SCIENCE

7 January 1966
Vol. 151, No. 3706

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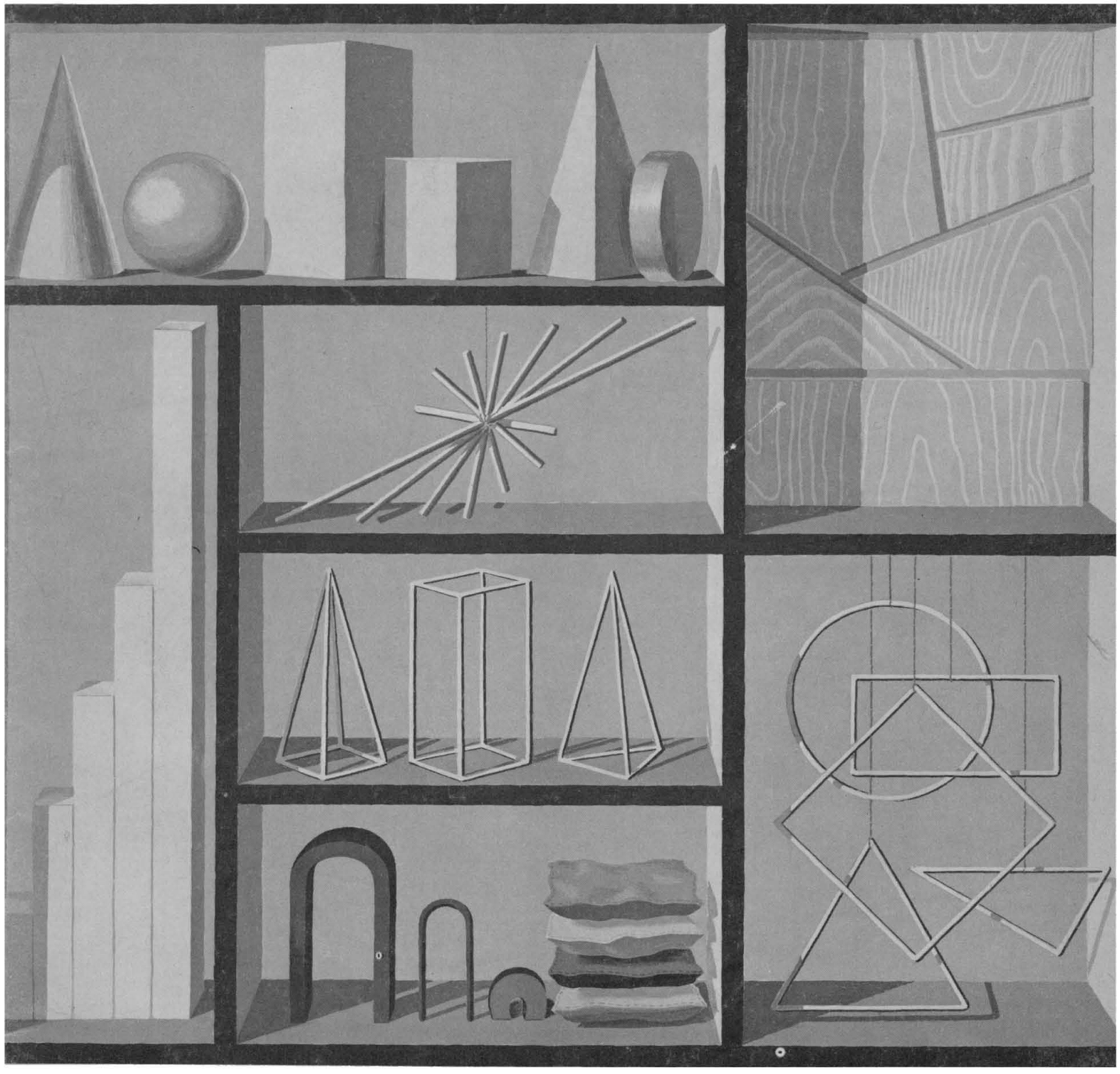

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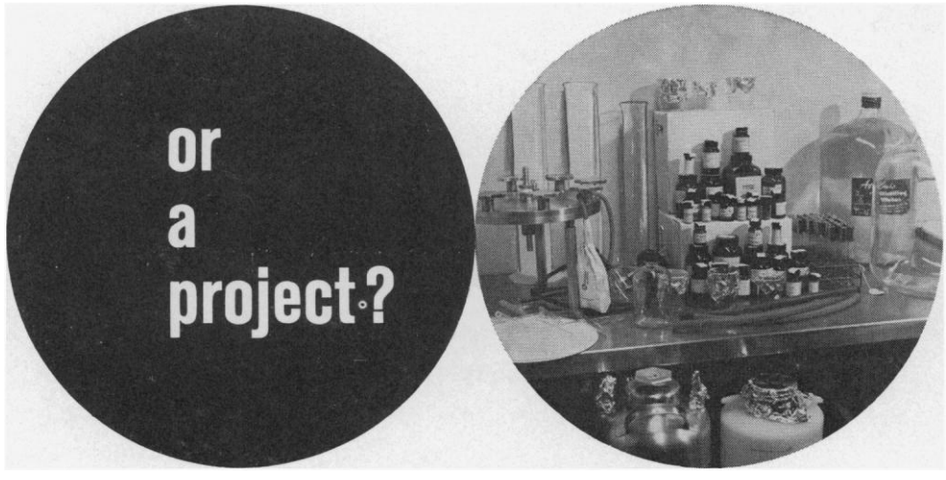

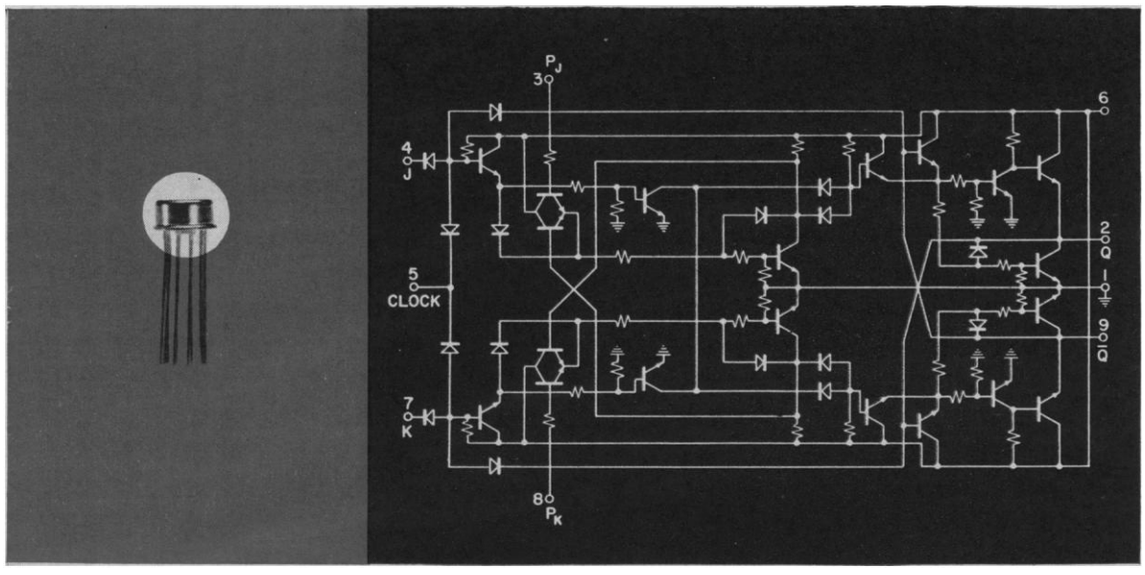

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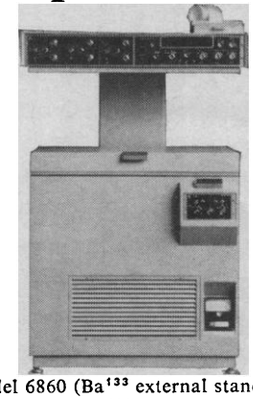

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COVER

An experiment in science education, *Science—A Process Approach*, is being carried on by the AAAS Commission on Science Education. The scheme centers on developing children's skills in using scientific procedures. Depicted on the cover is some of the equipment used by children of kindergarten age to learn the processes of measuring, observing, and using space-time relations. See page 49. [Federal Graphics, Washington, D.C.]

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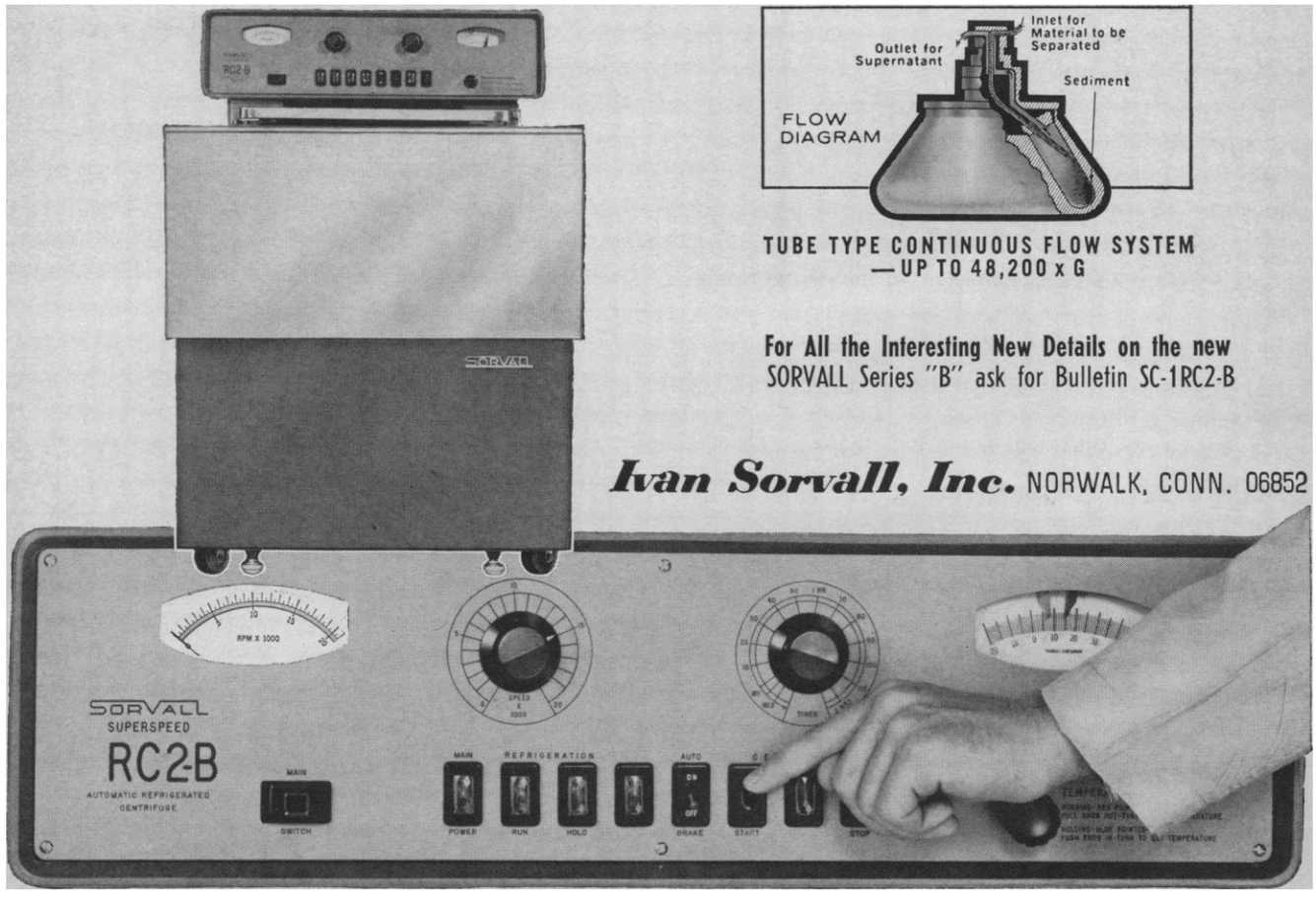

