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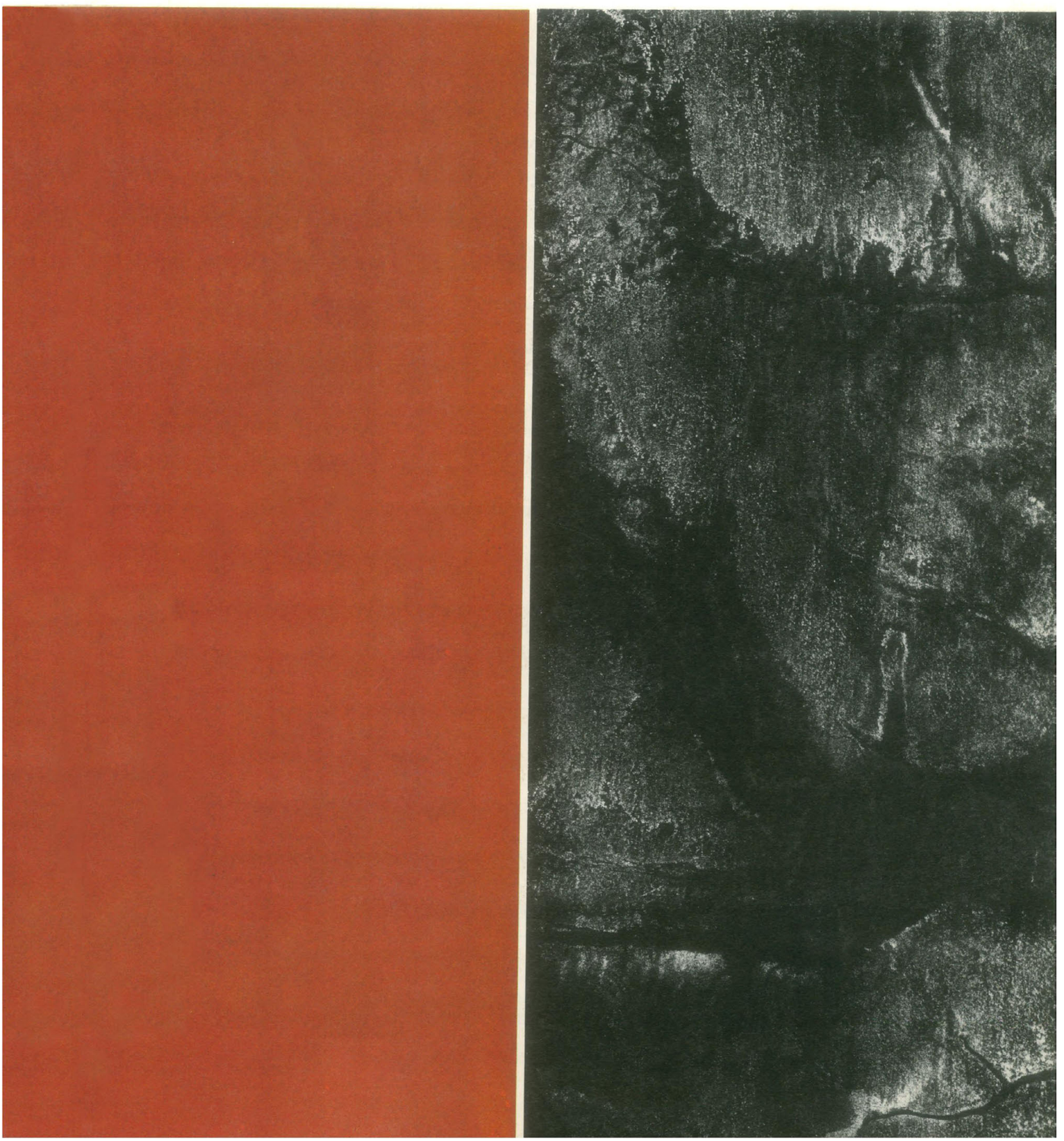

