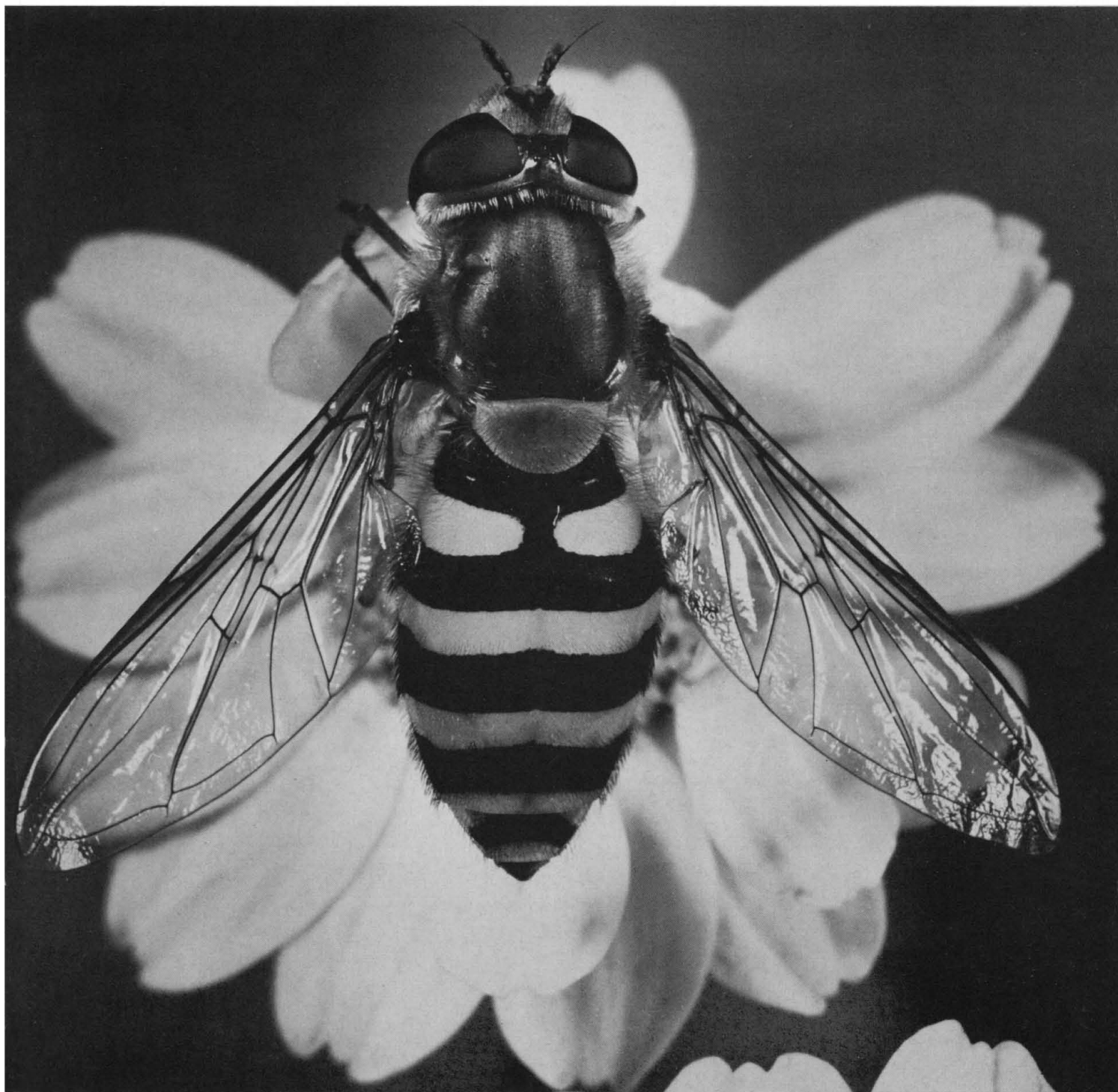


SCIENCE

11 December 1964

Vol. 146, No. 3650

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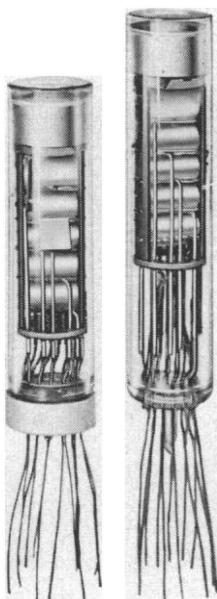
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4460	3/4"	S-11	3000-6500	4400	14	1250	6x10 ⁵	1.25x10 ⁵	1x10 ⁻¹³	3.7x10 ⁻¹³
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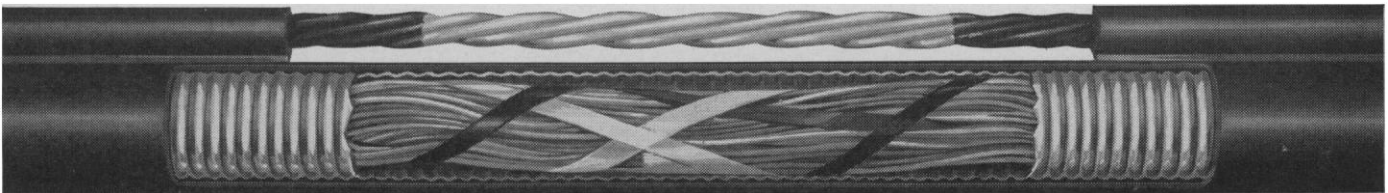
Hover flies (*Syrphus ribesii*) may be recognized by a longitudinal, false vein in the wings between the radius and the media. Many are brightly colored and resemble bees, bumble bees, and wasps. They feed upon nectar and pollen of flowers and are of value as pollinators of many plants. See review of *The Amazing World of Insects*, page 1451. [Macmillan Company and A. Oosthoek Publishing Company]

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.

Report from

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"UNDULATED" CORE MAKES SELF-SUPPORTING CABLE PRACTICAL



ABOVE: Drawing of new self-supporting cable structure shows "undulated" core of telephone wires encased in aluminum and polyethylene sheath members. Edges of corrugated aluminum sheath are butted along top of cable. Polyethylene sheath extends over steel strand on top to provide built-in cable support. BELOW: Photographs show, left to right, older-type ring-supported cable, present lashed cable, and new self-supporting cable.

Telephone cables strung along pole lines need mechanical support. Heretofore, this support has been provided by a separate, strong steel strand from which the cable is suspended—either by wire rings or by a lashing wire wound helically around the strand and cable.