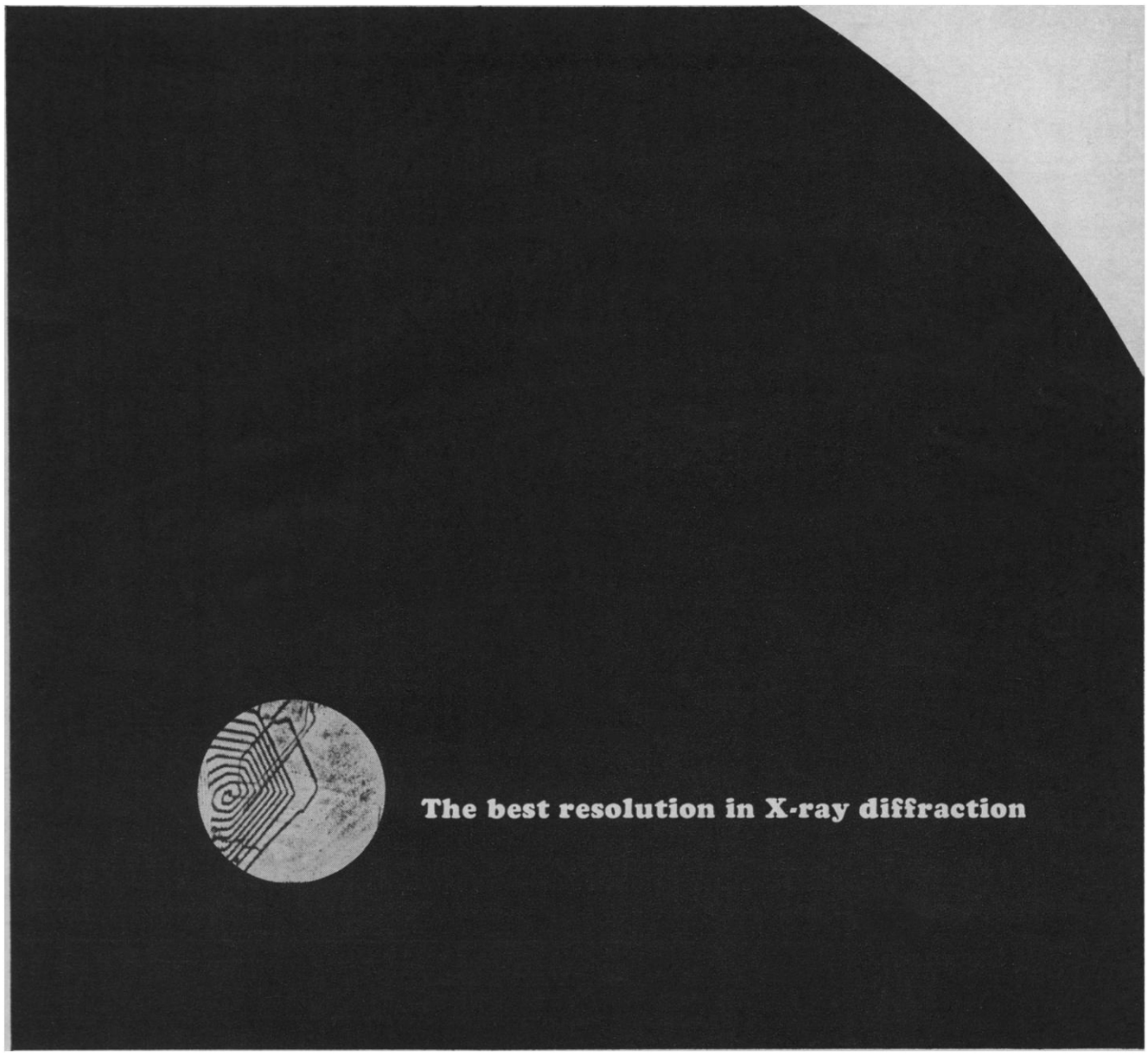

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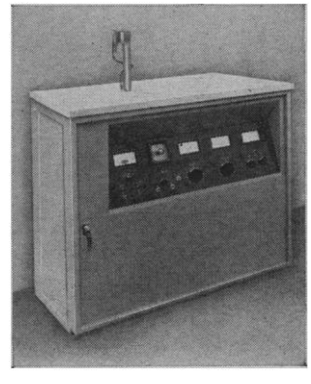

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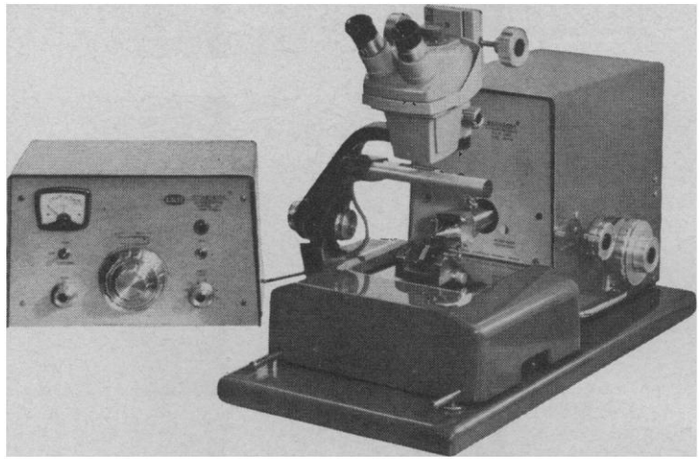

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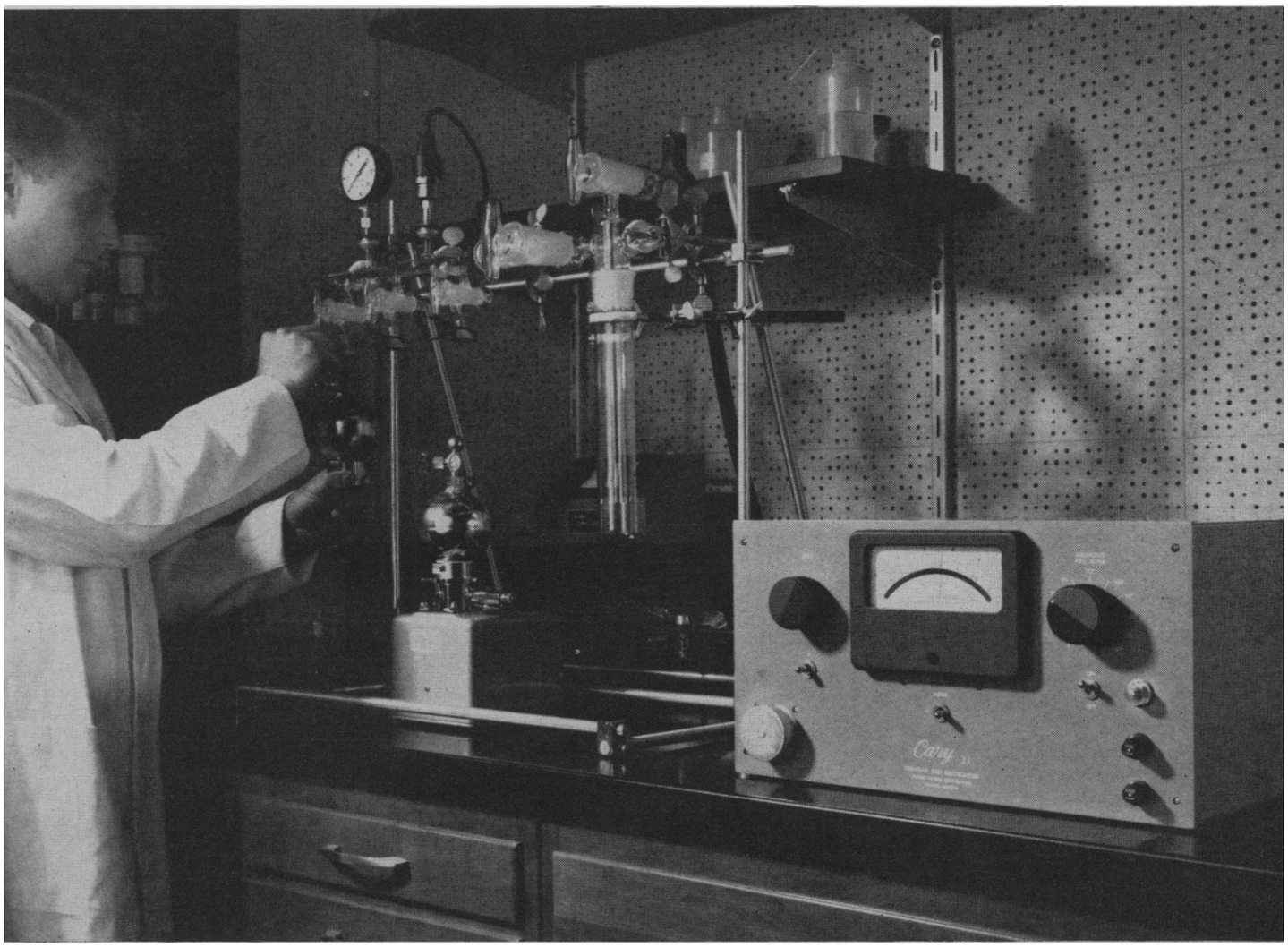

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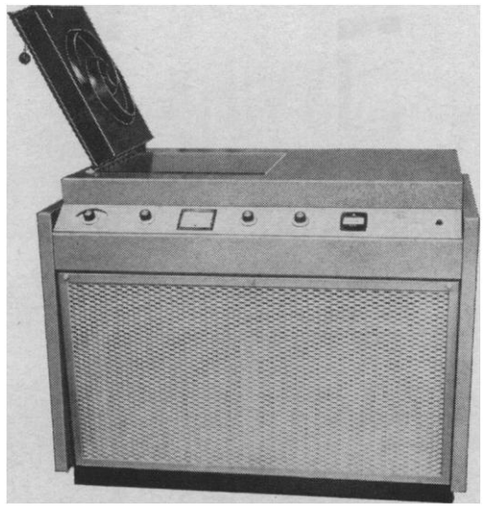

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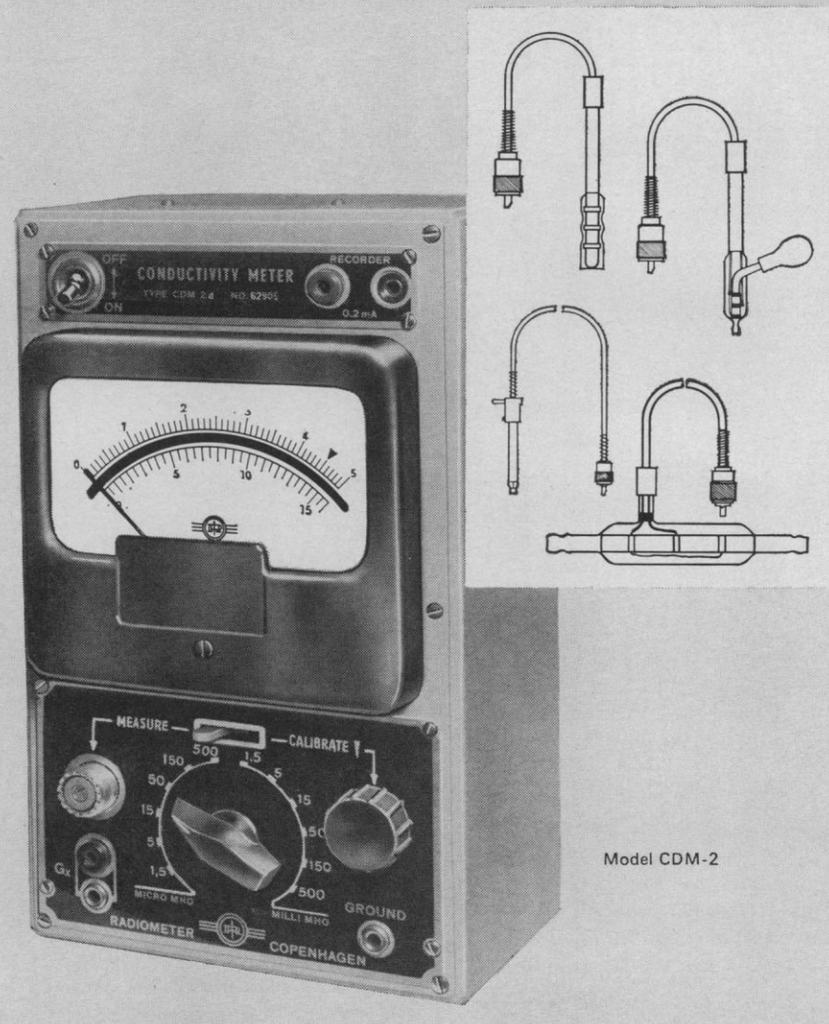

