SCIENCE

11 January 1963

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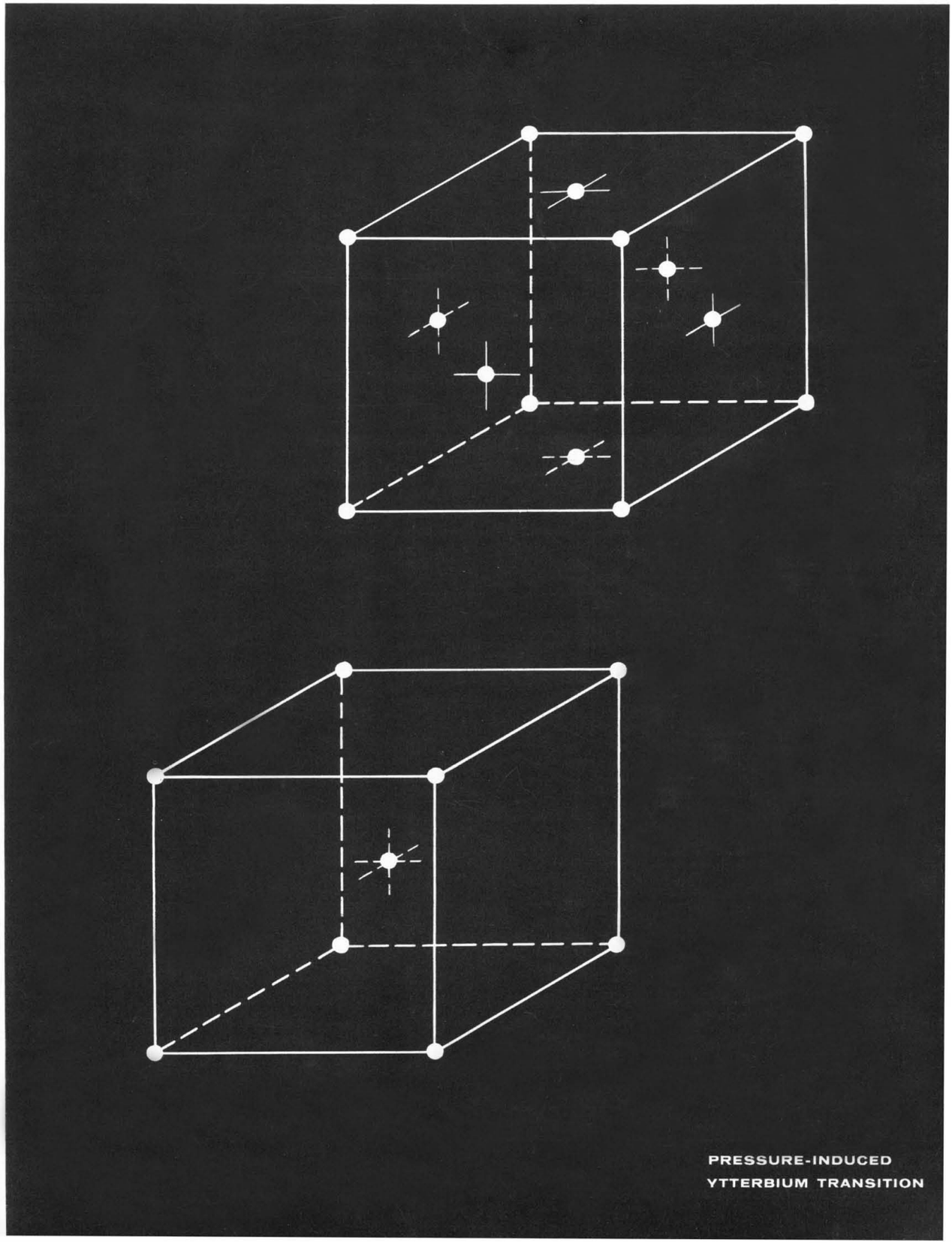
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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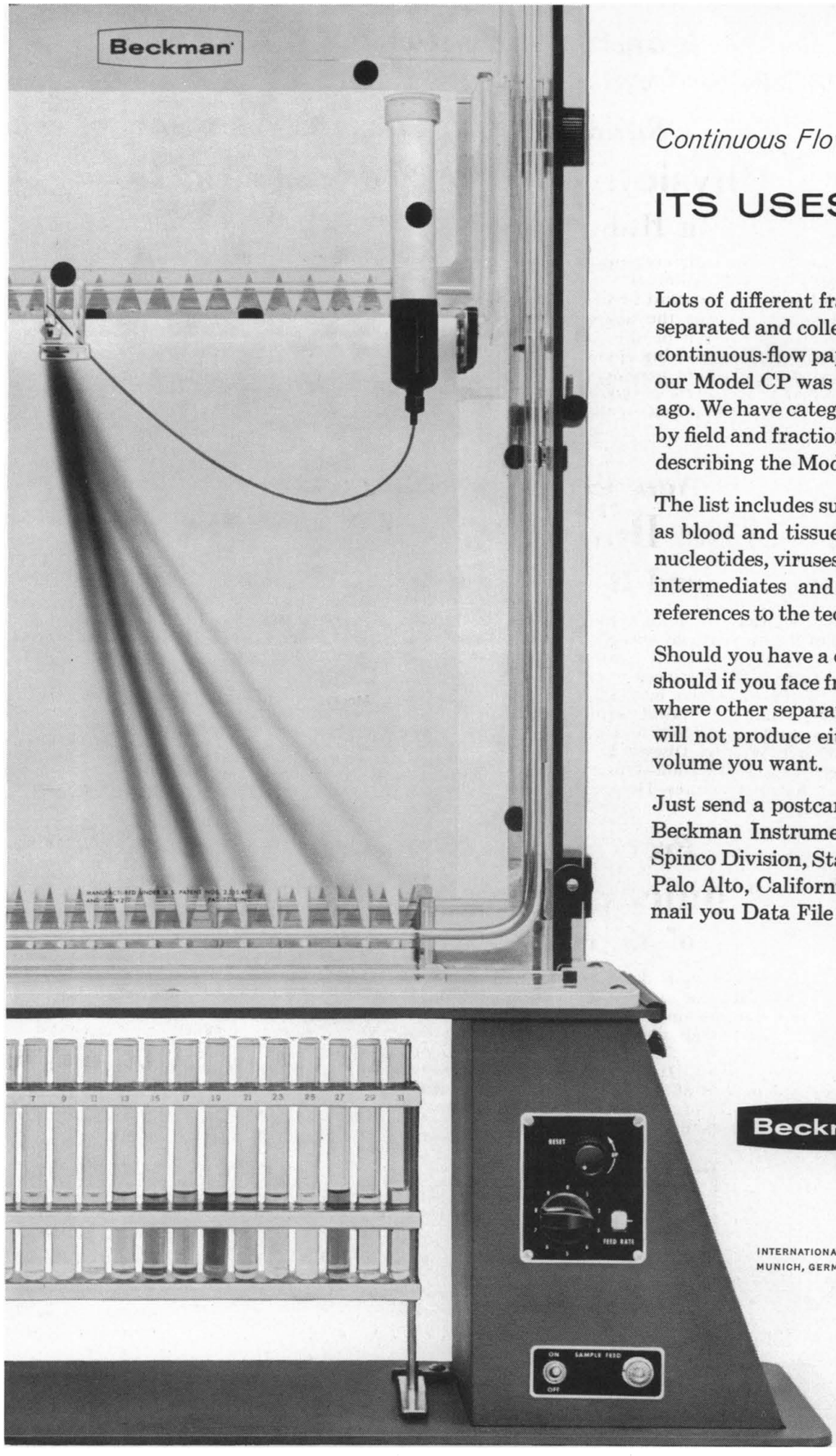

