

conversion of solar energy into electricity and storage of solar energy by Kattani; refrigeration and air-conditioning by Brinkworth, solar heating and cooling of homes by Yellott; solar production of hydrogen by Veziroglu and Kakac; solar energy measuring equipment by Wood; fundamentals of water desalination by Howe and Tleimat; economics of solar energy by Sayigh.

This book can be divided into four parts, apart from the first and last chapters written by the editor: chapter 1 dealing with the scope and advantages of solar energy and serving as a short introduction to this book, and chapter 21 at the end of the book, discussing costings of solar appliances. The first part, containing chapters 2 and 5, discusses the nature of the sun, solar radiation spectrum, estimation of total, direct and diffuse radiation, and heat-transfer fundamentals for solar energy utilization. The second part composed of chapters 6, 7 and 8, outlines fundamentals, fabrication, and uses of water and air heaters. The third part having chapters 9 and 11, deals with optics, concentrating collectors and solar furnaces. The fourth part, represented by chapters 10 and 12 to 20, discusses various applications of solar energy, e.g. solar pond, solar distillation, photovoltaic conversion of solar energy, solar refrigeration, solar hydrogen production space applications and solar measuring equipment.

Apart from the few errors and repetitions which are bound to occur in such a book of wide scope, the reviewer considers the contents of each chapter to be well rounded; but detail is sacrificed to clarity of the concept, particularly in chapter 16 (refrigeration and air-conditioning) which is rather elementary and lacking details and diagrams of actual systems or projects, and chapter 17 (solar heating and cooling of homes) which is a general and brief presentation of some applications in U.S.A. The editor has laid special emphasis on the engineering aspects of the topics, so the book is best suited as an engineers reference book, but each subject covered is more exhaustively discussed in other books and documents, particularly those of the U.S. Energy Research and Development Administration (ERDA) which are not on the list of references at end of the book.

Although the editor intended to make the book a truly international textbook, yet being himself Arabian, he concentrated more on information and data concerning the Arab countries; thus in chapter 4, sunshine hours and ambient conditions curves, iso-radiation maps and tables of total solar radiation and comparison between the estimated and measured values, are only for Arab locations and territories.

Finally, the reviewer finds this book unique in covering nearly all topics of solar energy, and feels that the clarity and neatness of presentation is a classic and a help for everyone interested in solar energy, and in the design and operation of solar equipment.

A-M. A. REZK

D. R. PITTS and L. E. SISSOM, *Theory and Problems of Heat Transfer, (Schaum's Outline Series)*. McGraw-Hill, New York (1978).

IN THEIR books Professors Pitts and Sissom have attempted to achieve a number of ambitious objectives. Firstly and perhaps most importantly they have attempted to write a text book that will be suitable for use by lecturers and students in tutorials and for self-study. The number of worked examples (296) and problems means that the book is worth buying for this fact alone. Secondly they have covered a number of areas; and major topics (Conduction, Convection, Radiation, Boiling and Condensation and Heat Exchangers) are covered in sufficient detail to ensure that the appropriate chapters could form the basis of several undergraduate courses. Thirdly, in their attempt at striking a balance between a mathematical approach based

upon rate equations and an empirical approach, they have in the main been successful. In particular the chapters on conduction give a balanced approach to the analytical and numerical methods available for the solution of the underlying equations. The examples illustrate the usefulness of these techniques and underpin the theory. A number of flow charts and Computer programs are given. (These chapters provide an excellent background for any Engineering Mathematics Lecturer; much of the mathematical detail would however need much expansion.) Finally, due importance is given to a precise definition of the particular problem being considered and all important relationships are clearly highlighted.

The authors are to be complimented on their work and I am sure that the book will find its way on to many bookshelves where it will be a valuable supplementary text book and source of exercises and problems.

R. D. GIBSON

*Department of Mathematics, Statistics and Computing
Newcastle upon Tyne Polytechnic
Newcastle upon Tyne
U.K.*

D. B. SPALDING (Editor), *Physicochemical Hydrodynamics, V.G. Levich Festschrift*. Advance Publications, London (1977), pp. X/V 1076.

THESE two substantial volumes contain the contributions to the conference held in Oxford in July 1977 to mark the sixtieth birthday of Benjamin Levich. The title is that used by Levich for his famous book first published in 1952. One of the outstanding features of this collection is an article by Levich himself describing the subject he invented and the problems which face it in its present state of development. Reading this article (which of course could not be presented by Levich personally at the conference) one is forcefully reminded that the Soviet Government has yet again impeded the progress of science by its shortsighted policy of preventing one of its ablest citizens from exercising his remarkable talent to the full.

It is impossible in a brief review to do justice to the extraordinary range of topics covered by the seventy or more papers, but the headings of the sections may give some idea: Physical Transport, Interface Mechanics, Interspersed Phases, Chemical Hydrodynamics, Electrophysics, Electrochemistry. It is abundantly clear that this is no formal tribute to a great man but, what is far more important, part of active scientific progress, a lively cross-fertilization process in which scientists from different disciplines can learn what their colleagues are doing. In this way the lines which have diverged from the origin in 1952 can be linked and again new directions discovered. Thus it is a tribute of which the recipient and the donors can justly be proud. Professor Spalding and his colleagues who undertook the large amount of work involved in organizing the conference and the publication deserve our grateful thanks.

ROGER PARSONS

*Directeur du Laboratoire
d'Electrochimie Interfaciale
du C.N.R.S.
Meudon
France*

M. P. MURGAI, *Natural Convection from Combustion Sources*. Oxford and IBH (1976). pp. 377. *Similarity Analysis in Fire Research*. Mohan Primlani (1976). pp. 132.

THESE volumes are closely related as to substantive physical phenomena treated, and still more so as to underlying philosophy. The author attempts comprehensive treatment