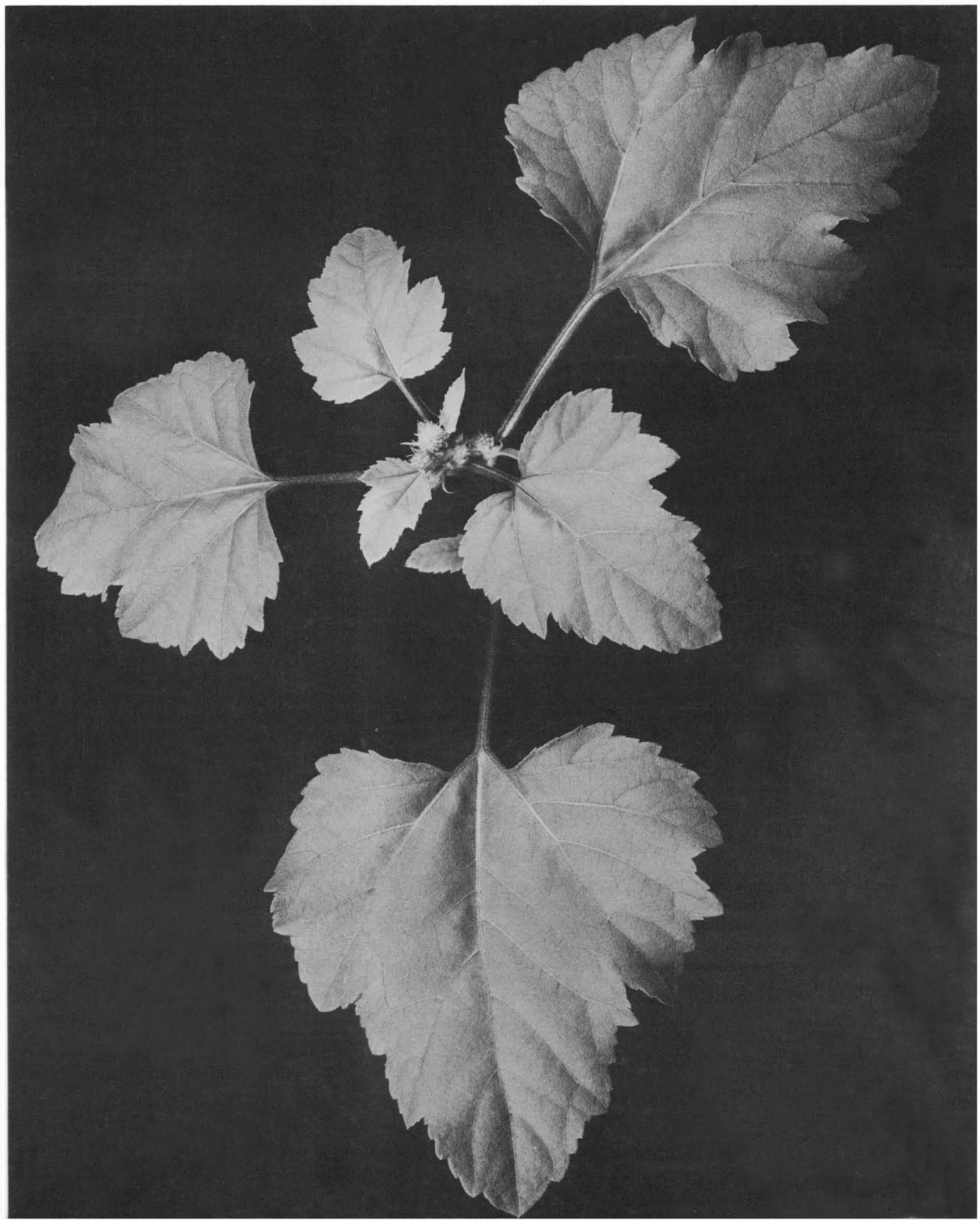
SCIENCE

7 September 1962

Vol. 137, No. 3532

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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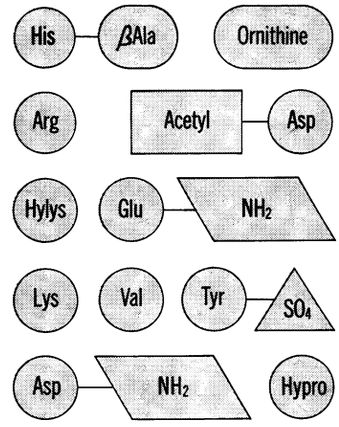

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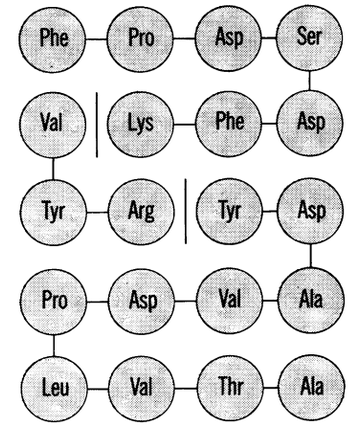

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Cover

Cockleburr, *Xanthium pennsylvanicum*. See page 723. [James McClanahan, California Institute of Technology]

