

pleasant reading for those who wish a refresher in the field.

**Introductory Nuclear Physics.** Second edition. David Halliday. John Wiley and Sons, Inc., New York (1955). 493 pages.

The first edition of Professor Halliday's book, published in 1950, won immediate favor with many students then studying nuclear physics at the upper undergraduate and beginning graduate levels and with their instructors. Among its few competitors the book was distinguished for the wide breadth of material surveyed and for the clarity with which the many topics were presented.

Although the number of books on nuclear physics has grown rapidly since 1950, the second edition of *Introductory Nuclear Physics* should hold much of the popularity of its predecessor. It is still frankly an introductory text, covering the broad field of basic nuclear physics briefly and clearly. Topics include cosmic rays, subnuclear particles, and molecular beams, for example, as well as the standard fare of nuclear decays and radiations, particle detection, accelerations, reactions, fission, etc. The arrangement of the material has been improved over the first edition, and the early introduction of new chapters on elements of quantum mechanics and two-nucleon systems should be helpful to the reader. The reviewer recommends the book not only for pedagogical purposes, but also for the library of the nonspecialist in nuclear physics who wishes to have readily available one book in which clear, concise answers to his questions can probably be found.

GEORGE F. PIEPER

**Electrons, Atoms, Metals and Alloys.** William Hume-Rothery. Revised edition. Philosophical Library, New York (1955). 387 pages. \$10.00.

This book, originally published in 1948, represents an attempt to teach modern concepts of atomic structure and the theory of the crystalline state of matter by means of a dialogue between a "Young Scientist" and an "Older Metallurgist." The latter, who took his degree in the period 1910-1920, is unable to keep up with modern advances in metallurgy and seeks the help of a member of the newer generation who brings him up to date in these matters. Topics covered begin with an introduction to quantum mechanics and proceed through the theory of atomic structure, free-electron theory of metals, Brillouin zone theory, ferromagnetism, and the theory of alloy formation. Also included are short sections on the theory of plastic deformation and the structure of the nucleus, both of which have been modified in this new edition as a result of recent developments.

Hume-Rothery states that the book is intended primarily for industrial metallurgists who wish to become acquainted with modern physical theories of metals and alloys and the dialogue form was chosen to make the material more palatable to such readers. How successful he has been in this objective is hard to say. Undoubtedly, a review of this book would best be given by an "Older Metallurgist" who has tried his hand at this novel form of education. It is hard to believe, however, that the few in this category who would have the perseverance to read this book

from start to finish would not also be able to attack the same material in the more conventional form. As for the graduate student studying the theory of metals and alloys, there is no doubt that another book by the same author ("Atomic Theory for Students of Metallurgy," The Institute of Metals, 1952), which covers essentially the same subject matter in conventional text-book form, would be a far more useful volume. Nevertheless, the present book may provide one who has already been exposed to the subject matter with a pleasant way to review the material and to increase his physical insight into the principles of quantum theory.

A. S. NOWICK

**Nuclear and Radiochemistry.** Gerhart Friedlander and Joseph W. Kennedy. John Wiley and Sons, Inc., New York (1955). 468 pages. \$7.50.

This book is a new, revised edition of the widely used *Introduction to Radiochemistry*, written primarily as a text book of a graduate or senior undergraduate course in radiochemistry. The book is divided into thirteen chapters. It begins with a general survey of radioactivity, nuclear structure, and the elementary principles and methods for studying nuclear reactions. The rate equations of radioactive transformations are then derived and applied to a number of problems. This section is followed by an elementary but instructive survey of nuclear states and the related radioactive processes and a discussion of the interaction of radiation with matter with many useful applications. The theory and methods for the detection and measurement of radiation are then taken up in the three consecutive chapters. A brief but well-written review of radioactivity applied to chemistry is given in Chapter 11. Two new chapters have been added to this edition: Chapter 12 gives a survey of the design and operation of nuclear reactors, and Chapter 13 contains a stimulating discussion on some cosmic problems, viz., the production of energy in stars, cosmic rays, geo- and cosmochronology, and the genesis of the elements.

The effectiveness of presentation and the clarity of discussion which characterized the earlier edition is maintained in the present book. The list of references at the end of each chapter has been revised and expanded. An up-to-date table of nuclides is given in Appendix G. The isotopic masses listed in this table should be very useful and convenient for computations regarding nuclear reactions. Answers to most of the exercises are given. These exercises are often as instructive as the text itself and were included by the authors as an integral part of the course. Undoubtedly, *Nuclear and Radiochemistry* will continue to be the most widely used text book of introductory radiochemistry for many years to come.

J. H. WANG

**Thermodynamics from the Classic and Generalized Standpoints.** Joseph Louis Finck. Bookman Associates, New York (1955). 224 pages. \$7.50.

This book is of interest to advanced students and those engaged in research in thermodynamics and applied fields. It is clearly written, well organized, and does not