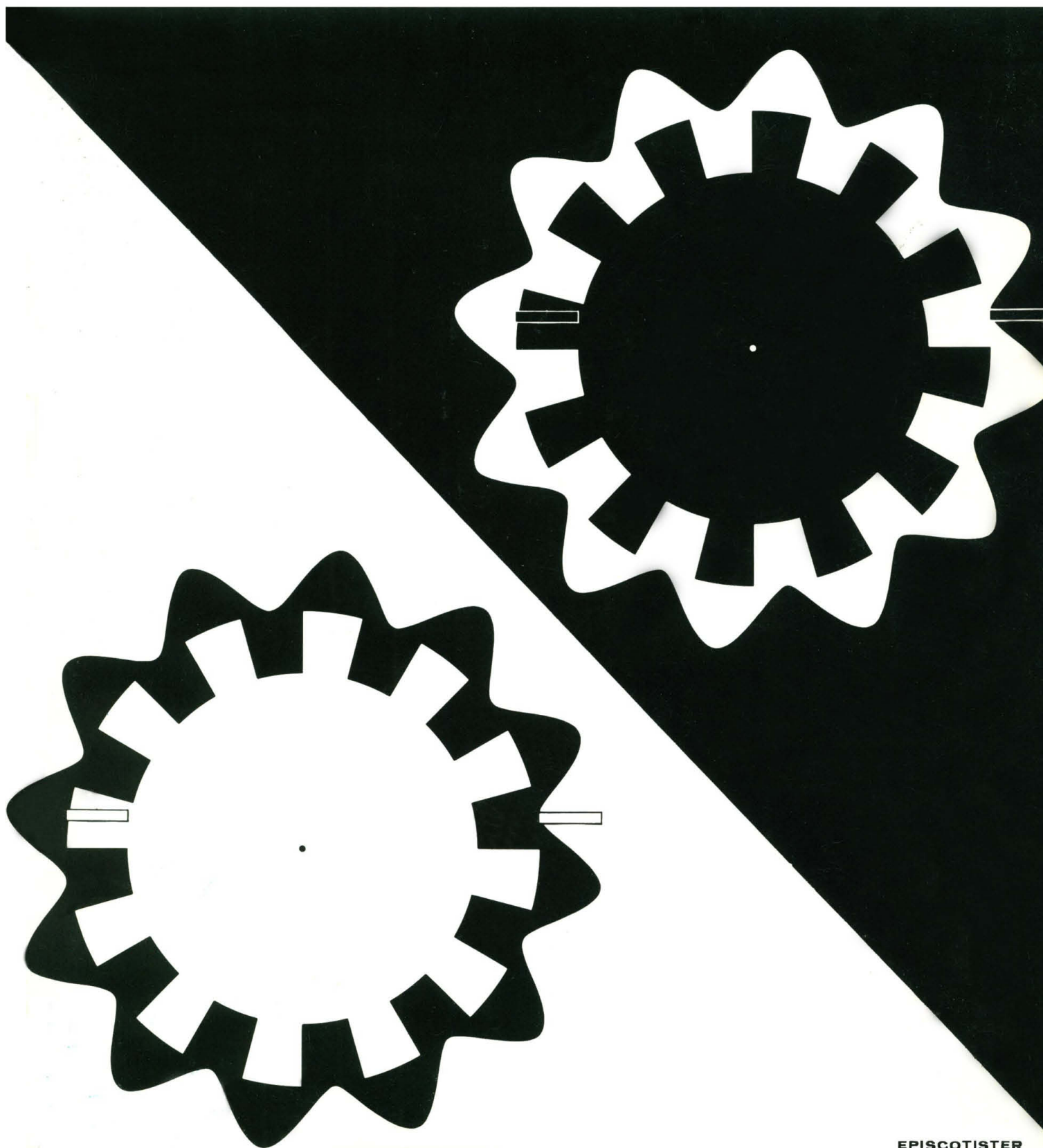


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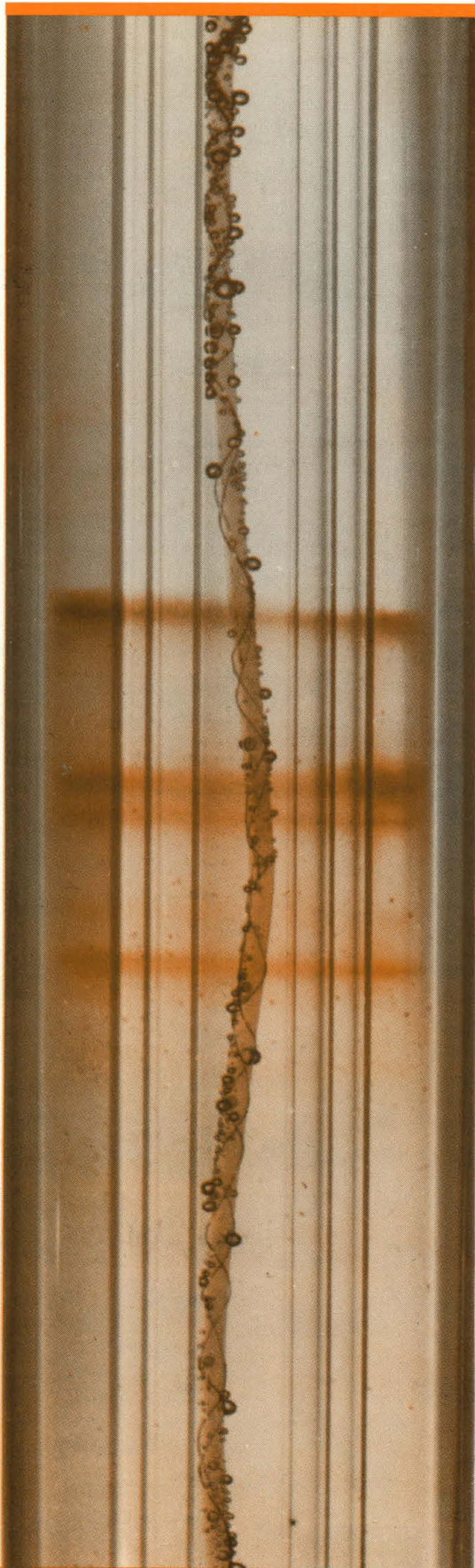
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Positive and negative photographs of a transparent disc with an opaque pattern painted on each of two annuli. Rotating the disc produces variations in the transmitted intensity of each of two beams of light. The beams are mixed on a viewing screen; the illumination becomes a composite function of time. See page 21. [J. Z. Levinson, Bell Telephone Laboratories, Inc.]

