

## letters

This has been documented time and time again. Is this the sign of a government that wants to be friendly and cooperative? Of course not.

In May 1984, the National Academy of Sciences called off a two-year-old freeze of science exchange with the Russians. Why? Was it because the Russians had gotten more humane in their behaviour? No, it was because the scientists didn't have the guts to continue a policy that was strong and right; rather, they chose to ignore the murder and treachery by Russia, and put a much higher priority on having their own selfish boondoggle trips around the world. That action was a disgrace. It only helps the Russian leaders to stay in power, and tells the Russian citizens that America was wrong, is weak, and has no courage to stand up against the Russians. Americans don't care how many other people are enslaved, murdered or mistreated, as long as it doesn't personally touch them. We should all be ashamed of this action by leaders of NAS.

The freeze originated over the Soviet invasion of Afghanistan. But after protesting for two years, Americans now don't care how many people are murdered by Soviet armies in Afghanistan. Again, the Russians stand fast, the Americans cave in and worry only about their own selfish pleasures.

American religious leaders visit Russia and come back telling how much religious freedom there is in Russia. How dumb can they be? Plenty dumb. They see a little window dressing where a few thousand Russian citizens are not put in prison for attending church, and extrapolate to the general conclusion that religion is alive and well in the Soviet Union. Any physicist who would draw that kind of conclusion from his research data would be thrown out of The American Physical Society. But the media play it up as a big thing and mislead the American public.

I urge The American Physical Society members to maintain a polite but very firm boycott of all Russian communication until Russia abandons its jamming, its Berlin Wall, its mistreatment of courageous Sakharov and similar inhumane actions. The only characteristics that get the attention of Russian leaders are directness, strength, determination and consistency.

G. TRUMAN HUNTER  
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8/84

an article describing the effects of nuclear war using results obtained from computer models. Articles of this genre often tend to be impersonal. Being a microcomputer enthusiast, I undertook the task of developing a program to simulate the effects of nuclear war on a more personal level.

The outgrowth of this activity has been the development of a technically correct adventure simulation game entitled NUCLEAR SURVIVAL. Use of NUCLEAR SURVIVAL gives an eye-opening view of what to expect from the "unthinkable." I would like to announce to your readership that I am making NUCLEAR SURVIVAL available as a public domain program.

NUCLEAR SURVIVAL allows one to use his or her wits to survive a nuclear exchange, hostile encounters, nuclear winter and much more. Through a realistic mix of skill and chance, one vicariously experiences the likely consequences of decisions made in preparing for and surviving a nuclear conflict. In each game, the player may make anywhere from a handful to in excess of 100 decisions, selecting from over 15 000 combinations of items. Each decision and each selection affects health and chances for survival.

NUCLEAR SURVIVAL is a program with about 900 lines of Microsoft BASIC and requires less than 27 kilobytes of computer memory. If you would like more information, send me a self-addressed, stamped envelope.

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## Classifying research

A recent article (July 1984, page 57) on proposed changes in the system for classifying scientific research contains the following remarks by Pentagon spokesman Frank Sobieszczyk:

The [defense] department considers [fundamental sensitive] research basically risk free. But it's better to err on the side of caution when a potential risk has been identified.

Nowhere else are the Pentagon's intentions so baldly apparent, and nowhere else do they so clearly conflict with basic Constitutional rights. What makes freedom of speech more than a hollow privilege is that the burden of proof must lie with the government when questions of censorship are raised. The current system—while by no means ideal—does require that the government decide in advance what research has military value. But requiring a broad, ill-defined category of research to be submitted to pre-publica-

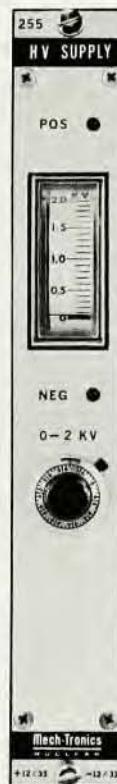
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## Nuclear war simulation

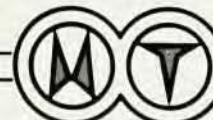
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tion review will shift the burden of proof to the individual scientist. In erring on the side of caution, the Pentagon will be able to review, and censor, papers of minimal value to this nation's security.

Two concerns have been thrust into needless conflict: freedom of expression and national security. In adjudicating this delicate question, it is indeed wise to err on the side of caution. Yet one must ask oneself, wherein lies the real risk?

JOHN BECHHOFER

8/84

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Chicago, Illinois*

## Is Dirac's monopole a dipole?

The April issue of **PHYSICS TODAY** presents a candid report by Bertram Schwarzschild<sup>1</sup> on the failure of the recent Stanford search for magnetic monopoles. Undeterred by this outcome, newer and larger-scale efforts are being planned to identify these hypothesized constituents of nature. Mindful of the maxim that those who do not learn from the past are doomed to repeat it, now may be the time to reexamine some of the premises that have led to the chase of the elusive magnetic monopole.

Let us recall that Dirac's monopole<sup>2</sup> of 1931 was a monopole "modulo" a physically unidentified singularity line.<sup>1</sup> In the early 1930s, the mathematical understanding of such field singularities was just beginning to emerge as some sort of superstructure on the existing knowledge of singularities in the complex plane. The topological aspects of these developments were covered by the work of G. de Rham<sup>3</sup> (cohomology of forms) while the analytic aspects were clarified by Laurent Schwartz's theory of distributions. In fact, the latter placed another one of Dirac's brainchildren on a firm mathematical footing: the delta function. A persuasive account can be found in a booklet by M. T. Lighthill.<sup>4</sup>

Unlike the delta function, Dirac's magnetic monopole is not only a mathematical but also a physical proposition. Hence, before one can proceed mathematically, one must first identify the physical nature of Dirac's singularity lines.

Physical evidence now overwhelmingly supports the idea of a dipolar flux quantization in the sense of Fritz London<sup>5</sup>—not a monopolar quantization. The singularity line thus becomes a return path of a dipolar flux. Hence Dirac's monopole is still compatible with London's dipole, because the monopole is really an anomalously shaped