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 BOOK REVIEWS
 

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**Actualités de Phytochimie Fondamentale.** By CHARLES MENTZER, Professeur au Museum National d'Histoire Naturelle, and OLGA FATIANOFF, Ingénieur Agronome. Masson et Cie., Editeurs, 120 Boulevard Saint-Germain, Paris VI, France. 1964. 266 pp. 16.5 × 21.5 cm. Price, 85 F.

Structural unities, deduced by molecular dissection, have been of great service in the chemical investigation of natural plant products. Professor Mentzer and Miss Fatianoff have presented in this small volume a brief discussion of what has come to be designated "biogenetic theory" in relation to the occurrence of these unities within certain classes of plant constituents. Their treatment is neither detailed nor sophisticated. Instead, it takes the form of a general introduction to the subject with numerous elementary examples. Emphasis is placed upon the identification of structural elements which plausibly may be thought to arise from acetate (C<sub>2</sub>), an isoprenoid (C<sub>5</sub>), and shikimic acid, respectively. A useful feature in this regard is the discussion of a number of compounds of relatively rare occurrence and obscure documentation. Most unhappily, since the term "biogenesis" implies some degree of association with "biosynthesis," the authors have made little effort to bring their discussion into a contemporary perspective with regard to the latter term.

The unique and valuable part of the book is a catalog with bibliography covering 141 pages. The catalog provides in tabular form the names, structures, empirical formulas, botanical origins, some physical constants, and reference citations for 425 natural plant products. Included among these are some cyclitols, nonprotein amino acids, some thiocyanates, ethylenic and acetylenic acids, and many cyclic and polycyclic compounds including terpenoids, genins, and polyphenols. Chemists and biochemists interested in plant products belonging to these classes will find this book well worth the price. Unhappily, the alkaloids, most of the fungal antibiotics, polycondensed molecules (proteins, polysaccharides, etc.), porphyrins, and many other classes of plant constituents are omitted.

One cannot avoid comparing this book with the "Merck Index." The latter is not confined to plant products, but it does treat many of them. On the other hand, it presents much more useful information about individual compounds and it does so in less space, relatively speaking. The reviewer would welcome a volume combining the better points of both the "Merck Index" and the Mentzer-Fatianoff book. More extensive coverage of plant constituents and more complete information regarding botanical sources than are provided by Professor Mentzer combined with the detail and format of the Merck volume would make a first-rate and exceedingly valuable handbook. It is to be hoped that the Mentzer-Fatianoff publication represents but a first step in this direction.

The book is printed on good paper, the type impression is clear, and the jacket is heavy paper. It is stated that the plan permits the addition of fascicles from time to time in the interest of updating the catalog and bibliography.

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**The Analytical Chemistry of Thorium.** By D. I. RYABCHIKOV and E. K. GOL'BRAIKH. Pergamon Press, The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 1964. 316 pp. 14.5 × 23 cm. Price, \$14.00.

The present monograph is the inaugural volume of a 50-volume series on the analytical chemistry of the elements being published under the auspices of the V. I. Vernadskii Institute of Geochemistry and Analytical Chemistry of the Academy of Sciences of the U. S. S. R. As such, it may well establish a pattern for subsequent volumes. If it does, the quality and utility of the series will be assured, for "The Analytical Chemistry of Thorium" is an excellent book—comprehensive, well-organized, well-written, well-documented, clearly translated, and carefully edited by Drs. R. Belcher and L. Gordon.

The textual material covers, in order, the occurrence of the element and its properties, methods for determining thorium,

methods of separating it from associated elements, the determination of thorium in natural and industrial materials, and the determination of impurities in metallic thorium. Each topic is handled in considerable detail, with inclusion of specific procedural directions wherever possible and of adequate literature citations. The limitations of each procedure are clearly delineated. Detailed referencing in the text continues only through 1955, but a supplementary bibliography through at least part of 1962 has been appended.

The general format and printing have been very well handled. Few errors, and none of them serious, have been detected.

This volume is recommended to the analyst who deals with any phase of the analytical chemistry of thorium, to the teacher who concerns himself with the heavy elements as such or with analytical problems in general, and to the student who values a condensation of information within a given area of chemistry.

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**Mass Spectrometry.** Edited by CHARLES A. McDOWELL, Department of Chemistry, The University of British Columbia, Vancouver, B. C., Canada. McGraw-Hill Book Company, Inc., 330 West 42 St., New York, N. Y. 10036. 1963. x + 639 pp. 16 × 23.5 cm. Price, \$20.00.

Mass spectrometry has developed rapidly following the impetus it received during the war. In common with other modern instrumental techniques, this development has produced specialists in one of three main areas. First, there are the experts in the physics of the instrument itself. They design and build new or improved types of instruments, determine how closely the performance agrees with theoretical predictions, and then immediately begin the next one, rarely stopping on the way to measure anything. At the other extreme are the chemists who exploit the analytical properties of the technique, and who generally use commercial instruments without modification. In between there are the chemical physicists and physical chemists who use the technique for obtaining information about molecular properties and processes. Although they also use the instrument primarily as a tool, their particular applications often require them to be involved in its design and construction.

While a number of books on mass spectrometry have been published recently, they have performed better than written by experts in one or other of the above categories and have consequently been somewhat lacking in the others. This book has attempted to circumvent these difficulties by presenting an anthology of twelve chapters, each written by different specialists. This attempt has been largely successful.

The first half of the book is concerned primarily with instrumental design and associated problems. The last half discusses some of the more important applications. The book starts with a succinct description of the different types of mass spectrometers available today, including the newer nonmagnetic instruments. The next short chapter entitled "Mass Spectrometry in Research" is somewhat misplaced, since most of the material is covered again in the last half of the book. This is followed by a chapter on the various means of forming ions in mass spectrometer sources. The author shows remarkable restraint in avoiding undue reference to his company's products. The next chapter on "Ion Optics" is perhaps misnamed. The author gives an extremely detailed treatment of the ion focusing characteristics of magnetic fields but barely mentions electrostatic lenses. This is probably because theory is incapable of accounting for the effects of the many perturbations which occur in mass spectrometer ion sources, and empirical methods are generally used in their design. However, since electrostatic lenses are required in all types, including nonmagnetic mass spectrometers, some of the more practical aspects of their design and operation would have been appreciated.

The chapter on high resolution instruments is expertly written, but it again is so detailed that much of it will be of interest only to the advanced instrument designer. On the other hand, the chapters on electronic circuitry and vacuum techniques contain