For ease of installation it is desirable to design the cable and strand into a single self-supporting structure. But in such designs the cable sheath and its core of telephone wires, as well as the strand, may be placed under tension when suspended between poles. With the

wires under tension, craftsmen have no readily available slack wire, which is needed in making connections for bringing service to a customer's house.

To solve this problem Bell Laboratories engineers, working in close cooperation with engineers of the Western Electric Company, manufacturing unit of the Bell System, "built the slack into the cable." The slack is provided by an undulation incorporated into the core of telephone wires. To help prevent the polyethylene cable sheath from tightening around the wires during

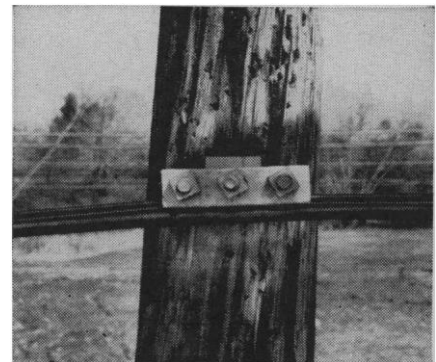
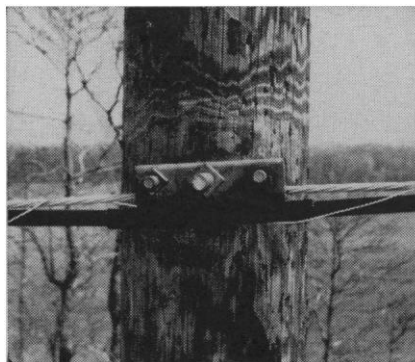
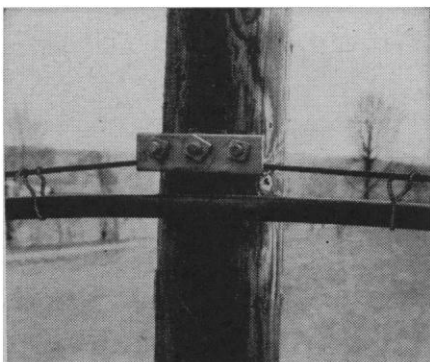
manufacture, the longitudinal edges of a corrugated aluminum sheath member are butted up against each other, rather than overlapped as in other cables.

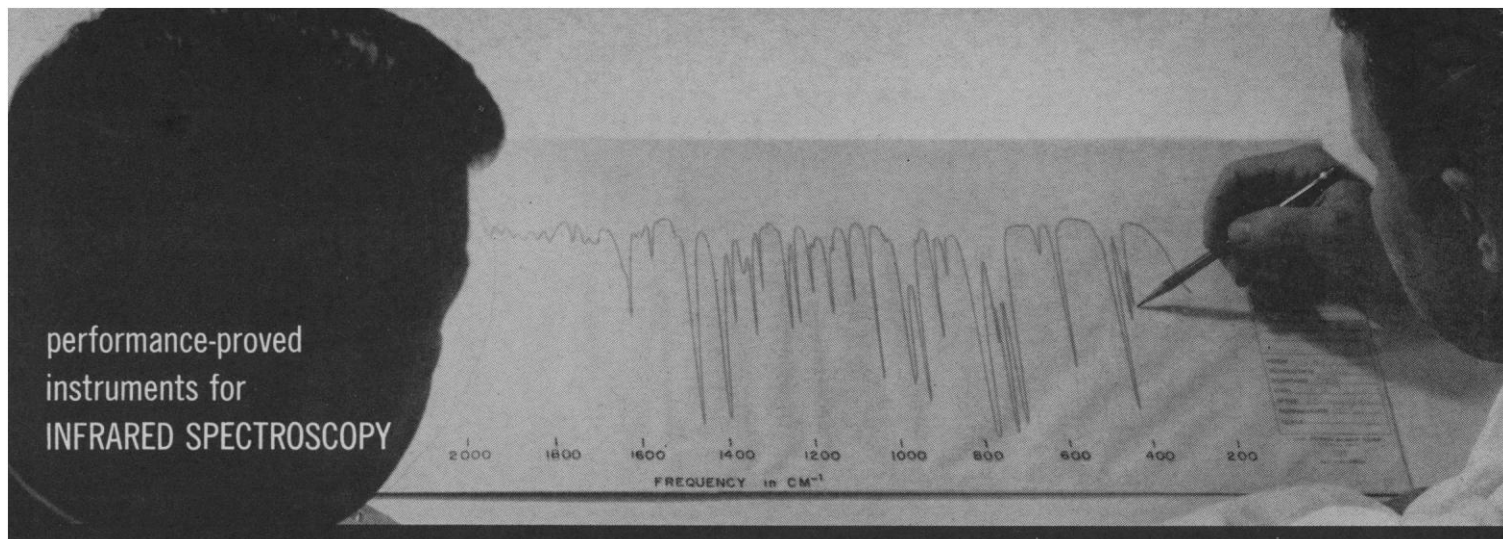
The new cable permits both efficient and economical construction methods. It is rapidly raised, tensioned, and clamped to poles. Craftsmen easily pull slack wire from the cable and, using plastic "ready access" terminals, make the required connections.



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Research and Development Unit of the Bell System





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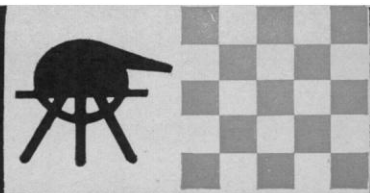
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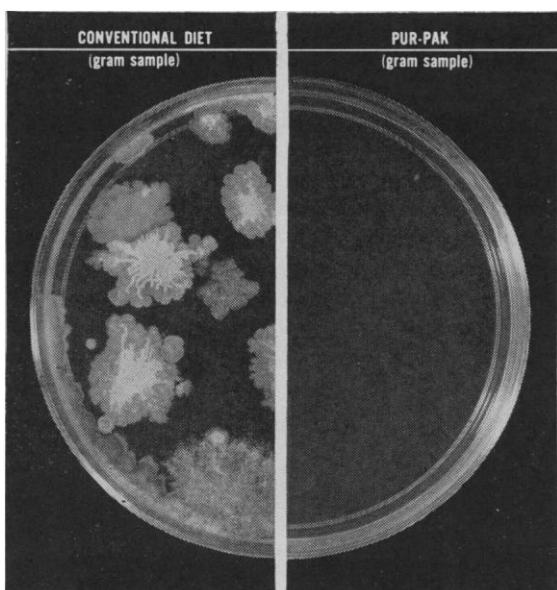


