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out that in some particular circumstances in the real world, a given nation's (or group of nations') development of weapons can become not only a social necessity, but a positive moral good that helps preserve peace, freedom and life itself, and thereby benefits humanity. Depending on the outcome of research and testing, I would place SDI in such a category.

I personally consider most of those American scientists who worked on weapons to help America win the peace in World War II, and those who in the intervening years continued weapons work, to have served their country at least as well and honorably as any young volunteer Army private who helps protect America's peace. They deserve the gratitude of all Americans, and I hope that most physicists would agree with me.

Those who now, or in the future, work on SDI may one day also rightfully be regarded as American heroes who fully deserve the appreciation of all Americans, and even all humanity, for eventually making nuclear attack no longer a viable option for America's enemies, large or small, or for anyone. It is far too premature to assume otherwise.

JOHN KWAPISZ

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5/86

I would like to make a point concerning the letters you have received (April, page 94) on the anti-Strategic Defense Initiative petition. It is not legitimate to make light of physicists who sign anti-SDI petitions simply because the signers would never apply for SDI grants anyway. Those who do military-related research, particularly SDI projects, have to overcome a tremendous built-in bias to petition against SDI. In essence, signers of anti-SDI petitions who don't work in SDI fields provide a natural balance to SDI researchers, who are inclined to favor SDI. Neither set of voices should be discounted in the debate.

JOHN DOWLING

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5/86

Ghost writing on SSC and SDI

I was recently in Bern and I got on the tram that Einstein used to take from the old clock tower to the Swiss Federal Patent Office and as I settled into a hard wooden seat and looked back at the clock face, a guttural voice whis-

pered into my ear, "You are riding on a photon and the hands of the clock are frozen in time." I gripped the edge of the wooden seat to reassure myself that I was still in material reality, when the voice continued: "Relax, I was joking! I just wanted to introduce myself." It was Einstein! Before my mind had a chance to reply, he continued: "After the joke, a little seriousness. I have been concerned for some time about the following statement made by Leon Lederman in his reply to Rustum Roy (PHYSICS TODAY, September 1985, page 9): 'Let me add that the creators of the essential science for this technological revolution (... Albert Einstein...) went on to discuss the issues and data out of the accelerator and astronomical laboratories, literally until their last gasp.' Unfortunately this is not correct, for two reasons: First, I was so shocked by the detonation of nuclear weapons in Japan, which was possible only as a result of the special theory, that I decided to suppress any further important results I might have obtained. Which I did. To confirm that my thoughts turned away from such matters toward peace let me quote my last signed letter, of 11 April 1955, to Bertrand Russell. In this letter I agreed to sign a manifesto urging all nations to renounce nuclear weapons and my last written words were 'Political passions, aroused everywhere, demand their victims.' Second, I am widely misquoted as saying, 'God does not play dice,' which nevertheless summarizes one of my major interests in my later years, which was God. Since God does not make SSCs I am not interested in them.

"What does interest me, given my unique perspective from ten-dimensional unified superstring space, is how humanity is going to survive in the coming decades. (After death one's soul goes through the ten to four dimension collapse in the reverse direction.) For the reality is, as God so frequently remarks to me, that just as Western society is embarking on the last leg of its road to self-destruction, so too is the high-energy physics community, that impeccable mirror of society, also embarking on its own little road to oblivion. No one seems to be aware of these two phenomena. Even the decision making is similar. Normally when anyone seriously considers investing a large sum of money (and \$500 billion and \$6 billion are both large sums) they will consider serious options. But the proposers of SDI and the proposers of SSC are unanimous in their promotion of a single choice. They do not consider various options rationally, but blindly and emotionally rush to support certain token goals. Can anyone explain

that to me?

"More importantly, why does not the physics community propose, for example, a \$6 billion program in peace research? What is peace? That is a very interesting physical question. How is it achieved? And so on. Such a program would have a far longer life than an SSC, thereby creating far more secure jobs, and might throw profound light on various problems of unification, both of physics and humanity. And it would have my blessing. Why then does no one propose it? One could deduce the answer to that question from what I have said already. In fact, the reason you cannot deduce the answer is the same reason you do not propose such a project."

R. J. ELLIS

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Magnetic order in CePb₃

In the December 1985 issue (page 21) Bruce Schechter reviewed recent discoveries on field-induced superconductivity. He mentioned neutron scattering experiments that failed to reveal any localized magnetic order in CePb₃. I do not know which experiments he was referring to, but I would like to inform PHYSICS TODAY readers that neutron scattering experiments on CePb₃ carried out at the High Flux Reactor of the Institut Laue-Langevin showed that CePb₃ does order magnetically with an incommensurate antiferromagnetic structure. Magnetism seems to be fairly localized in this compound. The results were submitted to *Physical Review Letters* in December 1985.