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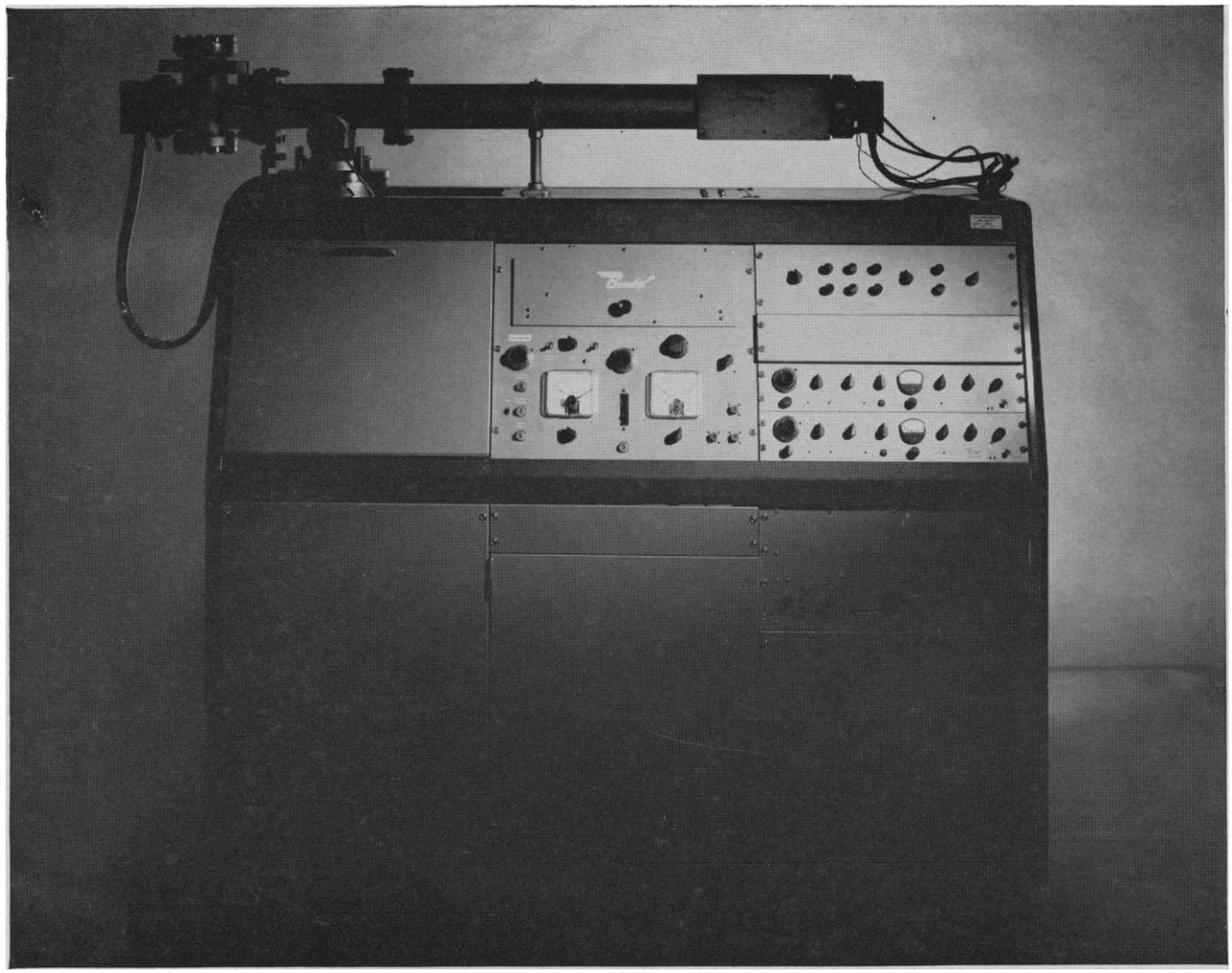

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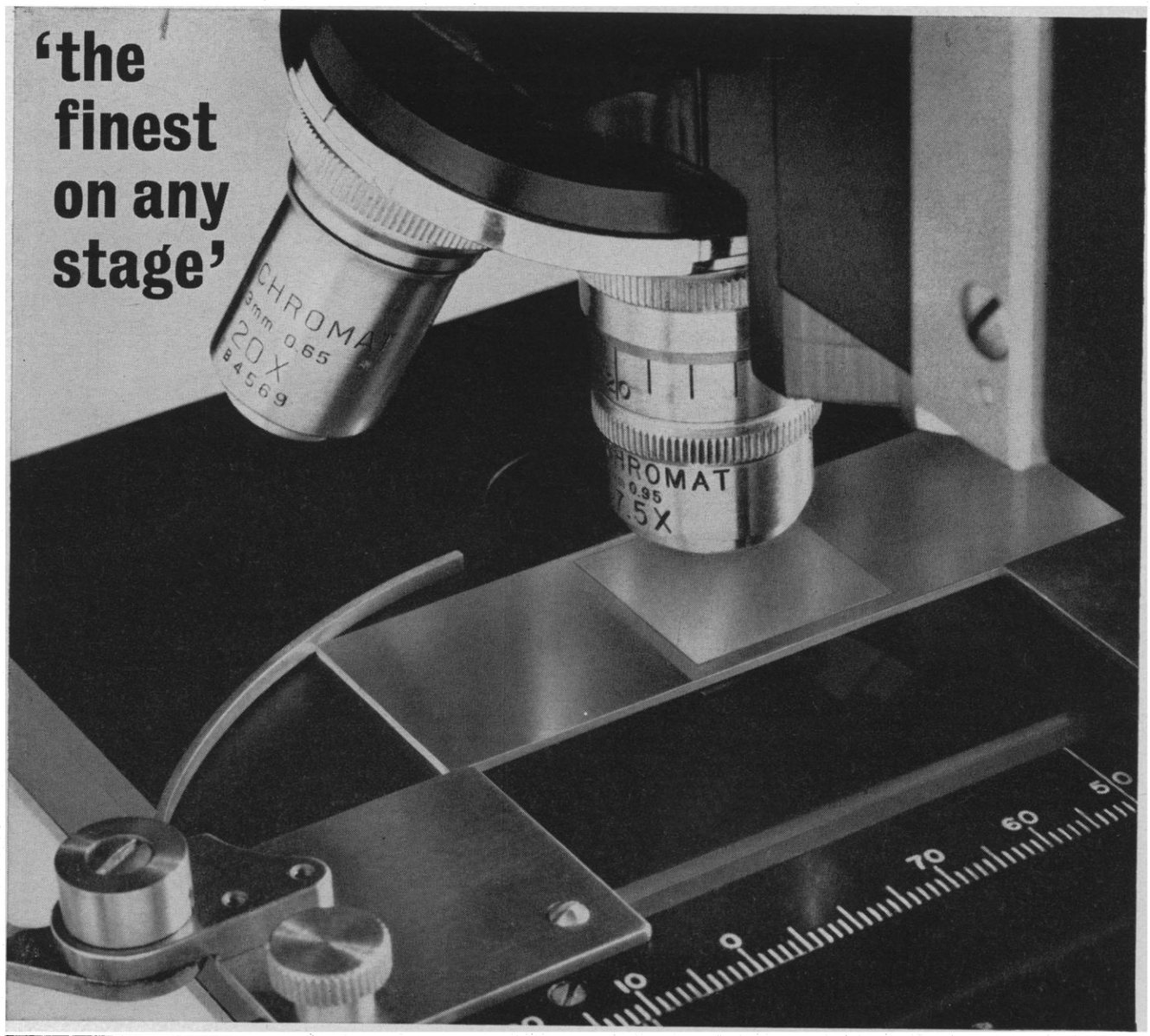

