book departs from the traditional pattern, however, by including a series of topics less often developed; for example, we find discussions of the density matrix, Racah coefficients, the Feshbach-Villars and Foldy-Wouthuysen representations, and the second quantization of boson and fermion systems. In addition, the reader will find applications to neutron scattering in crystals, molecular spectra, van der Waals forces, ferromagnetism, spin waves, superfluidity, and superconductivity. It is in these additional topics and applications that the book finds its *raison d'être*. All too many authors content themselves with presenting primarily the theory and its foundations, a situation that leaves the student often unaware of the manner in which quantum mechanics is actually used in physical problems. The variety of applications to be found partially reflects the range of the author's own research interests: He has made significant theoretical contributions in many branches of physics and is the author of books on solid-state and nuclear physics.

As might be expected in any work of such broad scope, there are places where the treatment is thin or insufficient. For example, in the chapter on central forces there are discussions of angular momentum and its couplings as well as transformation properties and *D*-functions, but, inexplicably, there is no mention of irreducible tensors or the Wigner-Eckart theorem and its applications. A superficiality of treatment is also apparent in certain parts of the text. To derive any real benefit from sections such as that on the nuclear shell model (section 94) it will be necessary for the reader to go elsewhere. Although these defects are an annoyance, they should not be considered to detract unduly from the overall usefulness of the book. Davydov's text may not replace its counterparts like Landau and Lifshitz in depth, but its emphasis on the uses of quantum mechanics makes it a valuable addition to the physicist's library.

The present version, translated from the Russian by Irene Schensted, differs from the earlier Dirk ter Haar edition (published in this country by Addison-Wesley) in several ways, not the least of which is cost: the NEO Press paperback is far less expensive and for that reason may be much more attractive to students. The other differences, however, must be noted. The ter Haar edition is more idiomatic and professional in its language. Moreover, it includes an excellent set of problems at the end of each chapter. The present edition, on the other hand, is essentially correct physically and not so awkward in its literal translation as to be misleading. It furthermore has at the end of each chapter a set of translator's notes that enlarges upon the developments in the text and is intended to make the book more accessible to beginning graduate students and undergraduates. Both versions of the text thus have their difficulties and good points. "You pays your money and you takes your choice."

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Henry S. Valk, a theoretical nuclear physicist, is chairman of the physics department at the University of Nebraska.

Computer approximations

NUMERICAL INTEGRATION. By Philip J. Davis, Philip Rabinowitz. 230 pp. Blaisdell, Waltham, Mass., 1967. $7.50

by Jacques E. Romain

"In writing this book," the authors state, "we have tried to keep our feet on the ground and our heads in the clouds. By ground we imply utility in day-to-day computation and know-how of the computer laboratory; by clouds, theoretical topics that underlie numerical integration." This statement gives a fairly exact overall description of the spirit of the book. The exposition is based on theoretical grounds (so that the reader can assess the validity of the various methods in the case of his own problem) and is carried to the point of practical application. Not all proofs are given, but when they are omitted, references are given. The authors take pains to indicate in which case each of several rival methods is advisable. Most methods are illustrated by examples, and the comparison between methods is displayed by means of examples selected in order to exhibit the convergence properties of the methods. The desirability of a careful analysis of the problem before choosing a method is often stressed: "One good thought is worth a hundred hours on the computer."

The book is computer-oriented and the emphasis is on approximate rules of integration that involve functional values. The coverage is broad, and an abundant bibliography (referred to after each method and submethod) covers the literature as of 1965. These features make the book complete enough to provide a good basic text for both classroom and computing laboratory. The subject matter includes improper integrals, infinite intervals, and two- or more-dimensional integrals; a chapter is devoted to error analysis and one to automatic integration (that is, standard procedures to be applied blindly); the book is complemented with some FORTRAN programs, a bibliography of ALGOL procedures and a bibliography of tables for integration.

A prerequisite for this book is a course in advanced calculus. A basic knowledge of numerical analysis is also desirable, as the examples are not worked out in every detail. The book will be a real help to those who meet these prerequisites.

Both authors have published several papers on numerical integration. Philip J. Davis is probably best known to the occasional practitioner for his contribution to the chapter on numerical integration in the NBS *Handbook of Mathematical Functions.*

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The reviewer is an adviser in applied mathematics, engaged, in part, in numerical computation work.

NEW BOOKS

ELEMENTARY PARTICLES & FIELDS

Topics in Several Particle Dynamics. By Kenneth M. Watson, John Nuttall. 121 pp. Holden-Day, San Francisco, 1967. $7.50

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