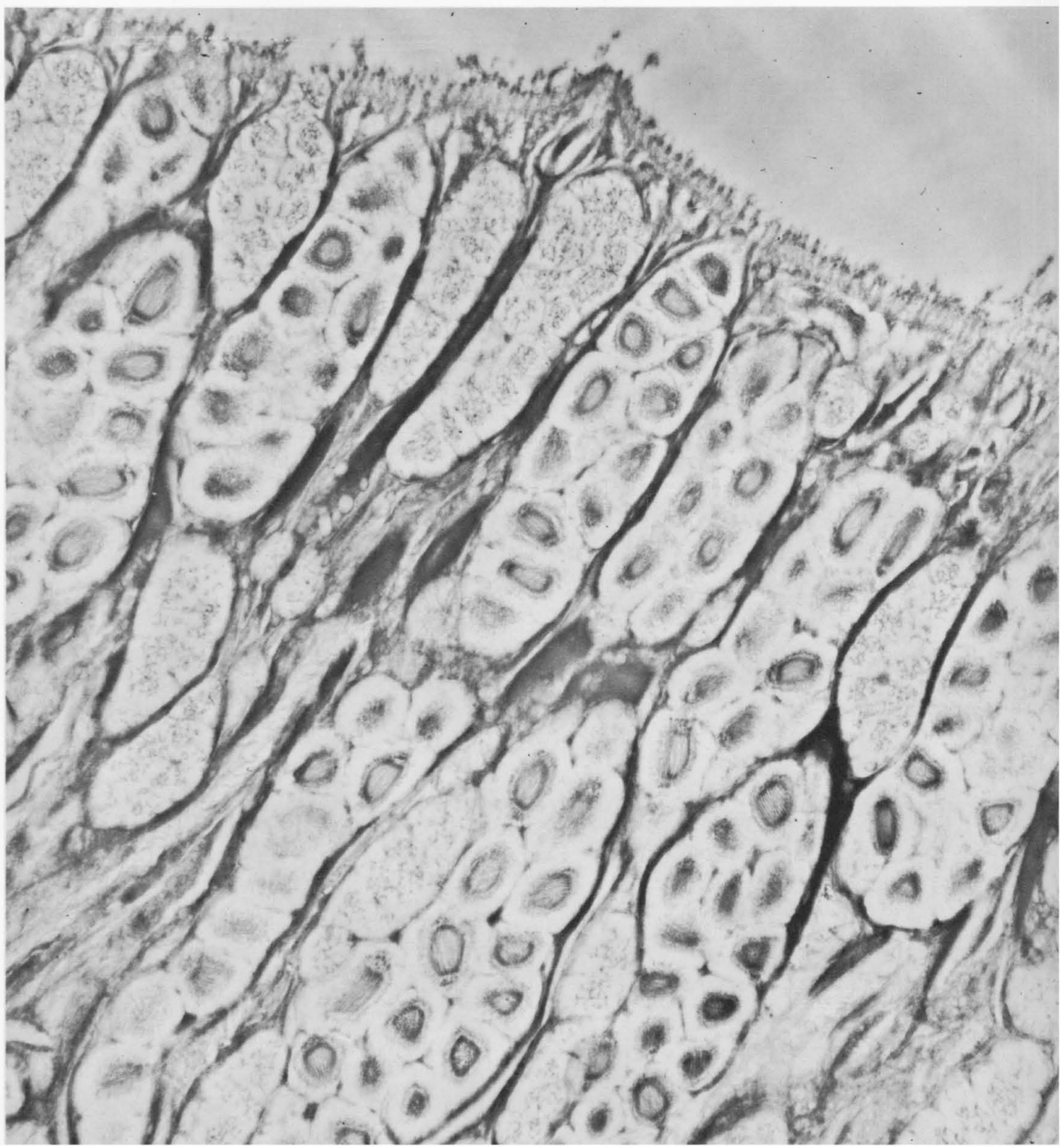
SCIENCE

4 May 1962

Vol. 136, No. 3514

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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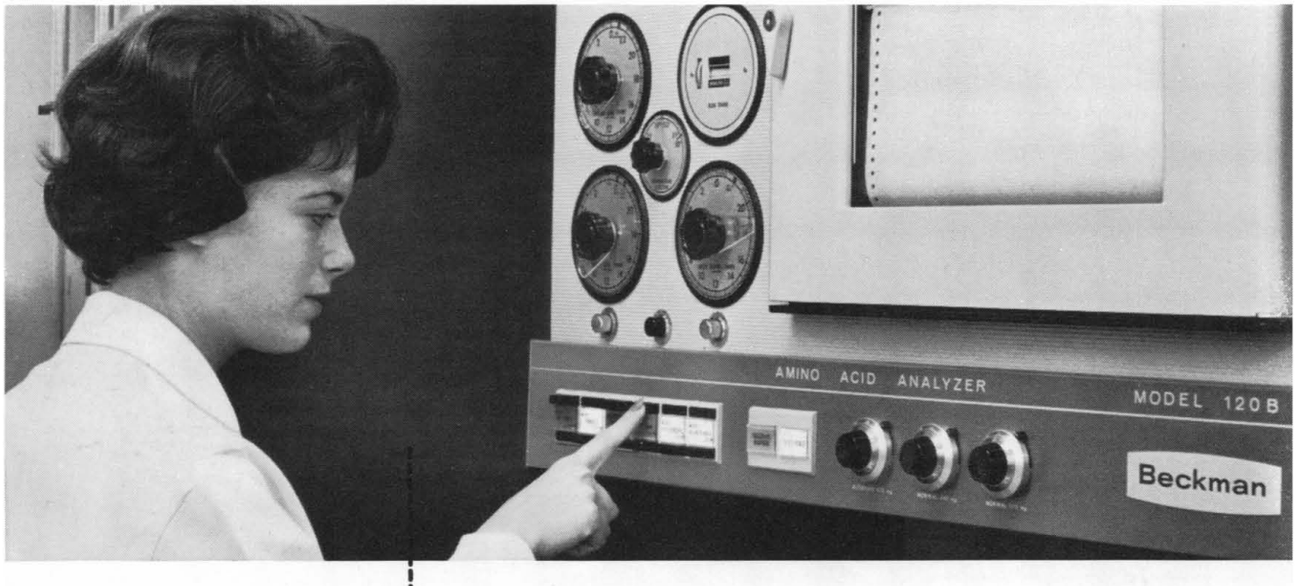

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Sagittal section of the walking surface of the starfish (*Asterias forbesi*) tube foot. The electron micrograph shows dozens