

ganisms express concern lest, between molecular biology beneath and populational biology above, the organism itself may have faded away, presumably like the Cheshire cat. It will surprise few, and I suspect that it really didn't surprise the authors, that they discovered that organisms are still with us. If there was any "shot-gun" marriage here, as the authors suggest might have been the case, it was not to hold together the organism. However, the utility of treating complex, multicellular plants and complex, multicellular animals in the same or at least alternate breaths is open to question. Although as an undergraduate I was brought up in an old-fashioned department of biology, I have come increasingly to wonder if the unity that undoubtedly exists on the biochemical and cellular levels actually exists to anything like the same meaningful extent when the higher plants and animals are reached. After all, did not a brilliant experimental physicist, Robert Wood, once explain to all of us that it is easy to tell cows from cowslips, parrots from carrots, and even beets from beetles?

GAIRDNER B. MOMENT
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Mathematics for Teachers

A Vector Space Approach to Geometry. Melvin Hausner. Prentice-Hall, Englewood Cliffs, N.J., 1965. xii + 397 pp. Illus. \$12.

This text was developed for use in a 1-year, in-service course for teachers of high-school mathematics, but it is not confined to the topics taught in such courses or to those closely related thereto. The central topic is geometry, but there is little preoccupation with what the high-school course is or ought to be. Instead the book shows how geometry actually figures in contemporary mathematics. The simplicity and generality of vector space methods underlie the whole development and make the content mathematically attractive. Actually what is presented is a fusion of geometry and (linear) algebra, and numerous applications of this composite discipline to other subjects are given—for example, applications to probability, physics, and function spaces. The chapter titles are "The

center of mass," "Vector algebra," "Vector spaces and subspaces," "Length and angle," "Miscellaneous applications," "Area and volume," "Further generalizations," "Matrices and linear transformations," "Area and metric considerations," "The algebra of matrices," and "Groups."

The exposition is commendable from the pedagogical standpoint also. The reader's "knowledge" is invoked to lead him painlessly to "facts" which then become formalized as axioms. The axioms are then used to derive consequences that are not just antiseptic versions of the previous material but substantial extensions of it. The area and volume treatment, in terms of outer products, is especially successful. Not so successful is the treatment of angles. Cosines are obtained from inner products, and angles are defined as what these cosines are the cosines of. In the section on rotations, these objects, properly, turn out to have a much richer structure than their non-committal definition seems to warrant. Mathematical honesty in the treatment of angles, angle measures, and trigonometric functions is notoriously lacking in our undergraduate curriculum, and this could have been an appropriate place to supply some.

Another of my reservations is concerned with the emphasis on barycentric coordinates, at the expense of the more commonplace yet perfectly adequate affine coordinates. However, their introduction and exploitation is the most original part of the entire book, and it is probably better that they be oversold, as they are here, rather than not presented at all, which is their usual fate.

HOWARD LEVI
*Hunter College,
City University of New York*

The Sea

La Vie dans les Mers (Presses Universitaires de France, Paris, 1965; 128 pp.), by Jean-Marie Pérès, replaces René Legendre's book by the same title in the series "Que Sais-Je?" Of course the subject is the same, but the book is completely different from its predecessor. Pérès is an enthusiastic ecologist, and his treatment of the subject is therefore much more ecological than that in the earlier version. Pérès is also on the side of the angels in cautioning

the reader against the notion of inexhaustible resources from the sea. The French have a way of presenting science in a lucid and concise manner, but Pérès has outdone his distinguished predecessor. The French is beautifully simple and should encourage candidates who are studying for their language examination.

JOEL W. HEDGPETH
*Marine Science Laboratory,
Newport, Oregon*

New Books

Mathematics, Physical Sciences, and Engineering

Acoustic Coagulation and Precipitation of Aerosols. Evgenii Pavlovich Mednikov. Translated from the Russian edition (Moscow, 1963) by Charles V. Larrick. Consultants Bureau, New York, 1965. 188 pp. Illus. Paper, \$25.

Advances in Electronic Circuit Packaging. vol. 5. Proceedings, 5th International Electronic Circuit Packaging Symposium. Sponsored by the University of Colorado, Electrical Design News, and Design News (Boulder, Colo.), August 1964. Lawrence L. Rosine, Ed. Plenum Press, New York, 1965. 303 pp. Illus. \$15. Twenty-six papers.

Advances in Heterocyclic Chemistry. vol. 4. A. R. Katritzky, A. J. Boulton, and J. M. Lagowski. Academic Press, New York, 1965. 478 pp. Illus. \$15. Six papers: "Covalent hydration in nitrogen-containing heteroaromatic compounds: [pt. 1] Qualitative aspects" by Adrien Albert and W. L. F. Armarego and [pt. 2] "Quantitative aspects" by D. D. Perrin; "Recent advances in oxazoline chemistry" by Robert Filler; "Isotriazoles" by R. Slack and K. R. H. Wooldridge; "Hetarynes" by H. J. den Hertog and H. C. van der Plas; and "Reactivity of azine, benzoazine, and azinoazine derivatives with simple nucleophiles" by Robert G. Shepherd and James L. Fedrick.

The Application of Wave Mechanical Methods to the Study of Molecular Properties. R. Daudel, Ed. Interscience (Wiley), New York, 1965. 198 pp. Illus. \$9.25. Advances in Chemical Physics Series, vol. 8, edited by I. Prigogine. Ten papers presented at the International Summer Institute (Menton, France), July 1963.

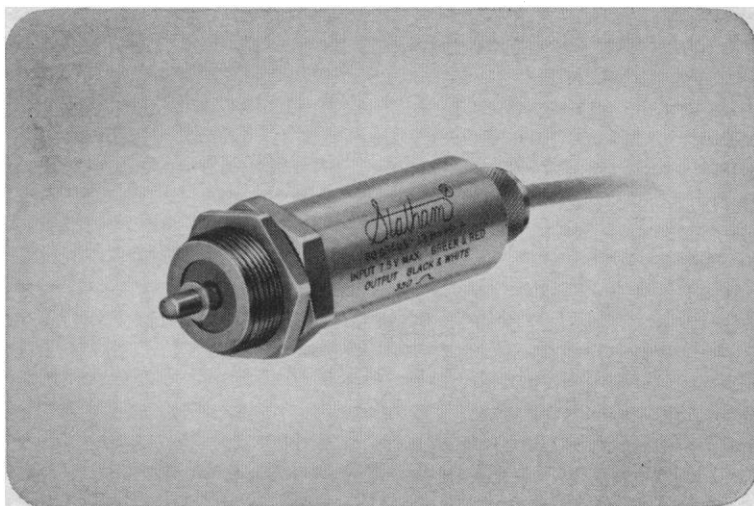
Applied Geochronology. E. I. Hamilton. Academic Press, New York, 1965. 283 pp. Illus. \$10.

Applied Optics and Optical Engineering. vol. 2, *The Detection of Light and Infrared Radiation.* Rudolf Kingslake, Ed. Academic Press, New York, 1965. 406 pp. Illus. \$15. Nine papers contributed by Glenn A. Fry, Leslie P. Dudley, Fred H. Perrin, E. W. H. Selwyn, Rudolf Kingslake, Benjamin H. Vine, Charles H. Evans, Henry Levinstein, and Charles F. Gramm.

(Continued on page 1282)

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Atomic and Ionic Impact Phenomena on Metal Surfaces. Manfred Kaminsky. Academic Press, New York; Springer, Berlin, 1965. 414 pp. Illus. \$14.50.

Boron-Nitrogen Compounds. Kurt Niedenzu and John W. Dawson. Springer, Berlin; Academic Press, New York, 1965. 184 pp. Illus. \$6.75. *Anorganische und Allgemeine Chemie in Einzeldarstellungen*, vol. 6, edited by Margot Becke-Goecking.

Chemical Energy. Laurence E. Strong and Wilmer J. Stratton. Reinhold, New York; Chapman and Hall, London, 1965. 125 pp. Illus. Paper, \$1.95. A volume in the *Selected Topics in Modern Chemistry Series*, edited by Harry H. Sisler and Calvin A. VanderWerf.

The Collected Papers of Emil Artin. Serge Lang and John T. Tate, Eds. Addison-Wesley, Reading, Mass., 1965. 566 pp. Illus. \$13.50.

Cooling Electronic Equipment. Allan D. Kraus. Prentice-Hall, Englewood Cliffs, N.J., 1965. 406 pp. Illus. \$16.

Cosmic Rays. Proceedings of the P. N. Lebedev Physics Institute. vol. 26. D. V. Skobel'tsyn, Ed. Translated from the Russian (Moscow, 1964). Consultants Bureau, New York, 1965. 260 pp. Illus. Paper, \$27.50.

Development of Concepts of Physics: From the Rationalization of Mechanics to the First Theory of Atomic Structure. A. B. Arons. Addison-Wesley, Reading, Mass., 1965. 992 pp. Illus. \$14.75.

Developments in Applied Spectroscopy. vol. 4. Proceedings, 15th Annual Mid-America Spectroscopy Symposium (Chicago, Ill.), June 1964. Elwin N. Davis, Ed. Plenum Press, New York, 1965. 558 pp. Illus. \$18.50. Forty-five papers on the following topics: X-ray spectroscopy (9 papers); Infrared and raman spectroscopy (8 papers); Ultraviolet and visible spectroscopy (4 papers); Gas chromatography (11 papers); NMR spectroscopy (1 paper); and Emission, flame, and atomic absorption spectroscopy (12 papers).

Diffusion in Body-Centered Cubic Metals. Proceedings of a conference (Gatlinburg, Tenn.), September 1964. J. A. Wheeler, Jr., and F. R. Winslow, Eds. American Soc. for Metals, Metals Park, Ohio, 1965. 440 pp. Illus. \$18. Twenty-seven papers.

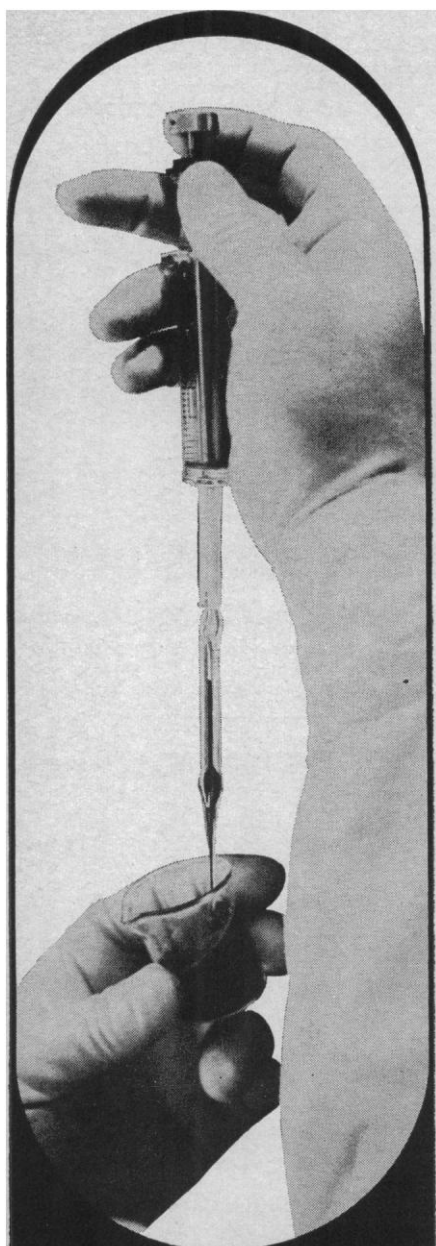
The Dynamics of Conduction Electrons. A. B. Pippard. Gordon and Breach, New York, 1965. 156 pp. Illus. Paper, \$1.95; cloth, \$4.95. *Documents on Modern Physics Series*, edited by Elliott W. Montroll and George H. Vineyard.

