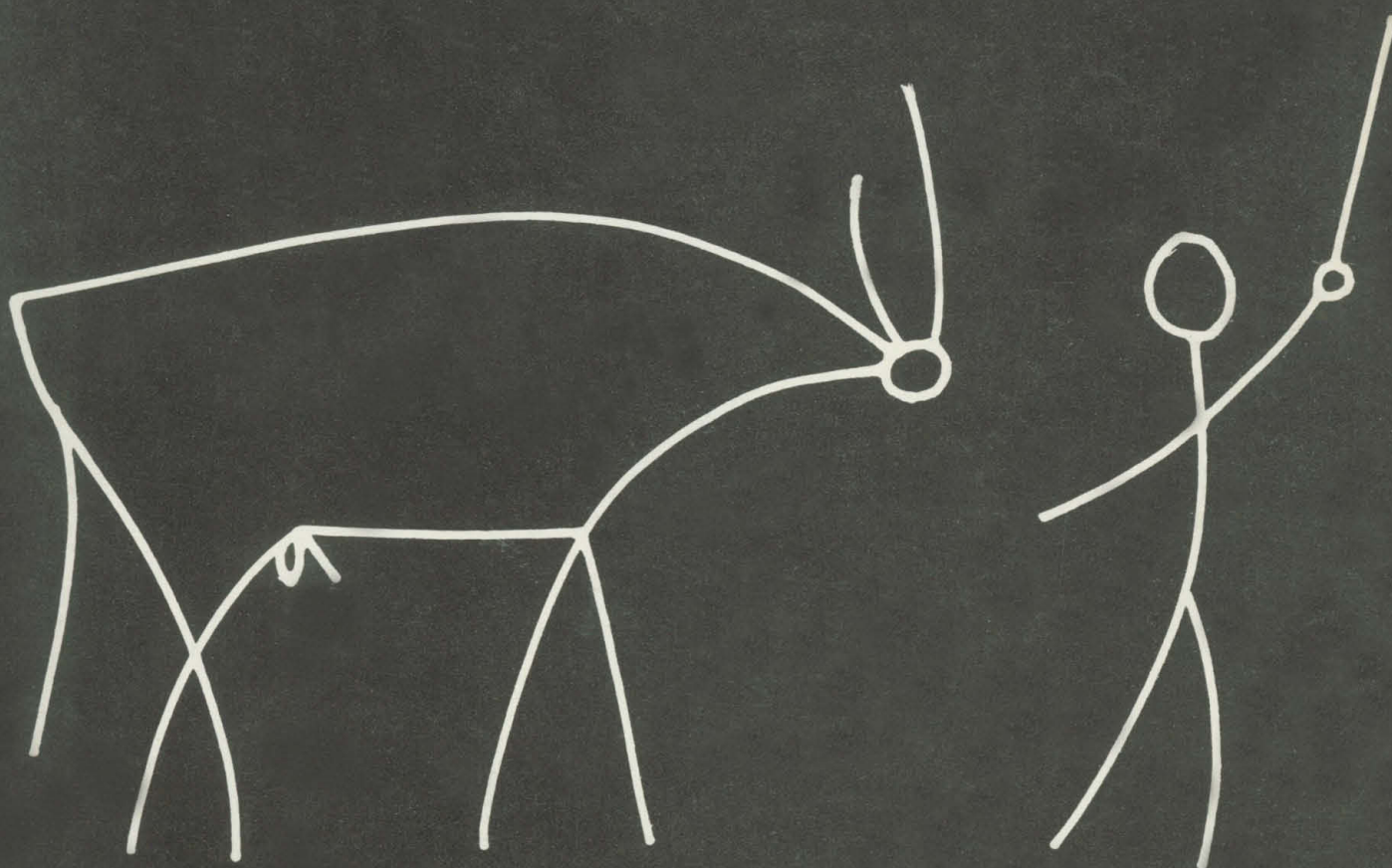


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19 January 1973

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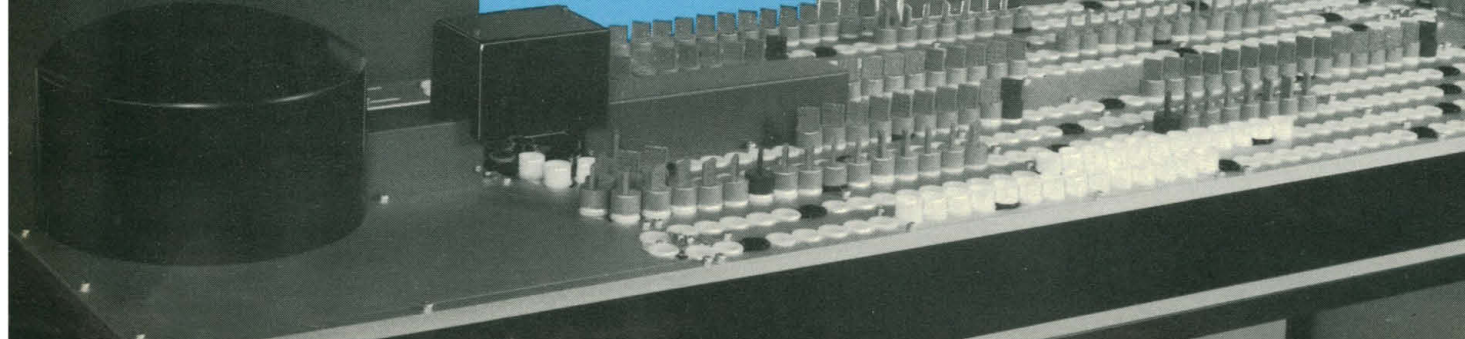
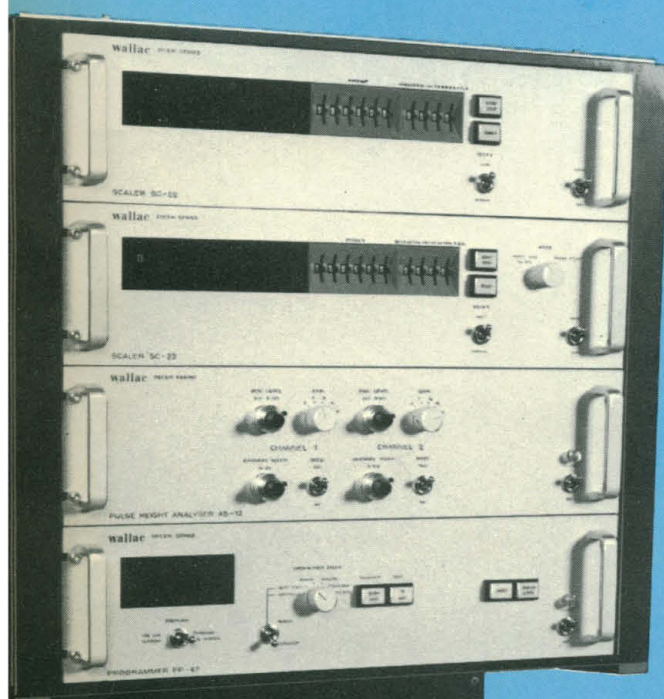
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Pen drawing (in the style of Pablo Picasso) symbolizing the domestication of animals. See page 235. [R. Protsch and R. Berger, University of California, Los Angeles]

