

## BOOK NOTICES

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### Two New Good Textbooks on Light

There have been for some time a number of textbooks on light which have attained the "standard" classification. Among these, perhaps, the most outstanding is "Physical Optics," by R. W. Wood, which though complete, is so burdened with information minute in character that it is useful mainly as a reference book.

McGraw Hill has undertaken to supply two books which would fill the need for adequate textbooks written with modern problems in mind. The authors and publishers are to be commended on their effort. In considering the problem it must be borne in mind that the subject is extraordinarily rich and minute in its complexity though not essentially difficult to master. The author's problem is therefore not so much one of exposition as it is one of organization and choice of material.

The first of these books is by G. S. Monk (University of Chicago) and entitled simply "Light—Principle and Experiments." It encompasses a larger area than the second book and offers no difficulties great enough to cause trouble to the average college sophomore or junior. Several errors have escaped the author's attention but these are on the whole rather trivial and of a nature to reveal themselves. The optical path through a Gregorian telescope on page 81 is an example of such an error. In the opinion of the reviewer, the book is admirably suited for a course on light given either for a quarter or a semester to students who have had one year of college physics.

The second book is by Jenkins and White (University of California) and entitled "Fundamentals of Physical Optics." It covers a more restricted part of the subject with greater thoroughness, and is on the whole the more difficult and better written of the two books. Its material could not be covered satisfactorily in one quarter or probably not even in one semester. The book presupposes the elementary calculus and is intended for seniors and first year graduate students.

It must be emphasized that both books are thoroughly modern and up-to-date not only in material but in points of view which have suffered some change in character since the great development of interest in atomic problems.

—C. E. Hesthal.

**Light—Principles and Experiments**, by George S. Monk. xi+477 pp. McGraw-Hill Book Company, Inc., New York, 1937.

**Fundamentals of Physical Optics**, by Francis A. Jenkins and Harvey E. White. xiv+453 pp. McGraw-Hill Book Company, Inc., New York, 1937.

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### Quantum Mechanics

Elements of Quantum Mechanics, by Saul Dushman, is an outgrowth of a set of lectures delivered in the summer of 1932 at Ohio State University. The book has been written for the student with little mathematical background and consequently contains in most instances detailed mathematical development.

In the first two chapters are discussed the early experiments which led to the quantum theory and the development of the Schrödinger equation. Subsequent chapters are devoted to potential barrier problems, Wilson-Sommerfeld quantum conditions, the problem of the harmonic oscillator, the rigid rotator and the hydrogen atoms in quantum mechanics and to the theory of perturbations. The final chapters are devoted to the hydrogen molecule, the theory of valence and to the radiation theory. At the end are several appendices which should be most helpful to the reader—in particular the list of collateral reading.

Dr. Dushman's book can be recommended to the beginning student of quantum mechanics, but will probably be of little interest to students well versed in the subject.—H. H. Neilsen.

**Elements of Quantum Mechanics**, Saul Dushman. xiii+452 pp. New York, John Wiley & Sons, 1938. \$5.00.

### More Quantum Mechanics

Professor Kemble has succeeded unusually well in his new book, *Fundamental Principles of Quantum Mechanics*, in formulating many of the mathematical difficulties which confront the advanced student actively engaged in obtaining solutions to physical problems. In his endeavor he has provided a book on the subject far superior to the average and one which should be very useful to the student who has already had an elementary introduction to the subject.

Chapters I and II contain an historical account of the early beginnings of the theory and a discussion of the wave-particle dualism of the atom. In chapter III the Schrödinger equation for one dimensional problems is treated and as well the Kramers-Wentzel-Brillouin approximate solutions. Chapters IV to VIII are devoted to the mathematics of quantum mechanics; the theory of orthogonal functions and their relations to function space; the theory of linear operators and its connection with the general quantum mechanical dynamical variable. The four following chapters concern themselves with the theory of measurement, matrix theory, perturbation theory and the radiation theory. The remaining two chapters are given over to an application of the theory discussed in the earlier chapters to the general problem of complex atomic spectra.

This book fills a very definite need and is enthusiastically to be recommended to students who wish to acquire more than a surface knowledge of the quantum theory.—*H. H. Neilsen.*

**The Fundamental Principles of Quantum Mechanics**, by Edwin C. Kemble. xviii+611 pp. New York, McGraw-Hill Book Co., 1937. \$6.00.

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### Thermodynamics

Enrico Fermi's book, *Thermodynamics*, is an elaboration upon a set of lectures delivered at Columbia University in the summer quarter of 1936. The first four chapters of this work are devoted in the conventional way to elementary principles and subsequent chapters treat in much the usual manner such subjects: Thermodynamic Potentials, Gaseous Reactions, Thermodynamics of Dilute Solutions and the Entropy Constant. At the end of each chapter problems will be found, intended to illustrate to the student the principles already set forth.

The book contains only a little more than a hundred fifty pages and in this space a very great deal of material is covered; in fact one is perhaps made to feel a little too acutely that the work is in reality a set of lecture notes rather than a text book on the subject. For this reason one is led to suspect that this book will prove itself most suitable in a course where time is available for considerable classroom discussion and for further amplification on several topics by the instructor in the course.—*H. H. Neilsen.*

**Thermodynamics**, by Enrico Fermi. x+160 pp. New York, Prentice-Hall, 1937. \$3.00.