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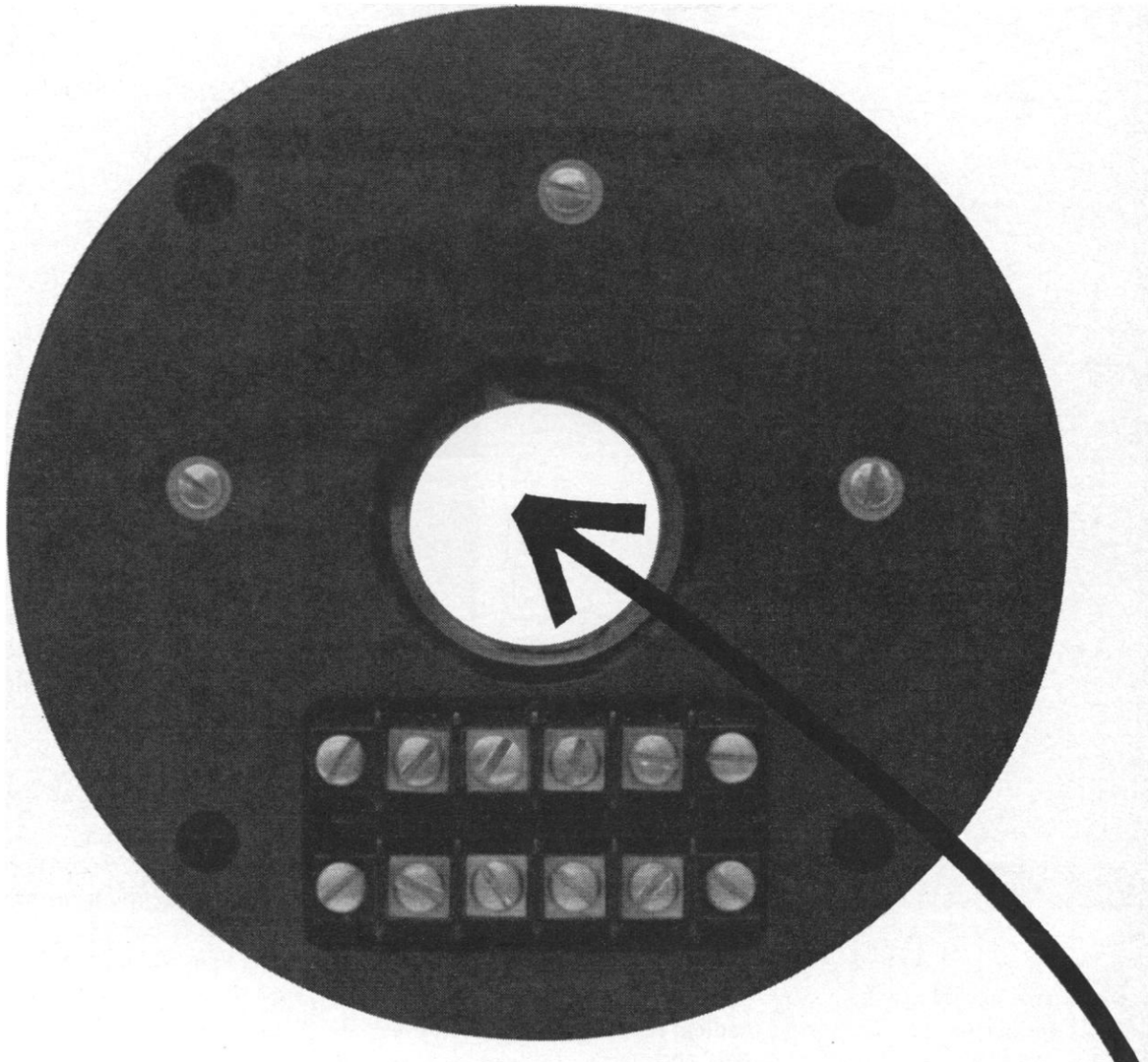

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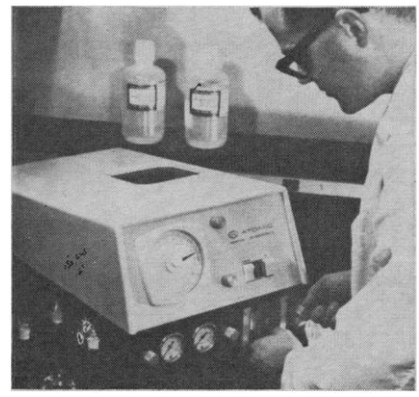

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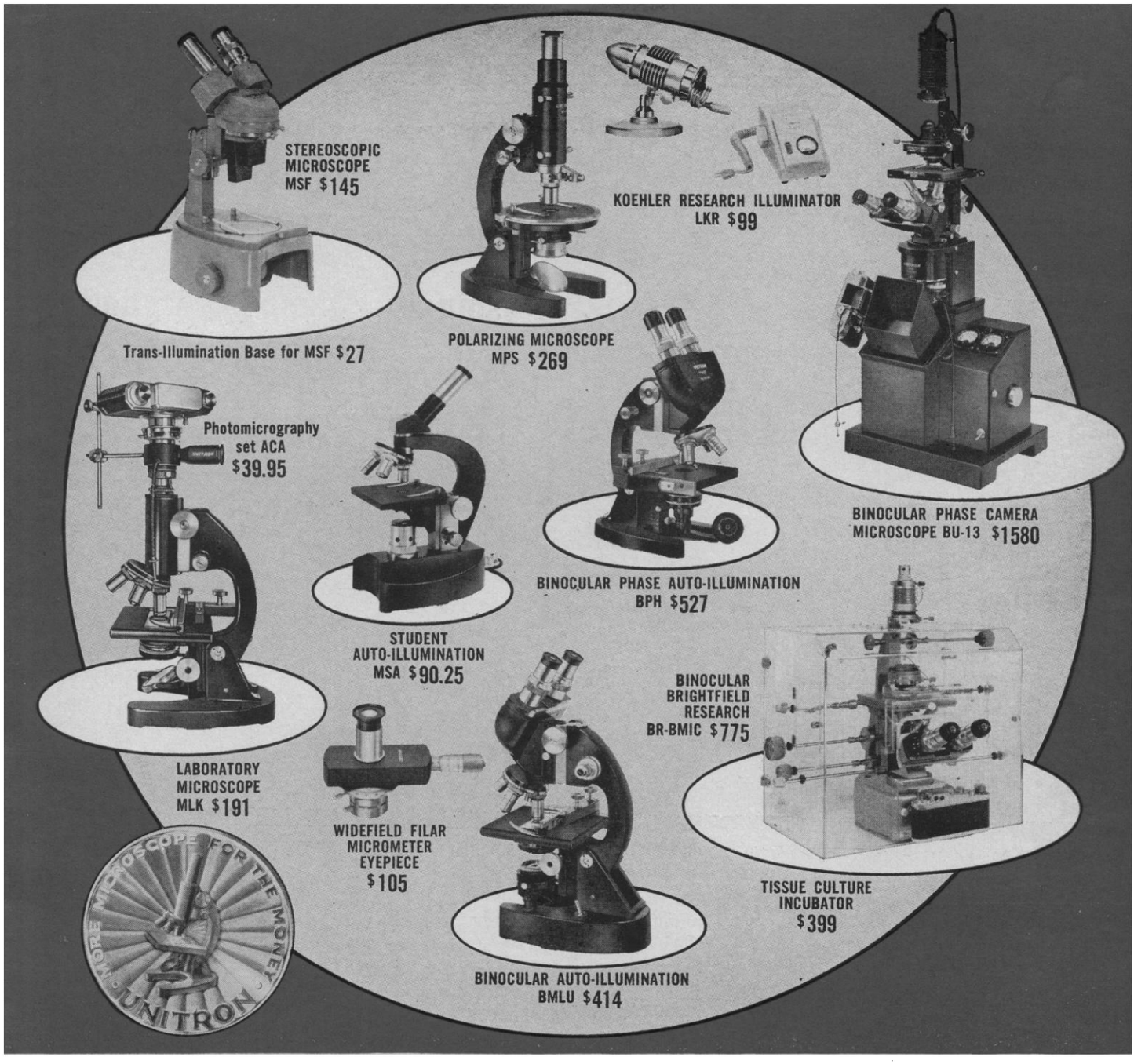

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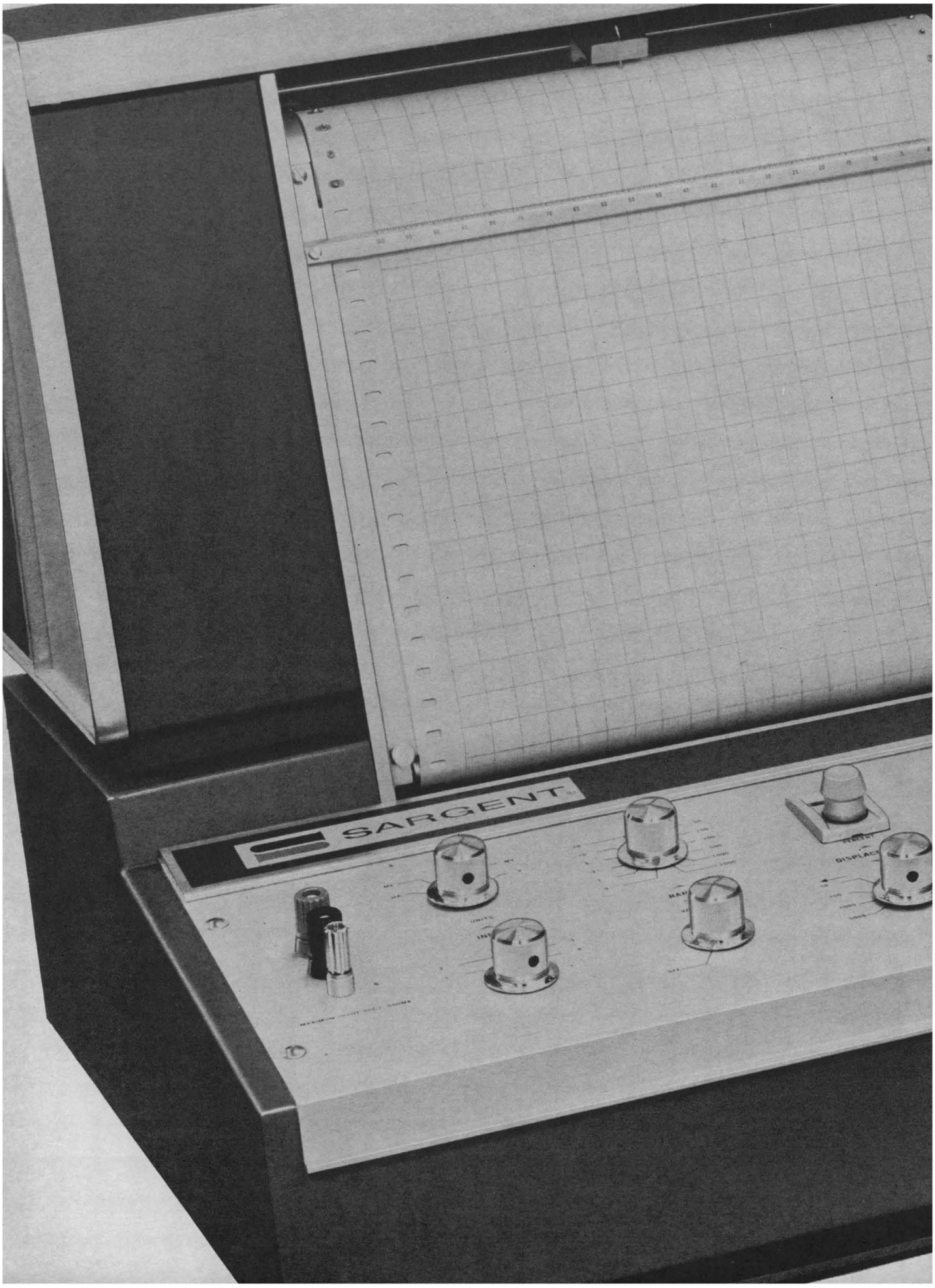
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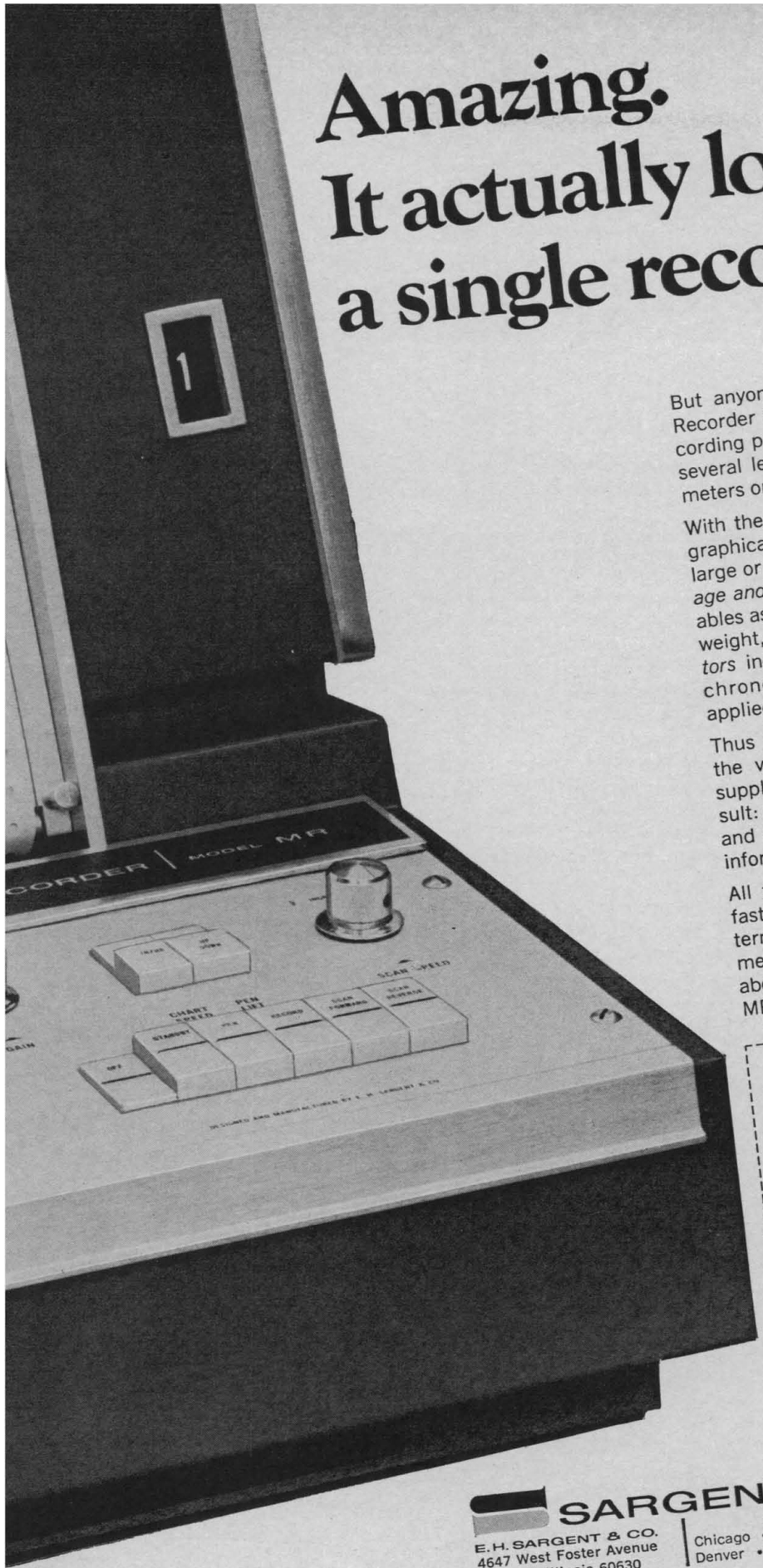