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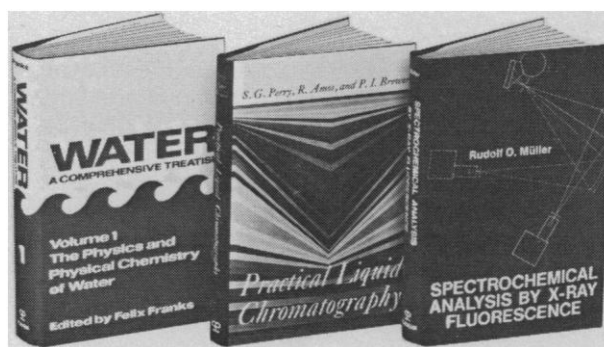
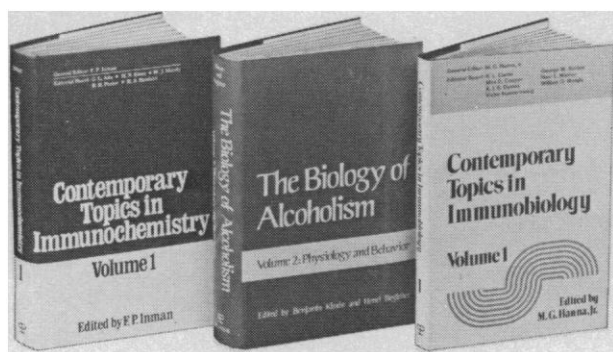
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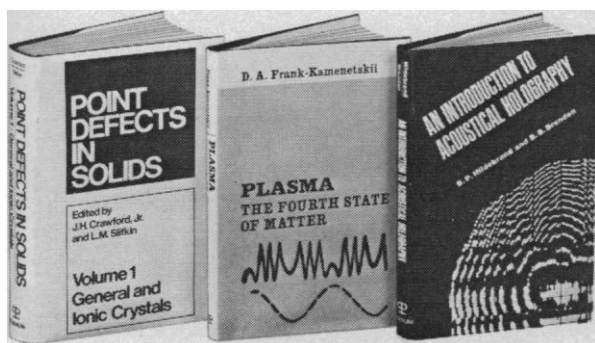
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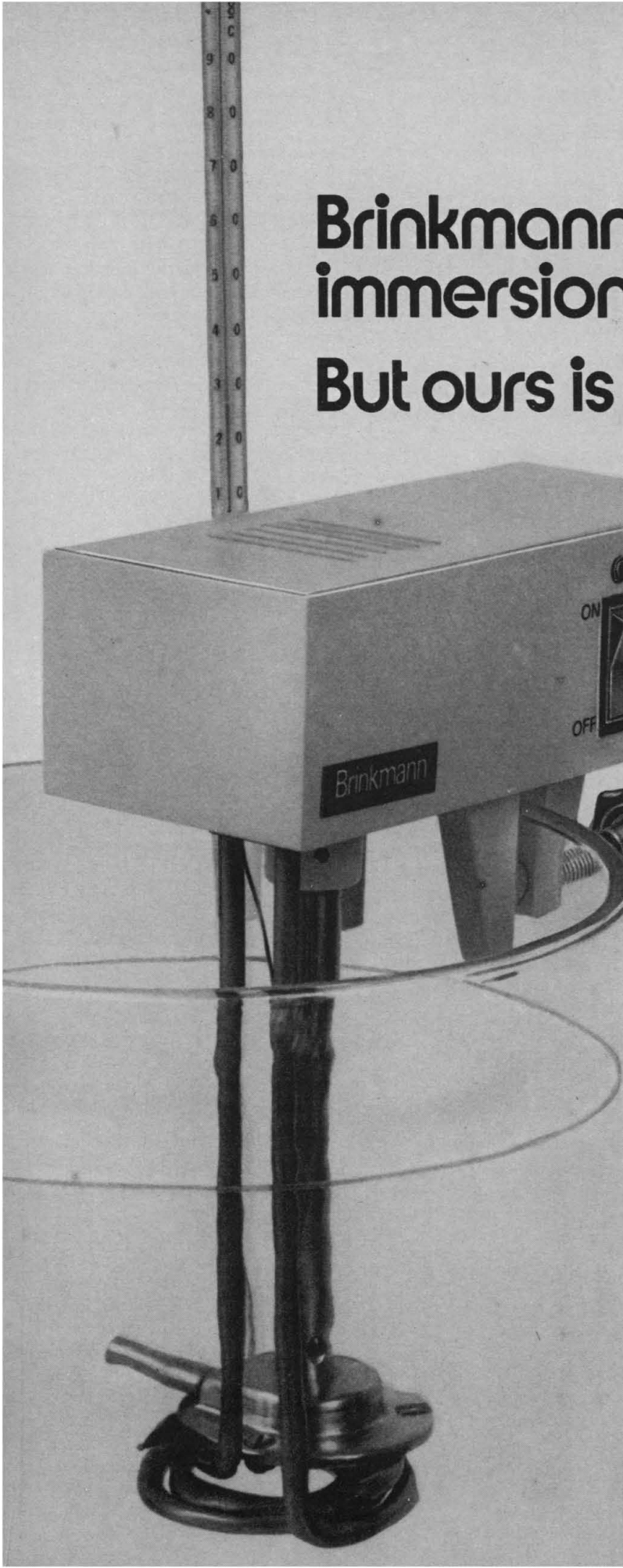
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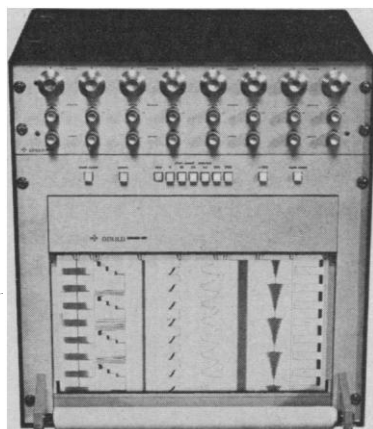
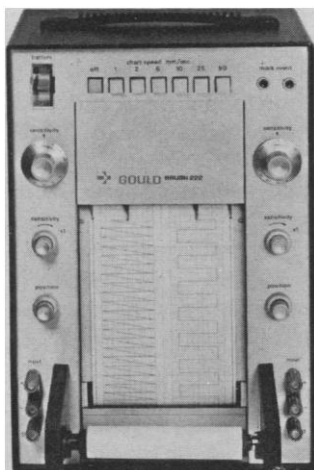
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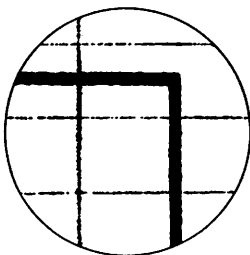
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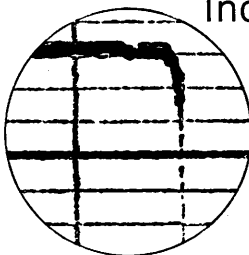
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expectedly in a brittle fashion at alarmingly low stresses, often after having sustained much higher stresses for a substantial time. For a given hydrogen potential, the susceptibility to hydrogen brittleness generally increases as the basic strength of the steel is increased.