of elliptical "secretory packets" migrating toward the walking surface prior to being secreted, possibly to be used as an adhesive (× 30,000). [A. B. Chaet, American University and the Marine Biological Laboratory, Woods Hole, Mass.; and D. E. Philpott, Boston University and the Marine Biological Laboratory]

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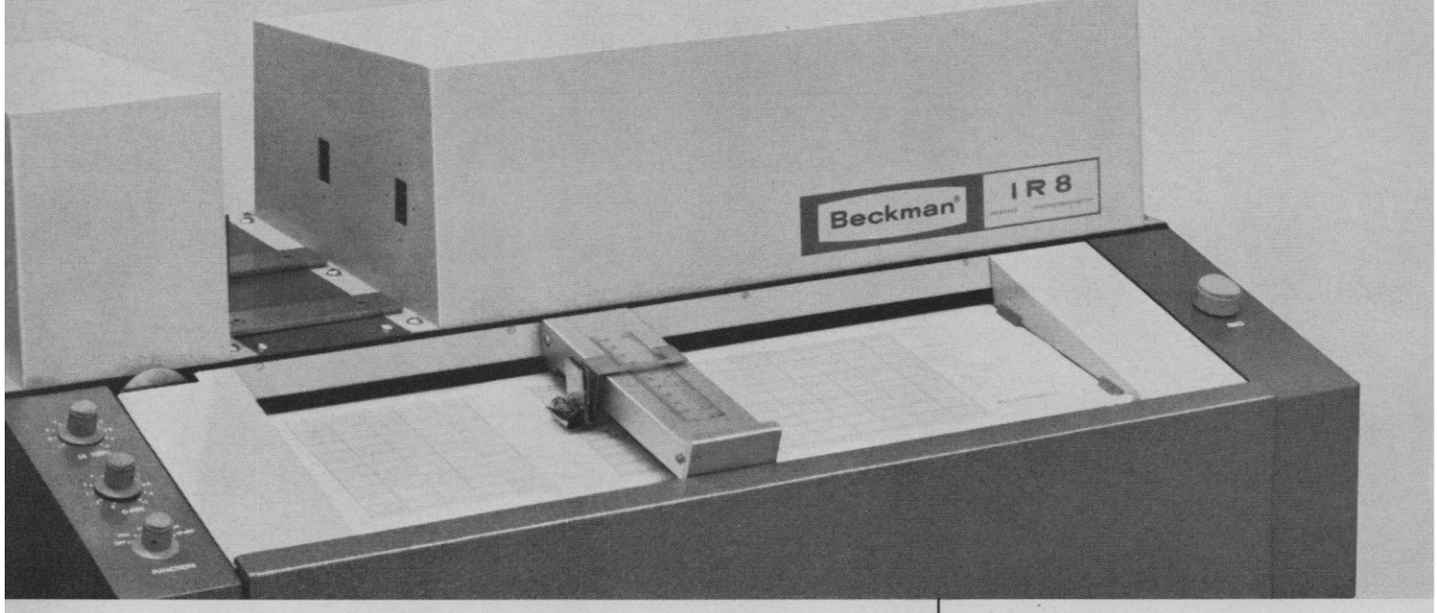

