

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.

ARNALDO M. ANGELINI
Dell'Ente Nazionale per L'Energia Elettrica
2/11/80

Rome
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.

RICHARD McDONALD
Lawrence Berkeley Laboratory
5/12/80

Berkeley, California

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

will be as difficult to understand why they were not helped and brought into a level of life that gives them some hope, as now we cannot understand the wars of religion in 17th-century Europe.

L. F. S. COELHO
Sussex University
England

5/5/80

Russian hospitality

Timothy Toohig has given an interesting and sympathetic report (February, page 9) of a visit to the USSR. He stresses the similarities between their preoccupations and ours. Though he recognizes by implication differences between the two cultures, there is one considerable difference between Eastern Europe and much of Western Europe (which extends to North America) that Toohig passes over without comment.

As a visiting scholar he was given certain privileges not shared by his colleagues. This was certainly generous of his hosts, and many of us who have visited those parts have been cheered by such signs of friendship and consideration. But we must remember that this genuine generosity is founded upon a basic cultural difference. Their granting of privilege is predicated upon a view of accepted inequality between accomplished persons of status (such as academics) and ordinary working people that our culture, for all its faults, does not condone. With us, a professor, or even a distinguished visitor, is not entitled to any more fundamental privilege than the next man. Some may say that we end up rewarding the wrong people; but we must recognize this difference in outlook if we are to understand some of the other cultures that we live with.

ERIC P. HAMP
The University of Chicago
Chicago, Illinois

3/28/80

That a person with the credentials of Timothy Toohig should fail to see through the Russian guise of hospitality is most alarming. He points out all the special privileges given to him without realizing how he is being used by the Russians to simply try and maintain their technological ties with the US. Toohig relates that his fellow Russian scientists are just people with concerns similar to ours and seem very humanistic in their attitudes, but he and they are not able to see that all around them human rights are flagrantly being violated in conflict with signed international agreements. Toohig has been duped by the Russian ruse.

Patriotism is no excuse for tolerating the violation of human rights. There is documentation aplenty of case after case of persecution of Russian people

HVD-1000A CAPACITOR CHARGING SUPPLY

The HVD-1000A is a compact (7" panel size), 1000 J/sec, low weight capacitor charging supply with output voltage capability to 35 kilovolts. This oil insulated system is voltage regulated & current limited, contains an internal dump switch, & provides low internal stored energy. It can function as a single shot or as a steady state supply. The supply also contains a load latchup inhibit. With these positive attributes & capabilities, the reliable, efficient HVD-1000A is definitely a power supply worth considering.

APPLICATIONS

Pulsed Lasers • CW Lasers • Plasma Research •
Fusion Research • Flash Photolysis • Jump
Experiments • Stroboscopy • Impulse Acoustics •
Pulsed X-Rays • Magnetics

CANDELA CORPORATION 96 south avenue, natick,
massachusetts 01760
617/653-7373

Circle No. 42 on Reader Service Card

EFFICIENT USE OF ENERGY

The APS Studies on the Technical Aspects of
the More Efficient Use of Energy.

AIP Conference Proceedings #25

EDITORS: K.W. Ford, G.I. Rochlin, R.H. Socolow,
D.L. Hartley, D.R. Hardesty, M. Lapp, J.
Dooker, F. Dryer, S. Berman and S.D.
Silverstein

This volume contains papers that identify areas of physics research and development which promise to improve the technologies governing energy efficiency at points of use. Three parallel substudies are included in this volume: I. A Physics Perspective II. The Role of Physics in Combustion and III. Energy Conservation and Window Systems.

305 pages. 1975. \$20.00 clothbound.

LC 75-18227. ISBN 0-88318-124-X.

For your copy of EFFICIENT USE OF ENERGY write to: American Institute of Physics, Marketing Services, 335 East 45 Street, New York, NY 10017.