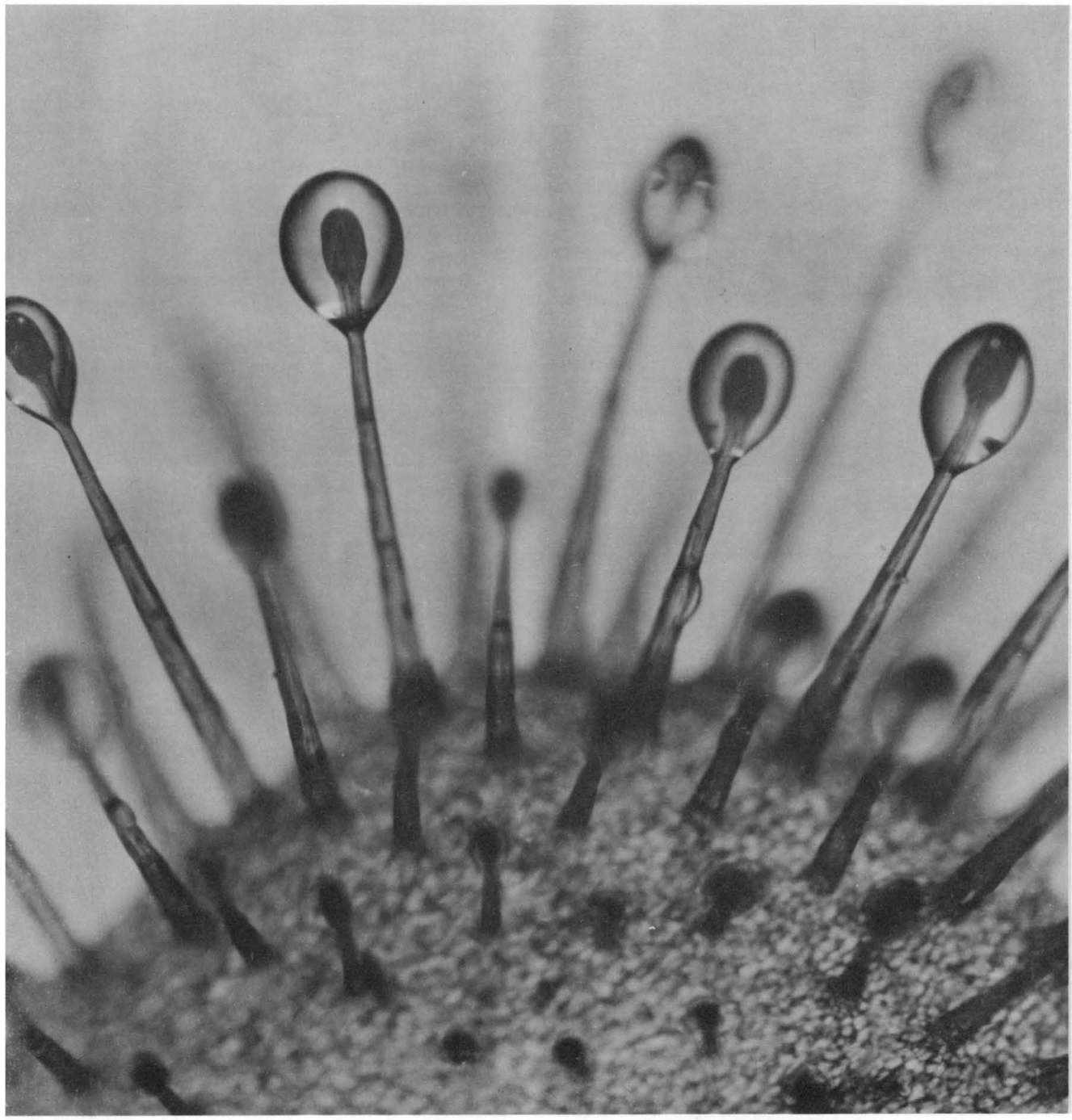
SCIENCE

17 December 1965
Vol. 150, No. 3703

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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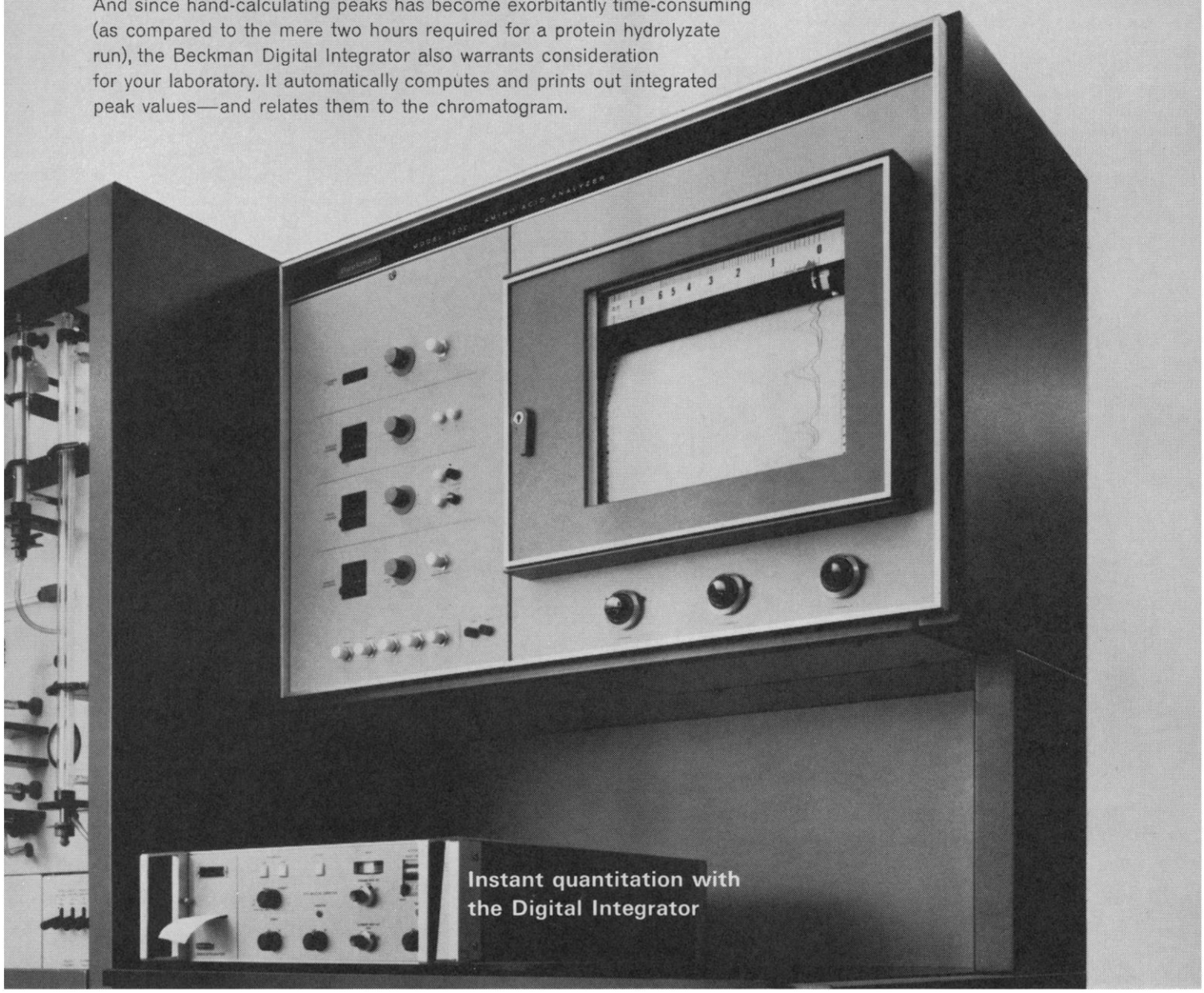

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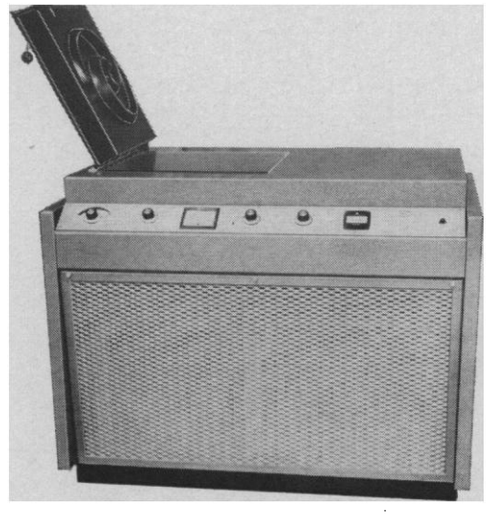

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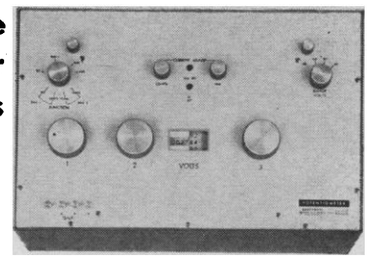

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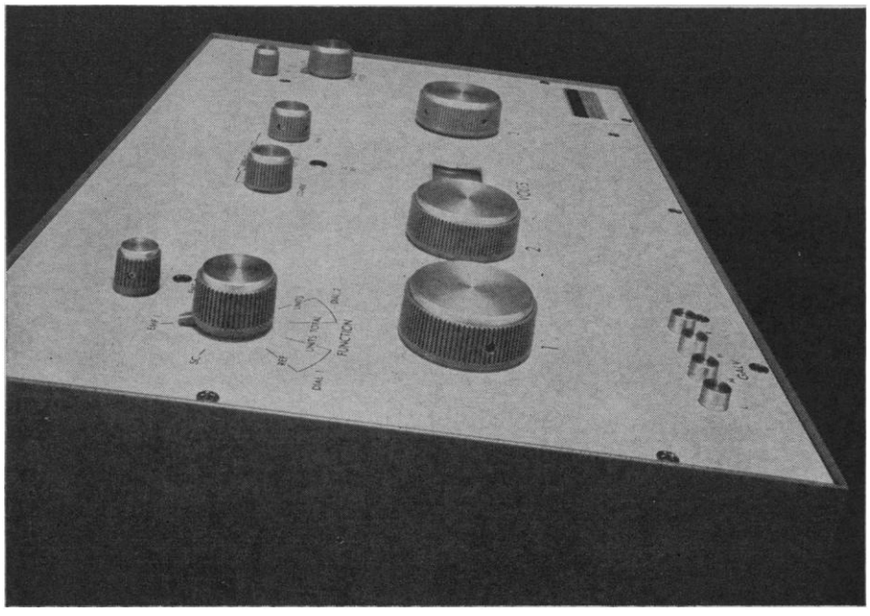

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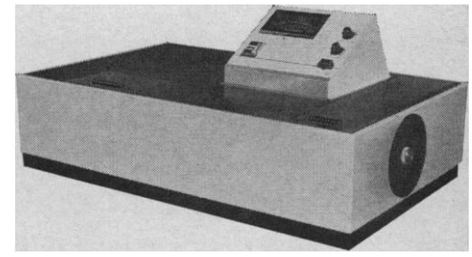

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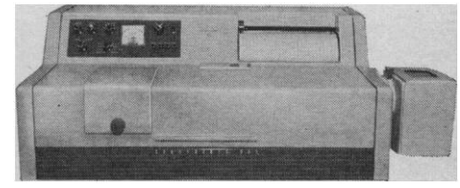

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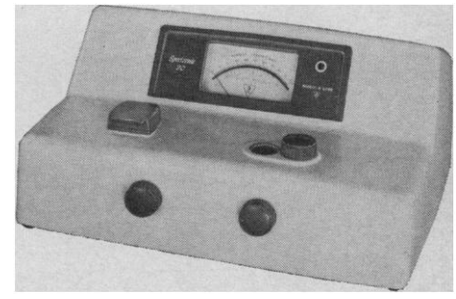

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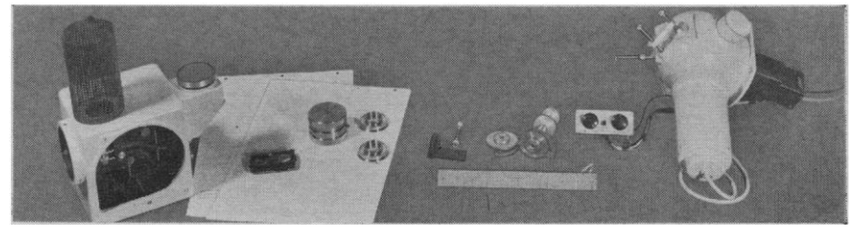

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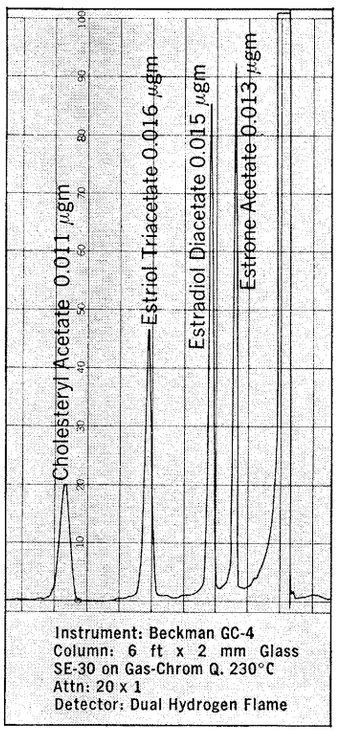