Electronic Computers. S. H. Hollingdale and G. C. Tootill. Penguin Books, Baltimore, 1965. 336 pp. Illus. Paper, \$1.65.

Elementary Structural Analysis and Design: Steel, Timber, and Reinforced Concrete. Linton E. Grinter. Macmillan, New York, ed. 2, 1965. 485 pp. Illus. \$9.75.

Elements of Modern Algebra. Sze-Tsen Hu. Holden-Day, San Francisco, 1965. 21 pp. Illus. \$9.85. *Holden-Day Series in Mathematics*, edited by Earl A. Coddington and Andrew M. Gleason.

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vol. 1. William M. Mueller, Ed. Gordon and Breach, New York, 1965. 439 pp. Illus. Paper, \$9.50; cloth, \$19.50. Eight papers: "Intermetallic diffusion" by David Lazarus; "Solid solutions" by Rudolph Speiser; "Nucleation processes" by Michael B. Bever; "Transformations" by Earl C. Roberts; "Metastable phases obtained by rapid solidification" by Pol Duwez; "Annealing mechanisms in deformed metals" by Paul Gordon; "Energetics in dislocation mechanics" by John E. Dorn; and "Oxidation of metals" by Kenneth R. Lawless.

Engineering Magnetohydrodynamics. George W. Sutton and Arthur Sherman. McGraw-Hill, New York, 1965. 568 pp. Illus. \$19.75. A volume in the McGraw-Hill Series in Mechanical Engineering.

Finite Graphs and Networks: An Introduction with Applications. Robert G. Busacker and Thomas L. Saaty. McGraw-Hill, New York, 1965. 308 pp. Illus. \$11.50. A volume in the International Series in Pure and Applied Mathematics.

Fundamentals of Carbanion Chemistry. Donald J. Cram. Academic Press, New York, 1965. 297 pp. Illus. \$9.50. Organic Chemistry, vol. 4, a series of monographs edited by Alfred T. Blomquist.

Die Genese der metamorphen Gesteine. Helmut G. F. Winkler. Springer, Berlin, 1965. 226 pp. Illus. Paper, DM. 19.80.

Geological Problems in Lunar Research (*Ann. N.Y. Acad. Sci.* 123). Harold E. Whipple, Ed. New York Acad. of Sciences, New York, 1965. 891 pp. Illus. Paper. Fifty-four papers presented at a conference held in May 1964. The topics considered were: Volcanic and impact mechanisms and origins (14 papers); Lunar tectonics (3 papers); Surface properties and radiation effects (5 papers); Lunar surface features and changes (6 papers); Lunar and terrestrial analogs (10 papers); Shatter coning (3 papers); Tekite origin (3 papers); Possible lunar technologies (5 papers); and Geophysical programs (5 papers).

High-Strength Materials. Proceedings, 2nd Berkeley International Materials Conference, June 1964. Victor F. Zackay, Ed. Wiley, New York, 1965. 895 pp. Illus. \$22. Twenty-two papers.

Industrial Isotope Techniques. Lars G. Erwall, Hans G. Forsberg, and Knut Ljunggren. Wiley, New York, 1965. 342 pp. Illus. \$19.50.

Interpretation Theory in Applied Geophysics. F. S. Grant and G. F. West. McGraw-Hill, New York, 1965. 603 pp. Illus. \$17.50. A volume in the International Series in the Earth Sciences.

An Introduction to Abstract Mathematical Systems. David M. Burton. Addison-Wesley, Reading, Mass., 1965. 128 pp. Illus. \$3.95. Addison-Wesley Series in Introductory Mathematics.

Introduction to Linear Algebra. Marvin Marcus and Henryk Minc. Macmillan, New York, 1965. 271 pp. Illus. \$7.95. A series of Advanced Mathematics Texts, edited by Carl B. Allendoerfer.

Introduction to Mass Spectroscopy and Its Applications. Robert W. Kiser. Prentice-Hall, Englewood Cliffs, N.J., 1965. 368 pp. Illus. \$14. Prentice-Hall International Series in Chemistry.

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Lattice Defects in Quenched Metals. International Conference (Argonne, Ill.), June 1964. R. M. J. Cotterill, M. Doyama, J. J. Jackson, and M. Meshii, Eds. Academic Press, New York, 1965. 829 pp. Illus. \$22. Twenty-eight papers.

Lectures in Theoretical Physics. vol. 7A, *Lorentz Group*. Lectures delivered at the Summer Institute for Theoretical Physics (Boulder, Colo.), 1964. Wesley E. Brittin and Asim O. Barut. Univ. of Colorado Press, Boulder, 1965. 394 pp. Illus. Paper, \$6.50. Eighteen papers.

Lectures on Particles and Field Theory. vol. 2. Brandeis Summer Institute in Theoretical Physics, 1964. Stanley Deser and Kenneth W. Ford, Eds. Prentice-Hall, Englewood Cliffs, N.J., 1965. 493 pp. Illus. Paper, \$5. Five papers: "Quantum electrodynamics" by K. Johnson; "Spectroscopy of the strongly interacting particles" by D. Lichtenberg; "Field theory of particles" by J. Schwinger; "Quasiparticles and perturbation theory" by S. Weinberg; and "The quantum theory of massless particles" by S. Weinberg.

Linear Elastic Theory of Thin Shells. J. E. Gibson. Pergamon, New York, 1965. 192 pp. Illus. Paper, 21s. The Commonwealth and International Library.

Machine-Tool Vibration. S. A. Tobias. Translated from the German edition (1961) by A. H. Burton. Wiley, New York, 1965. 367 pp. Illus. \$10.50.

Materials Science Research. vol. 2. Proceedings of a conference (Orlando, Fla.), April 1964. Henry M. Otte and Saul R. Locke, Eds. Plenum Press, New York, 1965. 333 pp. Illus. \$6.65. Seventeen papers given at the Southern Metals and Materials Conference on Advances in Aerospace Materials, sponsored by American Society of Metals.

Mathematical Theory of Connecting Networks and Telephone Traffic. V. E. Beneš. Academic Press, New York, 1965. 333 pp. Illus. \$12. Mathematics in Science and Engineering Series, edited by Richard Bellman.

Mathematics for Introductory Science Courses: Calculus and Vectors. With a review of algebra, analytic geometry, and trigonometry. Daniel A. Greenberg. Benjamin, New York, 1965. 230 pp. Illus. Paper, \$2.45; cloth, \$5.

Mechanics of Machines. vol. 1. H. E. Barnacle and G. E. Walker. Pergamon, New York, 1965. 312 pp. Illus. Paper, 25s. A volume in the Commonwealth and International Library Series, Mechanical Engineering Division, edited by N. Hiller and G. E. Walker.

Methods of Matrix Algebra. Marshall C. Pease, III. Academic Press, New York, 1965. 424 pp. Illus. \$13.75. Mathematics in Science and Engineering Series, edited by Richard Bellman.

Microwave Tubes. Proceedings, 5th International Congress (Paris), September 1964. Academic Press, New York, 1965. 535 pp. Illus. \$55. One hundred and forty-two papers.

Modern Algebra. vol. 1. Seth Warner. Prentice-Hall, Englewood Cliffs, N.J.,



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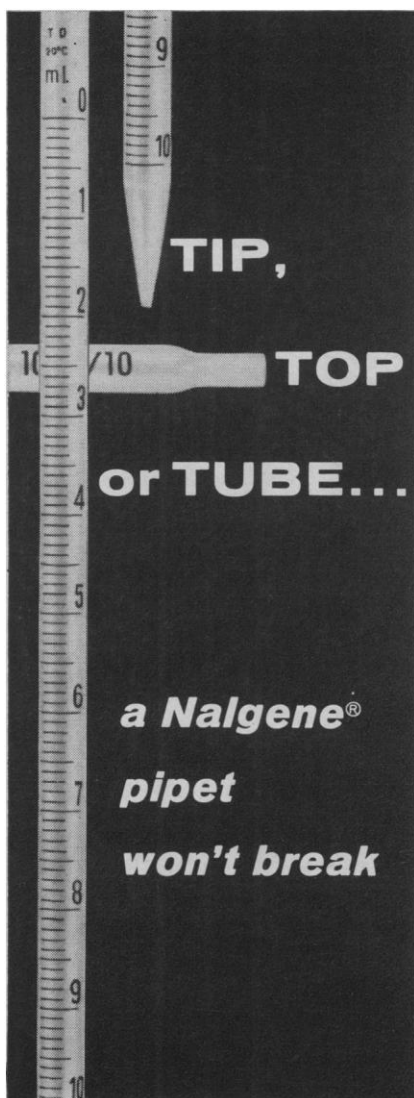
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1965. 478 pp. Illus. \$16.65. Prentice-Hall Mathematics Series, edited by Albert A. Bennett.

Modern Hydrology. Raphael G. Kazmann. Harper and Row, New York, 1965. 317 pp. Illus. \$10.50. Harper's Geoscience Series, edited by Carey Croneis.

Nuclear Interactions of the Hyperons. R. H. Dalitz. Published for the Tata Institute of Fundamental Research, Bombay, by the Oxford Univ. Press, New York, 1965. 112 pp. Illus. Paper, \$5.05.

Nuclear Magnetic Resonance in a Flowing Liquid. Aleksandr Ivanovich Zhernovoi and Georgii Dmitrievich Latyshev. Translated from the Russian edition (Moscow, 1965) by C. Nigel Turton and Tatiana I. Turton. Consultants Bureau, New York, 1965. 174 pp. Illus. \$22.50.

Numerical Analysis. I. M. Khabaza. Pergamon, New York, 1965. 254 pp. Illus. Paper, \$5. A volume in the Commonwealth and International Library of Science.

100 Great Problems of Elementary Mathematics: Their History and Solution. Heinrich Dörrie. Translated from the German edition (Würzburg, ed. 5, 1958) by David Antin. Dover, New York, 1965. 399 pp. Illus. Paper, \$2.

