

REVIEWS

Pharmaceutical Chemistry. Vol. 1: Theory and Application. Edited by L. G. CHATTEN. Marcel Dekker, Inc., 95 Madison Avenue, New York, N. Y. 10016, 1966. xii + 504 pp. Price \$14.50.

This text is a contributive volume with 13 chapters by 13 different authors. The purpose of the volume, according to the preface, is "to provide a broad basis on which the senior undergraduate and graduate student can build." The editor writes that "Although it is anticipated that the student has a fundamental knowledge of chemistry, each of the chapters deals with some basic principles which will serve as a review." If the advanced student is to use this book and it is assumed that he has studied quantitative analysis and organic chemistry, in the reviewer's opinion, the text has not met these objectives.

A detailed examination of the book supports this contention. The introductory chapter introduces the concept of quality control and sampling; in addition, the subjects of mass and volume determination and laboratory techniques which are usually treated in a first course in analysis are reviewed. Although the calculation of titration curve points and titration of mixtures is treated very well, some twenty pages are used to review equilibria topics which should be familiar to students at this level (or at least they can review on their own). The chapter dealing with precipitation, complex formation, and oxidation-reduction methods is an extensive consideration of the very numerous analyses of this type with some theoretical comment. Similarly, the chapter on acidimetry and alkalimetry deals with rudimentary analytical topics, *e.g.*, methods of expressing solution concentrations, and then treats many different acid-base analyses. This type of material would be better presented in a reference rather than a textbook. Nonaqueous titrimetry is presented at too practical a level without use of topics such as glacial acetic acid equilibria. The chapter on complexometry is good, but rigorous calculations involving complex equilibria are not adequately developed. Although the chapter on alkaloidal assay is interesting, it fails, *e.g.*, to use structures and calculations to point out acid-base behavior and to employ the concept of partition coefficients to explain solvent distribution behavior. However, the use of tables to summarize the many analytical methods is excellent. The miscellaneous methods chapter is very good in its treatment of topics such as the Karl Fischer titration, gas analysis, and nitrosation. Likewise, the section on ion-exchange separations is very well done. Enough theory is presented to permit the student to make simple calculations describing column behavior. Column, thin-layer, and paper chromatography are treated well in a single chapter but certain organizational lapses are disturbing, *viz.*, partition column chromatography and two-dimensional thin-layer chromatography are introduced in sections discussing detection methods. The experiments at the end of this chapter are good. The last two chapters deal with

the analysis of (a) fixed oils, fats and waxes, and (b) volatile oils. It is assumed that since the substances are complex mixtures whose analysis necessitates the use of many methods, they are used as examples. Both chapters are disappointing in that they are listings of physical and chemical procedures with some explanatory comment. The chemical methods are not adequately explained with equations and the calculations are represented by formulas which do not invite reasoning. The section on functional group analysis is not done well.

The following observations may be made in summary. The treatment in several of the chapters is too elementary. No use or mention is made of statistics, nor is enough use made of organic reaction mechanisms. Instrumental topics are introduced with little or no background (thereby requiring another book and additional expense). Not all chapters have problems and questions. If this text is to be used by advanced students, in spite of several good chapters, some good experiments, and an admirable use of literature references, it falls short.

Reviewed by Thomas Medwick
College of Pharmacy
Rutgers—The State University
Newark, N. J.

Sulfur Dioxide. Applications in Foods, Beverages and Pharmaceuticals. By LOUIS C. SCHROETER. Pergamon Press, Inc. 44-01 21st St., Long Island City, N. Y. 11101, 1966. xiv + 342 pp. 14 × 22 cm. Price \$11.

"Sulfur Dioxide" is an excellent monograph containing both the applications of this commercially important compound in pharmaceuticals, foods, and beverages and theoretical reference material useful to medicinal, inorganic, analytical, and pharmaceutical chemists.

The first chapter contains a complete review of the preparation and properties of sulfur dioxide. The properties of this compound are described in a sophisticated physicochemical manner and are well referenced. An outstanding characteristic of the book is the number of references (over 1100) that are cited.

The second chapter, dealing with the oxidation of sulfur dioxide, is particularly good. Sulfite oxidation in aqueous systems is discussed in detail from a kinetic-mechanistic standpoint reflecting the author's expertness in this area. Many of the key references are to the published work of Dr. Schroeter.

Chapter three contains the inorganic reactions, complexes and clathrates of sulfurous acid species. The reactions are limited to those typical of aqueous sulfurous acid systems. The complexes and clathrates are considered in a quantitative manner.

Chapter four, dealing with the organic reactions of sulfites is another particularly complete and good