closed shells, leading to distortion of the core and collective motions of all the nucleons.

This volume is primarily concerned with the first of the above-mentioned types of interactions. The author carefully collates and discusses the available information on nuclear moments, isomerism, and β-decay, developing the theoretical consequences of a number of different coupling schemes and comparing them with the data. In this discussion abundant use is made of the techniques and results of supermultiplet analysis, developed by Wigner and collaborators (of which the author was one of the foremost) in the thirties, for the understanding of the properties of light nuclei. Unfortunately, the general conclusion, that the coupling scheme is intermediate between *L-S* and *j-j*, portends a vast amount of detailed and laborious calculation.

In a lucid chapter on collective motions, the author develops the theory of the coupling of a single odd nucleon with the core. This is an excellent introduction to the present-day work on collective motions in heavy nuclei. The final chapter deals with the general (unsolved) problems of understanding the shell model in terms of a theory of nuclear forces.

While mainly intended for advanced students of nuclear physics, this volume will prove very useful as a reference, owing to its excellent survey and compilation of experimental data and theoretical results. It is amply documented and indexed.

Nuclear Physics. By Irving Kaplan. 609 pp. Addison-Wesley Publishing Co., Inc., Cambridge, Massachusetts, 1955. $10.00. *Reviewed by T. Teichmann, Lockheed Aircraft Corporation.*

The author of this book has set himself the rather difficult task of writing an elementary but complete and practically applicable account of nuclear physics, particularly aimed at nuclear engineers. In this he has been very largely successful, and the minor defects that occur must be attributed to the nature of the requirements rather than to a faulty exposition.

Among the many excellent features are comprehensive references relating to both general and specific topics, at the end of each chapter, and also numerical problems based on the material of each chapter. The latter seem particularly adopted to teach the reader how to make use of the results presented. A possible failing is that, of necessity, the use of quantum mechanical ideas is severely limited. Schrödinger's equation, and wave functions are mentioned very sketchily, and thereafter results depending on application of these must be taken on faith. Though these results are discussed qualitatively as far as possible, this reviewer feels that they may prove hard going for the uninitiated reader.

The book is also distinguished by an effective choice of material. It opens with a section on atomic physics, giving a logical and understandable summary, and including neat and clear derivations. The second (and main) section deals with nuclear physics, and gives a

complete account of the facts and the underlying explanations, though the parts where quantum mechanical arguments cannot be avoided make difficult reading. The third section, on special topics and applications, treats neutron physics, nuclear fission, nuclear energy sources, electromagnetic accelerators, and isotopes. This section (including the problems) would seem a considerable help in showing the engineer how to apply the basic ideas. The book also includes a reduced copy of the G.-E. Chart of the Nuclides.

To summarize, the book gives a thorough introductory account of nuclear physics and some important applications. It should prove extremely valuable to the nuclear engineer, and could also properly serve as an introductory course for the physicist.

Fundamental Formulas of Physics. Edited by Donald H. Menzel. 765 pp. Prentice-Hall, Inc., New York, 1955. $8.00. *Reviewed by Louis Weinberg, Hughes Research and Development Laboratories.*

Fundamental Formulas of Physics is a collection of formulas presented in thirty-one chapters which vary in length from a maximum of 106 pages for the chapter on mathematics to 5 to 10 pages for chapters on such subjects as electronics, nomograms, the physical constants, and meteorology. Some of the other fields included in the book are classical mechanics, electromagnetic theory, the special and general theories of relativity, hydrodynamics and aerodynamics, boundary value problems, acoustics, quantum mechanics, and solid-state physics. The chapters are for the most part written by outstanding men in the respective fields, some of whom merely list their formulas whereas others include explanatory material.

A wealth of material is represented by this collection of formulas which, as stated in the preface, is intended primarily as a reference and guide for research physicists, chemists, and engineers. In the opinion of this reviewer, the book has limited appeal for engineers; whether it will achieve wide circulation among physicists only time will tell. With the passage of time it will be possible to evaluate more fully some of the factors that determine whether a book of this type lives or dies or remains moribund all its life; such factors are the choice of material, the freedom from error, the ease with which the book can be used, the cross-referencing in chapters that cover overlapping material, and the quality of the index. In a sampling on all these points in accordance with the personal experience (and prejudices) of the reviewer the book does not come off well.

For example, the discussions of the Fourier and Laplace transforms follow each other and together cover less than a page. If lack of space was a restriction, surely the elementary formulas on trigonometric functions and integral calculus could have been omitted without diminishing the value of the book; this part of the handbook field is solidly held by the standard books by Burington, Peirce, and Dwight. Then, again, Hilbert transforms are