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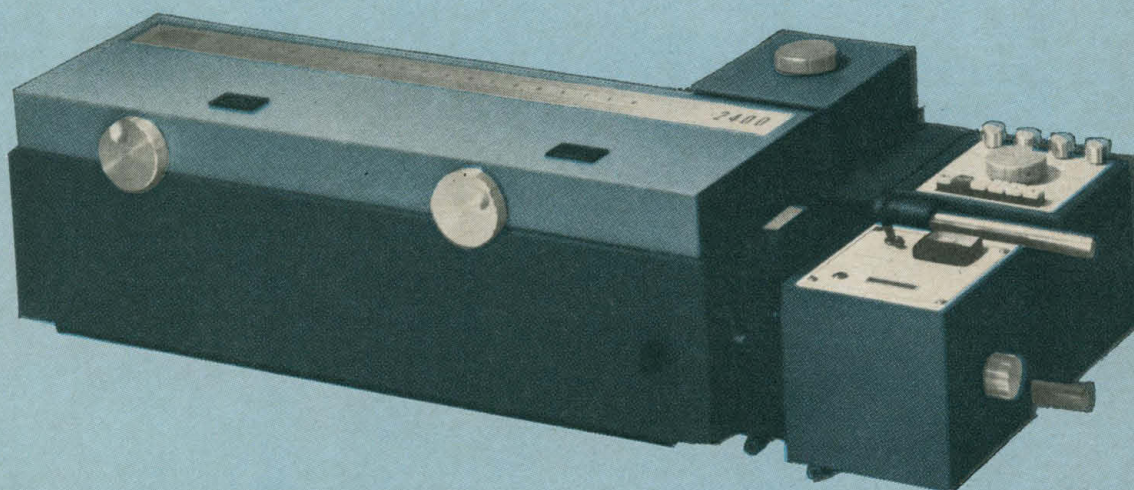
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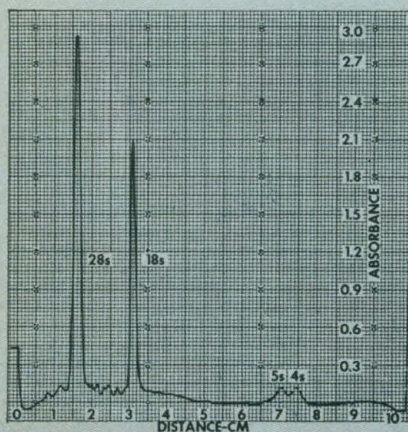
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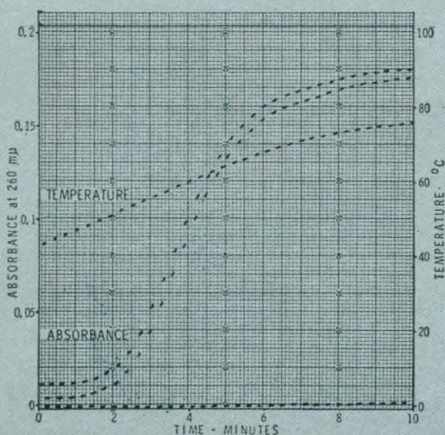
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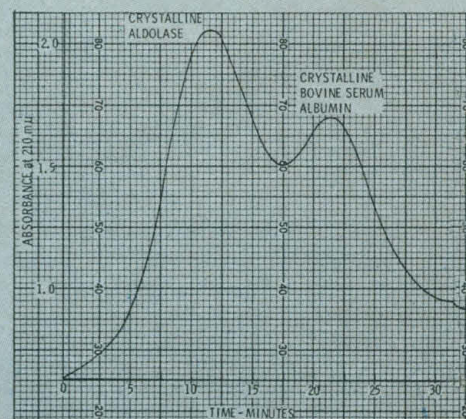
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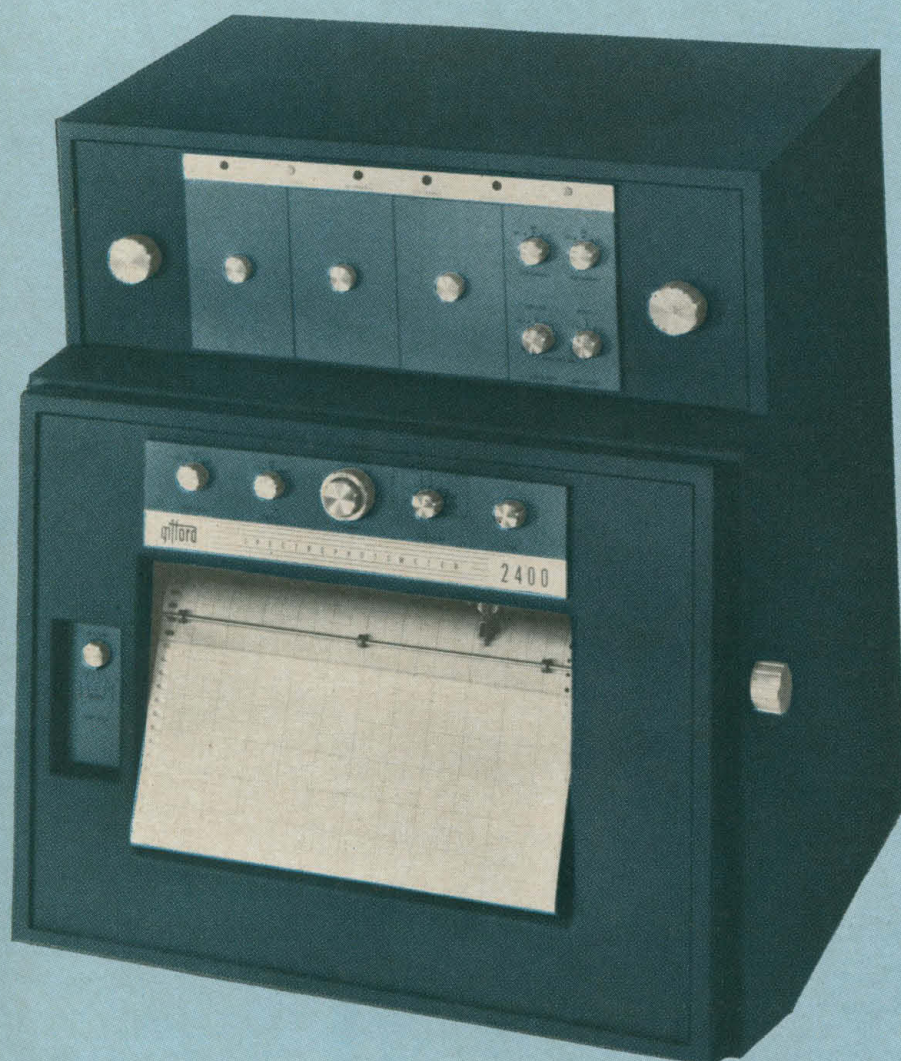