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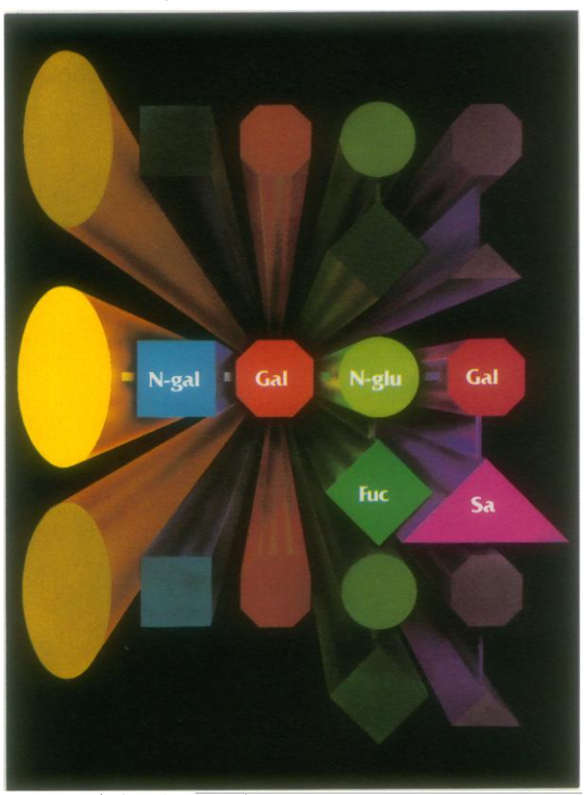

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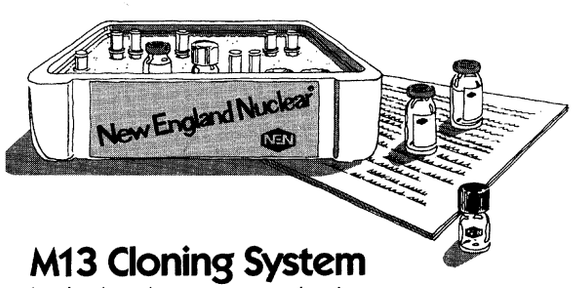

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COVER

(Left) Landsat image of section of Sahara Desert. (Right) Radar penetration through windblown sand of same area of the desert, revealing subsurface drainage features such as dry stream valleys and channels. (Northeast direction is top.) See page 1004. [Landsat simulated, true-color image processed by U.S. Geological Survey, Flagstaff, Arizona; Shuttle Image Radar-A, processed by Jet Propulsion Laboratory, Pasadena, California]

LETTERS

Argonne: Hope for Revitalization

I was director of the Reactor Engineering Division at Argonne National Laboratory during the period when Argonne was perhaps the premier reactor development laboratory in the world. I therefore looked forward to John Walsh's article on Argonne (News and Comment, 22 Oct., p. 354) with considerable anticipation, hoping to read of some signs of revitalization in that program. However, I was disappointed. I am therefore moved to register some emeritus comments on this aspect of Argonne's work.

Two sentences of the article deserve juxtaposition: "Currently more than a third of lab resources go into the effort that emphasizes work on the fast breeder reactor," and "Federal agencies tended to regard the labs simply as contractors obligated to perform necessary R & D." Both statements are clearly true. Placed together, they are instructive as to why the fast breeder reactor program of the United States hasn't progressed very well—and, indeed, why the mission-oriented programs of all the national labs, except the weapons labs, have floundered.

For at least 15 years, the United States has been the victim of overmanaged bureaucracy in the conduct of applied nuclear work. It has been about that long since the Atomic Energy Commission and its successor agencies decided to run the programs with central direction from Washington and partitioned responsibility in the field. A fast breeder reactor program that had been launched at Argonne's initiative in 1948 and had succeeded in producing a reactor (EBR-II) that was the springboard for launching other countries' programs was thereupon broken up, and only fragments returned. The rest of the pieces were assigned to other organizations, and liaison was permitted only at the sufferance of, and direction of, Washington. This situation still prevails.

The result as it concerns Argonne has been large, but unstable, employment of its nuclear engineers and related scientists as tasks are assigned and withdrawn. A very talented pool of people remain, but they are underemployed as far as utilizing their talents for an integrated job of breeder reactor development. Their ability to capitalize on the serendipities that abound from their being associated with basic research scientists in related fields is virtually nil.

When this happens, both the laboratory and the mission suffer. As for Argonne's applied programs, no end of travail is in sight. The current state of our fast breeder reactors, as compared with those in France, tells the story of the mission. In these days of wondering about and searching for ways to move our country back into the forefront of technological production, the ability to use our national labs as prime instruments for progress remains neglected.

I am delighted to hear that Argonne's basic science component is coming out of the doldrums; but it won't be fulfilling its promise as a complete national laboratory until its applied component is given an integrated job to do. However, that can't happen unless the Department of Energy is forced to reestablish its role as moderator and mediator (between scientists and engineers on the one hand, and the instruments of the body politic on the other) and to forgo its current role of manager and director.