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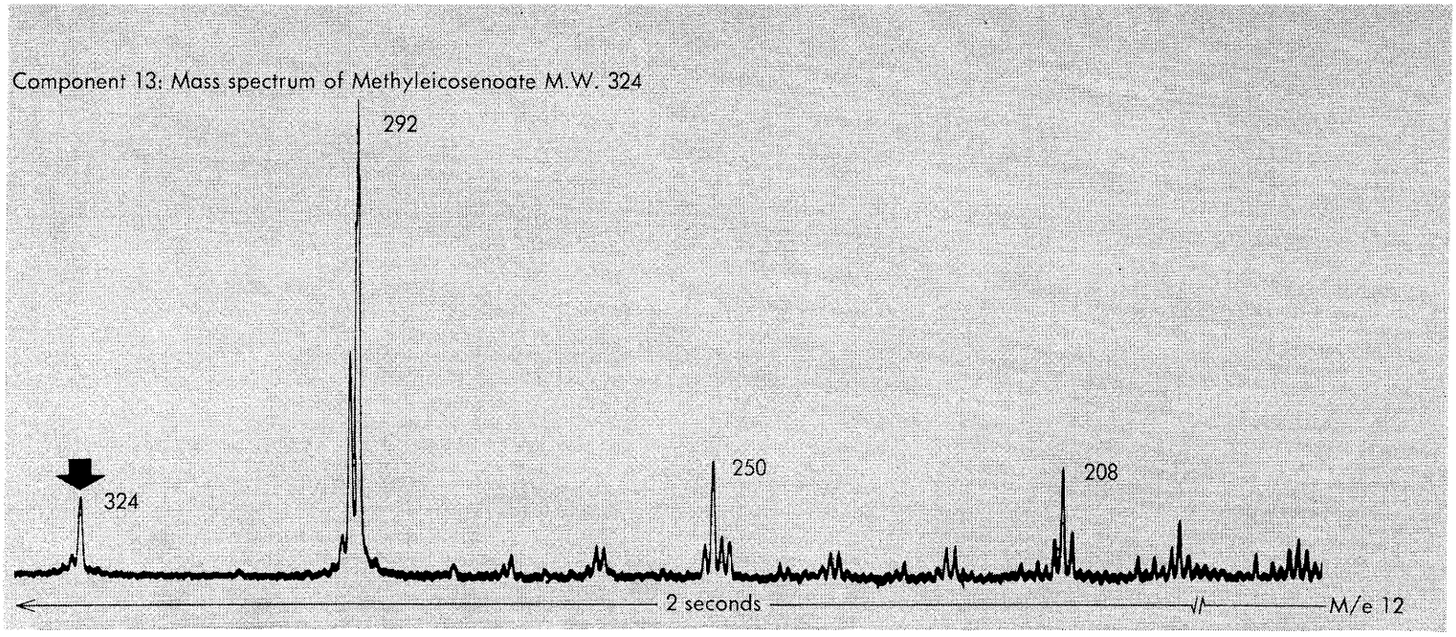

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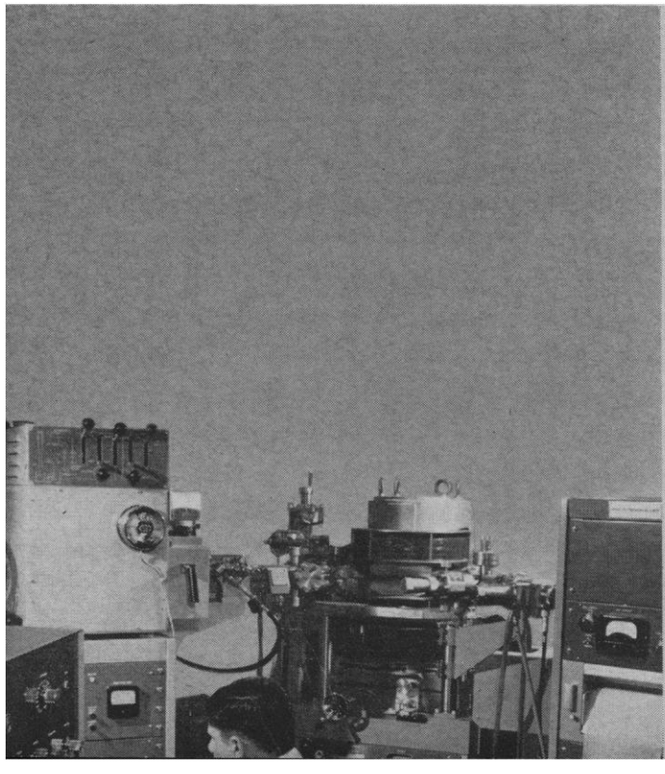
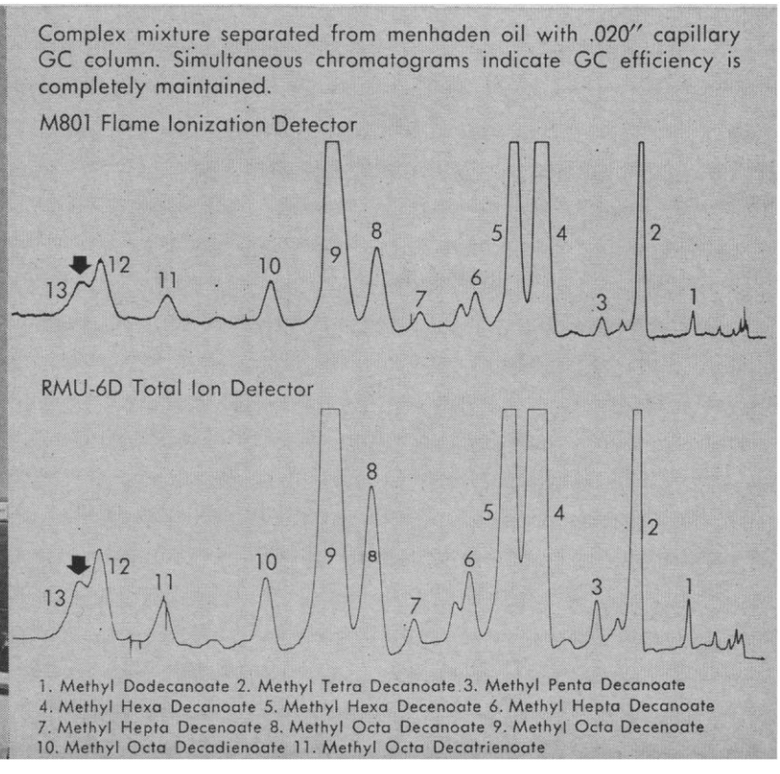
[1] K. BIEMANN AND J. T. WATSON, ANAL CHEM 36, 6, P. 1135, MAY, 1964.



Complex mixture separated from menhaden oil with .020″ capillary GC column. Simultaneous chromatograms indicate GC efficiency is completely maintained.



1. Methyl Dodecanoate 2. Methyl Tetra Decanoate 3. Methyl Penta Decanoate 4. Methyl Hexa Decanoate 5. Methyl Hexa Decenoate 6. Methyl Hepta Decanoate 7. Methyl Hepta Decenoate 8. Methyl Octa Decanoate 9. Methyl Octa Decenoate 10. Methyl Octa Decadienoate 11. Methyl Octa Decatrienoate

precede the spring meetings of the American Association of Petroleum Geologists. The GSA and the AAPG are the two largest societies of geologists, and many of the smaller geological organizations meet concurrently with these two groups.

In addition to short courses, a series of review articles is under development each of which will, in a few pages, outline basic theory, detail new developments, and cite the most important references on various specific geologic topics. This series will appear in the *Journal of Geological Education.*

Information about other programs being developed by AGI can be found in an editorial in the September 1965 *Geotimes.*

WILLIAM R. MUEHLBERGER
Department of Geology,
University of Texas, Austin 78712

More on Extrasensory Induction of Brain Waves

Science has published a number of articles that were highly critical of ESP research in the past. I am therefore rather surprised at the publication of Duane and Behrendt's report, "Extrasensory electroencephalographic induction between identical twins" (15 Oct., p. 367). The research described by Duane and Behrendt fails to meet some elementary criteria for parapsychological research, and I am certain that the report would have been rejected on first reading by all of the four reputable parapsychological journals (*1*).

The reported experiment has three major flaws. First, with only a single wall and 6 meters of space separating the subjects, the "receiving" twin may have been responding (subliminally?) to the experimenter's voice as he instructed the "sending" twin to open and close his eyes. Second, "gross inspection" as a means of scoring data in such a controversial area is obviously unacceptable. Third, the authors do not report even the most basic sort of descriptive data, such as number of trials under various conditions, much less any objective, statistical tests of their results.

Duane and Behrendt note that they will not draw any conclusions "because of the paucity of controlled data, contrasted with the voluminous controversial information available on the subject of extrasensory perception." The authors have not added further *controversial* data with such an inadequately controlled study, and they overlook the existence of a number of well-controlled studies of psychophysiological responses to ESP (*2*).

Speaking as a psychologist who is familiar with the reputable ESP literature and who has done some minor studies in the field, I feel the readers of *Science* should realize that Duane and Behrendt's report is below the usual standards for ESP research . . . and should not be taken as at all representative.

CHARLES T. TART
University of Virginia Hospital,
Charlottesville

References

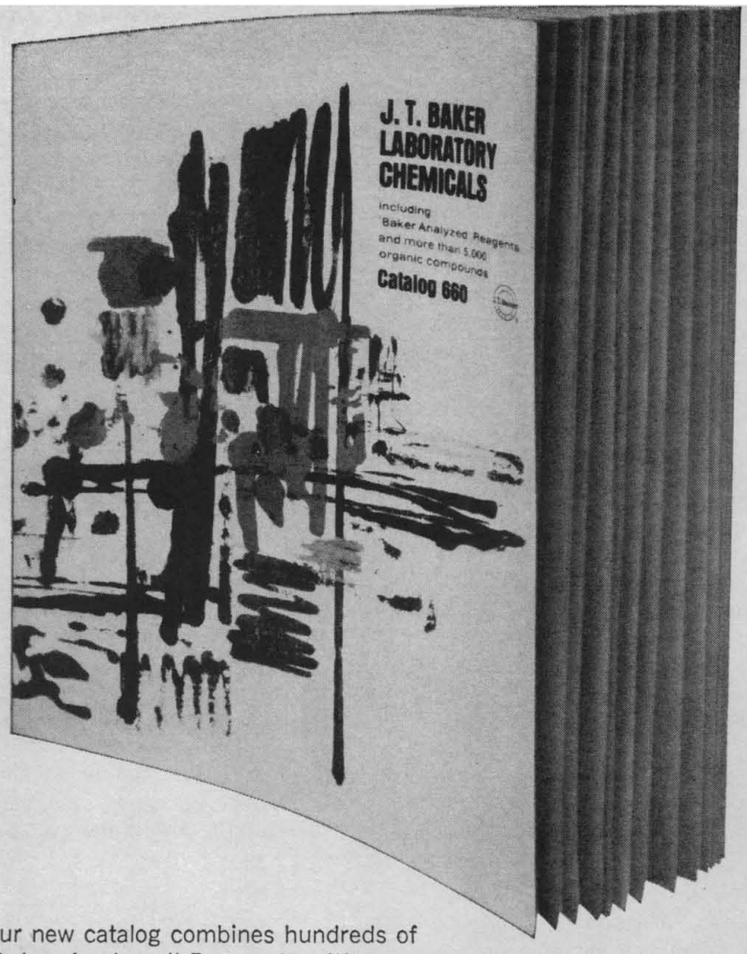
1. *Intern. J. Parapsychol.; J. Amer. Soc. Psychol. Res.; J. Parapsychol.; J. Soc. Psych. Res.*
2. D. Dean, *J. Soc. Psych. Res.* **41**, 351 (1962); C. Tart, *Inter. J. Parapsychol.* **5**, 375 (1963); J. Woodruff and L. Dale, *J. Amer. Soc. Psychol. Res.* **46**, 62 (1952).