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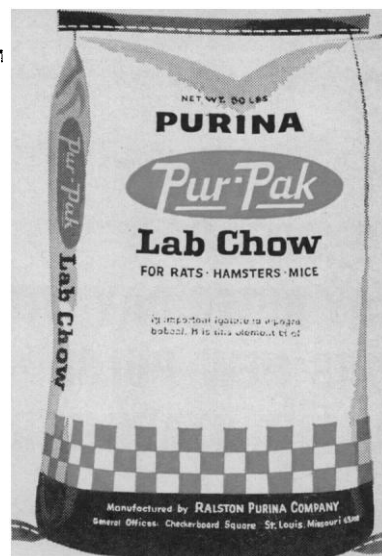


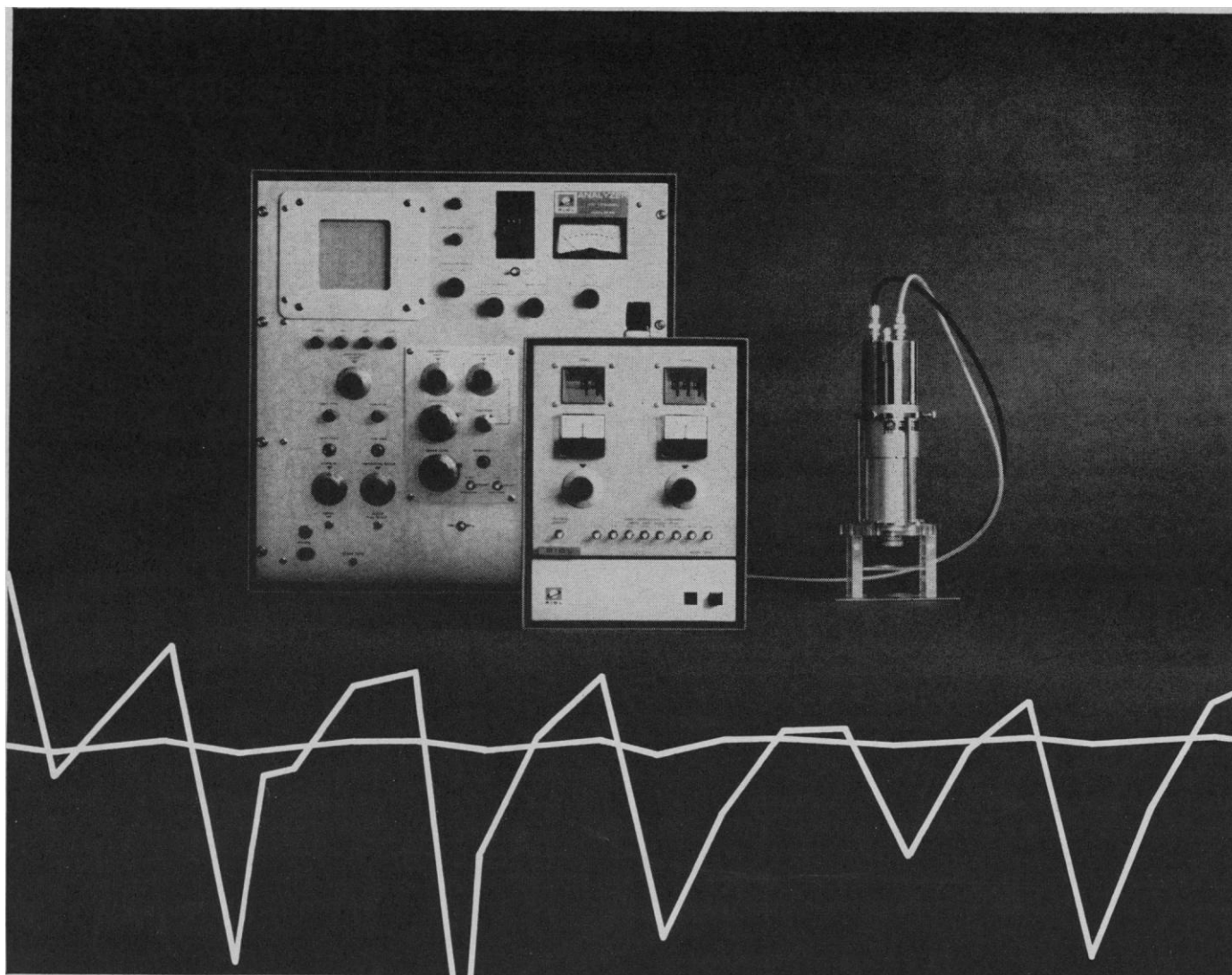
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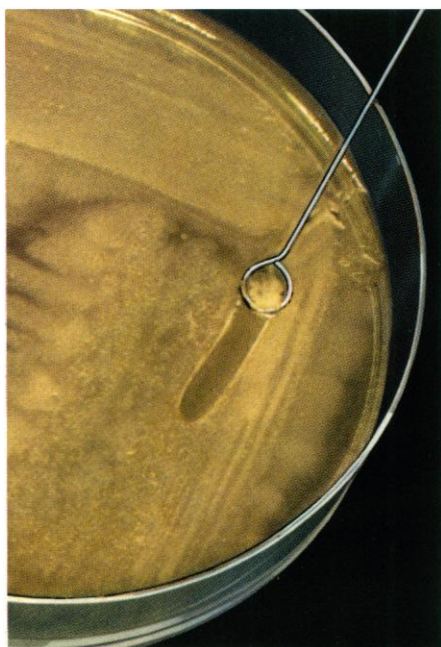
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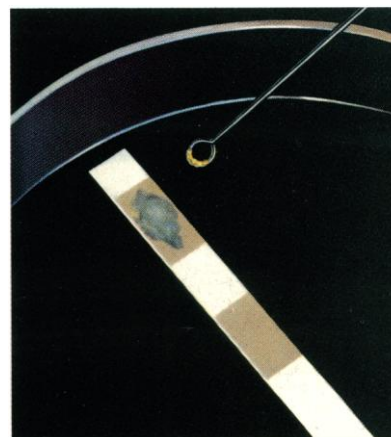
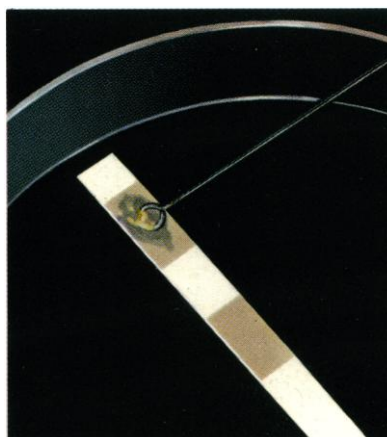
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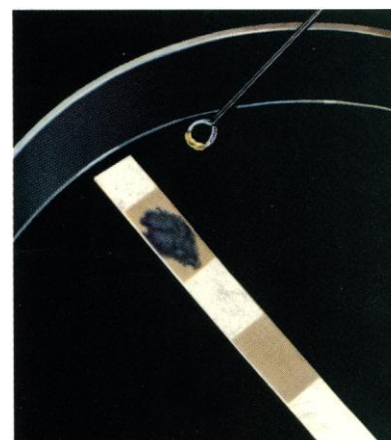


