

## NEW BOOKS

**Organic Arsenical Compounds.** By GEORGE W. RAIZISS, Ph.D., Professor of Chemotherapy, Graduate School of Medicine, University of Pennsylvania, and JOSEPH L. GAVRON, Associate in Research Chemistry, Dermatological Research Laboratories, Philadelphia, Pennsylvania. American Chemical Society Monograph Series. The Chemical Catalog Company, Inc., 19 East 24th St., New York, U. S. A., 1923. 570 pp. 2 figs.  $23.5 \times 16$  cm. Price \$7.00.

Since Berthelm published his "Handbuch der organischen Arsenverbindungen" in 1913, no compilation based exclusively on the literature of organic arsenic compounds has appeared. Raiziss and Gavron have now supplied in this newest and most pretentious member of the American Chemical Society Monograph series what every investigator interested in the medical applications of chemistry has long desired. The arrangement of the book on the whole is quite good, though interesting deviations occur now and then. Thus arseno-ethane is mentioned more than once in Chapter I, but finds no place in the section on aliphatic arseno compounds. Chapter III purports to treat of unsaturated aliphatic arsenicals but does not include vinyl and allyl derivatives which are scattered hither and yon in the preceding chapters. Several important classes of heterocyclic compounds are also missing from what would seem to be their logical places.

To one interested in the pure chemistry of organic arsenic compounds it appears that the authors have not scrutinized the original literature carefully enough. Reference is given to Renshaw's work on trimethylarsine, but instead of finding his accurate value for the boiling point, we see a statement to the effect that the compound boils below  $100^{\circ}$ . The plant method and best large-scale laboratory method for the preparation of phenylarsonic acid are not mentioned, although these were described in periodicals edited under the auspices of the American Chemical Society at a period of one to four years before the date of the authors' preface. On the other hand, much space is consumed in assigning complicated structural formulas to ill-characterized compounds, especially from the German patents. The system of listing all references together by number may be more concise, but without a cross index it is extremely inconvenient to start from a reference and locate its place in the text. A more comprehensive author index would have been useful in this particular. A commendable feature is the inclusion of a chapter on chemotherapy.

Unfortunately, a major mistake has been committed which might have been easily avoided. Nowhere throughout the book is to be found mention of the fact that W. Lee Lewis ever worked on Lewisite, all credit for the  $\beta$ -chloro-vinylarsines being ascribed to English investigators in spite of the fact that the latter in their publications freely acknowledge their debt to the American Chemical Warfare Service. Apparently the authors

made little or no attempt to incorporate unpublished results by other workers in the book, or to seek the aid of the latter in the detection and elimination of errors. If the coöperation of the better known chemists interested in the subject had been enlisted, as was done in other cases, the American Chemical Society would not now be found in the position of placing its stamp of approval on a volume which denies his best known piece of work to a leading American investigator in the field of organic arsenic compounds.

In mechanical excellence the monograph at present under discussion does not fall below the standard of its predecessors in the series. It is much superior to Morgan's "Organic Compounds of Arsenic and Antimony," which is the only other attempt at the subject in English. Every worker in organic arsenic chemistry or in chemotherapy "will wish to have the book on his shelves."

C. SHATTUCK PALMER

**A Course of Instruction in Instrumental Methods of Chemical Analysis.** By WILLIAM N. LACEY, Associate Professor of Chemical Engineering, California Institute of Technology. The Macmillan Company, New York, 1924. vii + 95 pp. 18 figs. 22.5 × 14.5 cm. Price \$1.50.

"The purpose of this book is to outline a brief course of laboratory instruction in the more important instrumental methods of chemical analysis. Now that the time formerly devoted in chemical courses of study to special branches of analytical chemistry, such as the analysis of gases, oil, fuels, foods, and technical products, has been largely eliminated through the development of other branches of chemistry, it seems desirable to compensate this in some measure by the introduction of a short course of experiments which shall familiarize the student with the important instruments available for analytical purposes such, for example, as the microscope, polariscope, refractometer, and gas analysis apparatus. This type of course seems all the more worth while since it can readily be made broadly educational, because of the variety of physical and physico-chemical principles involved."

"It is obvious that, to become expert in the use of the instruments, the student would have to spend much additional time in mastering technique. The aim of this course is only to afford clear ideas of the value of such analytical methods, to emphasize the fundamental principles involved, to point out the range of the application of the methods, and to indicate some of the essential precautions for insuring accuracy."