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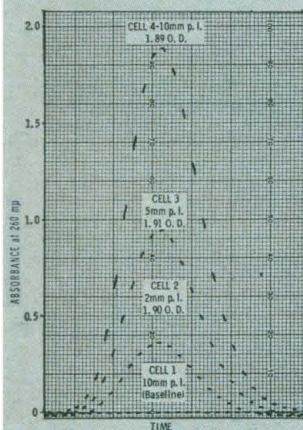
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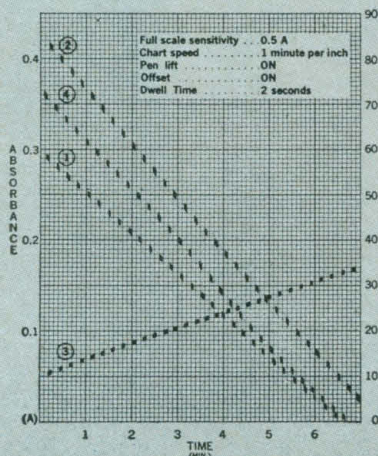
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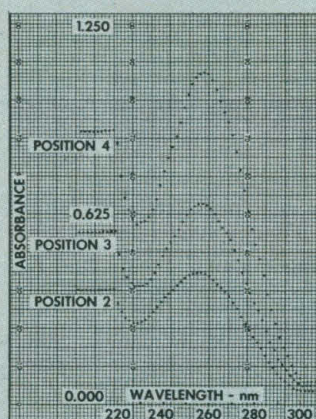
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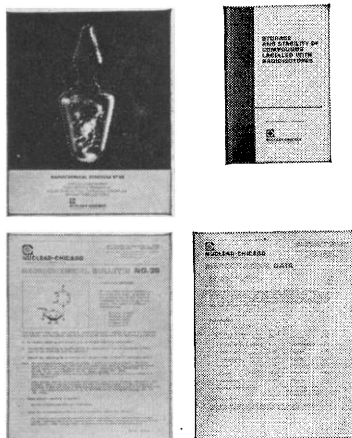
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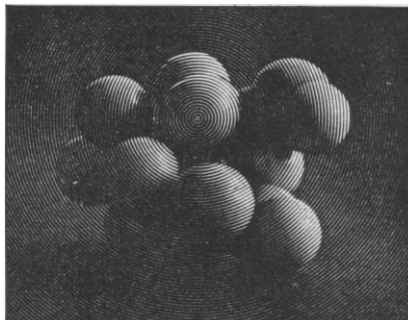


