

SCIENCE

13 June 1975

Volume 188, No. 4193

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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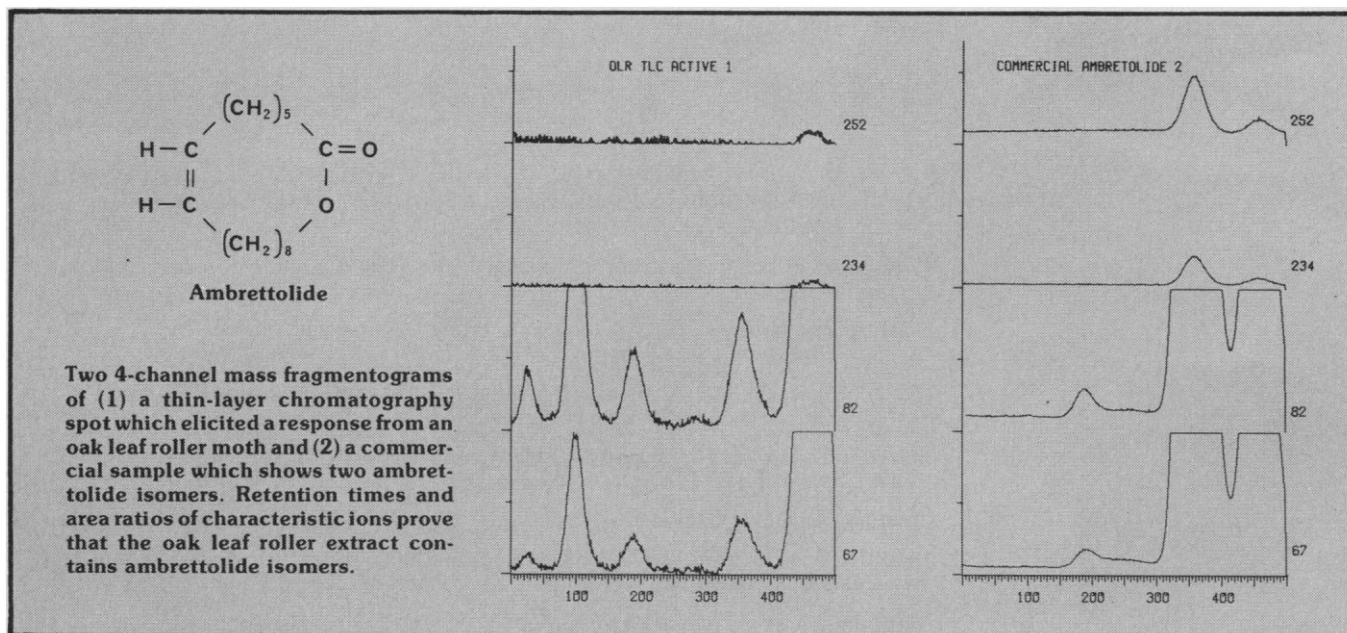
COVER

Forest burned in the Little Sioux wild-fire, northeastern Minnesota, 14-17 May 1971. (Cover) Two weeks after the fire *Clintonia borealis* Raf. (Lilaceae) was resprouting from the forest floor. [D. F. Grigal, University of California, Berkeley] (Below) In September 1971, extensive flowering of *Aster macrophyllus* L. (Compositae) occurred. See page 1109. [C. Wick, University of California, Berkeley]



The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress. Postmaster: Send Form 3579 to SCIENCE, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005.

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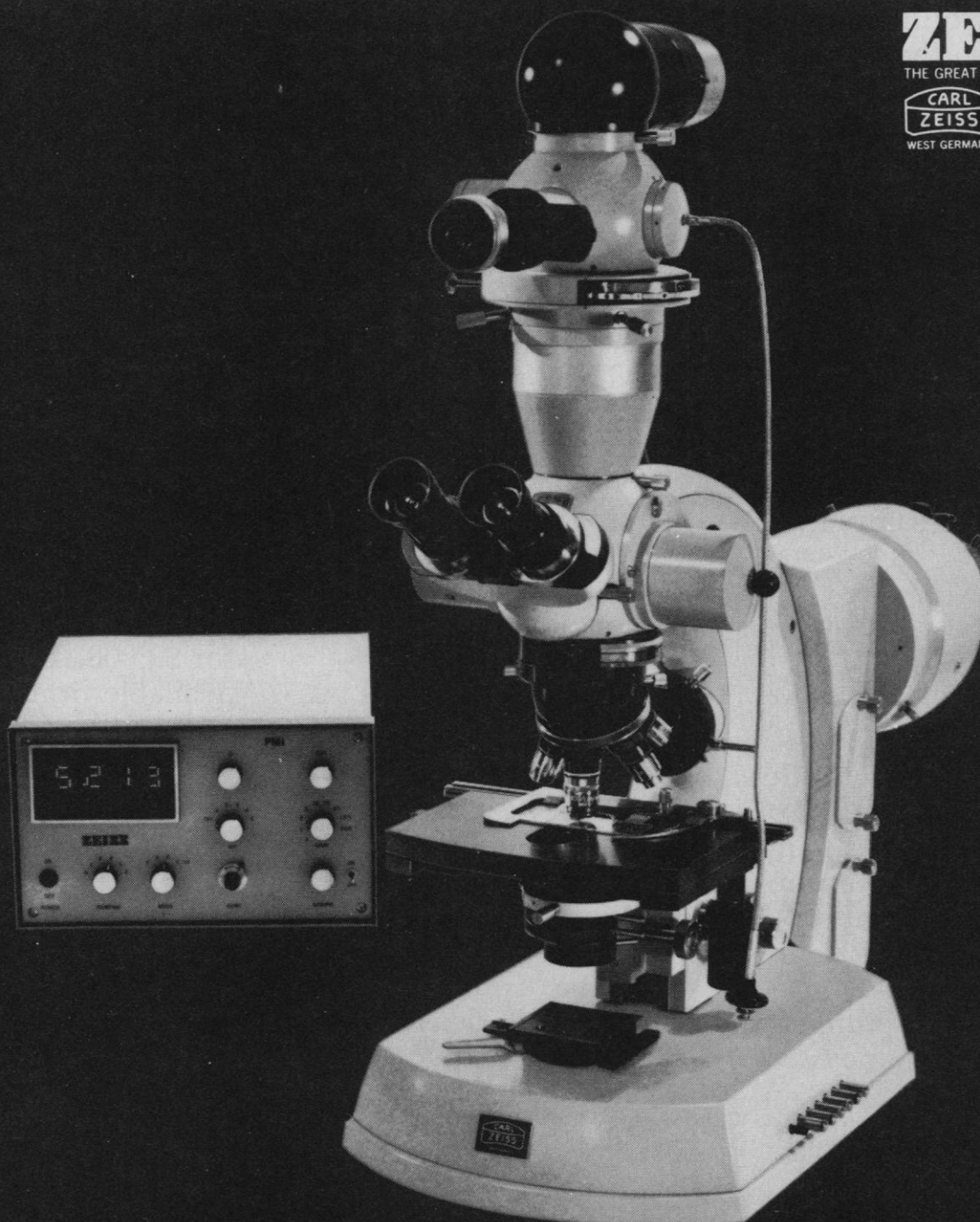
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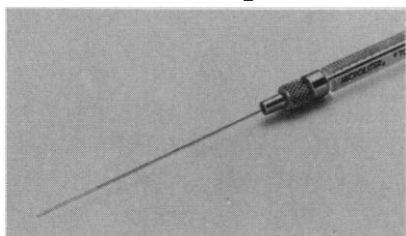
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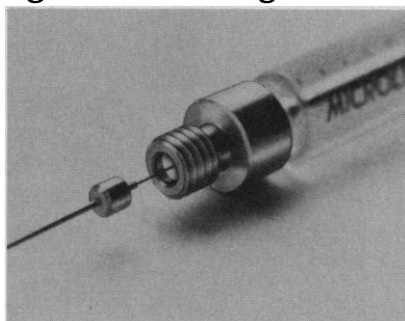
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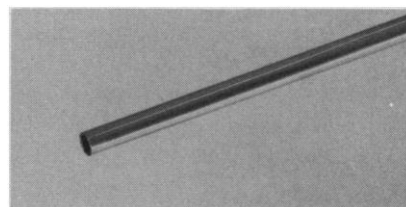