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Editor's note: The results were published in *Phys. Rev. Lett.* 56, 1980 (1986).

Aquinas's cosmology

In his recent article (February 1986, page 24) Edward Harrison calls attention to Newton's suggestion that the universe is infinite in extent. Who first suggested that it might be of infinite age?

In discussing some of Aristotle's ideas Thomas Aquinas asks if it can be proven that the universe has existed for only a finite interval of time (*Summa Theologica*, vol. I, q. 46, a. 10,2). After bringing up the strongest arguments against a universe of infinite age he shows that such arguments can be refuted and hence that it is not possible

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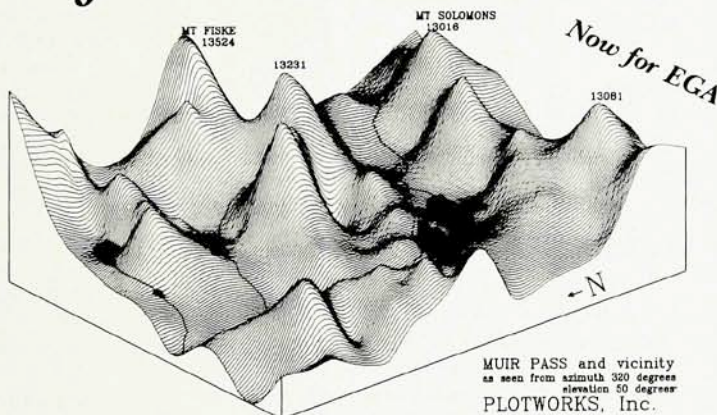
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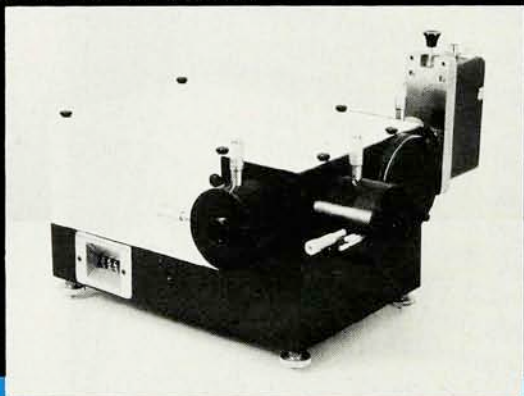
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letters

to prove by rational arguments that a genesis actually occurred. So it might be appropriate to say that Aquinas deserves credit as the first to suggest a steady-state cosmology.

Following a discussion of this with a local minister, she informed me that she had recently been reading Aquinas's writings on sadness. After a very long discussion Aquinas concludes that the only compensations for sadness are good friends and hot baths. So perhaps we should give Aquinas credit for suggesting the hot tub as well as for proposing steady-state cosmology.

I am grateful to Father Juan Casanovas for illuminating correspondence on Aquinas's cosmological writings.

GEORGE WALLERSTEIN
University of Washington
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3/86

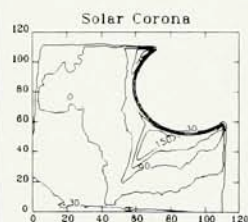
Balancing 'Books'

We were somewhat surprised by John Cameron and Steve Orman's review of our book *Medical Physics, Volume III: Synapse, Neuron, Brain* (February 1986, page 76). A large part of the review criticizes the book for omitting topics, and very little of the review mentions what it does contain. We are embarrassed to have to call attention publicly to the oversights of the reviewers, but perhaps they share our embarrassment, recognizing that their review may have been written too hastily.

Volumes I-III of *Medical Physics* contain nearly one thousand pages covering a variety of topics. We sought to avoid duplication and subjects in which the physics was redundant. In the preface to the third volume we state:

No attempt has been made to be comprehensive for the result would be encyclopedic. Instead, topics were chosen that illustrate the techniques. For example, Fick's laws of diffusion are derived in volume I and used both in that volume in the interpretation of the nerve impulse and the present volume for the diffusion of neurotransmitters at synapses. These laws of diffusion are equally useful in the interpretation of kidney function, which is not discussed in these volumes.

In addition, two pages after the preface, the publisher has listed the table of contents for the first volume. Chapter 3 of that volume is entitled "The nerve impulse: Action potential and transmission." That chapter, 36 pages long, supported by 20 pages in the appendix on chemical thermody-



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