Optical Methods of Investigating Solid Bodies. vol. 25. Proceedings, P. N. Lebedev Physics Institute. D. V. Skobel'tsyn, Ed. Translated from the Russian. Consultants Bureau, New York, 1965. 194 pp. Illus. Paper, \$22.50. Three papers: "Polarized luminescence of molecular crystals" by N. D. Zhevandrov; "Vibrational spectra and structure of certain oxides in the crystalline and glassy states" by V. P. Cheremisinov; and "Calculation of cross sections for excitation of atoms and ions by electron impact" by L. A. Vainshtein.

Optical Physics. Max Garbuny. Academic Press, New York, 1965. 480 pp. Illus. \$14.50.

Organic Chemistry. B. Pavlov and A. Terentyev. Translated from the Russian edition by Boris Belitzky. Gordon and Breach, New York; Noordhoff, Groningen, Netherlands, 1965. 568 pp. Illus. \$16. Russian Monographs and Texts on Advanced Mathematics and Physics, vol. 18.

Oxidation and Combustion Reviews. vol. 1. C. F. H. Tipper, Ed. Elsevier, New York, 1965. 350 pp. Illus. \$14.50. Six papers: "Application of the theory of branched chain reactions in low-temperature combustion" by R. Ben-Aïm and M. Lucquin; "Oxidation reactions induced by ionising radiation" by G. Hughes; "Gas phase photo-oxidation" by G. R. McMillan and J. G. Calvert; "Oxidation reactions involving nitrogen dioxide" by J. H. Thomas; "Oxidative degradation of high polymers" by W. L. Hawkins; and "The heterogeneous selective oxidation of hydrocarbons" by R. J. Sampson and D. Shooter.

Oxidation-Reduction Polymers (Redox Polymers). Harold G. Cassidy and Kenneth A. Kun. Interscience (Wiley), New York, 1965. 323 pp. Illus. \$12.50.

Periodic Correlations. Ronald Rich. Benjamin, New York, 1965. 175 pp. Illus. Paper, \$3.95; cloth, \$8. A volume in the Physical Inorganic Chemistry Series, edited by Robert A. Plane and Michell J. Sienko.

Physical Networks. Richard S. Sanford. Prentice-Hall, Englewood Cliffs, N.J.,



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1965. 590 pp. Illus. \$17.25. Prentice-Hall Electrical Engineering Series, edited by William L. Everitt.

Physico-Chemical Constants of Pure Organic Compounds. vol. 2. J. Timmermans. Elsevier, New York, 1965. 490 pp. \$28.50.

Physics of High Pressures and the Condensed Phase. A. Van Itterbeek, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1965. 614 pp. Illus. \$22.50. Fourteen papers.

Physics of Non-Crystalline Solids. Proceedings, International Conference (Delft, Netherlands), July 1964. J. A. Prins, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1965. 683 pp. Illus. \$27.50. Fifty-three papers on the following topics: Structure and devitrification (10 papers); Neutron diffraction, heat conduction, ESR, NMR, magnetism, and ultrasonics (9 papers); Relaxation, mainly in organic materials (12 papers); Relaxation, fracture, and coordination, mainly in inorganic materials (12 papers); and Optical and electric properties (10 papers).

Physics of the Earth's Upper Atmosphere. C. O. Hines, I. Paghis, T. R. Hartz, and J. A. Fejer, Eds. Prentice-Hall, Englewood Cliffs, N.J., 1965. 448 pp. Illus. \$17.35. Eighteen papers.

Preparative Inorganic Reactions. vol. 2. William L. Jolly, Ed. Interscience (Wiley), New York, 1965. 387 pp. Illus. \$14.50. Nine papers: "Phosphazene compounds" by R. A. Shaw, R. Keat, and C. Hewlett; "Silicon-nitrogen compounds" by B. J. Aylett; "Orthophosphoric acids and orthophosphates" by C. Y. Shen and C. F. Callis; "Metal alkoxides" by D. C. Bradley; "Cyclopentadienyl and arene metal carbonyls" by R. L. Pruett; "Sulfur and phosphorus—Bridged complexes of transition metals" by R. G. Hayter; "Binary fluorides" by E. L. Muetterties and C. W. Tullock; "Fluorine compounds of the platinum metals" by N. Bartlett; and "Compounds of xenon" by E. H. Appelman and J. G. Malm.

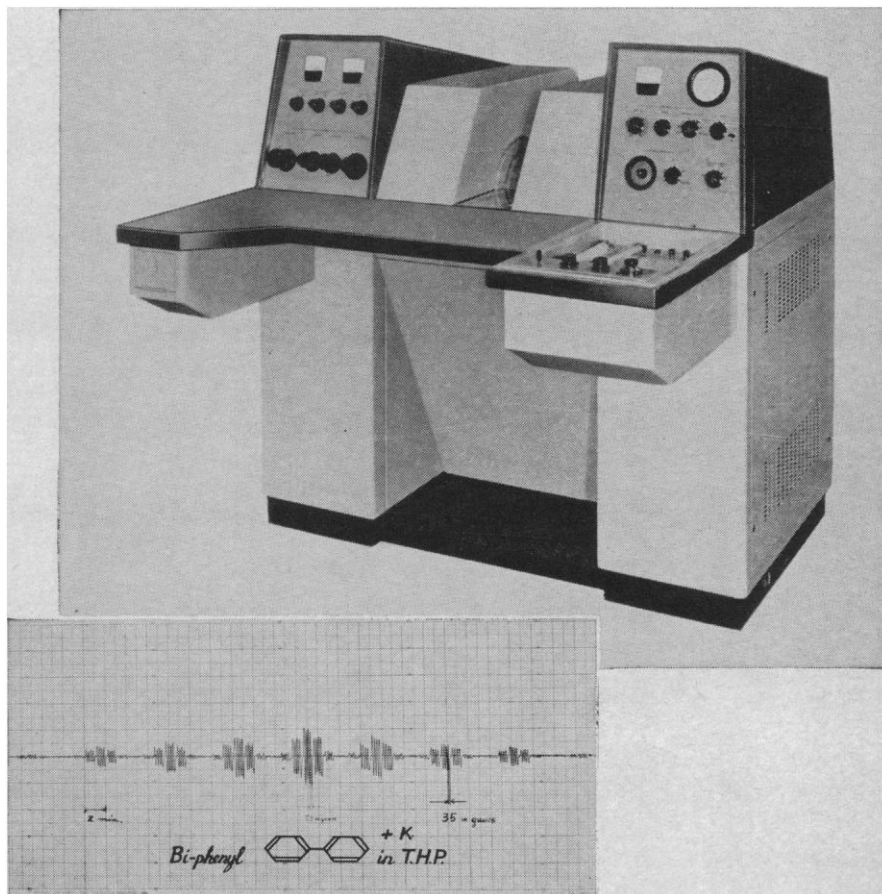
Probability Tables for Locating Elliptical Underground Masses with a Rectangular Grid. Igor' Dmitrievich Savinskii. Translated from the Russian edition (Moscow, 1964). Consultants Bureau, New York, 1965. 116 pp. Illus. \$15.

Programmed Units in Chemistry. *Balancing Chemical Equations* (69 pp., 60¢); *Chemical Formulas and Names* (62 pp., 56¢); *Chemical Symbols* (31 pp., 36¢); *Molecular Weight Calculations* (48 pp., 52¢); and *Weight and Volume Relationships* (38 pp., 48¢). Virginia P. Powell. Prentice-Hall, Englewood Cliffs, N.J., 1965. Paper.

Progress in Dielectrics. vol. 6. J. B. Birks and J. Hart, Eds. Academic Press, New York, 1965. 342 pp. Illus. \$14.50. Four papers: "Electrical force effects in dielectric liquids" by W. F. Pickard; "Polymeric semiconductors" by A. Rembaum, J. Moacanin, and H. A. Pohl; "Space charges in dielectrics" by Z. Croitoru; "Energy transfer in polyacene solid solutions, pt. 4: A bibliography for 1963" by F. R. Lipsett; and "The theory of ionic and electronic mobility in liquids" by S. A. Rice and J. Jortner.

Projective Geometry. vols. 1 and 2. Oswald Veblen and John Wesley Young.

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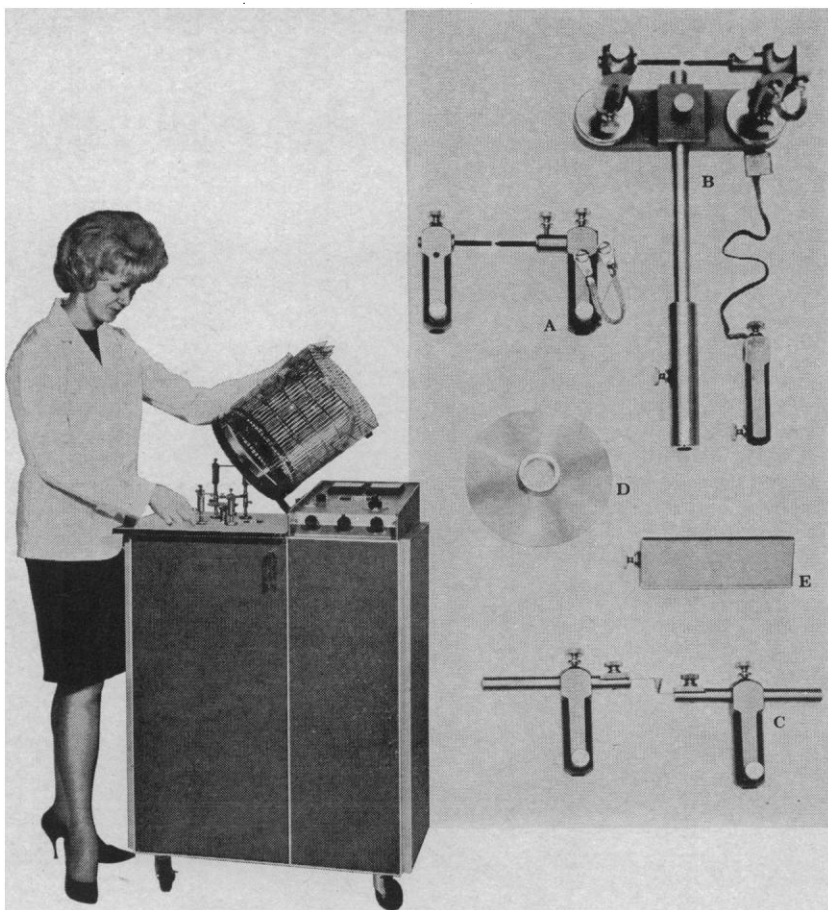
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Blaisdell (Ginn), New York, 1965, vol. 1, 355 pp., \$2.25; vol. 2, 525 pp., \$3. Illus. Paper.

Quantum Electronics and Coherent Light. Course 31, International School of Physics "Enrico Fermi." C. H. Townes and P. A. Miles, Eds. Academic Press, New York, 1965. 383 pp. Illus. \$16. Twenty-two papers.

Radiation Dosimetry. Course 30, International School of Physics "Enrico Fermi." G. W. Reed and F. W. Spiers, Eds. Academic Press, New York, 1965. 320 pp. Illus. \$14. Twenty-five papers.