A hydrogen economy would require a substantial increase in the capability to contain and transport hydrogen. It is not at all clear that this can be accomplished by a straightforward expansion of current technology. Nor is it clear that proponents of the hydrogen economy are sufficiently aware, or indeed aware at all, of hydrogen's degrading effects. The brittleness induced by hydrogen is not an insurmountable barrier to a hydrogen economy, but to date the problem has not received sufficient attention to allow, for example, a rational design for a hydrogen pipeline network.

H. H. JOHNSON

*Department of Materials Science and  
Engineering, College of Engineering,  
Cornell University, Ithaca, New York*

## Drug Abuse

The letter from Michael M. Baden (29 Sept. 1972, p. 1152) which is critical of the excellent summary by Thomas H. Maugh of research on narcotic antagonists (Research News, 21 July, p. 241) is itself in need of criticism. Baden may be correct in his two points that (i) abuse of methadone and overdose deaths more frequently result from oral administration than from injection and (ii) the amount of paregoric being abused is only a very small fraction of the total amount being consumed. However, Baden does not appreciate the contribution of parenteral abuse to problems associated with present oral administration nor why a more useful parenteral deterrent is essential.

The effect of methadone, when it is taken parenterally by addicts, is either indistinguishable from that of heroin (1) or may indeed be preferred to that of heroin (2). Accordingly, attempts have been made to prevent parenteral methadone abuse. Patients who have take-home privileges are provided either with solutions (for example, Tang) or with some solid dosage (such as the Disket), which, because of irritating properties when it is directly ingested orally, must be dissolved before use. These forms of dosage, which have been designed to prevent parenteral abuse, unfortunately

have not accomplished their objective, as they are either directly injectable (3) or can readily be prepared for injection (2, 4). Worse, however, is that their use has led to many deaths from methadone overdose. When given methadone in solution, the patient is not told the concentration in the mixture, nor is the bottle labeled. A solution containing 40 milligrams procured one day by a street addict may provide satisfaction and relief from withdrawal effects. On another day, a solution of identical appearance but containing 100 milligrams may be lethal. Tang solutions or Disket solutions are pleasant-smelling and attractive-looking. Young children drink them "eagerly" with disastrous results (5). Naloxone combined with methadone in a truly non-filterable dosage form would prevent parenteral abuse, eliminate the need for all liquid preparations, and undoubtedly result in fewer lethal doses administered by both oral and parenteral means.