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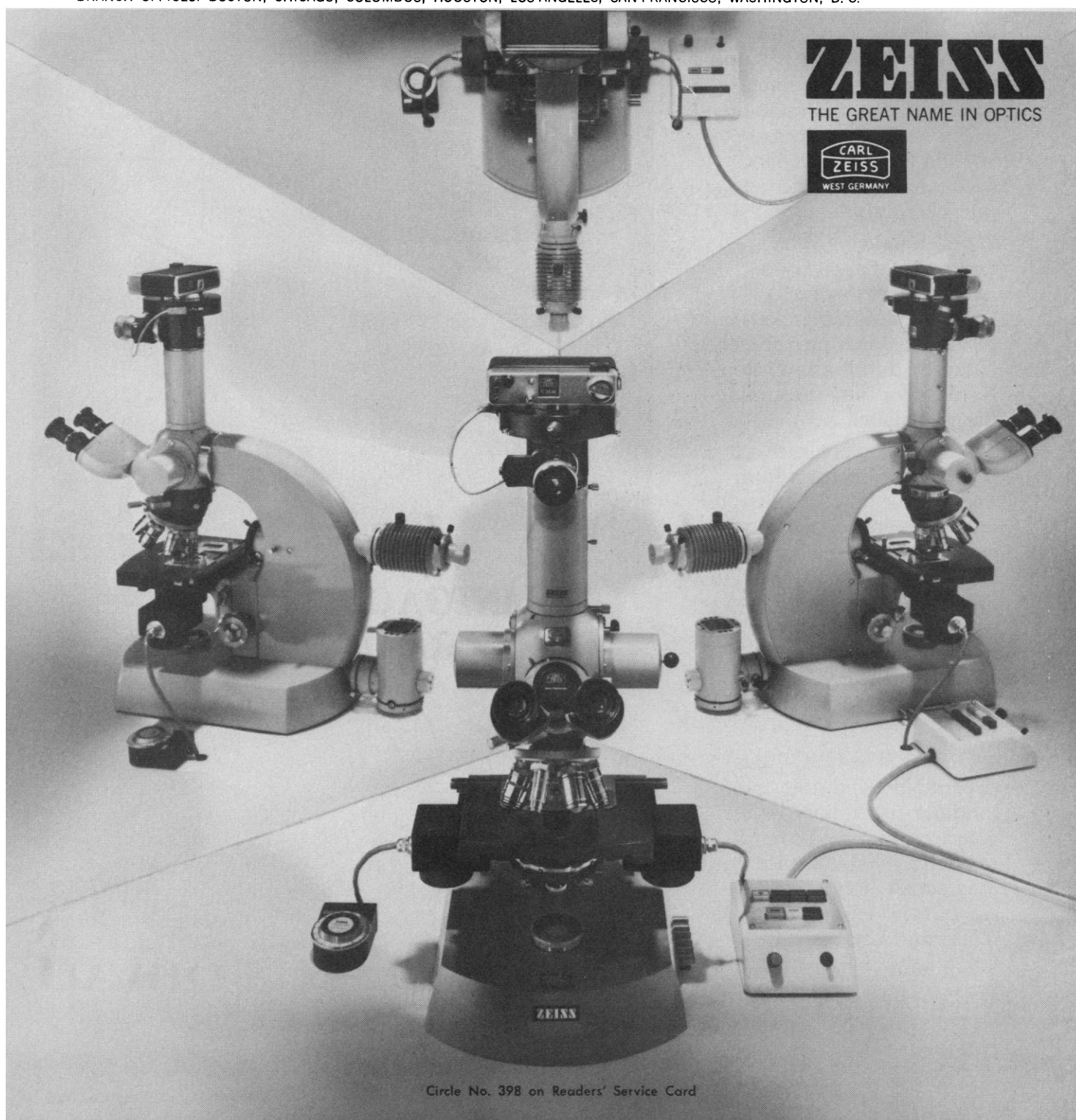
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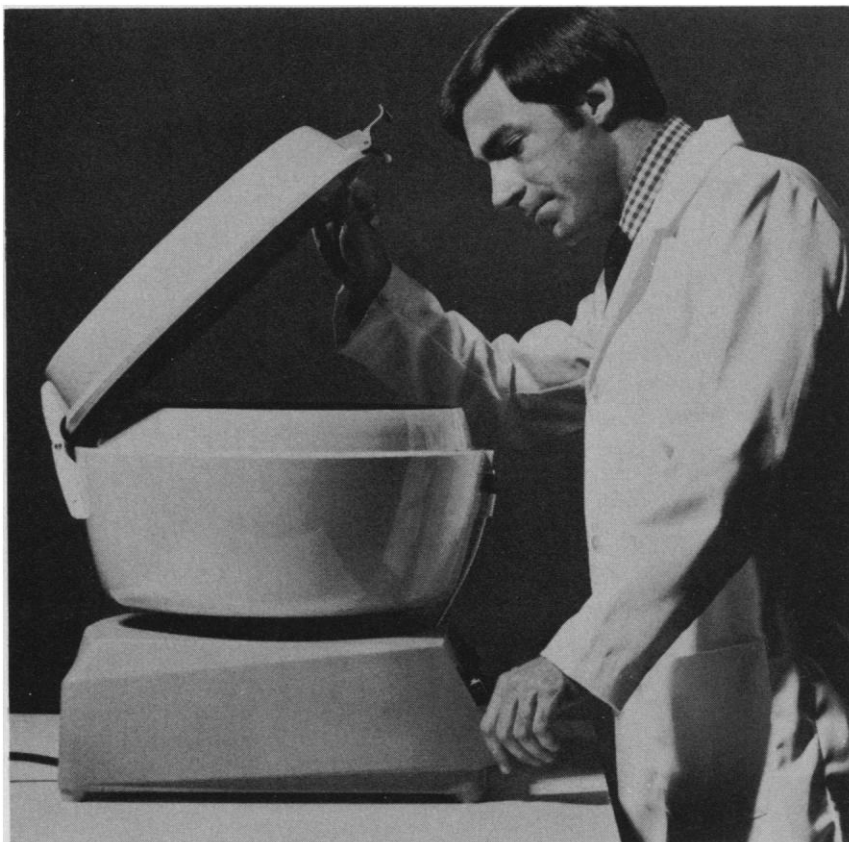
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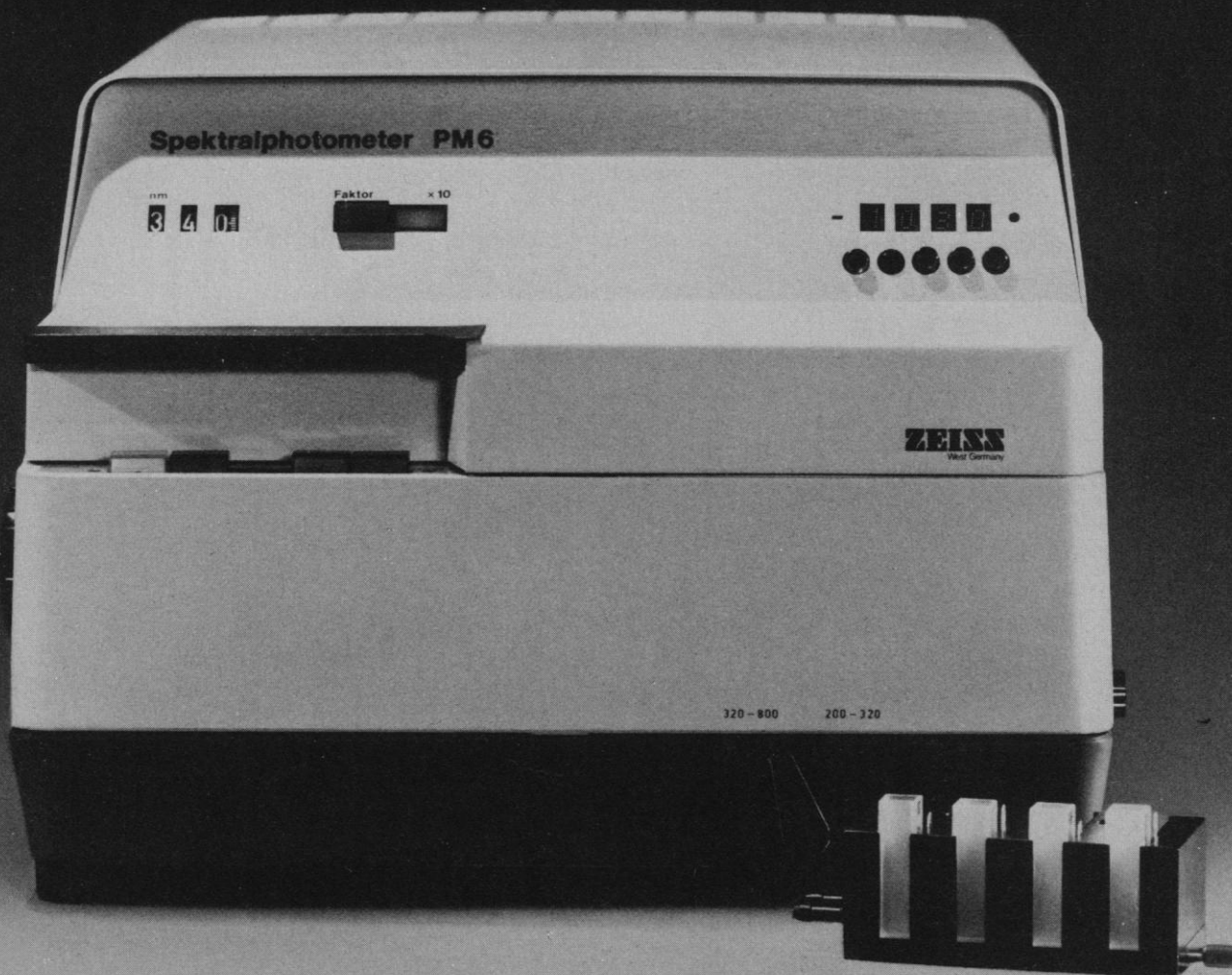