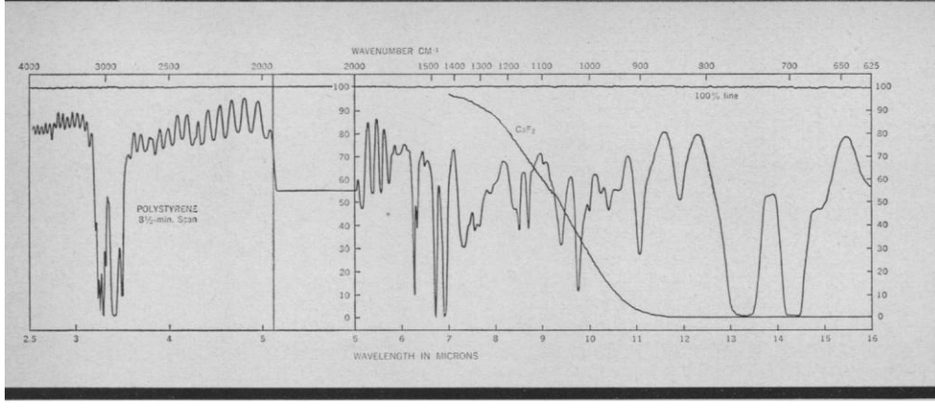

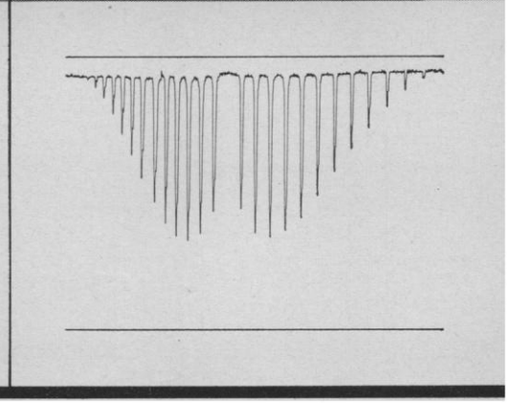

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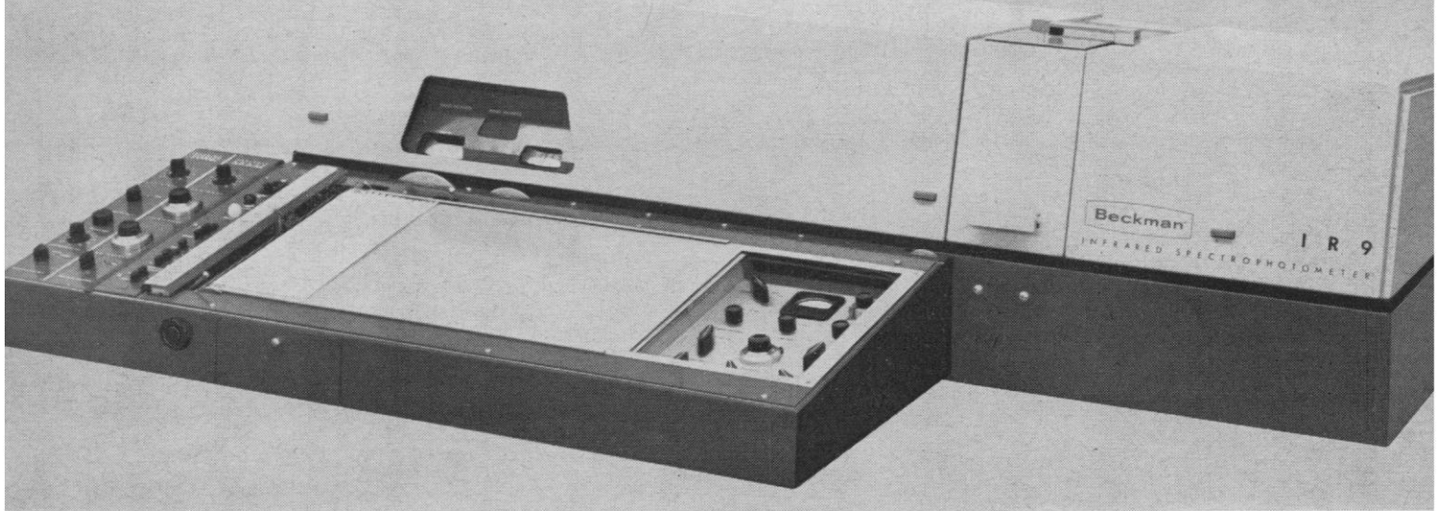
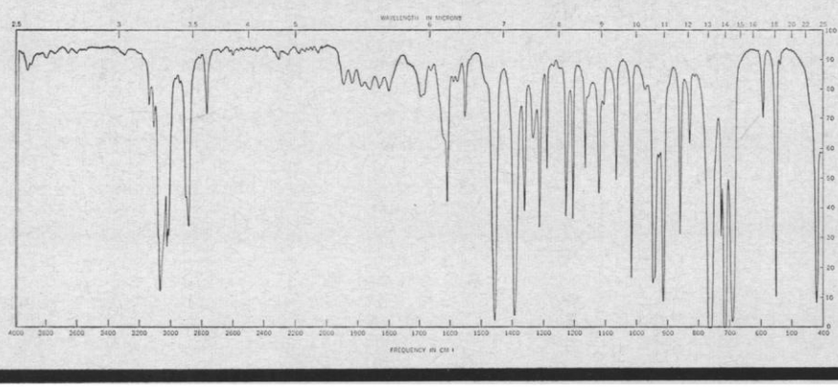
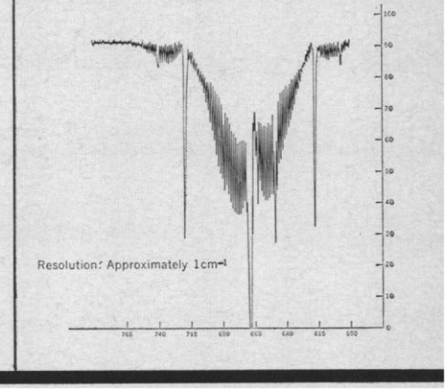