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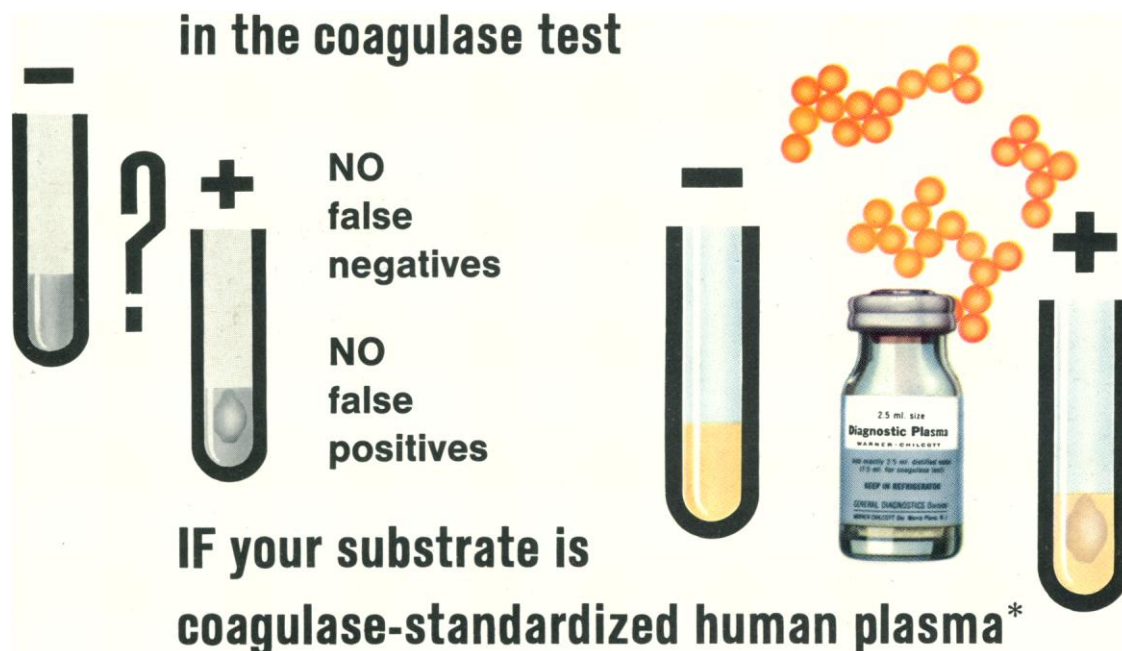
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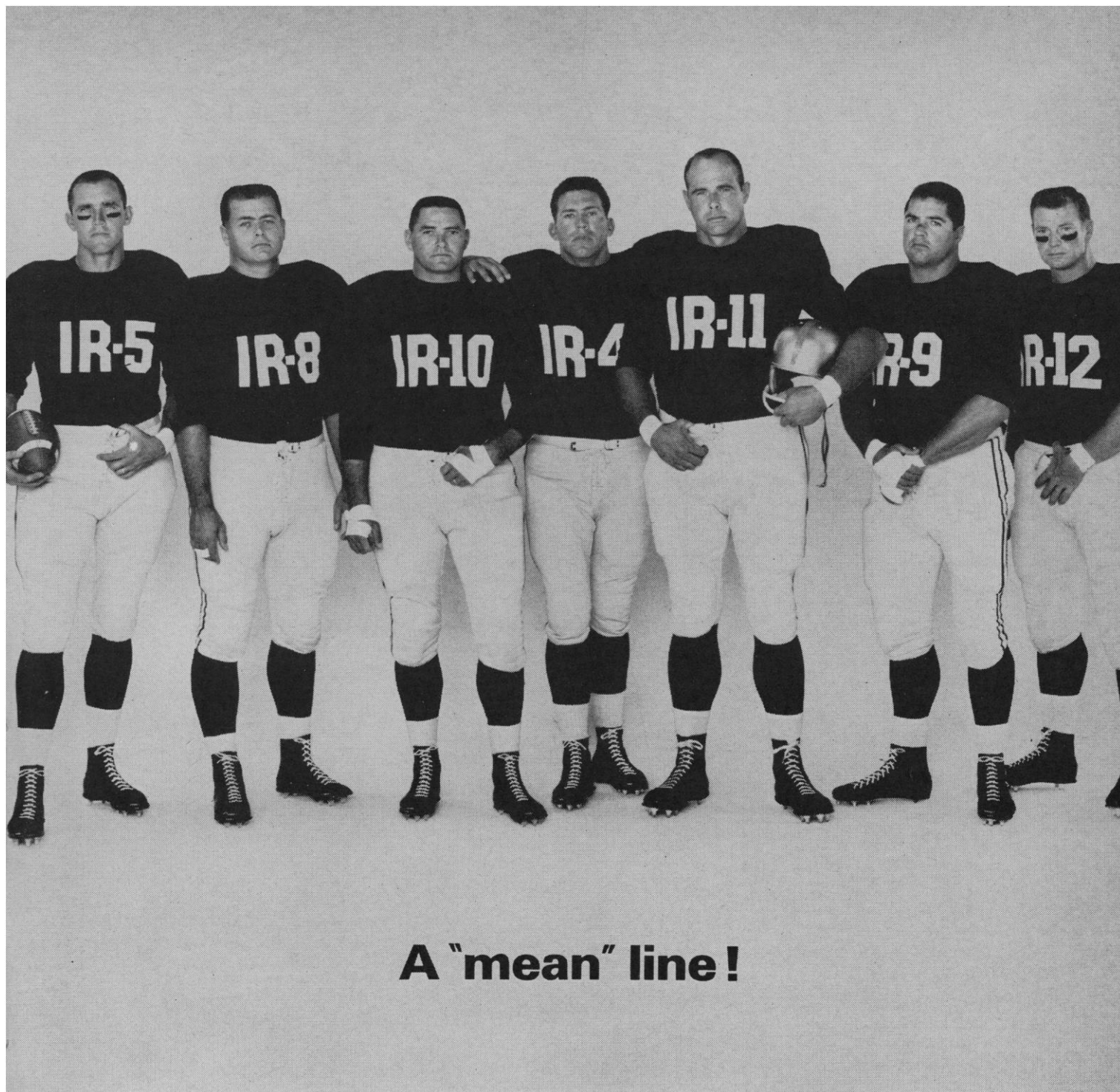
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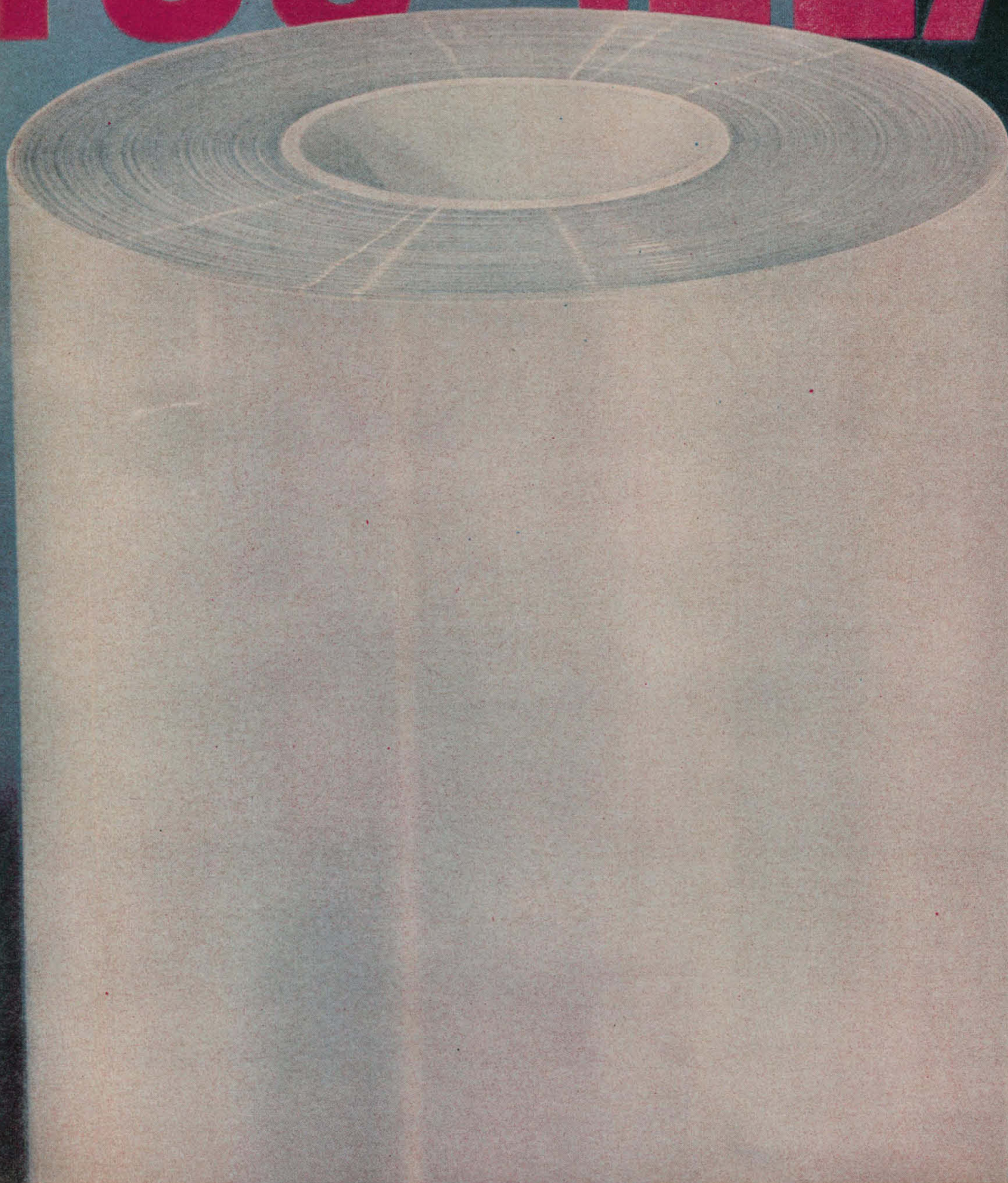
