

## REVIEWS

*Ionic Equilibria in Analytical Chemistry.* By HENRY FREISER and QUINTUS FERNANDO. John Wiley & Sons Inc., 605 Third Avenue, New York, N. Y., 1963. 15 × 23.5 cm. xiii + 334 pp. Price \$4.95.

The authors have attempted to present "a logical stepwise development of the principles of chemical equilibrium and techniques of calculation." Although treatment of the subject is not exhaustive, it does present a thorough and orderly discussion of equilibrium principles and calculations suitable for use on the undergraduate and graduate levels. Chapters 1 through 3 represent background information on concentrations of solutions, chemical equilibrium, and activity concepts. Subsequent chapters develop the expressions and calculations associated with acid-base, precipitation, metal complexation, oxidation-reduction, and ion exchange equilibria. Expansion of these equilibrium considerations is discussed in applications to various types of titrations. Also included in the book as an *Appendix* are comprehensively tabulated equilibrium constants. These include acid-base dissociation constants, solubility products, formation constants of metal complexes, oxidation-reduction potentials, and acid dissociation constants for metallochromic indicators.

An interesting feature of the book is the log C-pH diagrams which are particularly helpful in following the change of concentrations for various species with pH. Elimination of negligible species as observed from the diagrams simplifies the calculations of many complex systems. The book is well written and can serve as a text or reference volume for courses in analytical chemistry.

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*The Australian Pharmaceutical Formulary.* 9th Ed. Wilke & Co., Ltd., 19-47 Jeffcott St., Melbourne, Australia, 1964. 266 pp. 10 × 16 cm.

This edition, published by the Pharmaceutical Association of Australia, will become operative on November 1, 1964, and is divided into two sections, the Therapeutic Formulae and the Supplementary Formulae. The Therapeutic Formulae section has been adopted by the Australian National Health Service as its official formulary and includes a Children's Section with dose tables and special formulations. The Supplementary Formulae is devoted to items not required by the National Health Service and other items still used in medicine but not of significance to be included in the Therapeutic Formulae. Many of the formulas are identical to those appearing in the *British Pharmacopoeia* or the *British Pharmaceutical Codex*, and this is noted in the appropriate monographs.

*Structure Elucidation of Natural Products by Mass Spectrometry. Vol. 1: Alkaloids.* By HERBERT BUDZIKIEWICZ, CARL DJERASSI, and DUDLEY H. WILLIAMS. Holden-Day, Inc., 728 Montgomery St., San Francisco, Calif., 1964. 233 pp. Price \$10.50.

Most workers in the field of natural products have had occasion to wish for a technique whereby milligram quantities of material, isolated by laborious methods from natural sources, could be made to yield a maximum, if not total, amount of structural information. This relatively error-free publication lucidly reveals how such data, largely unavailable through conventional analytical and degradative techniques, can be achieved by the use of the modern mass spectrometer. The present volume, prefaced by two chapters on general considerations and deuterium labeling, specifically considers plant alkaloids, an area that has been particularly susceptible to mass spectrometry. The authors, having contributed substantially to the original literature, are eminently well qualified to write authoritatively concerning it. Throughout the book the discussions are well documented with references.

The power of the technique, judiciously supplemented by other physical and chemical procedures, is particularly evident in its application and interpretation in the field of indole and related alkaloids. Chapter by chapter, the fragmentations of these bases, from relatively simple to rather complex polycyclic structures, are considered in a detailed and comprehensive manner. Particularly outstanding is the chapter devoted to aspidospermine and related alkaloids, a group that has been very instrumental in the rapidly growing acceptance of the method. Alkaloids other than those related to indole are adequately covered also, although the principal emphasis has apparently been in the area of greatest interest to the authors. Nevertheless, they have successfully dispelled the "mystery" often associated with mass spectrometry and have created a book that should be an asset to any research library. Foreseeing that mass spectrometry, in future years, will become one of the indispensable and common tools for sophisticated work in the area of natural products, this book is recommended reading for anyone with such interests.

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*Biostatistics.* By AVRAM GOLDSTEIN. The Macmillan Company, 60 Fifth Ave., New York, N. Y., 1964. 272 pp. Price \$9.50.

This introductory textbook is the outgrowth of a course taught by the author and his colleagues to medical students.

The author makes no pretense of giving the underlying mathematical statistical basis for the various topics considered, but sufficient discussion and