16-min. scan of indene at approximately 1.0 cm^{-1} resolution.



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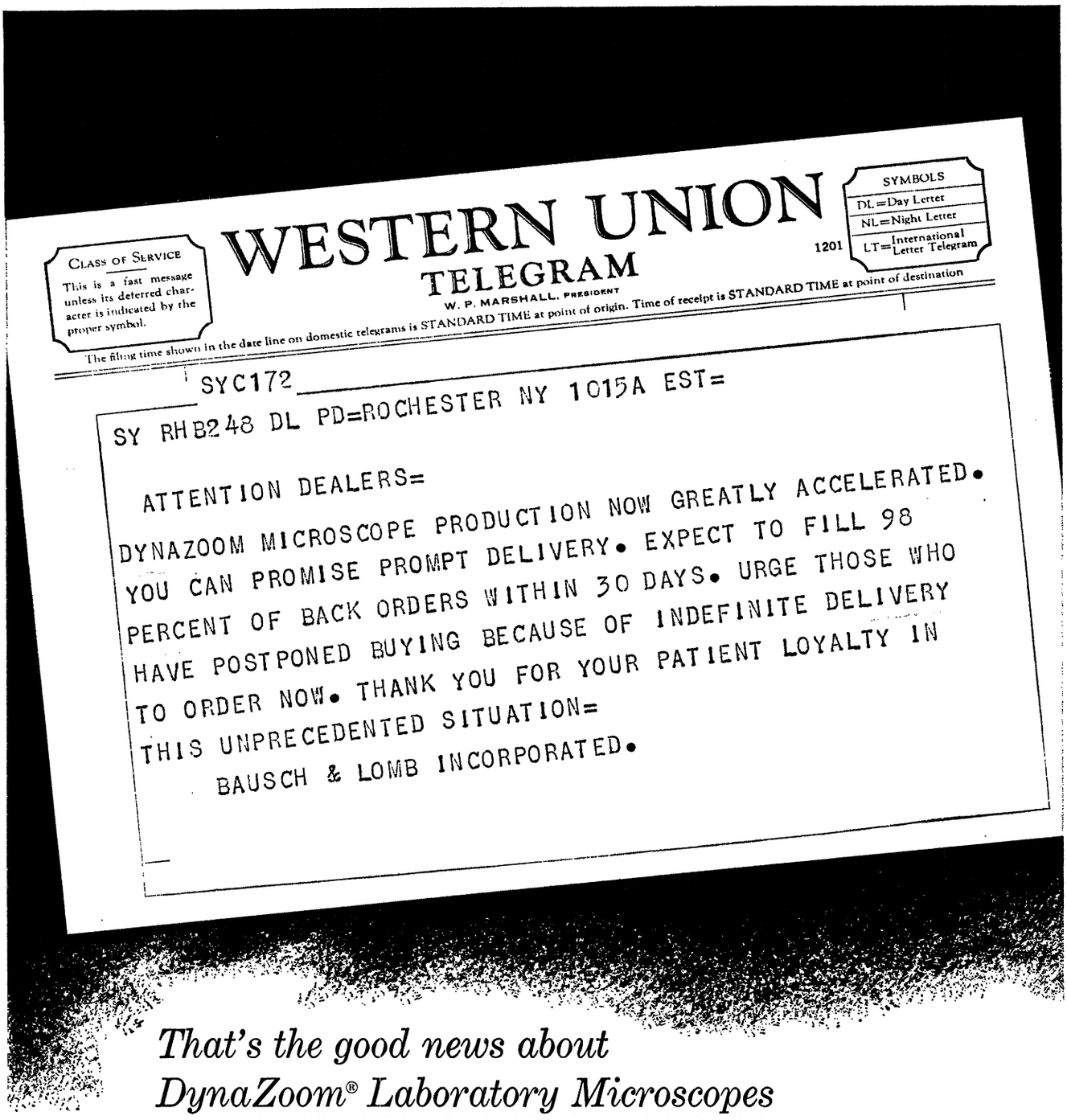