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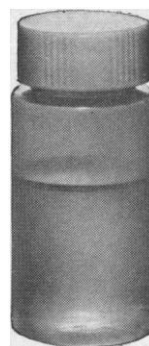
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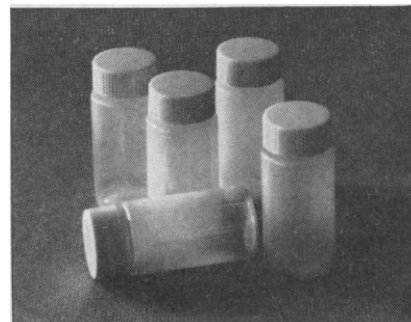
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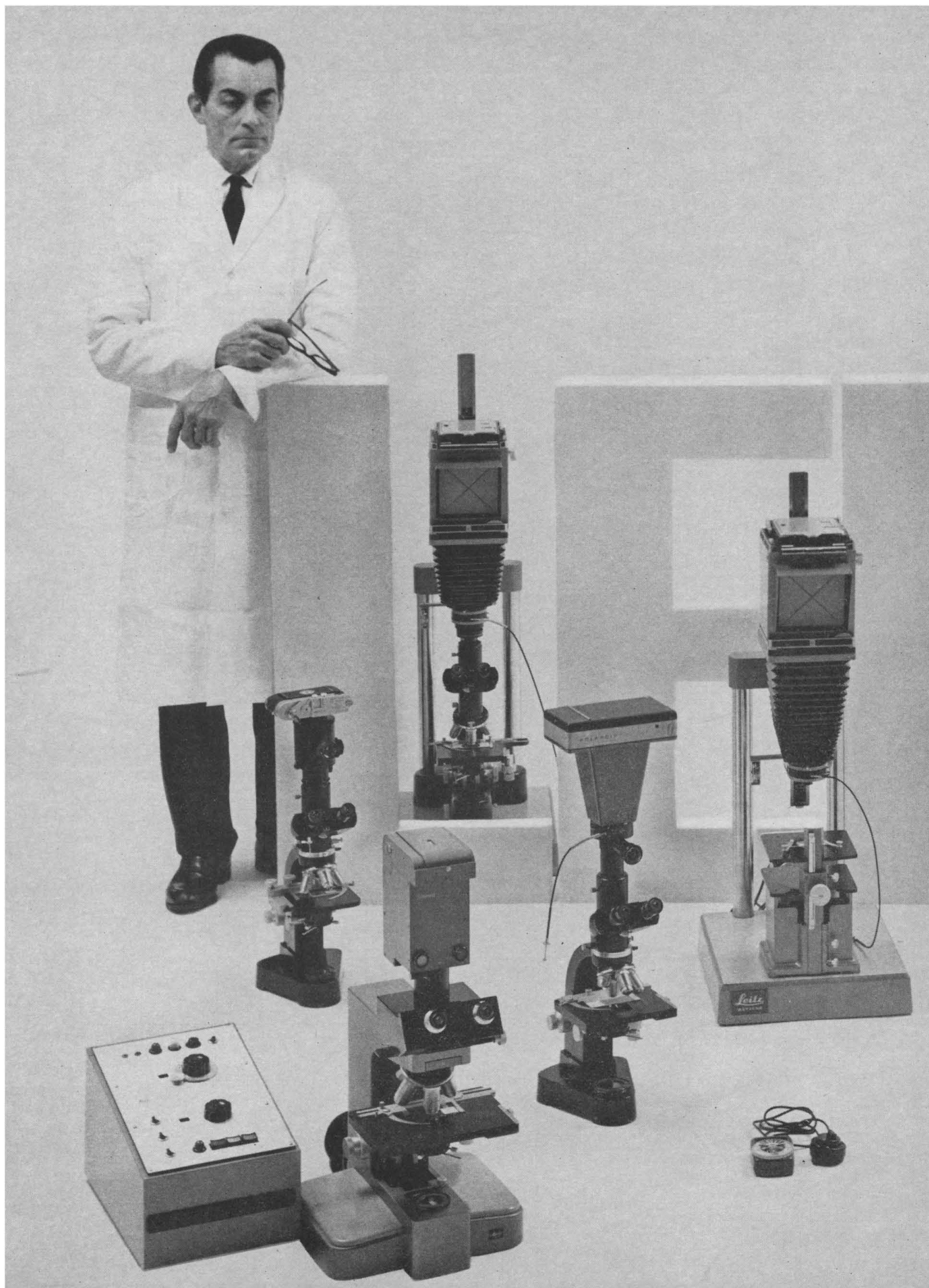
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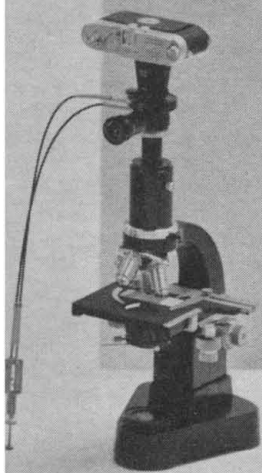