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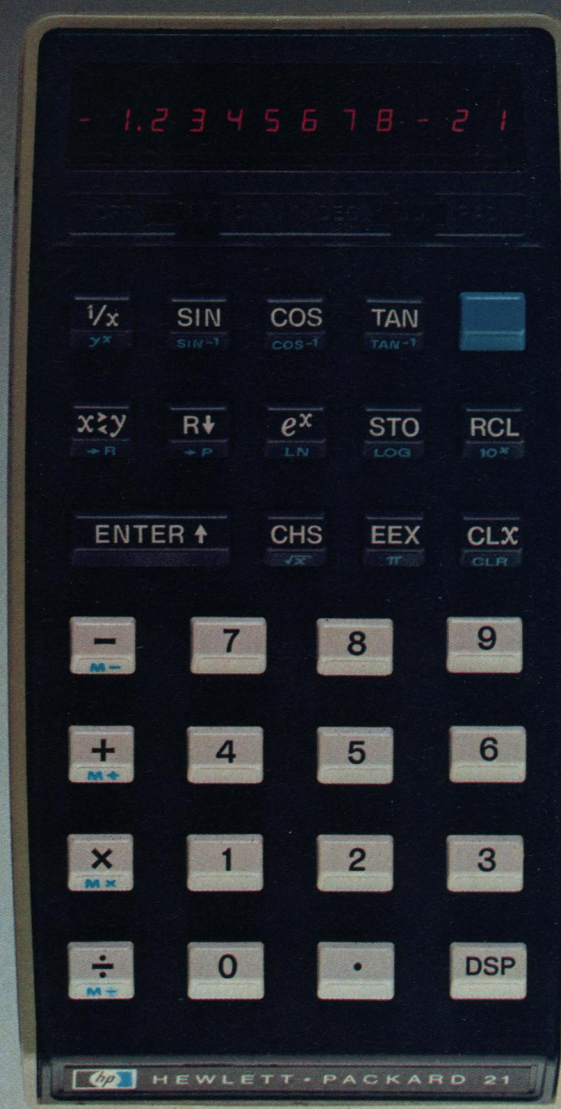
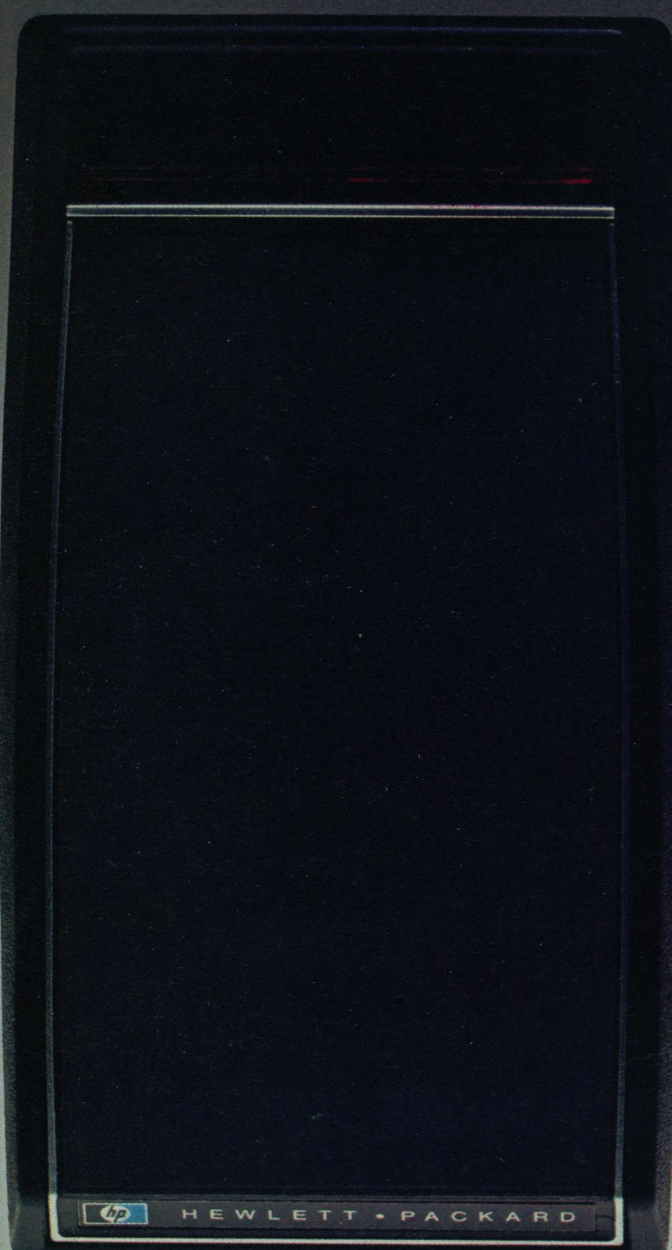
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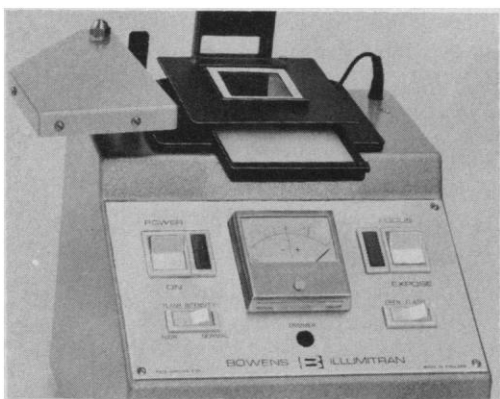
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Human Experimentation