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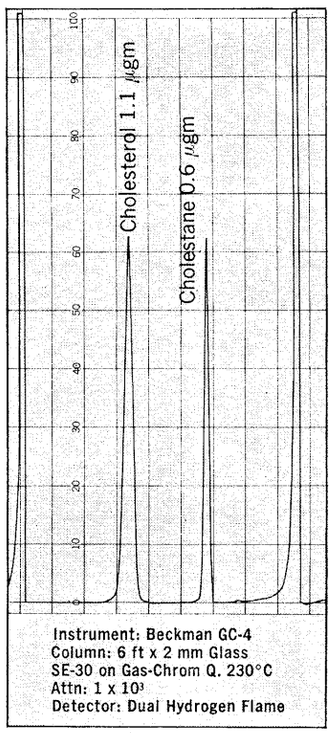

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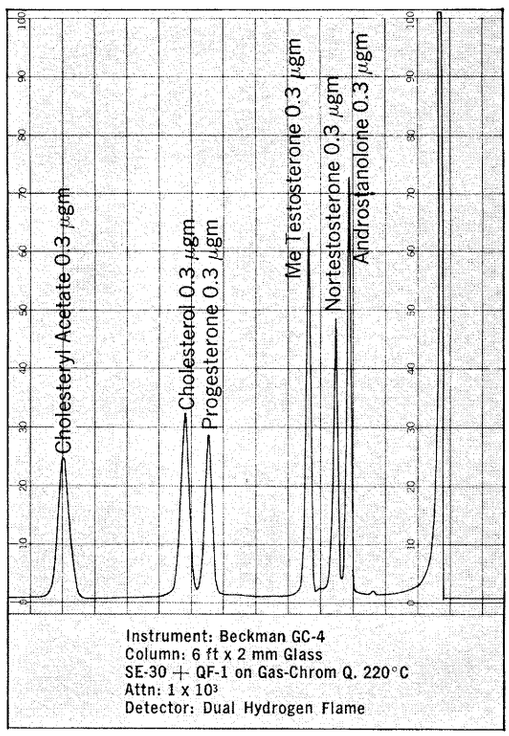

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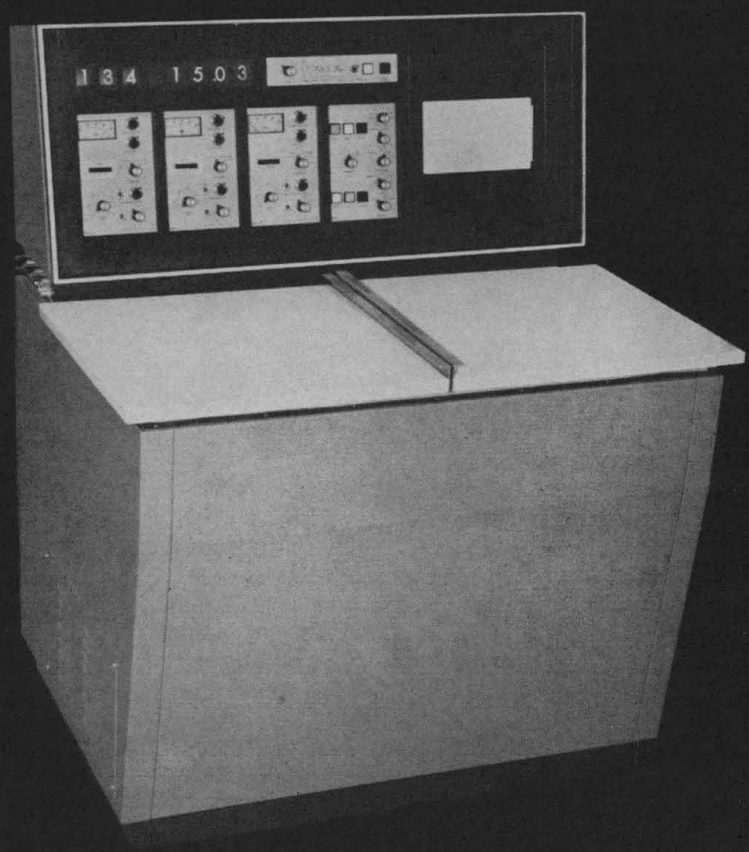

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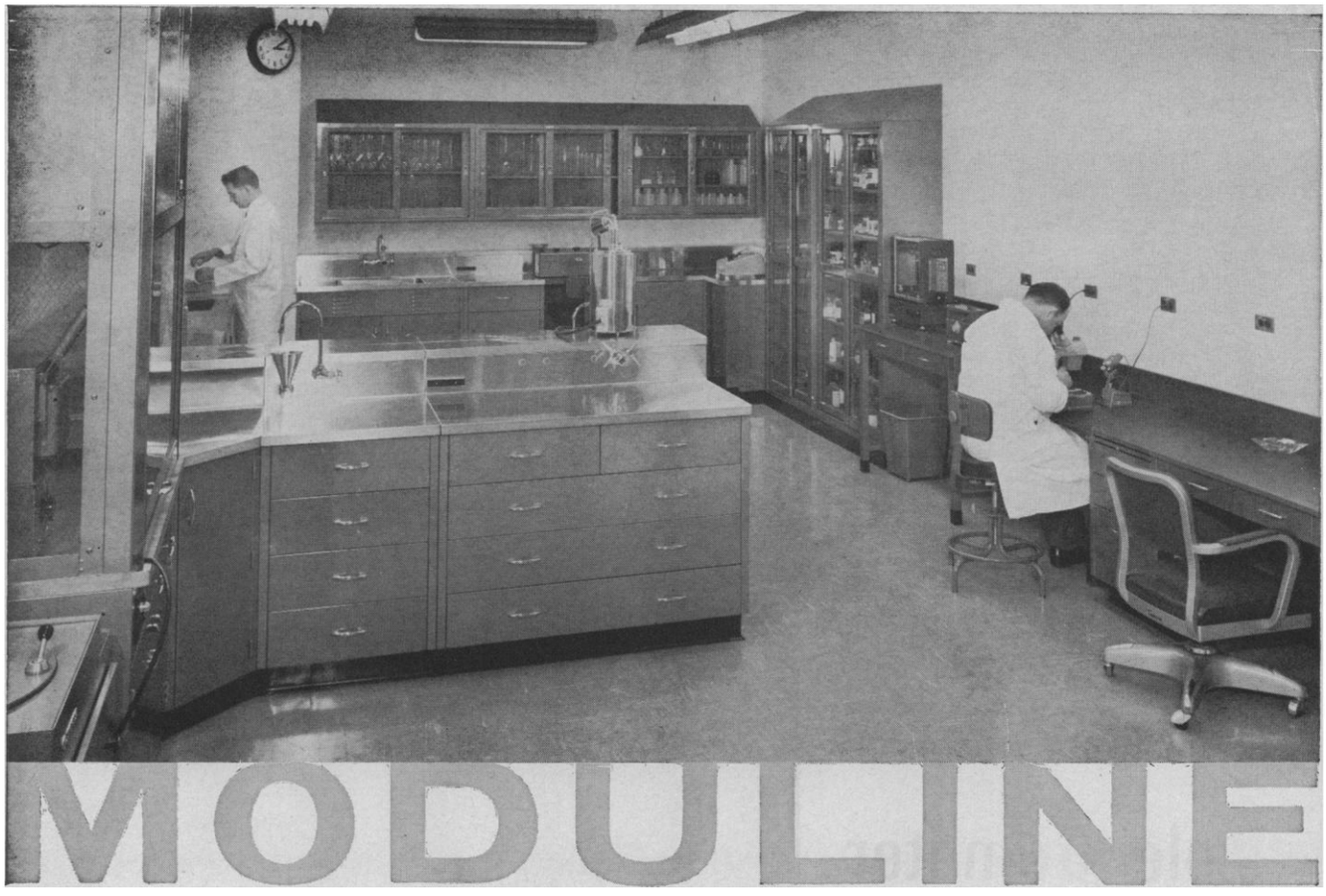

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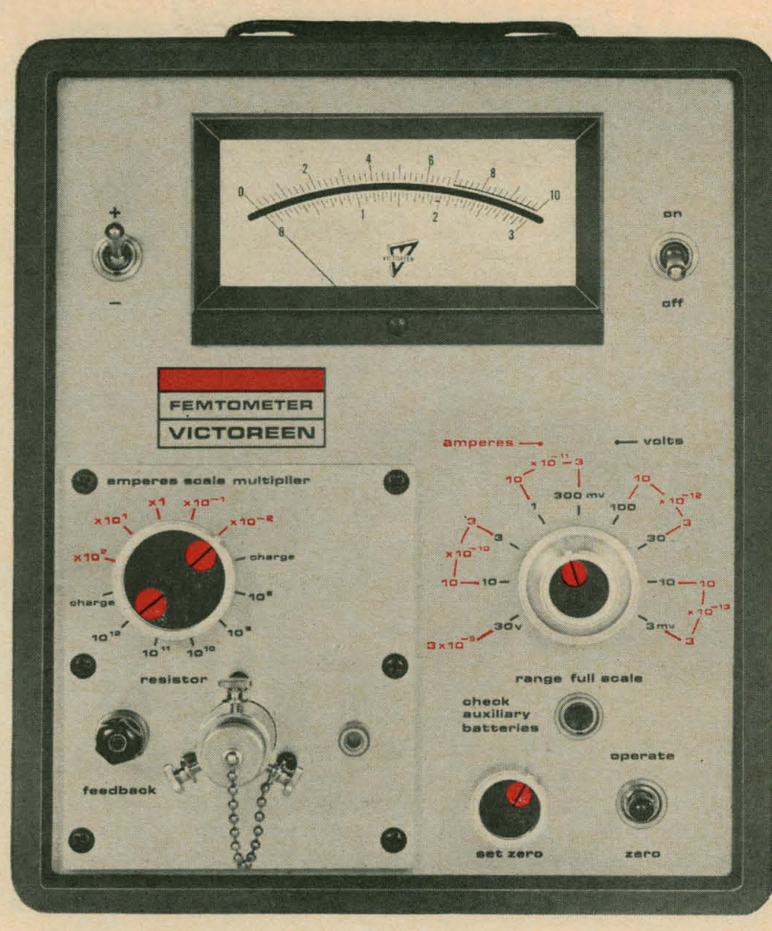

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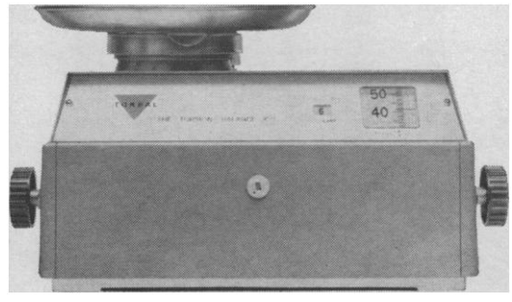

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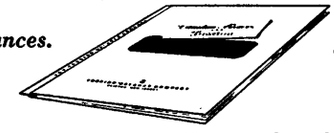

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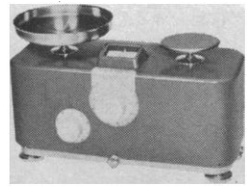
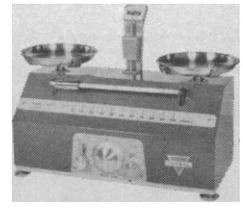


☐ **2000 gram capacity and with 10g. x 0.1g. and notched beam 100g. x 10g. increments.** Available with tare beam instead of notched beam. (DH-2(b)). 4500 gram capacity models (DH-4(a) and DH-4(b)) also available.

