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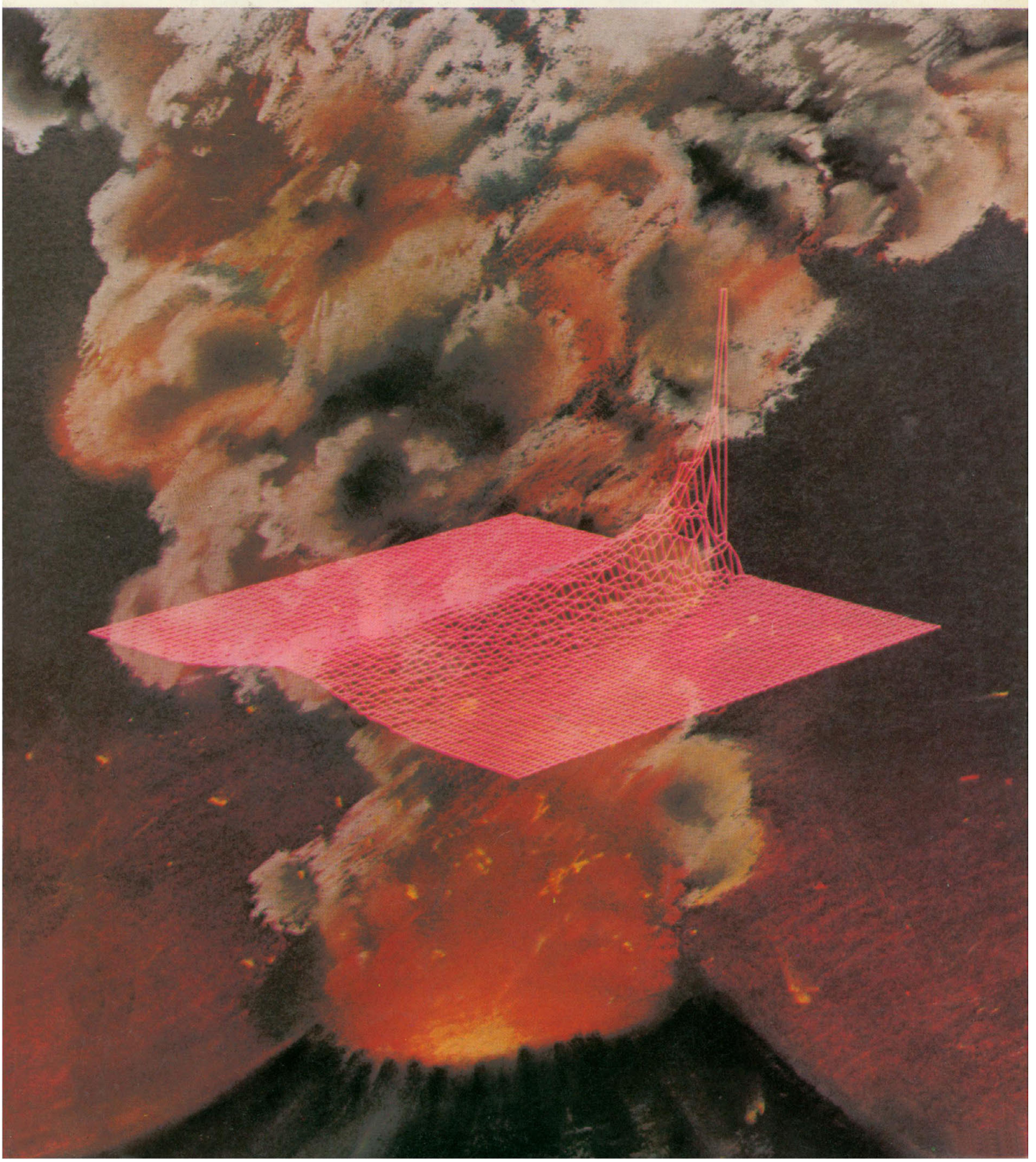

