

letters

collider in 1963. Electron-positron colliders followed at Frascati, Orsay and Novosibirsk." The role of the Princeton-Stanford team in the colliding-beam machine development has indeed been crucial. Nevertheless, it is not fair to say that electron-positron colliders followed at Frascati, Orsay and Novosibirsk. The work done in the latter institutions and the one done at Stanford were simultaneous—in fact, the first beam-beam collisions ever observed were e^+e^- collisions and not e^-e^- collisions, and this observation was done by the French-Italian collaboration working on the ring ADA, which was then operated at Orsay. (*Nuovo Cimento* 34, 1473, 1964).

J. HAISSINSKI

Laboratoire de l'Accélérateur Lineaire

4/85

Orsay, France

THE AUTHOR REPLIES: J. Haissinski is technically correct. Indeed ADA did observe the first e^+e^- collisions, although at extremely low intensity. My error stems from recalling that the Princeton-Stanford e^-e^- machine was started earlier, in 1958, first stored beam and had the full complement of injection, storage and collision devices designed to do physics experiments. I apologize for the error.

LEON M. LEDERMAN

Fermi National Accelerator

8/85

Laboratory

SDI non-nuclear?

In November 1983, *PHYSICS TODAY* published a letter (page 116) I had written in support of President Reagan's "Directed Energy Weapon" project; it emphasized the following three principles:

- Only scientists are capable of discovering methods to technically nullify nuclear weapons; hence it is their responsibility to search for such a method

- Beam weapons have practically zero inertial time; hence they can, in principle, defend against nuclear weapons, which require a large inertial time to be transported to a target country
- Beam weapons are nonexplosive and are the most benign weapons; they are useful only for defensive purposes.

In the year and a half since this letter was published, there has been a dramatic expansion of effort in the Strategic Defense Initiative. One approach that is being taken in SDI research, and the one that most concerns me, is the development of an x-ray laser driven by nuclear explosives. This approach, although possibly powerful when achieved, not only contradicts President Reagan's repeated claim of "non-nuclear defense," but also could lead to a dangerously unstable situation by making the SDI concept itself ineffec-

tive. Space deployment of nuclear weapons, even for a defensive purpose, would unavoidably lead to space deployment of offensive nuclear weapons, which would nullify the SDI concept. For SDI to succeed, political agreement to keep space free from any nuclear weapon are essential. Scientists should stick to a non-nuclear means of SDI.

A. HASEGAWA

6/84

Summit, New Jersey

Math anxiety and physics

The article "Math anxiety and physics: Some thoughts on learning 'difficult' subjects" (June, page 60), clearly outlines some major reasons why education in the US is at present in such a difficult situation. I found "The Learning Bill of Rights" to be particularly distressing with its implication that the less competent and responsible students have "rights" that can lead to dictation of policies for the nation's educational system.

It is all well and good to offer assistance to those who need help in acquiring an education, and in the US this has been common practice since at least 1630. But it is quite another matter to spoon-feed those who are unable or unwilling to fulfill legitimate requirements for learning at the college level. We make a big mistake in assuming that higher education is suitable for all and that it must be provided, at public expense, for everyone—regardless of their intellectual abilities or their willingness to reject responsibilities for their own actions. We need to recognize that each person educates himself or herself, and that in a very real sense, there are no teachers but only learners. When we reach the point, as we have in the US, where remedial courses in colleges are commonplace necessities because the educational foundations at lower levels have been inadequate and ineffective, and where significant numbers of former college students intentionally default on repayment of public loans to enable them to acquire higher education, then we have lost our sense of perspective.

Our emphasis on personal "rights" has been greatly overdone in recent years. It has passed the point of rationality and has given our vocal and radical elements an unjust hold on society at large. We need to recognize that freedom and license are fundamentally different and that for every right we claim, we must accept a concomitant obligation or responsibility. Yet, in all the civil-rights demonstrations since the 1950s, and in all the feminist agitations since the 1960s, I have yet to hear any exponent of

continued on page 108

THE COMPLETE SUPPLIER OF LABORATORY SUPERCONDUCTING MAGNET SYSTEMS

AMERICAN MAGNETICS, INCORPORATED has been supplying laboratory superconducting magnets for over 14 years. We are continuing to expand our facilities to meet your increasing demand for laboratory superconducting magnet systems. Our full line of instrumentation will support your system requirements.

The most complete line of Helium Level meters, Liquid Nitrogen Level meters, Power Supplies, and Power Supply Programmers, Energy Absorbers, Electronic Magnet Current Reversing, Cryothermometers, and Vapor Cooled Current Leads. All designed with the experimenter in mind.

Your one-stop laboratory superconducting magnet system supplier.

Call or write to



AMERICAN MAGNETICS, INC.

P.O. Box 2509, Oak Ridge, TN 37831-2509 USA.
Telephone (615) 482-1056 TLX 557-592



Circle number 14 on Reader Service Card