on the theory of isotopic spin for pions and nucleons, which is used in some of the scattering problems. The attention that is devoted to purely nuclear topics is contained in the section on scattering.

The problems are clearly stated; the reader would have little reason to suppose that this is a translation. There are misprints, not an uncommon number, but some of them should certainly have been discovered by an alert proofreader.

The choice of problems is remarkable in that purely pedantic considerations are given little weight; rather, practically every problem has intrinsic physical interest. Some of the problems are quite simple and their answers are simply presented. Some are quite complex, and their solutions show considerable skill in mathematical technique. Given the large number of pitfalls that one could easily imagine in the construction of a book of this sort, one must account this effort as a success. Indeed, it may very well be that this book is a forerunner of a number of similar volumes devoted to other areas of physics. If so, it can be hoped that their authors show the wisdom and judgment comparable to that manifested here.

Basic Nuclear Physics. By I. R. Williams and M. W. Williams. 280 pp. George Newnes, Ltd., London, 1962. 42s. *Reviewed by Robert L. Weber, The Pennsylvania State University.*

THE publisher of some two dozen books on nuclear energy offers *Basic Nuclear Physics* as a link between two series of books: those on radioisotopes and those on nuclear-reactor technology. The authors had in mind the people who come to the Isotope School, AERE Harwell and Wantage, to learn of the peaceful uses of isotopes. In presenting the background knowledge required by them, the authors have produced a book at approximately the level of those written in the United States by such authors as Blanchard, French, Halliday, and Murray.

The Williams' book is unpretentious, using as far as possible a nonmathematical approach to basic concepts. Yet it has been thoroughly planned. The writing is lucid and coherent. Definitions are clean (e.g., parity, p. 37). The line drawings are generally small and unobtrusive but clear. Some 16 photographs are reproduced nicely to show the appearance of particle tracks and the appearance and size of certain reactors and accelerators. The reader is encouraged to test his analytical skill and to use concepts quantitatively in some 84 exercises, for which answers are provided in the Appendix.

Each chapter is introduced by a statement of its plan or salient ideas. For example, Chapter 3, Models of the Nucleus, starts: ". . . The limitations of the use of models to aid understanding are the same for both atomic and nuclear phenomena. Because the nature of nuclei is so different from our everyday experience, no one model is perfect. Some facts about nuclei seem best explained by one model, while other facts are best

interpreted in terms of different models. These models should be regarded as complementary representations rather than contradictory ones, just as the wave and particle theories of light are to be regarded as complementary. Each model throws light on one or more facets of nuclei but no one model is yet capable of giving us a complete mental picture of the nucleus. In this chapter are outlined the two most successful nuclear models, namely the shell model which is concerned with the individual protons and neutrons in nuclear orbitals and the liquid drop model concerned with the collective behavior of the nucleons. The two are then to some extent combined in the unified model."

The potential nuclear physicist is expected to use this book as a point of departure, via the references given to books and review articles, to more detailed aspects of the subject. The list of some 346 references is more extensive than in the American books mentioned. The references seem to have been well chosen in their relevance to the chapters in Williams, but some will make heavy demands on the mathematical maturity of the student. There is no detectable British bias in the selection of these references, but one might wish that Bishop's *Project Sherwood* had been listed in Chapter 15, on fusion.

One notes a trend in recent physics textbooks to recognize the Nobel laureates. This is done in the Williams' book by an italic notation in the Index, with the year of the award in parentheses.

Basic Nuclear Physics is highly recommended for anyone who needs background knowledge of radioisotopes, radiation detectors, particle accelerators, and nuclear reactions. It is well suited as a textbook for a college-level course in nuclear physics, following a year of general physics, especially for students in engineering or in the biological sciences. A minor drawback in the choice of this textbook is that it employs the so-called Gaussian cgs system of units throughout. The authors remark, "This system has been used because data are usually quoted in these units though we are aware that much simplification would result from the universal adoption of the MKS system."

Quantum Theory of Scattering. By Ta-You Wu and Takashi Ohmura. 495 pp. Prentice-Hall Inc., Englewood Cliffs, N. J., 1962. $16.00. *Reviewed by Eugen Merzbacher, University of North Carolina.*

ALTHOUGH a solid basis for a quantum theory of scattering had been laid in 1933 when the first edition of Mott and Massey's *Theory of Atomic Collisions* was published, a comparison of the book under review with its famous predecessor reminds us forcefully of the vast amount of work which has been done in this field in the last thirty years.

Stressing their didactic aims, Wu and Ohmura present in this textbook the modern form of the theory and some of its applications in atomic and nuclear physics. There is no relativity in the book, not even a hint about Mott scattering, and very little on the in-