Principles of Unit Operations, A. S. Foust, L. A. Wensel, C. W. Clump, L. Maus, and L. B. Anderson, John Wiley & Sons, Inc., New York (1960). $15.00.

As the title would imply, this book is an attempt to organize the study of the unit operations on a fundamental basis. It undoubtedly reflects the present trend in the academic world to reorganize the study of chemical engineering into the study of basic phenomena. This text does not make any radical break with the past. It does however present the material in a different sequence from that found in many of the new texts on this subject. Presentation is broken down into three parts: stage operations, molecular and turbulent transport, and applications to equipment design.

Part one is concerned with stage operations and deals with mass transfer, phase relationships, equilibrium stage calculations, countercurrent multistage operations with and without reflux, and unsteady state stage operations (batch distillation). Every effort is made to try to generalize these concepts so that they will apply to all operations employing distribution of components between phases. It is however restricted to two component systems.

Molecular and turbulent transport are discussed in the second part, starting with the mechanism of molecular transport and its application to the steady and unsteady states. This is followed by two sections on turbulent transport. A final section deals with interphase transfer. Essentially it covers the basic phenomena of heat transfer, fluid flow, and diffusional processes, including some of the analogies for mass, heat, and momentum transfer and the newer film theories.

The final part is headed "Applications to Equipment Design." In reality it is a section on the unit operations as organized in other texts on the subject. Each section however draws the basic material it requires from the relevant sections of parts one and two. There are individual chapters on heat transfer, mass transfer, simultaneous heat and mass transfer, momentum transfer, energy balances, pumps and compressors, and physical separations.

Dimensional analysis and the characterization of particulate solids are discussed in the first two of three appendices; the third appendix gives some physical and equipment design data.

In spite of the fact that one might be inclined to believe from the title that the book is rather theoretical, the authors have managed to keep it at a practical level. There are numerous worked examples, and the relation to commercial operation is brought out quite well, in general.

The illustration of mass transfer operations by means of two component systems with an emphasis on graphical methods would seem to be unfortunate. Most industrial problems involve multicomponent systems, and some consideration of such systems would be appropriate in a text of this nature. Generally speaking however the student should benefit from this newer method of presentation with its emphasis on the scientific principles.

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Engineering Thermodynamics, Newman A. Hall and Warren E. Ibele, Prentice-Hall, Inc., Englewood Cliffs, New Jersey (1960). 643 pages. $15.00.

It is refreshing to see a new approach to such an old subject as engineering thermodynamics. The authors have not been content to discuss irreversibility qualitatively as it is done in many texts but have assigned a quantitative meaning to it throughout the text. In so doing maximum use of the second law is realized. The nature of the irreversibility as well as its magnitude is fully discussed. However this frequently necessitates the introduction of material not normally found in thermodynamic texts since nonequilibrium states may be involved, such as for example in the transfer of heat by convection.

Other novel features of the book are its treatment of solids and its treatment of forces other than hydrostatic pressure.

The general approach throughout the text is well suited for teaching. Derivations are rigorous and clearly explained step by step, and final relationships are further illustrated by numerous examples. Special areas of thermodynamics are adequately introduced to the student, and further