Model DH-2 (a)



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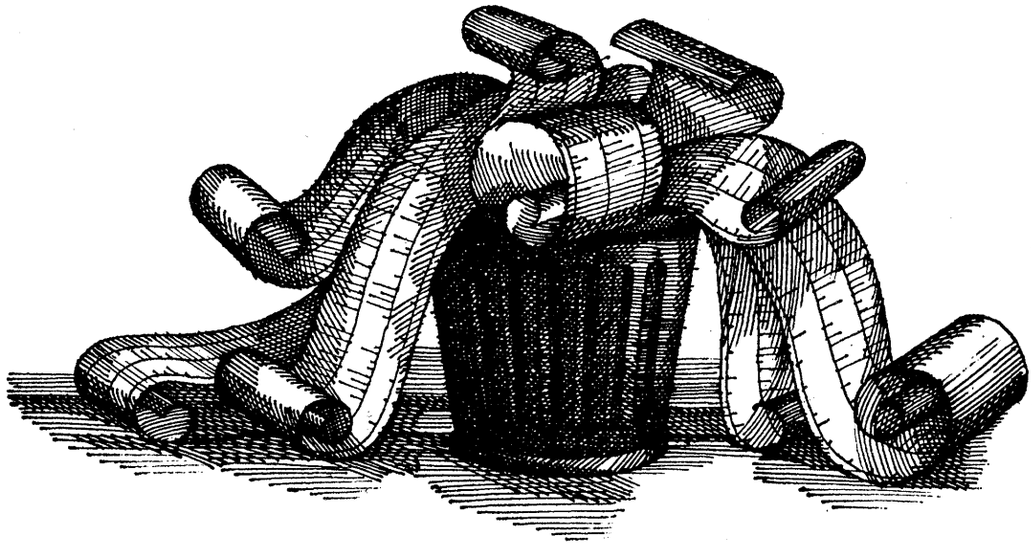

High-Resolution Mass Spectrometry and The chart paper flood

(A poignant tale with a pleasing end)

High-resolution mass spectrometry generates an overwhelming amount of invaluable data. Accordingly, it was bound to be useful for many applications. Take gas chromatography. Its marriage with mass spectrometry was a natural and was accordingly aided, abetted, and applauded by organic chemists, biochemists, and their friends. And this happy union is regularly blessed with issue: reams of chart paper requiring manual and mental baby-sitting. Very tiresome. Also quite unnecessary. Reason: the development of the new MS-9 data-handling system. This is a fast-scanning, high-resolution mass spectrometer which can monitor even microgram samples in effluents of gas chromatographs and yield spectra *in a form which can be computer-analyzed automatically* without inundating you in a veritable sea of chart paper.

From your standpoint (and ours) this is a major breakthrough and therefore is now worthy of at least some elaboration: this MS-9 mass spectrometer can eliminate your data-handling problem by enabling you to record spectra on magnetic tape either for instant playback through a recorder or for feeding directly to a computer for automatic analysis. In other words, the MS-9 doesn't abandon the user in the middle of the game by just spewing out data in difficult-to-use form and then quitting on you.

A few words about the MS-9's other specifications. This is a double-focusing instrument that is actually as simple to operate as a single-focusing mass spectrometer. And, although its over-all capabilities will intrigue the most advanced mass spectroscopist, even users who are not specialists in mass spectrometry will find the MS-9 easy to use with comfort and confidence. Its resolving power is uniquely high and guaranteed to be at least 33,000; switching from high to low resolving power can be done automatically by flicking a switch. It scans rapidly; it will, for example, scan a spectrum in 10 seconds at a resolution of 10,000. The sensitivity is high: microgram quantities can be studied at the highest resolving power. The data can be processed by your computer and the masses measured with such accuracy that the elemental composition of every ion can be calculated.

Obviously, this has been a grossly incomplete recitation of the many talents of the MS-9. Additional compelling information will be forthcoming at your request. Or consider this possibility: outline your specific problems and we'll tell you which of our line of mass spectrometers (the most comprehensive line around) is appropriate to your needs.

For further information on the MS-9, request bulletin number 97DLB.

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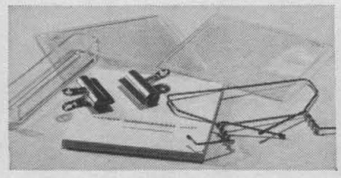
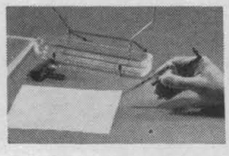
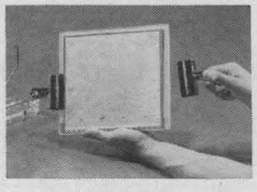
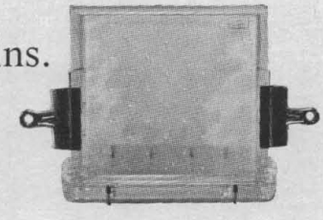
PICKER AEI

The EASTMAN CHROMAGRAM System for thin-layer chromatography consists of EASTMAN CHROMAGRAM Sheet and EASTMAN CHROMAGRAM Developing Apparatus.  It makes TLC—once messy and cumbersome—fast, neat, and uncomplicated. Gone are the bulk and expense of coating equipment and the problems of breakage and siliceous dust. You take EASTMAN CHROMAGRAM Sheet out of a box, spot it,  place it in the EASTMAN CHROMAGRAM Developing Apparatus,  and separation begins. 

EASTMAN CHROMAGRAM Sheet comes in two types: Type K301R with fluorescent indicator and Type K301R2 without fluorescent indicator. Both types are inert poly(ethylene terephthalate) with an adsorbent layer of polyvinyl-alcohol-bound silica gel 100 microns thick; over-all thickness is 0.3mm. The 20cm x 20cm sheets are packed 20 to the box. They are easily cut to desired sizes and shapes—you need stock only the one size.

EASTMAN CHROMAGRAM Developing Apparatus comprises two identical 23cm-square plates made with bosses, ridges, and flats that work together; a solvent trough, an easel, and a pair of spring clips. The apparatus involves no presaturation or lining with solvent-soaked filter paper. It takes little bench space, and that only when in actual use.

You can obtain EASTMAN CHROMAGRAM Sheet and Apparatus from your regular supplier of EASTMAN Organic Chemicals. Also available directly from *Distillation Products Industries,* Rochester, N.Y. 14603, at $35.50 for the apparatus and $23.20 per box of sheet (prices are subject to change without notice and do not include transportation).

"CHROMAGRAM" is a trademark.
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DPi

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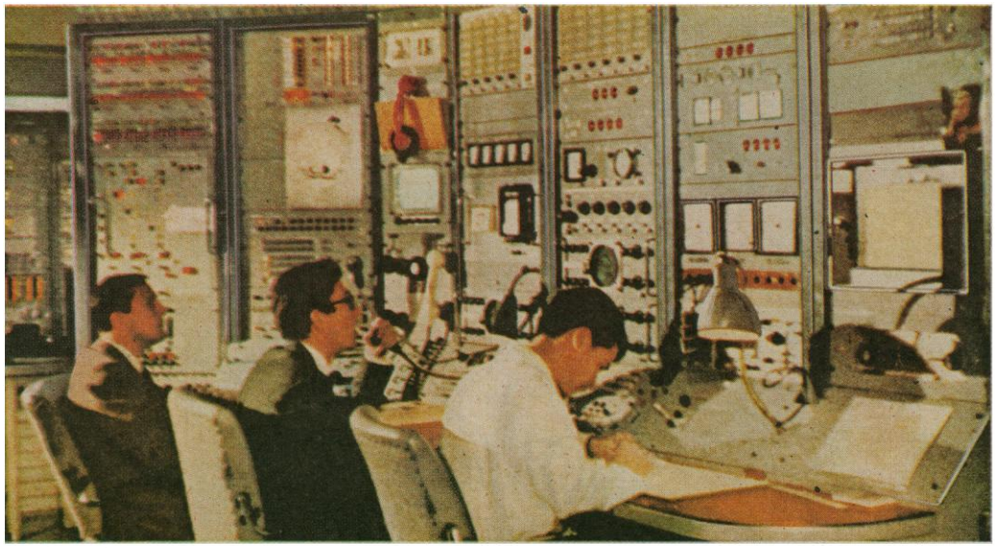

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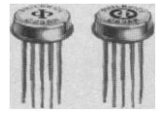
miniature packaging		*Models Q25AH & Q85AH — in low profile TO-8 transistor case*
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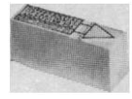
low offset current		*Model P2A — < 10^{-12} A.*
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JOHN A. STEVENSON
4113 Emery Place, NW,
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ROBERT G. CHESHIER
Chicago Medical School,
711 South Wolcott Avenue,
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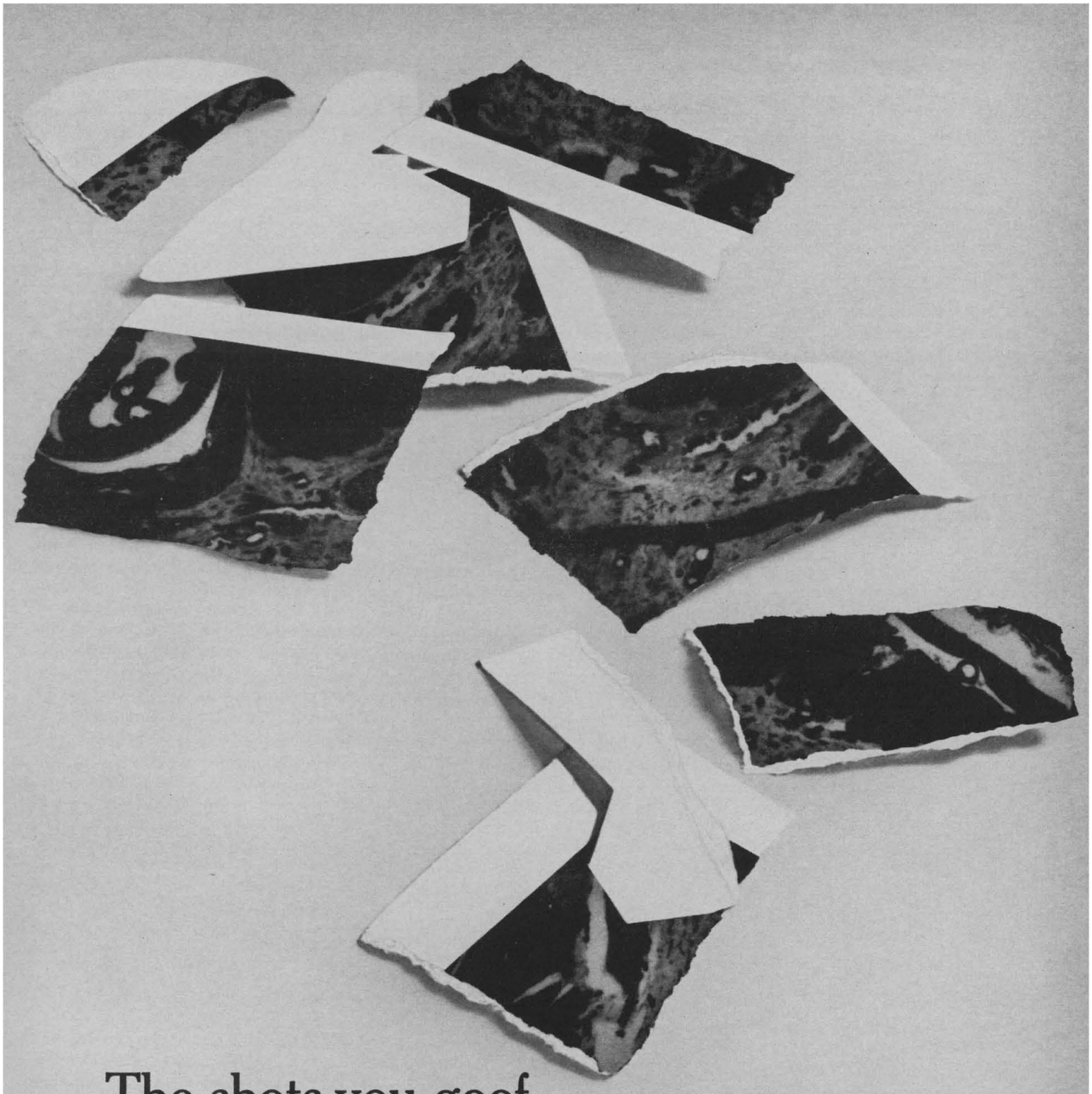
Half-Truth and Consequences

In his editorial "The profits and risks of simplification" (22 Oct., p. 439), Henry Eyring remarks that "one of the greatest hindrances to scientific discovery is the necessary preliminary uprooting of the hallowed simplifications that everyone knows but that just happen to be untrue." It is likely that many oversimplifications that deter scientific progress linger on in lectures and texts. A young graduate is in no position to choose what precepts to question, and it would be most unwise for him to doubt them all. The capability for competent criticism should lie in the older and presumably wiser members of the scientific community.

I propose a permanent committee under the auspices of the AAAS which



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The basic system features include an automatic cuvette positioner, adaptable to laboratory quality monochromators such as the Beckman DU or the Zeiss MQ4III; a detector-indicator unit with direct digital absorbance readout; and a main console housing the lamp source stabilizer, photometer circuit, chart recorder and automation circuitry.

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Wavelength Range	200 — 700 mu
Background Neutralization	to 2.9 A.
Linearity	± 0.25% or within 0.005 A.
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Maximum Noise	less than 0.003 A at 1.5 A.

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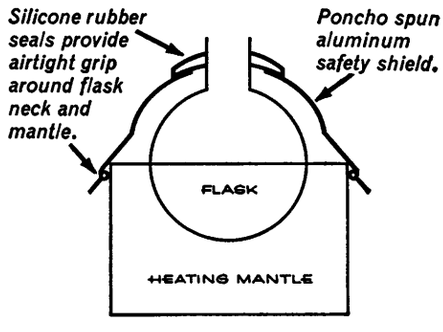
WHAT IT DOES: The Poncho protects mantles from spillover, flasks from falling objects, personnel from flying glass in cases of implosion or explosion. And it serves as an efficient heating top.