. . . One unfortunate consequence of the publication by *Science* of Duane and Behrendt's report is its being selected for emphasis in popularizations of current scientific papers. I heard one science report on a major network radio broadcast in which this paper was singled out, as well it might be. The nonscientific public seems to be constantly on the lookout for evidence that nonphysical forces pervade and influence events. Such reports are eagerly received and their content exaggerated.

GEORGE M. ROBERTSON
Grinnell College, Grinnell, Iowa

A few additional facts about our experiment are hereby provided in answer to questions raised by a number of readers (Letters, 3 Dec.).

The twins were not in shielded rooms; conceivably they could have sent coded signals to one another. Neither they nor our technicians knew what we were testing. Induction, when present, occurred in both directions. Irregular eye-opening and -closing periods of 5 to 30 seconds were established on command. The command was either a whisper or a tap on the shoulder. The subjects were closely monitored to insure that they were following instructions. The event marker (in the later experiments) was inaudible. In the successful twins transmission seemed to occur always. The first set of twins was tested on only one day, because immediately thereafter



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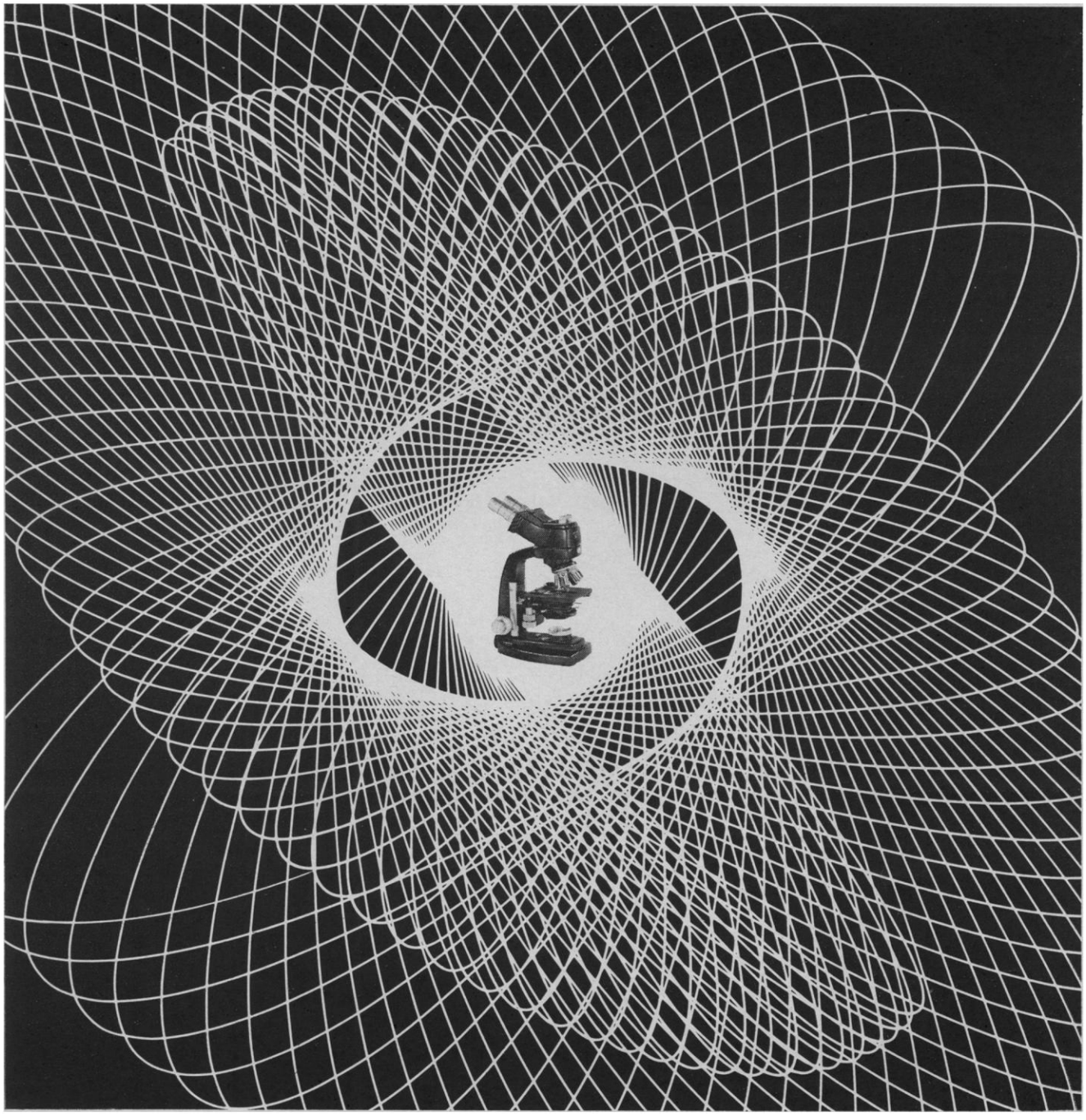

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7 January 1966, Volume 151, Number 3706 **SCIENCE**

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Priority

Credit for a discovery is important to scientists, and for good reason. Nevertheless, there has always been a tendency for persons not engaged in research to adopt a superior attitude of condescending disinterest. One really should not care who was first! To some degree this attitude reflects how far removed from the actual conduct of research such people have become.

Then there are those who make rules and regulations they confidently expect other scientists to follow. Osler, for example, opined that the credit goes to the man who convinces the world, not to the one to whom the idea first occurred and who did the work necessary to establish the theory. Osler, you must remember, did not live in the contemporary world of "mass media." He would have been flabbergasted at the ability of the public press to make or break a scientist.

We all know that demanding that one's discovery be recognized or given priority calls for anything but humility. The investigator who asks for recognition soon finds himself being judged selfish, vindictive, and aggressive. Those investigators who boast that they do not care who gets the credit almost assuredly are the ones most likely to make an outcry if, in their view, their discoveries are slighted.

In my opinion, perhaps the majority of scientists are often forced into the uncomfortable position of having to claim credit for a discovery. There are several reasons for this, chief among them being uncertainties concerning publication. What constitutes a definitive publication? Is an abstract enough, or a verbal communication to a society, or an unedited photocopy published in a quickie journal? And what constitutes acceptance for publication? Some journals call the date on which the manuscript is received the "acceptance date"; others "accept" the paper only after several months of negotiation with the author.

Some journals publish papers in the order in which they are received, while others publish them when they please. Add to this the current tendency toward extreme carelessness of authors in the preparation of bibliographies and it is not hard to see why the expression "first discovered" often is a gross distortion. I find such misuse altogether too common in today's literature.

What difference does all this make? I suspect it makes a lot! A scientist's only salable stock is his reputation for doing creative work. To allow others who are more aggressive to take his work away from him is unfair; moreover, it is not, and must not be allowed to become, a way of science. The operations of science must always be correct, no matter what value judgments are made about them. Scientists must not allow a fellow scientist to be jockeyed into the position of having to defend himself. If this occurs, the fault, often as not, is the result of our cumbersome system of establishing priority.

The solution of the problem is not, I believe, too difficult. Let us agree on several simple points: (i) in order for a published paper to qualify as the basis of credit for a discovery, enough data must be presented so that the results can be reproduced; (ii) publication must be in a journal with reasonably acceptable editorial supervision; and (iii) the date of receipt and the date of acceptance of the manuscript must both appear. (iv) Lastly, let those of us who refer to the work of others, especially when we say "first," do so with more than usual care. If we do, we will all sleep better, and rightly so; *priority* will no longer be a dirty word.—IRVINE H. PAGE, *Director, Research Division, Cleveland Clinic, Cleveland, Ohio*

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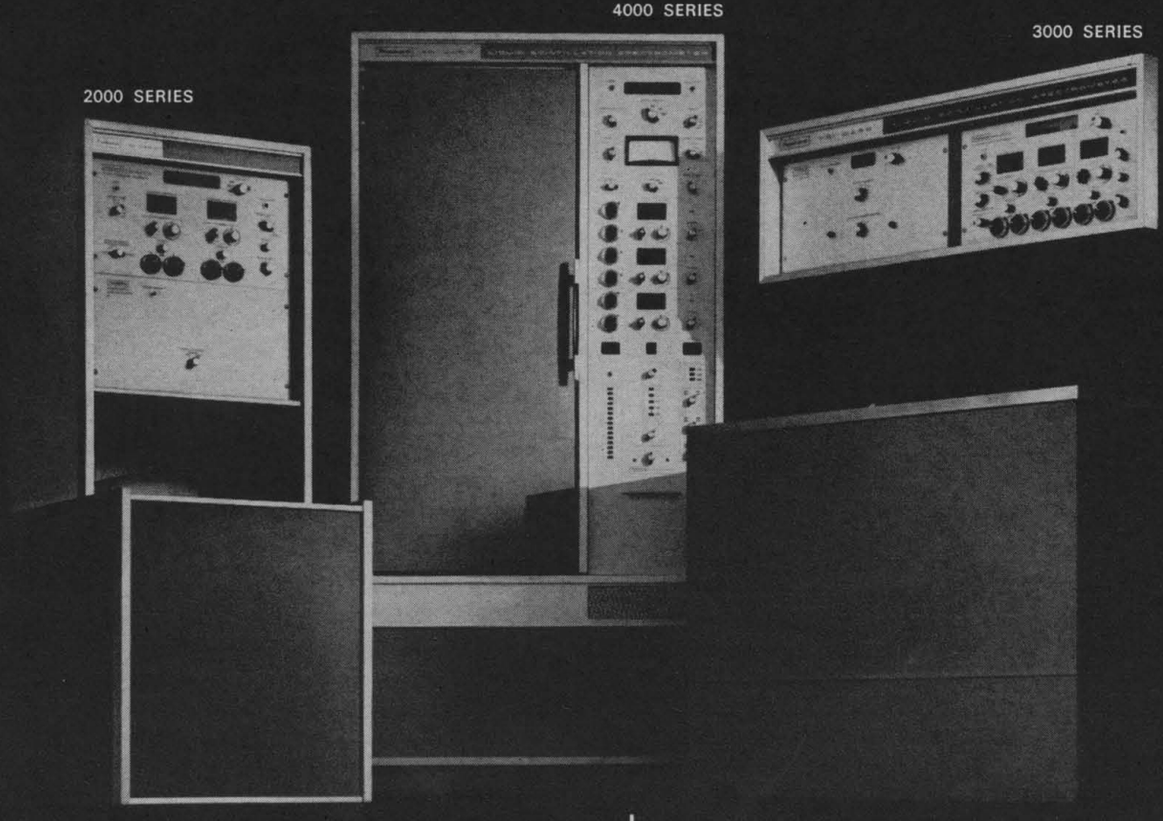

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Complete abstracts of papers are being made available by Macmillan and Company, Ltd., London.

C. B. MURPHY

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Forthcoming Events

January

16–21. American **Chemical** Soc., winter mtg., Phoenix, Ariz. (ACS, 1155 16th St., NW, Washington, D.C. 20036)

17–19. **Labelled Proteins in Tracer Studies**, conf., Pisa, Italy. (Euratom, Labelled Compounds Div., 51-53, rue Belliard, Brussels, Belgium)

19–21. **Instrumentation** for the Process Industries, Texas A&M symp., College Station. (P. T. Eubank, Dept. of Chemical Engineering, Texas A&M Univ., College Station)

20–21. Anharmonic **Phonon Interactions** in Solids, Princeton Univ., Princeton, N.J. (W. B. Daniels, Dept. of Solid State Sciences, Princeton Univ., Princeton, N.J.)

20–22. Regulation of **Antibody Response**, intern. symp., Toronto, Ont., Canada. (B. Cinader, Subdivision of Immunochemistry, Univ. of Toronto, Toronto, Ont.)

20–22. **Diabetes** in the Tropics, world congr., Bombay, India. (Organizing Secretary, Diabetic Assoc. of India, Maneckji Wadia Bldg., Mahatma Gandhi Rd., Bombay 1)

20–22. **Symmetry Principles at High Energy**, conf., Univ. of Miami, Coral Gables, Fla. (D. R. Lehman, Air Force Office of Scientific Research, Tempo D, 4th and Independence Ave., SW, Washington, D.C.)

