

articles, plus eight appendices, an author and a subject index, representing the contributions of 42 collaborators—of this monumental work. A brief survey of the contents, coupled with the exhortation that every nuclear physicist who has not already done so should set aside an afternoon in the library for a leisurely perusal of this book, will have to suffice.

Surveys of the interactions of electrons and photons with matter are followed by thorough discussions of the various techniques of beta- and gamma-ray spectroscopy. Then come chapters on the theory of beta decay and on the experimental results relating to the elucidation of the nature of the electron-neutrino field and its interaction with nucleons. Chapters on the theory of photon emission, internal conversion, and the shell model are followed by discussions of the results of β - and γ -ray spectra and isomers in elucidating the systematics of nuclear shell structure and the nature of the collective modes of nuclear motion. The rest of the volume contains contributions relating to various special techniques and applications—measurement of short lifetimes, angular correlations, etc., etc. The appendices contain indispensable tables of absorption coefficients, Fermi functions, forbidden shape factors, internal conversion coefficients, etc.

Inevitably, the contributions spill over into other aspects of nuclear spectroscopy, all however related in that an electron or γ -ray measurement is involved (α - γ correlations, charged particle reactions, neutron capture γ -rays). These indications of the interconnections between various aspects of nuclear physics serve to emphasize the great need for similar compilations covering the other phases of the field. It is to be hoped that such will follow soon, and that they will all maintain the lofty standard set by this work.

Theory of Ordinary Differential Equations. By Earl A. Coddington and Norman Levinson. 429 pp. McGraw-Hill Book Company, Inc., New York, 1955. \$8.50. Reviewed by T. Teichmann, Lockheed Aircraft Corporation.

This book provides the most complete and up-to-date treatment of the theory of ordinary differential equations presently available. Since the authors are both pure mathematicians the treatment is rigorous and does not make any concession to readers who are only interested in applying the results and who would be satisfied by heuristic arguments and vague hand waving in place of a proof. This is not to say, however, that the book will not prove useful to those interested in applications. The important results are all stated as theorems and corollaries, and while the treatment is quite formal, each chapter is prefaced with a section describing the central problem to be discussed, and the general methods of the text are complemented by a series of more specific problems at the end of each chapter, together with hints for their solution.

Among the topics treated are the existence and

uniqueness of solutions, linear differential equations with and without singularities, the asymptotic behavior of solutions both as a function of the independent variable, and of parameters of the equation, self-adjoint and non-self-adjoint boundary value problems, oscillation and comparison theorems, perturbation of periodic systems, and a topological discussion of two dimensional systems. There is also a list of the basic references for each chapter at the end of the book.

The sections on asymptotic expansions, non-self-adjoint boundary value problems, and on perturbation theory, in particular, will repay careful study, for this material is not readily available in other general works with the same degree of completeness. In fact, this volume, taken together with one of the standard books on special functions, will probably provide as much information as can reasonably be required as far as any applications are concerned, and will certainly give a thorough grounding for further mathematical research.

The Origin of the Earth (Second Edition). By W. M. Smart. 224 pp. Penguin Books, Inc., Baltimore, Md., 1955. Paperbound \$65. Reviewed by S. F. Singer, University of Maryland.

This little volume is done in a very readable and popular style but has a misleading title. It is really a popular exposition of astronomy and covers besides the earth also the solar system and the stars. Much of the book also deals with atomic structure and radioactivity. There are eight photographic plates of very good quality. This very fine book by the distinguished Glasgow astronomer should be well suited for additional reading in physics and astronomy courses.

Everyday Physics (Second Edition). By Ole A. Nelson and John G. Winans. 614 pp. Ginn and Company, Boston, Mass., 1955. \$4.36. Letter to the Editor from John G. Winans, University of Wisconsin.

In a review of the 1952 edition of this book published in the January 1954 issue of *Physics Today*, a number of errors were pointed out. Most of the errors have been corrected in the present 1955 edition. Correction sheets for remaining errors may be obtained by writing to the publisher.

Books Received

CLASSICAL ELECTRICITY AND MAGNETISM. By Wolfgang K. H. Panofsky and Melba Phillips. 400 pp. Addison-Wesley Publishing Co., Inc., Cambridge, Mass., 1955. \$8.50.

IMAGINATION'S OTHER PLACE. Poems of Science and Mathematics. Compiled by Helen Plotz. 200 pp. Thomas Y. Crowell Co., New York, 1955. \$3.50.

TRANSMISSION-LINE THEORY. By Ronold W. P. King. 509 pp. McGraw-Hill Book Co., Inc., New York, 1955. \$12.00.

ANNUAL REVIEW OF PHYSICAL CHEMISTRY. Vol. 6. Edited by G. K. Rollefson and R. E. Powell. 515 pp. Annual Reviews, Inc., Stanford, Calif., 1955. \$7.00.

AN INTRODUCTION TO THE THEORY OF AEROELASTICITY. By Y. C. Fung. 490 pp. John Wiley & Sons, Inc., New York, 1955. \$10.50.

GAS KINETICS. By A. F. Trotman-Dickenson. 322 pp. (Butterworths, England) Academic Press Inc., New York, 1955. \$8.00.

MESSEN UND RECHNEN IN DER PHYSIK. By Ulrich Stille. 416 pp. Friedr. Vieweg & Sohn, Braunschweig, Germany, 1955. DM 54.00.