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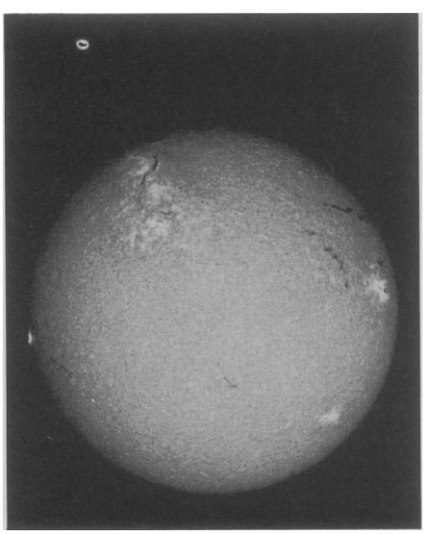
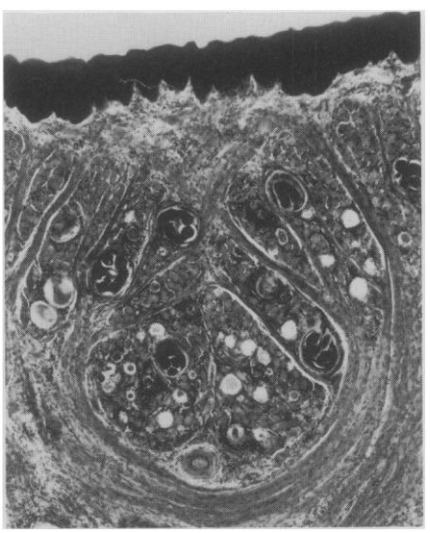
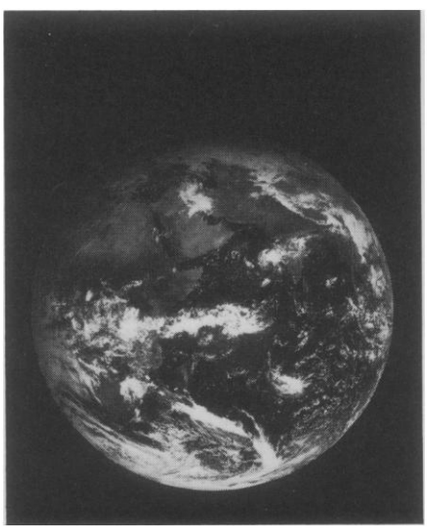


Hydrogen-alpha photograph of solar flares. Sacramento Peak Observatory, Sunspot, N.M.



Photomicrograph of *trichinella spiralis* in muscle, 175×. Tungsten-halogen source (3200 K) with KODAK WRATTEN Filter No. 58.



Meteorological imagery from geostationary satellite. VIZIR laser-beam recording by Société Européenne de Propulsion (France).

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**COVER**

Computer image illustrates new concept for vertical transport by thin random turbulent layers in stable fluids. The volcano (background) symbolizes the injection of foreign matter in the stratosphere which will subsequently be vertically transported, in part, by this mechanism. See page 1041. [Artwork: Gene Pepin (Graphics Department, Air Force Geophysics Laboratory, Hanscom Air Force Base, Massachusetts) and Brian Dewan (Lexington High School, Lexington, Massachusetts); photography: Patrick J. Windward (Photo Laboratory, Air Force Geophysics Laboratory)]

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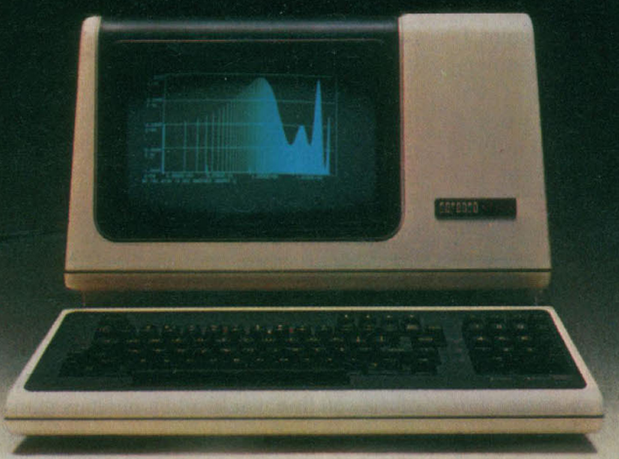

