

ture elements will have fantastically short half-lives—new methods of identifying them will have to be invented in the short time available to examine them."

This book should find a special welcome in high-school libraries.

Electromagnetic Scattering, Volume 5. Conf. Proc. (Potsdam, N.Y., 1962). Milton Kerker, ed. 592 pp. (Pergamon Oxford) Macmillan, New York, 1963. \$19.75.

Reviewed by H. J. Hagger, Albiswerk, Zürich, Switzerland.

The problem of electromagnetic scattering has for quite a long time aroused both theoretical and experimental interest, and has been studied over a range of wavelengths from optical frequencies well into the radio-frequency region. In the past very nice theoretical work has been done on resonance phenomena of different kinds. Mie's theory and the theory of Rayleigh and Gans may be con-

sidered classical examples in this respect. In August 1962, at Clarkson College of Technology in Potsdam, N.Y., scientists working on and interested in scattering processes gathered to discuss the problems and to interchange ideas and opinions. The result of the conference is this book, edited and presented by M. Kerker. It shows quite clearly the progress of the work done on electromagnetic scattering in the last decade, both theoretically and experimentally.

In the first part isolated particles of spherical and cylindrical cross section are considered and experimental and theoretical results are compared with classical theories, e.g., Rayleigh-Gans and Mie. In the second part light scattering in space and related polarization effects are dealt with, emphasizing phenomena in astrophysics and in the terrestrial atmosphere. In the third part papers on back-scattering of microwave radiation by dielectric and large ice spheres of particular

interest in radar meteorology, are included. The fourth part considers light scattering in solutions and by thin films. The last two sections deal with interaction in solids and liquids and multiple scattering.

As the proceedings of a conference, this book gives a review and a survey of the problems of electromagnetic scattering by regular and irregular particles; it will not and cannot be a treatise on the subject, but it happens to be a guide into the field showing what has been done, what can be done, where difficulties with model theories may arise and also, by omission, what should be done. It also shows that mathematical physics provides powerful tools for a solution of boundary-value problems of this kind. For the research worker in the field this book can be recommended, for he has the background necessary to read and to appreciate the book. For him it is both informative and stimulating.

BOOKS RECEIVED

ASTRONOMY & ASTROPHYSICS

The Origin and Evolution of Atmospheres and Oceans. Conf. Proc. (New York, Apr. 1963) Peter J. Brancazio and A. G. W. Cameron, eds. 314 pp. Wiley, New York, 1964. \$12.50.

BIOPHYSICS & MEDICAL PHYSICS

The Science of Smell. By R. H. Wright. 164 pp. Basic Books, New York, 1964. \$4.95.

CHEMISTRY & CHEMICAL PHYSICS

A Systematic Classification of Types of Intermetallic Structures. By P. I. Krip'yakevich. Transl. from Russian. 35 pp. Consultants Bureau, New York, 1964. Paper \$10.00.

ELECTRICITY & MAGNETISM

Ferromagnetic-Relaxation Theory. By Marshall Sparks. 227 pp. McGraw-Hill, New York, 1964. \$12.50.

Physics of Magnetism. By Soshin Chikazumi. 554 pp. Wiley, New York, 1964. \$15.75.

EXPERIMENTAL TECHNIQUES

High Temperature Technology. Symp. Proc. (Pacific Grove, Calif., Sept. 1963) 598 pp. Butterworths, Washington, D. C., 1964. \$18.50.

New Types of Metal Powders. Symp. Proc. (Cleveland, Ohio, Oct. 1963) Henry H. Hausner, ed. 167 pp. Gordon & Breach, New York, 1964. Cloth \$9.50; paper \$3.95.

Instrumentation in the Chemical and Petroleum Industries—1964. Symp. Proc. (Wilmington, Del., May 1964) George H. Robinson, ed. 140 pp. Plenum Press, New York, 1964. \$9.50.

Metallurgy at High Pressures and High Temperatures. Symp. Proc. (Dallas, Texas, Feb. 1963) K. A. Gschneidner, Jr., M. T. Hepworth, and N. A. D. Parlee, eds. 409 pp. Gordon & Breach, New York, 1964. Cloth \$19.50; paper \$8.75.

HANDBOOKS, TABLES, ETC.

Concise Dictionary of Atomics. Alfred Del Vecchio, ed. 262 pp. Philosophical Library, New York, 1964. \$6.00.

Atlas of Electron Spin Resonance Spectra, Volume 2. Theoretically Calculated Multicomponent Symmetrical Spectra. By Ya. S. Lebedev, V. V. Voevodskii, and N. N. Tikhomirova. Transl. from Russian. 195 pp. Consultants Bureau, New York, 1964. \$15.00.

Tables of the Velocity of Sound in Sea Water. By L. S. Bark, P. P. Ganson, and N. A. Meister. Transl. by D. E. Brown. 180 pp. (Pergamon, Oxford) Macmillan, New York, 1964. \$10.00.

HISTORY & PHILOSOPHY OF SCIENCE

Animal Chemistry. Or Organic Chemistry in its Application to Physiology and Pathology. By Justus Liebig. Transl. by William Gregory. (Reprint of 1842 ed.) 504 pp. Johnson Reprint, New York, 1964. \$14.50.

The Scientific Age. The Impact of Science on Society. By L. V. Berkner. 137 pp. Yale University Press, New Haven, Conn., 1964. \$4.00.

MATHEMATICS

Mathematical Bafflers. Angela Dunn, ed. 217 pp. McGraw-Hill, New York, 1964. \$6.50.

Elements of Abstract Harmonic Analysis. By George Bachman. 256 pp. Academic, New York, 1964. Paper \$3.45.

Finite Permutation Groups. By Helmut Wielandt. Transl. from German by R. Bercov. 114 pp. Academic, New York, 1964. Paper \$2.45.

NUCLEAR PHYSICS

The Nuclear Properties of the Heavy Elements. Vol. 1, Systematics of Nuclear Structure and Radioactivity. By Earl K. Hyde, Isadore Perlman, and Glenn T. Seaborg. 407 pp. Prentice-Hall, Englewood Cliffs, N. J., 1964. \$15.00.

Introduction to the Atomic Nucleus. By J. G. Cuninghame. 220 pp. Elsevier, Amsterdam, 1964. \$9.00.