Books

The Earth's Magnetism (Second Revised Edition). By Sydney Chapman. 127 pp. John Wiley and Sons, Inc., New York, 1951. $1.50.

This excellent little book gathers together the facts about terrestrial magnetism presently available. It is the first important work of this sort to appear since the impressive compendium which the Department of Terrestrial Magnetism issued over fifteen years ago. It is therefore a most welcome addition to the scant literature in this important field.

In this book Professor Chapman, who is certainly one of the leading if not the outstanding authority on this subject, presents the main facts regarding the earth's field, and the variations in this field produced mainly by solar influences and the lunar tide. He also gives some of his own interpretations and conclusions about the mechanisms through which these effects operate. Professor Chapman writes in a clear and interesting style. The level of the book is suitable for graduate students and presupposes acquaintance with the laws of electromagnetism and calculus. It should be read not only by persons interested in geomagnetism but also by those upon whose fields geomagnetic effects impinge, such as students of the ionosphere, of the upper atmosphere, and of cosmic rays.

The book is of a size that can be conveniently slipped into one's pocket. It is well printed on good quality paper, is very free of errors, and is well illustrated. It is an authoritative and useful work, and should be in every physics library.

Serge A. Korff
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Electromagnetic Fields. Theory and Applications. Volume I: Mapping of Fields. By Ernst Weber. 590 pp. John Wiley and Sons, Inc., New York, 1950. $10.00.

This is the first part of a two-volume treatment of electromagnetics designed for graduate students of electrical engineering, physics, and applied mathematics or for those engaged in research or development; the present volume deals with stationary fields.

The first three chapters comprise a cursory discussion of the physical quantities and relations of the static electric, magnetic, electric current, and analogous fields. The presentation is appropriate for engineers or mathematicians, the material serving primarily to define the fundamental boundary value problems to whose detailed consideration the remaining chapters are devoted. The physicist will be attracted by the well documented if sketchy survey of "critical field values" in Chapter 1, while all will appreciate the emphasis on the basic aspects of the various fields and the tabulation of their corresponding physical quantities in Chapter 3.

The remainder of the book is a comprehensive survey of analytic and practical methods for plotting potential fields. The superposition principle, image and inversion techniques, conjugate functions, conformal mapping, and separation of variables are discussed and applied to obtain exact or approximate solutions to various and numerous problems. In addition, the sections on experimental and graphical methods of field plotting are excellent supplements to the analytical techniques for more complicated geometries.

Some of the problems are treated in detail while others are merely sketched, the reader being referred to specific literature for details, graphs, or numerical results. For sheer number, this is probably the largest collection of problems compiled; e.g., the section on the Schwarz-Christoffel transformation contains more applications of this tool than found in any other text. The level of the general presentation, however, seems somewhat capricious: the author struggles to keep the book sufficiently self-contained to be useful to beginners and at the same time strives for completeness; the issue is never resolved.

This book, while not appropriate as a primary text for a graduate physics course in electromagnetics, will nevertheless serve as a useful auxiliary. Because of the number of problems discussed and the extensive references and bibliography, it is recommended to all workers in the field; no other text equals it in these regards. The price, however, is relatively too high to insure its purchase as an adjunct text by most students.

Vic Twersky
Mathematics Research Group
New York University

An Introduction to Acoustics. By Robert H. Randall. 340 pp. Addison-Wesley Press Inc., Cambridge, Massachusetts, 1951. $6.00.

An unsophisticated, intermediate textbook for undergraduates in physics or engineering which stresses the physical aspects of acoustics. Only a year of college physics and some slight knowledge of calculus are required as background, the book being proposed as the starting point for advanced study. The material is on the whole well chosen and the wide variety of topics touched on serve to indicate the present day scope of the subject.

V. T.

Ultrasonic Physics. By E. G. Richardson. 285 pp. Elsevier Publishing Co., Houston, Texas, 1952. $5.00.

This is written for the experimental physicist and physical chemist working in ultrasonics by one whose own research contributions to the subject are noteworthy; its theme is the ultrasonic interferometer as a precision tool in the physics laboratory. Starting with a discussion of sources and methods of detection of ultra-

sonics, it presents a detailed theoretical and practical treatment of acoustic interferometers. The remainder of the book is devoted to the propagation of ultrasonics in gases, liquids, solids, and in disperse systems such as aerosols, hydrosols, bubbly mixtures, etc. An extensive list of references is appended to each chapter.

V. T.

Briefly Noted

Neutron Cross Section Data

A recent publication of the U. S. Atomic Energy Commission, called *Neutron Cross Sections,* is an exhaustive compilation, in tabular and graphic form, of unclassified neutron cross section values based on all the data—both published and unpublished—available to the AEC Neutron Cross Section Advisory Group. The document consists principally of 184 graphs which show the variation of neutron cross section with energy for all the nuclides. For each element or isotope the cross sections are presented consistently in three energy ranges: 10^{-4} to 1 ev (labeled "Slow"), 1 to 10^4 ev ("Ev"), and 10^4 to 10^8 ev ("Mev"). The graphs are approximately 10 by 13 inches in size and the format is such as to make the compilation an ideal reference volume and work book. Symbols which accompany the curves indicate for each point the laboratory where and the method by which that value was obtained. Also included in the book are seven pages of tables of thermal cross section data.