The paregoric question also needs to be clarified. Effective 4 June 1972, a prescription was required for paregoric in all 50 states (6). The reason, as described in the *Federal Register* (7), is that "abuse of paregoric by addicts who process it into a form for intravenous administration is well known and well documented in the medical literature . . . it is in the public interest for paregoric to be restricted to prescription sales." The housewife who previously obtained a few cents worth of the popular old remedy from her corner pharmacy must now incur the additional expense and trouble of an appointment with a physician and a prescription for the drug—all because of a small degree of addict abuse. Both the Food and Drug Administration and the Bureau of Narcotics and Dangerous Drugs have expressed interest in returning paregoric to over-the-counter status if abuse can be prevented. As little as 1 milligram of naloxone in each 100 milliliters of paregoric can make such abuse a thing of the past.

IRWIN J. PACTER

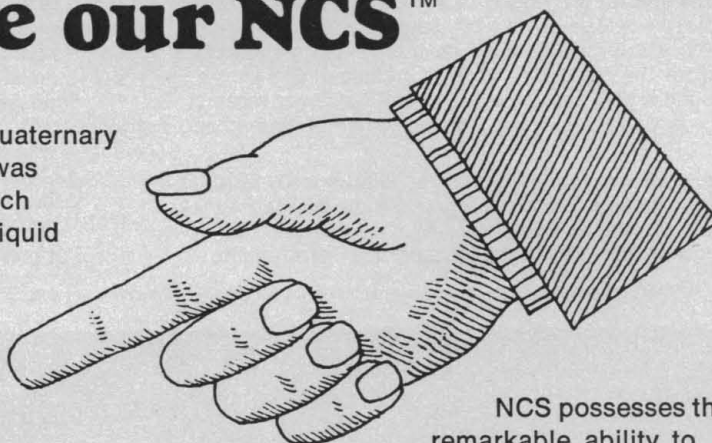
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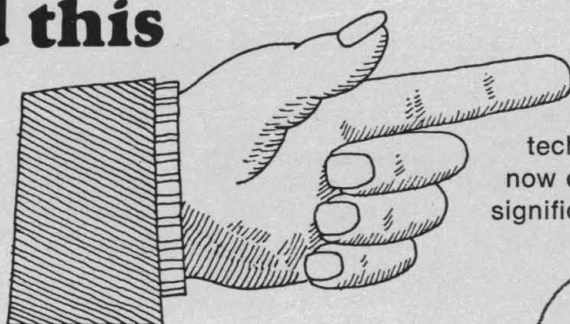


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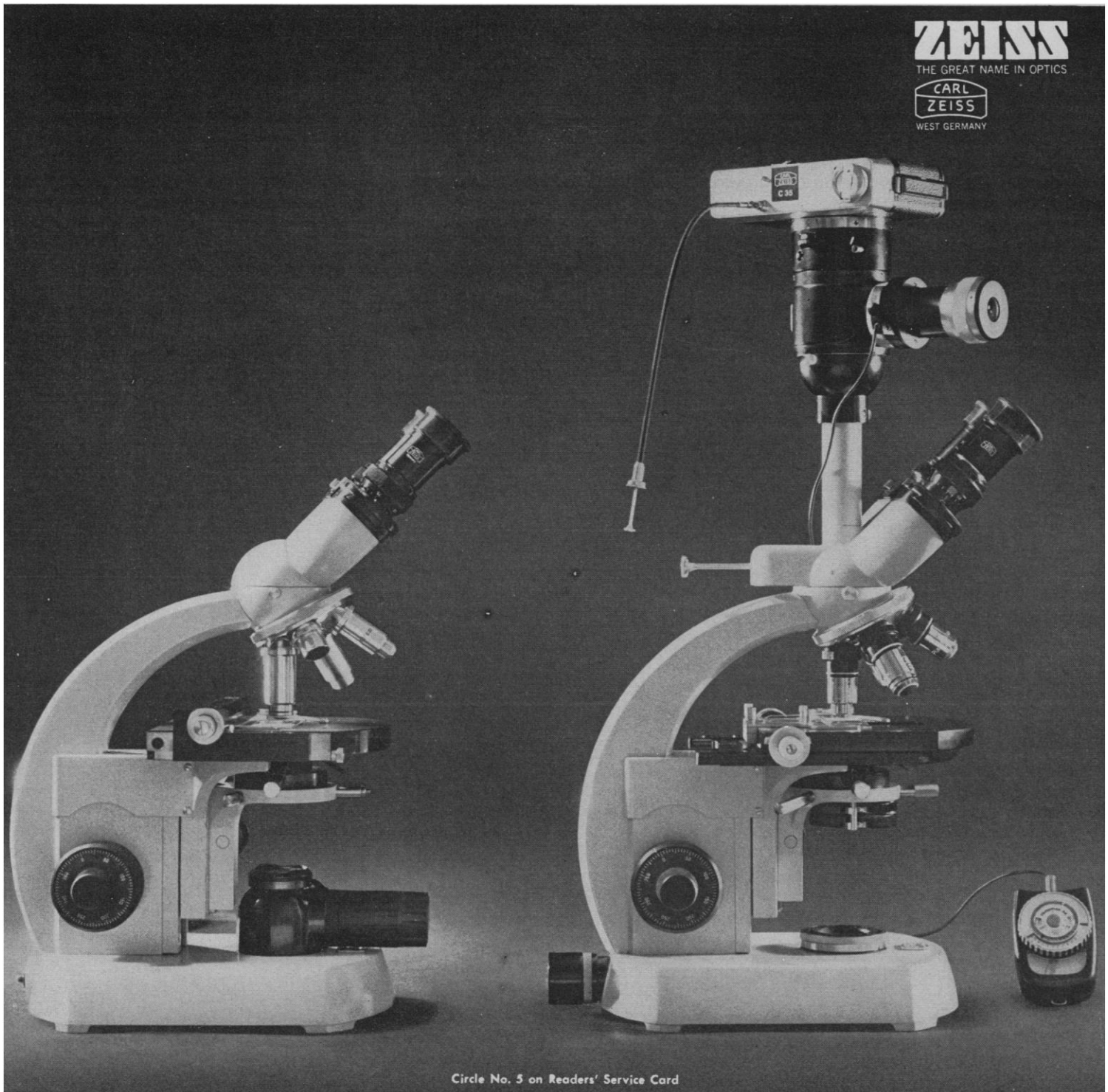
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## Departure of the President's Science Adviser

The resignation of Edward David and the likelihood that the office of the President's science adviser will be abolished come as a disappointing shock. David is a scientist-engineer of very broad competence who maintained intellectual integrity in the emotional heat of politics. He was helpful in meeting the many short-term demands of the Presidency, while working constructively toward long-term objectives.