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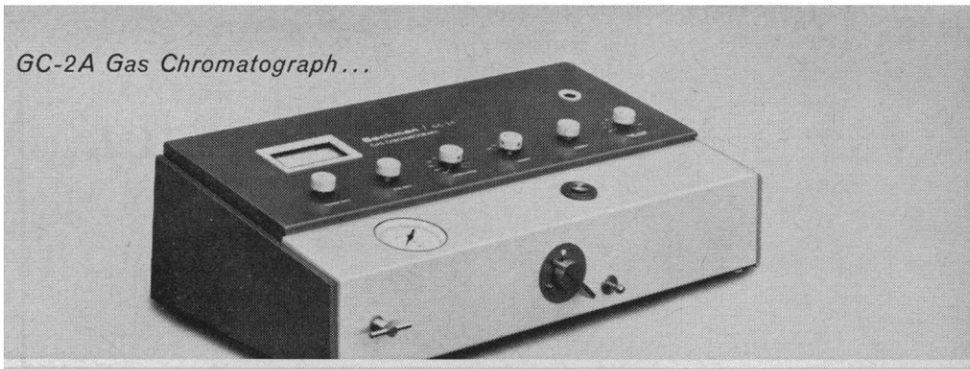

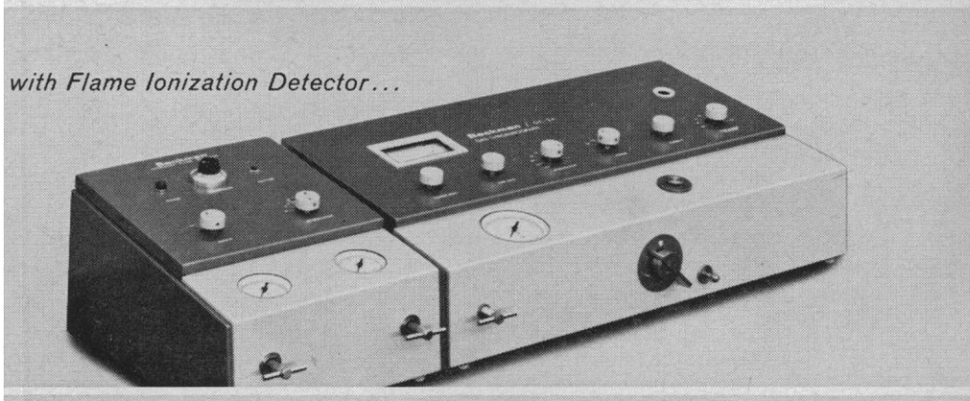

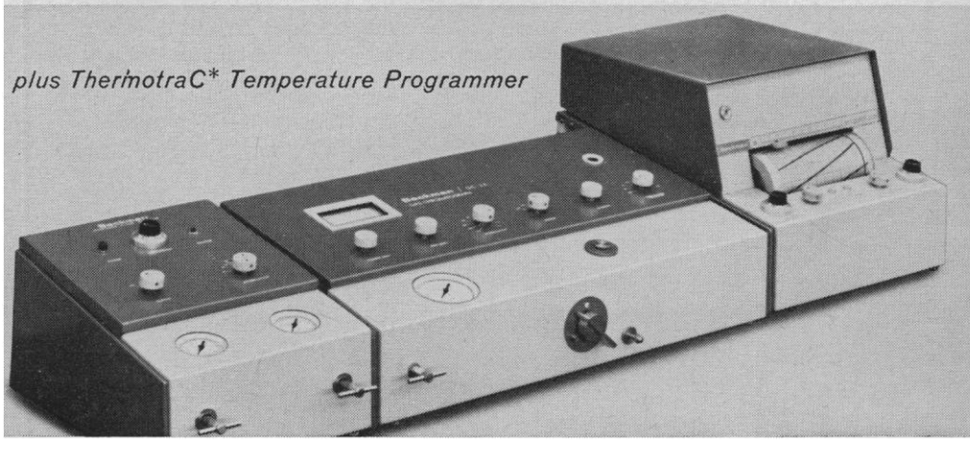

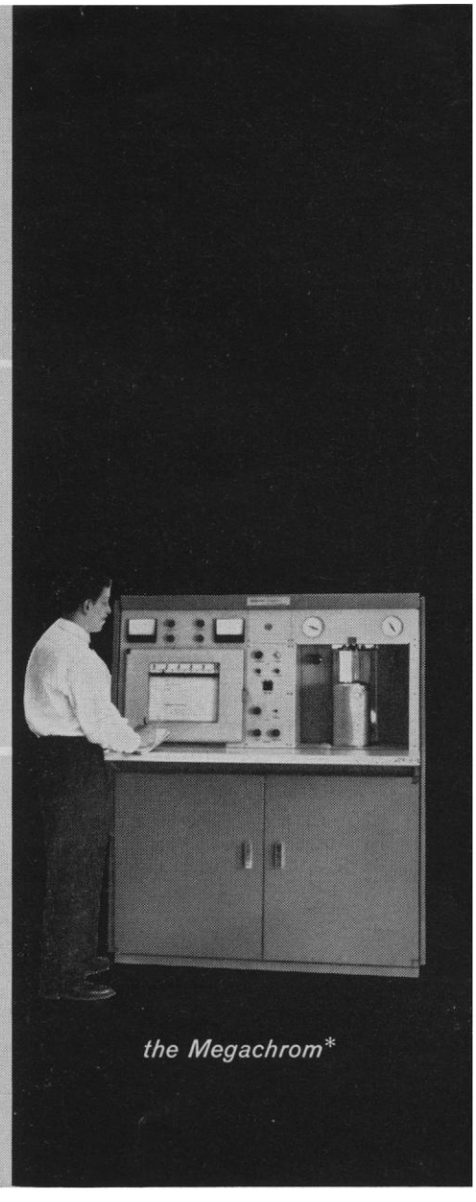