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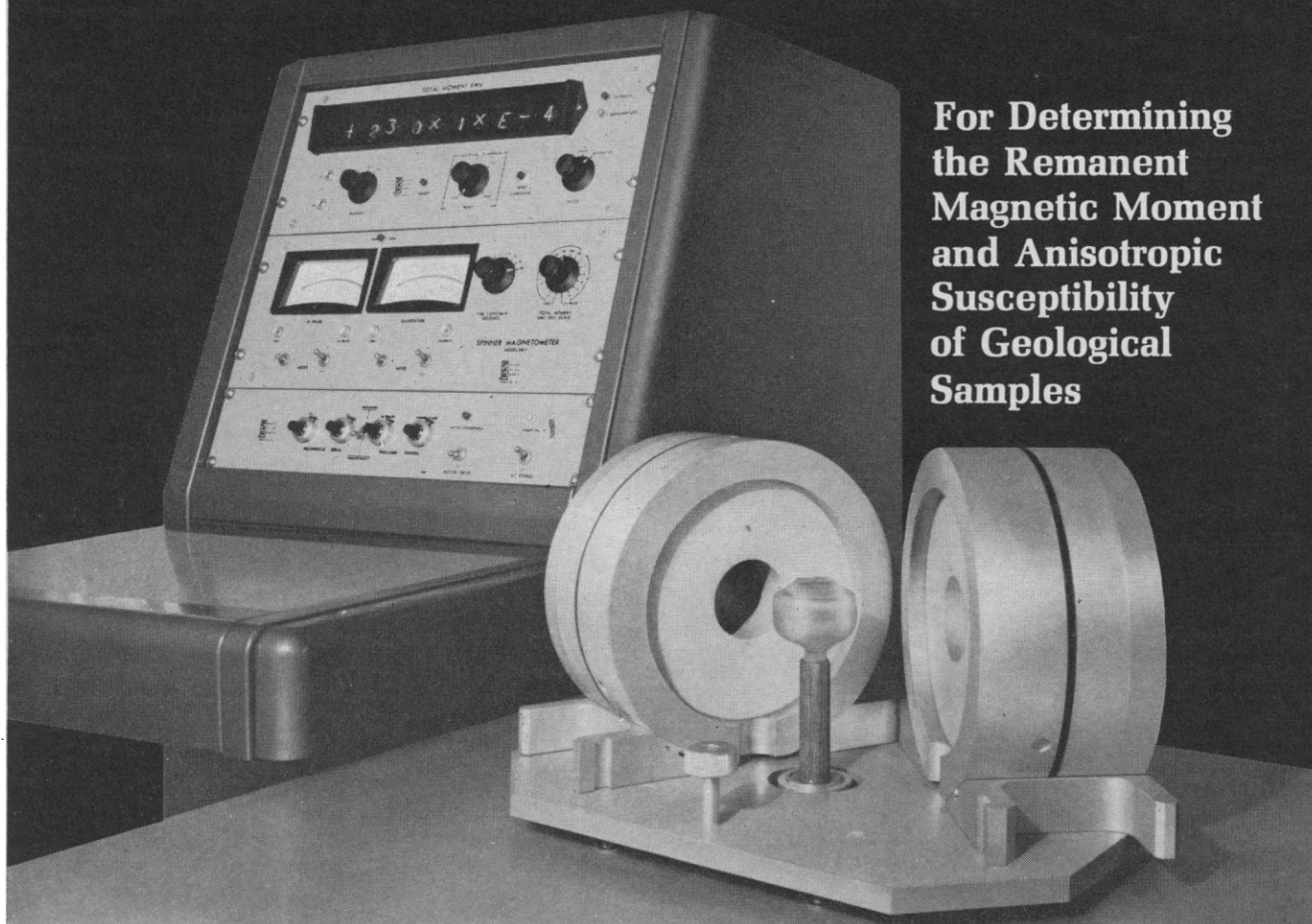
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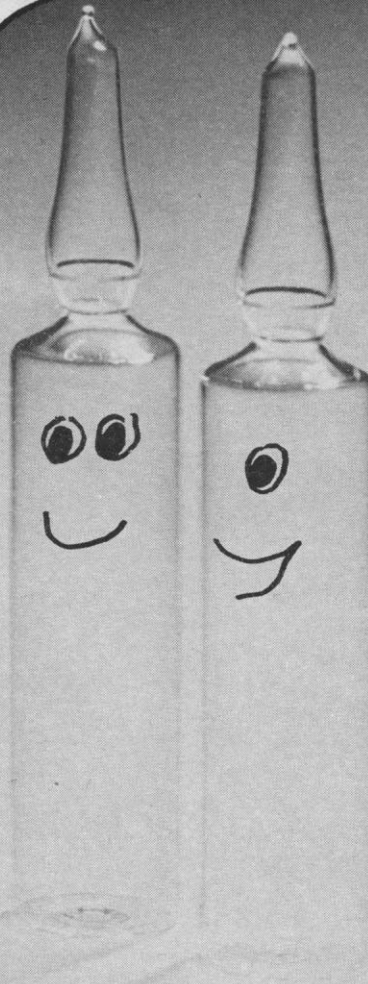
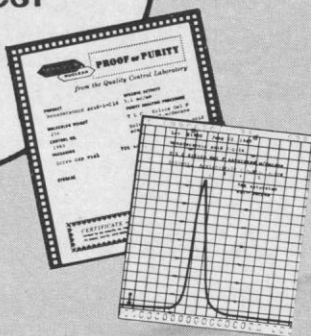
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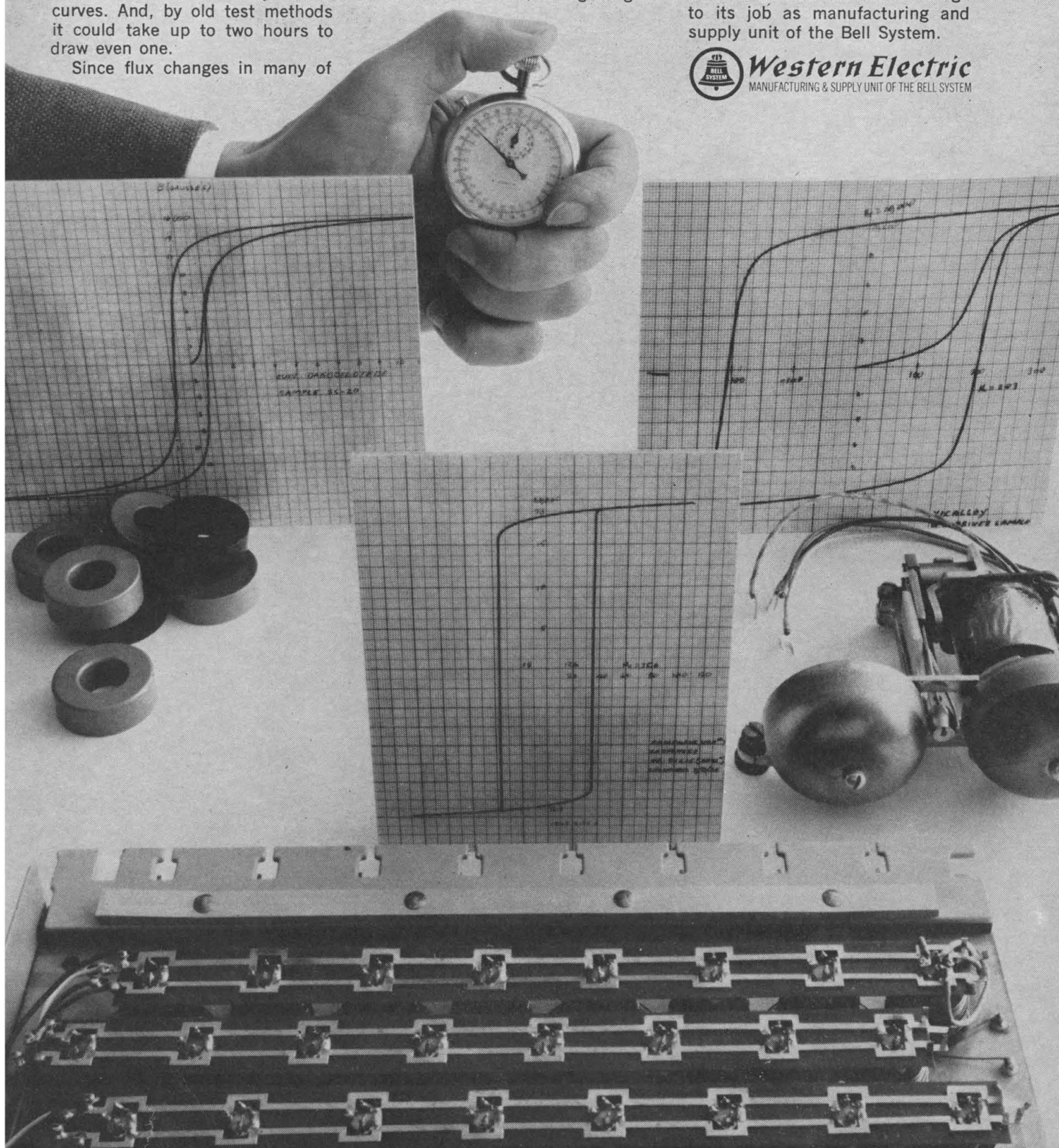
set to go again took time, skill, and infinite patience.

