

BOOK REVIEWS

Theory and Fundamental Research in Heat Transfer:
Edited by J. A. CLARK. Pergamon Press, Oxford, 1963,
220 pp.

This book represents a collection of papers resulting from a Symposium held during the 1960 Annual Meeting of the American Society of Mechanical Engineers. The primary purpose of each paper was to review the present status of a particular subject area of heat transfer and to recommend new avenues of research in each subject area.

With the rapid growth of heat-transfer literature, it is increasingly more difficult for a student or non-specialist to put to engineering use, information appearing in research journals. In order to digest this information, the reader must be aware of the current state of knowledge in the particular subject area. This is very often a difficult and time-consuming task. Review articles, which develop a subject area from basic principles blending in current advances, make this task an easier one, even though the current development portion of the article usually becomes quickly outdated by the rapid growth of literature. In spite of this disadvantage, it is felt that a book of the type presented here serves a very definite and useful purpose.

Inasmuch as the book contains articles on a large variety of subjects, the contents list is presented without a critical review of the articles.

Contents list

1. R. V. DUNKLE: Thermal radiation characteristics of surfaces.
2. R. F. PROBSTEIN: Heat transfer in rarefied gas flow.
3. J. W. WESTWATER: Things we don't know about boiling heat transfer.
4. H. W. EMMONS: Plasma heat transfer.
5. F. SCHULTZ-GRUNOW: Turbulent heat transfer in stratified flow.
6. J. A. KRUMHANSL: Thermal conductivity of solids.
7. S. S. PENNER, D. F. OLFE and M. LAPP: Recent studies on quantitative spectroscopy and gas emissivities.
8. H. C. HOTTEL and A. F. SAROFIM: Gaseous radiation with temperature gradients allowance for isotropic scatter.
9. R. J. MONAGHAN: Boundary layer development under pressure gradients, with particular reference to heat transfer.
10. N. FRÖSSLING: Problems of heat transfer across laminar boundary layers.
11. W. R. V. MALKUS: Outline of a theory of turbulent convection.

J. L. NOVOTNY

Air Cooled Heat Exchangers: American Society of Mechanical Engineers, New York (1964).

A COLLECTION of eleven papers on the subject of Air Cooled Heat Exchangers presented at the Seventh National Heat Transfer Conference is now available from the A.S.M.E. Headquarters in New York. These papers, sponsored by the A.S.M.E. Committee on Unfired Heat Exchangers, not only stress the present state of the art but also spell out some new analytical and experimental approaches to the rational design of extended surfaces.

The topics covered range from the optimization of finned surfaces to the determination of the maximum permissible operating temperatures for present day interference-fit finned tubing. An experimental method, which involves both steady-state and transient type measurements is proposed for determining the overall effectiveness, and the results are compared with analytical solutions. A new experimental facility built specifically to study flow through compact type heat exchangers is described in some detail.

In addition, there are several papers which stress the economics of design and the symposium concluded with two contributions relating to the air cooling of condensers. All in all, the present publication is timely and should prove of value to practicing engineers involved in the design of heat-transfer equipment.

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