In their thoughtful editorial of 25 April (p. 315) on the February Academy Forum "Experiments and research with humans: Values in conflict," Gaylin and Gorovitz emphasize the need for scientists and their critics to "not merely state their positions, [but] come to understand each other's point of view."

The dialogue begun in the Forum will be extended by a new working group brought together by the Institute of Medicine and the Forum. This group will encompass a diversity of disciplines and viewpoints that characterize scientists, their critics, and their supporters. They will expand the discussions of the Forum in an interdisciplinary manner to the point of recommending specific studies and other activities that will aid all of the concerned segments of society in reaching acceptable and appropriate decisions on the use of human subjects in research.

We hope that other organizations, such as the new section on science and technology developed by the American Bar Association, will include all related professions in their consideration of this multidimensional problem.

The following statements may be helpful in directing further inquiry:

1) The concern about the way in which human experimentation is conducted is greater than many investigators realize.

2) It is not enough to calculate risk-benefit ratios. Many ethical, moral, and political considerations are involved which cannot be addressed solely by improved calculation of cost-benefit ratios.

3) The increasing demands for greater proof of efficacy of therapeutic measures implies increasing need for experimentation involving man.

4) Although informed consent is a critical requirement for the ethical conduct of research, the larger share of protection for the rights of the subject devolves upon the processes for peer review, procedures that still may be less than adequate.

5) The subject of the appropriate conduct of research on humans is one that itself requires more critical research.

The broad interest and concern reflected by many reactions such as those expressed

by Gaylin and Gorovitz is, in our view, most important in furthering the goal of an understanding of the role of humans in research and the effective recognition of the human values involved.


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The letters from Jonsen (11 Apr., p. 98) and Lovinger (11 Apr., p. 100) regarding the use of children, prisoners, and others as medical research subjects deserve thoughtful consideration. The often nonexplicit premise in the debates in this area is that "research" or "experimentation" can be clearly and unequivocally defined, so that the issues lie in determining the ethical boundaries of experimentation in humans. However, such definitions are often anything but clear or unequivocal. Sometimes there is little reasonable argument, such as when a new drug or an entirely new surgical procedure is used, but the gray area is rather wide. For example, the use of surgical procedures such as dorsal column electrode implantation or aortocoronary bypass, where the long-term safety and therapeutic value are not completely known, is regarded as experimental in some places and as standard (nonexperimental or proven) in other institutions. The controls, reporting, and consent procedures could conceivably differ as a result of the definition used. There is as yet no established mechanism by which specialty societies could elaborate such definitions for adoption across the country. These are not simply issues of semantics, and most likely a large number of patients is involved. Perhaps open discussion of such problems may be helpful in placing the ethical issues in proper context.

E. EIDELBERG
Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85013



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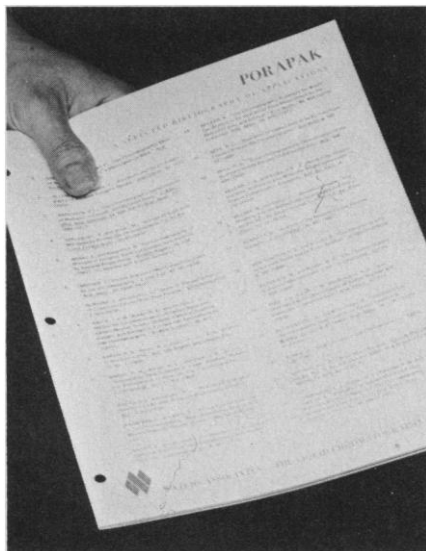
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Citation Analysis

The article by Nicholas Wade on citation analysis (News and Comment, 2 May, p. 429) omits two pertinent considerations. First, critical examination of citations in a special field usually reveals that citation errors and omissions in the bibliography of one author are transferred literally to another. This appears to imply that work which is not cited in an early well-known paper has a low probability of appearing as a historical reference in later papers. More important, there is ample historical evidence that many fundamental papers "ahead of their time" are ignored for lengthy periods before their importance is realized or their results rediscovered. The proponents of citation analysis as a tool for the evaluation of individual merit are thus adding injury to insult in these cases. The overall effect would be to discourage work which runs counter to the prevailing streams of thought.

MELVIN KLERER

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Suppose the "interesting possibilities" of the citation index come to pass. To keep a place in the scientific world it would be wise to, at the very least, make sure you are always first author of any article; cite yourself as often as possible; insist that your work be cited in all articles that you review; and automatically pass articles that already contain a sufficient number of citations to you. Unfortunately, you will not get any credit if an author leaves out one of your initials or, even worse, misspells your name. Nevertheless, if the above steps are taken, you should be able to push your "lifetime citation rate" over those of any immediate rivals. If all else fails, publish a paper containing a subtle misuse of the second law of thermodynamics.

H. J. M. HANLEY

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Whatever the purported benefits of citation analysis, I am sure that it will have as many, and maybe more, drawbacks. I can think of several problems without any difficulty.

I question whether citation analysis will "clearly" describe "something real about the scientific world" as Wade suggests. Figure 1 in Wade's article points to the fact that the two most-cited authors in 1967 have not been awarded the Nobel Prize. Nor have those ranking fourth and seventh through thirteenth.

Another problem is that papers which describe techniques are often cited with greater frequency than those in which a major breakthrough is reported. This despite the fact that many administrators do not consider technique papers to be as important as those reporting breakthroughs.

The most important drawback is that papers, even very significant ones, in smaller research areas will not be cited as often as less important articles in more popular fields. Needless to say, the popularity of a field has nothing to do with its scientific importance.

Finally, consider a paper that is criticized widely for being simply bad. It will be cited often, but citation analysis will not indicate that these citations were for the purpose of criticizing it.

JOSEPH ARDITTI

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As Wade points out, citation analysis "seems likely at present showing to corroborate the decisions made by the embattled peer review system." Of course, some of the "references are simply the 'noise' in the system, which [citation analysts] believe they can, for many purposes, filter out or at least reduce to insignificance." One way of performing the filtering or reduction is to bypass the citation counts and go directly to the main factor—money. The fellow who is able to get the grants and contracts is the fellow who gets the doctoral students. Each student publishes two or three papers on his thesis, in each of which he cites his professor's work. Then he goes on and does his own subsequent work, in which, of course, he cites those thesis papers which were coauthored by his professor, as well as the previous work. The grantee also goes (or sends his troops) to meetings where his work can be publicized; he pays page charges; he orders large quantities of reprints and mails them out broadside to everyone active in the field. The ultimate scientist spends all of his time in Washington, has no time at all for research, and is cited continually for work which he signed.