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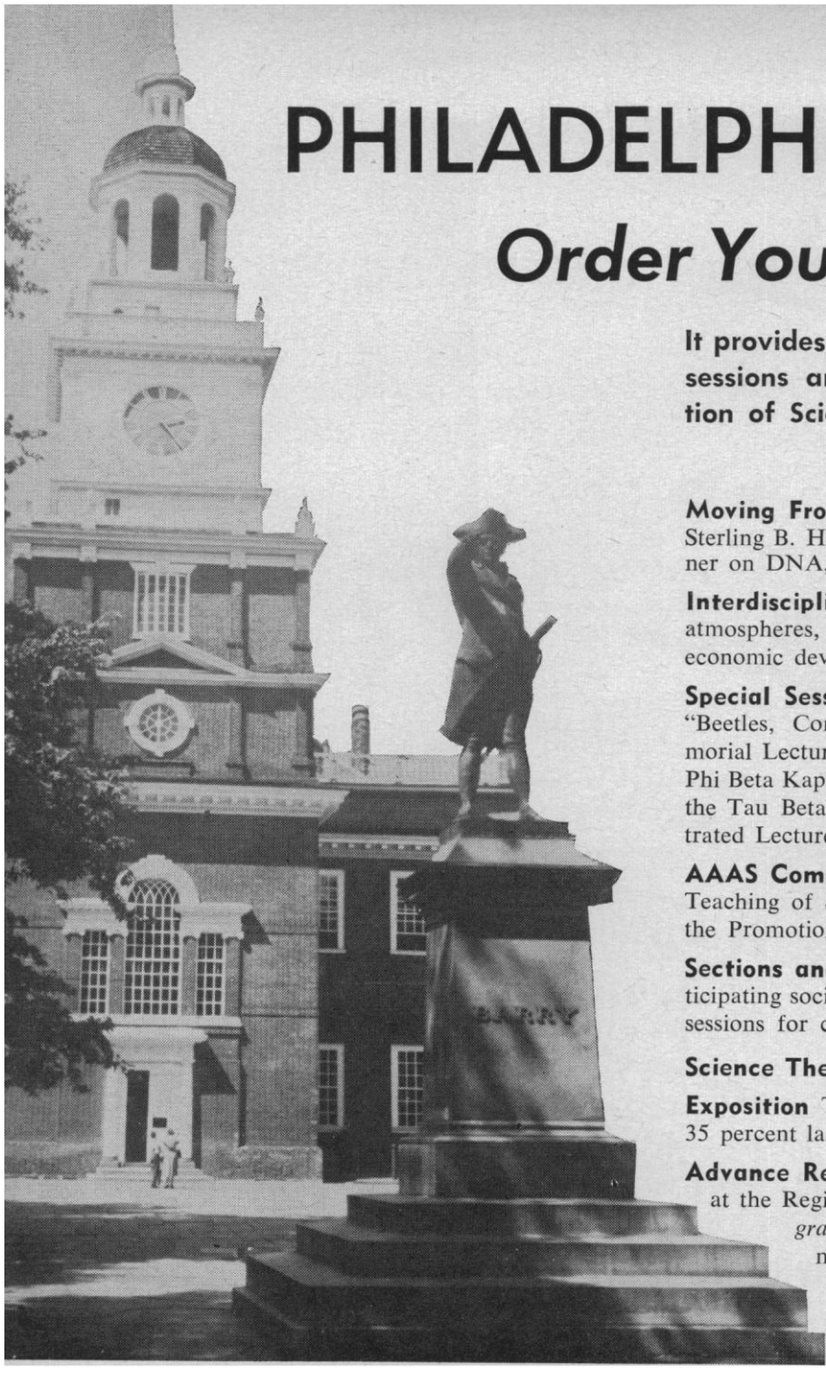

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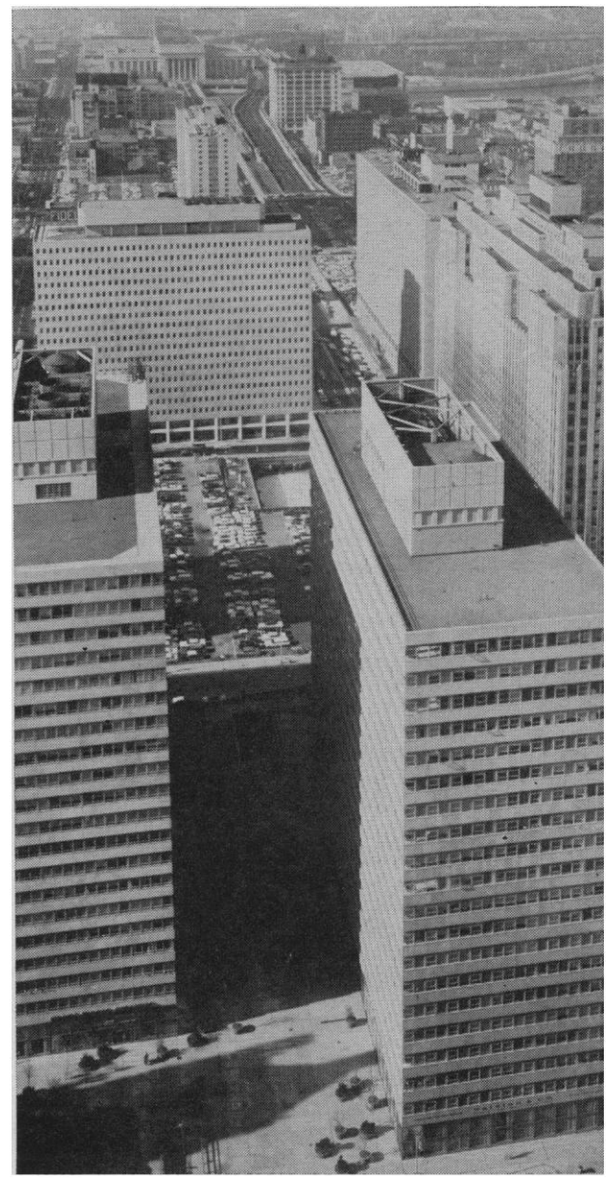