PROOF: To prove its safety, we fit a glass flask and Glas-Col quartz heating mantle with a Glas-Col Poncho safety shield . . brought to 650°C at full wattage . . then drenched it with ether, acetone, gasoline. *We could not produce a fire.*

REASON: The Poncho actually *seals* the flask *into* the mantle, greatly reducing fire hazards. Nitrogen purging further reduces danger when using flasks 12 liters and larger.



Write for descriptive **Poncho** *Bulletin . . which includes facts on Glas-Col's new Splash Guard* designed for smaller, low-wattage mantle and flask protection. Poncho/Mantle combinations available for flasks 500 ml to 200 liters, single or multiple neck.*

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HEATING MANTLES
Glas-Col Apparatus Company
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17 December 1965, Volume 150, Number 3703

SCIENCE

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Conservation and Natural Beauty

Once a powerful factor in American politics, the conservation movement is relatively weak, and divided as to objectives. During the heyday of Theodore Roosevelt's administration, tremendous progress was made in setting aside large areas as national parks. After the initial success, the movement chose to pursue other social objectives and gradually lost its force. During Franklin Roosevelt's administration there was another peak in conservation interest and accomplishment. In contrast to these two exemplary periods there have been other times of less activity. Vigor and initiative in conservation were lacking at a time of great expansion in population and industry. We permitted the pollution of most of our great rivers, the proliferation of urban sprawl, and destruction of much natural beauty. Even the national parks have suffered. In the use of these priceless resources, a major criterion of progress has been increase in the number of "visitor days." As a result, part of Yosemite Park on a weekend is like a city slum.

The need for action in conservation has been recognized. More than 30 major organizations are now active. One of the most dynamic of these is the Sierra Club. Membership is relatively small (about 32,000), but it is growing fast, and it has become national in scope. The group is adept at mobilizing support in specific controversies. The Sierra Club played a large role in forcing the Pacific Gas and Electric Company to abandon its plans for a reactor at Bodega Bay. Lately, the Sierra Club has made itself heard with respect to the power lines associated with the Stanford linear accelerator. Unfortunately, these are local skirmishes, and while such skirmishes may be won and their winning may be exemplary, many others are lost by default. Thus, while a few battles go well, the war as a whole is lost.

If we are to arrest the trend toward mass ugliness we must do more than stop or modify a few construction projects. An outline of broader goals was enunciated by President Johnson in his message on natural beauty. He said, "Our conservation must not be just classic protection and development but a creative conservation of restoration and innovation." This statement should be viewed as a challenge to conservationists to come up with ideas and plans. At least one leader has done so. In a recent speech Russell E. Train, president of the Conservation Foundation, has suggested a number of types of initiative that might be fostered. For instance, he would increase the opportunities for recreation associated with limited-access highways. Through expansion of rights-of-way, it would be possible to provide footpaths, bicycle paths, trails to natural features, picnic grounds, and even camp sites. One can imagine, further, a series of small but beautiful plots devoted to local flora.

In a recent issue of this journal (*Science*, 3 December), E. C. Stone discusses the problem of preserving vegetation in parks and wilderness. He makes it clear that we have already unwittingly conducted large-scale ecological experiments in our parks. By controlling predators we have permitted overexpansion of ungulates, with resultant large-scale destruction of flora. By controlling fires we have changed the natural succession of vegetation. Perhaps in our approach to conservation and natural beauty we would progress best by making some experiments. We should give over much of the areas of our parks to wilderness, letting nature take its course, while observing closely what is happening. At the same time, we might well devote limited areas to controlled experimentation.

These are only suggestions for initiative. But they illustrate the kind of approach the conservation movement must make if it is to change from an effort devoted to rear-guard action into a dynamic force for constructive achievement.—PHILIP H. ABELSON

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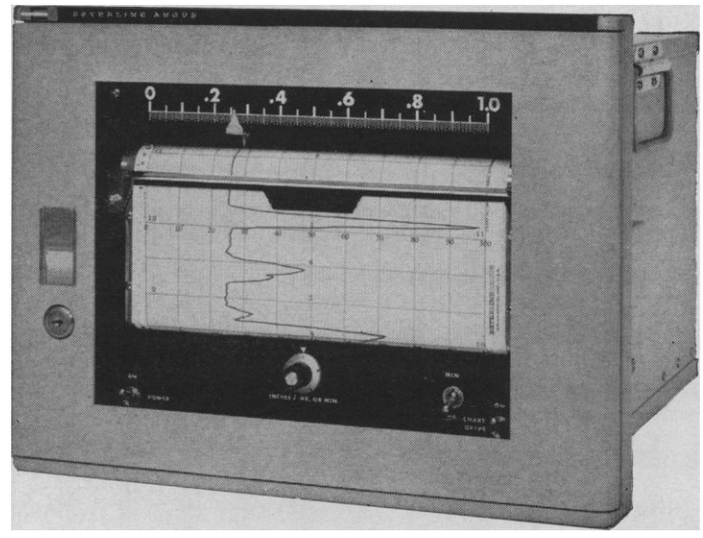

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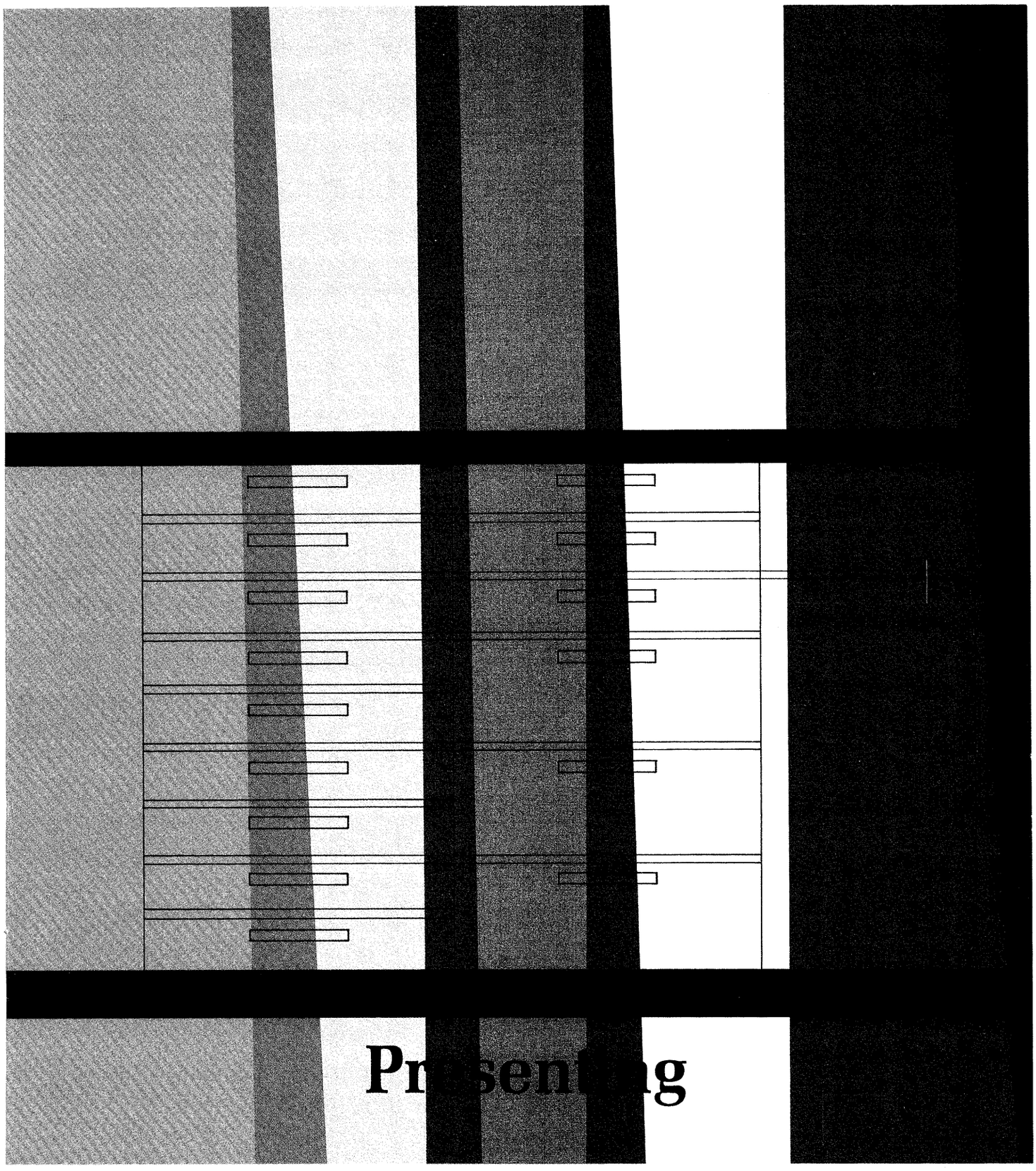

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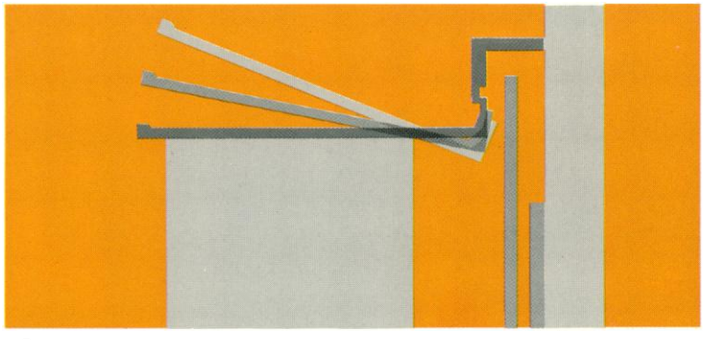

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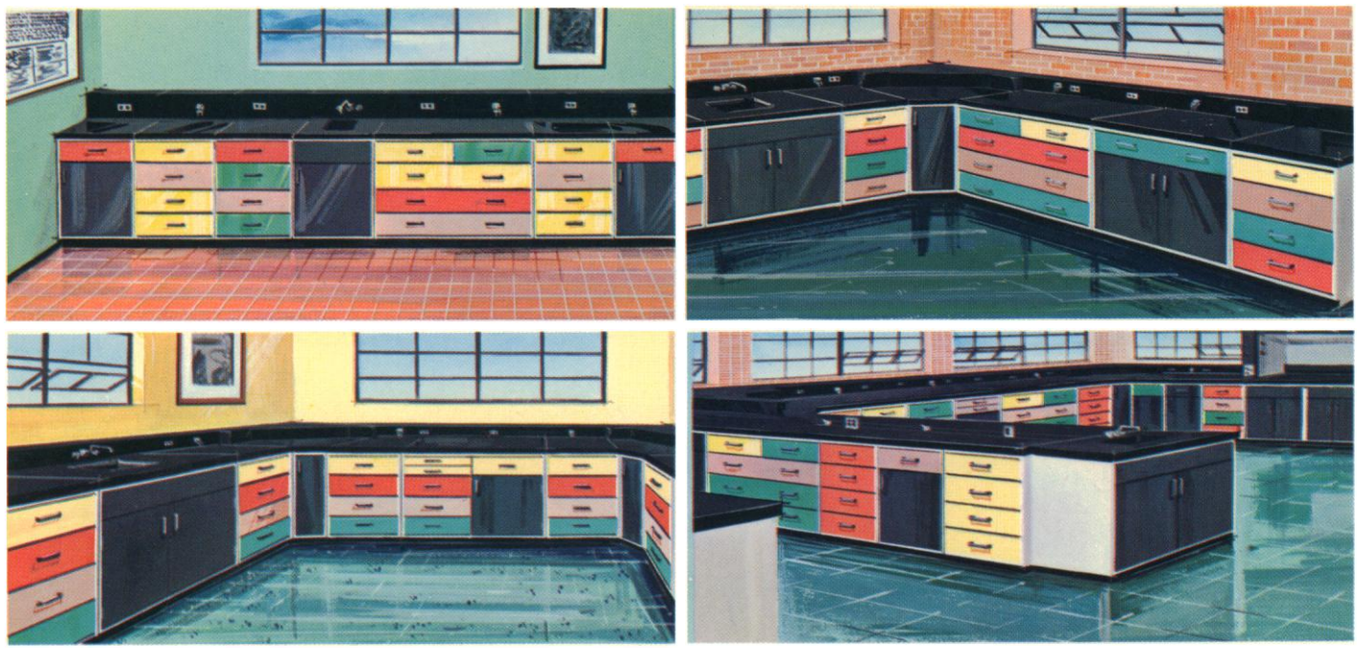

