

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