member of the APS for the last five years I must confess my amazement with the concern shown with the dissident scientists in the Soviet Union as presented in several editorials, letters and articles in *PHYSICS TODAY*. I agree that no one should be punished for his or her opinions, but it is hard to believe these are the most serious human-rights violations in the world, even more when they seem to make

chorus for a campaign to increase military spending (neutron bomb, cruise missiles in Europe, bacteriological weapons, cuts in social services in the US to finance arms, and so on).

The reality of the world now is one of increased inequalities. Almost three billion people are living in the Third World and of these some hundreds of millions are literally starving. Each year millions of these people die totally avoidable deaths after living in abject poverty all their lives (just recently millions died in the Sahel region, in Africa, after a longer than usual dry season). Why that? There are resources of all kinds in the so-called West: technologies, unemployed personnel (including a lot of physicists), money (which is wasted at a fantastic rate in weapons), but there is a lack of "political will." Data from the Stockholm-based SIPRI shows nearly 400 billion dollars yearly spent in weapons and half of that by the US alone.

In black Africa alone there are four million refugees from wars in several countries, each one as important as a human being as Andrei Sakharov. Their fault is that they are not physicists (not even scientists), not white, and the oppressive governments are not easily called Marxist dictatorships (Ethiopia is the only one in that category but one should add Namibia, Chad, Rhodesia, Uganda, Malawi, Central African Empire (now republic), etc. to the lists.)

I think that American scientists have a real desire in general for the well-being of humanity, but are blinded by propaganda and do not see all the suffering of the Third World people, caused by poverty and by oppressive governments. Instead they give moral support for increased military spending, not considering that the best result of it will be an increase in human suffering and at worst will lead to a nuclear war.

It is nonsense for me to say that Haitians leaving their country under a non-elected (and repressive) government are illegal immigrants but the Cubans are political refugees; it sounds not very good to say that the "refugees from red China into the free world" (Hong Kong) of ten years ago suddenly became "illegal immigrants to be returned to the Republic of China," chased by the British Navy and by British troops (would that be because China now is a friend?)

For me all that labelling and relabelling of refugees, illegal immigrants, economic refugees, and so on only means that millions of people in despair are the pawns of politicians in the West. The millions of starving people and refugees (from hunger or from political repression) are a moral scandal. In one or two centuries' time it