PHYSIKALISCHE FORMELSAMMLUNG. By G. Mahler, edited by K. Mahler. 153 pp. Walter de Gruyter & Co., Berlin, Germany, 1955. Paperbound DM 2.40.

AN INTRODUCTION TO QUANTUM STATISTICS. By William Band. 342 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1955. \$6.00.

A SURVEY OF ATOMIC CONSTANTS. By J. A. Bearden and John S. Thomsen. 138 pp. The Johns Hopkins University, Baltimore, Md., 1955.

THEORETISCHE METALLKUNDE. By Ulrich Dehlinger. 250 pp. Springer-Verlag, Berlin, Germany, 1955. DM 27.00.

STATIC AND DYNAMIC ELECTRON OPTICS. By P. A. Sturrock. 240 pp. Cambridge University Press, New York, 1955. \$5.50.

ELECTRIC MOTOR REPAIR. By Robert Rosenberg. 584 pp. Rhinehart & Co., Inc., New York, 1955. \$6.00.

ATOMIC PHYSICS: AN ATOMIC DESCRIPTION OF PHYSICAL PHENOMENA. By Gaylord P. Harnwell and William E. Stephens. 401 pp. McGraw-Hill Book Co., Inc., New York, 1955. \$8.00.

THE FORESEEABLE FUTURE. By Sir George Thomson. 166 pp. Cambridge University Press, New York, 1955. \$2.50.

MICROSCOPY OF CERAMICS AND CEMENTS. By Herbert Insley and Van Derck Fréchet. 286 pp. Academic Press Inc., New York, 1955. \$7.50.

ATOMIC ENERGY RESEARCH AT HARWELL. By K. E. B. Jay. 144 pp. Philosophical Library, New York, 1955. \$4.75.

PHYSICAL MATHEMATICS. By Chester H. Page. 329 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1955. \$6.00.

GRAPHICAL DESIGN OF OPTICAL SYSTEMS. By L. E. W. van Albada. 153 pp. Pitman Publishing Corp., New York, 1955. \$4.00.

TECHNICAL PUBLICATIONS. By C. Baker. 302 pp. John Wiley & Sons Inc., New York, 1955. \$6.00.

PARTICLE SIZE DETERMINATION. By R. D. Cadle. 303 pp. Interscience Publishers, Inc., New York, 1955. \$5.50.

ULTRASONIC ENGINEERING. By Alan E. Crawford. 344 pp. (Butterworths, England) Academic Press Inc., New York, 1955. \$8.00.

DIE KINEMATOGRAFISCHE KAMERA. By Harald Weise. 472 pp. Springer-Verlag, Vienna, Austria, 1955. \$19.00.

PRINCIPLES OF GUIDED MISSILE DESIGN. Editor of the Series, Grayson Merrill. 729 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1955. \$12.50.

SCIENCE EXHIBITS. Edited by Helen Miles Davis. 96 pp. Science Service, Washington, D. C., 1955. \$2.00.

BASIC MATHEMATICS FOR SCIENCE AND ENGINEERING. By Paul G. Andres, Hugh J. Miser, Haim Reingold. 846 pp. John Wiley & Sons, Inc., New York, 1955. \$6.75.

OUTSTANDING McGraw-Hill BOOKS

THE ATOMIC NUCLEUS

By **ROBLEY D. EVANS**, Massachusetts Institute of Technology. *International Series in Pure and Applied Physics.* 972 pages, \$14.50

This standard text and reference book for professional workers in all fields bordering on nuclear physics is characterized by an unusually broad coverage, involving most of the entire present field of nuclear physics, both "intra-nuclear" and "extra-nuclear." The author begins the discussion of each topic at the introductory level, then carries through intermediate levels of difficulty into advanced areas of most recent current research. This work is designed to bring the reader to a level of competence from which he can understand the current research literature, can profitably read advanced treatises and the many excellent monographs which are now appearing, and can undertake creative personal research.

ATOMIC PHYSICS

By **GAYLORD P. HARNWELL**, University of Pennsylvania; and **WILLIAM E. STEPHENS**, University of Pennsylvania. *International Series in Pure and Applied Physics.* 412 pages, \$8.00

Presenting the essential physical ideas upon which the current atomic theory of matter rests, this book departs from the strictly historical approach, discussing only briefly the early work on quantum theory, x-rays, etc. Emphasis is on the extension of the basic classical concepts of physics into the realm of atomic phenomena, and on the evolution of those particularly central and elemental quantum concepts, having no classical counterpart, which uniquely characterize the physics of atomic particles. A statistical description of atomic particles and their aggregates is given and applied to properties of gases, liquids and solids.

NUCLEAR PHYSICS

By **ALEX E. S. GREEN**, Florida State University. *International Series in Pure and Applied Physics.* 556 pages, \$9.00

A comprehensive presentation of the essentials of nuclear physics treated in a systematic fashion. All major recent advances are thoroughly discussed. The chapters are divided into five major topical groups: (1) background, (2) instruments and methods, (3) experimental results and their interpretation, (4) systematic and semiempirical theory, and (5) theory. The systematics of nuclei as revealed by experimental evidence is presented. The various nuclear models are also discussed and their prediction compared with experiment. For the benefit of research workers the book includes those areas of nuclear physics in which greater research is essential.

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