The abolition of the office of science adviser is one of many consequences of President Nixon's determination to reorganize the Executive Office of the President. Over the years, through congressional action and otherwise, the number of people reporting to the President has increased to unmanageable proportions. The President is moving toward decreasing the number of people reporting to him and toward cutting the size of the staff employed by the Executive Office of the President by as much as 50 percent. The details of the final structure are still hazy, but it is probable that, when the smoke clears, the President's Science Advisory Committee and the Office of Science and Technology will have vanished.

Many of the activities of a President's adviser must necessarily be hidden from view. For example, coordination of the many branches of government having a role in some technological matter needs to be accomplished without fanfare. There are ways, however, of getting a glimpse of the adviser's thinking and intellectual development. During his tenure, David made a substantial number of public appearances. His speeches make good reading: they are substantive, and they reveal a curious, probing, growing mind. During his stay in Washington, he never stopped learning.

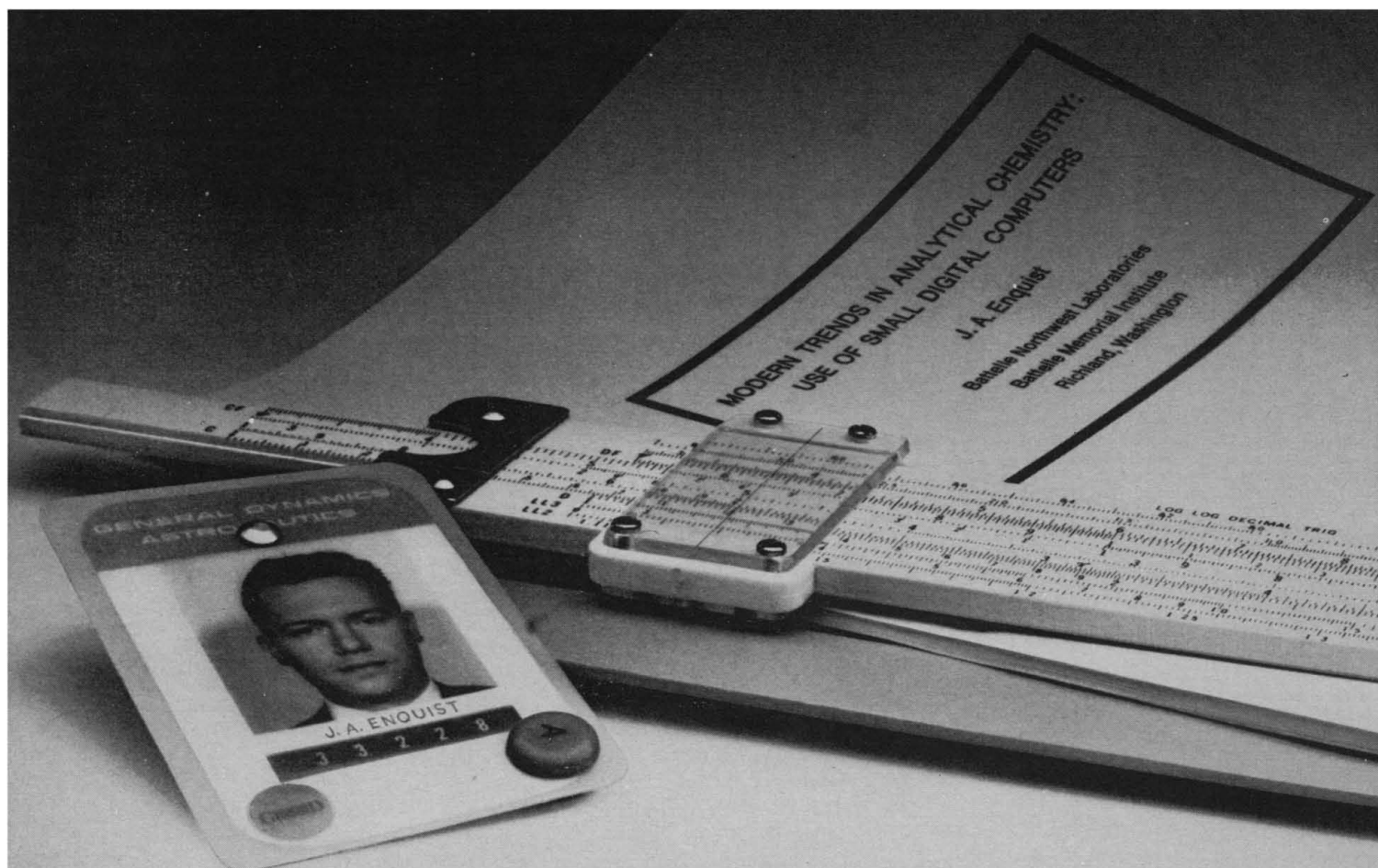
Under David, science and technology had visibility and a defender at the highest level. He saw to it that the budgets for civilian science and technology increased. But he was more than a mere advocate. He moved toward changing the emphasis of programs in accord with the changing temper of the times, yet he did not neglect long-term matters.