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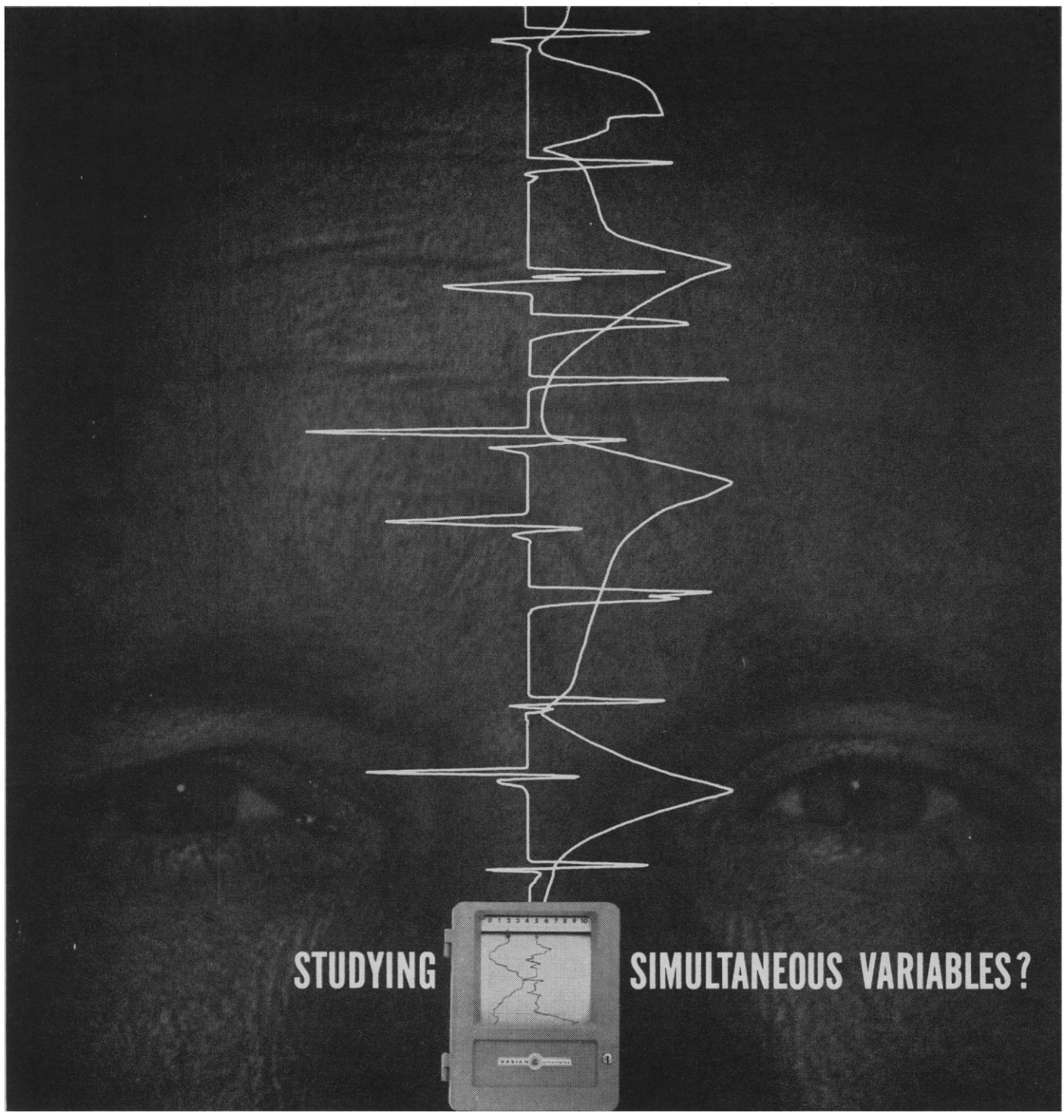

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VARIAN associates
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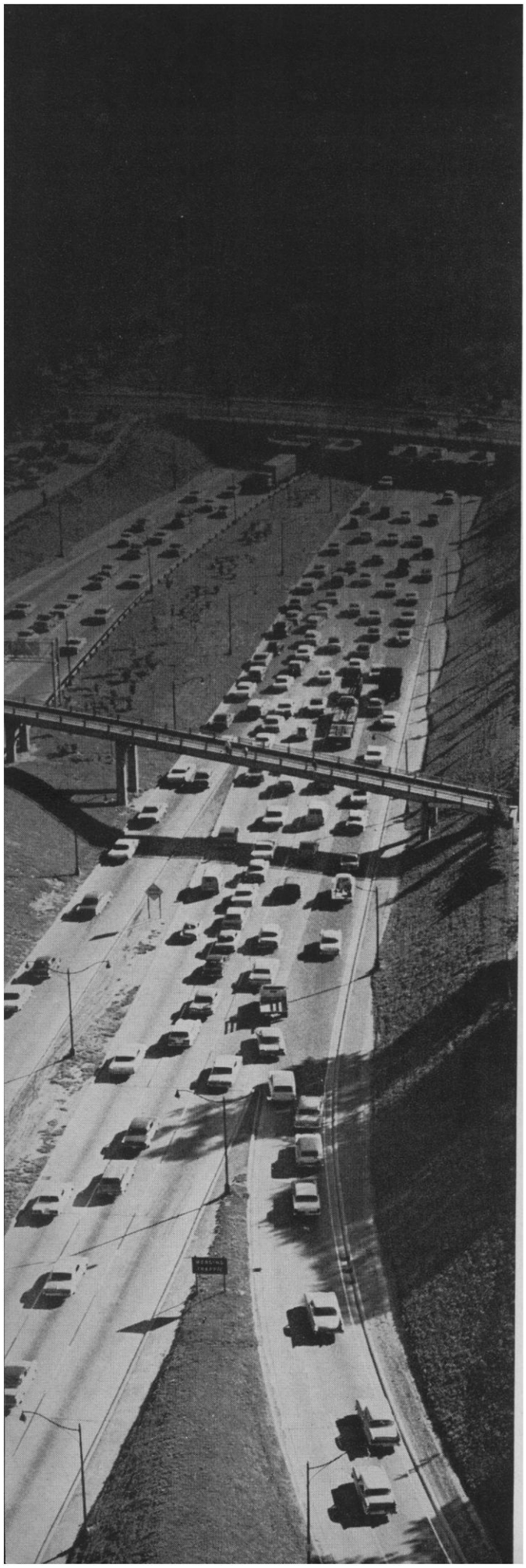
Cover

Face-centered cubic structure (top) and body-centered cubic structure (bottom). See page 111.



