sectors in the United States, by changing the tax laws, by eliminating financing subsidies and by regulating both Public and Private Power sectors.

The book is written in an interesting, provocative, and entertaining style, while tackling an important problem facing our society. In the opinion of this reviewer, the book is "mustreading" for anyone associated with the power system industry.

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THERMAL RADIATION HEAT TRANSFER, by Robert Siegel and John Howell. 803 pages, diagrams, 6 × 9 in. New York, McGraw-Hill Book Co., 1972. Price, $18.50 (approx. £7·10).

The author's purpose, initially was to provide a comprehensive source of information on the radiative transport of heat to practicing engineers at NASA, as demonstrated by the previous special publication by the authors of the book as part of an advanced study program at Lewis Research Center. These special publications constituted the elder edition of the book.

In the new edition, 1972, the following areas are covered: the radiative behaviour of materials, radiation between surfaces, and gas radiation. The authors have succeeded in presenting a thorough treatment of the topics supported by numerical examples to illustrate the applications of the analytical methods and homework problems which are directed towards researchers in the field as well as students on the graduate levels who are active in this field. The authors often make painstaking efforts to identify repeatedly the various terms: by words, scripts, multiderivatives, and the like; and in the reviewers' opinion this resulted in some redundancy in identifying terms which could have been avoided. Every chapter contains a list of references and a section listing symbols pertaining to that chapter which proved to be quite helpful.

Following an introduction on the importance of the thermal radiation area and the nature of it, the book opens with a classical treatment of the emission process of a blackbody. In the chapter on the properties of nonblack surfaces, the authors went into great detail to present a thorough summary of definitions which although seemed a little congested, may be unavoidable due to the nature of such quantities as bidirectional reflectance. The chapter on the prediction of radiative properties by the classical electromagnetic theory is concise but adequate; and the authors presented the relationships for the reflectivity, emissivity and absorptivity of materials in terms of the optical and electrical properties of the materials. The authors clearly indicate the restrictions and limitations underlying such relationships and further refer to literature for more improved relationships with lesser restrictions. However, they make it clear that none of these treatments accounts for surface effects because of the difficulties involved in specifying surface conditions and controlling surface properties. This chapter could have included an additional area dealing with theory and application of thin film optics.

The chapters on the exchange of radiant energy between black and gray isothermal surfaces present the various methods of calculating radiative geometric configuration factors as well as the radiative exchange in enclosures. The authors fell short of clearly indicating their motives behind presenting a very brief section using the set theory notation with respect to evaluating the configuration factors. In general, the matrix notations could have been emphasized more in these chapters because in practical situations it is rather common to face enclosure problems with multisurfaces which would be handled relatively neater and easier using matrix notations.

Then on enclosures having specularly reflecting surfaces, the authors provide a lucid and uncluttered picture of the subject. They refer the readers to literature for other situations such as surfaces with both diffuse and specular components and others. Radiation between nondiffuse nongray surfaces is also included.

The Monte Carlo approach for solving radiative transfer problems with and without participating medium is presented in

two chapters. The difficulties of the Monte Carlo technique is made clear in that there are no rigorous criteria that exist to guarantee the convergence of the method, although convergence has not yet been a difficulty in thermal radiation. Other difficulties were indicated as those pertaining to an optimum sample size. Radiation in the presence of other modes of heat transfer with and without a participating medium is presented.

The chapters on Fundamentals of Radiation in Absorbing, Emitting and Scattering Media, The Equations of Transfer for an Absorbing-Emitting Gas and their Approximate Solutions, The Introduction to the Microscopic Basis for Radiation in Gases and Gas Properties, The Engineering Treatment of Gas Radiation in Enclosures, The Radiative Transfer in Scattering and Absorbing Media are presented in great detail along with some specialized effects in absorbing-radiating media such as radiation phenomena in media with nonunity refractive index, flames, and particle radiation. In the area of band absorption correlations, an emphasis on engineering treatment using the total band absorptance with available continuous correlation equations for all mass path lengths would have been desired.

The book includes six appendices covering the following: conversion factors, radiation constants, and blackbody functions; sources of diffuse configuration factors; catalog of selected configuration factors; radiative properties; enclosure analysis method of Gebhart; and exponential integral relations.

The authors give the reader considerable physical insight into the material, and researchers as well as interested graduate students should find the book a very useful and informative source.

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