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Student Response to External Factors

Faced with costs of the Vietnam war, civil disturbances, and a monetary crisis, many politicians look at academic research as a luxury that can be dispensed with, at least temporarily. In an election year politicians are especially sensitive to the tempests of the day and not so interested in long-term considerations. Basic research that might pay off in a decade or two has a low priority with many of them. For example, a list of budget deferrals prepared by one congressman, Representative W. E. Brock (R-Tenn.), suggested that the National Science Foundation budget be cut by \$250 million, or roughly halved. However, more is involved than the postponement of some research with attendant "savings" of a few hundred million dollars.

What is involved is potential destruction of much of our excellence in academic research and a possible weakening of the nation's strength through disruption of the training of future scientists.

In choosing their curricula students are responsive to the temper of the times. A historical example of student response to external factors occurred in geology during the last decade. In the year following the Suez crisis of 1957, the oil companies experienced a severe drop in profits. They responded by firing many of their geologists. In a few years enrollments in geology at many universities plummeted to a small fraction of their former magnitude, and they have not approached the former peak since. If federal support of academic research is cut, the physical sciences are likely to be hit the hardest and the experience in earth science of a decade ago may be repeated in the physical sciences.

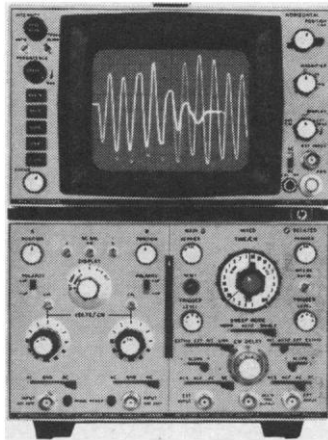
Particularly vulnerable to present-day developments is physics. Already the number of undergraduate majors in physics has been falling. The decline could be accelerated. All the physical sciences are difficult to master, and their practitioners are not particularly well rewarded financially. If society turns its back on the physical sciences, why should a young man tackle the tough courses?

The making of a physical scientist begins in high school; there he must select a number of relatively difficult mathematics and science courses if he is to be ready for college. After that he faces 8 tough years. If at any time during high school, college, or graduate school the student falters, he is lost. A decision to "drop out" is practically irreversible. If the politicians take measures that dim the challenge and limit opportunities for research for 1 year, they should expect the consequences of their action to persist for many years.