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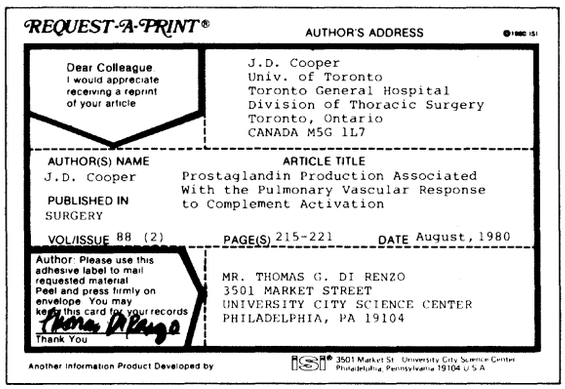
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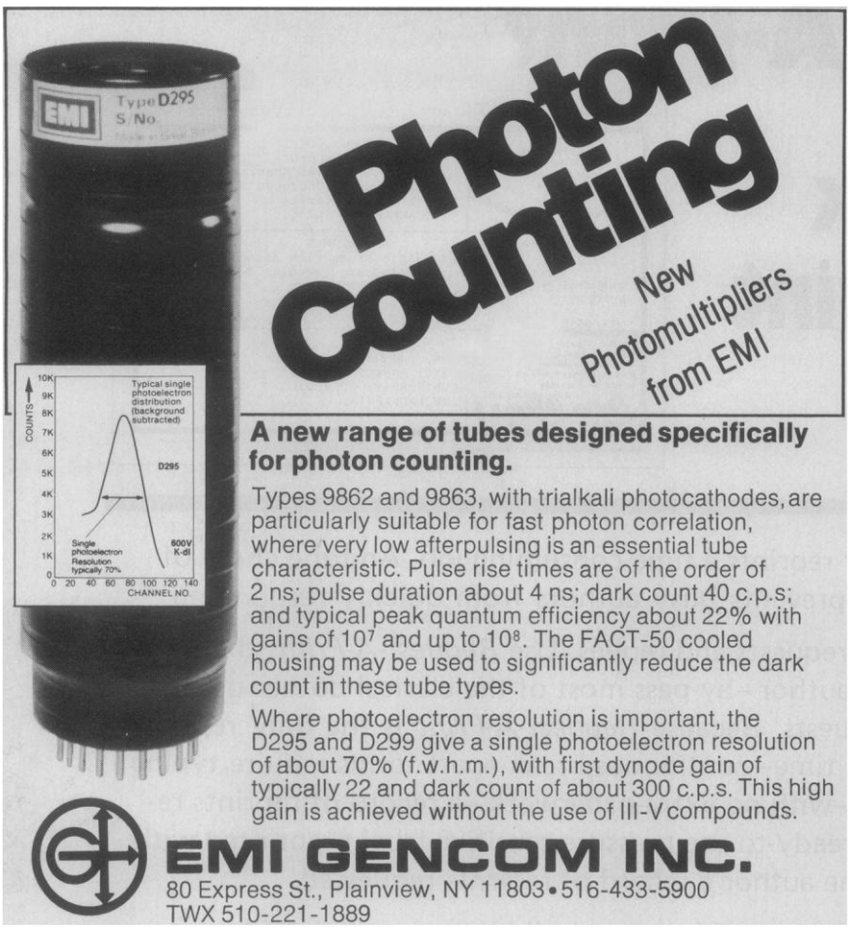


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Edited by Philip H. Abelson and Mary Dorfman

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problem we discussed in the session is only one example of a broad class. We did dwell upon this one example, but only because it threatens to compromise seriously science education in North America.

ROLF M. SINCLAIR
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*Washington, D.C. 20005*

**References and Notes**

1. See, for example, B. C. Sproul, *Primal Myths: Creating the World* (Harper & Row, New York, 1979).

## Culturing Before a Transplant

Thomas H. Maugh II, in his article on altering the donor organ (Research News, 10 Oct. 1980, p. 177), does not cite the work of Jacobs and of Lueker and Sharpton with cultured mouse ovarian allografts. These investigators found that a significant proportion of mouse ovaries that had been cultured for 6 to 12 days (Jacobs) or only 3 days (Lueker and Sharpton) were accepted when transplanted to major-locus incompatible recipients. *Transplantation* published these papers back-to-back (*1*), about 5 months before Lafferty's first report (*2*) appeared on the survival of cultured mouse thyroid allografts. In fact, we received Jacobs' paper about a month before the Lueker-Sharpton one, but with her permission, held her paper until the other one was reviewed so that we could publish them together. These papers represent the first reliable reports of the ability of short-term maintenance in vitro to promote the survival of allografts of normal tissue. Jacobs, working with Huseby, already had established this principle with tumor allografts as early as 1967 (*3*).

