Protection, chairman of its Scientific Committee 46 on Operational Radiation Safety, and a member of its Scientific Committee 1 on Basic Radiation Protection Criteria.

Radiation Heat Transfer Notes

Author D. K. Edwards

Publisher Hemisphere Publishing Corporation (1981)

Pages 370

Price $19.95

Reviewer J. N. Anno

What is new in radiation heat transfer since the work in the 1920s by H. C. Hottel (to which the author refers in a 1954 reference)? Well, apparently plenty is new. The author approaches the age-old topic of radiation heat transfer from a modern physics standpoint. Indeed, these notes will probably be more appreciated by physicists than by engineers. The author goes to great lengths to dispel the old approximation that the radiation heat flux is proportional to the difference in the fourth power of the temperatures between the hot and cold surfaces. In fact, he may have gone too far so as to lose the usefulness of this work to the field engineer. Extensive commentary on the relationship of his notes to the more familiar engineering usage would have been appreciated. With this as the only major criticism, let me now extol the virtues of this book to selected members of the American Nuclear Society (ANS).

Radiation Heat Transfer Notes abounds with useful detailed data for radiation heat transfer calculations. This collection of such information in a single volume may, of itself, make this text a worthwhile addition to the members' bookshelves. In addition, the last four chapters, and especially Chap. 6, should be particularly useful to fission reactor safety people interested in the details of radiation heat transfer through gas (steam).

To those members of ANS in the academic world, I highly recommend this text for a graduate or dual-level nuclear engineering course in heat transfer. It comes complete with exercises (problems) and illustrations. It also sets a firm groundwork for computer calculations of complex heat transfer problems, especially in Chap. 8, the last chapter. In summary, I believe that this 370-page book will be useful to a significant fraction of the ANS membership, and so recommend it.

J. N. Anno is a professor of nuclear engineering at the University of Cincinnati and president of Research Dynamics Incorporated, a small business research and development (R&D) corporation. During the almost 30 years he has spent in R&D activities, he has been involved in a number of experimental and theoretical investigations in the area of heat transfer. In addition, he has taught several courses in heat transfer in the nuclear engineering program at the University of Cincinnati. He has authored several journal articles on heat-transfer-related topics and considers the subject to be basic to the engineering sciences.

Atomic Energy

Author R. M. E. Diamant

Publisher Butterworths, Woburn, Massachusetts (1982)

Pages 553

Price $49.95

Reviewer K. Almenas

The first difficulty in reviewing *Atomic Energy* by R. M. Diamant concerns classification. Where does the book fit? What audience does it try to address?

The plain cover, the number of pages (553), the profusion of tables, graphs, and diagrams leave the initial impression that this is a technical work addressed to the professional. However, a somewhat closer inspection shows that this cannot be the case. The scope of the book is enormous. It starts with a basic definition of the fission process, covers reactor theory and reactor development history, describes all possible reactor types, polemicizes about reactor safety, and closes with a chapter on the hydrogen economy. Understandably, such a scope does not allow depth of treatment, and even if it were written in an exemplary fashion, it would be of little interest to the professional.

Presumably then, the author has the general public in mind. This is suggested also by a statement in the brief preface that expresses the hope that " . . . this book will help a little in clarifying what atomic energy is all about." Let us assume then that the intended framework has been found. Then the proper question in evaluating this work can be stated as follows: Should this book be recommended to the interested layman who wants to learn about nuclear energy?

The answer falls easier than the question. It is an emphatic–no! The clearly negative evaluation follows not from one, but from a whole range of reasons. They include the lack of a consistent plan for presentation of the subject matter, an apparent inability to exercise selectivity, numerous misstatements, outright errors, and general carelessness. The writing style is annoyingly glib in some paragraphs and barely understandable in others.

Such a strongly negative evaluation should be justified to the reader of this review. It seems only fair to allow the author himself to do this. The number of quotations that could be used for illustrative purposes is extensive; thus, selectivity is required. For an easier overview, the chosen excerpts are grouped into several categories.

Let us start with the "misstatements." These are errors for which it is apparent that the author knows better. Some examples are:

p. 25. "As is well known the primary particles of elements are known as atoms . . . "

p. 73. "The shorter the gamma ray, or in other words, the higher their energy content, the greater their penetrating power."

p. 91. "Enriched uranium costs an average 50% more than unenriched uranium."