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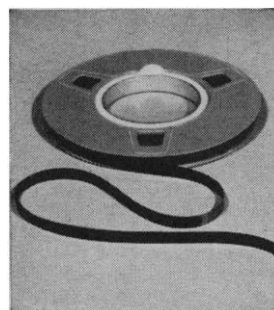
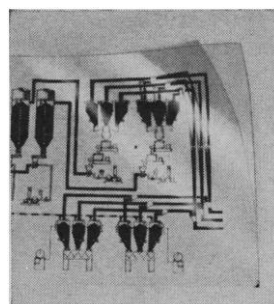
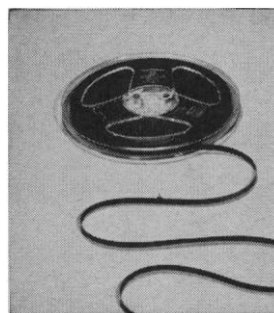
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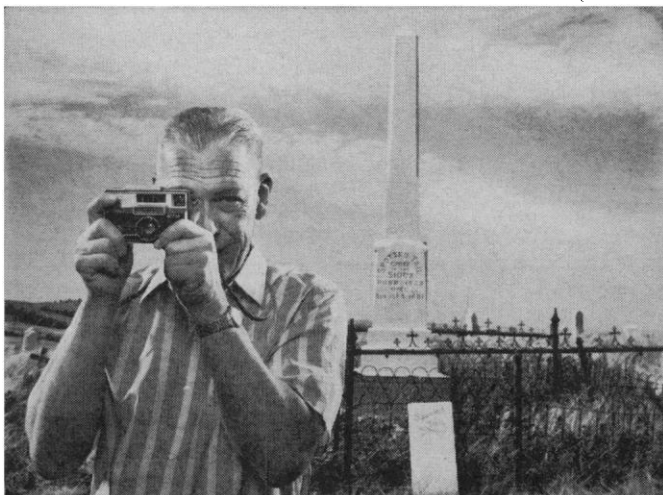
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Kodak reports on:

culmination of a pinhole . . . excitement in Bimini



This magazine is assumed to reach the reader at a time of year when he faces a decision on how to prove once more to the satisfaction of his family that they live in an affluent society. Let us here express the hope that the level of his contribution to that society during the year now closing permits his presentation to them of the most up-to-date camera and projector to represent no disproportionate devotion to material possessions.



The KODAK INSTAMATIC 800 Camera culminates the line that Giam-battista della Porta started in the 1550's with a pinhole in one wall of a darkened room to capture the look of the adjacent countryside.

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The KODAK CAROUSEL 800 Projector is the other wing needed to fly the course properly.

It encourages neatness at the payout from the pleasures of the chase, obviates the fumbling observed at times on occasions of slide projection, reduces the probability that the best slides of any given sequence have been filed beneath the pile of last year's receipted phone bills.

Each show of 80 slides has its book-like place on the shelf. At show-time drop the spillproof tray onto the machine like a phono record. Gentle, non-jamming gravity feeds the slides. Spin to any slide, any time. Or let the machine run itself, 5, 8, or 15 seconds to a slide. Or run the show from a long cord, backing up on demand from the audience to linger longer at a scene passed too swiftly with the impetus of your narrative. Or put the narrative on tape, add music to taste, and synchronize to the slide show by means of a recorder and CAROUSEL Programmer with taped signals changing the slides.

The horse is a mammal

2,4-Dinitroso-1,3-naphthalenediol (EASTMAN 9503) has demonstrated, bare-eyed, the presence of 10^{-9} g. of iron in one of those acrylamide gel discs that make up the characteristic disc-electrophoretic fingerprint of a protein mix. The reagent was devised by a very smart man we know. He and a buddy thought up disc electrophoresis in the first place.

Last winter he vacationed on Bimini, which has the Lerner Marine Laboratory as one of its charms. After a quick snooze in the sun, he sought exercise first in skin-diving and then in phylogeny. He had his disc-electrophoresis kit along. An amazing observation resulted from a colleague's offer of octopus serum. The protein pattern resembled the mammalian serum pattern even more than the uncanny octopus eye resembles the mammalian eye.

Excited by this new evidence of interphyletic convergence, our smart friend upon his return home prepared to clinch it by proving that the disc corresponding to the iron-bearing protein transferrin in mammals would in the mollusk's serum respond selectively to a sufficiently sensitive reagent for iron.

Of iron reagents there are plenty; none he could find, however, performed as well under the special conditions encountered in disc-staining as the one named above, which he extrapolated from the literature, his experience, and the sheer force of reason. After he told us what it was, we made him some that he found better than his own product.

This is now offered by Distillation Products Industries, Rochester, N. Y. 14603 (Division of Eastman Kodak Company), which also offers the other compounds needed in disc electrophoresis, as well as all the other EASTMAN Organic Chemicals needed in numberless other endeavors. Separately and without charge, the same organization continues to offer the authors' description of the theory of disc electrophoresis and their illustrated directions for the procedure, now supplemented for iron. Ours has been a proud role in publicizing their method around the world.

It is therefore distressing to have to report that no publication on cephalopod phylogeny is in immediate prospect from our friend. Not only is he smart but also frank, lucky, and grateful to have learned in time of some misbegotten horse serum that he was confusing with the colleague's octopus samples.

This is another advertisement where Eastman Kodak Company probes at random for mutual interests and occasionally a little revenue from those whose work has something to do with science

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The Great Teachers

The advantage that the researcher has over the teacher in gaining reputations outside his own institution has been increased in recent years by the large amounts of external money available for research, the national review system under which much of that money is granted, and the emphasis given to research by federal agencies and universities. Recent reports, comments, and editorials from a variety of sources have warned that a better balance must soon be restored. Teaching, of course, may best be combined with research, but the inevitable increase in college enrollment, the need to provide an excellent education for the next generation of teachers and researchers, and widening acceptance of the importance of full development of talent all call for more emphasis on good teaching.

In the short run, various means can be used to increase the number of teachers, but the basic problem cannot be solved unless the status of teaching is enhanced in the eyes of present and prospective faculty members and the supporters of higher education. One point is clear: the status of teaching is not going to be enhanced by lowering the status of research. Any attempt in that direction would deservedly fail. A second point is clear: if great teaching is to be rewarded, the great teachers must be identified. And here there is a problem for those who contend that the quality of teaching is unmeasurable.

Given enough time, students, measurements, and statistical analysis, we might determine the qualitative improvement in the streams of students who pass through the classes of different teachers. But this approach is impracticable; any realistic effort to identify the outstanding teachers must depend upon the judgment of qualified observers. Three kinds of judges have been used. Judgments are frequently made by faculty colleagues, but the man being judged often can make the just complaint that his colleagues know little about what goes on in his classroom. Administrative officers also pass judgment on teaching quality, but a spy from the president's office is seldom welcome in the classroom. Sometimes student ratings are used. Some teachers rebel at the idea of being graded by their students, but others testify that students discriminate well and that, if given the responsibility, they judge on quality and not on popularity.

Yet the fact must be faced: if the prestige of teaching is to be enhanced, there must be agreement on who the good teachers are. As a start, it should be possible on any campus to collect independent ratings, preferably on firsthand evidence rather than on hearsay. If it turns out that there is reasonably high consistency in the judgments, good; the point has been made that the ablest teachers can be identified. If there is no satisfactory consistency, that is another story, but at least the effort would be good local propaganda for calling attention to the importance of teaching.

The teacher who wishes for enhanced status must therefore make a choice. He can cooperate in efforts to see if the ablest teachers can be identified reliably. If that turns out to be the case, then rewards, privileges, and other means of enhancing prestige can follow. Or he can insist that good teaching is essentially a private and unmeasurable affair. But he cannot hold this view, plead that the ablest teachers be given special recognition, and also honor consistency.