DAVID STEINMULLER
Transplantation, c/o *Department of Immunology, Mayo Clinic,*
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**References**

1. B. B. Jacobs, *Transplantation* **18**, 454 (1974); D. C. Lueker and T. R. Sharpton, *ibid.*, p. 457.
2. K. J. Lafferty, M. A. Cooley, J. Woolnough, K. Z. Walker, *Science* **188**, 259 (1975).
3. B. B. Jacobs and R. A. Huseby, *Transplantation* **5**, 410 (1967).

*Erratum*: The new chairman of the Senate Committee on Commerce, Science, and Transportation is Senator Bob Packwood (R–Ore.). Senator Harrison H. Schmitt (R–N.M.) was incorrectly identified as chairman (News and Comment, 6 Feb., p. 559).

*Erratum*: Important information in the article "Insulin wars: New advances may throw market into turbulence" (News and Comment, 12 Dec. 1980, p. 1225) came from a review written by Scott R. King of F. Eberstadt & Co., Inc., New York. Credit to King was inadvertently omitted from the article.

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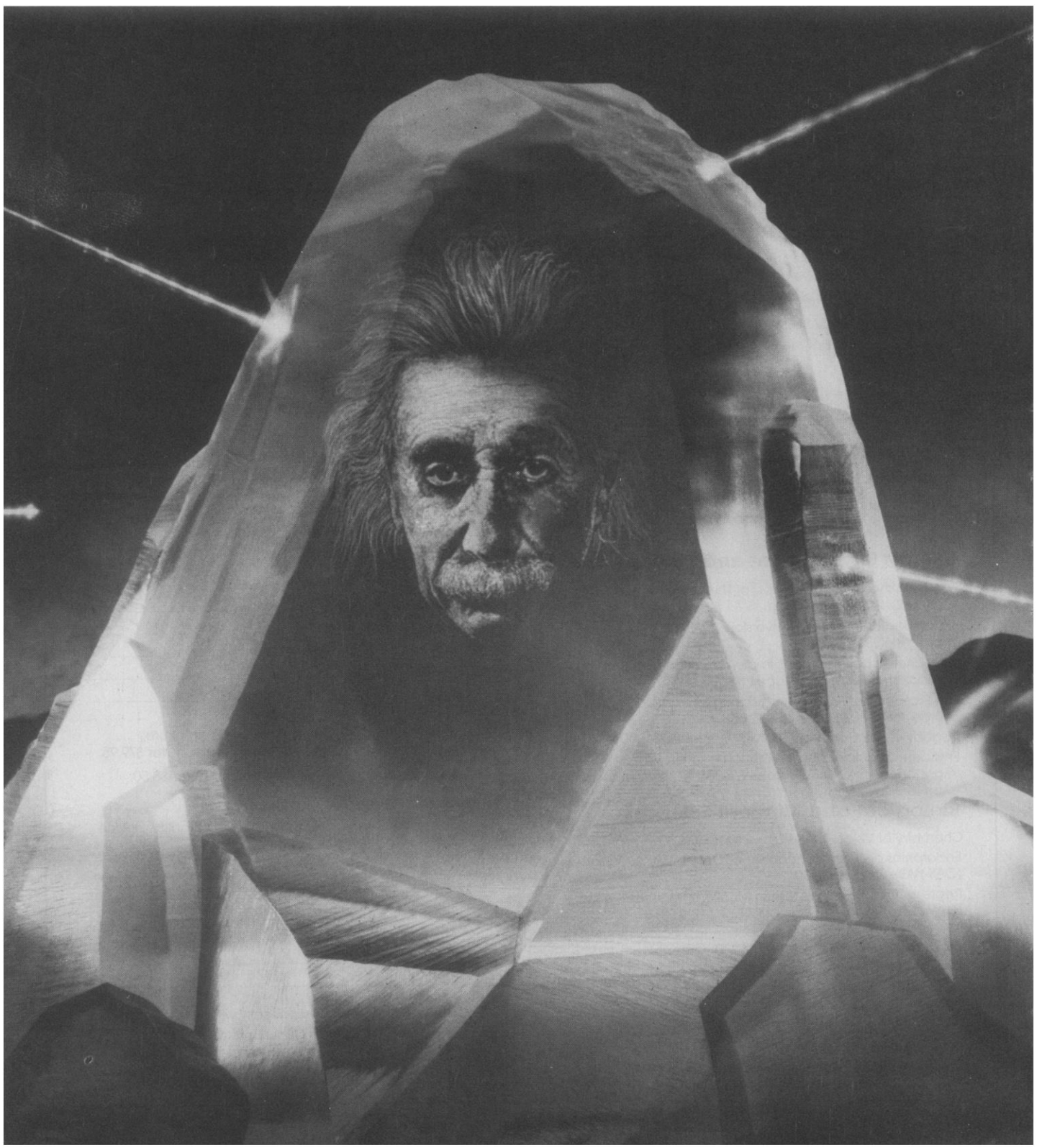