Radiochemical Survey of the Elements. Principal characteristics and applications of the elements and their isotopes. M. Haissinsky and J. P. Adloff. Translated from the French by Express Translation Service. Elsevier, New York, 1965. 187 pp. Illus. \$12.

Radiochemistry of Rhodium [NAS-NS-3008 (rev)]. James C. Armstrong, Jr., and Gregory R. Choppin. Natl. Acad. of Sciences—Natl. Res. Council, Washington, D.C., 1965 (available from Clearinghouse for Federal Scientific and Technical Information, U.S. Department of Commerce, Springfield, Va.). 81 pp. Illus. Paper, \$1.

Random Processes in Nonlinear Control Systems. A. A. Pervozvanskii. Translated from the Russian (Moscow, 1962) by Scripta Technica. Ivo Herzer, Translation Editor. Academic Press, New York, 1965. 357 pp. Illus. \$14. Mathematics in Science and Engineering Series, vol. 15, edited by R. Bellman.

Recent Researches in the Fields of Hydrosphere, Atmosphere and Nuclear Geochemistry. Yasuo Miyake and Tada-shiro Koyama, Eds. Maruzen, Tokyo, 1965. Twenty-five papers; the volume is dedicated to Ken Sugawara.

Research in Molecular Spectroscopy. Proceedings, P. N. Lebedev Physics Institute, vol. 27. D. V. Skobel'tsyn, Ed. Translated from the Russian edition (Moscow, 1964). Consultants Bureau, New York, 1965. 211 pp. Illus. Paper, \$22.50.

Reviews of Plasma Physics. vol. 1. M. A. Leontovich, Ed. Translated from the Russian edition (Moscow, 1963) by Herbert Lashinsky. Consultants Bureau, New York, 1965. 338 pp. Illus. \$12.50. Four papers: "Motion of charged particles in electromagnetic fields in the drift approximation" by D. V. Sivukhin; "Particle interactions in a fully ionized plasma" by B. A. Trubnikov; "Transport processes in a plasma" by S. I. Braginskii; and "Thermodynamics of a plasma" by A. A. Vedenov.

Rock Magnetism. Takesi Nagata. Maruzen, Tokyo; Plenum Press, New York, ed. 2, 1965. 350 pp. Illus. \$9.50.

Second Symposium on Oil Shale. A symposium (Denver, Colo.), April 1965. Colorado School of Mines, Golden, 1965. 206 pp. Illus. Paper, \$4. Eleven papers.

Simplified Design of Structural Steel. Harry Parker. Wiley, New York, ed. 3, 1965. 325 pp. Illus. \$7.75.

SOCMA Handbook. Commercial organic chemical names. Chemical Abstracts Service, American Chemical Soc., Washington, D.C., 1965. 757 pp. Illus. \$25.

The Solid-State Chemistry of Binary Metal Hydrides. George G. Libowitz. Benjamin, New York, 1965. 151 pp. Illus.

\$7.50. A volume in the Physical Inorganic Chemistry Series, edited by Robert A. Plane and Michell J. Sienko.

Soviet Research in New Semiconductor Materials. D. N. Nasledov and N. A. Goryunova, Eds. Translated from the Russian edition (Kishinev, 1964) by A. Tybulewicz. Consultants Bureau, New York, 1965. 127 pp. Illus. Paper, \$17.50. Seventeen papers.

Spectroscopic Techniques in Organic Chemistry. A. J. Baker and T. Cairns. Heyden, London, 1965. 91 pp. Illus. Paper, \$3.50. Spectroscopy in Education Series, vol. 2.

Stellar and Solar Magnetic Fields. A symposium, International Astronomical Union (Rottach-Egern near Munich, Germany), September 1963. R. Lüst, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1965. 466 pp. Illus. \$17.50. Fifty-nine papers.

Studies in Mathematics. vol. 3, *Studies in Real and Complex Analysis.* I. I. Hirschman, Jr., Ed. Published by the Mathematical Association of America; available from Prentice-Hall, Englewood Cliffs, N.J., 1965. 221 pp. Illus. \$4.

Sulfonation and Related Reactions. Everett E. Gilbert. Interscience (Wiley), New York, 1965. 541 pp. Illus. \$16.50. Interscience Monographs on Chemistry, Organic Chemistry Section, edited by George A. Olah.

A Survey of Modern Algebra. Garrett Birkhoff and Saunders MacLane. Macmillan, New York, ed. 3, 1965. 447 pp. Illus. \$8.50.

Symmetries in Elementary Particle Physics. A. Zichichi, Ed. Academic Press, New York, 1965. 441 pp. Illus. Paper, \$7.95; cloth, \$12. Nine lectures, five seminars, and six discussions presented at the 1964 International School of Physics "Ettore Majorana" (1964) Advanced Study Institute, by J. Ashkin, S. M. Berman, G. Bernardini, L. C. Biedenharn, M. M. Block, N. Cabibbo, R. P. Feynman, R. Gatto, P. Kabir, P. Tarjanne, and G. Zweig.

Symmetry Principles at High Energy. Coral Gables Conferences, Second Conference, January 1965. Behram Kurşunoğlu, Arnold Perlmutter, and Ismail Şakmar, Eds. Freeman, San Francisco, 1965. 446 pp. Illus. Paper, \$8.

Tenth Symposium (International) on Combustion (Cambridge, England), August 1964. Organized by the Combustion Institute. Combustion Inst., Pittsburgh, Pa., 1965. 1516 pp. Illus. \$35. One hundred thirty-one papers.

The Theory of Electron-Atom Collisions. G. F. Drukarev. Translated from the Russian edition (1962) by S. Chomet. J. B. Hasted, Translation Ed. Academic Press, New York, 1965. 173 pp. Illus. \$6.50.

Theory of Random Functions. vol. 1. A. Blanc-Lapierre and R. Fortet. Translated from the original French edition (1953) by J. Gani. Gordon and Breach, New York, 1965. 454 pp. Illus. \$14.50.

Theory of Random Functions: And Its Application to Control Problems. V. S. Pugachev. Revised translation from second Russian edition (Moscow), with amendments incorporated to conform with third Russian edition (1962), by O. M. Blunn. N. L. Johnson, Translation Ed.

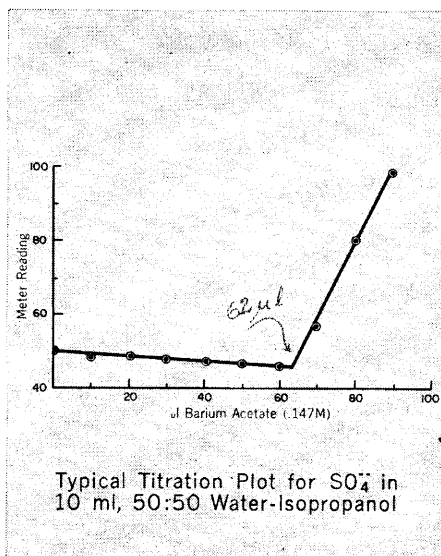
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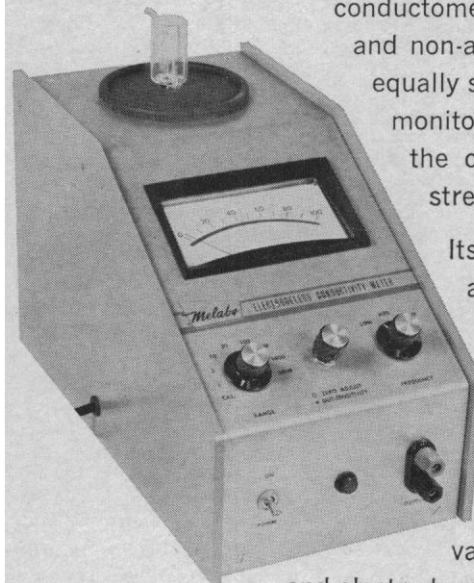
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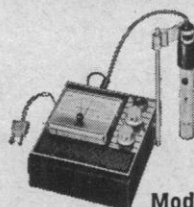
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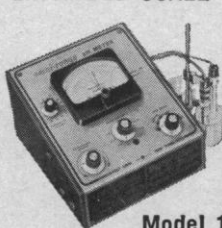
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Pergamon, London; Addison-Wesley, Reading, Mass., 1965. 851 pp. Illus. \$21.

Thermodynamic and Transport Properties of Uranium Dioxide and Related Phases. Report of the panel (Vienna), March 1964. Charles Holley, Ed. International Atomic Energy Agency, Vienna, 1965 (order from Natl. Agency for International Publications, New York). 115 pp. Illus. Paper, \$2.50.

Thermodynamics of Multicomponent Systems. Bruce H. Sage. Reinhold, New York, 1965. 378 pp. Illus. \$18.50.

Time-Domain Analysis and Design of Control Systems. Richard C. Dorf. Addison-Wesley, Reading, Mass., 1965. 206 pp. Illus. \$8.95.

Transactions of the Moscow Mathematical Society for the Year 1963. Prepared jointly by the American Mathematical Society and the London Mathematical Society. American Mathematical Soc., Providence, R.I., 1965. 528 pp. Illus. \$5.50. English translation of *Trudy Moskovskogo Matematicheskogo Obshchestva*; 12 papers.

La Transmission de la Chaleur au Cours de la Solidification, du Rechauffage et de la Trempe de l'Acier. Yves Dardel. Editions de la Revue de Métallurgie, Paris, 1964. 266 pp. Illus. F. 70.

Treatise on Analytical Chemistry. vol. 6, pt. 1, *Theory and Practice*. Section D-3 (continued), *Optical Methods of Analysis*. I. M. Kolthoff and Philip J. Elving, Eds. Interscience (Wiley), New York, 1965. 923 pp. Illus. \$23. The contributors are N. Bauer, George G. Cocks, G. W. Leddicotte, S. Z. Lewin, Lucy B. McCrone, Walter C. McCrone, Marvin Margoshes, Edward C. Olson, John H. Reisner, E. J. Rosenbaum, Bourdon F. Scribner, A. Lee Smith, William A. Struck, Ralph E. Thiers, and Bert L. Vallee.

A Treatise on Analytical Dynamics. L. A. Pars. Wiley, New York, 1965. 663 pp. Illus. \$27.50.

Ultrasound in the Production and Inspection of Concrete. pt. 1, *Production Applications* (47 pp.) by Yu. E. Kornilovich and V. I. Belokhvostikova; pt. 2, *Inspection in Hydraulic Construction* (64 pp.) by A. K. Tret'yakov and A. M. Filonidov. Translated from the Russian (1964) by James S. Wood. Consultants Bureau, New York, 1965. Illus. Paper, \$7.50 each.

Ultraviolet Radiation. Lewis. R. Koller. Wiley, New York, ed. 2, 1965. 320 pp. Illus. \$12. Wiley Series in Pure and Applied Optics; Stanley S. Ballard, Advisory Editor.

Underwater Acoustics Handbook. Vernon M. Albers. Pennsylvania State Univ. Press, University Park, ed. 2, 1965. 372 pp. Illus. \$12.50.