Therefore, instead of counting the number of citations, we should count the number of dollars. This would have the great advantage of completely corroborating the system. The granting agencies would then be able to prove conclusively that the people to whom they are giving the money are indeed the finest scientists.

ROBERT E. MACHOL

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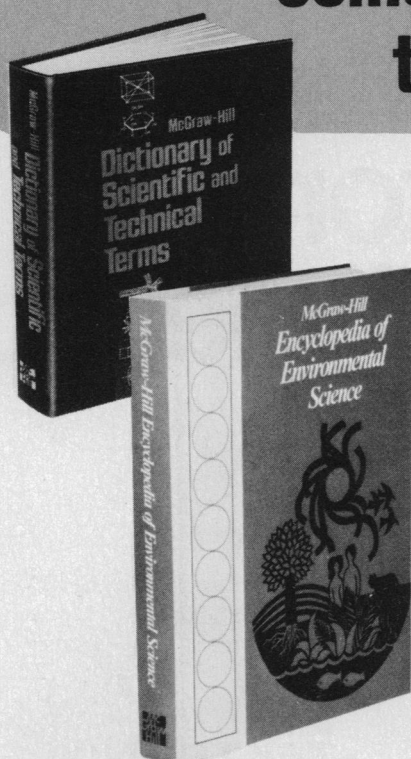


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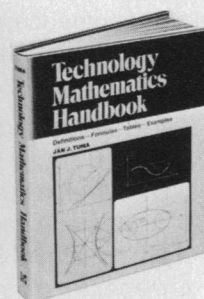
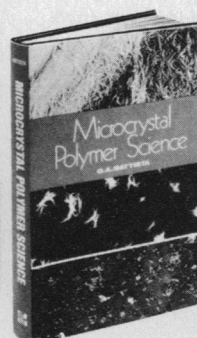
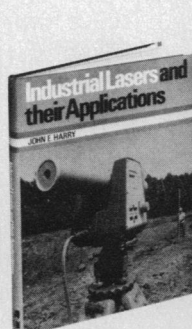
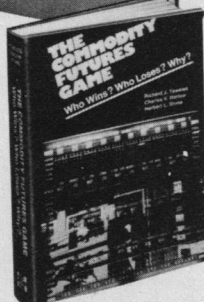
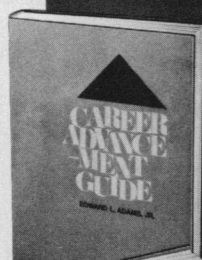
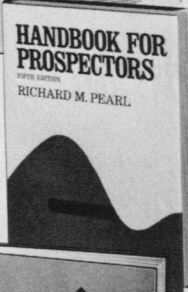
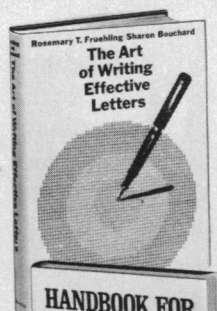
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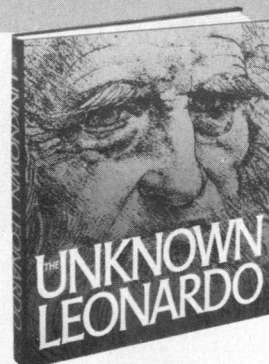
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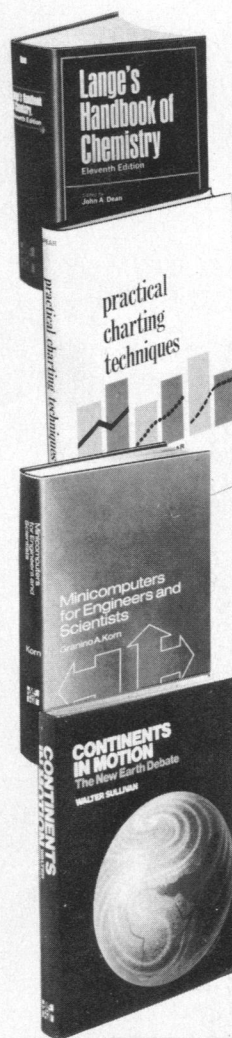
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World Population Conference in Perspective

Summing up the tangled opinions on population growth and environmental quality, a cartoon caption reads, "Eventually we will run out of food to feed ourselves, fuel to warm ourselves, and air to breathe. . . . This is something we must learn to live with." The United Nations Conference on World Population, held in Bucharest in August 1974, had stronger answers than "wait and see." Delegates from 135 nations adopted by acclamation (only the Holy See reserving) a World Population Plan of Action. The Plan of Action is not ideal, but the extent to which it succeeds should not be underestimated. Hesitant in tone, the plan lacks quantitative goals, but it does make all the necessary provisions for countries wishing to reduce population growth. Specific implications for population growth rate and quality of life of all countries are especially apparent in three areas: the status of women, control of reproduction by individuals, and the use of the environment.

At the U.N. Commission on the Status of Women in January 1974, a resolution calling for equal representation of men and women to the Conference on World Population was adopted. Women were not equally represented at Bucharest, but 13 delegations were headed by women. As a result of vigorous lobbying efforts by women participants, the Plan of Action mentions the elimination of discrimination against women and expansion of the role of women no less than seven times, while the subject was mentioned only once, under a subheading, in the draft plan. It is indicative of the increasing awareness of the necessity to fully integrate women into society that the amendments on the status of women were adopted with virtually no opposition.

Although the plan is careful to acknowledge national sovereignty, basic individual rights to control reproduction are delineated. Furthermore, the plan recognizes "that couples and individuals in the exercise of this right take into account the needs of their living and future children, and their responsibilities towards the community." This is the first time that a U.N. document asks individuals to assess the cost of a child to the family as well as to society at large. The quality of life for an individual and society, therefore, becomes a factor in determining the number of children an individual or couple bears.