One of a series briefly describing GM's research in depth

Traffic theory, driver decisions, and car performance

Some problems confronting the individual in his everyday driving are beginning to be described in terms of traffic theory by scientists at the General Motors Research Laboratories.

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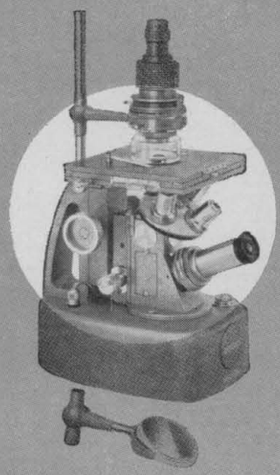
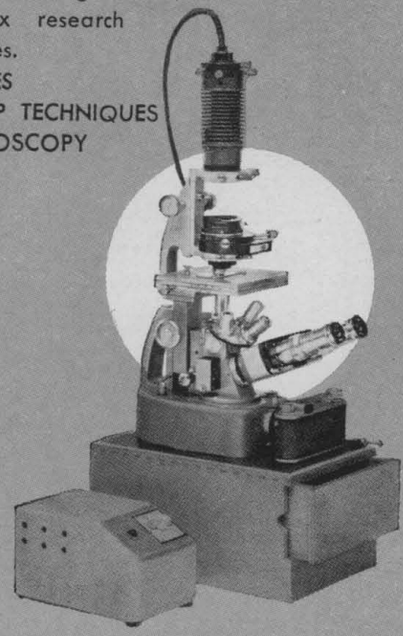
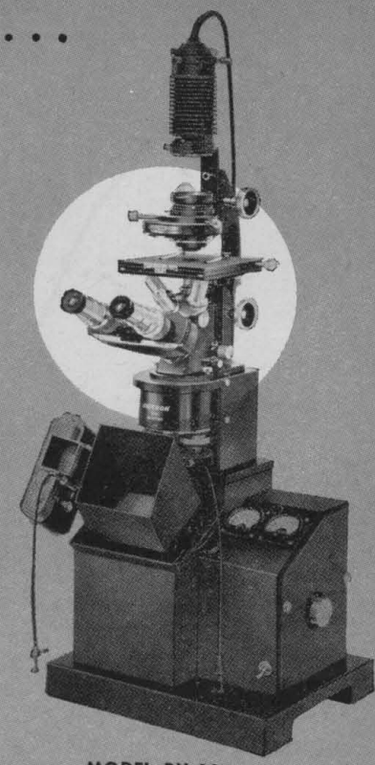


MODEL MIC



MODEL PH-BMIC



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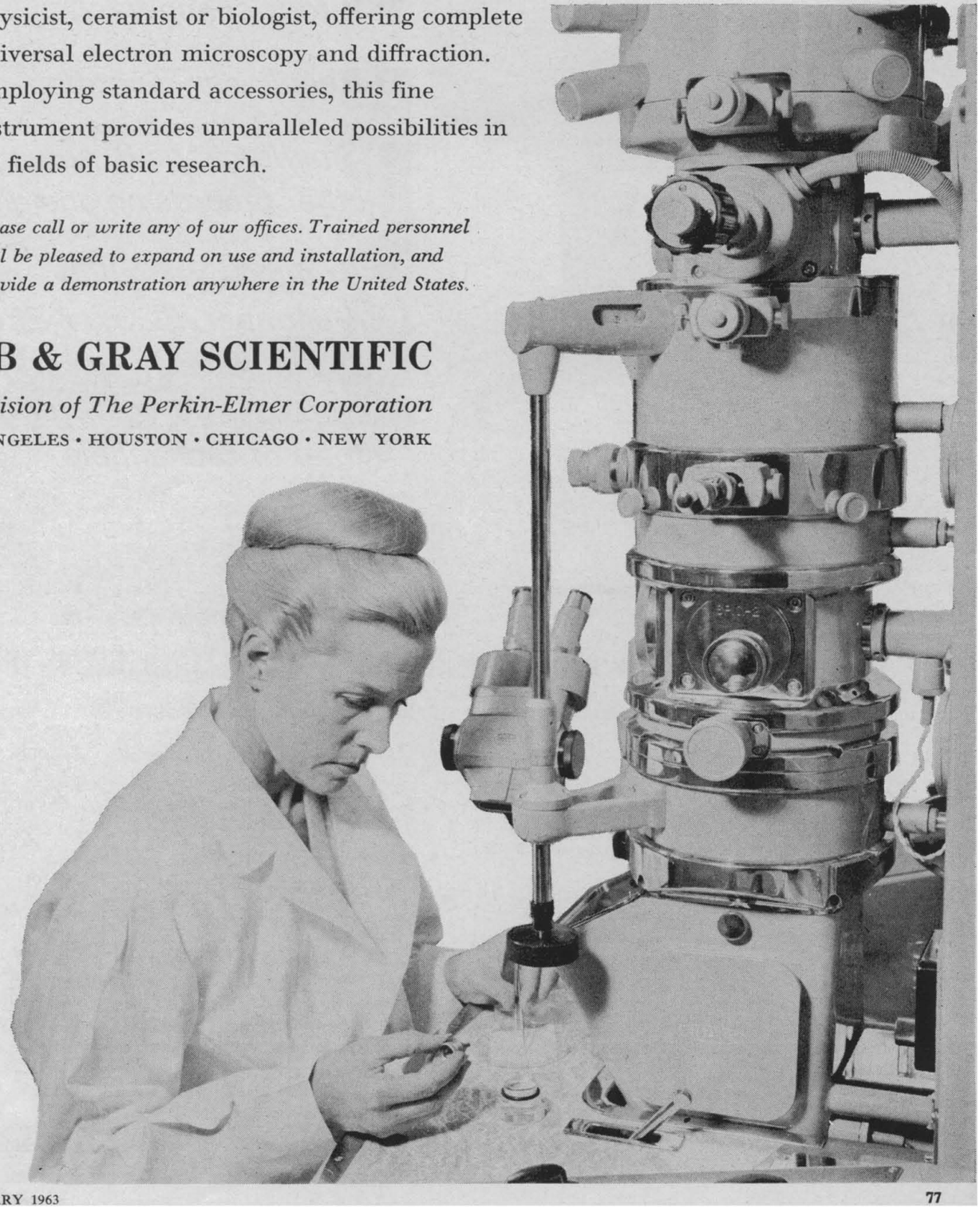

