

## BOOK NOTICES AND REVIEWS

*A Treatise on Pharmaceutical Chemistry.* By JOHN C. KRANTZ, JR., Ph.D., Baltimore, Maryland. C. V. Mosby Co., St. Louis. \$3.50.

Chapter I treats of the simplest of procedures in quantitative analysis, such as discussion of balance, its location, instruction in weighing, etc. Chapters II to XII treat of the quantitative analysis of ions such as can be found in any good book on quantitative analysis. The procedures include both gravimetric and volumetric analysis and the discussion of these. They also include a discussion of precipitation in which solubility product is explained. All of this appears before the discussion of ionization and ionization constant which are reserved for Chapter XX under the head of "Physical Chemistry." The above chapters are very brief, consisting of the following number of pages: 7, 6, 2, 4, 2, 2, 2, 1 $\frac{1}{2}$ , 2, 2, 2 $\frac{1}{2}$ , and 1 $\frac{1}{3}$ . It is evident that only the briefest treatment is possible. The "Topics for Study" at the end of each chapter are well chosen and, if properly prepared, would require of the student considerable collateral reading. Chapters XIII and XIV treat of electrolytic determinations. A very good but brief discussion of the fundamental principles involved in electrolytic determination is given and a discussion of electrolytic determinations of the U. S. Pharmacopoeia. The author states that mercury cathode may be employed in all the pharmacopoeial determinations and he suggests that copper may be determined in this way. I believe the majority of electrolytic chemists prefer not to use the mercury cathode cup for the determination of copper and zinc.

In Part II one page is given to "Organic Chemistry, Introduction" and then the student is plunged into such highly complex subjects as hypnotics, (Chapter XV). The simplest procedure in quantitative analysis is discussed but the student must have studied organic chemistry for at least a year before he would be able to understand complex organic compounds that are treated. The discussion of the classification of these hypnotics according to solubility as per Overton and Meyer is good as is also their description of manufacture and use. The discussion of the therapeutic value of these drugs is questionable in a text of this kind. The references at the end of the chapter are few. Chapter XVI treats of local antiseptics. Here again highly complex compounds are passed with a paragraph or two and the references at the end of the chapter are only to the

work of pharmacists and pharmacologists. Chapter XVII treats of antipyretics in a way similar to the treatment of hypnotics and local antiseptics. Only one reference is given. Chapter XVIII treats of bactericides and discusses such unrelated organic chemicals as phenol, chloramine, dyes, organic mercurials and organic compounds of arsenic, silver and antimony. Again we are given only a brief discussion of each with organic chemical formulas. The author does, however, clearly discuss the classification of bactericides and phenol coefficient. A very good list of references is given at the end of this chapter. Chapter XIX is devoted to endocrines. It consists of fourteen pages. A splendid list of references accompany the chapter. The list of endocrines includes: Epinephrine, Tyramine, Ephedrine, Pituitary Gland, Thyroxin, Insulin and the Ovarian Hormone. Evidently the author overlooked the fact that Tyramine and Ephedrine should not be placed in the chapter on endocrines as he plainly states that these substances are a naturally occurring base and a plant alkaloid. The author shows a good knowledge of his subject but only the most important points are touched upon. The chapter is followed by a good reference list.

Part III treats of physical chemistry. The chapter headings are as follows: Ionization, Use of Indicators and Buffer Solution, Equilibria and Colloidal Substances. Only one hundred pages are devoted to the important subject of physical chemistry but good lists of references are given at the ends of the chapters. When we know that whole textbooks are devoted to physical chemistry, to colloids, to emulsions, etc., we fully realize that in one hundred pages only the briefest of treatment is possible.

There are forty-three experiments outlined to illustrate the points discussed throughout the text and these are well chosen.