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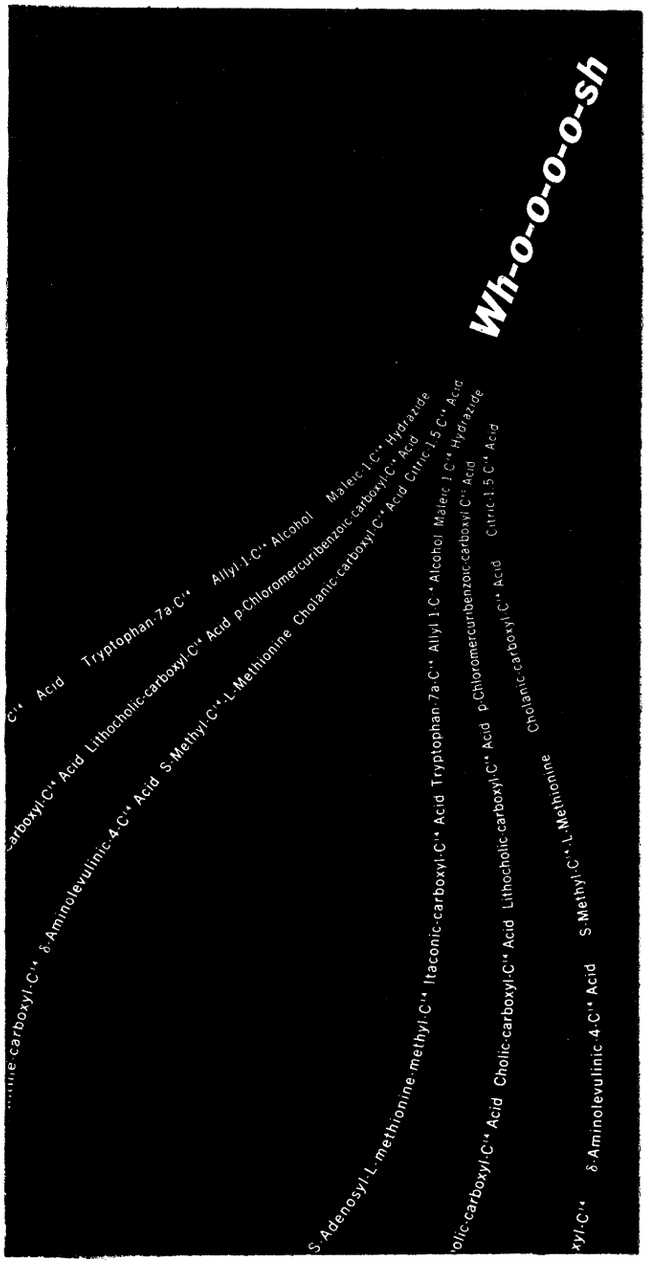
[1] J. H. RUSH AND G. K. SCHNABLE, APPL. OPT. 3, 1347 (1964)



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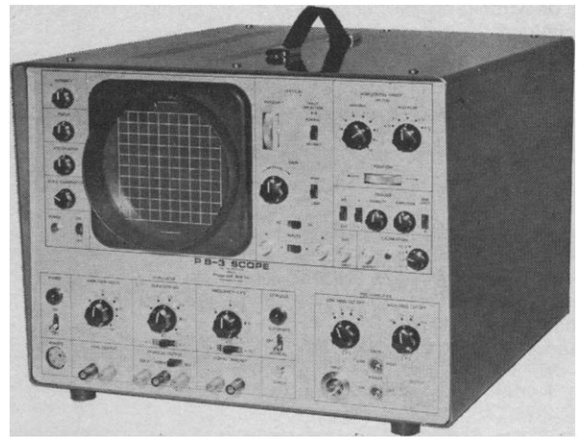

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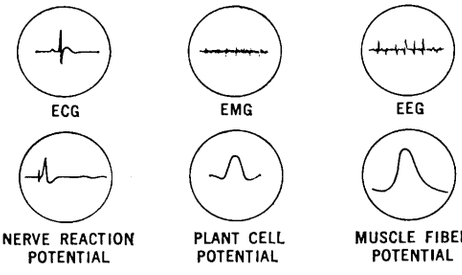

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27–30. **Differential Equations and Dynamical Systems.** Univ. of Puerto Rico, Mayaguez. (Center for Dynamical Systems, Brown Univ., Providence, R.I.)

27–30. **Phi Delta Kappa**, Professional Education Fraternity, Univ. of Oklahoma, Norman. (M. Bemis, Phi Delta Kappa, 8th and Union, Bloomington, Ind. 47402)

28–30. Indian **Medical** Assoc., 41st conf., Baroda (Gujarat). (Indian Medical Assoc. House, Indraprastha Marg., New Delhi 1)

29–4. **Pugwash Conf. on Science and World Affairs**, Addis Ababa, Ethiopia. (J. Rotblat, Pugwash Continuing Committee, 8 Asmara Rd., London, N.W.2, England)

January

4–7. **Solid State Physics**, conf., Manchester College of Science and Technology, Manchester, England. (S. F. Edwards, Dept. of Physics, Victoria Univ. of Manchester, Manchester 13)

5–8. National Soc. of **Professional Engineers**, winter mtg., Bal Harbour, Fla. (NSPE, 2029 K St., NW, Washington, D.C. 20006)

6–7. Society for **General Microbiology**, 45th general mtg., London, England. (P. H. Clarke, Biochemistry Dept., University College, Gower St., London, W.C.1)

6–10. International Council of **Scientific Unions**, 11th general assembly, Bombay, India. (Intern. Council of Scientific Unions, Via Sebenico 2, Rome, Italy)

7–8. **Surgical Research** Soc., winter mtg., London, England. (A. P. M. Forrest, Cardiff Royal Infirmary, Newport Rd., Cardiff, Wales)

10–13. **Radioactive Isotopes** in Clinical Medicine and Research, 7th intern. symp., Bad Gastein, Austria. (R. Hofer, Second Medical Univ. Clinic, Garnisongasse 13, Vienna 9)

11–12. Man's Extension into the **Sea**, symp. on SEALAB II, Washington, D.C. (T. Evans, Conference Management Organizer, Colonial Bldg., 105 N. Virginia Ave., Falls Church, Va. 22046)

12–14. **Medicinal and Aromatic Plants in India**, symp., Central Indian Medicinal Plants Organization, Lucknow, India. (S. C. Datta, CIMPO, 4 Sapru Marg, Lucknow)

12–20. International **Fertility** Assoc., Latin American mtg., Acapulco, Mexico. (M. Roland, 109-23 71st St., Forest Hills, N.Y. 11375)

13–14. Institute of **Mathematical Sciences**, 4th Matscience anniversary symp., Madras, India. (C. P. Ramaswami Aiyer, Inst. of Mathematical Sciences, Madras)

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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., 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, ALA, 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)

24–27. 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 Engineers**, 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)

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 20418)

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. 07703)

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)

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)

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, Washintgon, 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)

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 25)

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)

Section of the American Society of Plant Physiologists and the Western Region of the American Society for Horticultural Science considered "Salinity and the growth of plants." Paul Saltman (University of Southern California) was chairman of the symposium. L. Bernstein (U.S. Salinity Laboratory, Riverside) reported on the salinity and the mineral composition in plants; his colleague at the Riverside Laboratory, R. H. Nieman, discussed the suppression of plant growth due to salinity. The symposium ended with E. Epstein (University of California, Davis) reporting on salinity and its effect on the pattern of selective ion transport in plants.

Several sessions of contributed papers were held. These included a discussion by D. Chapman (Scripps Institution of Oceanography) on a new xanthophyll in the cryptomonad algae. Other reports from Scripps concerning algae included J. Lewin on the weakly silicified diatoms, B. Reimann on ultrastructure of certain diatom walls, and R. Lewin on the apochlorotic counterparts of filamentous blue-green algae. Researchers at the University of California at Berkeley considered fungal zoospores with regard to production (V. Holsinger and D. Branton), morphology (E. Crump and D. Branton), and ultrastructure (M. Fuller, R. Reichle, and H. Whisler).

Another session considering morphology of vascular plants included the ontogeny of the *Vitis* tendril (S. Tucker and L. Hoefert), ultrastructure of *Chenopodium* apices (E. Gifford and K. Stewart), and growth of pollen tubes in *Oenothera* (A. Hecht and S. Kumar). Other papers reported on the leaf surface wax of garden beet (B. Bystrom and co-workers), drought resistance in mosses (M. Iman and H. Currier), and information concerning the nature of biological membranes as a result of freeze-etch techniques (D. Branton).

The annual business meeting was chaired by Katherine Esau (University of California, Santa Barbara). The new officers for 1965–66 are: Paul C. Silva (University of California, Berkeley), chairman; and Arthur R. Kruckeberg (University of Washington), vice-chairman. The Section will participate at the national meeting of the AAAS in Berkeley, December 1965, and the next meeting will be in Seattle, Washington, with the Pacific Division of AAAS.

JANET R. STEIN

University of British Columbia, Vancouver 8, Canada

NEW BOOKS

(Continued from page 1580)

Flower Pollination in the Phlox Family. Verne Grant and Karen A. Grant. Columbia Univ. Press, New York, 1965. 192 pp. Illus. $5.75.

Fundamentals of Soil Science. C. E. Millar, L. M. Turk, and H. D. Foth. Wiley, New York, ed. 4, 1965. 503 pp. Illus. $9.95.

General Genetics. Adrian M. Srb, Ray D. Owen, and Robert S. Edgar. Freeman, San Francisco, ed. 2, 1965. 569 pp. Illus. $9.

Guaianolides and Germacranolides. František Šorm and Ladislav Dolejš. Hermann, Paris, 1965. 153 pp. Illus. Paper, F. 48. Chemistry of Natural Products Collection, No. 6, edited by Edgar Lederer.

Haematological Techniques for Use on Animals. R. K. Archer. Davis, Philadelphia, 1965. 145 pp. Illus. Paper, $4.

Handbook of Physiology. A critical, comprehensive presentation of physiological knowledge and concepts. Section 3, vol. 2, *Respiration*. Wallace O. Fenn and Hermann Rahn, Eds. American Physiological Soc., Washington, D.C., 1965. 778 pp. Illus. $28 (order from Williams and Wilkins, Baltimore).

Handbook of Waterfowl Behavior. Paul A. Johnsgard. Cornell Univ. Press, Ithaca, N.Y., 1965. 394 pp. Illus. $10.

Histopathologic Technic and Practical Histochemistry. R. D. Lillie. McGraw-Hill, New York, ed. 3, 1965. 727 pp. Illus. $13.95.

Homeostasis. L. L. Langley. Reinhold, New York, 1965. 126 pp. Illus. Paper, $1.95. A volume in the Selected Topics in Modern Biology Series, edited by Peter Gray.

Immunological Diseases. Max Samter, Ed. Little, Brown, Boston, 1965. 990 pp. Illus. $30. Eighty-one papers.

Mammalian Radiation Lethality: A Disturbance in Cellular Kinetics. Victor P. Bond, Theodor M. Fliedner, and John O. Archambeau. Academic Press, New York, 1965. 356 pp. Illus. $9.50. American Institute of Biological Sciences and U.S. Atomic Energy Commission Monograph Series on Radiation Biology.

Mammals of the Pacific States: California, Oregon, and Washington. Lloyd G. Ingles. Stanford Univ. Press, Stanford, Calif., 1965. 518 pp. Illus. $10.

Methods and Goals in Human Behavior Genetics. Steven G. Vandenberg, Ed. Academic Press, New York, 1965. 365 pp. Illus. $8.95. Sixteen papers.

Neurotic Styles. David Shapiro. Basic Books, New York, 1965. 221 pp. $5.50.

Nutritional Aspects of Cardiovascular Diseases. Eörs Bajusz. Lippincott, Philadelphia, 1965. 264 pp. Illus. $12. International Monographs: Aspects of Animal and Human Nutrition Series.

Newer Methods of Nutritional Biochemistry. With applications and interpretations. vol. 2. Anthony A. Albanese, Ed. Academic Press, New York, 1965. 574 pp. Illus. $18.50. Eleven papers: "Body composition" by A. M. Pearson; "Energy metabolism" by R. Passmore and M. H. Draper; "Growth and pituitary hormones" by O. H. Gaebler; "Utilization of essential amino acids by man"

by Helen E. Clark; "'Abnormal metabolites' of amino acid origin" by Herbert Sprince; "Enzymes of the tryptophan→ nicotinic acid pathway" by Francesco M. Chiancone; "Folic acid, biotin, and pantothenic acid" by E. L. R. Stokstad and Susan M. Oace; "The determination of the fat-soluble vitamins: A, D, E, and K" by James Allen Olson; "Anabolic steroids" by Aaron Arnold and Gordon O. Potts; "Calcuim and phosphorus metabolism" by Leo Lutwak, and "Epilogue" by Anthony A. Albanese.

The Peptides. vol. 1, *Methods of Peptide Synthesis*. Eberhard Schroder and Klaus Lubke. Translated from the German by Erhard Gross. Academic Press, New York, 1965. 511 pp. Illus. $18.