University Physics: Experiment and Theory. George D. Freier. Appleton, Century, Crofts (Meredith), New York, 1965. 613 pp. Illus. \$10.

Vectors. James A. Hummel. Addison-Wesley, Reading, Mass., 1965. 124 pp. Illus. Paper, \$1.95. Addison-Wesley Series in Introductory Mathematics.

World Maps of Climatology: Weltkarten zur Klimakunde. H. E. Landsberg, H. Lippmann, K. H. Paffen, and C. Troll. Springer-Verlag, New York, ed. 2, 1965. 36 pp. Illus. Maps. \$7.50.



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Advances in Enzymology, and Related Subjects of Biochemistry. vol. 27. F. F. Nord, Ed. Interscience (Wiley), New York, 1965. 640 pp. Illus. \$17.50. Ten papers: "Mechanism of enzyme action—An approach through the study of slow reactions" by Kunio Yagi; "Extrinsic cotton effects and the mechanism of enzyme action" by David D. Ulmer and Bert L. Vallee; "Contributions of EPR spectroscopy to our knowledge of oxidative enzymes" by Helmut Beinert and Graham Palmer; "Chemie und biochemie des disulfidaustausches" by Von L. Lumper and H. Zahn; "Enzymology of the nucleus" by Günther Siebert and G. Bennett Humphrey; "The chemical basis of mutation" by L. E. Orgel; "The origin of life and the origin of enzymes" by A. I. Oparin; "Experimental approaches to the origin of life problem" by Howard H. Pattee; "Inhibition of folate biosynthesis and function as a basis for chemotherapy" by George H. Hitchings and James J. Burchall; and "The mechanisms of microbial oxidations of petroleum hydrocarbons" by A. C. van der Linden and G. J. E. Thijssse.

The Amino Sugars: The Chemistry and Biology of Compounds Containing Amino Sugars. vol. 2A, *Distribution and Biological Role*. Endre A. Balazs and Roger W. Jeanloz, Eds. Academic Press, New York, 1965. 620 pp. Illus. \$22. Twenty papers.

Analgetics. George deStevens, Ed. Academic Press, New York, 1965. 489 pp. Illus. \$17. Medicinal Chemistry Series of Monographs, vol. 5, edited by George deStevens. Seven papers: "The physiology and pharmacology of pain and its relief" by Charles A. Winter; "Clinical measurement of pain" by Raymond W. Houde, Stanley L. Wallenstein, and William T. Beaver; "Morphine and its modifications" by Everette L. May and Lewis J. Sargent; "Synthetic analgetics with morphine-like action" by Robert A. Hardy, Jr. and M. Gertrude Howell; "Isoquinoline analgetics" by A. Brossi, H. Besendorf, L. A. Pirk, and A. Rheiner, Jr.; "Pyrazole derivatives" by Walter Krohs; and "General synthetics" by George deStevens; there is an introduction by Alfred Burger.

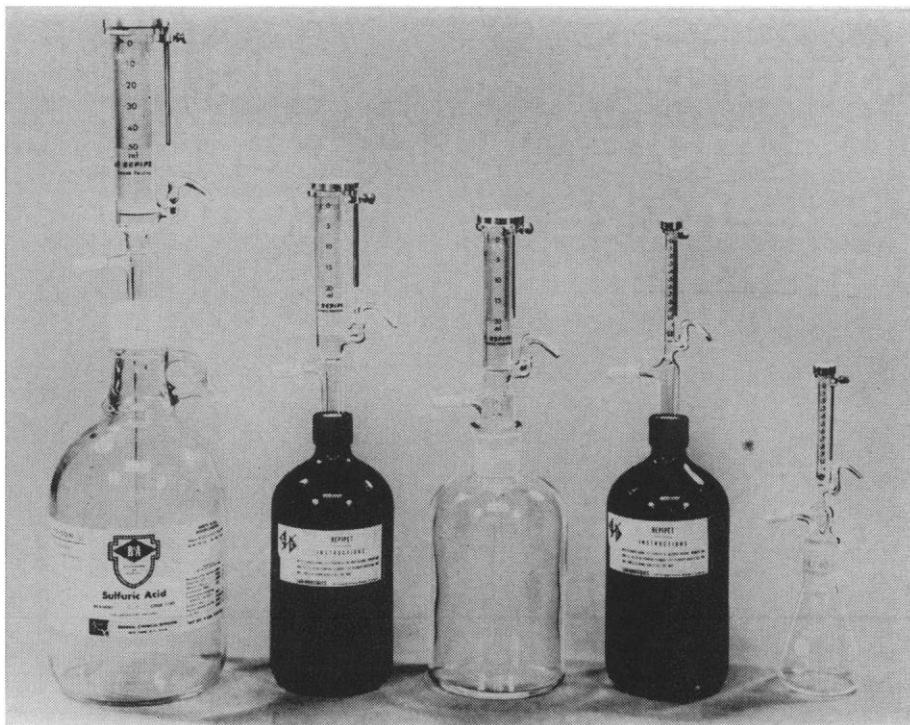
Bioenergetics: The Molecular Basis of Biological Energy Transformations. Albert L. Lehninger. Benjamin, New York, 1965. 274 pp. Illus. Paper, \$2.95; cloth, \$6. Biology Teaching Monograph Series, edited by Cyrus Levinthal.

Biological Effects of Radiation. Daniel S. Grosch. Blaisdell (Ginn), New York, 1965. 307 pp. Illus. Paper, \$3.50. A Blaisdell Book in the Pure and Applied Sciences Series.

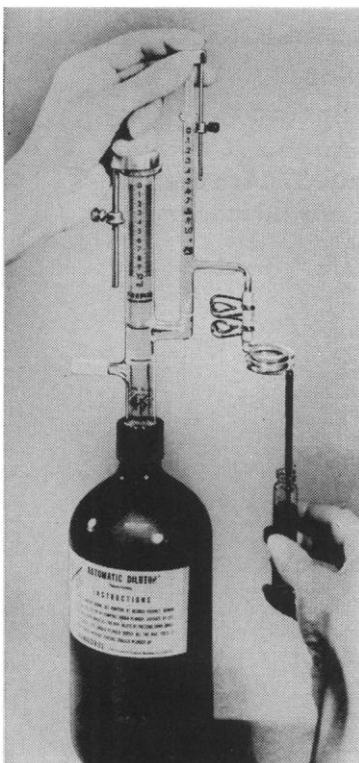
Biology and Information: Elements of Biological Thermodynamics. Karl Sigmundovich Trinchler. Translated from the Russian by Edwin S. Spiegelthal. Consultants Bureau, New York, 1965. 103 pp. Illus. Paper, \$17.50.

Biomedical Electronics. Howard M. Yanof. Davis, Philadelphia, 1965. 373 pp. Illus. \$12.50.

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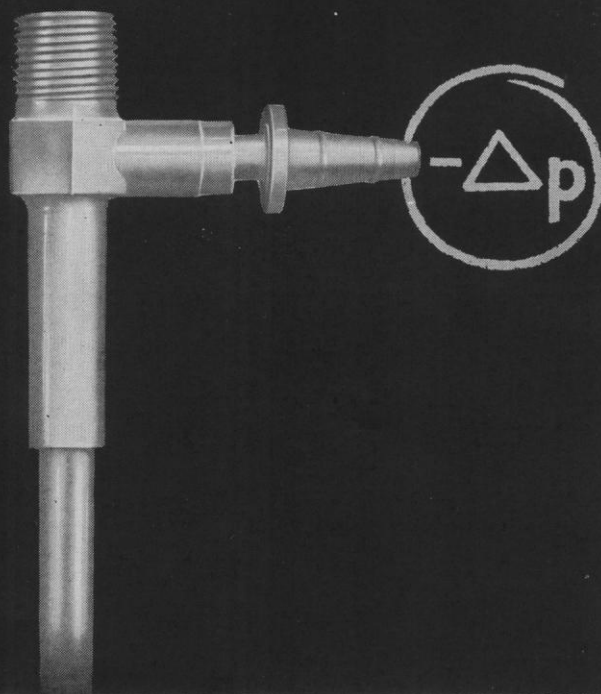
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Cells and Tissues in Culture: Methods, Biology, and Physiology. vols. 1 and 2. E. N. Willmer, Ed. Academic Press, London, 1965. vol. 1, 802 pp., 17 papers; vol. 2, 825 pp., 17 papers. Illus. \$25 each.

Cellular Ultrastructure of Woody Plants. Proceedings, Advanced Science Seminar (Upper Saranac Lake, N.Y.), September 1964. Wilfred A. Côté, Jr., Ed. Syracuse Univ. Press, Syracuse, N.Y., 1965. 617 pp. Illus. \$14. Twenty-nine papers.

Circadian Clocks. Proceedings, Feldafing Summer School, September 1964. Jürgen Aschoff, Ed. North-Holland, Amsterdam, 1965. 499 pp. Illus. \$15. Forty-four papers.

Comparative Physiology and Pathology of the Skin. Arthur J. Rook and G. S. Walton, Eds. Davis, Philadelphia, 1965. 808 pp. Illus. \$31. Fifty-five papers on the following topics: Comparative dermatology (5 papers); Hair (12 papers); Nutritional influences on the skin (3 papers); Porphyria and light sensitization (5 papers); The mast cell (6 papers); Immunology (13 papers); and Tumours of the skin (11 papers).

Comprehensive Biochemistry. vol. 6, *Lipids and Amino Acids and Related Compounds.* Marcel Florkin and Elmer H. Stoltz, Eds. Elsevier, New York, 1965. 339 pp. Illus. \$17. Nine papers: "Fatty acids, long-chain alcohols, and waxes" by James F. Mead, David R. Howton, and Judd C. Nevenzel; "Neutral fats and oils" by J. A. Lovern; "Phospholipids and glycolipids" by Donald J. Hanahan and Hans Brockerhoff; "General chemistry of the amino acids" by R. J. F. Nivard and G. I. Tesser; "Nitrogenous bases" by N. van Thoi; "Melanins" by J. Harley-Mason; "Peptides: Synthetic methods and applications" by George W. Anderson; "Cap-sular polypeptide" by G. Ivánovics; and "Syntheses of bacterial glutamyl polypeptides" by V. Bruckner.

Computers in Biomedical Research. vol. 1. Ralph W. Stacy and Bruce D. Waxman, Eds. Academic Press, New York, 1965. 584 pp. Illus. \$20. Twenty-two papers.

Deranged Memory. A psychonomic study of the amnesic syndrome. George A. Talland. Academic Press, New York, 1965. 368 pp. Illus. \$9.50.

Evolution of Parasites. Third symposium, British Society for Parasitology (London), November 1964. Angela E. R. Taylor, Ed. Blackwell, Oxford, England; Davis, Philadelphia, 1965. 141 pp. Illus. Paper. \$5. Four papers: "The evolution of parasitic protozoa" by J. R. Baker; "The evolution of parasite-arthropod vector systems" by P. F. Mattingly; "The evolution of parasitic platyhelminths" by J. Llewellyn; and "Patterns of evolution in parasitic nematodes" by W. G. Inglis.

