

BOOK REVIEWS

D. CHISHOLM (Editor), **Developments in Heat Exchanger Technology** — 1. Applied Science Publishers, London, 1980, 300 pp. £26.00.

IN THE words of its editor this book is "hopefully, the beginning of a series of volumes intended for use by the professional engineer in keeping himself abreast with developments in this field". The extent to which the intention is fulfilled will vary from case to case depending on the background of the particular engineer and on the section of the book that he is studying. Apart from the Introduction, there are eight chapters: Shell-and-Tube Exchangers for Single-Phase Application; Reboilers; Condensers; Compact Heat Exchangers; Air Coolers; Special Surface Geometries for Heat Transfer Augmentation; Heat Pumps; and Heat Exchangers for Waste Heat Recovery. With such a diverse range of topics and with different authors for each it was inevitable that there would be large differences in the way that the intention of keeping the engineer abreast with developments was approached. In some chapters there is a discipline-orientated section followed by a product-orientated discussion, while in others the emphasis is entirely on the latter with very little analytical treatment. A difference such as this need be no disadvantage, since it can arise from the nature and state-of-development of the topic. But there are also differences in the extent of previous knowledge that the different authors attribute to their readers, as regards both analytical matters and technological jargon. Thus in the case of heat pumps we are taken back to the Carnot cycle and told just what a heat pump is, free from jargon. Whereas in the case of reboilers we are told that their function is "to provide boil-up...". Those professional engineers (including the reviewer) who are not sure what 'boil-up' is are left to guess or are required to deduce the meaning from the context.

One sees the difficulties of the editor and authors of a book such as this: are they to assume that the reader knows *nothing* about the topic, or that he knows all but the latest development? Should they aim to show the reader the rules of design or the reasons behind the rules? Obtaining satisfactory answers to these and similar questions is really a matter of carefully identifying the likely reader and the way in which the book is intended to help him. The heterogeneous texture of the present volume suggests that further attention could be given to the matter in subsequent volumes.

Each chapter of the book is self contained and can be studied independently of the others. Each has its own list of references and there is also a bibliography of 526 references for the book as a whole, with a useful separate index. (One's confidence in its usefulness is a little undermined by a statement in the introduction that "with a few exceptions — [the entries] were randomly selected".) The related concepts of mean temperature difference, correction factor, effectiveness, Number of Transfer Units, are used in different chapters without coordination, and sometimes with inadequate explanation. It would have been helpful if such matters had been brought together, perhaps in the introduction, for coordinated treatment.

Despite these criticisms, there is no doubt that the book contains a great deal of useful material; and most professional engineers in the field of heat transfer will find it worth their while to scan its pages for areas of interest to them (in the library perhaps, for the book costs £26). Research workers too may be stimulated by the gaps in knowledge that passages of the book state or imply. For example, the statement that the design of the air-side of air coolers "is still very much a 'black art'" throws down a gauntlet for any reader of this journal who is looking for a challenge.

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