coverage, I believe he could have very profitably added about 20–30 pages. The added text could have included material now lacking on reference-junction techniques and devices; the details of special thermocouple circuits such as thermopiles, averaging (parallel) thermocouples, and differential thermocouples; and interfacing problems with signal-processing instrumentation, as well as some information on the instrumentation itself. Perhaps in a second edition?

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Nuclear Structure Theory

J. M. Irvine
478 pp. Pergamon Press, New York, 1973. $27.00

Nuclear-structure theory has developed into two almost completely separate groups. One group has been attempting to understand the properties of nuclei from nuclear matter calculations, while the other has been using less fundamental models, such as the shell model, to predict detailed features of nuclei. There are many experts in either of these fields, but there seem to be remarkably few who understand both fields well. Both theorist and experimentalist would welcome a book that covers in a consistant notation the nuclear-structure theory between such diverse topics as the Brueckner ladder sum and Nilsson wave functions. John Maxwell Irvine's book is partially successful in this task.

A principal characteristic that distinguishes this book from others is the considerable attention paid to detail. There are numerous useful tables and formulas that are usually not included, or only referenced, in other books. There are tables of two-body matrix elements, tables of Nilsson wave functions, rules for the use of Goldstone graphs, and recursion formulas for calculating coefficients of fractional parentage. By including these details in the text, the author has created a "guide-book," which should help the physicist who is not expert in a particular aspect of nuclear structure theory not only by quickly acquainting him with the principles involved in a calculation, but also by providing him with many of the detailed ingredients used in such calculations.

The book does have a number of weaknesses. One is that the space available in a single volume could have been used to better advantage. For example, the first of the book's four sections is devoted to nuclear phenomenology, and included here are

about fifty pages of detailed nuclear decay schemes. Since such data rapidly become out of date and are easily available elsewhere, the book would be better off without them. The book also has some errors both in the tables (such as the table of CFP) and the discussion (the description of the solar-neutrino experiment).

Most of the nuclear-structure theory is contained in the central two sections of the book, under the headings "The Nuclear Many-Body Problem" and "Nuclear Models." Here such topics as perturbation theory, Landau-Migdal theory, the shell model and the Nilsson model are presented; and it is here the the author exhibits the expertise of one who has contributed to research in these fields. The discussion of the shell model is especially detailed with a considerable number of comparisons between experiment and theory presented. The last section of the book does not contain nuclear physics *per se*, but contains a collection of mathematical tools used in structure calculations such as group theory, Racah algebra and graphology.

In order to cover in any detail the subjects introduced, the author has adopted a very concise style of presentation. As a result, this book is not suitable as a text for a graduate nuclear-physics course, although it may be useful as a reference text in such a course.

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new books

Nuclei, Nuclear Physics

The Invariant Imbedding Theory of Nuclear Transport (Modern Analytical and Computational Methods in Science and Mathematics, No. 39). J. O. Mingle. Elsevier, New York, 1973. $11.50

Particles and Nuclei, Vol. 2, Part 4. N. N. Bogolyubov, ed. 186 pp. Consultants Bureau, New York, 1973. $40.00

Elementary Particles and Fields

Classical Theory of Particles and Fields. K. H. Ruei, 3 volumes: Vol. 1, 380 pp., Vol. 2, 450 pp., Vol. 3, 420 pp. University Press, Taipei, Taiwan, 1972 (Available through Richard Abel & Co, PO Box 4245, Portland, Ore. 97208). Vol. 1, $9.50; Vol. 2, $11.50; Vol. 3, $11.50

Experiments on High Energy Particle Collisions—1973. AIP Conf. Proc. No. 12, Particles and Fields Subseries No. 4. R. S. Panvini, ed. 439 pp. American Institute of Physics, New York, 1973. $15.00

Pi-Pi Scattering—1973. AIP Conf. Proc. No. 13, Particles and Fields Subseries No. 5.