In the light of the importance of the physical sciences to all aspects of technology, including national defense, recent actions and attitudes of the politicians seem ill-considered. During President Johnson's tenure, funds for academic research in the physical sciences have not fared well, and last year funds for graduate fellowships in the physical sciences were reduced. Now graduate students are to be drafted, and if the federal budget is to be cut, academic research will fare badly.

But academic research is not the only enterprise that would suffer. Later, industry would find that well-trained young men were not available. The government would not be able to satisfy its needs. The public ultimately might discover that this country's security and prosperity had been jeopardized and that emergency measures could not restore a lost generation.—PHILIP H. ABELSON

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the single-cell level; it was clear from the later sessions that the choice of techniques for assessing quantitatively the changes caused by radiation in a single cell is still very limited. The search must continue for new assay procedures and further efforts must be made to improve the stoichiometry of some of the methods already available.

H. Glubrecht proposed a vote of thanks to the sponsors and Professor Serlupi Crescenzi replied on behalf of NATO.

The general consensus of opinion was that a meeting of 40 to 50 persons certainly provides an opportunity for the maximum interchange of information and ideas in a way which is not possible at a larger meeting.

A more detailed account of the meeting is being prepared. Requests for copies should be addressed to P. P. Dendy, Department of Radiotherapeutics, University of Cambridge, Tennis Court Road, Cambridge, England.

P. P. DENDY

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Calendar of Events

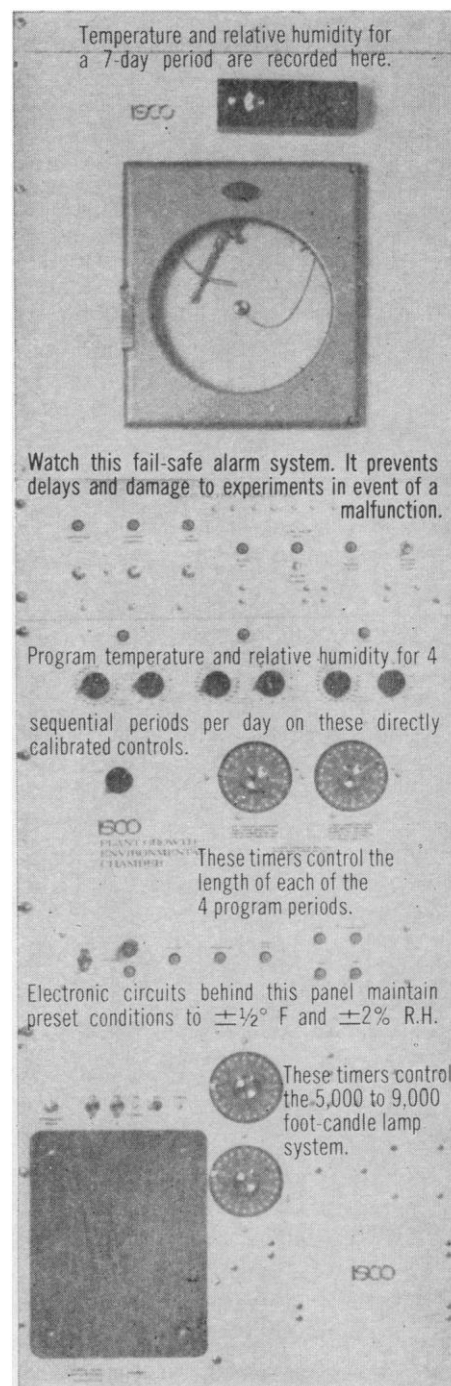
Courses

Epidemiology, University of Minnesota, 16 June-6 July (funded by a USPHS grant). Courses include fundamentals of epidemiology and biostatistics, epidemiology of cancer and cardiovascular diseases, and topics in infectious disease epidemiology. Although primarily intended for teachers of preventive medicine and epidemiology in medical schools, registration is open to postdoctoral fellows, graduate students, and residents in departments of preventive medicine in medical schools. Fee: \$120. (Dr. Leonard M. Schuman, Director, Graduate Summer Session in Epidemiology, University of Minnesota School of Public Health, 1158 Mayo Building, Minneapolis 55455)

Fundamentals of Optics, University of Rochester, a 2-week summer course. It is an intensive course on optical engineering and the underlying optical science; designed for physicists and engineers in industry and government laboratories. Participants must have the equivalent of a bachelor's degree in physics or engineering. Tuition: \$400. (Fundamentals of Optics, Institute of Optics, Bausch & Lomb Building, University of Rochester, Rochester, N.Y. 14627)

Elements of Simulation, State University of New York at Buffalo, 3-7 June. A background in the use of digital computers is desirable. Enrollment is limited to 40. Fee: \$175. (Office for Continuing Education, Millard Fillmore College, Hayes A, State University of New York at Buffalo, Buffalo 14214)