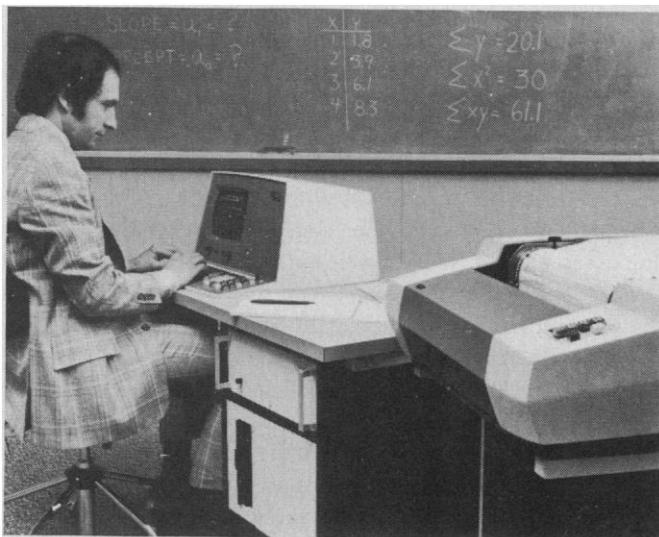
Recognition of environmental constraints on the use of resources appears as one of the principles and objectives of the plan. Population goals, the plan indicates, should consider supplies and characteristics of natural resources as well as the quality of the environment. Cognizant of the relationship between resources and increasing population, the plan directs attention to minimizing waste and distributing resources more equitably.

In a regional post-world population conference consultation, held in Bangkok in January 1975, national goals and timetables for making family planning services available and for reducing birthrates to the replacement level were adopted by 26 countries. The rhetoric of governments suggests that population problems and the World Plan of Action will be receiving high priority.

The extent to which governments are committed to population and quality of life issues will be indicated by the results of the U.N. World Conference of the International Women's Year to be held in June in Mexico City. This world conference may recognize the interrelationship of the status of women and family planning. Unless individuals and governments recognize the role of women in population increase and take action to integrate women in all facets of development, population growth may continue as women define themselves solely in terms of their child-bearing and child-rearing capacities.—DEE BOERSMA, *Institute for Environmental Studies, University of Washington, Seattle 98195*