One of the criticisms of Presidential science advisers is that they often became so involved in the day-to-day fighting of political brush fires that they lost sight of the forest. David avoided frittering away his energies and concentrated on a limited number of activities of greatest potential impact. For example, his office chose to take a leading role in the energy problem. Another area in which he has been extraordinarily perceptive is the role of civilian technology in world affairs. Civilian technology is supplanting money and military power as currency in the conduct of international diplomacy. The U.S. public and most politicians seem to be about the only influential people in the world still unaware of this. David moved vigorously in capitalizing on this neglected asset, and his negotiations with the Russians have seemed to be particularly useful.

It is to be hoped that the drastic changes being implemented will not leave science without a spokesman or influence in the White House. At the very least, it is essential that some scientist connected with the government be designated as the chief scientist.

For years most of the scientific establishment has fought against the creation of a Department of Science. It has been argued that science and technology permeate the activities of virtually all executive agencies and that centralization would not be wise. The argument has been driven home too well. In consequence, there is now danger that science, while being everywhere, will be nowhere.—PHILIP H. ABELSON





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 1965-67 Electronics Engineer, General Dynamics/Astronautics  
 1967-69 Research Engineer, Battelle Northwest Laboratory  
 1967-72 Author of the following papers:  
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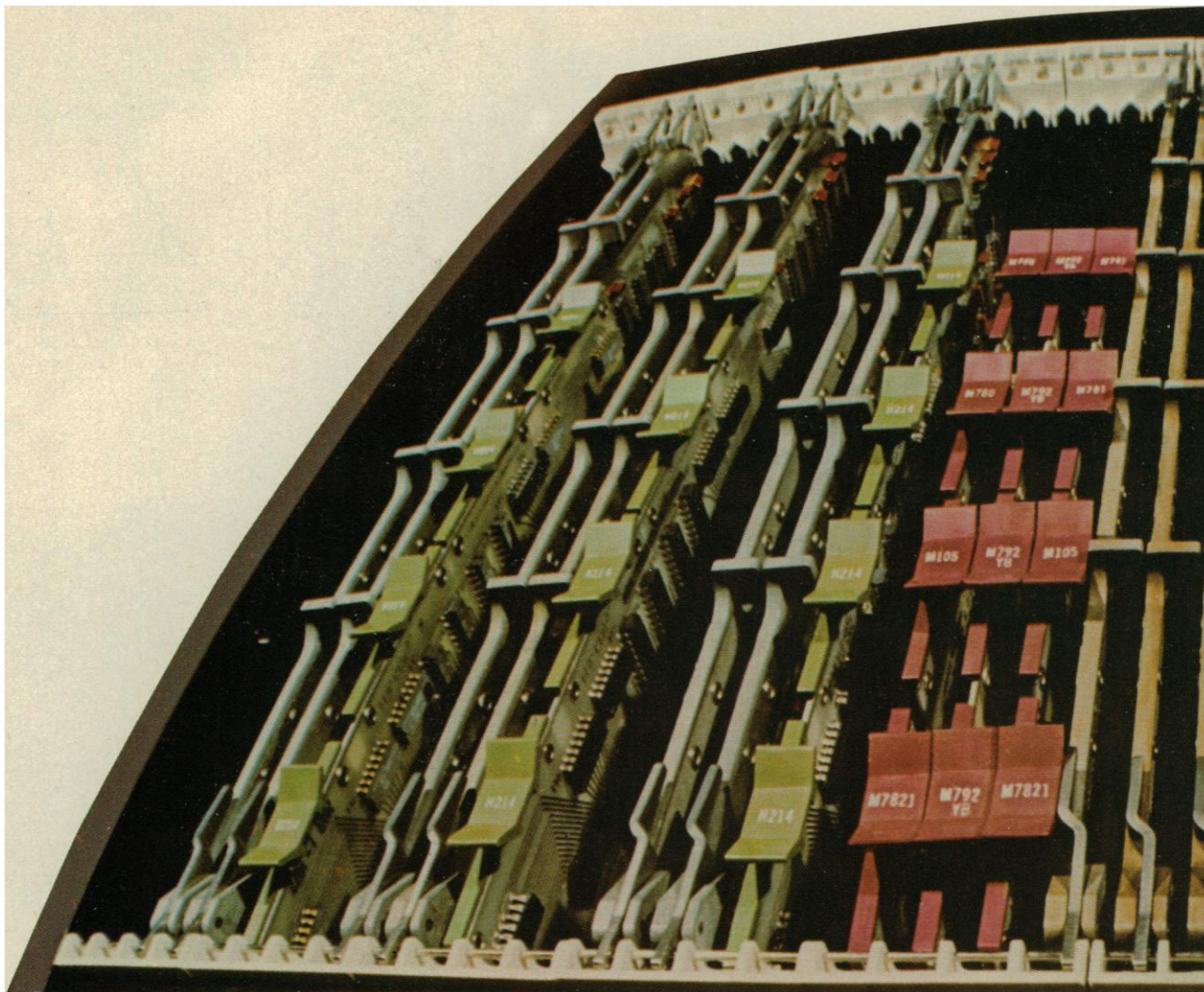
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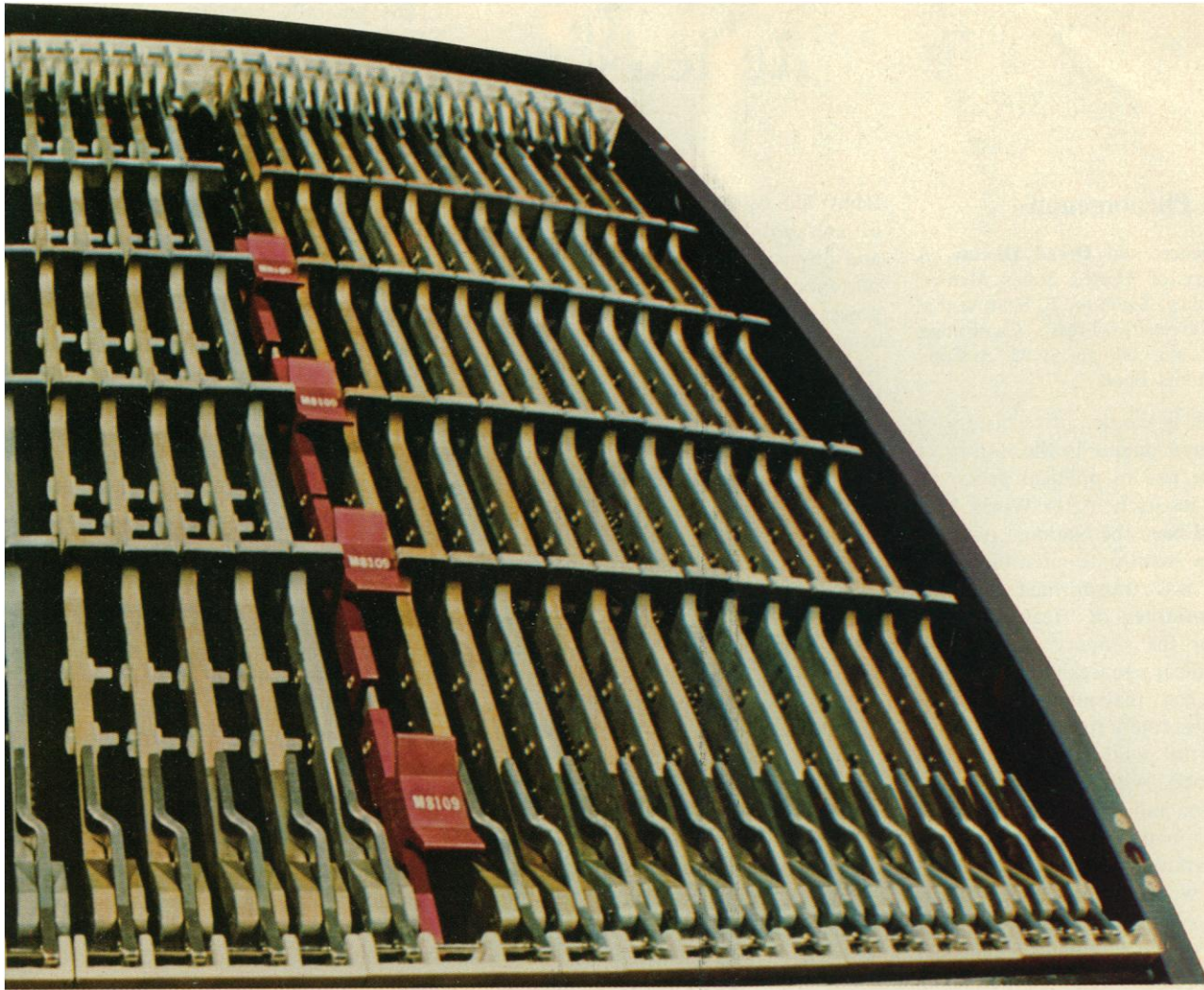
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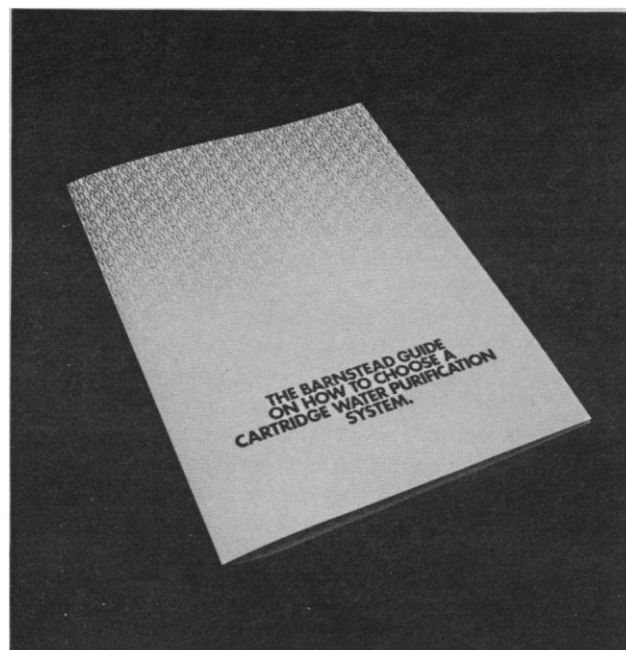
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**Ionizing Radiation. Levels and Effects.** A Report of the United Nations Scientific Committee on the Effects of Atomic Radiation to the General Assembly, with Annexes. United Nations, New York, 1972. 2 vols. Vol. 1, Levels. iv pp. + pp. 1-198, illus. Vol. 2, Effects. vi pp. + pp. 199-448, illus. Each vol., \$7; the set, \$12.50.

**Irradiation Effects in Fissile Materials.** J. Létourte and Y. Quérré. North-Holland, Amsterdam; Elsevier, New York, 1972. x, 128 pp., illus. \$15.50. Defects in Crystalline Solids, vol. 6.

**Land above the Trees.** A Guide to American Alpine Tundra. Ann H. Zwinger and Beatrice E. Willard. Harper and Row, New York, 1972. xviii, 490 pp. + plates. \$15.

**Landforms of Cold Climates.** J. L. Davies. M.I.T. Press, Cambridge, Mass., 1972. xvi, 200 pp., illus. Paper, \$2.95. An Introduction to Systematic Geomorphology, vol. 3. Reprint of the 1969 edition.