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Manpower or Mind Power

Numbers are the standard yardstick in studies of scientific personnel. They are the measure employed in comparisons of our scientific effort with the Russians' and are commonly used in government reports. This emphasis is disturbing. It carries the implication that scientists, like nuts and bolts, are interchangeable and can be mass-produced. The latest report exemplifying this tendency is entitled "Meeting Manpower Needs in Science and Technology" and was released 12 December by the President's Science Advisory Committee. The document calls for an increase in the number of Ph.D. degrees granted in the engineering, mathematical, and physical sciences from 2,900 in 1960 to 7,500 in 1970. To reach this goal the report proposes increased subsidies for graduate students. Given sufficient federal support, large numbers of men can be persuaded to undertake graduate study. Will such a program produce excellence?

Unfortunately the report barely mentions quality and offers no other inducement to scholarship than financial security. This is not astonishing. All of us can understand numbers and money. But who can measure or inspire creative genius? Scientists vary greatly in their effectiveness. One Enrico Fermi is more valuable to the nation than a thousand ordinary Ph.D.'s. When we increase the number of Ph.D.'s do we increase or do we diminish the probability of fostering such geniuses? I suspect that in the recent expansion of science quality has been diluted. This impression is based in part on my evaluation of some recent Ph.D. theses which would barely have earned an M.S. degree in an earlier period. Many papers today seem pedestrian. The experimental equipment employed usually is superb; the idea content too often is thin. Some graduate students in more than one eastern school are on the job only 40 hours a week. A desirable standard is more like 70 to 90 hours. This development indicates lack of motivation. A gifted individual has nothing if he is without drive and a sense of direction. A man of moderate endowment may show flashes of genius if he struggles hard enough. Some of the great scientists of the past were comparatively free from financial pressures; others were creative in spite of adversity. Most individuals seem to need a hardening experience to bring out their best. Giving such people financial security is as likely to hurt them as to help them. The Great Depression was a valuable experience for some scientists who were in their formative years at the time. Turning away from the negative aspects of lack of money, they emphasized the search for truth, the love of knowledge, the joy of discovery, the esteem of colleagues. Will these values seem important to the additional students who are lured into graduate school by increased subsidies? Implementation of the report should produce a fine crop of technologists for industry. It may diminish the number of gifted individuals with the necessary motivation to be truly creative. We hope that in planning for future manpower less attention will be directed toward numbers and more toward quality. The current report is the first in a series. Perhaps a later document will deal with these difficult but more important aspects of this national problem.—P.H.A.

Keyed to the needs of researchers in such diversified studies as Agricultural Chemistry, Biology, Geochemistry, Metallurgical and Historical Research, Organic Chemistry and Process Controls, the all-new TMC Activation Analysis Package offers the *first integrated system* for gamma radiation analysis.

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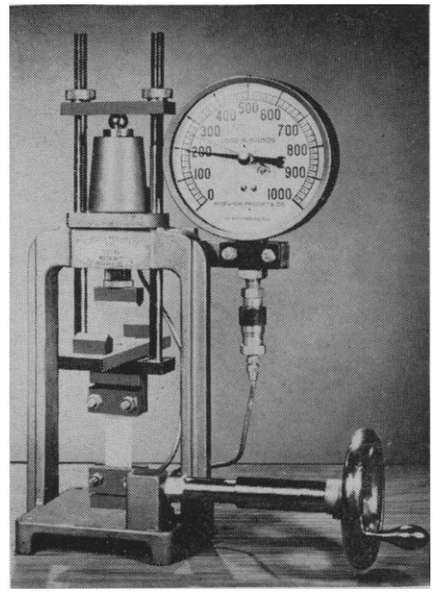
Moisture meter (model 507) is a noncontacting device that may be mounted over a conveyer belt, on the outside of a bin, or around a transfer pipe, to provide direct reading of percent water by weight. The moisture measurement is made by the use of neutron and gamma radiations. A beam of high-energy neutrons is directed from the gage to the material being measured. Some of the back-reflected neutrons are moderated by the hydrogen in the material. If this hydrogen represents water, the determination of the number of moderated neutrons is a measure of the moisture content per unit volume. To convert this to weight basis, a density measurement is made simultaneously by directing a beam of gamma rays into the material. The number of gamma rays reflected is an inverse function of the density. Independent signals representing thermal neutrons and reflected gamma rays are transmitted to an electronic unit where they are scaled to pounds per cubic foot and presented simultaneously to a ratio computer. The high-energy neutrons are provided by a plutonium-beryllium source with an output of about 3×10^6 neutrons per second. Gamma radiation is provided by 50 to 200 mc of cesium-137.—J.S. (Nuclear-Chicago Corp., Dept. S549, 359 E. Howard Ave., Des Plaines, Ill.)

SkeduFlo **computer** (model NTC-18) is a portable instrument designed for training in the critical-path method and the Pert system of project management. Capacity of the computer is 18 jobs, said to be sufficient to illustrate many of the interacting relationships characteristic of life-size project systems. The computer is self-contained, requiring no accessory equipment. Among the features of the training computer are: critical jobs are spotted immediately from neon-lamp indicators; all relevant data can be read directly from a built-in meter; project duration, amount of slack or float, earliest job starting times, and latest job completion times, are all available for direct reading: late-lights can be coupled into special jobs in the project to signal when any delay or change in any part of the project schedule causes these special jobs to fail to meet a preselected target date. The instrument weighs approximately 50 lb, including carrying case.—J.S. (Mauchly Associates, Inc., Dept. S572, Ft. Washington, Pa.)

Portable **moisture monitor** for hydrogen or oxygen gas overcomes the difficulty that, once hydrogen and oxygen are freed from water by electrolysis, the products of electrolysis readily recombine with the sample gas to produce more water. The type 26–304 moisture monitor operates on the dual-flow method in which readings are taken at two different sample flow rates. The difference between the two readings is said to be the true moisture content of the sample gas with accuracy of ±5 percent of full scale. Flow rates are automatically changed from 20 to 40 ml/min and back in 15-min cycles by a solenoid valve and timer. A zero suppress circuit nulls the total signal at the 20 ml/min flow rate so that when the flow rate is switched to 40 ml/min the instrument reads moisture content from 1 to 1000 ppm. A manual switch permits the instrument to be used for measurement of moisture of gases other than oxygen and hydrogen. The most sensitive range is 10 ppm full scale. Time for 63-percent response to a large step change at the inlet, either up-scale or down-scale, is 30 sec.—J.S. (Consolidated Electrodynamics Corp., Dept. S533, Pasadena, Calif.)