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Art for Science's Sake

More can be done with science films for the classroom than simply providing every student with a good seat at a good lecture in a well-equipped lecture hall. A good lecture is a respectable achievement but the camera, if used imaginatively, can itself contribute something to telling a story. Just how much the camera can contribute may be seen in one of the films—perhaps in other films, too, but we have not viewed them all—made for the Physical Science Study Group's new high school physics course. The film is "Frames of Reference." It is 16 mm, sound, runs 26 minutes, and stars J. N. P. Hume and D. G. Ivey, of the University of Toronto.

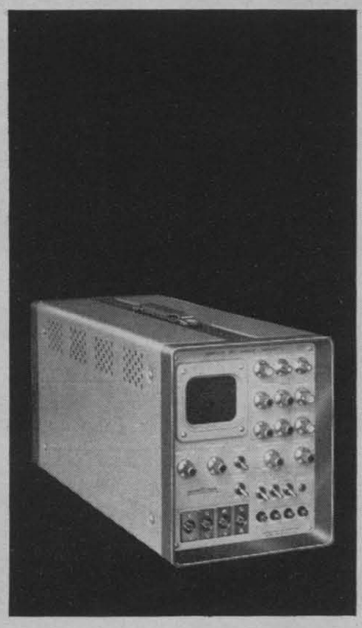
The picture opens with a well-dressed, obviously intelligent chap telling us that much in life depends on one's point of view, one's frame of reference. A second chap, equally well-dressed and intelligent-looking—only upside down—enters the scene, coolly surveys the first chap, and accuses him of being upside down. The accusation is returned and the two men, true scientists that they are, agree to settle their differences by flipping a coin.

Dr. Upside-down (to us) flips first. His coin travels down toward the floor and then back up to his hand. Dr. Right-side-up (to us) flips second. His coin travels up and continues right off the screen and we hear a noise like that of a coin hitting the floor. During this time the camera has been pulling slowly back. The first chap, who we now see has been hanging by his knees from a bar, skins the cat and lands on his feet, while the camera, which we also now see has been upside down, rights itself.

With the same zest, the picture goes on to demonstrate the distinction between inertial and noninertial frames of reference, and the appearance of fictitious forces in a noninertial frame. Whenever a new idea is introduced, a feeling for the underlying problem is first created. There is humor, but it is not a distraction, for it develops directly out of the work of exposition. The two demonstrators, although they use the term "Doctor" in referring to each other, should impress a high school student as not being too different from some of the more affable adults he knows.

It is not difficult to see such a film as a meaningful part of a physics course. The student's intuition of a certain part of physics should receive a powerful bolstering. But no equations are introduced and no calculations are made. There is nothing quantitative in the presentation. And so there is still plenty for the teacher to do, besides answering the many questions the picture is bound to provoke.

The picture is an entertaining, informative lecture, but what we are suggesting is that it is also something more. What was done in the film studio could not have been done on the lecture platform. The camera is a part of the demonstration, being fixed now to one frame of reference and now to another, being now close to the action and now distant. But tricks are not performed simply to display the producer's ingenuity. It is typical that the picture is in black and white, since nothing more could be said by using color. "Frames of Reference" shows that the explanation of science on film can approach the making of a work of art.—J.T.



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Meetings

Entomology

Robert Glen (director-general of the Research Branch, Canada Department of Agriculture, Ottawa) was inducted as president of the Entomological Society of America for 1962 at the society's annual meeting in Miami, 27–30 November 1961.

Edward A. Steinhaus (chairman of the department of insect pathology, University of California, Berkeley) was the announced winner of a run-off ballot for the office of president-elect for 1962.

Frank S. Arant (Alabama Experiment Station), society president for 1961, convened the plenary business sessions.

Theodore H. Hubbell (director of the Museum of Zoology, University of Michigan) delivered the Founders Memorial Lecture, on "Florida-Antillean zoogeography, with special reference to the Orthoptera." Thomas Say (1787–1834) was the pioneer entomologist memorialized.

A record attendance of 1130 at the Miami meeting was reported by R. H. Nelson, executive secretary. D. O. Wolfenbarger (Sub-Tropical Experiment Station, Homestead, Florida), the program chairman, reported that the number of papers (318) presented at the sectional and subsectional meetings was greater than in any previous year. Plenary sessions were held in the McAllister Hotel, where society headquarters were maintained. Section and subsection meetings were held in the McAllister, Columbus, and Everglades hotels. F. Gray Butcher (University of Miami) was chairman of the local arrangements committee.