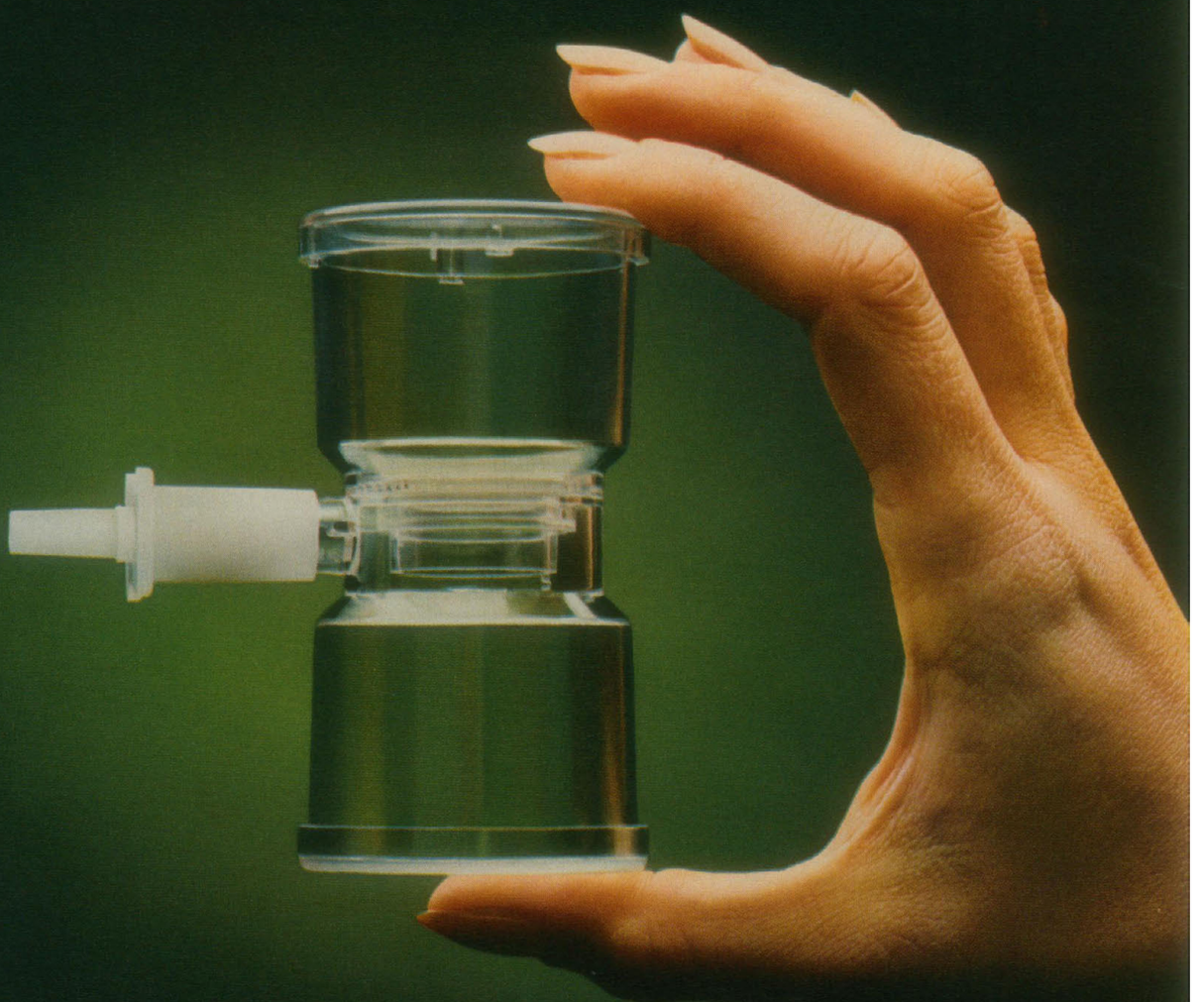
BERNARD I. SPINRAD
Department of Nuclear Engineering, Oregon State University, Corvallis 97331

Easing Nuclear Tensions

I commend *Science* for the publication of "Declaration of prevention of nuclear war" (29 Oct., p. 448) and Philip H. Abelson's editorial "Efforts to decrease nuclear tensions" (29 Oct., p. 427).

I am one who firmly believes in a freeze on the production of further nuclear weaponry followed by a programmed decrease in arsenals of these weapons, but only with an acceptable scheme for verification. Although, as Abelson points out, verification may be sticky, I nevertheless believe that it is achievable. An important and perhaps essential catalyst for nuclear dearmament must certainly be widespread "grass-roots" support in both the Soviet Union and the United States.

