program used by the authors in a specific example is typically noted.

Some of the example problems in each chapter are solved in SI units, and others employ English units. A point is made of the fact that the variables in the tables and the computer routines are not assigned inherent units. The potential user is given the very important reminder to employ a consistent set of units in his calculations and computer program imputs.

As noted previously, although numerous loading situations and geometries are treated, there is very little development presented. This is certainly in keeping with the objective of the book, namely, to make it as useful as possible for the practicing design engineer needing easy access to material that will enable him to solve a particular problem in the shortest amount of time and, significantly, within a limited budget. This particular orientation, however, would seem to limit the book's usefulness as a basic textbook in lower-level design engineering courses. Students in such courses would presumably lack the depth of background required to use Pilkey and Chang's book most effectively. It would appear that a more appropriate use of the book in a sequence of courses would be as a supplementary text at the advanced undergraduate and graduate levels, where the students would have already established a reasonable level of background knowledge in the subject matter. Where the lecture content is especially rich, this volume would probably suffice as the main text in an advanced course.

The unusually wide variety of structures, geometries, and loading situations examined makes *Modern Formulas for Statics and Dynamics* a useful and necessary addition to any engineering library.

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About the Reviewer: Robert Zerwekh, an associate professor of mechanical engineering at the University of Kansas, received his academic training, largely in metallurgy, from the University of Missouri-Rolla and, at graduate level, from the University of Illinois and Iowa State University. Dr. Zerwekh's teaching is currently in metallurgy and materials science, thermodynamics, and fluid mechanics. His research interests are in properties of solids, plastic deformation, and solid-state phase transformations.

Basic Nuclear Engineering. By K. S. Ram. Halsted Press (a division of John Wiley & Sons, Inc.), New York (1977). 221 pp. $9.75.

Basic Nuclear Engineering is a very compact textbook about the size of a regular *Reader's Digest*. The author, K. S. Ram, formerly of the University of Cincinnati, is now at the Indian Institute of Technology, Kanpur. The book is unique in other ways; Dr. Ramanna, Director of the Bhabha Atomic Research Center, notes in the Foreword that "... [the book] fills a long felt need for a book by an Indian author on this subject." If my limited knowledge of the nuclear program in India is correct (the *Nuclear News* World List of Nuclear Power Plants), there are two boiling water reactors (Tarapur) and one pressurized heavy water reactor (PHWR) (RAPP.1) operating, with five additional PHWRs under construction. Professor Ram has keyed his text to the CANDU-type reactor to the extent that essentially all of the examples and problems related to power reactors consider this concept.

The organization of the chapters is traditional, with a review of nuclear physics and radioactive decay, followed by neutron reactions, slowing down, four-factor formula, etc. The emphasis on heavy water systems at times leaves one with the feeling that he is reading from Glasstone and Edlund or one of the other very early texts, where a great deal of emphasis was placed on natural uranium and graphite. Here, of course, emphasis is on heavy water rather than graphite. In later chapters, the headings are sometimes confusing. Chapter 10, "Design Considerations of Control Requirements," is a discussion of control materials, a brief introduction to control requirements for a power reactor, and then the traditional control rod worth calculations for a central rod in a cylindrical reactor and a cruciform rod. Chapter 11, "Heat Transfer Problems in Reactor Engineering," treats only the primary side of the plant; nowhere in the book is the entire nuclear plant described or discussed. Chapter 13, "Shielding," is more nearly "Radiation Protection."

Few nuclear engineering textbooks devote more than a paragraph to thermal stresses, but in *Basic Nuclear Engineering*, Chap. 12 is devoted to this topic. The author considers primarily the pellet and cladding, but includes a final section on thermal cycling of components in general. Chapter 14, "Fuel Cycles," has a particularly interesting section on the use of axial fuel movement to obtain uniform burnup. This concept is applicable only to systems with on-line refueling (e.g., CANDU) and is not discussed in most U.S. textbooks. There is no material presented on instrumentation, safety, accident evaluation, or licensing. The latter three topics have become so crucial for successful nuclear plant evolution that even a textbook on "basics" should include some mention of these areas.

The author has elected to omit tables of nuclear data usually presented in an appendix, and his bibliography is very limited and in some instances refers to articles or reports not generally available.

In the past few years, several excellent new or revised textbooks have been published for the advanced undergraduate and first-year graduate level. Since *Basic Nuclear Engineering* has been prepared so specifically for the Indian nuclear program, it has severe limitations when it is considered for students in the U.S. Of course, basics are basics, but there are essentially no examples or problems included on light water reactors. Adoptions in the U.S. market will be hampered by the omission of so much material that is important to the U.S. nuclear program.

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