Acknowledgement

This study was supported by the National Science Foundation through Grant No. MEA-82-07779. The present report was prepared during the author's term as F. Mosey Visiting Scholar to the Faculty of Engineering, and with the support of the Centre for Environmental Fluid Dynamics, University of Western Australia.

References

1 **Patterson J. C. and Imberger J.** Unsteady natural convection in a rectangular cavity, *J. Fluid Mech., 1980,* **100**, *65*

2 **Blythe P. A., Daniels P. G. and Simpkins P. G.** Thermally driven cavity flow in porous media: I. The vertical boundary layer structure near the corners, *Proc. Roy. Soc., 1982,* **A380**, *119*

3 **Somers E. V.** Theoretical considerations of combined thermal and mass transfer from a vertical flat plate, *J. Appl. Mech., 1956,* **23**, *295*

4 **Mathers W. G., Madden A. J. and Piet E. L.** Simultaneous heat and mass transfer in free convection, *Ind. Eng. Chem., 1957,* **49**, *961*

5 **Wilcox W. R.** Simultaneous heat and mass transfers in free convection, *Chem. Eng. Sci., 1961,* **13**, *120*

6 **deLeeuw Den Bouter J. A., DeMunnik B. and Heertjes P. M.** Simultaneous heat and mass transfer in laminar flow convection from a vertical plate, *Chem. Eng. Sci., 1968,* **23**, *1185*

7 **Gebhart B. and Pera, L.** The nature of vertical natural convection flows resulting from the combined buoyancy effects of thermal and mass diffusion, *Int. J. Heat Mass Transfer, 1971,* **14**, *2025*

8 **Bejan A. and Cunnington G. R.** Theoretical considerations of transition to turbulence in natural convection near a vertical wall, *Int. J. Heat and Fluid Flow, 1983,* **4**, *131*

9 **Yewell R., Poulikakos D. and Bejan A.** Transient natural convection experiments in shallow enclosures, *J. Heat Transfer, 1982,* **104**, *533*

10 **Gill A. E.** The boundary layer regime for convection in a rectangular cavity, *J. Fluid Mech., 1966,* **26**, *515*

11 **Batchelor G. K.** Heat transfer by free convection across a closed cavity between vertical boundaries at different temperature, *Quart. Appl. Math., 1954,* **12**, *209*

12 **Rohsenow, W. M. and Choi, H. Y.** *Heat, Mass and Momentum Transfer, Prentice-Hall, Englewood Cliffs, New Jersey, 1961, Chapter 7*

13 **Bejan A.** Natural convection heat transfer in a porous layer with internal flow obstructions, *Int. J. Heat Mass Transfer, 1983,* **26**, *815*

BOOK REVIEW

Engineering Flow and Heat Exchange

O. Levenspiel

This book is designed to be used in a course following on from one that introduces the principles of heat, mass and momentum transfer and not much more.

The first half of the book is entitled 'Flows of fluids and mixtures'. In eight chapters, this covers basic fluid mechanics for flows that are Newtonian and non-Newtonian, compressible and incompressible, and the specialized topics of terminal velocities, low pressure systems as well as flows through packed and fluidized beds. The second half, 'Heat Exchange', takes the student through basic heat transfer plus through-the-wall and direct heat exchangers as well as energy storage devices. Radiation heat transfer is given only a brief introduction.

In the author's preface, he states that the book will be of interest to practising engineers or technologists who want a broad picture of the subject or who need help in getting started on the solution to a problem. In this respect I think the book serves its purpose. One can see how someone who is a technologist or engineer in a field other than chemical or mechanical engineering could find the book quite useful. Such users may well want to go further with a problem than is possible by using this book. Here, the references are adequate support for the material discussed. To be of much use as a book for non-experts, however, a bibliography of newer, specialized books on heat exchangers, fluidized beds and the like would be most useful.

The second suggested application of the book, as alluded to in the first paragraph above, is as a follow-on text. Here it could not be used after typical texts on transport phenomena as there would be far too much overlap in most areas. It would best fit in as a service course for other than chemical or mechanical engineers or technologists. For instance, I can see it following *Engineering Thermodynamics* by Reynolds and Perkins or *Introduction to Thermal Sciences* by Schmidt *et al*, although the second is probably already too comprehensive.

Subject to the above restrictions, the book is well written and the examples as well as the problems after each chapter are interesting and instructive.

C. J. Cremers
University of Kentucky,
Lexington, KY,
USA

Published, price $34.50, by Plenum Press, 233 Spring Street, New York, NY 10013, USA