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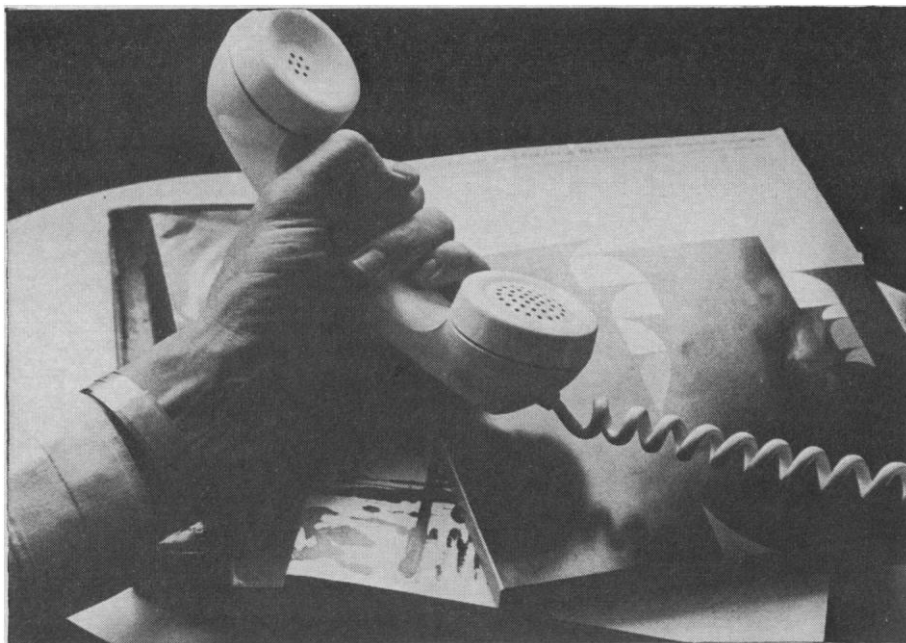
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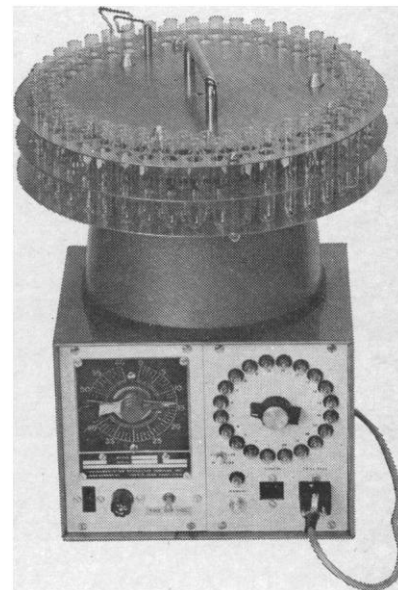
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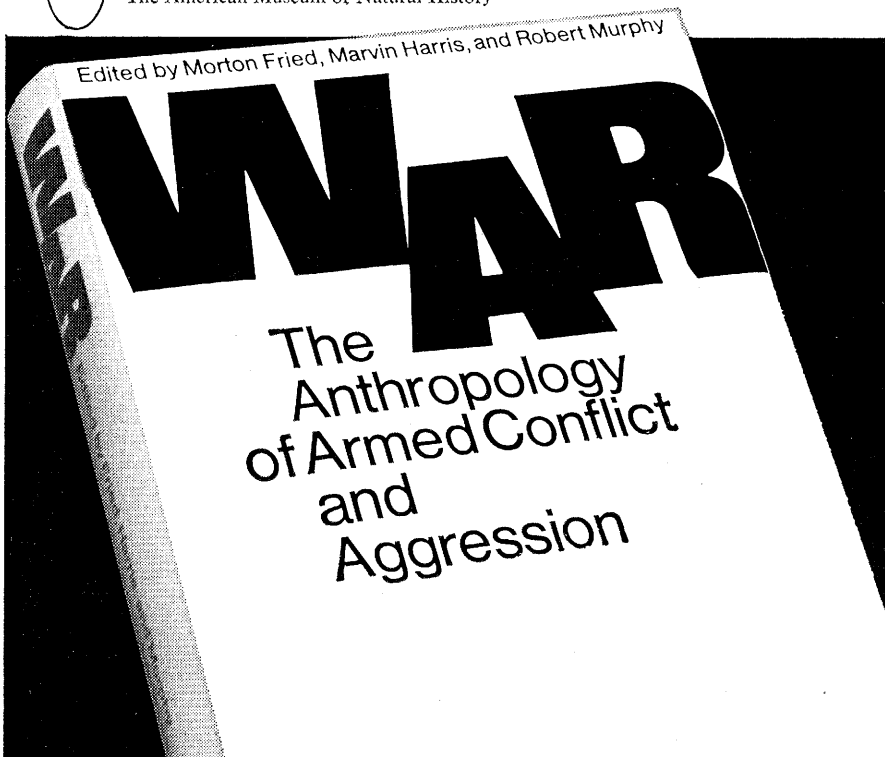
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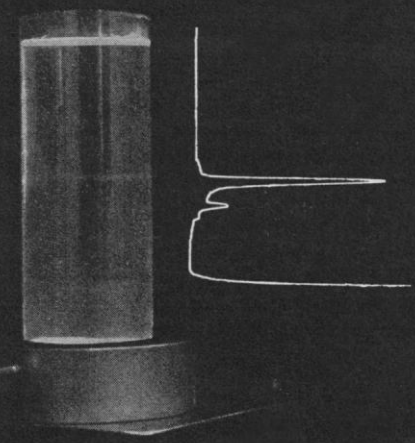
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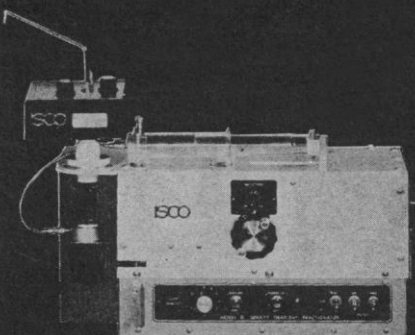
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