—DAEL WOLFLE

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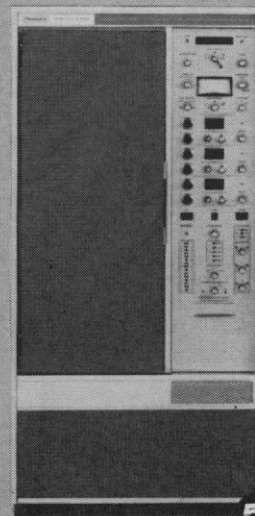
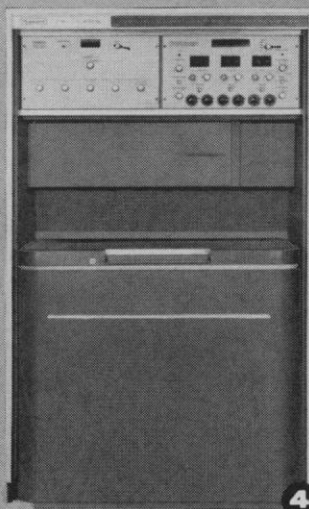
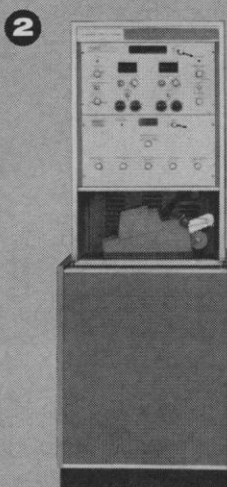
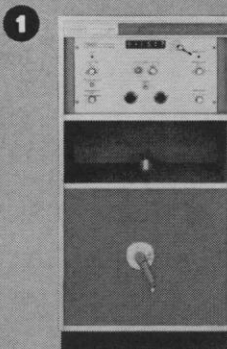
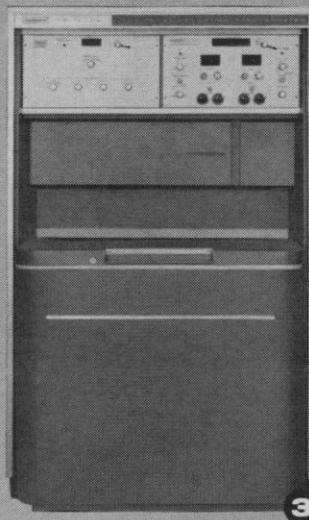
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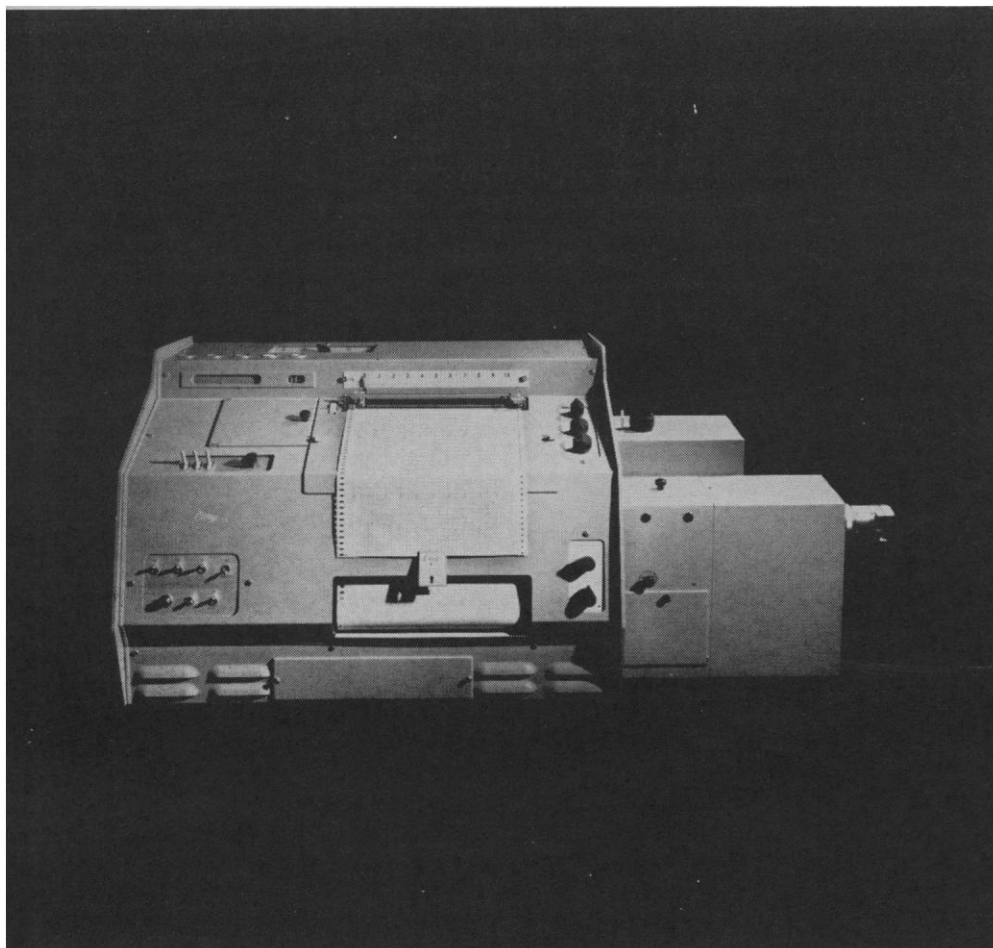
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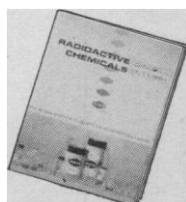
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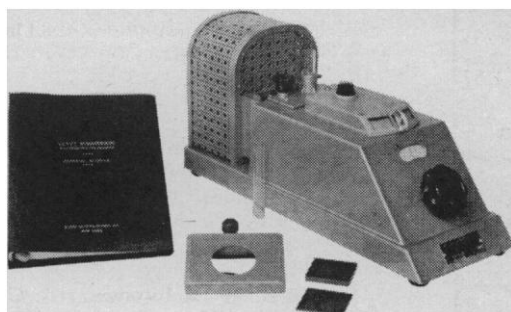
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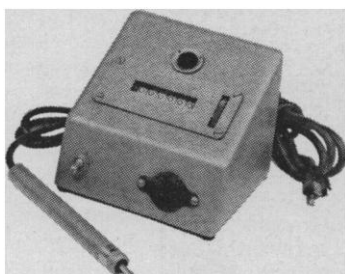


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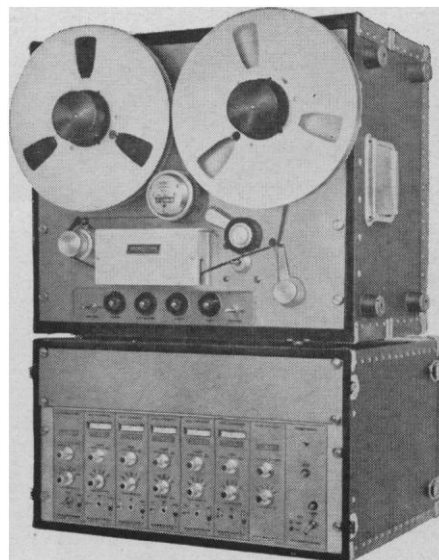
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MISTAIRE LABORATORIES
152 Glen Ave.,
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Metric Assoc. (R. P. Fischelis, Ohio Northern Univ., Ada)

National Assoc. of Biology Teachers (R. Beidleman, Colorado College, Colorado Springs)

National Assoc. of Science Writers (L. S. Zahn, Hill & Knowlton, Inc., 150 E. 42 St., New York, N.Y.)