**Liberation Ethics.** John M. Swomley, Jr. Macmillan, New York, 1972. viii, 244 pp. Cloth, \$6.95; paper, \$1.95.

**Maize Rough Dwarf.** A Planthopper Virus Disease Affecting Maize, Rice, Small Grains and Grasses. Isaac Harpaz. Israel Universities Press, Jerusalem, 1972 [U.S. distributor, Halsted (Wiley), New York]. xvi, 252 pp., illus. \$24.

**Mammalian Oogenesis, I.** Papers by Hannah Peters and others. MSS Information Corp., New York, 1972. 170 pp., illus. \$15.

**Map Projections.** For Geodesists, Cartographers and Geographers. Peter Richardus and Ron K. Adler, North-Holland, Amsterdam; Elsevier, New York, 1972. x, 174 pp., illus. \$19.75.

**Meiosis IV.** Current Research. Papers by M. Callebaut and others. MSS Information Corp., New York, 1972. 244 pp., illus. \$15.

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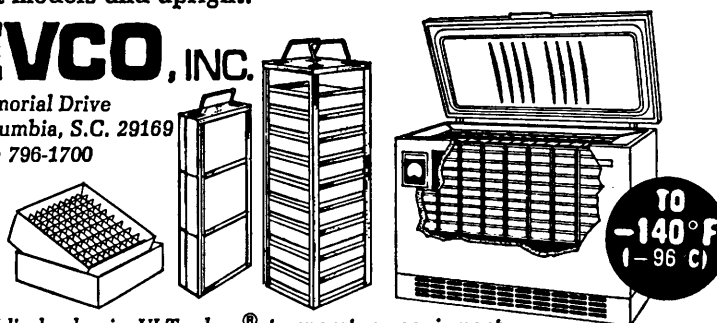
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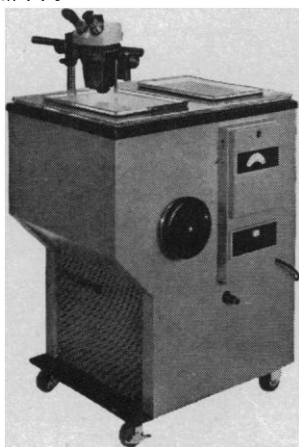
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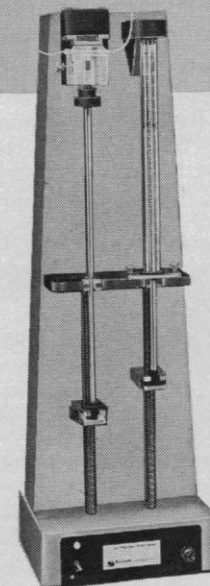
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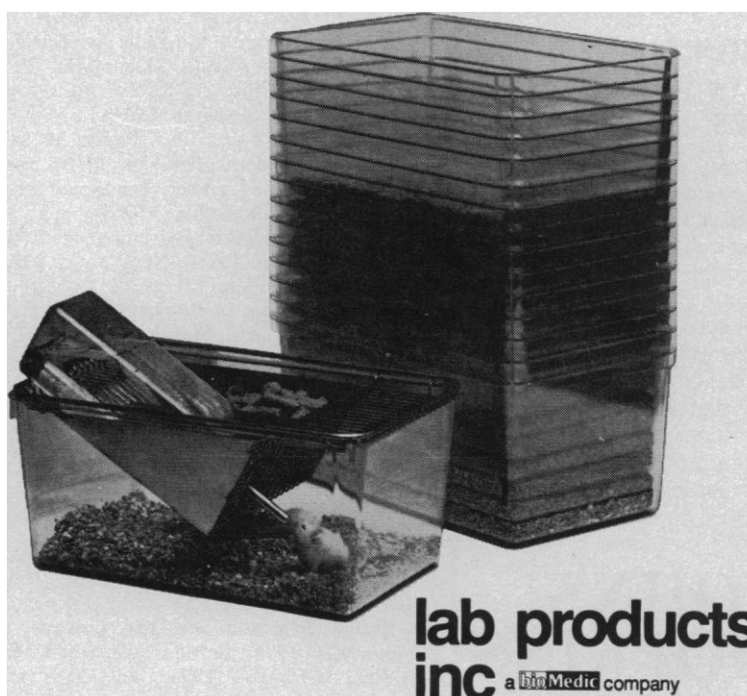
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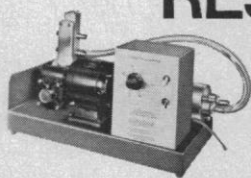
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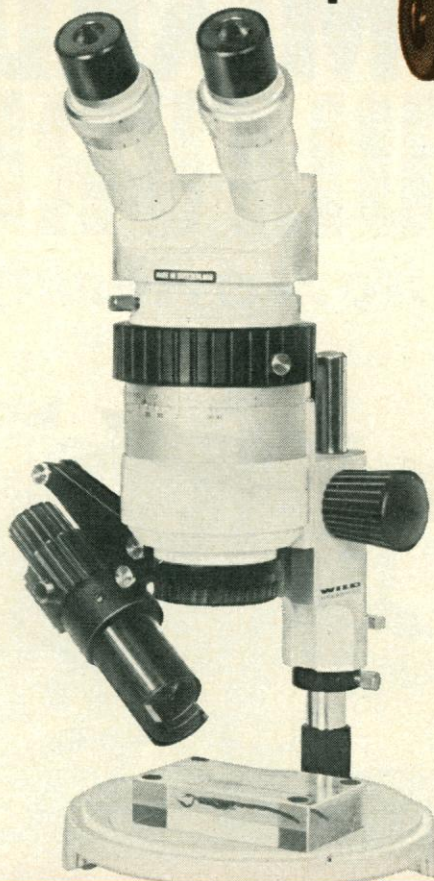
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