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Forthcoming Events

May

6–10. American Soc. for Microbiology, annual, Kansas City, Mo. (P. Gerhardt, Dept. of Bacteriology, Univ. of Michigan, Ann Arbor)

6–10. Electrochemical Soc., annual, Los Angeles, Calif. (R. K. Shannon, 1860 Broadway, New York 23)

6–10. French Soc. of Ophthalmology, Paris. (M. A. Dollfus, FSO, 27, rue du Faubourg-Saint-Jacques, Paris 16°)

6–12. World Congr. of Gastroenterology, Munich, Germany. (G. A. Martini, Martinstr. 52, Hamburg 20, Germany)

7. League against Trachoma, annual, Paris, France. (J. Sédan, Ligue contre le Trachoma, 94, rue Sylvabelle, Marseilles, France)

7–8. American Inst. of Mining, Metallurgical and Petroleum Engineers, Soc. of Petroleum Engineers' Secondary Recovery Symp., Wichita Falls, Tex. (E. O. Kirkendall, AIME, 29 W. 39 St., New York 18)

7–9. American Oil Chemists' Soc., annual, New Orleans, La. (W. O. Lundberg, Hormel Inst., Univ. of Minnesota, 801 16 Ave., NE, Austin)

7–9. Implications of Organic Peroxides in Radiobiology, intern. symp., Argonne, Ill. (R. N. Feinstein, Div. of Biological and Medical Research, Argonne Natl. Laboratory, Argonne)

7–9. National Watershed Congr., annual, Columbus, Ohio. (C. R. Gutermuth, Wildlife Management Inst., Washington, D.C.)

7–11. American Psychiatric Assoc., Toronto, Canada. (C. H. H. Branch, 156 Westminster Avenue, Salt Lake City, Utah)

7–11. American Soc. of Tool and Manufacturing Engineers, annual convention and tool exposition, Cleveland, Ohio. (A. Cervenka, Vanderbilt Blvd., Oakdale, N.Y.)

7–11. Radiation Damage in Solids and Reactor Materials, symp., Intern. Atomic Energy Agency, Venice, Italy. (IAEA, 11 Kärntner Ring, Vienna 1, Austria)

7–11. Society of Photographic Scientists and Engineers, annual, Boston, Mass. (E. S. Cobb, Box 1609, Main Post Office, Washington, D.C.)

7–12. International Conf. of Marine Engineers, London, England. (Inst. of Marine Engineers, Memorial Bldg., 76 Mark Lane, London, E.C.3)

7–12. International Seed Testing Assoc., annual congr., Lisbon, Portugal. (A. F. Schoorel, ISTA, Binnenhaven 1, Wageningen, Netherlands)

8. American Soc. of Safety Engineers, Chicago, Ill. (A. C. Blackman, ASSE, 5 N. Wabash Ave., Chicago 2)

8. World Health Assembly, annual, Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva)

8–10. American Soc. of Lubrication Engineers, annual, St. Louis, Mo. (A. E. Cichelli, Bethlehem Steel Co., 701 E. Third St., Bethlehem, Pa.)

8–10. World Commission on Vocational Rehabilitation, annual, Washington, D.C. (D. Warms, Intern. Soc. for Rehabilitation of the Disabled, 701 First Ave., New York 17)

8–19. Latin American Meeting on Higher Agricultural Education, Medellín, Colombia. (Intern. Agency Liaison Branch, Office of Director General, U.N. Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, Italy)

9–11. Conference on Mucous Secretions, New York, N.Y. (S. Jakowska, Natl. Cystic Fibrosis Research Foundation, 521 Fifth Ave., New York 17)

9–11. Operations Research Soc. of America, Washington, D.C. (G. D. Shellard, New York Life Insurance Co., 51 Madison Ave., New York 10)

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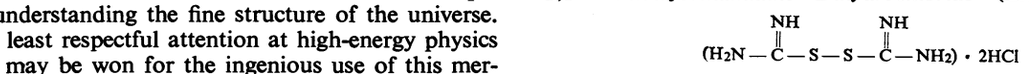
—SH

If we were vain men, we would say that in introducing *1,1′-Dithiodiformamidine Dihydrochloride* (EASTMAN 8479)



we are advancing the cause of elucidating the inner secrets of enzyme action.

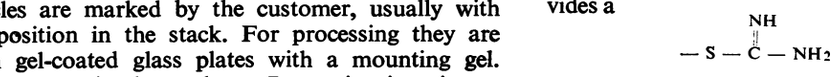
Pompously we would point out how the pattern goes: how some obscure organic compound is first synthesized in 1937 or 1927 or 1887; how investigators of a later generation pull down the dusty old volume from a high shelf for directions on the synthesis.

