BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.

Two-Phase Flow Dynamics

Authors Arthur E. Bergles and Seikan Ishigai

Publisher Hemisphere Publishing Corporation, Washington, D.C. (1981)

Pages 554

Price $75.00

Reviewer Sanjoy Banerjee

The book is essentially a collection of papers presented at the Japan-U.S. Seminar on Two-Phase Flow Dynamics held in August 1979. The seminar was sponsored by the Japan Society for the Promotion of Science and the U.S. National Science Foundation. Participation in the seminar was by invitation.

I found the book valuable because it provides a comprehensive survey of Japanese work on two-phase waves and flow instabilities. The Japanese work is characterized by a thoroughness in both experiment and theory that is seldom found elsewhere. For example, the paper on pressure wave propagation in gas-liquid plug trains by G. Matsui starts with force balances on liquid plugs, goes through a perturbation analysis to show that the waves are dispersive, and then takes account of the weak nonlinearity to derive a governing Kerteweg-deVries equation. This remarkable result would be sufficient for most papers, but Matsui then proceeds to present an extensive set of comparisons with experimental data. The other Japanese papers are of a similar caliber. I would like to particularly commend the survey of Japanese two-phase flow research presented by Professor Akagawa and one on two-phase instabilities by Professor Nakanishi.

In contrast, the U.S. papers were somewhat disappointing. I had encountered most of them elsewhere, at least in part. This is perhaps inevitable in a seminar of this sort where reviews of work are presented. However, the U.S. papers were characterized by some notable absences. For example, flow regimes have been predicted with some success using a mechanistic approach by A. E. Dukler's group, and I expected a presentation of this work. Similarly, John Lienhard's group has made considerable progress in predicting void inception in flashing liquids, and a description of this work was also missing.

In conclusion, the book will be a valuable resource of Japanese work for researchers in two-phase dynamics. I would recommend it for acquisition by research libraries and workers in the field.

Vice-chairman and professor of nuclear engineering at the University of California at Santa Barbara, Sanjoy Banerjee obtained his PhD in 1968 from the University of Waterloo, Canada. Professor Banerjee has been acting director of the Applied Science Division, Atomic Energy of Canada Limited, a founding member of the Canadian Advisory Committee on Nuclear Safety, and has represented Canada in several international meetings and negotiations. His current research encompasses wave and macroscopic instabilities in two-phase flows.

Cogeneration and District Heating—An Energy Efficiency Partnership

Author Roy Meador

Publisher Butterworths, Woburn, Massachusetts (1981)

Pages 203

Price $14.95

Reviewer Bruce Rankin

This book provides a complete background and history of central heating for large residential and commercial complexes. In most later cases, the energy is waste heat from electric generating stations, although heat from solid waste is covered. Included are discussions of very early successful systems, many foreign systems, and projected systems. Use of nuclear power plant thermal discharges for district heating is discussed.

Considerable technical data concerning past and present systems are presented, but there is little in the way of theory. The book can be quickly and easily read by anyone interested in the field. I believe the book is useful to lawyers, businessmen, bankers, planners, and politicians as well as engineers. Coverage is very broad; the book is not highly technical.

Bruce Rankin has taught classes on heat/power systems at the U.S. Naval Academy for over 20 years. Previously, he spent 5 years designing propulsion plants for the first nuclear submarines. Prior to that he worked as an engineer on the central station design.

He is currently a consultant on various types of energy systems including solar, solid waste, and nuclear.