Plant Physiology: A Treatise. vol. 4A, *Metabolism: Organic Nutrition and Nitrogen Metabolism*. F. C. Steward, Ed. Academic Press, New York, 1965. 751 pp. Illus. Five papers: "Photosynthesis (carbon assimilation): Environmental and metabolic relationships" by Moyer D. Thomas; "Micrometeorology and the physiology of plants in their natural environment" by Edgar Lemon; "The respiration of plants and their organs" by E. W. Yemm; "The respiration of bulky organs" by Dorothy F. Forward; and "Metabolism of nitrogenous compounds" by F. C. Steward and D. B. Durzan.

Practical Clinical Enzymology. J. King. Van Nostrand, Princeton, N.J., 1965. 371 pp. Illus. $12.50.

Principles of Nutrition. Eva D. Wilson, Katherine H. Fisher, and Mary E. Fuqua. Wiley, New York, ed. 2, 1965. 606 pp. Illus. $7.25.

Quantitative Problems in Biochemistry. Edwin A. Dawes. Williams and Wilkins, Baltimore, ed. 3, 1965. 333 pp. Illus. $8.25.

Readings in Ecology. Edward J. Kormondy, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1965. 235 pp. Illus. Paper, $3.95. Prentice-Hall Biological Science Series, edited by William D. McElroy and Carl P. Swanson. Sixty papers on the following topics: Early natural history (3 papers); The physical and chemical environment (14 papers); The study of populations (15 papers); The study of communities (13 papers); and The concept of the ecosystem (15 papers).

Das Röntgenfernsehen. Technische Grundlagen und klinisch-rontgenologische Anwendung. Alfred Gebauer, Josef Lissner, and Ottfried Schott. Thieme, Stuttgart, Germany, 1965 (order from Intercontinental Medical Book Corp., New York). 176 pp. Illus. DM. 34.

Science of Biology. David F. Miller and B. B. Vance. Lippincott, Philadelphia, 1965. 688 pp. Illus. $5.80.

The Structure of Lipids by Spectroscopic and X-Ray Techniques. D. Chapman. Wiley, New York, 1965. 335 pp. Illus. $10.50.

Textbook of Physiology and Biochemistry. George H. Bell, J. Norman Davidson, and Harold Scarborough. Williams and Wilkins, Baltimore, ed. 6, 1965. 1152 pp. Illus. $15.25.

Vertebrates: Their Structure and Life. W. B. Yapp. Oxford Univ. Press, New York, 1965. 533 pp. Illus. $8.50.

Viral and Rickettsial Infections of Man. Frank L. Horsfall and Igor Tamm, Eds.

Lippincott, Philadelphia, ed. 4, 1965. 1300 pp. Illus. $15.50. Fifty-four papers.

Vision and Visual Perception. Clarence H. Graham, Ed. Wiley, New York, 1965. 645 pp. Illus. $23.50. Contributors are Neil R. Bartlett, John Lott Brown, Yun Hsia, Conrad G. Mueller, and Lorrin A. Riggs.

Visual Capabilities in the Space Environment. A collection of articles sponsored by the Human Factors Society. C. A. Baker, Ed. Pergamon, New York, 1965. 211 pp. Illus. $10.50. Sixteen papers; thirteen are reprints from *Human Factors*, vol. 4, No. 6, and vol. 5, No. 3.

Wheat: Botany, Cultivation, and Utilization. R. F. Peterson. Hill, London; Interscience (Wiley), New York, 1965. 448 pp. Illus. $16. A volume in the World Crops Books Series, edited by Nicholas Polunin.

Work and Mental Illness. Eight case studies. Ozzie G. Simmons. Wiley, New York, 1965. 283 pp. $6.95.

Mathematics, Physical Sciences, and Engineering

Advanced Physical Chemistry: Molecules, Structure, and Spectra. Jeff C. Davis, Jr. Ronald, New York, 1965. 642 pp. Illus. $12.

Advanced Quantum Theory: An Outline of the Fundamental Ideas. Paul Roman. Addison-Wesley, Reading, Mass. 1965. 749 pp. Illus. $17.50. Addison-Wesley Series in Advanced Physics.

Advances in Fluorine Chemistry. vol. 4. M. Stacey, J. C. Tatlow, and A. G. Sharpe, Eds. Butterworth, Washington, D.C., 1965. 325 pp. Illus. $14.95. Six papers: "The Balz-Schiemann reaction" by H. Suschitzky; "Some techniques and methods of inorganic fluorine chemistry" by R. D. Peacock; "Ionic reactions of fluoro-olefins" by R. D. Chambers and R. H. Mobbs; "Structural aspects of monofluorosteroids" by N. F. Taylor and P. W. Kent; "Fluorides of the main group elements" by R. D. W. Kemmitt and D. W. A. Sharp; and "The vibrational spectra of organic fluorine compounds" by J. K. Brown and K. J. Morgan.

Advances in Geophysics. vol. 11. H. E. Landsberg and J. Van Mieghem, Eds. Academic Press, New York, 1965. 359 pp. Illus. $14. Four papers: "Astrogeology: Terrestrial meteoritic craters and the origin of tektites" by Vladimir Vand; "Atmospheric ozone" by Arlette Vassy; "The heat and water budget of the earth's surface" by David H. Miller; and "Fluctuations of ground-water levels" by G. Tison, Jr.

Analogues for the Solution of Boundary-Value Problems. B. A. Volynskii and V. Ye. Bukhman. Translated from the Russian edition (Moscow, 1960) by Jacques J. Schorr-Kon. J. G. L. Michel, Translation Ed. Pergamon, New York, 1965. 472 pp. Illus. $15. International Tracts in Computer Science and Technology and Their Application.

Angular Correlation Methods in Gamma-Ray Spectroscopy. A. J. Ferguson. North-Holland, Amsterdam; Interscience (Wiley), New York, 1965. 226 pp. Illus. $8.50.

Applied Capillary Microscopy: The

Role of Microorganisms in the Formation of Iron-Manganese Deposits. B. V. Perfil'ev, D. R. Gabe, A. M. Gal'perina, V. A. Rabinovich, A. A. Sapotnitskii, É. É. Sherman, and É. P. Troshanov. Translated from the Russian edition (Moscow, 1964) by F. L. Sinclair. Consultants Bureau, New York, 1965. 130 pp. Illus. Paper, $22.50.

Applied Structural Design of Building. Thomas H. McKaig. McGraw-Hill, New York, ed. 3, 1965. 507 pp. Illus. $17.50.

Astronautics for Science Teachers. John G. Meitner, Ed. Wiley, New York, 1965. 389 pp. Illus. $8.95. Ten papers.

Azeotropy and Other Theoretical Problems of Vapour-Liquid Equilibrium. Wladyslaw Malesinski. Polish Scientific Publishers, Warsaw; Interscience (Wiley), New York, 1965. 234 pp. Illus. $9.25.

Bituminous Materials: Asphalts, Tars, and Pitches. vol. 2, pt. 1, *Asphalts.* Arnold J. Hoiberg, Ed. Interscience (Wiley), New York, 1965. 716 pp. Illus. $27.50. Twenty papers.

Borides, Silicides, and Phosphides. A critical review of their preparation, properties and crystal chemistry. Bertil Aronsson, Torsten Lundström, and Stig Rundqvist. Methuen, London; Wiley, New York, 1965. 130 pp. Illus. $4.25.

A Brief Survey of Modern Algebra. Garrett Birkhoff and Saunders MacLane. Macmillan, New York, ed. 2, 1965. 287 pp. Illus. $7.

Chemistry. E. Russell Hardwick. Blaisdell (Ginn), New York, 1965. 317 pp. Illus. $7.50. A Blaisdell Book in the Pure and Applied Sciences.

Chemistry and Technology of Explosives. vol. 2, Tadeusz Urbański. Translated from the Polish edition by Władysław Ornaf and Sylvia Laverton. Państwowe Wydawnictwo Naukowe, Warsaw; Pergamon, New York, 1965. 529 pp. Illus. $12.

Chemistry in the Space Age. Marjorie H. Gardner. Holt, Rinehart, and Winston, New York, 1965. 176 pp. Illus. Paper, $1.28; cloth, $2.95.

Complex Variable Methods in Science and Technology. John Cunningham. Van Nostrand, Princeton, N.J., 1965. 186 pp. Illus. $7.50.

Components for Pneumatic Control Instruments. The static and dynamic characteristics of pneumatic resistances, capacitances, and transmission lines. L. A. Zalmanzon. Translated from the Russian edition (Moscow, 1961) by R. Hardbottle. F. P. Stainthorp, Translation Ed. Pergamon, New York, 1965. 337 pp. Illus. $17.50.

Computer Control of Industrial Processes. Emanuel S. Savas. McGraw-Hill, New York, 1965. 414 pp. Illus. $16.

Conceptions de la physique contemporaine. Les interprétations de la mécanique quantique et de la mesure. Bernard d'Espagnat. Hermann, Paris, 1965. 154 pp. Illus. F. 24.

A Concise Encyclopedia of Metallurgy. A. D. Merriman. Elsevier, New York, 1965. 1192 pp. Illus. $7.50.

Constitution of Binary Alloys. First supplement. Rodney P. Elliott. McGraw-Hill, New York, 1965. 909 pp. Illus. $35. McGraw-Hill Series in Materials Science and Engineering.

Crystal Structures. vol 3, Inorganic Compounds R_x $(MX4)_y$, $R_x(M_nX_p)_y$, Hydrates, and Ammoniates. Ralph W. G. Wyckoff. Interscience (Wiley), New York, ed. 2, 1965. 989 pp. Illus. $27.50.

Crystals: Perfect and Imperfect. Allan Bennett, Donald Hamilton, Alexei Maradudin, Robert Miller, and Joseph Murphy. Walker, New York, 1965. 253 pp. Illus. $5.95.

Diamagnetism and the Chemical Bond. Ya. G. Dorfman. Translated from the Russian edition (Moscow, 1961) by Scripta Technica. Charles P. Poole, Jr., Translation Ed. Elsevier, New York, 1965. 192 pp. Illus. $10.

Dictionary of π-Electron Calculations. C. A. Coulson and A. Streitwieser, Jr. Freeman, San Francisco, Calif., 1965. 388 pp. Illus. $15.

Digital Computer Fundamentals. Technical Training Staff, Data Systems Division, Litton Industries. Prentice-Hall, Englewood Cliffs, N.J., 1965. 235 pp. Illus. $10. Prentice-Hall Series in Electronic Technology, edited by Irving L. Kosow.

Distribution Functions of the Element and Mineral Contents of Igneous Rocks. Dmitrii Alekseevich Rodinov. Translated from the Russian (Moscow, 1964). Consultants Bureau, New York, 1965. 86 pp. Illus. Paper, $17.50.

The Doppler Effect: An Introduction to the Theory of Effect. T. P. Gill. Logos Press, London; Academic Press, New York, 1965. 159 pp. Illus. $6.50.

Dynamics of Chromatography. pt. 1, Principles and Theory. J. Calvin Giddings. Dekker, New York, 1965. 335 pp. Illus. $11.50.

Dynamics of Linear Systems. Václav Doležal. Czechoslovak Acad. of Sciences, Prague, 1964. 224 pp. Illus.

Dynamics of Vibrations. Enrico Volterra and E. C. Zachmanoglou. Merrill, Columbus, Ohio, 1965. 638 pp. Illus. $17.50.

Electrical Conduction in Solids. H. Inokuchi. Dover, New York, 1965. 64 pp. Illus. Paper, $1.35. Solid-State Physics Series, edited by L. Jacob.

Electrical Engineering Circuits. Hugh Hildreth Skilling. Wiley, New York, ed. 2, 1965. 799 pp. Illus. $10.75.

Electricity and Magnetism: Berkeley Physics Course. vol. 2. Edward M. Purcell. McGraw-Hill, New York, 1965. 479 pp. Illus. $5.50.

Electromagnetic Clutches and Couplings. T. M. Vorob'yeva. Translated from the Russian edition (Moscow, 1960) by O. M. Blunn. A. D. Booth, Translation Ed. Pergamon, New York, 1965. 232 pp. Illus. $9.

Electromagnetic Theory for Engineers and Scientists. Allen Nussbaum. Prentice-Hall, Englewood Cliffs, N.J., 1965. 326 pp. Illus. $14. Prentice-Hall Electrical Engineering Series, edited by W. L. Everitt.

Electromechanical Energy Conversion. C. R. Chapman. Blaisdell (Ginn), New York, 1965. 266 pp. Illus. $8.50. A Blaisdell Book in the Pure and Applied Sciences.

Electron and Ion Emission from Solids. R. O. Jenkins and W. G. Trodden. Dover, New York, 1965. 94 pp. Illus. Paper, $1.35. Solid-State Physics Series, edited by L. Jacob.

Electronics Source Book for Teachers. vols. 1–3. Harold S. Spielman. Hayden, New York, 1965. vol. 1, 521 pp.; vol. 2, 584 pp.; vol. 3, 524 pp. Illus. $48.

Elementary Classical Physics. vols. 1 and 2. vol. 1, *Mechanics, Kinetic Theory, Thermodynamics* (656 pp.); vol. 2, *Electromagnetism and Wave Motion* (648 pp.). Richard T. Weidner and Robert L. Sells. Allyn and Bacon, Boston, Mass., 1965. Illus. $7.75 per volume.