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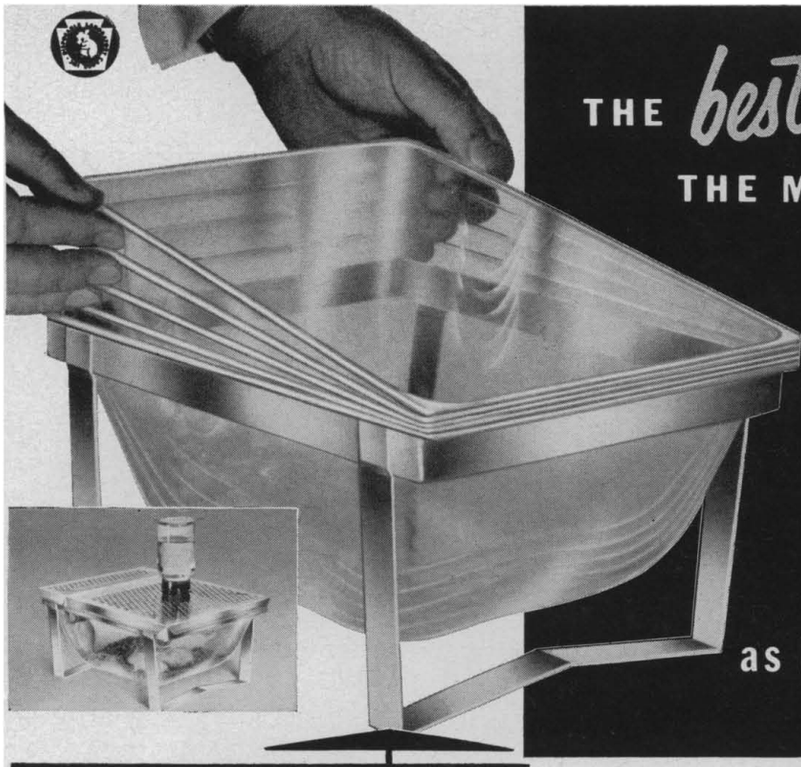

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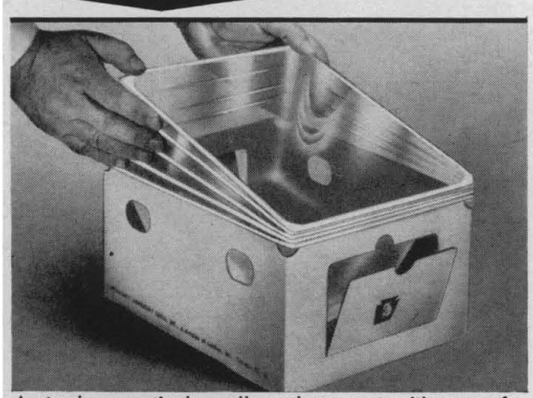

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The Keeper of the Gate

All over the world students are knocking on university doors. All over the world universities are expanding. In some countries social policy calls for a reasonable balance between facilities and demands; thus efforts are being made to keep building apace with rising student demand. In other countries large numbers must be turned away, for the basic policy has been primarily one of exclusion. This problem is an old one. As long ago as the 5th century, the "professors who kept the gate" of Nalanda University in ancient India posed entrance examinations that excluded eight out of every ten candidates.

But increasingly the policy of exclusion is giving way to the idea of selection, for whether the most immediately pressing problem be one of a great excess of candidates, one of properly steering applicants to the most appropriate institutions, or one of improving the methods of selection, admission officers know that the policies that determine who has access to higher education also determine who can gain entrance to the professions and to many positions of government, industrial, and social leadership. The admissions process is a great filter that, in selecting students, is also in large measure determining the nation's future.

General recognition of this role of university admissions, plus worldwide increases in emphasis on education and numbers of university applicants, has resulted in an international study that is sponsored or supported by UNESCO, the International Association of Universities, the Carnegie Corporation, and the College Entrance Examination Board. Educational statistics routinely supplied by most countries to UNESCO, supplemented by detailed and analytical studies of countries selected to represent widely different regions and conditions, provide the basis for considering such questions as: Who has access to the university? What educational, cultural, economic, and political policies and practices control access to higher education? What measures are most useful in selecting the candidates of greatest ability? Should major decisions concerning eligibility be made early so that the elect can be especially prepared in secondary schools, or later so that a larger number can seek to qualify?

Nations differ so greatly in their educational traditions, in the percentage of an age group enrolled in school, and in their economic and cultural development that each must find its own answers to its own problems. But behind these differences and the differences in the mechanics of university admissions lie the world's educational and social problems. These have enough in common to make of the international study a venture that will help individual nations and educational institutions in considering their own problems and that will be of special value to the developing countries that know they must rely upon massive and rapid educational improvements to achieve their national goals.—D.W.

MNEW FROM MNEMOTRON!*

We are silent about the "M" in Mnemotron but not about our new 700 Series Data Recorder. With good reason. For one, it brings the size and cost of data recording systems down to sensible proportions if your data is analog voltage from DC to 5000 cycles per second. And its features would not embarrass even the costliest instrumentation recorder. Here are a few:

COMPACTNESS. A complete 7 channel record/reproduce system uses less than two feet of rack space. A 14 channel system adds less than seven inches more.

ACCURACY. Input-output characteristic is linear within 0.2 per cent with Mnemotron unique Pulse Frequency Modulation (PFM) data conversion technique.

FLEXIBILITY. As many data channels as you need with a choice of channel format. For greatest operating economy, choose up to 7 channels on ¼ inch magnetic tape, 14 channels on ½ inch tape, standard IRIG spacing and track width of 7 channels on ½ inch tape.

INTEGRATED RECORD/REPRODUCE MODULES. A single solid-state PFM Data Converter has all the record/reproduce electronics for each channel. Simple rotary switching lets you select data conversion for 3 tape speeds. No additional plug-ins needed.

ISOLATED INPUT CIRCUITS. Input terminals of each channel are isolated from all the others to readily accept data from floating, unbalanced or differential sources.