21–22. Physiology of **Hemostasis and Thrombosis**, 14th annual Wayne State Univ. symp. on blood, Detroit, Mich. (W. H. Seegers, Dept. of Physiology and Pharmacology, Wayne State Univ., Detroit)

22–27. American Acad. of **Orthopedic Surgeons**, Chicago, Ill. (J. K. Hart, 29 E. Madison, Chicago 2)

23–28. American **Library** Assoc., midwinter mtg., Chicago, Ill. (D. H. Clift, American Library Assoc., 50 E. Huron St., Chicago 60611)

24–26. **Aerospace Sciences**, 3rd mtg., American Inst. of Aeronautics and Astronautics, New York, N.Y. (AIAA, 1290 Sixth Ave., New York 10019)

24–26. **Economic Geology** in Massachusetts, conf., Amherst. (O. C. Farquhar, Geology Dept., Univ. of Massachusetts, Amherst 01003)

24–27. Modern Methods of **Analytical Chemistry**, 19th annual, Louisiana State Univ. symp., Baton Rouge. (P. W. West, LSU, Baton Rouge)

24–27. American Soc. of **Heating, Refrigerating, and Air-Conditioning Engi-**

neers, semiannual mtg., Houston, Tex. (ASHRAE, 345 E. 47 St., New York)

24–27. American **Meteorological Soc.**, 46th annual mtg., Denver, Colo. (K. C. Spengler, AMS, 45 Beacon St., Boston, Mass.)

24–28. Animal and Clinical **Pharmacologic Techniques in Drug Evaluation**, part 1, mtg., Philadelphia, Pa. (J. H. Nodine, Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia 19102)

24–30. **CNS–Drugs**, symp., Regional Research Laboratory, Hyderabad, India. (P. B. Sattur, Regional Research Laboratory, Hyderabad 9)

25. Research and Industrial Applications of the **Mössbauer Effect**, New York, N.Y. (M. Ress, New England Nuclear Corp., 575 Albany St., Boston, Mass.)

25–27. **Reliability**, 12th annual symp., Inst. of Electrical and Electronics Engineers, San Francisco, Calif. (A. R. Park, General Precision Inc., 1378 Encinatas Rd., San Marcos, Calif.)

26. Current and Future Problems in **Chemistry at High Temperatures**, Rice Univ., Houston, Tex. (M. A. Paul, Div. of Chemistry and Chemical Technology, National Acad. of Sciences, Washington, D.C. 20418)

26–27. **Sulfur**, symp., Wilson Dam, Ala. (V. J. Kilmer, Div. of Agricultural Development, Tennessee Valley Authority, Wilson Dam 35661)

26–28. **Light Nuclei**, symp., Lyon, France. (R. Radvanyi, Lab. Joliot-Curie de physique nucléaire, Faculté des Sciences, B.P. 1, Orsay, France)

26–28. **Mathematical** Assoc. of America, 49th annual mtg., Chicago, Ill. (H. M. Gehman, State Univ. of New York, Buffalo 14214)

26–29. American **Physical** Soc., annual mtg., New York, N.Y. (K. K. Darrow, APS, 335 E. 45 St., New York 10017)

26–29. American Assoc. of **Physics Teachers**, annual mtg., New York, N.Y. (M. Phillips, Ryerson Physical Laboratory, Univ. of Chicago, Chicago, Ill. 60637)

27–29. American **Group Psychotherapy** Assoc., Philadelphia, Pa. (AGPA, 1790 Broadway, New York 10019)

27–29. International **Medical Assembly** of Southwest Texas, San Antonio. (S. E. Cockrell, Jr., 202 W. French Pl., San Antonio 78212)

28–4. **Medical Ethics**, seminar, London, England. (E. F. Shotter, Ciba Foundation, 41 Portland Pl., London, W.1)

28–29. **Proteins**, 21st conf., Rutgers Bureau of Biological Research, Rutgers Univ., New Brunswick, N.J. (R. L. Squibb, Rutgers Univ., New Brunswick)

30–4. Institute of **Electrical and Electronics Engineers, Power Group**, winter mtg., New York, N.Y. (E. C. Day, IEEE, 345 E. 47 St., New York 10017)

30–4. American Soc. for **Testing and Materials**, spring mtg., Washington, D.C. (T. A. Marshall, ASTM, 1916 Race St., Philadelphia 3, Pa.)

31–2. **Information Theory**, intern. symp., Inst. of Electrical and Electronics Engineers, Univ. of California, Los Angeles. (A. V. Balakrishnan, Dept. of Engineering, Univ. of California, Los Angeles 90024)

31–2. Solid Propellant **Rockets**, 7th conf. (American Inst. of Aeronautics and

Astronautics, 1290 Sixth Ave., New York 10019)

31–3. Scientific Aspects of **Pest Control**, symp., Washington, D.C. (Agricultural Board, National Academy of Sciences, 2101 Constitution Ave., NW., Washington)

February

2–4. **Aerospace and Electronic Systems**, winter conv., Inst. of Electrical and Electronics Engineers, Los Angeles, Calif. (A. S. Jerrems, Aerospace Group, Hughes Aircraft Co., Culver City, Calif.)

2–6. American College of **Cardiology**, Chicago, Ill. (W. D. Nelligan, 9650 Rockville Pike, Bethesda, Md. 20014)

3–4. American **Chemical Soc.**, 1st Middle Atlantic regional mtg., Philadelphia, Pa. (Philadelphia Section Office, ACS, 212 Harrison Laboratory, 34th and Spruce St., Philadelphia 19104)

3–9. **Medical Education**, congr., Chicago, Ill. (W. S. Wiggins, 535 N. Dearborn St., Chicago 60610)

6–9. American Inst. of **Chemical Engineers**, Dallas, Tex. (The Institute, 345 E. 47 St., New York 10017)

7–8. Perspectives in **Virology**, 5th mtg., New York, N.Y. (M. Pollard, Lobund Laboratory, Notre Dame, Ind.)

7–9. **Reactor Physics** in the Resonance and Thermal Regions, mtg., San Diego, Calif. (G. Joanou, General Atomic Corp., P.O. Box 1111, San Diego, 92112)

7–18. World **Meteorological Organization**, regional assoc. #5, 4th session, Wellington, New Zealand. (WMO, 4 Avenue, Giuseppa Motta, Geneva, Switzerland)

8–9. **Cost Aspects of Water Supply**, 8th sanitary engineering conf., Urbana, Ill. (J. H. Austin, 203 Civil Engineering Hall, Univ. of Illinois, Urbana 61803)

9–11. **Solid State Circuits**, 13th annual conf., Philadelphia, Pa. (K. H. Fischer, U.S. Army Electronics Command, Attn: AMSEL-KL-I, Fort Monmouth, N.J.)

10–11. **Snow**, eastern conf., Hartford, Conn. (G. Ayer, P.O. Box 948, Albany 1, N.Y.)

10–12. **Intermediate Energy Physics**, conf., College of William and Mary, Williamsburg, Va. (R. T. Siegel, Physics Dept., College of William and Mary, Williamsburg 23185)

13–16. **Radiation Research** Soc., 14th annual mtg., Coronado, Calif. (F. Smith, Biology Dept., American Univ., Washington, D.C.)

14–16. **Transplantation**, 7th intern. conf., New York Acad. of Sciences, New York, N.Y. (F. T. Rapaport, New York Univ. Medical Center, 550 First Ave., New York 10016)

14–18. Society of **Economic Geologists**, New York, N.Y. (J. O. Kalliokoski, Dept. of Geology, Princeton Univ., Princeton, N.J. 08540)

15–17. **Radioisotope Applications in Aerospace**, symp., Dayton, Ohio. (P. Polishuk, Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio)

15–18. Treatment and Storage of Highly **Radioactive Waste**, symp., Richland, Wash. (W. H. Regan, Jr., U.S. Atomic Energy Commission, Washington, D.C. 20545)

16–17. **Voluntary Health**, 2nd natl. conf., Chicago, Ill. (Dept. of Community Health and Health Education, American Medical Assoc., 535 N. Dearborn St., Chicago, 60610)

16–18. Practical **Space Applications**, symp., San Diego, Calif. (C. Tross, Box 931, Rancho Santa Fe, Calif.)

16–19. National Soc. of **College Teachers of Education**, Chicago, Ill. (E. H. Goldenstein, Administration Bldg., 413, Univ. of Nebraska, Lincoln 68508)

16–19. Institute of **Management Sciences** annual mtg., Dallas, Tex. (W. M. Campbell, Atlantic Refining Co., P.O. Box 2819, Dallas 75221)

17–19. American **Educational Research** Assoc., Chicago, Ill. (R. A. Dershimer, The Association, 1201 16th St., NW, Washington, D.C. 20036)

18–20. American **Psychopathological** Assoc., symp., New York, N.Y. (F. A. Freyhan, The Association, Natl. Inst. of Mental Health, c/o St. Elizabeths Hospital, Washington, D.C. 20032)

19. **Pleistocene of Ohio**, interdisciplinary conf., Ohio Acad. of Science, Columbus. (J. L. Forsyth, Dept. of Geology, Bowling Green State Univ., Bowling Green, Ohio)

21–25. **Analytical Chemistry and Applied Spectroscopy**, Pittsburgh, Pa. (R. E. Hein, Mellon Inst., 4400 Fifth Ave., Pittsburgh 15213)

21–25. Society for **Nondestructive Testing**, spring natl. conv., Los Angeles, Calif. (E. L. Criscuolo, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Md. 20910)

21–25. **Non-Elastic Processes in the Upper Mantle**, symp., Upper Mantle Committee, Intern. Union of Geodesy and Geophysics, Newcastle, England. (D. C. Tozer, School of Physics, The University, Newcastle-upon-Tyne, 1, England)

22–26. Canadian Assoc. of **Radiologists**, 29th annual, Montreal, Quebec. (The Association, 1555 Summerhill Ave., Montreal)

23–25. **Biophysical** Soc., 10th annual mtg., Boston, Mass. (J. Baruch, Bolt, Beranek and Newman Inc., 50 Moulton St., Cambridge, Mass. 02138)

24–26. American Acad. of **Forensic Sciences**, Chicago, Ill. (S. R. Gerber, Law-Medicine Center, Western Reserve Univ., Cleveland, Ohio 44106)

24–26. Interdisciplinary Aspects of **Radiative Energy Transfer**, Philadelphia, Pa. (J. J. Welsh, Space Sciences Laboratory, General Electric Co., Box 8555, Valley Forge, Pa.)

25–26. **Thoracic** Soc., spring mtg., London, England. (H. M. Foreman, Sully Hospital, Sully, Glamorganshire, England)

27–3. American Inst. of **Mining, Metallurgical, and Petroleum Engineers**, annual mtg., New York, N.Y. (The Institute, 345 E. 47 St., New York 10017)

27–4. International **Anesthesia Research** Soc., Bal Harbour, Fla. (A. W. Friend, 227 Wade Park Manor, Cleveland 6, Ohio)

28–4. **Aerial Triangulation**, symp., Urbana, Ill. (M. B. Scher, Intern. Soc. for photogrammetry, Commission 3, 9701 East Light Dr., Falls Church, Va.)

28–4. American **Crystallographic** Assoc., mtg., Univ. of Texas, Austin. (W. L. Kehl, Gulf Research and Development Co., P.O. Drawer 2038, Pittsburgh, Pa. 15230)

28–4. American Assoc. of **Junior Colleges**, 46th annual conv., St. Louis, Mo. (The Association, 1315 16th St., NW, Washington, D.C. 20036)

March

1–2. **Dairy Engineering**, natl. conf., Michigan State Univ., East Lansing. (C. W. Hall, Agricultural Engineering Dept., Michigan State Univ., East Lansing)

1–3. **Space Maintenance** and Extra-Vehicular Activities, natl. conf., Orlando, Fla. (M. B. Goldman, Mail No. 302, Martin Co., Baltimore, Md. 21203)

1–10. **Industrial Development** in the Arab Countries, regional sym., Kuwait. (Intern. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Via delle terme di Caracalla, Rome, Italy)

2–4. **Air Pollution** Medical Research, AMA conf., Los Angeles, Calif. (Dept. of Environmental Health, American Medical Assoc., 535 N. Dearborn St., Chicago, Ill. 60610)

2–4. **Plasmadynamics**, conf., Monterey, Calif. (American Inst. of Aeronautics and Astronautics, 1290 Sixth Ave., New York 10019)

2–4. **Scintillation and Semiconductor Counters**, 10th symp., Washington, D.C. (W. A. Higinbotham, Brookhaven Natl. Laboratory, Upton, L.I., N.Y.)

3–4. Louisiana Soc. for **Electron Microscopy**, 3rd annual symp., New Orleans. (W. R. Goynes, Southern Regional Research Laboratory, Box 19687, New Orleans)

3–5. Central **Surgical** Assoc., Chicago, Ill. (C. E. Lischer, 457 N. Kingshighway, St. Louis 8, Mo.)

4–5. **Cineradiology**, 5th symp., Rochester, N.Y. (R. Gramiak, Div. of Diagnostic Radiology, Univ. of Rochester Medical Center, Rochester 14620)

4–6. American Assoc of **Pathologists and Bacteriologists**, 63rd annual mtg., Cleveland, Ohio. (P. Fitzgerald, Downstate Medical Center, 450 Clarkson Ave., Brooklyn 3, N.Y.)

