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.

Energy Policy and Public Administration

Author Gregory A. Daneke and George K. Lagassa

Publisher Lexington Books, D. C. Heath and Company, Lexington, Massachusetts (1980)

Pages 318

Price $29.95

Reviewer E. Michaelides

The book is a collection of nontechnical papers on the subject of energy policy and public administration. It attempts to cover a variety of subjects ranging from local to regional and national energy policies, but the papers lack any rigor in the conclusions, and sometimes appear to contradict each other. While there are undoubtedly articles worth reading, such as the one on public policy and efficient use of energy, many appear to be of little value for the further education of a scientist. It is apparent that most of the authors are unfamiliar with the technical aspects of energy. Many of the articles, in essence, advocate that the laws of physics may be violated by simply changing the funding patterns or the administration of energy policy. Thus, their desired goal will be achieved.

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Convective Boiling and Condensation (2nd ed.)

Author John C. Collier

Publisher McGraw-Hill Book Company, New York (1981)

Pages 435

Price $59.50

Reviewer M. R. Bottaccini

Convective Boiling and Condensation is one of those rare books, difficult to read and to understand, which become classics. The author has done the very best job possible, given the state of the subject, and until a theory is invented, no better job can be done. The heterogeneous literature on two-phase flow lacks an organizing principle; designers have been known to suffer frustration and emotional rages as a result of their incapacity to structure knowledge into a semblance of order. The various theoretical models proposed are based on simple-minded momentum balances derived from trivializing assumptions. Little or no use is made of partial differential equations, and finite element analysis is avoided as though dangerous to the soul.

In spite of all the experimentation reported throughout the world, but especially in the United Kingdom and the Soviet Union, convective processes remain a mystery whose outer boundaries are well defined but whose interiors are unknown. What is one to do in such a situation? The obvious solution is the encyclopedic book, loaded with charts, tables, and empirical coefficients. All valid references up to publication time should be listed, and a complicated empirical structure should be built upon tenuous intellectual foundations. Not a good solution, and hard to follow, but with patience and a sharp eye, design information can be found, and with some intuition, understanding achieved. It follows, hence, that Collier's work defies praise: exhaustive? thorough? useful? well written?—well—the nomenclature alone has over 600 entries and there are nearly 700 citations to the literature.

There are four introductory chapters dealing with the basic models, with empirical treatment of two-phase flow, and with a relatively old-fashioned introduction to convective boiling. A mixture of basic thermodynamics and sophisticated experimentation characterizes them. Very thorough empirical descriptions of subcooled and saturated boiling heat transfer occupy the middle of the book. Two chapters on critical heat flux in forced convective flow present, for the first time, useful design information on what is still a research subject. For those two chapters, if for nothing else, the book is worth its price. Condensation is treated rather casually in a chapter built on the older literature.

The eleventh chapter is useful. Collier gives guides to improvement of the performance of boiling and condensing heat transfer surfaces. Two aspects are considered: first, methods for improving heat transfer coefficients and