In the past decade and a half I have visited the Soviet Union eight times, most recently for 2 weeks in October–November 1981 and for 5 weeks in July–August 1982. There is no doubt in my mind that there is now a growing anxiety in the Soviet Union concerning the possibility of nuclear war. This is, in part, a result of constant reminders in the press and on radio and television that Brezhnev has proclaimed that the Soviet Union will not initiate a nuclear war but that no such proclamation has come from the United States. I have found great concern, but no animosity, about



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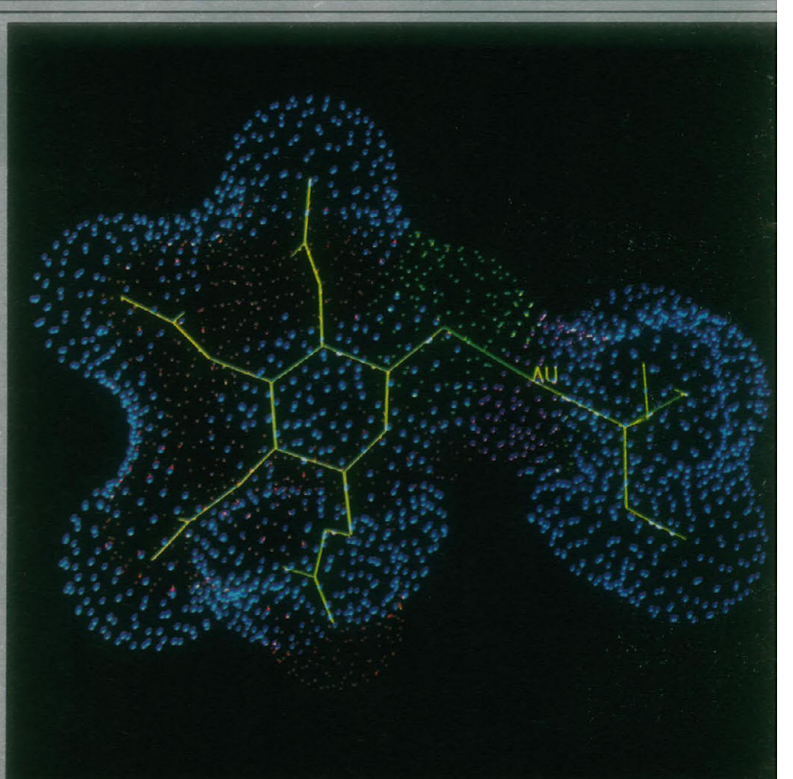

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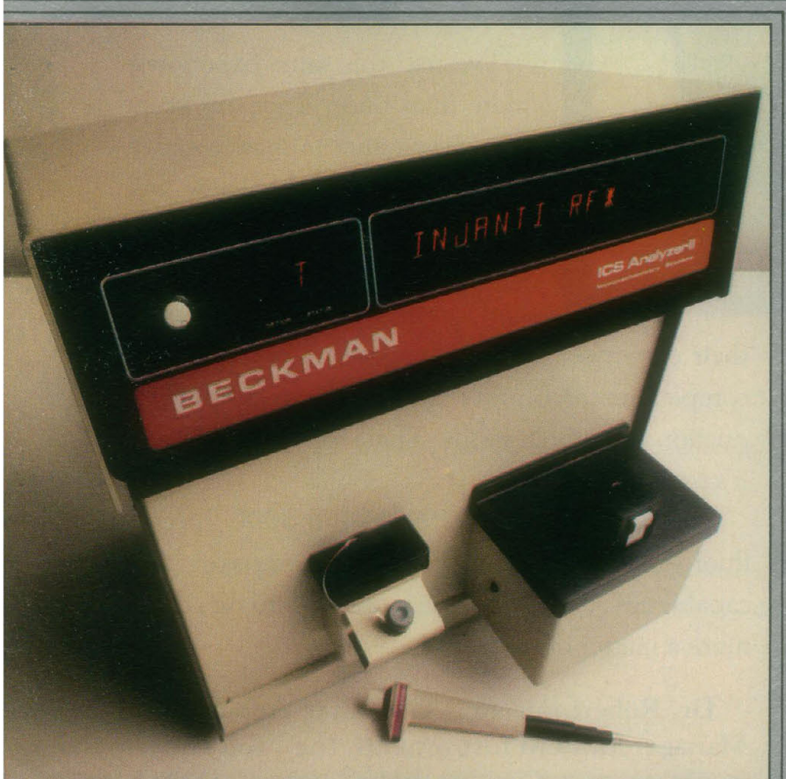

cellular and molecular biology, we are also investigating new aspects of gene regulation and function to develop new therapeutic agents targeted to key cellular macromolecules.

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"After the meeting broke up, he cornered me and said he had more questions but would rather discuss them privately. With his colleagues present. In his lab.