5–7. Society for American **Archaeology**, 31st annual mtg., Univ. of Nevada, Reno. (D. D. Fowler, Dept. of Anthropology, Univ. of Nevada, Reno 89507)

5–10. International Acad. of **Proctology**, 18th annual conv., Miami Beach, Fla. (A. F. Cantor, 147-41 Sanford Ave., Flushing, N.Y. 11355)

6–11. American Soc. of **Photogrammetry**, Washington, D.C. (C. E. Palmer, 5917 Brookview Dr., Brookland Estates, Alexandria, Va.)

7–9. Fundamental **Cancer Research**, 20th annual symp., Univ. of Texas, Houston. (M. Mandel, Dept. of Biology, M. D. Anderson Hospital and Tumor Inst., Univ. of Texas, Houston 77025)

7–9. **Electric Propulsion**, 5th conf., American Inst. of Aeronautics and Astronautics, San Diego, Calif. (A. T. Forrester, Electro-Optical Systems, Inc., 300 N. Halstead St., Pasadena, Calif. 91107)

7–9. **Space**, 3rd congr., Cocoa Beach, Fla. (R. M. Barnes, PAA-Guided Missiles Range Div., Bldg. 423, MU 111, Patrick Air Force Base, Fla.)

7–11. American Soc. for **Metals**, western metal and tool exposition and conf., Los Angeles, Calif. (The Society, Metals Park, Ohio)

7–11. Society of **Plastics Engineers**, 22nd annual technical conf., Montreal, P.Q., Canada. (G. L. Bata, Union Carbide

Canada, Ltd., P.O. Box 700, Pointe-aux-Trembles, P.Q.)

7–12. Inter-American **Nuclear Energy** Commission, 6th mtg., Washington, D.C. (J. D. Perkinson, Jr., Pan American Union, Washington 20006)

8–3. World **Meteorological** Organization, commission for synoptic meteorology, 4th session, Wiesbaden, Germany. (WMO, 41, avenue Giuseppe Motta, Geneva, Switzerland)

9–11. **Ethics in Medical Progress**, Ciba Foundation symp., London, England. (Ciba, 41 Portland Pl., London W.1)

9–13. Teaching Machines and **Programmed Instruction**, intern. symp., Nürtingen, Germany. (Arbeitsgemeinschaft Programmierte Instruktion, Inst. für Kybernetik, Pädagogische Hochschule Berlin, Malteserstr. 74-100, 1 Berlin 46)

10–11. **Heat Transfer** to Non-Newtonian Fluids, 12th annual heat transfer conf., Oklahoma State Univ., Stillwater. (J. D. Parker, Dept. of Mechanical Engineering, Oklahoma State Univ., Stillwater 74075)

11–13. National Council of **Teachers of Mathematics**, San Diego, Calif. (J. D. Gates, 1201 16th St., NW, Washington, D.C. 20036)

11–13. National **Wildlife** Federation, annual mtg., Pittsburgh, Pa. (T. L. Kimball, 1412 16th St., NW, Washington, D.C. 20036)

12–13. **Linguistics**, 11th natl. conf., Linguistic Circle of New York, New York. (L. Pap, State Univ. College, New Paltz 12561)

14–16. Society of **Toxicology**, annual scientific mtg., Williamsburg, Va. (C. S. Weil, Mellon Inst., 4400 Fifth Ave., Pittsburgh, Pa. 15213)

14–20. **Obstetrics and Gynecology**, 8th Australian congr., Hobart. (J. F. Correy, 173 Macquaire St., Hobart)

14–6 May. Extraordinary Administrative **Aeronautical Radio** conf., 2nd session, Geneva, Switzerland. (Intern. Telecommunication Union, Place des Nations, Geneva)

15–16. **Flame Resistant Polymers**, conf., London, England. (Secretary, Plastics Inst., 6 Mandeville Pl., London, W.1)

15–18. **Optical Soc.** of America, spring mtg., Washington, D.C. (M. E. Warga, 1155 16th St., NW, Washington 20006)

17–19. **Isobaric Spin in Nuclear Physics**, intern. conf., Florida State Univ., Tallahassee. (D. Robson, Dept. of Physics, Florida State Univ., Tallahassee)

18–19. **Rural Health**, conf., Colorado Springs, Colo. (B. L. Bible, 535 N. Dearborn St., Chicago, Ill. 60610)

18–20. American **Psychosomatic** Soc. annual mtg., Chicago, Ill. (W. A. Greene, The Society, 265 Nassau Rd., Roosevelt, N.Y. 11575)

21–24. **Aerospace Instrumentation**, 4th intern. symp., College of Aeronautics, Cranfield, England. (E. K. Merewether, ISA Aerospace Industry Div., 4515 Canoga Ave., Woodland Hills, Calif.)

21–25. Institute of **Electrical and Electronics Engineers**, intern. conv., New York, N.Y. (IEEE, 345 E. 47 St., New York 10017)

22–23. **Biomagnetics**, 3rd intern. symp., Univ. of Illinois, Chicago. (M. F. Barnothy, Univ. of Illinois, 833 S. Wood St., Chicago)

22–24. Measurement and Applications of **Neutron Cross Sections**, conf., Washington, D.C. (W. W. Havens, Dept. of Physics, Columbia Univ., 538 W. 120 St, New York 10027)

22–31. American **Chemical** Soc., spring mtg., Pittsburgh, Pa. (ACS, 1155 16th St., NW, Washington, D.C.)

23–25. Institute of **Mathematical Statistics,** Purdue Univ., Lafayette, Ind. (G. E. Nicholson, Jr., Univ. of North Carolina, Chapel Hill)

23–25. Modern Methods of **Weather Forecasting and Analysis**, Chicago, Ill. (J. R. Fulks, U.S. Weather Bureau, 5730 S. Woodlawn Ave., Chicago)

24–26. **Biomathematics and Computer Science** in the Life Sciences, symp., Houston, Tex. (Dean, Div. of Continuing Education, Univ. of Texas Graduate School of Biomedical Sciences, Texas Medical Center, Houston 77025)

24–26. Pediatric and Adolescent **Gynecology**, conf., New York Acad. of Sciences, New York. (W. R. Lang, Jefferson Medical College of Philadelphia, 1025 Walnut St., Philadelphia, Pa.)

24–27. International Assoc. for **Dental Research**, 44th general mtg., Miami, Fla. (G. H. Rovelstad, U.S. Navy Dental School, Natl. Naval Medical Center, Bethesda, Md. 20014)

25–26. National Assoc. of Biology Teachers, western regional conv., Los Angeles, Calif. (The Association, Professional Building, Great Falls, Mont.)

26–27. Arizona **Chest Disease** symp., Tucson. (E. A. Oppenheimer, P.O. Box 6067, Tucson 85716)

26–2. **Stress Analysis**, 3rd intern. conf., Berlin, Germany. (H. Kotthaus, Verein Deutscher Ingenieure, Prinz-Georg Str. 77/79, 4 Düsseldorf 10)

27–30. American Assoc. of **Dental Schools**, Miami Beach, Fla. (R. Sullens, 840 N. Lake Shore Dr., Chicago, Ill.)

28–30. **Great Lakes Research**, 9th conf., Chicago, Ill. (B. M. McCormac, IIT Research Inst., 10 W. 35 St., Chicago 60616)

28–31. Collegium Intern. **Neuro-Psychopharmacologicum**, 5th biennial mtg., Washington, D.C. (M. K. Taylor, 3636 16th St., NW, Washington 20010)

29–31. **Airborne Infection**, 2nd intern. conf., Illinois Inst. of Technology, Chicago. (E. K. Wolfe, U.S. Army Biological Laboratories, Fort Detrick, Frederick, Md. 21701)

29–31. **Applied Meteorology**, 6th natl. conf., Los Angeles, Calif. (B. N. Charles, Booz-Allen Applied Research, 6151 W. Century Blvd., Los Angeles 90045)

29–31. **Chemical** Soc., anniversary mtgs., Oxford, England. (General Secretary, Burlington House, London W.1)

29–31. **Surface-Active Substances**, intern. conf., Berlin, East Germany. (Inst. für Fettchemie, Deutsche Akademie der Wissenschaften zu Berlin, Rudower Chaussee 5, 1199 Berlin-Adlershof)

29–31. **Symbolic and Algebraic Manipulation**, symp., Assoc. for Computing Machinery, Washington, D.C. (J. E. Sammet, I.B.M. Corp., 545 Technology Sq., Cambridge, Mass. 02139)

29–1. American Assoc. for **Contamination Control**, 5th annual technical mtg., Houston, Tex. (W. T. Maloney, The Association, 6 Beacon St., Boston, Mass. 02108)

NEW BOOKS

(Continued from page 67)

"Epiphytic microorganisms in relation to plant disease" by Curt Leben.

The Anatomy of the Laboratory Mouse. Margaret J. Cook. Academic Press, New York, 1965. 149 pp. Illus. $6.

Bacterial Genetics. Werner Braun. Saunders, Philadelphia, ed. 2, 1965. 394 pp. Illus. $10.

Biochemical Engineering. Shuichi Aiba, Arthur E. Humphrey, and Nancy F. Millis. Univ. of Tokyo Press, Tokyo, Japan; Academic Press, New York, 1965. 339 pp. Illus.

The Biosocial Basis of Mental Retardation. Sonia F. Osler and Robert E. Cooke, Eds. Johns Hopkins Press, Baltimore, 1965. 167 pp. Illus. $5.50. Seven papers: "The mentally handicapped in a technological society" by Eli Ginzberg; "The nature of intelligence" by G. Wilson Shaffer; "Perinatal factors and intelligence" by Janet B. Hardy; "Effects of early deprivation of photic stimulation" by Austin Riesen; "Induced mental and social deficits in rhesus monkeys" by Harry F. Harlow and Gary Griffin; "Learning processes of the mentally retarded" by David Zeaman; and "Diagnostic, cultural, and remedial factors in mental retardation" by Samuel A. Kirk.

Chemical Microbiology. Anthony H. Rose. Butterworth, Washington, D.C., 1965. 255 pp. Illus. $7.50.

Cybernetic Medicine. Aldo Masturzo. Thomas, Springfield, Ill., 1965. 158 pp. Illus. $6.50.

Diagnosis and Therapy of the Glaucomas. Bernard Becker and Robert N. Shaffer. Mosby, St. Louis, Mo., ed. 2, 1965. 455 pp. Illus. $18.50.

Dictionary of Nutrition and Food Technology. Arnold E. Bender. Butterworth, Washington, D.C., ed. 2, 1965. 229 pp. $9.50.

Diseases of Tobacco. George Blanchard Lucas. Scarecrow Press, New York, ed. 2, 1965. 778 pp. Illus. $18.

Electrolytes and Cardiovascular Diseases: Physiology, Pathology, Therapy. vol. 1, *Fundamental Aspects.* Eörs Bajusz, Ed. Williams and Wilkins, Baltimore, 1965. 424 pp. Illus. $16. Twenty-one papers: Cardiac metabolism and function (7 papers); Necrotizing cardiomyopathies (9 papers); and Vascular function and hypertension (5 papers).

Evolution and Modification of Behavior. Konrad Lorenz. Univ. of Chicago Press, Chicago, Ill., 1965. 125 pp. $3.50.

Fertilization. C. R. Austin. Prentice-Hall, Englewood Cliffs, N.J., 1965. 159 pp. Illus. Paper, $2.95; cloth, $4.95. Foundations of Developmental Biology Series, edited by Clement L. Markert.

A Flora of Northeastern Minnesota. Olga Lakela. Univ. of Minnesota Press, Minneapolis, 1965. 557 pp. Illus. $10.

The Fungous Diseases of Man. J. Walter Wilson and Orda A. Plunkett. Univ. of California Press, Berkeley, 1965. 444 pp. Illus. $15.

Handbook of Physiology. A critical, comprehensive presentation of physiological knowledge and concepts. Section 2, vol. 3, *Circulation.* W. F. Hamilton, Ed. Published for the American Physiological

Society by Williams and Wilkins, Baltimore, 1965. 985 pp. Illus. $32.

Hawk's Physiological Chemistry. Bernard L. Oser, Ed. McGraw-Hill, New York, ed. 14, 1965. 1488 pp. Illus. $19.50.

Hybrids. David C. Rife. Public Affairs Press, Washington, D.C., 1965. 167 pp. Illus. $3.75.

Hypoglycaemia. Vincent Marks and F. Clifford Rose. Davis, Philadelphia, Pa., 1965. 368 pp. Illus. $12.

International Review of Connective Tissue Research. vol. 3. David A. Hall, Ed. Academic Press, New York, 1965. 295 pp. Illus. $12. Five papers: "The histochemistry of the connective tissues" by Harold M. Fullmer; "Connective tissue and periodontal disease" by Stig D. Schultz-Haudt; "Experimental lathyrism" by Marvin L. Tanzer; "The physical chemistry of gelatin" by Arthur Veis; and "Acid hydrolases of connective tissue" by J. F. Woessner, Jr.