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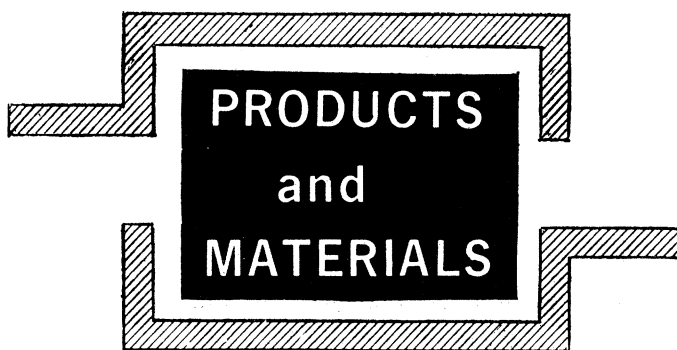
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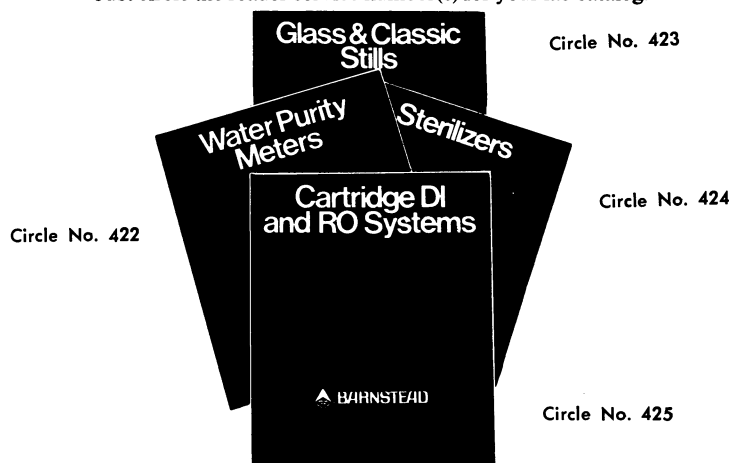
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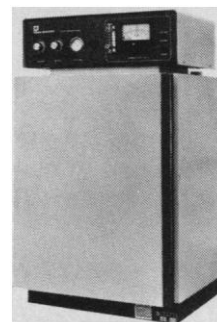
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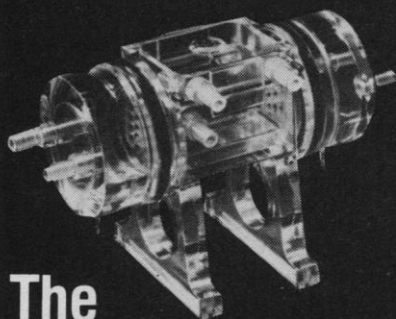
