oscillator, after a decade of productive use, is now in the Smithsonian Institution. The second decade witnessed extensive applications in thermal reactors, and the third decade has been the transitional period to a dominance of small-sample reactivity measurements in fast reactors over those in thermal reactors. Over 60% of the approximately 200 references cited in the monograph were published between 1963 and 1968, while only 9% (18 references) are more recent. The last of these appeared in mid-1970, more than two years before publication of the monograph. Thus, the monograph is more useful in providing an historical perspective and a basic understanding rather than an awareness of current activities.

On balance, in spite of the above emphasis on shortcomings, the book is a valuable addition to the bookshelf on reactor physics. It accomplishes well its objective of providing a unified, systematic treatment of the fragmented literature on the subject of small-sample reactivity measurements. Current problem areas, such as the complexity of scattering contributions to the observed reactivity and the systematic discrepancy between measured and calculated reactivity coefficients in plutonium-fueled fast reactors, are discussed, and suggestions for further studies made, where appropriate. The book deserves to be studied, rather than just read, by those who are working or interested in the subject area.

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The Elements of Nuclear Power. By D. J. Bennett. Longman Group Limited, London (1972). 206 pp. £3.50.

The Elements of Nuclear Power, a small paperback book, should find a useful and convenient niche in the literature somewhere between the voluminous Glasstone and Sesonske's *Nuclear Reactor Engineering* and the soon to be revised *Introduction to Nuclear Engineering* by Raymond Murray. Several unique features recommend this text: its modest size (201 pages); reasonable price of 3 pounds 50; its readability; and a slight bias toward natural uranium reactor systems.

The text begins with the traditional review of atomic and nuclear physics, then covers some of the more simple aspects of chain reaction theory and homogeneous reactor theory. Modest corrections are given for two-group analysis, heterogeneity, fast-neutron escape probabilities and fission. Other considerations include heat transfer and fluid flow, thermodynamics of power plant systems, the elements of reactor kinetics, and reactivity effects and reactor control. The closing chapter briefly introduces radiation hazards and simple shielding concepts.

Hardly discussed are radiation damage to material, nuclear fuel cycles, enrichment plants, or reactor technology. Several drawbacks to the text include the lack of any student exercise problems at the end of the chapters and, slightly more serious, the lack of any significant number of illustrative examples worked into the body of the text. Such omissions render the book somewhat less useful for self-study and for classroom application if other sets of exercises and examples are not readily available.

The text is only meagerly supplemented with tables of typical values of atomic masses, gamma-ray energies, decay constants, delayed-neutron fractions, thermal-neutron cross sections, Westcott g factors, neutrons per fission, etc. The reviewer has found that such a consistent set of numerical values presented throughout the text can be very useful in introducing the student to sample calculations and practical problems.

Data are limited on typical values for such derived or calculated parameters as Fermi age, resonance escape probabilities, temperature ranges, pressures, flow rates, plutonium concentrations, enrichments, xenon and samarium poisoning effects, fission product buildup, and control requirements in typical reactor situations. A consistent and accurate set of such numbers can be of great use to the student who is in no position to either derive, calculate, or select and evaluate such parameters from the literature.

All things considered, this book should be useful as an introductory textbook for engineering students wishing a reasonably broad but not too detailed technical introduction to nuclear power reactors. It should also serve as a rather brief and completely self-consistent introductory course for undergraduate-level nuclear engineering students.

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