Enumerabiliy, Decidability, Computability: An Introduction to the Theory of Recursive Functions. Hans Hermes. Translated from the German edition (1960) by G. T. Herman and O. Plassmann. Academic Press, New York; Springer Verlag, Berlin, 1965. 255 pp. Illus. $9.75. Die Grundlehren der Mathematischen Wiesenschaften in Einzeldarstellungen, vol. 127.

Ergodic Theory and Information. Patrick Billingsley. Wiley, New York, 1965. 207 pp. Illus. $8.50.

Fields and Waves in Communication Electronics. Simon Ramo, John R. Whinnery, and Theodore Van Duzer. Wiley, New York, 1965. 770 pp. Illus. $13.50.

Friedel-Crafts and Related Reactions. vol. 4, *Miscellaneous Reactions, Cumulative Indexes*. George A. Olah. Interscience (Wiley), New York, 1965. 1209 pp. Illus. $45.

Fundamentals of Classical Thermodynamics. Gordon J. Van Wylen and Richard E. Sonntag. Wiley, New York, 1965. 660 pp. Illus. $8.95. Series in Thermal and Transport Sciences, coordinated by Gordon J. Van Wylen.

Galaxies, Nuclei, and Quasars. Fred Hoyle. Harper and Row, New York, 1965. 170 pp. Illus. $3.

General Investigations of Curved Surfaces. Karl Friedrich Gauss. Translated from the Latin and German by Adam Hiltebeitel and James Morehead. Raven Press, Hewlett, N.Y., 1965. 127 pp. Illus. $3.95. The Raven Series in Higher Mathematics, edited by Jay R. Goldman.

Geology of Granite. E. Raguin. Translated from the second French edition by E. H. Kranck, P. R. Eakins, and Jean M. Eakins. Interscience (Wiley), New York, 1965. 336 pp. Illus. $11.

A Guide to Fortran IV Programming. Daniel D. McCracken. Wiley, New York, 1965. 159 pp. Illus. Paper, $3.95.

A Guidebook to Mechanism in Organic Chemistry. Peter Sykes. Wiley, New York, ed. 2, 1965. 283 pp. Illus. Paper, $4.75.

Handbook of Preparative Inorganic Chemistry. vol. 2. Georg Brauer, Ed. Translated from the German edition (Stuttgart, 1962) by Scripta Technica. Paul G. Stecher, Translation Ed. Academic Press, New York, ed. 2, 1965. 881 pp. Illus. $32.

Heat Exchanger Design. Arthur P. Fraas and M. Necati Ozisik. Wiley, New York, 1965. 394 pp. Illus. $17.50.

High-Speed Wind Tunnel Testing. Alan Pope and Kennith L. Goin. Wiley, New York, 1965. 486 pp. Illus. $15.

Industrial Electronic Circuits and Applications. R. Ralph Benedict and Nathan Weiner. Prentice-Hall, Englewood Cliffs, N.J., 1965. 543 pp. Illus. $14.60. Prentice-Hall Series in Electronic Technology, edited by Irving L. Kosow.

Intermediate Waters of the Pacific

Ocean. Joseph L. Reid, Jr., Johns Hopkins Press, Baltimore, 1965. 85 pp. Illus. $8.50. A volume in the Johns Hopkins Oceanographic Studies Series.

Interpretation of Organic Spectra. D. W. Mathieson, Ed. Academic Press, New York, 1965. 189 pp. Illus. $7. Contributors are J. A. Elvidge, J. K. Brown, K. J. Morgan, C. J. Timmons, D. Whiffen, A. Quayle, and R. I. Reed.

Introduction to Calculus and Analysis. vol. 1. Richard Courant and Fritz John. Interscience (Wiley), New York, 1965. 685 pp. Illus. $10.50.

Introduction to Photomechanics. A. J. Durelli and W. F. Riley. Prentice-Hall, Englewood Cliffs, N.J., 1965. 416 pp. Illus. $16.65. Prentice-Hall International Series in Theoretical and Applied Mechanics.

Introduction to the Theory of Similarity. A. A. Gukhman. Translated from the Russian edition (Moscow, 1963) by Scripta Technica. Robert D. Cess, Translation Ed. Academic Press, New York, 1965. 278 pp. Illus. $12.

Lectures in General Algebra. A. G. Kurosh. Translated from the Russian edition (Moscow, 1962) by Ann Swinfen. P. M. Cohn, Translation Ed. Pergamon, New York, 1965. 374 pp. Illus. $7.50. International Series of Monographs on Pure and Applied Mathematics, vol. 70.

Light-Sensitive Systems: Chemistry and Application of Nonsilver Halide Photographic Processes. Jaromir Kosar. Wiley, New York, 1965. 48 pp. Illus. $15. Wiley Series on Photographic Science and Technology and the Graphic Arts, edited by Walter Clark.

Linear Sequential Switching Circuits: Selected Technical Papers. D. A. Huffman, Bernard Elspas, Juris Hartmanis, T. E. Stern, B. Friedland, Martin Cohn, Neal Zierler, and C. V. Srinivasan. William H. Kautz, Ed. Holden-Day, San Francisco, 1965. 240 pp. Illus. $6.75. Holden-Day Series in Information Systems; ten reprints of papers published between 1956 and 1962.

Magnetohydrodynamics of Liquid Metals. Igor' Mikhailovich Kirko. Translated from the Russian edition (Moscow, 1964). Consultants Bureau, New York, 1965. 90 pp. Illus. Paper, $17.50.

Mathematics for Science. W. L. Ferrar. Oxford Univ. Press, New York, 1965. 340 pp. Illus. $4.50.

Metallurgie des Eisens. vol. 1, pts. 1 and 2, Geschichtliches, Begriffsbestimmung, Allgemeine physikalisch-chemische Grundlagen Thermische Vorbehandlung von Eisenerzen. Gmelin-Durrer. Verlag Chemie, Weinheim, Germany, ed. 4, 1964. pt. 1, 605 pp.; pt. 2, 348 pp. Illus. $211 set.

Meteorology. William L. Donn. McGraw-Hill, New York, ed. 3, 1965. 502 pp. Illus. $8.95.

Modern Chemistry. H. Clark Metcalfe, John E. Williams, and Joseph F. Castka. Holt, Rinehart, and Winston, New York, 1966 (a revision of C. E. Dull's Modern Chemistry, © 1958). 606 pp. Illus. $5.80.

Modern Optics. Earle B. Brown. Reinhold, New York; Chapman and Hall, London, 1965. 655 pp. Illus. $25.

New Methods and Recent Developments of the Stereochemistry of Ephedrine, Pyr-

rolizidine, Granatane, and Tropane Alkaloids. Relationships between the structure and pharmacological activity of tropeines. Achievements in the total synthesis of natural steroids. G. Fodor, K. Nádor, and I. V. Torgove. Akadémiai Kiadó, Budapest, 165. 319 pp. Illus. $14.70. Recent Developments in the Chemistry of Natural Carbon Compounds, vol. 1, edited by R. Bognár, V. Bruckner, and G. Fodor.

New Ways of Working Metals. David Fishlock and K. W. Hards. Philosophical Library, New York, 1965. 146 pp. Illus. $10.

Numbers and Arithmetic. John N. Fujii. Blaisdell (Ginn), New York, 1965. 571 pp. Illus. $8.50 [Teacher's Manual, 90 pp. (paper), $1.50].

Optical Pumping: An Introduction. Robert Bernheim. Benjamin, New York, 1965. 284 pp. Illus. Paper, $4.95; cloth, $9. Frontiers in Chemistry Series, edited by Ronald Breslow and Martin Karplus.

Oxidation Mechanisms. T. A. Turney. Butterworth, Washington, D.C., 1965. 216 pp. Illus. $6.50.

The Phases of Silica. Robert B. Sosman. Rutgers Univ. Press, New Brunswick, N.J., ed. 2, 1965. 398 pp. Illus. $10.

Physical Climatology. William D. Sellers. Univ. of Chicago Press, Chicago, 1965. 280 pp. Illus. $7.50.

The Physical World. vol. 3, *Electricity, Magnetism, and Atomic Structure*. H. J. P. Keighley and F. R. McKim. Pergamon, New York, 1965. 246 pp. Illus. $3.95. The Commonwealth and International Library of Science.

Physics and Chemistry of the Earth. vol. 6. L. H. Ahrens, Frank Press, S. K. Runcorn, and H. C. Urey, Eds. Pergamon, New York, 1965. 516 pp. Illus. $20. Seven papers: "Recent evidence concerning the structure and composition of the earth's mantle" by Don L. Anderson; "The application of trace element data to problems in petrology" by S. R. Taylor; "Factors in the distribution of the trace elements during the crystallisation of magmas" by L. V. Tauson; "Seismic surface waves: some observations and recent developments" by Robert L. Kovach; "Sea floor relief and mantle convection" by H. W. Menard; "Present status of oceanic heat-flow measurements" by R. P. von Herzen and M. G. Langseth; and "Experimental tectonics" by V. V. Belousov and M. V. Czovskii.

Polyesters. vol. 1, *Saturated Polymers*. I. Goodman and J. A. Rhys. Iliffe, London; Elsevier, New York, 1965. 158 pp. Illus. $7.75.

Principles of Communication Engineering. John M. Wozencraft and Irwin Mark Jacobs. Wiley, New York, 1965. 736 pp. Illus. $17.

Progress in Elementary Particle and Cosmic Ray Physics. vol. 8. J. G. Wilson and S. A. Wouthuysen, Eds. North-Holland, Amsterdam; Wiley, New York, 1965. 403 pp. Illus. $14. Four papers: "Analyticity in potential scattering" by A. Martin; "Strong interactions symmetry" by Yuval Ne'eman; "Experimental information on negative kaons" by M. M. Nikolić; and "Resonances" by A. G. Tenner and G. F. Wolters.

Solar Radio Astronomy. Mukul R. Kundu. Interscience (Wiley), New York, 1965. 672 pp. Illus. $19.75.

Spectroscopy and Structure. Richard N. Dixon. Methuen, London; Wiley, New York, 1965. 213 pp. Illus. $4.50.

Stars and Stellar Systems. vol 8, *Stellar Structure*. Lawrence H. Aller and Dean B. McLaughlin. Univ. of Chicago Press, Chicago, 1965. 668 pp. Illus. $17.50. Stars and Stellar Systems: Compendium of Astronomy and Astrophysics Series, edited by Gerard P. Kuiper and Barbara M. Middlehurst. Eleven papers: "The origin of the chemical elements" by Stanley Bashkin; "Stellar energy sources" by Hubert Reeves; "Stellar absorption coefficients and opacities" by Arthur N. Cox; "Stellar models for main-sequence stars and subdwarfs" by Bengt Strömgren; "The theory of white dwarfs" by L. Mestel; "Theory of novae and supernovae" by E. Schatzman; "Supernovae" by F. Zwicky; "Magnetic stars" by T. G. Cowling; "Meridian circulation in stars" by L. Mestel; "Stellar stability" by P. Ledoux; "Stellar evolution and age determinations" by R. L. Sears and Robert R. Brownlee.

State Variables for Engineers. Paul M. Derusso, Rob J. Roy, and Charles M. Close. Wiley, New York, 1965. 620 pp. Illus. $14.95.

Structural Transformations in Glasses at High Temperatures. N. A. Toropov and E. A. Porai-Koshits, Eds. Translated from the Russian (Leningrad, 1965) by E. B. Uvarov. Consultants Bureau, New York, 1965. 233 pp. Illus. $25. Twenty-one papers on a series of investigations performed at the I. V. Grebenshchikov Institute of Silicate Chemistry of the Academy of Sciences of the U.S.S.R.

Tables for Computing Elevations in Topographic Levelling. L. S. Khrenov. Translated from the Russian edition by D. E. Brown. Pergamon, New York, 1965. 208 pp. $10. Mathematical Tables Series, vol. 31.

Testing of Polymers. vol. 1, John V. Schmitz, Ed. Interscience (Wiley), New York, 1965. 493 pp. Illus. $19.50. Fourteen papers: "Standards and sources of tests for polymers" by W. E. Brown, F. C. Frost, and P. E. Willard; "Conditioning equipment for polymer testing" by F. M. Gavan and F. A. Joy; "Mechanical relationships in testing for mechanical properties of polymers" by J. Marin; "Theories of phenomenological viscoelasticity underlying mechanical testing" by M. G. Sharma; "Introduction to electrical property tests" by A. H. Sharbaugh; "DC dielectric conductance (reciprocal resistance) and conductivity (reciprocal resistivity) measurements" by A. H. Scott; "Dielectric constant and loss measurements" by R. W. Tucker; "Characterization of polymers by electrical resistivity techniques" by R. W. Warfield; "High voltage electrical testing of polymers" by T. W. Dakin; "Cavitation erosion testing of polymers" by J. H. Brunton; "Testing for odor and taste transfer properties of polymers" by J. B. Sjöström and F. Sullivan; "Indentation and compression testing of floor coverings" by F. M. Gavan and J. T. Wein, Jr.; "The measurement of gas and vapor permeation and diffusion in polymers" by V. Stannett and H. Yasuda; and "Selected references on sources of standards and tests for polymers" by W. E. Brown and J. V. Schmitz.