We would point out how these alert, up-to-date investigators base a technique on the compound; what a distressing fraction of their time and manpower is diverted from their alert, up-to-date investigation to synthesizing the old compound, an enterprise for which scant credit can be taken, however grimy the bottoms of any pitfalls left by the parties who originally described the synthesis.

We would point out how when other teams set out to confirm, controvert, or extend, they too suffer their gall and spend their gold on the dreary old synthesis.

We would point out how the whole line of research enters a new and faster growing stage of development when we are able to announce that the compound is available as an EASTMAN Organic Chemical and all they have to do is order it.

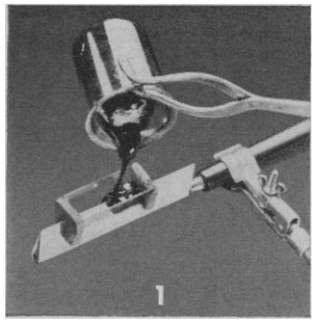
We would then point out that EASTMAN 8479 splits and provides a

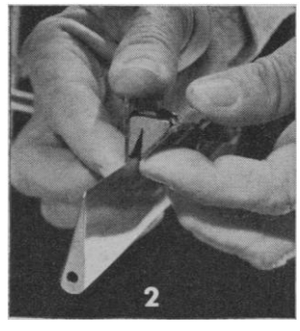


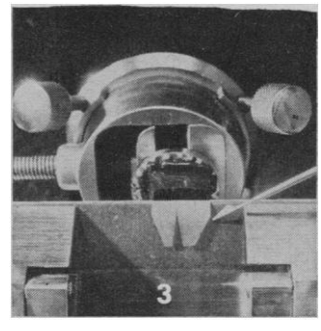
moiety that seems to seek out active sulfhydryl sites on transamidinases with which it forms disulfide links, with the result that the transamidinase cannot transfer metabolic amidine until something like cysteine comes along that is more attractive to the thioformamidine and breaks the blockage (*Archives of Biochemistry and Biophysics, 86,* 80).

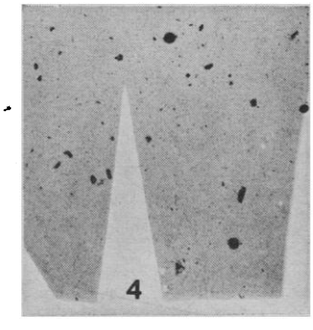
As it happens, we are not vain men but ambitious men who are just as eager to sell this as any of the 3900 other EASTMAN Organic Chemicals available from Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company).

Faithful but flexible. A microbiologist of ours who sometimes minds other people's business has come up with a stunt for microscopic study of profile sections on objects like microtome knives:









Neither dental impression waxes nor any other casting compounds have proved so faithful and yet so flexible for this use as EPOLENE C-10 Polyethylene Resin (to which the user can add 4% carbon black for photomicrographic contrast). Chemically inert, applied at only 100 C, it follows profile details as small as 0.00009-in. radius and gives reproducibility to 0.00001 inch despite the deformation of the unpeeling. A postcard to "Department BLB," Eastman Chemical Products, Inc., Kingsport, Tenn. (Subsidiary of Eastman Kodak Company), will apprise us of your interest and convince us that you are an influential person to have demonstrating the virtues of our resin.

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

9–12. Glass Technology Conf., Baden-Baden, Germany. (Deutsche Glastechnische Gesellschaft, Bockenheimerlandstr. 126, Frankfurt am Main)

9–12. Science Writers Seminar, intern., Seattle, Wash. (Intern. Press Inst., Münstergasse 9, Zurich 1, Switzerland)

9–12. Virginia Acad. of Science, Norfolk. (P. M. Patterson, Hollins College Branch, Roanoke)

9–19. Prediction of Volcanic Eruptions and the Relationship between Magmas and the Nature of Volcanic Eruptions, symp., Tokyo, Japan. (Secretary, Organizing Committee, c/o Science Council of Japan, Ueno Park, Tokyo)

10–12. Meetings on Diabetes, University of Paris, Paris, France. (M. Rathery, Hotel-Dieu, Paris)

10. Glass Container Technology, seminar, New York, N.Y. (Packaging Inst., 342 Madison Ave., New York 17)

10. Vitamins and Transplantation Immunity, Assoc. of Vitamin Chemists, Chicago, Ill. (H. S. Perdue, Abbott Laboratories, N. Chicago)

10–11. American Inst. of Chemists, Inc., Chicago, Ill. (J. Kotrady, c/o AIC, 60 E. 42 St., New York 17)

10–12. Food Protection, intern. symp., Ames, Iowa. (J. C. Ayres, Dept. of Dairy and Food Industry, Iowa State Univ., Ames)

12. International College of Surgeons, clinical meeting, London, England. (Secretary, ICS, 1516 Lake Shore Dr., Chicago 10, Ill.)