National Council of Teachers of Mathematics (J. Gates, NCTM, 1201 16th St., NW, Washington, D.C.)

National Geographic Soc. (R. W. Gray, NGS, 16th and M Sts., NW, Washington, D.C.)

National Inst. of Social and Behavioral Science (D. P. Ray, NISBS, 863 Benjamin Franklin Station, Washington, D.C.)

National Science Teachers Assoc. (A. F. Eiss, NSTA, 1201 16th St., NW, Washington, D.C. 20006)

Pharmacological Soc. of Canada (C. W. Nash, Dept. of Pharmacology, Univ. of Alberta, Edmonton)

Sigma Delta Epsilon (S. C. Stevens, VA Hospital, Lincoln, Neb.)

Society for Computer Science in Biology and Medicine (R. S. Ledley, Natl. Biomedical Research Foundation, 8600 16th St., NW, Silver Spring, Md.)

Society for Economic Botany (Q. Jones, New Crops Research Branch, Plant Industry Station, Beltsville, Md.)

Society for General Systems Research (J. H. Milsum, Dept. of Electrical Engineering, McGill Univ., Montreal)

Society for the History of Technology (J. J. Beer, Dept. of History, Univ. of Delaware, Newark)

Society of the Sigma Xi (T. T. Holme, Sigma Xi, 51 Prospect St., New Haven, Conn. 06511)

Society of Technical Writers and Publishers (G. Marx, Director of Communications, Illinois Inst. of Technology, Research Inst., Chicago)

27-29. **American Philosophical Assoc.**, Boston, Mass. (L. E. Hahn, Dept. of Philosophy, Southern Illinois Univ., Carbondale 62903)

27-30. **American Statistical Assoc.**, Chicago, Ill. (D. C. Riley, ASA, 810 18th St., NW, Washington, D.C. 20006)

28-30. **American Economic Assoc.**, annual, Chicago, Ill. (H. F. Williamson, AEA, 629 Noyes St., Evanston, Ill.)

28-30. **American Geophysical Union**, Seattle, Wash. (W. W. Kellogg, Rand Corporation, 1700 Main St., Santa Monica, Calif.)

28-30. **Linguistic Soc. of America**, New York, N.Y. (A. A. Hill, Post Office Box 8120, University Station, Austin, Tex.)

28-30. **Western Soc. of Naturalists**, Univ. of Washington, Seattle. (I. A. Abbott, Hopkins Marine Station of Stanford Univ., Pacific Grove, Calif.)

January

5-7. **Glass Formation, Phase Equilibria, Nucleation and Crystal Growth**, symp., Sheffield, England. (D. Hawskworth, Soc. of Glass Technology, Thorton, 20 Hallam Gate Rd., Sheffield 10)

5-8. **Solid State Physics**, 2nd annual conf., H. H. Wills Physics Laboratory, University of Bristol, England. (Administrative Assistant, Inst. of Physics and Phys-

ical Soc., 47, Belgrave Square, London, S.W.1)

6-8. **Industrial Electronics and Control Instrumentation**, 13th annual conf., Philadelphia, Pa. (E. Weiss, Sun Oil Co., Marcus Hook, Pa.)

6-9. **Psychopharmacological Conf.**, Czechoslovak Medical Soc., Psychiatry Section, Jeseník Spa. (M. Vojtechovsky, Budejovicka 800, Pavilion A1, Prague, Czechoslovakia)

8-9. **Orthopaedic Research Society**, New York, N.Y. (R. A. Calandruccio, 869 Madison Ave., Memphis, Tenn.)

9-14. **American Acad. of Orthopedic Surgeons**, annual, New York, N.Y. (H. K. Hart, AAOS, 29 E. Madison, Chicago 2, Ill.)

10-16. **The New Science**, symp., Colorado Springs, Colo. (F. A. Sondermann, Colorado College, Colorado Springs)

11-14. **Civilian and Military Uses of Aerospace**, conf., New York, N.Y. (I. B. Laskowitz, New York Acad. of Sciences, 2 E. 63 St., New York)

12-14. **Reliability and Quality Control**, symp., Miami, Fla. (H. D. Hulme, Westinghouse R&D Center, Bldg. 601-1346, Churchill Boro, Pittsburgh, Pa.)

12-15. **Crustacea**, symp., Cochín, India. (Marine Biological Assoc. of India, Marine Fisheries P.O., Mandapam Camp, S. India)

14. **American Genetic Assoc.**, Washington, D.C. (W. R. Singleton, Biology Bldg., Univ. of Virginia, Charlottesville)

18-20. **Solar Radiation Simulation**, intern. conf., Los Angeles, Calif. (H. F. Sander, Inst. of Environmental Science, 34 S. Main St., Mount Prospect, Ill.)

19. **Cor Pulmonale**, New York Heart Assoc., annual medical conf., New York, N.Y. (NYHA, 10 Columbus Circle, New York 10019)

19-20. **Die Design and Press Tooling Conf.**, American Soc. of Tool and Manufacturing Engineers, Hartford, Conn. (M. Zapico, Asst. Conf. Director, ASTME, 10700 Puritan Ave., Detroit 38, Mich.)

20-22. **Instrumentation**, College Station, Tex. (P. T. Eubank, Chemical Engineering Dept., Texas A&M Univ., College Station)

20-23. **National Soc. of Professional Engineers**, New Orleans, La. (P. H. Robbins, 2029 K St., NW, Washington, D.C.)

22. **Bibliographical Soc. of America**, New York, N.Y. (Mrs. H. C. Ralph, P.O. Box 397, Grand Central Station, New York 10017)

22-1. **Earthquake Engineering**, 3rd world conf., Auckland and Wellington, New Zealand. (Administrative Secretary, Third World Conf. on Earthquake Engineering, P.O. Box 5180, Wellington)

22-23. **Blood**, annual symp., Detroit, Mich. (W. H. Seegers, Dept. of Physiology and Pharmacology, Wayne State Univ. College of Medicine, Detroit)

22-23. **Hydrocarbon Analysis**, symp., American Soc. for Testing and Materials, Houston, Tex. (ASTM, 1916 Race St., Philadelphia 3, Pa.)

25-26. **Fundamental Phenomena in the Material Sciences**, 3rd annual symp., Boston, Mass. (D. B. Fay, Ilikon Corp., Natick Industrial Centre, Natick, Mass.)

25-26. **Viruses of Laboratory Rodents**, symp., Atlanta, Ga. (R. Holdenried, Natl. Cancer Inst., NIH, Bethesda, Md. 20014)