Theory and Principles of Electrode Processes. B. E. Conway. Ronald, New York, 1965. 311 pp. Illus. $7. Modern Concepts in Chemistry Series, edited by Bryce Crawford, Jr., W. D. McElroy, and Charles C. Price.

Theory of Energy and Mass Transfer. A. V. Luikov and Yu. A. Mikhailov. Translated from the Russian edition by L. A. Fenn. J. S. Dunn and J. A. Weightman, Translation Eds. Pergamon, New York, revised English edition, 1965. 402 pp. Illus. $12.75.

Transactions of the Society of Rheology. vol. 9, pt. 1. Raymond R. Myers, Ed. Interscience (Wiley), New York, 1965. 466 pp. Illus. Paper, $14.50. Twenty-nine papers.

Transformations in Optics. Lawrence Mertz. Wiley, New York, 1965. 126 pp. Illus. $8.95.

Transistor Circuit Analysis and Design. John J. Corning. Prentice-Hall, Englewood Cliffs, N.J., 1965. 480 pp. Illus. $14.

Treatise on Electrochemistry. G. Kortum. Translated from the third German edition (Weinheim, 1962) by Express Translation Service, London. Elsevier, New York, 1965. 659 pp. Illus. $30.

Vistas in Astronomy. vol. 6, *Celestial Mechanics, Instrumentation, Meridian Astronomy, Solar Research, Astrophysics*. Arthur Beer, Ed. Pergamon, New York, 1965. 222 pp. Illus. $13. Seven papers: "Relativistic theories of gravitation" by G. J. Whitrow and G. E. Morduch; "Methods in meridian astronomy" by F. Schmeidler; "On aberrations and field errors" by P. A. Lanna; "Observations of seeing" by Sarah Lee Lippincott; "The nature of the active regions of the sun" by S. B. Pikelner; "Condensation of solar prominences" by J. Kleczek; and "The diffuse emission nebulae" by S. R. Pottasch.

Economics and the Social Sciences

Biennial Review of Anthropology, 1965. Bernard J. Siegel, Ed. Stanford Univ. Press, Stanford, Calif., 1965. 315 pp. $8.50. Eight papers: "Physical anthropology" by Alice M. Brues and Clyde C. Snow; "African prehistory" by Creighton Gabel; "Language" by John J. Gumperz; "Economic anthropology" by Manning Nash; "Social organization" by Harumi Befu; "Studies in peasant life" by Robert T. Anderson; "Psychology and anthropology" by J. L. Fischer; and "Cultural change" by Charles H. Lange.

Changing Japan. Edward Norbeck. Holt, Rinehart, and Winston, New York, 1965. 96 pp. Illus. Paper, $1.50. Case Studies in Cultural Anthropology Series, edited by George Spindler and Louise Spindler.

Cognition and Thought: An Information-Processing Approach. Walter R. Reitman. Wiley, New York, 1965. 326 pp. Illus.

Developmental Planning. Richard L. Meier. McGraw-Hill, New York, 1965. 438 pp. Illus. $10. McGraw-Hill Series in International Development.

The Dusun: A North Borneo Society. Thomas Rhys Williams. Holt, Rinehart, and Winston, New York, 1965. 112 pp. Illus. Paper, $1.50. Case Studies in Cul-

tural Anthropology Series, edited by George Spindler and Louise Spindler.

The Ecological Perspective on Human Affairs: With Special Reference to International Politics. Harold Sprout and Margaret Sprout. Princeton Univ. Press, Princeton, N.J., 1965. 248 pp. Illus. $5.50.

Ego in Evolution. Esther Menaker and William Menaker. Grove Press, New York, 1965. 284 pp. $6.95.

Farmers, Workers and Machines: Technological and Social Change in Farm Industries of Arizona. Harland Padfield and William E. Martin. Univ. of Arizona Press, Tucson, 1965. 339 pp. Illus. $7.50.

Federal Budget Policy. David J. Ott and Attiat F. Ott. Brookings Institution, Washington, D.C., 1965. 164 pp. Illus. Paper, $1.95; cloth, $5. Studies of Government Finance Series.

The Fern and the Tiki. An American view of New Zealand national character, social attitudes, and race relations. David P. Ausubel. Holt, Rinehart, and Winston, New York, 1965. 254 pp. Paper. $1.95.

Financing State and Local Governments. James A. Maxwell. Brookings Institution, Washington, D.C., 1965. 294 pp. Illus. Paper, $2.45; cloth, $5. Studies of Government Finance Series.

Hours of Work. Clyde E. Dankert, Floyd C. Mann, and Herbert R. Northrup, Eds. Harper and Row, New York, 1965. 218 pp. Illus. $3.50. Industrial Relations Research Association Series, No. 32. Eleven papers.

The Igbo of Southeast Nigeria. Victor C. Uchendu. Holt, Rinehart, and Winston, New York, 1965. 129 pp. Illus. Paper, $1.50. Case Studies in Cultural Anthropology Series, edited by George Spindler and Louise Spindler.

Lamotrek Atoll and Inter-Island Socioeconomic Ties. William H. Alkire. Univ. of Illinois Press, Urbana, 1965. 192 pp. Illus. Paper, $4. Illinois Studies in Anthropology, No. 5.

The Life History in Anthropological Science. L. L. Langness. Holt, Rinehart, and Winston, New York, 1965. 94 pp. Paper, $1.50. Studies in Anthropological Method, edited by George Spindler and Louise Spindler.

The Living Races of Man. Carleton S. Coon with Edward E. Hunt, Jr. Knopf, New York, 1965. 396 pp. Illus. $10.

Manual for Kinship Analysis. Ernest L. Schusky. Holt, Rinehart, and Winston, New York, 1965. 92 pp. Illus. Paper, $1.50. Studies in Anthropological Method, edited by George Spindler and Louise Spindler.

Mathematical Foundations for Social Analysis. Robert McGinnis. Bobbs-Merrill, New York, 1965. 426 pp. Illus. $8.50.

Modes of Thinking in Young Children. A study of the creativity-intelligence distinction. Michael A. Wallach and Nathan Kogan. Holt, Rinehart, and Winston, New York, 1965. 367 pp. Illus. $8.

Paired-Associates Learning: The Role of Meaningfulness, Similarity, and Familiarization. Albert E. Goss and Calvin F. Nodine. Academic Press, New York, 1965. 368 pp. Illus. $13.50.

Population in History: Essays in Historical Demography. D. V. Glass and D. E. C. Eversley, Ed. Aldine, Chicago, 1965. 704 pp. Illus. $17.50. Twenty-seven papers, of which seven are unabridged reprints of earlier papers.

Prehistoric Societies. Grahame Clark and Stuart Piggott. Knopf, New York, 1965. 356 pp. Illus. $6.95. The History of Human Society Series, edited by J. H. Plumb.

Prisoner's Dilemma: A Study in Conflict and Cooperation. Anatol Rapoport and Albert M. Chammah. Univ. of Michigan Press, Ann Arbor, 1965. 270 pp. Illus. $7.50.

The Sixth Mental Measurements Yearbook. Oscar Krisen Buros, Ed. Gryphon Press, Highland Park, N.J., 1965. 1752 pp. $32.50.

The Uncommitted: Alienated Youth in American Society. Kenneth Keniston. Harcourt, Brace, and World, New York, 1965. 512 pp. Illus. $8.50.

Water Resource Investment and the Public Interest. An analysis of federal expenditures in ten southern states. Robert H. Haveman. Vanderbilt Univ. Press, Nashville, Tenn., 1965. 212 pp. Illus. $6.

General

Advances in Agronomy. vol. 17. A. G. Norman, Ed. Academic Press, New York, 1965. 398 pp. Illus. $14. Seven papers: "Advances in fertilizers" by Lewis B. Nelson; "Breeding wheat for quality" by Erhardt R. Hehn and Mark A. Barmore; "Classification and properties of organic soils" by R. S. Farnham and H. R. Finney; "Sweetclover improvement" by W. K. Smith and H. J. Gorz; "Colorado mountain soils" by D. D. Johnson and A. J. Cline; "Progress and problems in tree fruit and nut production" by H. J. Brooks, H. W. Fogle, and J. W. McKay; and "Structural chemistry of soil humic substances" by G. T. Felbeck, Jr.

The Battle Against Bacteria. A history of the development of antibacterial drugs, for the general reader. P. E. Baldry. Cambridge Univ. Press, New York, 1965. 112 pp. Illus. Paper, $1.95; cloth, $4.50.

Candidates, Issues, and Strategies: A Computer Simulation of the 1960 and 1964 Presidential Elections. Ithiel de Sola Pool, Robert P. Abelson, and Samuel L. Popkin. M.I.T. Press, Cambridge, Mass., ed. 2, 1965. 207 pp. Illus. Paper, $2.45. M.I.T. Paperback Series.

Earthman, Spaceman, Universal Man? Paul A. Campbell. Pageant Press, New York, 1965. 255 pp. Illus. $5.

Exploring Science for the Space Age. Victor C. Smith. Lippincott, Philadelphia, ed. 2, 1966. 432 pp. Illus. $4.20.

Fishes of the World in Color. Hans Hvass. Translated by Gwynne Vevers. Dutton, New York, 1965. 156 pp. Illus. $4.95.

The Foundations of Metaphysics in Science. Errol E. Harris. Humanities Press, New York, 1965. 512 pp. Illus. $10.

The Images of Space. Harold Leland Goodwin. Holt, Rinehart, and Winston, New York, 1965. 189 pp. Paper, $1.28; cloth, $2.95. Holt Library of Science Series.

Medical Book Profiles. vol. 1, No. 3. Dale Jagemann, Ed. Bowker, New York, 1965. 241 pp. Paper, $60 annual subscription, published monthly. It contains, in reduced size, reproductions of the title page, table of contents, list of contributors, preface, and indexes of graduate and professional level medical books listed in the current issue of the American Book Publishing Record.

Optical Measurements in the Printing Industry. J. M. Adams. Pergamon, New York, 1965. 175 pp. Illus. Paper, $3.95. Commonwealth and International Library of Science.

Physics. Samuel Rapport and Helen Wright, Ed. Washington Square Press, New York, 1965. 349 pp. Illus. Paper, 60¢. Eighteen papers.

Plant Drugs That Changed the World. Norman Taylor. Dodd, Mead, New York, 1965. 285 pp. Illus. $5.

Plant Operators' Manual. Stephen Michael Elonka. McGraw-Hill, New York, ed. 2, 1965. 334 pp. Illus. $9.

Praxiology: An Introduction to the Sciences of Efficient Action. Tadeusz Kotarbiński. Translated from the Polish by Olgierd Wojtasiewicz. Państwowe Wydawnictwo Naukowe, Warsaw; Pergamon, New York, 1965. 225 pp. $7.50.

The Rights of Infants: Early Psychological Needs and Their Satisfaction. Margaret A. Ribble. Columbia Univ. Press, New York, ed. 2, 1965. 160 pp. $4.95.

Science and Ethical Values. Bentley Glass. Univ. of North Carolina Press, Chapel Hill, 1965. 113 pp. Illus. $3.75.

Science: U.S.A. William Gilman. Viking Press, New York, 1965. 511 pp. $7.95.

The Scientific Revolution. W. E. Knowles Middleton. Schenkman, Cambridge, Mass., 1965. 96 pp. Illus. Paper, $1.25; cloth, $2.65.

Sci-Tech Book Profiles. vol. 1, No. 3. Dale Jagemann, Ed. Bowker, New York, 1965. 445 pp. Paper, $90 annual subscription, published monthly. It contains in reduced size reproductions of the title page, table of contents, list of contributors, preface and indexes of each graduate or professional level scientific or technical book listed in the current issue of the American Book Publishing Record.

Sky Rangers: Satellite Tracking Around the World. Eloise Engle and Kenneth H. Drummond. John Day, New York, 1965. 219 pp. Illus. $4.95.

Starlight Nights: The Adventures of a Star-Gazer. Leslie C. Peltier. Harper and Row, New York, 1965. 248 pp. Illus. $4.95.

Teen-age Sex Counselor. B. Y. Glassberg. Barron's Educational Series, Woodbury, N.Y., 1965. 144 pp. Illus. Paper, $1.25, cloth, $3.75.

Triumphs of Biology. Philip Goldstein. Doubleday, Garden City, N.Y., 1965. 312 pp. Illus. $4.95.

Weeds of the Northern United States and Canada. F. H. Montgomery. Warne, New York, 1965. 254 pp. Illus. $3.95.

The Wonder of Electricity. Hy Ruchlis. Harper and Row, New York, 1965. 226 pp. Illus. $3.95.

The World of Coral. Robert Silverberg. Duell, Sloan, and Pearce, New York, 1965. 158 pp. Illus. $3.95.