VERSATILITY. 700 Series plug-in accessories expand instrumentation capability. Typical: Electrocardiogram preamplifiers for recording directly from electrodes. Pulse Record unit for recording trigger pulses, time markers, or stimulus pulses in medical research . . .

PRICE. 7 Channel System from $6,495

COMPLETE SPECIFICATIONS. Send for your copy today.

*To answer the many inquiries, Mnemotron comes from Mnemosyne, Greek Goddess of Memory.

MNEMOTRON CORPORATION

45 South Main St., Pearl River, New York, 914 PEarl River 5-4015, Cables: Mnemotron, TWX: H99

Subsidiary of Technical Measurement Corporation, North Haven, Conn.

Kodak reports on:

a motion picture to move bosses...
a phone number that should perhaps be noted... separating metal ions

Huntley with rope

Our principal business is the manufacture of photographic materials. Therefore we must tell the world that photography is very useful. The world, however, knows this already. When you tell somebody something he already knows, you run a risk of boring him. Fortunately, if he himself regards the message as a doctrine worth preaching, he will pay attention, will applaud, and will help round up an audience.

In this case, we assume that he has charge of photographic operations in a businesslike organization. We assume further that he is not lazy and would rather see those operations expand than diminish.

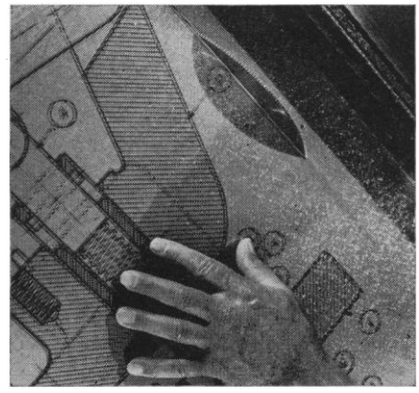
We have made him a 42-minute movie to show. Instead of spending all that time singing paeans, the movie tries to stimulate his colleagues and his bosses to think up functions for him that might not have occurred to them.

Mr. Chet Huntley, no paean singer, narrates. We take you inside a cake being baked in Dayton. We puzzle you with a monstrous camera intended to take pictures in Cincinnati without perspective. We show you how they test a new hydrofoil on Lake Washington and what nooks and crannies a camera can explore when fitted with fiber optics. We take you to lots of places, starting on a classy note with the hunt for anti-matter at Brookhaven.

If we create the impression that the great linear accelerator there is nothing but another camera accessory, do not conclude that perspective is being shunned in Rochester as well as in Cincinnati. Historians of science differentiate between the "low technology" that civilizations evolve over the millenia for hewing the wood and drawing the water of everyday life and the "high technology" that is called into existence by the demands of pure science and then very kindly lowers a rope to haul up the "low technology." Maybe 1520 feet of movie film narrated by Mr. Chet Huntley with music and color to dispel boredom is better than rope.

To book a showing of "Photography at work . . . a progress report," write Eastman Kodak Company, Professional Photographic Sales Division, Rochester 4, N. Y.

Rigid, clear, machinable bearer of images



There are photographic plates that have their emulsions coated directly on clear methyl methacrylate .060″, .130″, or .250″ thick. We can make them as large as 30 inches wide by almost any length. The finished image-bearing plate can be conventionally sawed, drilled, threaded, or otherwise machined. It can be cemented. It doesn't shatter like glass.

Ask almost any camera shop for KODAK PHOTOPLAST Plates. If, now that you know, you want immediate action and can't wait while the dealer orders pamphlet P-34, it might be well to place a call to Rochester, Area Code 716, LO 2-6000, Ext. 2374.

The product has lately been revised to broaden latitude greatly. One can speak of latitude in an emulsion with a cliff-like density *vs.* log exposure curve because the cliff can be shifted parallel to itself by choice of development time. The development latitude gives exposure latitude (not in general but in this particular emulsion).

TOPO in Milan

Pliny (who was born in 23, used no initials, and died in 79 so that his written permission is not required for the use of his name in paid advertising) gets credit for about 1900 years of priority on chromatography. He told how to use papyrus impregnated with gallnut extract for the detection of ferrous ion, although he didn't say it just that way and didn't call it chromatography. Today we need words like that. Otherwise if you are seen watching blots spread on blotting paper, people will question your right to earn a living by such activity.

Paper chromatography has made a leap forward. Don't think of it as a technique on which biochemists have some kind of exclusive contract. Biochemists took to it because it is a powerful and ridiculously simple way of separating closely similar components of a mixture when you don't have much of the mixture. It was known to be useful also for separating metal ions, but you heard less about that. Now you may hear more. TOPO (*Trioctylphosphine Oxide*) did it.

They love our TOPO in Milan and are impregnating filter paper with it (*Journal of Chromatography, 7*, 112). We had put it on the market in '57 after workers at the Oak Ridge National Laboratory, who had studied the solvent extraction merits of various phosphine oxides for 49 different elements, had picked TOPO for complexing hexavalent uranium.

The Milanese appear to have fixed their attention on the wide and well-spaced *differences* in the affinity that TOPO displays toward various metal ions. For about 50 of them their paper gives curves of R_F against acidity of the eluent. A full set of curves is presented for each of the eluents HCl, HNO_3, and H_2SO_4. Also operating procedures down to fine details.

Bravo Milanesi! Bravo TOPO! Bravo Oak Ridge! Want an abstract? Want any other of some 3900 EASTMAN Organic Chemicals? Ask Distillation Products Industries, Rochester 3, N.Y. (Division of Eastman Kodak Company).*

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*The word can be pronounced "EASTMAN 7440" to avoid the embarrassment of shouting in Italian "Hurray for the mouse!"

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

program for the conservation of natural communities throughout the world, the International Union for the Conservation of Nature (IUCN) acted as host for the conference, which was held at its headquarters, Les Uttins, at Morges. The IUCN was represented at the conference by Jean Baer, its president, and by two consultants, E. M. Nicholson (London) and E. H. Graham (Washington, D.C.). Its fine hospitality and the stimulating atmosphere which it provided gave great impetus to the work of the Planning Committee.