Catalog of **digital modules** provides 412 pages of information on specifications and application data of modules for construction of digital instruments and instrument systems. An introductory section of 7 pages provides a brief description of analog and digital computers and number systems. A 56-page section describes basic digital circuits that permit construction of a variety of general and special-purpose logic circuits using the modules. Four appendixes that provide additional background to digital techniques are titled: "Binary-coded decimal codes and arithmatic," "Boolean algebra," "Pulse train techniques," and "Bibliography of digital logic." The last includes introductory books and reference works. The remainder of the catalog presents detailed specifications of all of the manufacturer's modules and accessory equipment.—J.S. (Digital Equipment Corp., Dept. S573, Maynard, Mass.)

Testing machine for tensile and compression testing of materials at loads up to 1000 lb is compact and portable, but rugged enough for industrial use for quality control. The instrument is a desk-top device operated by a hydraulic piston and hand-operated screw pump, equipped with jigs and fixtures for a variety of tensile, flexural, or compressional testing applications. Hydraulic pressures are indicated on a 6-inch dial gauge that can be had in various ranges from 0 to 100 to 0 to 1000 lb/in.^{2} While intended for testing industrial materials, the range and size of the instrument make it suitable for many biological applications, such as homogenizing by pressure sieving or sudden



The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

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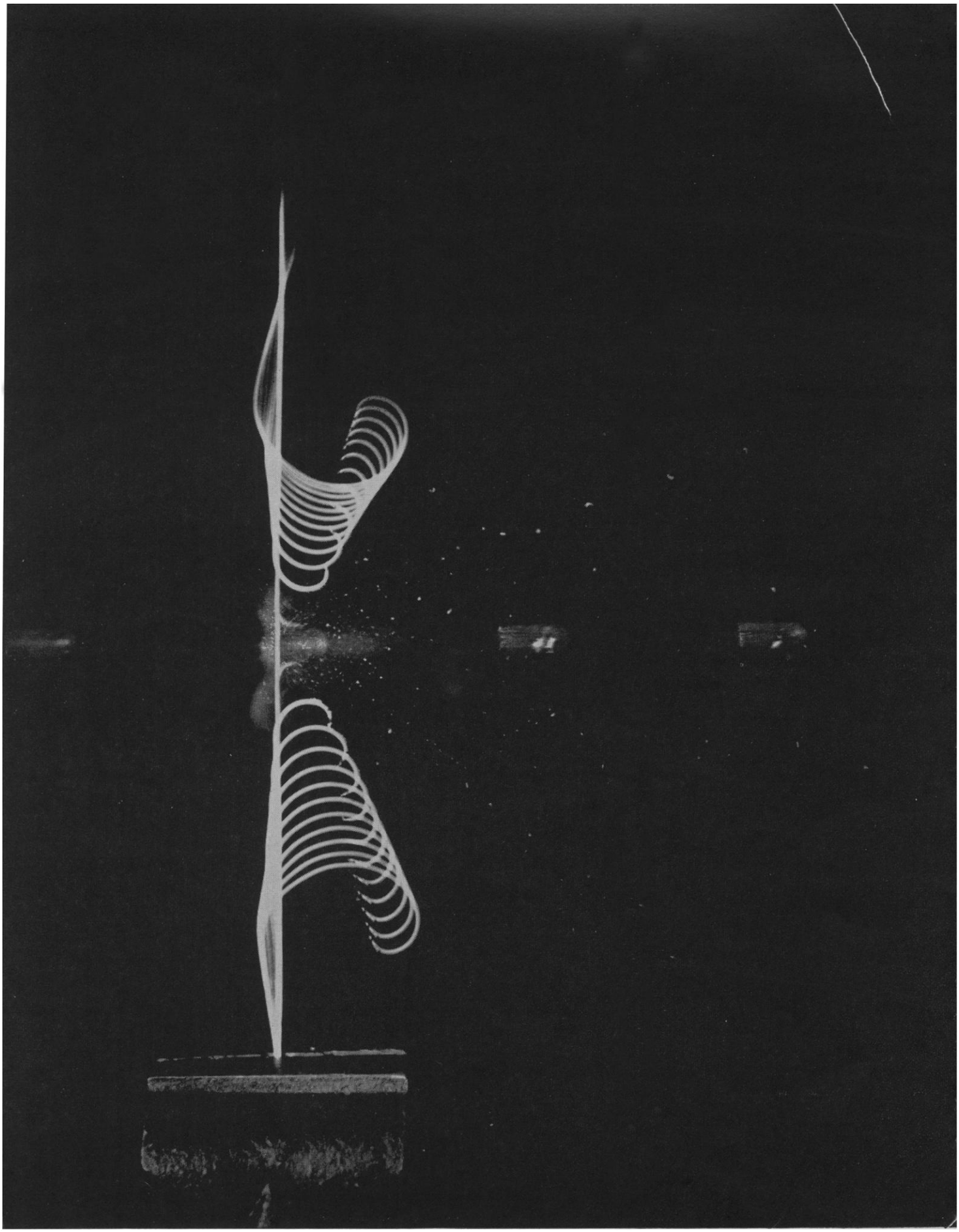
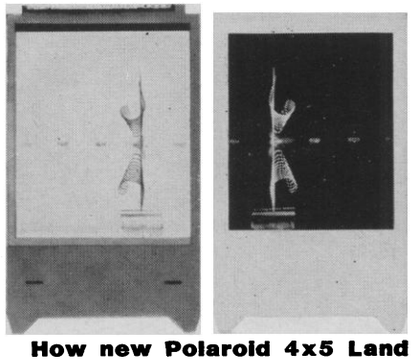


Dr. Harold Edgerton had a fully developed positive and a negative just 20 seconds after he took this multiple exposure of a .22 caliber bullet cutting a single copper wire. He used his new EG&G Multiple Microflash unit with a Speed Graphic loaded with **Polaroid P/N 4x5 film.**