The book treats of so many phases of modern chemistry that it is not at all surprising that errors could creep in. Several minor errors in the use of English might be mentioned. The structural formulas of Carbromal and Bromural (pages 84 and 85) are in error. "A greater potential decomposition than hydrogen" (page 64) would indicate that hydrogen had a decomposition potential. This same error occurs on page 65. "Is not sufficient for the decomposition of calcium nitrate" (page 67) when calcium is intended. The old form

of the structure of atomic chlorine (pages 123 and 124) is given while modern physical chemists consider this a structure to be made up of three shells with two, eight and seven electrons, respectively. In his references the abbreviations approved by the American Chemical Society are not always used.

In the preface the author states:

"It is the purpose of this treatise to bring to the attention of the student of pharmaceutical chemistry certain special topics in gravimetric and electrometric analysis, organic and physical chemistry, a knowledge of which will enable him more intelligently to attempt to solve the problems of his comprehensive profession. In no manner has the author aimed to serve the end of completeness, for in a field so vast as this one, many volumes would be required to cover it completely, and the experiences of many authors would be necessary."

Perhaps he accomplishes what he set out to do, but the student of pharmaceutical chemistry leaves the book with a feeling that a complete treatment by the author of any one or more of the major subjects touched upon would have been refreshing. The book is a good reference work for those busy workers that need only the fundamentals of the subject, and will undoubtedly find wide use in this connection.

The pharmaceutical chemist is compelled to cover so great a variety of subjects that the reviewer fears that in some colleges of pharmacy considerable "old style" chemistry is still presented. It is difficult indeed for the pharmaceutical chemist to keep abreast of the advancement of so many phases of the science of chemistry and this perhaps explains the above unsatisfactory situation. It is indeed refreshing to find in the author at least one young pharmaceutical chemist who has had sufficient training in modern chemistry to treat understandingly of its application to the problems of pharmacy.—C. B. JORDAN.

*Mikrochemie der Arzneimittel und Gifte*, Microchemistry of Drugs and Poisons, by ADOLF MAYRHOFER, Ph.D. and Dr. Pharm., Part Two, Drugs of Organic Nature, published by Urban & Schwarzenberg, Berlin. Price 16 marks.

The volume before us is a highly technical and up-to-date treatise on microchemical examination of drugs and poisons of organic nature. It comprises 270 pages of text with 24 illustrations and 15 valuable plates. The

work is a good example of German thoroughness in scientific exposition and will be found very valuable by pharmaceutical chemists, pharmacologists and those specializing in pharmacognosy.

The treatise is logically divided into two sections, a general one and a special one. In the general section, the author describes microchemical methods for determination of carbon, nitrogen, sulphur and phosphorus; technical methods for microsublimation and microdistillation; and other routine laboratory methods for microchemical work, such as the determination of the boiling point, etc. A very long chapter is then devoted to mineral optics. Here we find a complete discussion of the applications of the polarimeter and the polarizing microscope in pharmacognostic work. Refractometry receives a great deal of attention and a number of valuable tables are included, giving the refraction indices of various drugs and poisons, both in a solid form and in solution.

Following the general section, which comprises 65 pages comes the special discussion of individual drugs and groups of drugs. The author begins with a discussion on the hydrocarbons of the aliphatic and aromatic series and their halogen derivatives. Then follows discussion and description of the microchemical examination of alcohols, aldehydes, ketones, ethers, etc. Separate chapters are devoted to carbohydrates, glucosides, phenols, organic acids and their esters. A very extensive discussion of the amines comes next. An extremely valuable portion of the book is devoted to the alkaloids. Alkaloids are discussed according to their sources, the botanical classification being followed for the most part. There are a large number of very useful and lucid summaries and tables giving concise information in regard to color reactions, and the beautiful plates at the end are intended to give microscopical photographs of the crystalline structure of a great many drugs and poisons of great value to the microchemist.—D. I. MACHT.

*Chemical Reactions and Their Equations; a Guide for Students of Chemistry*. Second Edition pages IX-145, I. W. D. НАСКН, Prof. of Chemistry, College of Physicians and Surgeons, San Francisco. P. Blakiston & Co., Philadelphia, 1928.

The transplanting of a knowledge of descriptive chemistry into the mind of the student is