At the conclusion of the session, G. Laclavère, treasurer of ICSU, discussed with the conference members his experiences with the planning stages of the International Geophysical Year and made many helpful comments on procedure. He expressed great satisfaction with the work accomplished by the committee.

G. LEDYARD STEBBINS

Department of Genetics,
University of California, Davis

Forthcoming Events

October

7–10. Society of **Petroleum Engineers**, Los Angeles, Calif. (SPF, 345 E. 47 St., New York 17)

7–13. **Cardiology**, intern. congr., Mexico City, Mexico. (I. Costero, Instituto Nacional de Cardiologia, Ave. Cuauhtemoc 300, Mexico 7, D.F.)

8–10. **Electronics**, natl. conf., Chicago, Ill. (National Electronics Conf., 228 N. La Salle St., Chicago 1)

8–11. **Allergy**, congr., Basel, Switzerland. (R. Schuppli, c/o Dermatologische Universitäts-Klinik, Basel)

8–11. **Infectious Pathology**, intern. congr., Bucharest, Rumania. (N. Cajal, Str. Dumbrava, Rossie 23, Bucharest)

8–11. **Otorhinolaryngology**, congr., Paris, France. (H. Guillon, French Soc. of Otorhinolaryngology, 6 Avenue MacMahon, Paris 17°)

8–11. **Water Pollution Control** Federation, annual, Toronto, Canada. (R. E. Fuhrman, Executive Secretary, WPCF, 4435 Wisconsin Ave., NW, Washington 16, D.C.)

8–12. American Soc. of **Civil Engineers**, Detroit, Mich. (W. H. Wisely, 345 E. 47 St., New York 17)

8–12. Industrial **Forestry**, seminar, St. Paul, Minn. (Z. W. White, Yale School of Forestry, 205 Prospect St., New Haven 11, Conn.)

8–12. **Instruments** and Research Equipment, symp. and exhibit, Bethesda, Md. (L. Heiss, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.)

8–12. **Lead** and **Radiation Shielding Problems**, intern. conf., London, England. (J. Oldroyd, Lead Development Assoc., 34 Berkeley Square, London, W.1)

8–13. Treatment and Storage of **High-**

Level **Radioactive Wastes**, symp., Vienna, Austria. (Intern. Atomic Energy Agency, 11 Kärntner Ring, Vienna 1)

8–20. **Statistical Forecasting**, training seminar, Paris, France. (World Meteorological Organization, 41 Avenue Giuseppe Motta, Geneva, Switzerland)

9–11. **Analytical Chemistry** in Nuclear Reactor Technology, Gatlinburg, Tenn. (C. D. Susano, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

9–11. International Assoc. of **Food Analysts**, symp., Bordeaux, France. (L. de Saint Rat, 18 Avenue de Villars, Paris 7e, France)

9–11. **Nuclear Reactor Chemistry**, conf., Gatlinburg, Tenn. (W. R. Grimes, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

9–12. American **Dietetic** Assoc., annual, Miami Beach, Fla. (V. F. Harger, Dept. of Home Economics, Ohio State Univ., Columbus 10)

9–12. Scientific Soc. for **Aviation**, annual, Brunswick, Germany. (Wissenschaftliche Gesellschaft für Luftfahrt, Martinstr. 40–42, Cologne, Germany)

10–12. **Comparative Medicine**, intern. symp., New York, N.Y. (J. D. Bech, Animal Medical Center, 350 Lafayette St., New York 12)

12. Biochemical Aspects of **Hormone** Action, symp., St. Louis, Mo. (A. B. Eisenstein, Jewish Hospital of St. Louis, 216 S. Kingshighway Blvd., St. Louis 10)

12–13 American **Medical Writers'** Assoc., Washington, D.C. (S. O. Waife, P.O. Box 1796, Indianapolis 6, Ind.)

12–13. **Photography** of Electronic Display, symp., Washington, D.C. (Soc. of Photographic Scientists and Engineers, P.O. Box 1609, Washington, D.C.)

12–14. **Phosphorylated Glucides**, intern. symp., Milan, Italy. (Segreteria del Comitato Organizzatore del Symposium Internazionale sui Glucidi Fosforilati, Via Modica 6, Milano)

13. Metabolic and Structural Alterations in **Pre-Diabetes**, symp., New York, N.Y. (R. Levine, New York Diabetes Assoc., 104 E. 40 St., New York 16)

13–14. Fundamental Nature of **Living Matter**, symp., Cleveland, Ohio. (Dedication Committee Office, Allen Memorial Library, 11000 Euclid Ave., Cleveland 6, Ohio)

13–14. International Federation of **Surgical Colleges**, annual, Atlantic City, N.J. (I. S. Ravdin, American College of Surgeons, 3400 Spruce St., Philadelphia 4, Pa.)

13–14. Society for **Psychophysiological Research**, annual, Denver, Colo. (S. G. Margolin, Dept. of Psychophysiology, Univ. of Colorado, Denver 20)

13–14. Unfinished Tasks in the **Behavioral Sciences**, symp., Chicago, Ill. (A. Abrams, Div. of Behavioral Sciences, Chicago Medical School Research Institute, 2020 W. Ogden Ave., Chicago 12)

14–17. **Electrical Insulation**, conf., Hershey, Pa. (L. J. Frisco, Div. of Engineering and Industrial Research, Natl. Acad. of Sciences, 2101 Constitution Ave., Washington 25)

14–19. **Dentistry Teaching**, seminar, Bogota, Colombia. (Pan American Sanitary Bureau, Washington 6)

14–19. **Pulp and Paper Engineering**,

conf., Montreal, Canada. (Technical Assoc. of the Pulp and Paper Industry, 360 Lexington Ave., New York 17)

15–17. Association of Official **Agricultural Chemists**, annual, Washington, D.C. (W. Horwitz, Box 540, Benjamin Franklin Station, Washington 4)

15–17. **Materials Handling**, conf., Cincinnati, Ohio. (American Soc. of Mechanical Engineers, 29 W. 39 St., New York 18)

15–17. Selection Problems in **Plastics**. Amsterdam, Netherlands. (Secretariate, Tesselschadestraat 5, Amsterdam W.)