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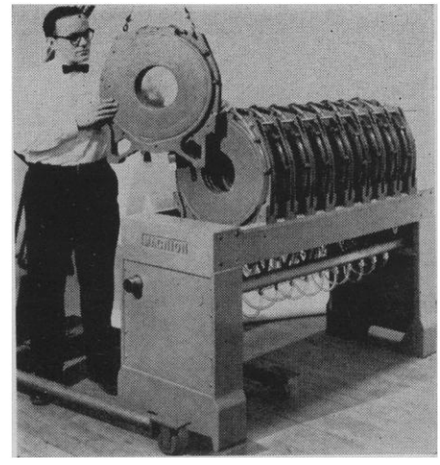
decompression, as well as the application to the testing of tensile and compression strengths of bone, tendon, and other tissues.—R.L.B. (Research Products Co., Dept. S548, P.O. Box 1047, 1415 Third St., South, St. Petersburg 31, Florida)

Melting point apparatus provides a simple, accurate means for determining the melting points of single crystals, micro or macro particles. Determinations may be made up to 360°C with an accuracy of ±0.5°C. A unique feature of the apparatus is a thermometer with a specially formed bulb having a depression for receiving the sample under test. This eliminates errors due to temperature differential between the sample and the thermometer. Changes in a single crystal weighing as little as 10 μg can be observed before, during, and after melting. A cover glass shields the thermometer bulb and sample from air currents. The National Melting Point Apparatus consists of a 75× microscope, with a built-in oblique-light illuminator, 330-watt variable transformer equipped with a voltmeter and ammeter, heating stage, and the 0 to 360°C thermometer. The variable transformer may be used separately for controlling the voltage of heating mantles and other electrical apparatus within its rated capacity.—R.L.B. (National Instrument Co., Dept. S547, 4119 Fordleigh Rd., Baltimore 15, Md.)

Bioamplifier is a compact, packaged plug-in unit with a voltage gain of 6000, intended for picking up electrical activity, such as EEG, EKG, EMG, and fetal EKG for monitoring these activities in clinical or research applications. The amplifier has an input impedance of 0.5 megohm, differential input, at least 80 db common mode rejection, and 3 μv peak to peak noise level. Frequency response is 0.4 cy to 5 kcy/sec and output impedance is 30,000 ohms. The volume of the unit without batteries is 0.675 in.^{3} and it weighs ½ oz. It requires +7 and −7 volts at 1 ma.—R.L.B. (Biocom, Inc., Dept. S543, 5883 Blackwelder St., Culver City, Calif.)

The Plasmaflux is an **integrated air-core solenoid system** designed for plasma dynamics experiments and the like. Continuous fields of up to 30 kgauss are said to be achieved in a bore 7-inches in diameter. Solenoid systems are available with inside diameters ranging from 1 to 12 inches. Static axial field ripple of less than 1 part in 10^3 are



obtained with 1-inch spacing between coil assemblies. Overall space factors, including all coolant passages and insulation, are said to be better than 90 percent and heat transfer rates exceed 250 w/in.—J.S. (Magnion Inc., Dept. S550, 195 Albany St., Cambridge 39, Mass.)

A line of **adjustable leaks** is designed for control of pressure down to 10^{-9} torr, control of signal intensity in mass spectrometers, gas tube back filling, gas flushing during bake-out operations, and other applications. Controlled flow range from 5×10^{-7} to 10^{-2} standard milliliter of air per second at 1 atm differential pressure is available in the model 72 unit. The model 11 covers the range from 5×10^{-2} to 10 standard ml/sec. Intermediate ranges are available. Controlled flow below the limit of detection with a mass spectrometer is said to be achieved by lowering inlet pressure. The adjustable leak is available with either bakable or nonbakable valves. The device is fabricated without organic materials. Setting is made by adjustment of a micrometer head.—J.S. (Andonian Associates, Inc., Dept. S541, 26 Thayer Rd., Waltham 54, Mass.)

Digital printer (model 1000) features printing speed of 20 lines per second with up to 20 columns of print. Spacing is six lines per inch. The printer accepts a 10-line coded input. A variety of input control signal voltage levels can be accommodated by selection of plug-in accessories. An inhibiting signal prevents change of data while the printer is in the print phase of its cycle. The instrument is completely solid state in design and operates on 115-volt, 60 cy/sec power. Either folded paper or rolled paper may be used.—J.S. (Franklin Electronics, Inc., Dept. S570, Bridgeport, Pa.)

Environmental testing unit (model ES-100) provides for simulation of space environments encountered up to 500 miles above the earth's surface. The unit will attain a pressure of 2×10^{-9} torr or less within 4 hours. A horizontal main chamber provides a working space of more than 2 ft^3. The evacuation system consists of a 7-inch oil diffusion pump and a 5-ft^3/min mechanical pump. Baffling is provided by a liquid-nitrogen trap and a water-cooled baffle. Effective speed is said to be 400 lit/sec in the chamber and 4000 lit/sec for condensable gases. Two 4-inch sight ports are provided for visual observation. Insulated heaters are provided to raise the surface temperature of the chamber to over 200°C.—J.S. (Jarrell-Ash Co., Dept. S557, 26 Farwell St., Newtonville 60, Mass.)

Vector vacuum-tube voltmeter (model 300A) measures in-phase, quadrature, and r.m.s. voltage. An electronic multiplier is used to drive a phase-sensitive instrument with characteristics similar to an electrodynamometer wattmeter. The instrument responds only to the fundamental input frequency of a complex signal when the reference terminals have a sine wave of that frequency applied to them. The in-phase meter deflection associated with the wattmeter is transformed into a quadrature meter deflection by the inclusion of a self-calibrated 90-deg phase shifter. By using the electronic multiplier as a squaring device, r.m.s. readings are obtained. An internal calibrating voltage can be used to check accuracy of the instrument. Voltage range is 1 mv to 300 volts. Accuracy is said to be ±2 percent of full scale. Frequency range is 15 cy to 30 kcy/sec. Signal input impedance is 2 megohms and reference input impedance is 1 megohm. Reference voltage may be 0.25 to 220 volts.—J.S. (Industrial Test Equipment Co., Dept S553, 55 E. 11th St., New York 3)

Silicon semiconductor strain-gage **load cell** (type 210) is used in measuring and monitoring tension of equipment used in a variety of underseas applications. The cells are available for force ranges from 0 to 100 to 0 to 100,000 lb. Piezoresistive transducers used are provided with temperature compensation and are designed to provide output levels of 250 mv to drive indicators and recorders directly without amplification.—J.S. (Braincon Corp., Dept. S566, Box 312, Marion, Mass.)

Electrometer converter (model MC-209) for digital voltmeters is essentially a stabilized high-voltage supply that substitutes its own current for the current normally drawn from the point of measurement. The instrument covers the voltage range 100 μv to 1 kv. It feeds back into the digital voltmeter a neutralizing current determined by a resistor. Since the direction of the current is towards the input terminals, and since the resistor and the voltage source are in parallel with the input, the resistor can be considered a "negative shunt resistance," supplying energy to the circuit. The total range of the instrument is covered in seven settings. Input resistance is said to be infinite when the instrument is properly balanced, and 1000 times the input resistance of the digital voltmeter when casually balanced. The minimum input resistance that can be compensated fully is 1 megohm. Speed of manual operation of the instrument is said to be greater than the manual operation of a potentiometer with electronic null indicator.—J.S. (Micronia Amplifier Corp., Dept. S609, Box 269, Port Washington, N.Y.)