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# Prepared Minds

In its efforts to restore American prestige, productivity, and strength, the Reagan Administration should not lose sight of the crucial roles of education and basic research. All administrations, when faced with public demands for budget cutting, are tempted to sacrifice long-term needs for short-term political advantages. The present status of the country reflects the consequences of more than a decade of shortsighted policies.

The need for a continuing flow of well-trained scientists and engineers is obvious. But the continuation of support for basic research at universities is not guaranteed and may require sturdy defense. A variety of questions have been raised. For example, why should this country conduct so much of its basic research at universities? Why not do it in industrial laboratories or concentrate it in specially created institutes? Why is it necessary for the United States to support basic research? After all, the Japanese attained their strong industrial position without doing much basic research. Aren't the present stocks of knowledge sufficient? Why increase them when the libraries are already bulging?

It is not my intention to answer all these questions here. Most of them have been treated elsewhere, though the importance of conducting basic research at universities merits repeated emphasis. Faculties at universities know that teaching and research are closely intertwined. The professor who stops doing research usually ceases to be intellectually active and ceases to be an effective teacher. To be effective as an educational institution, a university must do more than certify that a student has completed the requisite number of courses. Merely taking courses and spending 4 or 8 years at a university can be a costly waste of the individual's as well as the public's money. Much more than reading books and regurgitating facts on demand is required. To attain the best results, students must experience a superior, stimulating, exciting intellectual climate. The students will mutually provide some of this, but an essential portion must be derived from professors who are intellectually vibrant. Beyond that, students of science and engineering can be adequately trained only if they have access to the kinds of equipment they will be using when later employed elsewhere.

Another matter that has not been adequately discussed is the value of stocks of knowledge. In one sense, books and bound volumes of journals are the most valuable assets possessed by humanity. Yet in another sense they are worthless—mere accumulators of dust and mold. They are valuable only insofar as prepared minds can use their contents. In science, the people who can best use the stocks of knowledge are those who are engaged in creating them. They can interweave their special knowledge, experience, and judgment with facts from books or computers to create valid interpretations and new insights.

Participation in a highly active, highly competitive field of basic research requires unusual dedication and self-discipline. In its way, it demands an effort analogous to that of athletes who train to become champions. A few of the intellectual athletes receive recognition as Nobel laureates, but in general, the physical athletes are far more highly rewarded. What is not generally appreciated is the enormous potential value to the nation of creative scientists as problem solvers. To get a measure of this value one has only to peruse Vannevar Bush's book *Modern Arms and Free Men.* During World War II a few thousand scientists and engineers, mainly drawn from academic-type institutions, created a series of weapons systems that saved hundreds of thousands of lives and hundreds of billions of dollars. Before the war most of the key people were engaged in basic research. Times have changed, and it is unlikely that basic research scientists will play much of a role in the coming Reagan rearmament program. Most of the funds will be used to procure arms and to train people to fight. How much will be spent to enable the nation to function well under the unpredictable circumstances that will prevail 10 years from now is problematical.

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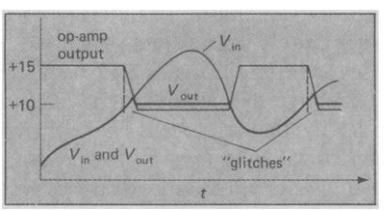


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