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The Fabric of the Heavens. The development of Astronomy and Dynamics. By Stephen Toulmin and June Goodfield. (Reprint of 1961 ed.) 285 pp. Harper & Row, New York, 1965. Paper \$1.95.

New Foundations of Quantum Mechanics. By Alfred Landé. 171 pp. Cambridge University Press, Cambridge England, 1965, 87-50.

Scales and Weights. A Historical Outline. By Bruno Kisch. 297 pp. Yale University Press, New Haven, Conn., 1965. \$15.00.

Philosophical Problems of Elementary Particle Physics. I. V. Kuznetsov and M. E. Omel'yanovskii, eds. Transl. from Russian by A. Sen and R. N. Sen 294 pp. Daniel Davey and Co., New York, 1965. \$15.25.

NUCLEAR PHYSICS

Lectures in Theoretical Physics, Vol. VII B: Elementary Particles. Wesley E. Brittin and Leona Marshall, eds. 472 pp. University of Colorado Press, Boulder, 1965. Paper \$6.50.

Nuclear Interactions of the Hyperons. By R. H. Dalitz. 106 pp. Oxford University Press, London, 1965. Paper \$5.05.

Meson and Baryon Spectroscopy. By D. B. Lichtenberg. 157 pp. Springer-Verlag, Berlin and New York, 1965. Paper \$2.80.

Proceedings of the Conference on Photon Interactions in the Bev-Energy Range. (Cambridge, Mass., Jan. 26-30, 1963) Bernard T. Feld, ed. MIT Press, Cambridge, Mass. \$5.00.

Elementary Particle and High Energy Physics: 1963 Lectures Given at the Cargèse Summer School of Theoretical Physics. M. Levy and Ph. Meyer, eds. 362 pp. Gordon & Breach, New York, 1965.

Symmetries in Elementary Particle Physics. Summer School (Erice, Sicily, Aug-Sept. 1964). A. Zichichi, ed. 429 pp. Academic, New York, 1965. Paper \$7.95.

Lectures on Particles and Field Theory, Volume 2. By K. Johnson, et al. 483 pp. Prentice-Hall, Englewood Cliffs, N. J., 1965. Paper \$5.00.

Coulomb Excitation. By L. C. Biedenharn and P. J. Brussaard. 334 pp. Clarendon Press, Oxford, 1965, Paper \$6.40.

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The Technology of Nuclear Reactor Safety. Vol. 1, Reactor Physics and Control. T. J. Thompson and J. G. Beckerley, eds. 743 pp. MIT Press, Cambridge, Mass., 1964, \$25.00.

Progress in Nuclear Techniques and Instrumentation, Volume 1. F. J. M. Farley, ed. 398 pp. (North-Holland, Amsterdam) John Wiley, New York, 1965. S17.50.

Nuclear Reactor Kinetics. By Milton Ash. 415 pp. McGraw-Hill, New York, 1965. \$19.50.

Industrial Atomic Energy. Uses, Hazards and Controls. By International Brother-hood of Electrical Workers. 3 Vols. John F. Rider, New York, 1965. Cloth \$12.25, paper \$10.75.

Thermal Stress Techniques in the Nuclear Industry. By Zenons Zudans, Tsi Chu Yen, and William H. Steigelmann. 583 pp. American Elsevier, New York, 1965. \$20.00.

Experimental Reactor Analysis and Radiation Measurements. By Donald D. Glower. 348 pp. McGraw-Hill, New York, 1965. \$13.50.

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Research in Molecular Spectroscopy, D. V. Skobel'tsyn, ed. Transl. from Russian. 205 pp. Consultants Bureau, New York, 1965. Paper \$22.50.

Developments in Applied Spectroscopy, Volume 4. Conf. Proc. (Chicago, June 1964). Elwin N. Davis, ed. 546 pp. Plenum Press, New York, 1965. \$18.50.

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Photometry. By John W. T. Walsh. (Reprint of 1958 ed.) 544 pp. Dover, New York, 1965. Paper \$3.00.

Atomic Spectra in the Vacuum Ultraviolet from 2250-1100 A. Part One: Al, C. Cu, Fe, Ge, Hg, Si, (H₂) By J. Junkes, E. W. Salpeter, and G. Milazzo. 124 pp. plus 9 charts. Specola Vaticana, Vatican City, 1965. Paper \$10.00.