International Trends in Mental Health. Henry P. David, Ed. McGraw-Hill, New York, 1966. 382 pp. $15. McGraw-Hill Series in International Development; 29 papers: Introduction; A World view (6 papers); Community centers (7 papers); Children and schools (5 papers); Approaches to social problems (6 papers); and Resources (5 papers).

Introduction to Anatomy. Roger Warwick. Arco, New York, 1965. 240 pp. Illus. Paper, $1.65; cloth, $3.50.

Introduction to Botany. H. J. M. Bowen. Arco, New York, 1965. 224 pp. Illus. Paper, $1.65; cloth, $3.50

An Introduction to General Virology. Thomas M. Bell. Lippincott, Philadelphia, Pa., 1965. 292 pp. Illus. $7.50.

An Introduction to the Study of Enzymes. H. Gutfreund. Wiley, New York, 1965. 345 pp. Illus. $9.95.

The Microstructure of Cells. Stephen W. Hurry. Houghton, Mifflin, Boston, 1965. 48 pp. Illus. Paper, $1.80.

The Mosquitoes of Victoria (Diptera, Culicidae). N. V. Dobrotworsky. Melbourne Univ. Press, Carlton, Australia; Cambridge Univ. Press, New York, 1965. 243 pp. Illus. $18.

Myxomatosis. Frank Fenner and F. N. Ratcliffe. Cambridge Univ. Press, New York, 1965. 393 pp. Illus. $19.50.

Neural Mechanisms of Higher Vertebrate Behavior. J. S. Beritoff. Translated from the Russian and edited by W. T. Liberson. Little, Brown, Boston, 1965. 400 pp. Illus. $15.

Neurohistochemistry. C. W. M. Adams, Ed. Elsevier, New York, 1965 769 pp. Illus. $29. Seventeen papers: Hystochemical and cytochemical technique (6 papers); Histochemistry of the normal nervous system (3 papers); and Histochemistry applied to neuropathology (8 papers).

Nonequilibrium Thermodynamics in Biophysics. A. Katchalsky and Peter F. Curran. Harvard Univ. Press, Cambridge, Mass., 1965. 260 pp. Illus. $9.75. Harvard Books in Biophysics, vol. 1.

Pharmacology of the Coronary Circulation. Natalia V. Kaverina. Translated from the Russian by R. Crawford. Pergamon, New York, 1965. 277 pp. Illus. $12.50.

Physiological Controls and Regulations. William S. Yamamoto and John R. Bro-

beck, Ed. Saunders, Philadelphia, 1965. 374 pp. Illus. $11.50. Fifteen papers.

Pollen and Sport Morphology: Plant Taxonomy. Gymnospermae, Bryophyta (text). An introduction to palynology, III. G. Erdtman. Almqvist and Wiksell, Stockholm, 1965. 216 pp. Illus. Plates.

Principles of Sensory Evaluation of Food. Maynard A. Amerine, Rose Marie Pangborn, and Edward B. Roessler. Academic Press, New York, 1965. 612 pp. Illus. $19.50. Food Science and Technology Series, edited by M. L. Anson, C. O. Chichester, E. M. Mrak, and G. F. Stewart.

Readings in Animal Behavior. Thomas E. McGill, Ed. Holt, Rinehart, and Winston, New York, 1965. 604 pp. Illus. $12. Fifty-five papers: Introductory readings (5 papers); Behavior genetics (6 papers); Neural, hormonal, and chemical control of behavior (8 papers); The development of behavior, critical periods, and imprinting (11 papers). Sensory processes, communication, and orientation (8 papers); Learning and motivation (10 papers); and Social behavior, ethology, and evolution (7 papers).

Speech Disorders. Multisensory techniques for remedial education in disorders of speech, language, and the psycho-neural motor system. Suzanne de Parrel. Translated from the French by D. M. Keane. Pergamon, New York, 1965. 254 pp. $12.

Spore Liberation. C. T. Ingold. Oxford Univ. Press, New York, 1965. 220 pp. Illus. $5.60.

Treatise on Invertebrate Palentology. Raymond C. Moore, Ed. Pt. H., *Brachiopoda*, vols. 1 and 2. Alwyn Williams and others. Geological Soc. of America and Univ. of Kansas Press, Lawrence, 1965. vol. 1, 553 pp.; vol. 2, 406 pp. Illus. $19.50.

The Veins: Normal and Abnormal Function. J. Edwin Wood. Little, Brown, Boston, 1965. 242 pp. Illus. $10.

Mathematics, Physical Sciences, and Engineering

Adsorption from Solutions of Non-Electrolytes. J. J. Kipling. Academic Press, New York, 1965. 340 pp. Illus. $12.

Advanced Quantum Chemistry: Theory of Interactions between Molecules and Electromagnetic Fields. Hendrik F. Hameka. Addison-Wesley, Reading, Mass., 1965. 287 pp. Illus. $13.75. Addison-Wesley Series in Advanced Physical Chemistry.

Advances in Chemical Physics. vol. 9. I. Prigogine, Ed. Interscience (Wiley), New York, 1965. 426 pp. Illus. $15.75. Five papers: "Scaled particle methods in the statistical thermodynamics of fluids" by Howard Reiss; "Quantum chemistry of crystal surfaces" by Jaroslav Koutecký; "Vibrational properties of hexafluoride molecules" by Bernard Weinstock and Gordon L. Goodman; "Electronic correlation in atoms and molecules" by R. K. Nesbet; and "Diamond synthesis" by R. H. Wentorf, Jr.

Algebra. Serge Lang. Addison-Wesley, Reading, Mass., 1965. 526 pp. Illus. $12.75.

Analytical Chemistry of Potassium. I.

M. Korenman. Translated from the Russian edition (Moscow, 1964) by N. Kaner. D. Slutzkin, Translation Ed. Israel Program for Scientific Translations, Jerusalem; Davey, New York, 1965. 250 pp. Illus. $14. Analytical Chemistry of Elements Series.

The Biochemistry of the Nucleic Acids. J. N. Davidson. Methuen, London; Wiley, New York, ed. 5, 1965. 368 pp. Illus. $5.50.

Catalytic Hydrogenation: Techniques and Applications in Organic Synthesis. Robert L. Augustine. Dekker, New York, 1965. 200 pp. Illus. $8.75.

Ceramics for Advanced Technologies. J. E. Hove and W. C. Riley, Eds. Wiley, New York, 1965. 460 pp. Illus. $19.50. University of California Engineering and Physical Sciences Extension Series. Fourteen papers.

The Collected Papers of Enrico Fermi. vol. 2, United States 1939–1954. Edoardo Amaldi, Herbert L. Anderson, Enrico Persico, Emilio Segrè, and Albert Wattenberg, Eds. Univ of Chicago Press, Chicago, 1965. 1101 pp. Illus. $22.50.

Collected Papers of P. L. Kapitza. vol. 2, 1938–1964. D. ter Haar, Ed. Pergamon, New York, 1965. 497 pp. Illus. $21.50. Twenty-five papers.

Computer Programming for Chemists. Kenneth B. Wiberg. Benjamin, New York, 1965. 279 pp. Illus. $12.50. Frontiers in Chemistry Series, edited by Ronald Breslow and Martin Karplus.

Elements of Theoretical Mechanics for Electronic Engineers. Franz Bultot. Translated from the French by Elizabeth S. Knowlson. Pergamon, New York, 1965. 264 pp. Illus. $7.50. International Series of Monographs in Electronics and Instrumentation, vol. 32, edited by D. W. Fry and L. Costrell.

The Engineer's Guide to Steel. Albert Hanson and J. Gordon Parr. Addison-Wesley, Reading, Mass., 1965. 414 pp. Illus. $13.75.

Fluorimetric Analysis. M. A. Konstantinova-Schlezinger, Ed. Translated from the Russian edition (Moscow, 1961) by N. Kaner. Israel Program for Scientific Translations, Jerusalem; Davey, New York, 1965. 392 pp. Illus. $15.25. Physical Principles and Techniques of Spectroscopic Analysis Series.

Fundamentals of Mathematics. Moses Richardson. Macmillan, New York, ed. 3, 1966. 623 pp. Illus. $7.95.

Gravimetric Analysis. pt. 3. László Erdey. Translated by Gyula Svehla. Ilona Buzás, Translation Ed. Pergamon, New York, 1965. 309 pp. Illus. $7.50. International Series of Monographs in Analytical Chemistry, vol. 7, edited by R. Belcher and L. Gordon.

Green's Function Methods in Probability Theory. Julian Keilson. Hafner, New York, 1965. 228 pp. Illus. Paper, $6.50.

High Pressure Chemistry. R. S. Bradley and D. C. Munro. Pergamon, New York, 1965. 194 pp. Illus. Paper, $3.95. The Commonwealth and International Library.

Industrial Heat Transfer: Practical and Theoretical, with Basic Numerical Examples. Alfred Schack. Translated from the sixth German edition (Düsseldorf, 1962) by I. Gutman. Wiley, New York, 1965. 476 pp. Illus. $16.

Introduction to Chemical Process Con-

trol. Daniel D. Perlmutter. Wiley, New York, 1965. 218 pp. Illus. $6.95.

Introduction to Physical Gas Dynamics. Walter G. Vincenti and Charles H. Kruger, Jr. Wiley, New York, 1965. 556 pp. Illus. $13.50.

Introduction to Variational Methods in Control Engineering. A. R. M. Noton. Pergamon, New York, 1965. 132 pp. Illus. $5.

Magnetohydrodynamics. Andrey Gennadievich Kulikovskiy and Grigoriy Aleksandrovich Lyubimov. Translated from the Russian edition (Moscow, 1962) by Scripta Technica. Ludwig Oster, Ed. Addison-Wesley, Reading, Mass., 1965. 224 pp. Illus. $9.75.

Man's Physical Universe. Arthur Talbot Bawden and Keith Kearney Fredericks. Macmillan, New York, ed. 5, 1966. 670 pp. Illus. $8.95.

Method of Moments in Applied Mathematics. Yu V. Vorobyev. Translated from the Russian by Bernard Seckler. Gordon and Breach, New York, 1965. 178 pp. Illus. $12.50. Russian Monographs and Texts on Advanced Mathematics and Physics Series.

Mixing in the Chemical Industry. Z. Štěrbáček and P. Tausk. Translated from the Czechoslovakian edition (Prague) by K. Mayer. J. R. Bourne, Translation Ed. Pergamon, New York, 1965. 405 pp. Illus. $15. International Series of Monographs in Chemical Engineering, vol. 5.

Modern Ceramics: Some Principles and Concepts. J. E. Hove and W. C. Riley, Eds. Wiley, New York, 1965. 421 pp. Illus. $14.50. University of California Engineering and Physical Sciences Extension Series. Fourteen papers.

Molecular Photochemistry. Nicholas J. Turro. Benjamin, New York, 1965. 300 pp. Illus. $12.50. Frontiers in Chemistry Series, edited by Ronald Breslow and Martin Karplus.

Nonexistent Compounds: Compounds of Low Stability. W. E. Dasent. Dekker, New York, 1965. 192 pp. Illus. $8.50.

Ontogeny of Minerals. D. P. Grigor'ev. Translated from the Russian edition (1961) by IPST Staff. Y. Brenner, Translation Ed. Israel Program for Scientific Translations, Jerusalem; Davey, New York, 1965. 256 pp. Illus. $11.50.

Oscillometry and Conductometry. E. Pungor. Translated by T. Damokos. A. Townshend, Translation Ed. Pergamon, New York, 1965. 255 pp. Illus. $12. International Series of Monographs in Analytical Chemistry, vol. 21.

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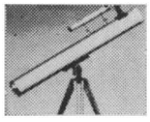

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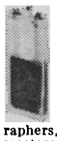

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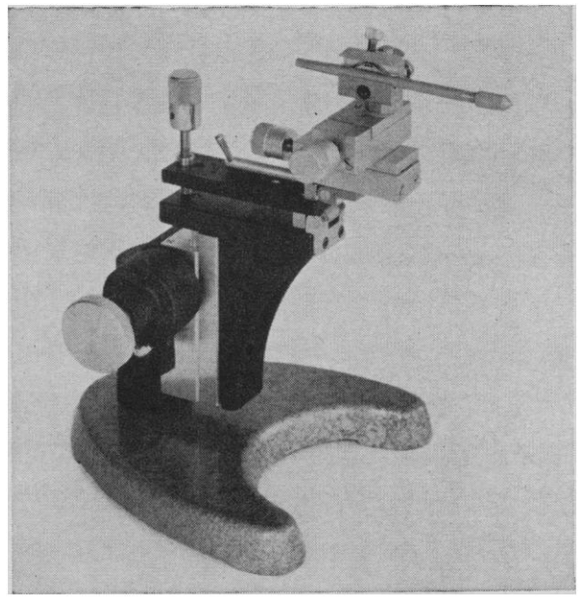

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