

BOOKS

Lange's Handbook of Chemistry, 11th edit., John A. Dean, (Ed.), McGraw-Hill, New York, xiii + 1, (1973). 576 pages. \$19.50.

The problem of writing a review of the new eleventh edition of this well-established popular handbook is similar to that faced a few years ago by Kurt Vonnegut when he was asked by the *New York Times* to review the current edition of *Webster's Dictionary*. Vonnegut chose to focus his attention on the "dirty" words in the new dictionary; your reviewer unfortunately cannot follow an analogous path.

When Nobert Lange prepared the first edition of this work in 1934 there was considerable speculation about the probability of success for a book that seemed at first glance to cover the same field as the then well-established other handbook of chemistry and physics. Lange's handbook did succeed and today occupies a firm position among the many handbooks published by McGraw-Hill.

The present edition, edited by the other John Dean, Professor of Chemistry, University of Tennessee, presents a new organization of eleven sections: mathematics, general information and conversion tables, atomic and molecular structure, inorganic chemistry, analytical chemistry, electrochemistry, spectroscopy, organic chemistry, thermodynamic properties, and physical properties. Each section has separate pagination. As might be expected, the material of earlier editions has been updated and expanded and new material has been added. The latter category includes emission and absorption lines, formation constants of metal complexes with organic and inorganic ligands, selectivity coefficients for ion-exchange resins, Hammett and Taft substituent constants, and mass absorption coefficients of X-ray emission lines.

In any work of this sort the inclusion of new material requires either that new editions will grow to unmanageable size or that some material must be discarded. We all have our nominations for oblivion, but then who are we to characterize as useless the density of aqueous sodium hydrogen sulfite solutions from 10.27 to 368.2 grams per liter concentration of sulfur dioxide? At a time when pocket calculators have replaced the slide rule someone might even try to make a case for discarding the mathematical tables in the next edition.

In my student days I was taught that

single-volume handbooks were composed of third-hand information; a variety of illustrations was presented to show how they perpetuated errors. One can hope that during the past 40 years the concentration of errors has decreased, particularly because many chemical engineers continue to shun Beilstein, Gmelin, and the primary literature and to rely on handbook data exclusively. Some of my best friends are chemical engineers; they should be reminded of the witches in Macbeth who lead us on by honest trifles to betray us in deepest consequence.

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Electrostatics and Its Application, A. D. Moore (Ed.), Wiley, New York (1973). 481 pages. \$24.95.

This book is a unified, thorough survey of modern electrostatics containing 20 chapters, written by 18 electrostatics experts, and dealing with topics ranging from fundamental concepts to practical applications. The chapters were planned in broad outline by the editor so as to promote an integrated treatment, but each contributing expert was responsible for the content of his chapter. There is some overlap among chapters since the same effects and phenomena appear in different applications of electrostatics, but the resulting repetition is more helpful than annoying.

The first 6 chapters deal with introductory electrostatics, mathematical formulation of electric field analysis, charging of macroscopic particles, static electrification of dielectrics, and long-lasting electrization and electrets. The presentations comprise an excellent introduction or review depending upon the needs of the reader. The remaining chapters discuss major applications of electrostatics, such as motors, generators, precipitation and separation, coating, imaging, printing, dielectrophoresis, electrostatics in the powder industry, atmospheric electrostatics, electrostatic nuisances and hazards. Each of the applications chapters begins with an overview which can be read by electrostatics amateurs—including chemical engineers not highly familiar with electrostatics—for general understanding.

Electrostatics is a fascinating mixture

of science and art. Engineers, scientists, or others looking for background information and current literature on specific electrostatic topics will be pleased to find both in one book.

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Basic Principles and Calculations in Chemical Engineering, 3rd edit., David M. Himmelblau, Prentice-Hall, Englewood Cliffs, N. J. (1974). 542 pages. \$15.95.

This aptly titled book is designed to serve as an introductory undergraduate text, and its utility is confined to that use. The scope is broad and the coverage thin. The basic principles of conservation of mass and energy provide the framework for a well organized introduction to stoichiometry, PVT relationships (for ideal and real gases), phase change phenomena, and thermochemical and physical properties of matter. Vapor-liquid and chemical equilibria and kinetics are not treated. The final short chapter on unsteady state processes seems almost an afterthought and is not up to the quality of the rest of the book. Well organized appendices cover conversion factors, selected properties of common substances, and a brief treatise on solution of sets of equations.

Each chapter begins with an information flow chart showing the interrelations among topics included in the chapter and material presented previously. Each topic is introduced with a brief exposition of concept, sometimes with interesting historical background and basic data where appropriate. Related calculations are illustrated through solution of numerous examples (136 in all). Many problems (493, including eleven specified for computer application) are presented at the ends of chapters. Each chapter closes with a sometimes extravagant statement of what should have been assimilated and a list of related references.

Considering the space limitations imposed by the breadth of coverage, the conceptual expositions are well done. The examples and problems are well chosen to illustrate a wide variety of related calculations. Some examples and problems are trivial and contrived, others are substantive, relevant and in-