The Genus Aspergillus. Kenneth B. Raper and Dorothy I. Fennell. With a chapter by Peter K. C. Austwick. Williams and Wilkins, Baltimore, 1965. 698 pp. Illus. \$20.

Grundriss der Ökologie. Mit besonderer Berücksichtigung der Tierwelt. Wilhelm

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Kühnelt. Fischer, Jena, East Germany, 1965. 402 pp. Illus.

Handbook of Physiology. A critical, comprehensive presentation of physiological knowledge and concepts. Section 5, *Adipose Tissue*. Albert E. Renold and George F. Cahill, Jr. American Physiological Soc., Washington, D.C., 1965. 832 pp. Illus. \$28.

International Conference on Gerontology. A. Balazs, Ed. Akadémiai Kiadó, Budapest, Hungary, 1965. 939 pp. Illus. \$19.60. One hundred and thirty-three papers presented at a conference (Budapest), 1962.

Isotopes in Experimental Pharmacology. Lloyd J. Roth, Ed. Univ. of Chicago Press, Chicago, 1965. 502 pp. Illus. \$12.50. Thirty-six papers on the following topics: Isotopic labeling of drugs (2 papers); Activation analysis (2 papers); Autoradiography (8 papers); Compartmental analysis and dynamic measurements (10 papers); Drug biotransformation (8 papers); Biochemical pharmacology (4 papers); and Deuterium isotope effect: Elucidation of pharmacological mechanisms (2 papers).

Mechanisms of Hormone Action. P. Karlson, Ed. Academic Press, New York; Thieme, Stuttgart, Germany, 1965. 285 pp. Illus. \$14.50. Twenty-two papers presented at a NATO Advanced Study Institute. Most of the papers are in English, the others in German or French.

Metabolism of Steroid Hormones. Ralph I. Dorfman and Frank Ungar. Academic Press, New York, 1965. 726 pp. Illus. \$32.

Methods of Animal Experimentation. vol. 1. William I. Gay, Ed. Academic Press, New York, 1965. 398 pp. Illus. \$13.50. Nine papers: "Collection and withdrawal of body fluids and infusion techniques" by Alvin F. Moreland; "Anesthesia and sedation" by Albert Schaffer; "Care of animals during surgical experiments" by Norman Bleicher; "Radiography" by William D. Carlson; "Methods of euthanasia and disposal of laboratory animals" by Dietrich C. Smith; "Methods of parasitic infections: Outline of general principles" by Ira Singer; "Methods in germfree animal research" by Walter L. Newton; "Aerosol challenge of animals" by Joseph V. Jemski and G. Briggs Phillips; and "Principles in drug administration" by Geoffrey Woodard.

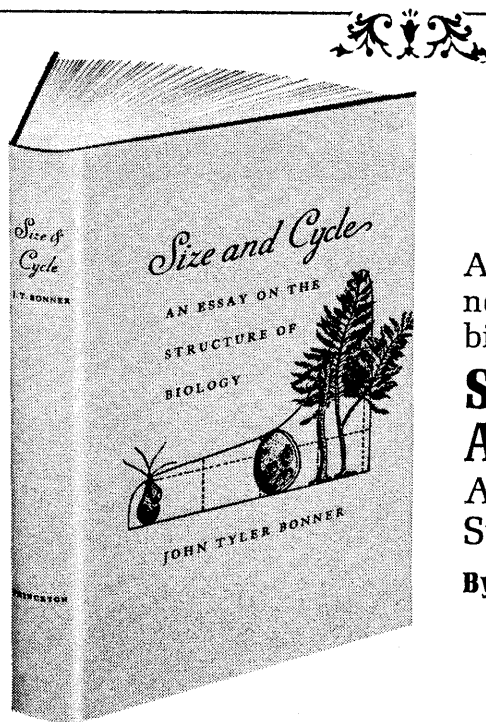
Nutrition and Caries-Prevention. vol. 3. *Symposia*, Swedish Nutrition Foundation (Falsterbo), August 1964. Gunnar Blix, Ed. Almqvist and Wiksells, Stockholm, 1965. 130 pp. Illus. Kr. 35. Twelve papers.

Physiology of Digestion in the Ruminant. Papers presented at a symposium (Ames, Iowa), August 1964. R. W. Dougherty, Ed. Butterworth, Washington, D.C., 1965. 496 pp. Illus. \$14.50. Thirty-three papers.

Primate Behavior: Field Studies of Monkeys and Apes. Irvén De Vore, Ed. Holt, Rinehart, and Winston, New York, 1965. 668 pp. Illus. \$10.

The Principal Diseases of Lower Vertebrates. H. Reichenbach-Klinke and E. Elkan. Academic Press, London, 1965. 612 pp. Illus. \$20.

Proceedings, International Union of Physiological Sciences (Tokyo, Japan),



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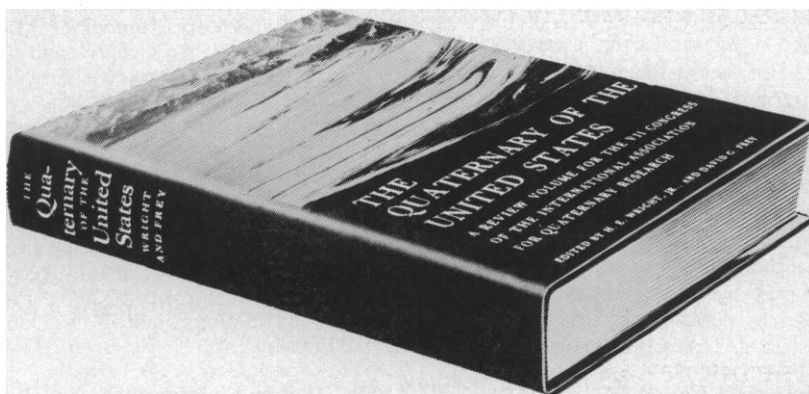
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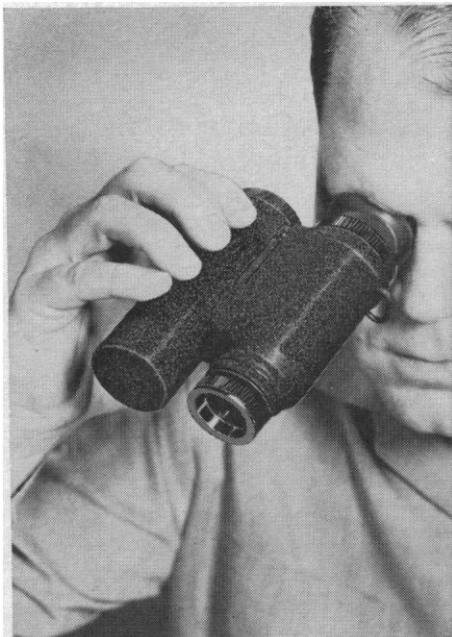
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September 1965. D. Noble, Ed. Excerpta Medica Foundation, Amsterdam, 1965. 652 pp. Illus. Paper. International Congress Series, No. 87.

Progress in Experimental Tumor Research, vol. 6. F. Homburger, Ed. Hafner, New York, 1965. 352 pp. Illus. \$22.25. Six papers: "The position of oncogenic viruses in a classification of viruses based on particle morphology" by J. D. Almeida and Arthur W. Ham; "Antigenic behaviour of lymphoma cell populations in mice as revealed by the spleen colony method" by Arthur Axelrad; "Effects of anticancer drugs on biochemical control mechanisms" by J. Frank Henderson; "Some unsolved problems in lung cancer etiology" by Francis J. C. Roe and Margaret A. Walters; "Approaches to the combination chemotherapy of transplantable neoplasms" by Alan C. Sartorelli; and "Transplantation methods as a tool for detection of tumor-specific antigens" by Hans Olof Sjögren.

Recent Progress in Hormone Research, vol. 21. Proceedings, 1964 Laurentian Hormone Conference (Lake George, N.Y.), September 1964. Gregory Pincus, Ed. Academic Press, New York, 1965. 687 pp. Illus. \$24. Fourteen papers and discussions on the following topics: Recent advances in thyroid chemistry and physiology (2 papers); Hormones in normal and pathological physiology (2 papers); Pituitary hormones (3 papers); Steroid sex hormones (3 papers); Comparative endocrinology (2 papers); and Neurohumors (2 papers).

Selected Exercises from Microbes in Action: A Laboratory Manual of Microbiology. Harry W. Seeley, Jr. and Paul J. VanDemark. Freeman, San Francisco, 1965. 235 pp. Illus. Paper, \$3.25.

Selected Papers on Molecular Genetics. A collection of reprints. J. Herbert Taylor, Ed. Academic Press, New York, 1965. 661 pp. Illus. Paper, \$5.95; cloth, \$9. Perspectives in Modern Biology Series; 55 papers.

The Strategy of Life. Clifford Grobstein. Freeman, San Francisco, 1965. 128 pp. Illus. Paper, \$1.75; cloth, \$3.50. A Series of Books in Biology, edited by Douglas M. Whitaker, Ralph Emerson, Donald Kennedy, and George W. Beadle.

The Theory of Inbreeding. Sir Ronald A. Fisher. Academic Press, New York, ed. 2, 1965. 158 pp. Illus. \$6.

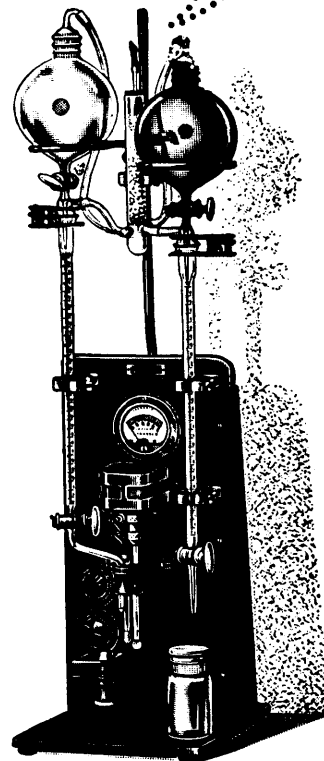
The Uniqueness of Biological Materials. A. E. Needham. Pergamon, New York, 1965. 613 pp. Illus. \$15. This book is part of the International Series of Monographs on Pure and Applied Biology, zoology division, vol. 25.

Vascular Differentiation in Plants. Katherine Esau. Holt, Rinehart, and Winston, New York, 1965. 172 pp. Illus. \$4.50. Biology Studies Series.

Viruses, Cells, and Hosts. M. Michael Sigel and Ann R. Beasley. Holt, Rinehart, and Winston, New York, 1965. 176 pp. Illus. Paper. Holt Library of Science Series II.

Vitamin B₁₂. E. Lester Smith. Methuen, London; Wiley, New York, ed. 3, 1965. 192 pp. Illus. \$4.25. Methuen's Monographs on Biochemical Subjects, a series edited by Sir Rudolph Peters and F. G. Young.