Meetings

Gordon Research Conference

A Winter Gordon Research Conference on polymers will be held from 4 to 8 February 1963 in Santa Barbara, California, at the Miramar Hotel. The Polymer Group of the Southern California Section of the American Chemical Society developed the early plans for this conference. The purpose of the Gordon Research Conferences is to stimulate research in universities, research foundations, and industrial laboratories. The Summer conferences are held in New Hampshire [see *Science* **135**, 932 (1962)].

Attendance at the conference, limited to approximately 100, is by application. Individuals interested in attending should apply immediately to the director of the conferences, Dr. W. George Parks, University of Rhode Island, Kingston. Applications must be submitted in duplicate on the standard form, which may be obtained from the office of the director. The applications will be reviewed by the Conference Committee. This committee, in selecting the participants, will distribute the attendance as widely as possible among the institutions and laboratories represented by the applications. A registration card will be mailed to those selected. Advance registration by mail is required; this is completed when the registration card, with a deposit of $15, is received in the office of the director. A registration card not accompanied by the $15 deposit will not be accepted. This advance deposit is not required of scientists from foreign countries.

A fixed fee of $115 has been established for resident conferees, covering registration, room, and meals. This fee was established to encourage attendance for the entire conference and to increase the special fund that is available to the conference chairman for assisting participants who attend the conference wholly or in part at their own expense.

The participants are expected to live at the conference location because one of the objectives of the conference is to provide a place where scientists can get together informally to discuss scientific research. All participants are urged to attend the conference for the entire week. Under special circumstances conferees will be permitted to stay at locations other than the site of the conference. Such nonresident conferees will be charged a registration fee of $50.

Conferees living at the conference location who will pay all or part of the fixed fee as a personal expense may request a reduction of $25 in the fixed fee. Application for this special fee must be made when the registration card is returned to the director.

Accommodations are available for wives who wish to accompany their husbands, and for children 12 years of age and over. All such requests should be made at the time the attendance application is submitted. The charge for room and meals for a guest is $75.

Polymers

Robert Simha, *chairman*
Maurice L. Huggins, *vice chairman*

4 Feb. J. R. Van Wazer, "Random and non-random reorganization, including functionality changes; application to inorganic systems"; C. A. Klein, "Crystal structure and physical properties of pyrolytic graphites"; L. A. Wall, "Some remarks on high temperature polymers."

5 Feb. J. D. Ferry, "The role of free volume in the dependence of viscoelastic properties on molecular weight dis-

tribution and in time-dependent viscoelastic properties near the glass transition temperature"; T. G. Fox, "Free volume, chain entanglements and the properties of concentrated polymer systems."

6 Feb. J. Vinograd, "Equilibrium sedimentation of biological macromolecules in a density gradient"; J. J. Hermans, "Application of density gradient centrifugation to synthetic polymers"; R. L. Baldwin, "Physical chemistry of synthetic DNA's."

7 Feb. B. H. Zimm, "Theory of uncoiling of DNA molecules"; E. P. Geiduschek, "Physico-chemical and biological properties of cross-linked DNA molecules"; H. F. Mark, "Recent progress in polymer research"; business session.

8 Feb. Contributions on recent research.

W. GEORGE PARKS
University of Rhode Island, Kingston

Forthcoming Events

February

4–8. **Rice Genetics** and **Cytogenetics**, symp., Los Baños, Laguna, Philippines. (Intern. Rice Research Inst., Manila Hotel, Manila, Philippines)

4–9. Recent Trends in **Iron and Steel Technology**, symp., Jamshedpur, India. (Secretary, Indian Inst. of Metals, 31 Chowringhee Rd., Calcutta, India)

4–20. Application of **Science and Technology** for the Benefit of Less Developed Areas, U.N. conference, Geneva, Switzerland. (Science Conference Staff, Agency for International Development, 826 State Dept. Annex 1, Washington 25)

5–14. International **Radio** Consultative Committee, Plan Subcommittee for Asia, New Delhi, India. (V. Barthoni, 128 rue de Lausanne, Geneva, Switzerland)

6–9. American College of **Radiology**, Chicago, Ill. (F. H. Squire, Presbyterian–St. Luke's Hospital, 1753 W. Congress St., Chicago 12)

7–8. **Industrial Pharmacy**, 2nd seminar, Austin, Tex. (L. R. Parker, Pharmacy Extension Service, Univ. of Texas, Austin 12)

8–18. United Nations Committee on **Industry and Natural Resources** in Asia and the Far East, Bangkok, Thailand. (S. Santitham, Rajadamnern Ave., Bangkok)

10–15. **Management** Function in Research and Development, conf., Pasadena, Calif. (Management Development Section, Industrial Relations Center, California Inst. of Technology, Pasadena)

10–16. **Planned Parenthood**, intern. conf., Singapore. (V. Houghton, Intern. Planned Parenthood Federation, 69 Eccleston Sq., London, S.W.1, England)

11–14. American Soc. of **Heating, Refrigerating, and Air-Conditioning Engineers**, New York, N.Y. (R. C. Cross, 345 E. 47th St., New York 17)

11–14. Industrial **Lubrication**, intern. conf. and exhibit, London, England. (E. V. Paterson, Scientific Lubrication, 217a Kensington High St., London W.8)

11–15. Quantum **Electronics**, intern. symp., Paris, France. (Secrétariat, Troisième Congrès International d'Electronique Quantique, 7 rue de Madrid, Paris 8e)

12–14. **Lysozomes**, symp. (by invitation), London, England. (Ciba Foundation, 41 Portland Pl., London W.1)

13–15. **Electrochemistry**, 1st Australian conf., part I, Sydney, Australia. (F. Gutmann, Physical Chemistry Dept., Univ. of New South Wales, Kensington, N.S.W., Australia)

13–16. National Soc. of College Teachers of **Education**, Chicago, Ill. (E. J. Clark, Indiana State College, Terre Haute)

14–15. American Soc. for **Quality Control**, Textile and Needles Trades Div., annual conf., Clemson, S.C. (H. F. Littleton, c/o Charles H. Bacon Co., Lenoir City, Tenn.)