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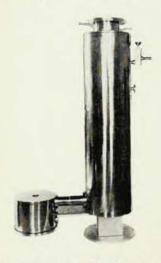
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Quantum Electronics and Coherent Light. Proceedings of the International School of Physics "Enrico Fermi", Varenna, Italy, Course 31. By C. H. Townes, P. A. Miles, ed. 371 pp. Academic Press, New York, 1964. \$16.00.

Applied Optics and Optical Engineering, Vol. 2. The Detection of Light and Infrared Radiation. Rudolf Kingslake. ed. 390 pp. Academic, New York, 1965. \$15.00.

PHYSICS OF FLUIDS

Proceedings of the Fourth International Congress on Rheology. (Brown University, Providence, R.I., Aug. 26-30, 1963.) 4 vols. Interscience, New York, 1965.

Atomic Theory of Gas Dynamics. By John W. Bond, Jr., Kenneth M. Watson, and Jasper A. Welch, Jr., eds. 518 pp. Addison-Wesley, Reading, Mass. 1965. \$16.75.

Physics of High Pressures and the Condensed Phase, A. Van Itterbeek, ed. 598 pp. (North-Holland, Amsterdam) John Wiley, New York, 1965, \$22.50.

An Introduction to the Theory of Superfluidity. By I. M. Khalatnikov. Transl. from the Russian by Pierre C. Hohenberg. 206 pp. Benjamin, New York, 1965. Cloth \$9.00, paper \$4.95.

Modern Developments in Fluid Dynamics. Vol. 2, An Account of Theory and Experiment Relating to Boundary Layers, Turbulent Motion and Wakes. S. Goldstein, ed. (Reprint of 1938 ed.) 702 pp. Dover, New York, 1965. Paper \$2.50.

Methods in Computational Physics. Advances in Research and Applications. Vol. 4, Applications in Hydrodynamics. Berni Alder, Sidney Fernbach, and Manuel Rotenberg, eds. 385 pp. Academic, New York, 1965, \$14.00.

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Plasma Physics. By J. L. Delcroix. 266 pp. John Wiley, New York, 1965. \$7.75.

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Excitons. By D. L. Dexter and R. S. Knox. 139 pp. Interscience, New York, 1965. \$6.50.

Science of Materials. By T. J. Lewis and P. E. Secker. 256 pp. Reinhold, New York, 1965, \$7.50.

Bestrahlungseffekte in Festkörpern. Eine Einführung in die Theorie. By Günther Leibfried, 288 pp. B. G. Teubner, Stuttgart, 1965.

Atomic and Ionic Impact Phenomena on Metal Surfaces. By Manfred Kaminsky, 402 pp. (Springer-Verlag, Berlin) Academic, New York, 1965. \$14.50.

Soviet Research in New Semiconductor Materials. D. N. Nasledov and N. A. Goryunova, eds. Transl. from the Russian by A. Tybulewicz. 121 pp. Consultants Bureau, New York, 1965. Paper \$17,50.

Electronics of Solids. By Walter R. Beam, 633 pp. McGraw-Hill, New York, 1965. \$16.00.

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Lattice Dynamics. Conf. Proc. (Copenhagen, Aug. 1963). R. F. Wallis, ed. 730 pp. Pergamon, New York, 1965. \$28.50.

Field-Effect Transistors. By Leonce J. Sevin. Jr. 130 pp. McGraw-Hill, New York, 1965. \$10.00.

Materials Science Research. Vol. 2. Conf. Proc. (Orlando, Fla., Apr. 16-17, 1964). Henry M. Otte and Saul R. Locke, eds. 319 pp. Plenum Press, New York, 1965. \$13.50.

Lattice Defects in Quenched Metals. Conf. Proc. (Argonne, June 1964) R. M. Cotterill, et al., eds. 807 pp. Academic Press, New York, 1965, \$22.00.

An Atlas of Models of Crystal Surfaces. By John F. Nicholas. 256 pp. Gordon & Breach, New York, 1965. \$27,50.

Solid State Physics: Advances in Research and Applications, Volume 17. Frederick Seitz and David Turnbull, eds. 377 pp. Academic Press, New York, 1965. \$14.00.