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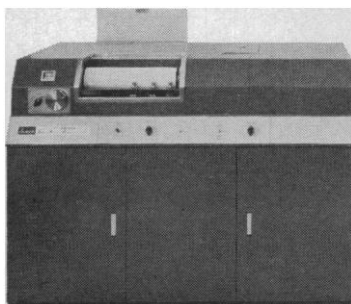
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American Scientific Books, 1964-1965. Phyllis B. Steckler, Ed. Bowker, New York, 1965. 260 pp. \$8. This volume covers the period April 1964 through March 1965 and is a cumulation of titles, arranged by subject, from the monthly issues of the *American Book Publishing Record*. Scientific, medical, and technical books published in the United States are included, but juveniles and texts below the college level as well as government and business publications and most serials are excluded.

Black Brant: Sea Goose of the Pacific Coast. Arthur S. Einarsen. Univ. of Washington Press, Seattle, 1965. 160 pp. Illus. \$5.

Canine and Feline Nutritional Requirements. Proceedings of a symposium organized by the British Small Animals Veterinary Association (London), May 1964. Oliver Graham-Jones, Ed. Pergamon, New York, 1965. 170 pp. Illus. \$9.50. Fifteen papers.

The Career of Philosophy. vol. 2, *From the German Enlightenment to the Age of Darwin*. John Herman Randall, Jr. Columbia Univ. Press, New York, 1965. 687 pp. \$12.95.

The Case for Going to the Moon. Neil P. Ruzig. Putnam, New York, 1965. 256 pp. Illus. \$4.95.

The Century of the Detective. Jürgen Thorwald. Translated from the German edition by Richard Winston and Clara Winston. Harcourt, Brace, and World, New York, 1965. 512 pp. Illus. \$8.95. An account of the uses of science in police work.

Chemistry in the Soviet Union. John Turkevich. Van Nostrand, Princeton, N.J., 1965. 576 pp. \$12.

The Common Cold. Christopher Andrewes. Norton, New York, 1965. 187 pp. Illus. \$4.50. The Advancement of Science Series, edited by Richard Carrington.

Cone-Bearing Trees of the Pacific Coast. Nathan A. Bowers. Pacific Books, Palo Alto, Calif., 1965. 231 pp. Illus. \$4.95.

The Doctorate: A Handbook. George K. Schweitzer. Thomas, Springfield, Ill., 1965. 114 pp. Illus. \$4.75.

European Philosophy Today. George L. Kline, Ed. Quadrangle Books, Chicago, Ill., 1965. 172 pp. Paper, \$2.25; cloth, \$5.50. Five papers: "The philosophy of Xavier Zubiri" by José Ferrater Mora; "The new image of man in Martin Heidegger's philosophy" by J. Glenn Gray; "The 'modernity' of Franco Lombardi" by Henry S. Harris; "Three stages on Sartre's way" by Eugene F. Kaelin; and "Leszek Kolakowski and the revision of Marxism" by George L. Kline.

Evolution of Mathematical Thought. Herbert Meschkowski. Translated from the second German edition (Braunschweig, 1960) by Jane H. Gayl. Holden-Day, San Francisco, 1965. 169 pp. Illus. \$5.95.

Flight. H. Guyford Stever, James J. Haggerty, and the Editors of *Life*. Time Inc., New York, 1965. 200 pp. Illus. \$3.95. Life Science Library Series.

Focus on Bacteria. Emmy Klieneberger-Nobel. With a chapter by Ruth M. Lemcke. Academic Press, New York, 1965. 153 pp. Illus. \$5.50.

Food Technology the World Over. vol. 2, *South America, Africa and the Middle East, Asia.* Martin S. Peterson and Donald K. Tressler, Eds. Avi, Westport, Conn., 1965. 424 pp. Illus. \$14.

From Zero to Infinity. What makes numbers interesting. Constance Reid. Crowell, New York, ed. 3, 1965. 191 pp. Illus. \$4.50.

Forest-Soil Relationships in North America. Papers presented at Second North American Forest Soils Conference (Corvallis, Ore.), August 1963. Chester T. Youngberg, Ed. Oregon State Univ. Press, Corvallis, 1965. 544 pp. Illus. \$8. Thirty-five papers.

Fundamentals of Geography. Earl B. Shaw. Wiley, New York, 1965. 424 pp. Illus. Plates. \$8.50.

Geochronology of North America (Publ. 1276). Committee on Nuclear Science, NAS-NRC. Natl. Academy of Sciences-Natl. Research Council, Washington, D.C., 1965. 321 pp. Paper, \$6.

Graduate Education Today. Everett Walters, Ed. American Council on Education, Washington, D.C., 1965. 260 pp. \$4. Thirteen essays by Everett Walters, Moody E. Prior, John W. Ashton, John L. Snell, Roy F. Nichols, Leonard B. Beach, Henry E. Bent, Robert S. Ford, John Perry Miller, Gustave O. Arlt, W. Gordon Whaley, Bryce Crawford, and Allan M. Cartter.

A Guide to Information Sources in Mining, Minerals, and Geosciences. Stuart R. Kaplan, Ed. Interscience (Wiley), New York, 1965. 613 pp. Illus. \$12.50. Guides to Information Sources in Science and Technology series, vol. 2, edited by Bernard M. Fry and Foster E. Mohrhardt.

Homer William Smith: His Scientific and Literary Achievements. Herbert Chas-is and William Goldring, Eds. New York Univ. Press, New York, 1965. 306 pp. Illus. Plates. \$4.50.

Human Factors Evaluation in System Development. David Meister and Gerald F. Rabideau. Wiley, New York, 1965. 319 pp. Illus. \$9.95.

Human Motivation. Symposium (Washington, D.C.), August 1963. Marshall R. Jones, Ed. Univ. of Nebraska Press, Lincoln, 1965. 95 pp. Illus. \$4.25. Four papers: "Some general implications of conceptual developments in the study of achievement-oriented behavior" by John W. Atkinson; "Criteria for judging needs to be instinctoid" by Abraham H. Maslow; "Theories of motivation: An overview and a synthesis" by K. B. Madsen; and "Motivation as a component of the regulatory system of behavior" by Janusz Reykowski. Discussions on the papers were given by Ingmar Dureman and Marshall R. Jones.

An International Bibliography of Non-Periodical Literature on Documentation and Information. Compiled and edited by Hans Zell and Robert Machesney. Maxwell, Long Island City, N.Y., 1965. 300 pp. \$4. The bibliography contains 1555 references to books, pamphlets, reports, and technical papers published during the years 1930 to 1964. Russian material is not included. Entries are arranged alphabetically by author.

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to Dextrose and Starch Syrups. Anthony Standen, Ed. Interscience (Wiley), New York, ed. 2, 1965. 946 pp. Illus. \$45.

Man, Culture, and Animals. The role of animals in human ecological adjustments. A symposium (AAAS Publ. No. 78). Anthony Leeds and Andrew P. Vayda, Eds. AAAS, Washington, D.C., 1965. 312 pp. Illus. Members, \$7; others, \$8. Most of the 15 papers are based on a symposium presented at the Denver meeting of the AAAS (1961). The papers are "Anthropologists and ecological problems" by Andrew P. Vayda; "The association between Australian Aborigines and dingoes" by J. M. Meggitt; "A re-examination of hunting, trapping, and territoriality among the northeastern Algonkian Indians" by Rolf Knight; "The Virginia deer and intertribal buffer zones in the upper Mississippi Valley" by Harold Hickerson; "Southern Atabaskan herding patterns and contrasting social institutions" by Peter Kunstader; "Reindeer herding and Chukchi social institutions" by Anthony Leeds; "Camel pastoralism in North Arabia and the minimal camping unit" by Louise E. Sweet; "Native cattle keeping in eastern Africa" by W. W. Deshler; "Animal and social types in the exploitation of the Tibetan Plateau" by James F. Downs and Robert B. Ekvall; "Herds and herders in the Inca State" by John V. Murra; "The myth of the sacred cow" by Marvin Harris; "The Euro-American ranching complex" by Arnold Strickon; "Comments on the symposium" by Homer Aschmann; and "Functional analyses in the symposium" by Paul W. Collins.

Meaning and Knowledge: Systematic Readings in Epistemology. Ernest Nagel and Richard B. Brandt. Harcourt, Brace, and World, New York, 1965. 684 pp. \$8.95.

Medical Aspects of Boxing. Proceedings of a conference (London), November 1963. A. L. Bass, J. L. Blonstein, R. D. James, and J. G. P. Williams, Eds. Pergamon, New York, 1965. 132 pp. Illus. \$7.50. Thirteen papers.

Men and Snakes. Ramona Morris and Desmond Morris. McGraw-Hill, New York, 1965. 224 pp. Illus. \$6.95.

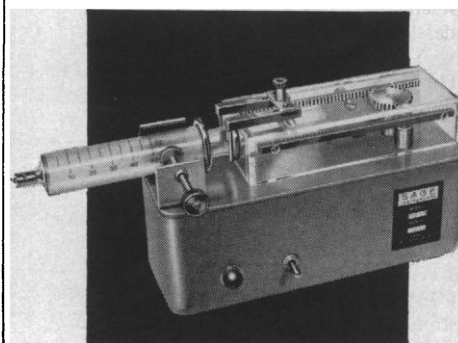
Mysterious Phenomena of the Human Psyche. Leonid L. Vasiliev. Translated from the Russian by Sonia Volochova. University Books, New Hyde Park, N.Y., 1965. 240 pp. \$6.

Oceanography. Warren E. Yasso. Holt, Rinehart, and Winston, New York, 1965. 176 pp. Illus. Paper. Holt Library of Science, Series II.

Physiologie Nutritionnelle et Sevrage des Porcelets. Séminaire international organisé par l'Institut National de la Recherche Agronomique (Paris), September 1964. E. Salmon-Legagneur and A. Aumaitre, Eds. Institut National de la Recherche Agronomique, Paris, 1965. 236 pp. Illus. Paper, F. 24. Twenty-one papers.

Proceedings of the Fourth International Congress on Rheology. Providence, R.I., August 1963. pts. 1 to 4. pt. 1 (383 pp., 22 papers; \$15.50) E. H. Lee and Alfred L. Copley, Eds.; pt. 2 (726 pp., 47 papers; \$30) E. H. Lee, Ed.; pt. 3 (651 pp., 59 papers; \$26) E. H. Lee, Ed.; pt. 4, *Symposium on Biorheology* (646 pp., 55 papers) Alfred L. Copley, Ed. Interscience (Wiley), New York, 1965. Illus.

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Science in the Age of Space. Dan Q. Posin. Quadrangle Books, Chicago, 1965. 271 pp. Illus. \$4.95.

Science in the Nineteenth Century. René Taton, Ed. Translated from the French edition (Paris, 1961) by A. J. Pomerans. Basic Books, New York, 1965. 646 pp. Illus. \$17.50. Thirty-four papers on the following topics: Mathematics (3 papers); Mechanics and astronomy (2 papers); Physical science (7 papers); Geological sciences (2 papers); Biological sciences (14 papers); and Science and society (6 papers).