15–14 Apr. **Aeronautics and Space**, intern. exhibition, São Paulo, Brazil. (Santos Dumont Foundation, Avenida Ipiranga Nº. 84, São Paulo)

16–23. Caribbean **Dental** Convention, Port of Spain, Trinidad. (A. V. Awon, 43–45 Frederick St., Port of Spain)

17–21. Technical Assoc. of the **Pulp and Paper** Industry, annual, New York, N.Y. (TAPPI, 360 Lexington Ave., New York 17)

18–20. American **Standards** Assoc., natl. conf., New York, N.Y. (ASA, 10 E. 40 St., New York 16)

18–20. **Biophysical** Soc., annual, New York, N.Y. (A. Mauro, Rockefeller Inst., New York)

18–20. **Electrochemistry**, 1st Australian conf., part II, Hobart, Tasmania. (J. N. Baxter, Chemistry Dept., Univ. of Tasmania, Hobart)

18–25. Expert Committee on **Food Additives**, FOA/WHO, Rome, Italy. (Intern. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome)

19–22. **Radiochemistry**, inter-American conf., Montevideo, Uruguay. (Pan American Union, Washington 6)

20–22. Fundamental **Cancer** Research, annual symp., Houston, Tex. (L. Dmochowski, Section of Virology and Electron Microscopy, M. D. Anderson Hospital, Houston 25)

20–22. **Solid-State Circuits**, intern. conf., Philadelphia, Pa. (F. J. Witt, Bell Telephone Laboratories, Inc., Murray Hill, N.J.)

20–23. National Assoc. for Research in **Science Teaching**, Washington, D.C. (J. D. Novak, Biological Science Dept., Purdue Univ., Lafayette, Ind.)

20–24. Diseases of the **Chest**, intern. congr., New Delhi, India. (M. Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.)

21–22. American Soc. for **Quality Control**, regional conf., Las Vegas, Nev. (S. R. Wood, Dept. 61, Bldg. 160, Aerojet-General Corp., Azusa, Calif.)

22–23. American **Psychopathological** Assoc., annual, New York, N.Y. (F. A.

Freyhan, c/o St. Elizabeths Hospital, Washington 20, D.C.)

23–28. American Soc. for **Testing** and **Materials**, Atlantic City, N.J. (H. H. Hamilton, 1916 Race St., Philadelphia 3, Pa.)

24–25. Unit Processes in **Hydrometallurgy**, symp., Dallas, Tex. (F. T. David, Colorado School of Mines, Golden)

24–27. **Diffusion**, intern. conf., Palm Springs, Calif. (J. A. Biles, Univ. of Southern California, School of Pharmacy, Los Angeles 7)

24–28. American Inst. of **Mining, Metallurgical, and Petroleum Engineers**, annual, Dallas, Tex. (E. Kirkendall, AIME, 345 E. 47 St., New York 17)

25–27. Advanced **Marine Engineering** Concepts for Increased Reliability, symp., Ann Arbor, Mich. (G. L. West, Jr., Dept. of Marine and Nuclear Engineering, Univ. of Michigan, Ann Arbor)

25–1. **Environmental Engineering**, natl. conf., Atlanta, Ga. (W. H. Wisely, American Soc. of Civil Engineers, 345 E. 47 St., New York, N.Y.)

26–27. **Dairy Engineering**, natl. conf., East Lansing, Mich. (C. W. Hall, Dept. of Agricultural Engineering, Michigan State Univ., East Lansing)

26–1. Society of **Plastics Engineers**, annual technical conf., Los Angeles, Calif. (G. P. Kovach, Foster Grant Co., 289 N. Main St., Leominster, Mass.)

27–3. American College of **Cardiology**, Los Angeles, Calif. (D. Scherf, 55 E. 86 St., New York 27)

28–2. Experimental Aspects of **NMR Spectroscopy**, Pittsburgh, Pa. (W. A. Straub, Applied Research Laboratory, U.S. Steel Corp., Monroeville, Pa.)

March

1–3. **Developing Brain and Binding Sites** of Brain Biogenic Amines, intern. symp., Galesburg, Ill. (H. E. Himwich, Research Div., Galesburg State Research Hospital, Galesburg)

2–6. Canadian Assoc. of **Radiologists**, annual, Quebec, Canada. (J. L. Léger, 1555 Summerhill Ave., Montreal 25, P.Q., Canada)

4–6. Association of **Iron and Steel Engineers**, western meeting, Los Angeles, Calif. (T. J. Ess, 1010 Empire Bldg., Pittsburgh 22, Pa.)

4–6. **Wildlife Management** Inst., Detroit, Mich. (C. R. Gutermuth, 709 Wire Bldg., Washington 5)

4–8. **Analytical Chemistry and Applied Spectroscopy**, 14th annual, Pittsburgh, Pa. (W. A. Straub, Applied Research Laboratory, U.S. Steel Corp., Monroeville, Pa.)

4–9. **Astronautics**, 3rd Inter-American symp., São Paulo, Brazil. (Symp. Secretariat, Sociedade Interplanetaria Brasileira, Caixa Postal 6450, São Paulo)

5–7. **Plant Engineering and Maintenance**, 4th southeastern seminar, Charlotte, N.C. (A. Brown, Service Engineering Associates, Inc., P.O. Box 2665, Atlanta, Ga.)

5–8. Committee on **Textile Materials**, New York, N.Y. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia 3, Pa.)

5–9. Application of **Radioisotopes in Hydrology**, symp., Tokyo, Japan. (IAEA, 11 Kärntner Ring, Vienna 1, Austria)

6. American Assoc. of **Psychiatric Clinics for Children**, annual, Washington, D.C. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

6–9. American **Orthopsychiatric** Assoc., annual, Washington, D.C. (American Psychiatric Assoc., 1700 18th St., NW, Washington 9)

7–9. German Soc. of **Endocrinology**, 10th symp., Vienna, Austria. (H. Nowakowski, Deutsche Gesellschaft für Endokrinologie, c/o II. Medizinische Universitätsklinik, Hamburg-Eppendorf, Germany)

9. **Linguistics**, 8th annual, New York, N.Y. (L. Pap, State Univ. College, New Paltz, N.Y.)

10–13. American Inst. of **Chemical Engineers**, New Orleans, La. (J. Henry, 345 E. 47th St., New York, N.Y.)

10–20. **Nutrition** Problems in Latin America, 5th U.N. Food and Agriculture Organization conf., Lima, Peru. (Intern. Agency Liaison Branch, Office of the Director General, Viale della Terme di Caracalla, Rome, Italy)

11–16. Numerical **Weather Forecasting**, World Meteorological Organization/International Union of Geodesy and Geophysics, intern. symp., Oslo, Norway. (World Meteorological Organization, Geneva, Switzerland)

14. Assoc. of **Vitamin Chemists**, Chicago, Ill. (H. C. Spruth, Abbott Laboratories, 14th and Sheridan, North Chicago)