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Predominant causation factors
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Role of pathologic free radicals
Urban factors & lifestyle
Disordered nutrition

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Chemical mechanisms
Positive steps in prevention
Role of carotenoids & retinoids
Role of fruits & vegetables
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3 December 1982, Volume 218, Number 4576 **SCIENCE**

Excessive Zeal to Publish

A small but growing number of scientists have acted irresponsibly in their zeal to appear in print. Actions have included simultaneous publication of the same material in two or more journals, dual submission of manuscripts, and repeated publication at intervals of material that is different in form but not in substance.

The drive to expand bibliographies is understandable, even if some of the methods are not forgivable. Competition for research funds is strenuous. A good publication record is important. Today, in fast-moving fields, studies are often conducted by large predoctoral and postdoctoral teams. Most of the members' names on a publication may wind up cited in the "*et al.*'s." If there are multiple publications, each member can have a turn at being first author. Another incentive for multiple submissions is the regrettable delay that occurs when a journal is slow in processing manuscripts. There is a temptation to submit papers to several journals with the plan of withdrawing from some after acceptance by one. But excessive submissions have deleterious effects.

Excessive publication hinders effective communication among scientists. It places an unfair burden on those who wish to be informed. It steals the time of conscientious reviewers. It increases the work of editorial offices and slows the processing of meritorious material. It creates excessive costs of publication which are borne by someone else, such as the government, libraries, and members of scientific societies.

Statistics on the magnitude of the problem are not available, but reviewers of papers for *Science* have repeatedly called attention to it. Incidents of duplicate submission occur, despite our printed instruction to authors that "papers are considered with the understanding that they have not been published and are not under consideration elsewhere." Other journals have similar policies. Thus far, miscreants have encountered few obvious penalties for their acts. However, reviewers for granting agencies examine the bibliographies cited in proposals and judge them not by number but by content.

Until recently, editors of journals have not penalized authors who make dual submissions other than by rejecting their papers. Editors have enough responsibilities without taking on the task of policemen. However, precedents have now been set for imposing penalties. Benjamin Lewin, editor of *Cell*, and Daniel Koshland, editor of the *Proceedings of the National Academy of Sciences*, have agreed that for a period of 3 years they will refuse to consider any manuscript submitted by a certain author who published similar articles in their journals. Penalties for other infractions will depend on the frequency of the offense. Another editor told of an incident in which it was found that an investigator had submitted the same manuscript to two journals in a particular field. As a penalty for this, all U.S. journals publishing in that field agreed never to consider any manuscript from that investigator's laboratory. These are tough sanctions which should not be invoked lightly.

Until recently, our attitude at *Science* has been perhaps too lenient. When reviewers pointed to duplicate submissions, the papers were rejected. Additional sanctions were not imposed. In the future, a sterner policy will prevail. We will amend our procedures to make the author's commitment to a single submission even more explicit and binding. We will encourage reviewers to inform us about unethical behavior of authors. Such reports will have a bearing on future submissions. In cases of duplicate publication of original research findings involving *Science* and other major periodicals, we will, after careful examination of the facts, consider joining in concerted action against the offender.

We hope that punitive actions will not be necessary. The prospect of them is disagreeable. But the integrity of scientific publication must be maintained, and offenders must be made aware that they have more to lose than to gain by their behavior.—PHILIP H. ABELSON

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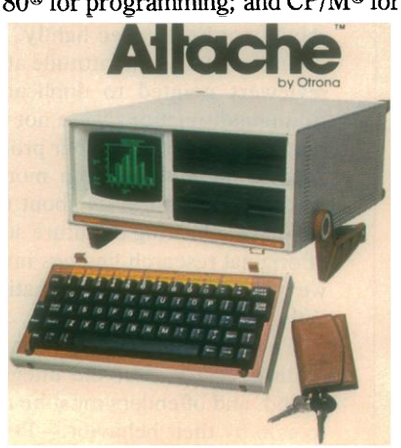

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66. I thank R. T. Klingbiel and P. N. Tyminski for assistance in preparing this article.

NOTICE

New Length Limits for Articles and Reports as of 1 November 1982

Articles: Up to 5000 words (approximately five printed pages in *Science*), including the references and notes *and* the figure and table legends. The illustrations (figures and tables) when printed in *Science* should together occupy no more than one page.

Reports: Up to 2000 words (approximately 1½ printed pages in *Science*), including the references and notes *and* the figure and table legends. The illustrations (figures and tables) when printed in *Science* should occupy no more than half a page.

Letters: Up to 250 words.

Technical Comments: Up to 500 words, including references and notes.