Science Teaching and Testing. Leo Nedelsky. Harcourt, Brace and World, New York, 1965. 384 pp. Illus. \$6.95.

The Scientific Analysis of Personality. Raymond B. Cattell. Penguin Books, Baltimore, 1965. 399 pp. Illus. Paper, \$1.65.

The Scientific Estate. Don K. Price. Harvard Univ. Press, Cambridge, Mass., 1965. 335 pp. \$5.95.

Selected Readings in the History of Chemistry. Compiled by Aaron J. Ihde and William F. Kieffer. Division of Chemical Education, American Chemical Soc., Easton, Pa., 1965. 304 pp. Illus. Paper, \$4.50. Fifty-nine papers reprinted from the *Journal of Chemical Education* (1933 to 1963) on the following topics: General history (12 papers); Analytical chemistry (12 papers); Physical chemistry (10 papers); Inorganic chemistry (6 papers); Nuclear and radiochemistry (4 papers); Organic chemistry (11 papers); and Industrial chemistry (4 papers).

The Sky at Night. Patrick Moore. Norton, New York, 1965. 224 pp. Illus. \$5.95.

Sociology and the Military Establishment. Morris Janowitz and Roger Little. Russell Sage Foundation, New York, ed. 2, 1965. 136 pp. Paper, \$1.50.

Soils in Relation to Crop Growth. Firman E. Bear. Reinhold, New York, 1965. 303 pp. Illus. \$12.50.

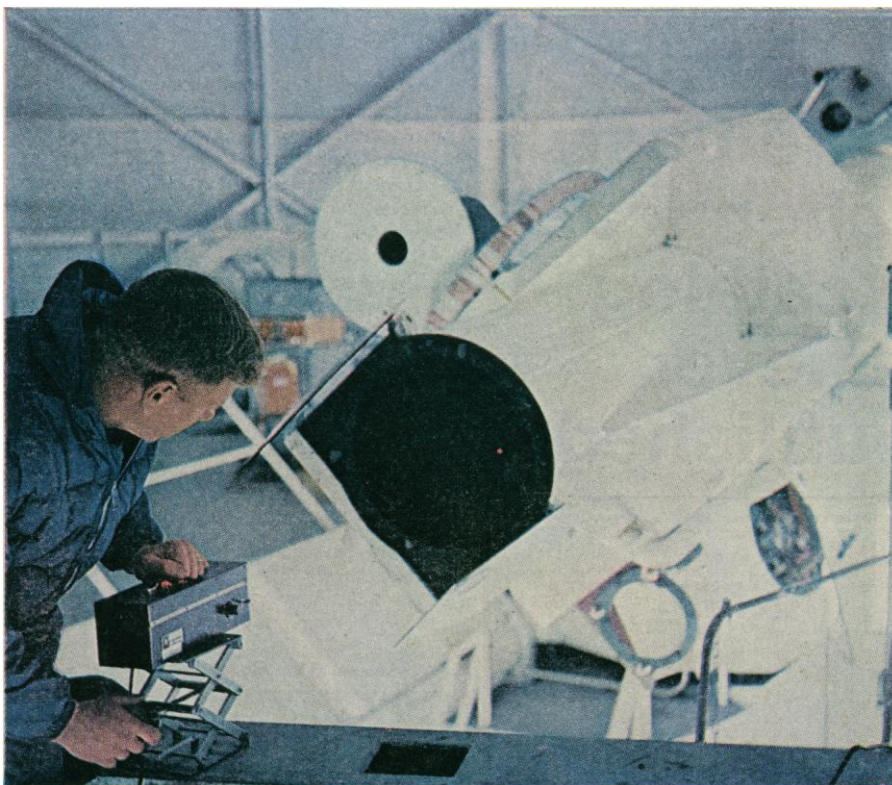
Teaching Genetics in School and University. C. D. Darlington and A. D. Bradshaw, Eds. Oliver and Boyd, Edinburgh; Philosophical Library, New York, 1964. 128 pp. Illus. \$7.50.

Topics in Public Health. J. M. Mackintosh. Livingstone, London; Williams and Wilkins, Baltimore, 1965. 301 pp. \$9.

United States Government Organization Manual 1965-1966. Natl. Archives and Records Service, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 806 pp. Illus. Paper, \$1.75.

The World of the Forest. Henry Clepper and Arthur B. Meyer. Heath, Boston, Mass., 1965. 128 pp. Illus. Paper, \$1.32. Science Resource Series.

The Year Book of the National Institute of Sciences of India. Natl. Inst. of Sciences of India, New Delhi, 1964. 139 pp.



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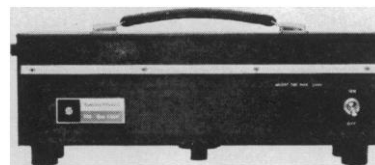
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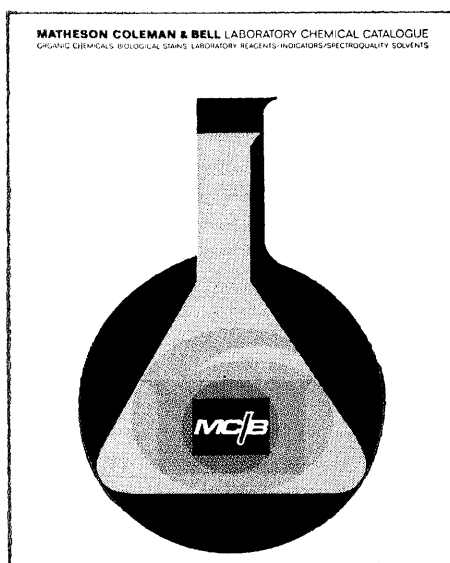


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Behavior of Metals under Impulsive Loads. John S. Reinhart and John Pearson. Dover, New York, 1965. 264 pp. Illus. Paper, \$2. Reprint, 1954 edition.

Bird Display and Behaviour: An Introduction to the Study of Bird Psychology. Edward A. Armstrong. Dover, New York, 1965. 439 pp. Illus. Paper, \$2.50. Reprint, ed. 2, 1947.

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Complete Report of "Mechanism of Mutagenesis." Seiji Matsumura, Ed. Genetics Soc. of Japan, Mishima, Japan, 1965. 116 pp. Illus. Paper. Reprinted from the *Japanese Journal of Genetics* 39, September 1964.

Computing Mechanisms and Linkages. Antonín Svoboda. Hubert M. James, Ed. Dover, New York, 1965. 371 pp. Illus. Paper, \$2.25. Reprint, 1948 edition.

Diophantus of Alexandria: A Study in the History of Greek Algebra. Sir Thomas L. Heath. Dover, New York, 1964. 395 pp. Illus. Paper, \$2.75. Reprint, ed. 2, 1910.

The Divided Self: An Existential Study in Sanity and Madness. R. D. Laing. Penguin Books, Baltimore, 1965. 218 pp. Paper, 95¢. Reprint, 1960 edition.

Electrodynamics. Leigh Page and Norman Hsley Adams. Dover, New York, 1965. 511 pp. Illus. Paper, \$2.50. Reprint, 1940 edition.

Electromagnetic Theory: A Critical Examination of Fundamentals. vols. 1 and 2. Alfred O'Rahilly. Dover, New York, 1965. vol. 1, 462 pp.; vol. 2, 892 pp. Illus. Paper, \$2.25 each. Reprint, 1938 edition, *Electromagnetics*.

Elements of Chemistry: In a New Systematic Order, Containing All the Modern Discoveries. Antoine-Laurent Lavoisier. Translated by Robert Kerr. With an introduction by Douglas McKie. Dover, New York, 1965. 623 pp. Plates. Paper, \$3.

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Natural Philosophy of Cause and Chance. Max Born. Dover, New York, 1965. 253 pp. Illus. Paper, \$1.50. Reprint, 1949 edition. Waynflete Lectures (Oxford, England), 1948 and a new essay, "Symbol and reality," Nobel Laureates (Lindau, Germany), 1964.

The New Architecture and the Bauhaus. Walter Gropius. Translated from the German edition by P. Morton Shand. M.I.T. Press, Cambridge, Mass., 1965. 112 pp. Illus. Paper, \$1.95. Reprint; M.I.T. Paperback Series.

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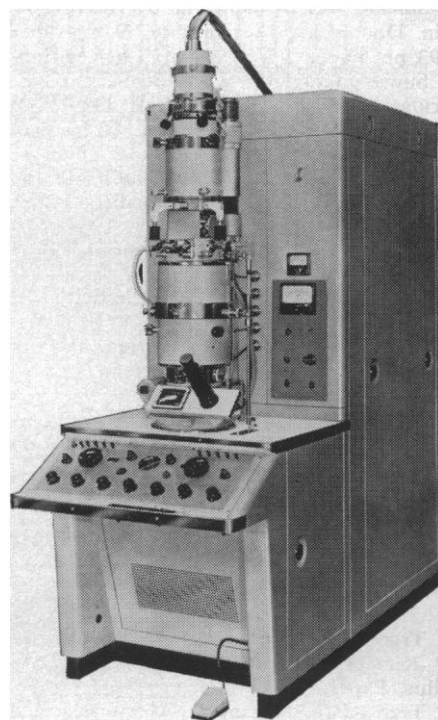
Reflexes of the Brain. I. Sechenov. K. Koshtoyants, Ed. Translated from the Russian text (vol. 1, *Selected Works*, Moscow, 1952 to 1956) by S. Belsky. G. Gibbons, Translation Ed. Notes by S. Gellerstein. M.I.T. Press, Cambridge, Mass., 1965. 157 pp. Paper, \$1.95. Reprint; M.I.T. Paperback Series.

Semantics: Studies in the Science of Meaning. Michel Bréal. Translated by Mrs. Henry Cust. With a new introduction by Joshua Whatmough. Dover, New York, 1964. 421 pp. Paper, \$2. Reprint, 1900 edition.

Solid Analytical Geometry and Determinants. Arnold Dresden. Dover, New York, 1964. 320 pp. Illus. Paper, \$2. Reprint, 1930 edition.

Solid Geometry. With chapters on space-lattices, sphere-packs, and crystals. L. Lines. Dover, New York, 1965. 312 pp. Illus. Paper, \$2. Reprint, 1935 edition.

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Theory of Elasticity and Plasticity. H. M. Westergaard. Dover, New York, 1964. 190 pp. Illus. Paper, \$1.75. Reprint, 1952 edition, Harvard Monographs in Applied Science, No. 3.

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Viscosity of Electrolytes and Related Properties. R. H. Stokes and R. Mills. Pergamon, London; Macmillan, New York, 1965. 161 pp. Illus. \$7.50. The International Encyclopedia of Physical Chemistry and Chemical Physics Series, edited by E. A. Guggenheim, J. E. Mayer, and F. C. Tompkins.

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