Because of the Advisory Group's careful study of all the available values and their extensive discussions with the experimenters who determined them, this volume can be said to represent an authoritative, critical evaluation of existing information with the data as given being the weighted "best values" of several types of neutron cross sections. Members of the AEC Advisory Group responsible for this publication are D. J. Hughes, Chairman, Brookhaven National Laboratory; T. W. Bonner, Rice Institute; H. Goldstein, Nuclear Development Associates; W. W. Havens, Jr., Columbia University; I. Kaplan, Brookhaven National Laboratory; C. O. Muehlhause, Argonne National Laboratory; A. H. Snell, Oak Ridge National Laboratory; J. R. Stehn, Knolls Atomic Power Laboratory; T. M. Snyder, Knolls Atomic Power Laboratory; R. F. Taschek, Los Alamos Scientific Laboratory; A. Wattenberg, Massachusetts Institute of Technology; and C. W. Zabel, Los Alamos Scientific Laboratory.

Neutron Cross Sections (AECU No. 2040) may be obtained at $1.00 per copy from the Office of Technical Services, Department of Commerce, Washington 25, D. C.

Periodic Table

The General Electric Company has issued a new periodic chart, designated as APH-68B, of all 98 chemical elements known to date. Copies of the chart, which is printed on a heavy card, 11 by 14 inches, may be obtained without cost by writing to the General Electric Co., Schenectady 5, New York.

Books Received

Reports on Progress in Physics. Volume XV. Executive Editor A. C. Stickland. 338 pp. The Physical Society, London, England, 1952. £2 10s (price to Fellows 27s 6d).

The Neglect of Science. Essays Addressed to Laymen. By F. E. Simon. 138 pp. Basil Blackwell, Oxford, England, 1951. 8s 6d.

Electronic and Ionic Impact Phenomena. By H. S. W. Massey and E. H. S. Burhop. 669 pp. Oxford University Press, London, England, 1952.

Annual Report 1951 Conference on Electrical Insulation (Of the Division of Engineering and Industrial Research), 56 pp. National Academy of Sciences, National Research Council, Washington, D. C.

Mass Spectrometry. Report of a Conference Organized by The Mass Spectrometry Panel of The Institute of Petroleum. April 20–21, 1950. 205 pp. The Institute of Petroleum, London, England, 1952. 30s.

The Technion Yearbook (1951 Edition). Volume X. 360 pp. American Technion Society (American Society for the Advancement of the Hebrew Institute of Technology in Haifa, Palestine, Inc.), New York.

Teachers Guide Book for the Electronics Educator (Second Edition). Prepared by Robert Stollberg. 65 experiments with plate and schematic for each experiment. Dumville Manufacturing Company, Washington, D. C., 1952. Cloth bound, $4.00 ($3.00 for teachers); paper bound, $1.00.

Fouriersynthese von Kristallen und ihre Anwendung in der Chemie. By Werner Nowacki. 237 pp. Verlag Birkhäuser, Basel, Switzerland, 1952.

Advances in Catalysis and Related Subjects. Volume IV. Edited by W. G. Frankenburg, V. I. Komarewsky, and E. K. Rideal. 457 pp. Academic Press Inc., New York, 1952. $9.50.

Reports on Progress in Physics. Volume XV. Edited by A. C. Stickland. 338 pp. The Physical Society, London, England, 1952. Nonfellows £2 10s, Fellows 27s 6d.

Precision, A Measure of Progress. 63 pp. Department of Public Relations, General Motors, Detroit, Michigan, 1952.

Polarography (Second Revised and Augmented Edition). Volume I. By I. M. Kolthoff and James J. Lingane. 420 pp. Interscience Publishers, Inc., New York, 1952. $9.00.

The Scientific Papers of James Clerk Maxwell. Two Volumes Bound as One. Edited by W. D. Niven. 1413 pp. Dover Publications, Inc., New York, 1952. $10.00.

Ferromagnetic Properties of Metals and Alloys. By K. Hoselitz. 317 pp. Oxford University Press, New York, 1952. $8.00.

An Introduction to Modern Thermodynamical Principles (Second Edition). By A. R. Ubbelohde. 185 pp. Oxford University Press, New York, 1952. $4.25.

The Scientific Work of René Descartes. By J. F. Scott. 211 pp. Taylor and Frances Ltd., London, England, 1952. £1.

Metallurgy for Engineers. By John Wulff, Howard F. Taylor, and Amos J. Shaler. 624 pp. John Wiley and Sons, Inc., New York, 1952. $6.75.

Color in Theory and Practice (New Edition). Edited by H. D. Murray. 360 pp. Chapman and Hall Ltd., London, England, 1952. 70s.

An Introduction to Astronomy (Fourth Edition). By Robert H. Baker. 306 pp. D. Van Nostrand Company, Inc., New York, 1952. $4.00.