15–17. Specialists on **Antisubmarine Warfare**, natl. symp., Boston, Mass. (classified secret). (T. Nussdorfer, Geophysics Corp. of America, Bedford, Mass., or Institute of the Aerospace Sciences, 2 E. 64 St., New York 21)

15–18. American **Meteorological** Soc., natl., New York, N.Y. (AMS, 45 Beacon St., Boston 8, Mass.)

15–18. **Danube Research**, intern. symp., Bratislava, Czechoslovakia. (L. Kneppo, Slovak Acad. of Sciences, Ul. Obrancov Mieru 41, Bratislava)

15–18. **Instrument-Automation**, conf. and exhibit, New York, N.Y. (Meetings Manager, Instrument Soc. of America, Penn-Sheraton Hotel, Pittsburgh 19, Pa.)

15–18. **Space** Phenomena and Measurement, intern. symp., Detroit, Mich. (H. E. DeBolt, AVCO Corp., 201 Lowell St., Wilmington, Mass.)

15–19. American College of **Surgeons**, annual clinical congr., Atlantic City, N.J. (ACS, 40 Erie St., Chicago 11, Ill.)

15–19. American **Public Health** Assoc., annual, Miami Beach, Fla. (APHA, 1790 Broadway, New York, N.Y.)

15–19. Diagnosis and Treatment of **Radioactive Poisoning**, Vienna, Austria. (World Health Organization, Palais des Nations, Geneva, Switzerland)

15–20. **Laboratory, Measurement, and Automation Techniques in Chemistry**, intern. congr. and exhibit, Basel, Switzerland. (Sekretariat, ILMAS, Clarastr. 61, Basel)

15–26. **Statistics**, Inter-American conf., Washington, D.C. (Inter-American Statistical Inst., Pan American Union, Washington 6)

16. Oak Ridge Inst. of **Nuclear Studies**, Oak Ridge, Tenn. (W. G. Pollard, ORINS, Oak Ridge)

16–18. **Lubrication**, conf., Pittsburgh, Pa. (American Soc. of Mechanical Engineers, 29 W. 39 St., New York 18)

16–18. Noise in **Electronic Systems**, seminar, Rochester, N.Y. (H. Kentner, Extended Services Div., Rochester Inst. of Technology, Rochester 8)

16–19. **Textile Materials**, New York, N.Y. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia 3, Pa.)

17–20. **Insect Pathology and Microbial Control**, intern. colloquium, Paris, France. [Secretariat, Intern. Committee for Biological Control, c/o Laboratoire du Lutte Biologique, La Minière (Seine-et-Oise), France]

18. **Bibliographical** Soc. of America, Cambridge, Mass. (F. R. Goff, Rare Book Div., Library of Congress, Washington 3)

18–19. **Applied Spectroscopy** and **Analytical Chemistry**, annual Pacific regional meeting, Pasadena, Calif. (W. F. Ulrich, Scientific and Process Instruments Div., Beckman Instruments, Fullerton, Calif.)

18–19. **Cellulose**, conf., Syracuse, N.Y. (Cellulose Research Inst., State Univ. College of Forestry at Syracuse Univ., Syracuse 10)

18–19. German Soc. for **Operations Research**, annual, Bonn, Germany. W. Krelle, GSOR, c/o Universität, Liebfrauenweg 5, Bonn)

18–20. **Indiana Acad. of Science**, Evansville. (W. W. Bloom, Valparaiso Univ., Valparaiso, Ind.)

18–21. Central Assoc. of **Electroencephalographers**, annual, Rochester, Minn. (D. W. Klass, Mayo Clinic, Rochester)

19–20. **Aging**, symp., San Francisco, Calif. (M. A. Shearn, Kaiser Foundation Hospital, Oakland, Calif.)

19–20. **Quantitative Systematics**, symp., St. Louis, Mo. (R. L. Dressler, Missouri Botanical Garden, 2315 Tower Grove Ave., St. Louis 10)

21–24. **Fundamental Research**, symp., Chicopee, Mass. (Technical Assoc. of the Pulp and Paper Industry, 360 Lexington Ave., New York 17)

21–24. Society of American **Foresters**, Atlanta, Ga. (H. Clepper, 425 Mills Bldg., 704 17 St., NW, Washington 6)

22–24. **Aerospace and Navigational Electronics**, conf., Baltimore, Md. (Inst. of Radio Engineers, Office of the Technical Secretary, 1 E. 79 St., New York 21)

22–26. Advances in **Radioisotope Scanning**, symp., Oak Ridge, Tenn. (R. M. Kniseley, Oak Ridge Inst. of Nuclear Studies, Oak Ridge)

22–26. **Diabetes**, Buenos Aires, Argentina. (C. A. Campos, Sociedad Argentina de Diabetes, Santa Fe 1171, Buenos Aires)

22–26. Society of **Motion Picture and Television Engineers**, convention, Chicago, Ill. (C. S. Stodter, 55 W. 42 St., New York 35)

23–25. **Occupational Therapists**, intern. congr., Philadelphia, Pa. (M. T. Cardwell, 963 Avenue Rd., Toronto 7, Ont., Canada)

23–27. American Soc. of **Oral Surgeons**, New Orleans, La. (L. W. Peterson, 117 N. Meramec St., Clayton 5, Mo.)

23–1. **Care of Children in Institutions**, Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva)

24–25. **Computer** Applications, symp., Chicago, Ill. (R. S. Hollitch, Armour Research Foundation, Illinois Inst. of Technology, 35 W. 33 St., Chicago 16)

24–26. Design of Experiments in **Army Research**, Development, and Testing, Washington, D.C. (by invitation only). (F. G. Dressel, Army Research Office, Box CM, Duke Station, Durham, N.C.)

24–26. Society for **Experimental Stress Analysis**, annual, Milwaukee, Wis. (B. E. Rossi, 21 Bridge Square, Westport, Conn.)

24–27. International Assoc. of **Milk and Food Sanitarians**, annual, Philadelphia, Pa. (H. L. Thomasson, Box 437, Shelbyville, Ind.)

24–28. **Angiology**, intern. conf., Darmstadt, Germany. (Sekretariat, c/o Medizinische Klinik, Bismarckstr. 28, Darmstadt)

(See issue of 10 August for comprehensive list)