In the opinion of the reviewer, the author has attempted to cover such a wide field so briefly that he has not accomplished his above-mentioned purpose. In most cases, the theory involved is given too briefly and the experiments described do not give the student the correct idea of the value of such analytical methods. The correct emphasis is certainly not put on

the importance of these various instruments when practically the same space is devoted to viscosimetric analysis as to microscopic analysis and gas analysis. The only experiment given under Combustion Analysis (Expt. 12) is the determination of carbon in steel while the analysis of organic compounds by this method, which requires a different technique, is entirely omitted. Also, it is difficult to understand why fire assaying is included in this text. In the experiment on gas analysis the choice of the Orsat apparatus as the only one used, seems to the reviewer to be unfortunate.

M. L. NICHOLS

**Chemisches Wörterbuch.** (Chemical Dictionary.) By Dr. H. REMY, Professor of Analytical Chemistry, Hamburg University. Teubner's Kleine Fachwörterbücher, vols. 10 and 11. B. G. Teubner, Leipzig and Berlin, 1924. viii + 416 pp.; 5 tables in the Appendix; 15 figs. 18.5 × 12.5 cm. Price, g. mk., bound, 8.60; half linen, 10.60.

"What is it? What is its source? How is it made? What is its use?" These are the questions that the compiler has attempted to answer clearly and concisely in the preparation of this little dictionary. He has apparently carefully considered his responsibilities, and in an exceptionally good preface discusses briefly his aims. He believes that such a book not only should define terms but should improve the understanding of the theoretical foundations of chemistry and its relations to life and industry.

In general, the specifically important of the questions asked above have been succinctly answered, but it is doubtful whether the broader aim has been realized as fully as the author has desired, chiefly because of the very great degree of mechanical compression that has apparently been necessary.

Some nine thousand terms are listed, including names of important chemical substances, types of compounds, laws, theories, symbols, technical terms, minerals, explosives, and a few brief biographies of the most famous chemists from the German point of view. Structural formulas are given for many of the organic compounds, and the commoner types of laboratory apparatus are pictured. A few condensed tables appear in the text. In the Appendix are five unusually well arranged tables of the elements, as follows: (I) Symbols, Atomic Weights and Atomic Numbers; (II) The Periodic System; (III A) The Grouping of the Elements around the Noble Gases; (III B) The Positions of the Radio Elements in the Periodic System; (IV) A Summary of the Radio Elements by Series. Abbreviations, some of them obscure, are used in great variety, and there is an unfortunate tendency to rely on cross references for complete definition. These signs of condensation will interfere somewhat with the convenient use of the book by anyone whose knowledge of German is limited. The selection of terms appears to have been carefully made, and the information given, exact. The paper is not of high quality, but the

presswork is reasonably good, and double columns provide short lines that are easy to read. It is a good book to own, not only as an aid in perusing German chemical literature, but also because of the information it may impart to the student who is willing to read beyond the mere definition.

WILLIS A. BOUGHTON

**Applied Chemistry.** By IRA D. GARARD, Professor of Chemistry in New Jersey College for Women, State University of New Jersey. The Macmillan Company, New York, 1924. ii + 496 pp. 27 figs. 12.5 × 18.5 cm. Price \$3.50.

This book can best be described by a quotation from the preface. "The purpose of this book is mainly to provide a textbook for college students who have taken a course in general chemistry and who are further interested in the application of chemistry and the manner in which it functions in modern life. Sufficient organic chemistry is included to make clear any of those later chapters which deal primarily with organic substances. . . In addition to its use as a text, it is hoped that the book will prove useful to readers who are interested in chemistry because of its relation to their fields in science, art, or industry. . . While the selection of the topics is necessarily determined by the author's judgment and the limited size of the book, it is meant to include: natural phenomena—air and water; food, digestion, nutrition—enzymes, fats, sugars, proteins, starches, nutrition, and preparation of foods; sanitation—microorganisms, toilet articles, and cleansing agents; shelter, clothing and common articles of merchandise—textiles, leather, rubber, paints, inks, metals, glass and fuels; some chemical explanation and information of a general nature—corrosion, combustion and the colloidal state of matter. . ."

The author has accomplished his announced purpose well. The book is clear, accurate and interesting. The discussion is mainly from the point of view of the consumer rather than of the manufacturer. The book is inadequate as a textbook for students planning to become professional chemists, but this is not a criticism since the author expressly disclaims writing for such students; it can be recommended to students planning a career in engineering, agriculture, business, perhaps even medicine and certainly to that growing number of college students who are either avowedly or secretly planning careers as home makers.

The reviewer believes that the book would be strengthened by the addition of a chapter dealing with plant growth, soil fertility and fertilizers.

GRINNELL JONES