13–16. American Acad. of Dental Medicine, annual, Baltimore, Md. (P. Block, 36 N. Luzerne Ave., Baltimore)

13–16. Transfer of Calcium and Strontium across Biological Membranes, conf., Ithaca, N.Y. (R. H. Wasserman, Dept. of Physical Biology, New York State Veterinary College, Cornell Univ., Ithaca)

13–17. American Industrial Hygiene Assoc., conf., Washington, D.C. (W. S. Johnson, Bethlehem Steel Co., Bethlehem, Pa.)

14–16. National Aerospace Electronics Conf., Dayton, Ohio. (Inst. of the Aerospace Sciences, 2 E. 64 St., New York 21)

14–16. Technical Assoc. of the Pulp and Paper Industry, coating conf., annual, Cincinnati, Ohio. (TAPPI, 155 E. 44 St., New York 16)

14–18. American Soc. of Civil Engineers, convention, Omaha, Neb. (W. H. Wisely, 345 E. 47 St., New York 17)

14–18. Hormonal Steroids, intern. congr., Milan, Italy. (L. Martini, Instituto de Farmacologia e Terapia, 21 Via A. del Sarto, Milan)

14–19. International Office of Epizootics, Paris, France (Office Internationale des Epizooties, 12, rue de Prony, Paris)

15–16. Council on Medical Television, annual, Bethesda, Md. (J. F. Huber, CMT, Inst. for Advancement of Medical Communication, 33 E. 68 St., New York 21)

15–16. Injury, Inflammation, and Immunity, intern. symp., Elkhart, Ind. (L. Thomas, Dept of Medicine, New York Univ., Bellevue Medical Center, New York, N.Y.)

15–17. World Food Forum, Washington, D.C. (J. K. McClarren, U.S. Dept. of Agriculture, 409 Administration Bldg., Washington 25)

15–19. International College of Surgeons, European federation, surgical congr., Amsterdam, Netherlands. (J. Blazenburg, ICS Netherlands Section, A. Perkstraat 57, Hilversum, Netherlands)

16. Design of Talking and Writing Machines for the Rehabilitation of Communication Disabilities, conf., New York, N.Y. (C. Berkeley, Foundation for Medical Technology, 2 E. 63 St., New York 21)

16–17. Navy Medical-Dental TV Workshop, Bethesda, Md. (Inst. for Advancement of Medical Communication, 33 E. 68 St., New York 21)

16–18. Conference on Dust, Scheveningen, Netherlands. (Fachgruppe Staubtechnik, Prinz-Georg-Str. 77/79, Düsseldorf 10, Germany)

16–18. Noise Abatement, intern. congr., Salzburg, Austria. (Osterreichischer Arbeitsring für Lärmbekämpfung, Stubenring 1, Vienna 1, Austria)

16–26. Large Electric Systems, intern. conf., Paris, France. (ICLES, 112 Boulevard Haussmann, Paris 8e)

17–18. Regional Implications of Space Research, symp. (by invitation), Durham, N.C. (C. E. Whitefield, Bureau of Public Information, Duke Univ., Durham)

17–19. American Inst. of Industrial Engineers, annual, Atlantic City, N.J. (W. J. Jaffe, Newark College of Engineering, Newark, N.J.)

17–19. Eccrine, Apocrine, and Holocrine Glands, symp., Madison, Wis. (Div. of Postgraduate Medical Education, University of Wisconsin Medical School, Madison 6)

17–19. Nepiology, intern. conf., Catania, Sicily. (S. Rapisardi, Via Mavilla 37, Catania)

17–19. Paralanguage and Kinesics, conf., Bloomington, Ind. (T. A. Sebeok, Research Center in Anthropology, Rayl House, Indiana Univ., Bloomington)

17–20. International Medical Soc. of Endoscopic Photocinematography, Television and Radiocinematography, Louvain, Belgium. (J. M. Dubois de Montreynaud, Société Médicale Internationale d'Endoscopie et de Radiocinématographie, 4, rue du Général-Baratier, Rheims, France)

17–31. Special Libraries Assoc., Washington, D.C. (J. B. North, Missile and Space Div., Lockheed Aircraft Corp., 50-14, Palo Alto, Calif.)

18. Problems of Finding and Using the Chemical Literature, symp., Columbus, Ohio. (B. S. Youngblood, Columbus Section, American Chemical Soc., 2835 Pontiac Ave., Columbus 11)

18–19. Indiana Acad. of Science, Mitchell. (W. W. Bloom, Valparaiso Univ., Valparaiso, Ind.)

18–29. European Plastics and Rubber Conf., Paris, France. (Du Mont Publicity Co., 18 Queensberry Place, London, S.W.7, England)

19–20. International Assoc. for the Study of the Liver, Munich, Germany. (G. A. Martini, c/o Universitäts Krankenhaus, Eppendorf, Hamburg, Germany)

20–23. American Inst. of Chemical Engineers, natl., Baltimore, Md. (F. J. Van Antwerpen, AICE, 345 E. 47 St., New York 17)