Transactions Vacuum Metallurgy Conference 1964. Michael A. Cocca, ed. 505 pp. American Vacuum Society, Boston, 1965. \$10.00.

Energetics in Metallurgical Phenomena, Volume 1. William M. Mueller, ed. 425 pp. Gordon & Breach, New York, 1965. Cloth \$19.50; paper \$9.50.

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Physics of Non-Crystalline Solids. Conf. Proc. (Delft, July 1964). J. A. Prins, ed. 667 pp. (North-Holland, Amsterdam) John Wiley, New York, 1965, \$27.50.

Semiconductor Junctions and Devices. Theory to Practice. By William B. Burford, III. and H. Grey Verner. 328 pp. McGraw-Hill, New York, 1965. \$12.00

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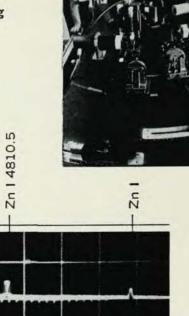
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Optik. Ein Lehrbuch der Elektronmagnetischen Lichttheorie. By Max Born. (2nd Printing of 1933 ed.) 591 pp. Springer-Verlag, Berlin and New York, 1965, DM 38.

An Introduction to the Use of Generalized Coordinates in Mechanics and Physics. By William Elwood Byerly. (Reprint of 1916 ed.) 118 pp. Dover, New York, 1965. Paper \$1.35.

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Linear Systems. By Ralph J. Schwarz, and Bernard Friedland. 521 pp. MGraw-Hill, New York, 1965. \$12.50.

Development of Concepts of Physics, From the Rationalization of Mechanics to the First Theory of Atomic Structure. By A. B. Arons. 972 pp. Addison-Wesley, Reading, Mass., 1965. \$14.75.

Mathematics For Introductory Science Courses: Calculus and Vectors. By Daniel A. Greenberg. 214 pp. Benjamin, New York, 1965, \$5.00.

A Laboratory Course in Physics. (Book Two). By D. L. Livesey, G. H. Cannon, and T. Ryniak. 186 pp. Copp Clark, Vancouver, 1965.

Physics. (2nd ed.) By the Physical Science Study Committee. 686 pp. D. C. Health, Boston, 1965. \$6.12.

Electricity and Magnetism (2nd ed.) By B. I. Bleaney and B. Bleaney. 764 pp. Clarendon Press, Oxford, 1965. \$11.20.

Mechanics, Molecular Physics, Heat and Sound. By Robert Andrews Millikan, Duane Roller, and Earnest Charles Watson. (Reprint of 1937 ed.) The M.I.T. Press, Cambridge, Mass, 1965. Paper \$3.45.

THEORETICAL PHYSICS

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Coral Gables Conference on Symmetry Principles at High Energy. (Jan. 1965). Behram Kursunoglu, Arnold Perlmutter, and Ismail Sakmar, eds. 438 pp. W. H. Freeman, San Francisco, 1965. Paper \$8.00.

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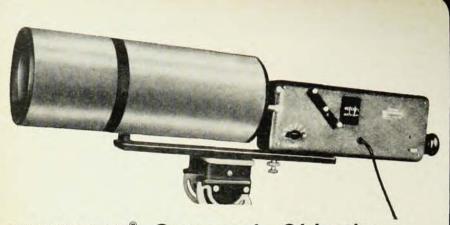
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Wave Mechanics of a Free Particle. By Edward Fisher. 108 pp. Western Periodicals, North Hollywood, 1965. \$10.00. Qu'est-Ce Qu'une Particule Elémentaire?

Qu'est-Ce Qu'une Particule Elémentaire? By Bernard Diu. 166 pp. Masson, Paris, 1965. Paper 38F.

Advances in Theoretical Physics, Volume I. Keith A. Brueckner, ed. 323 pp. Academic, New York, 1965. \$12.00.

Introduction to Physics. By A. Kitaigorodsky. Transl. from the Russian by O. Smith. (Reprint) 719 pp. Dover, New York, 1965. Paper \$3.00.

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Single and Multi-Component Flow Processes. R. L. Peskin, et al., eds. 127 pp-Rutgers University, New Brunswick, 1965. \$3.00.

Advances in Heat Transfer, Volume 2. J. P. Hartnett and T. F. Irvine, Jr. eds. 465 pp. Academic, New York, 1965. \$16.00.