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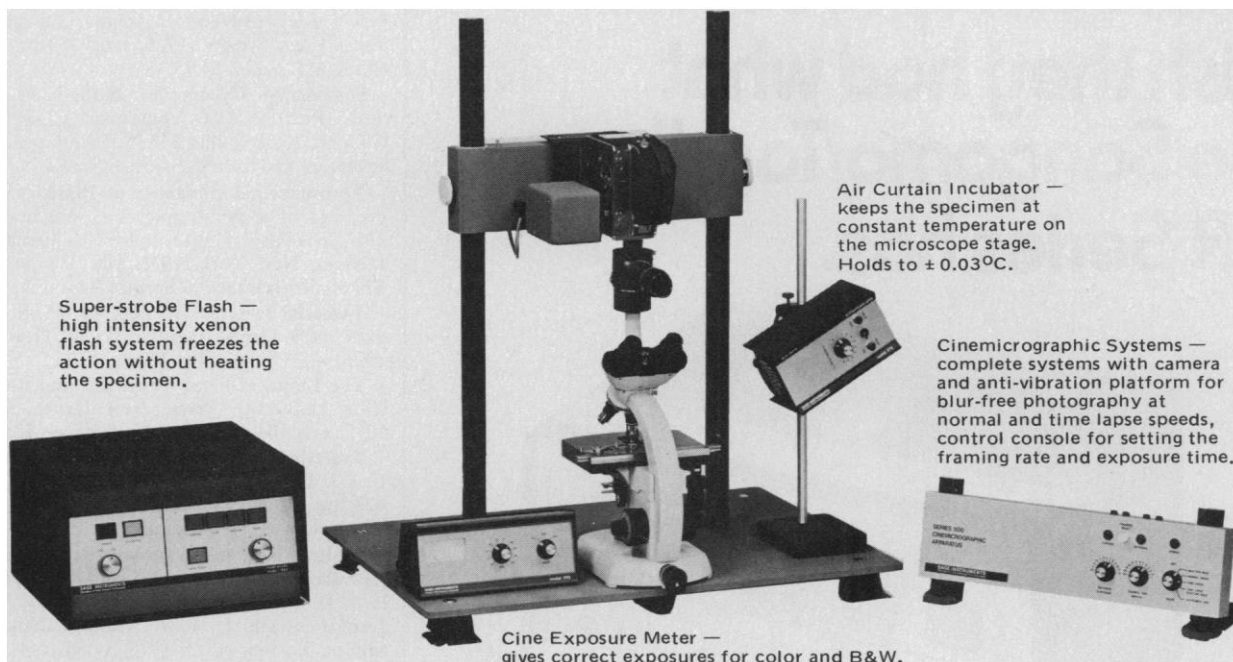
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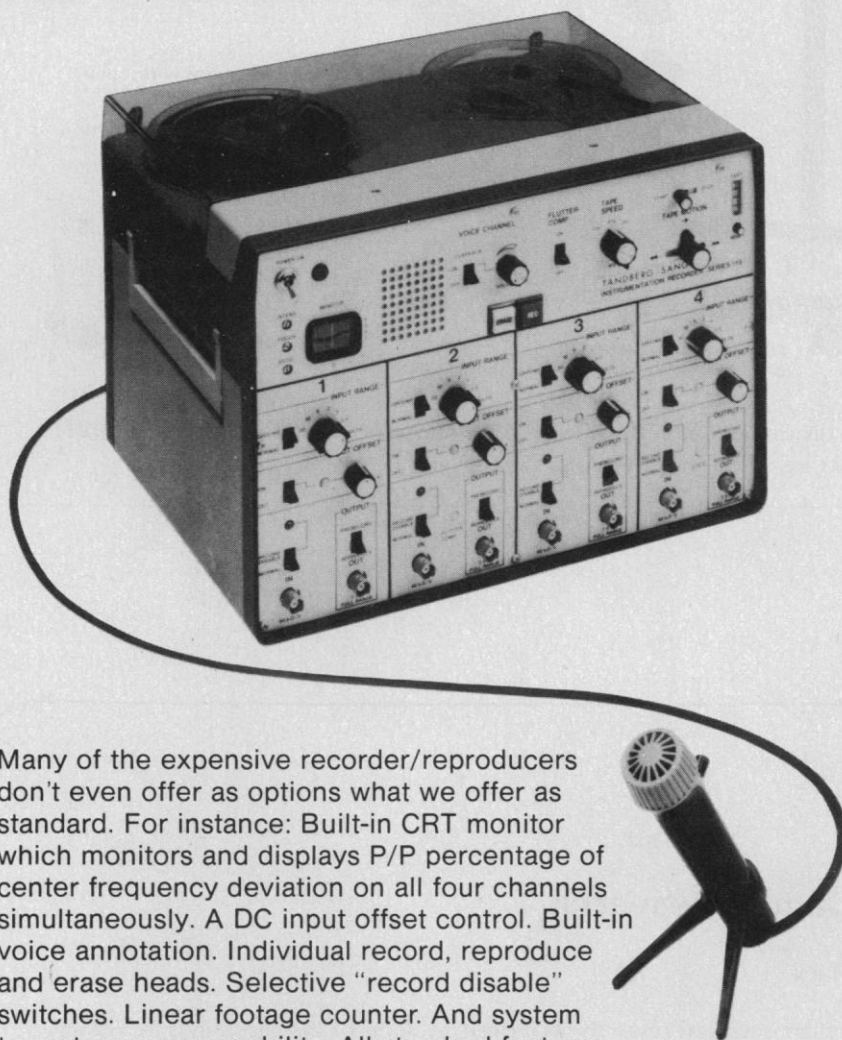
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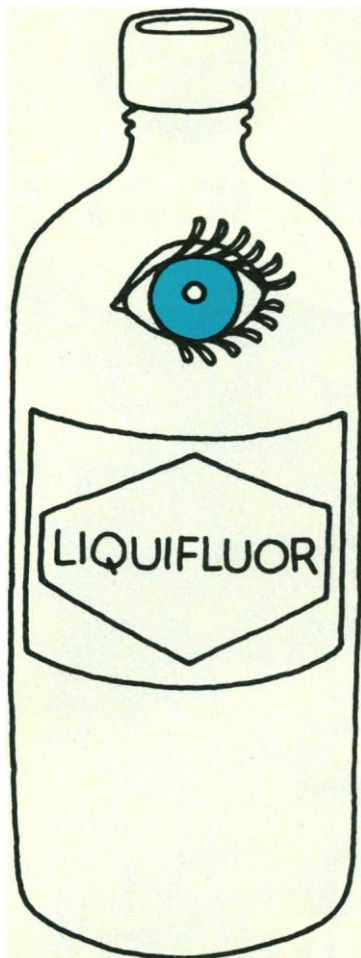


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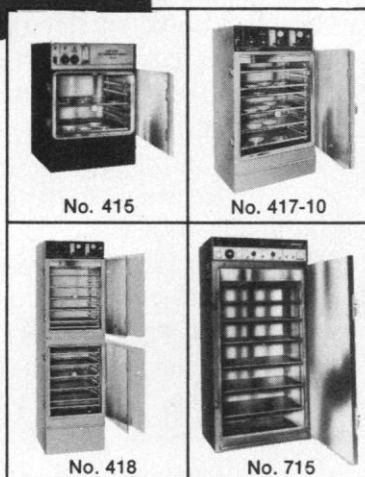
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