# BOOKS

The first edition of this excellent text has been revised to a considerable extent. Most of the recent advances in chemical engineering thermodynamics are included, particularly material on generalized thermodynamic properties, thermodynamics of fluid flow, and thermodynamics of separation processes. The recent developments in application of irreversible thermodynamics to chemical engineering are not discussed.

One of the major improvements in the new edition is contained in the opening chapter, which has been expanded and clarified, particularly with respect to the discussion of entropy. The result is a much better presentation for the beginning student in thermodynamics of the basic first-and second-law principles.

The added information on generalized thermodynamic properties consists of much of the material published previously by Lydersen, Greenkorn, and Hougen ("Generalized Thermodynamic Properties of Pure Fluids," University of Wisconsin Engineering Experimental Station Report 4, 1955). This section represents a valuable addition to the data available for calculation of thermodynamic properties; however the inclusion of such material is not without its disadvantages. The presentation of so many tables of generalized properties and related functions requires much of the discussion of the calculation of thermodynamic properties to be based wholly on generalized equations and methods involving precalculated values of functions. This is most convenient for ease in solution of problems, but for a beginning student this approach may tend to obscure somewhat the basic relationships of thermodynamic properties with $p$-$v$-$t$ properties, rather than simplify matters. These concepts, however, are illustrated by the inclusion of numerous examples involving the use of generalized properties.

Material on the expansion and compression of fluids included in the first edition has been split into separate sections in the new volume, resulting in a much clearer presentation of the topics discussed. The added chapter on the thermodynamics of fluid flow presents an excellent treatment of this subject.

Additional material covered in the new edition includes the thermodynamics of solutions, vapor-liquid equi-

libria, and chemical reaction equilibria. Also discussed in individual sections are power plant cycles, internal combustion engines, and refrigeration processes.

Aside from the reviewer's feeling that overemphasis has been placed on generalized correlations insofar as learning thermodynamics is concerned, the present volume represents an improvement in both content and coverage over the previous edition. The topics are well presented and well illustrated, and the text is certainly to be recommended for general use.

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# Computer Program Abstracts

Readers of the *A.I.Ch.E. Journal* who are interested in programming for machine computation of chemical engineering problems will find in each issue of *Chemical Engineering Progress* abstracts of programs submitted by companies in the chemical process industries. Collected by the Machine Computation Committee of the A.I.Ch.E., these programs will be published as manuals where sufficient interest is indicated. The following abstracts have appeared this year:

CEP (January, 1960), p. 86

Equilibrium Flash Vaporization (012)
Equilibrium Flash Distillation (035)
Smoker Distillation Program (037)

CEP (February, 1960), p. 90

Electric Log Interpretation (039)
Solution of Counterflow Water Cooling Tower (040)
Operational Characteristics of Isothermal Tubular Flow Reactors (041)

CEP (March, 1960), p. 86

Nonlinear Regression by Criterion of Least Squares (034)
Batch Rectification of Binary Mixtures (042)
Enthalpy Lookup (043)

CEP (April, 1960), p. 80

Multicomponent Extraction of Heavy Metal Nitrates with Tributyl Phosphate Solvents (045)
General Analysis of Variance (047)
Thermodynamic Functions of Diatomic Gases (048)