Book Reviews

Cyclooctatetraen. By GERHARD SCHRÖDER, Institut für Organische Chemie der Technischen Hochschule Karlsruhe. Verlag Chemie, 694 Weinheim/Bergstr., Germany. 1965. viii + 88 pp. 15 × 23 cm. DM 23.

This interesting book covers the whole history of cyclooctatetraene chemistry to date from the original synthesis by Wilstätter, Waser, and Heidelberger in the period from 1911 to 1913, through the remarkable catalytic synthesis of cyclooctatetraene by W. Reppe and his associates to the noteworthy synthesis of bullvalene by Dr. Schröder in 1964. Practically all of the unusual chemistry of cyclooctatetraene studied by Reppe and by others in intervening years is covered in concise, readable form. Although the text is in German, it is liberally illustrated with structural formulas and should present no difficulties to a chemist with any knowledge of German. Following the description of the synthesis of cyclooctatetraene are sections dealing with its chemical properties and of its utility in the preparation of a host of derivatives that are most accessible through cyclooctatetraene. An unusual feature of the book includes a description of 21 specific preparations, beginning with the catalytic synthesis of cyclooctatetraene from acetylene and ending with the preparation of bullvalene. It is difficult to locate all of this varied chemistry, which appears in a collection of 213 references cited by Dr. Schröder, and he has performed a real service for all who are interested in this chemistry by collecting the material and the references in this book.

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The Peptides. Volume I. Methods of Peptide Synthesis. By EBERHARD SCHRÖDER and KLAUS LÜBKE, Hauptlaboratorium der Schering AG, West Berlin, Germany. Translated by ERHARD GROSS, National Institutes of Health, Bethesda, Md. Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1965. xxix + 481 pp. 16 × 23.5 cm. $20.00.

The discovery that the peptide architectural principle can give rise to compounds exhibiting a broad spectrum of physiological activity has stimulated great interest in peptide chemistry. Significant advances were made along the lines of synthetic methodology, procedures of purification, and criteria for homogeneity of peptides. This field has experienced a tremendous upsurge during the past decade.

In Volume I of "The Peptides," Schröder and Lübke have attempted the tedious task of summarizing comprehensively the present status of the synthetic aspects of peptide chemistry. This is to be followed by a second volume covering specifically the chemistry of biologically active peptides.

The organization of Volume I is conventional. Following a summary of the nomenclature, one finds chapters on amino-protecting groups, carboxyl-protecting groups, formation of the peptide bond, amino acids, the synthesis of cyclic peptides, depsipeptides, peptoids, the plastein reaction, solid-phase peptide synthesis, and finally problems of racemization. This is followed by an impressive bibliography of some 2,700 references plus author and subject indexes. In addition, the volume contains a number of valuable tables listing the relative stabilities of various amino- and carboxyl-blocking groups and providing literature references to derivatives of individual amino acids. The book, written in German, was translated into English by Erhard Gross.

This monograph is addressed to the specialist and not to the reader who wishes to acquaint himself with the basic principles of peptide chemistry. In an attempt to be comprehensive the authors have included much trivial detail and one misses keenly a critical evaluation of the multitude of available synthetic procedures and reactions. It is unfortunate that this treatise on peptide chemistry devotes some 300 pages to a review of synthetic reactions, many of them unimportant from the practical point of view, and only 8 pages to a discussion of such key problems as racemization, purification procedures, and techniques for evaluating the homogeneity of peptides. The uninformed reader does not become aware of the fact that methods of isolation and purification of peptides have paved the way for the preparation of highly purified complex materials for biological study. Indeed, the overwhelming emphasis on classical organic chemistry of peptides may create a misleading picture, particularly to the novice.

Readers who appreciate electronic theory may not look with favor on the formulation of hydrochlorides of amino acid esters as R–NH_2·HCl (p 53) or the designation of resonance hybrids (p 324) as equilibrium reactions. Also one is hard-pressed to find any mechanistic treatment of such key reactions in peptide chemistry as the acid-catalyzed removal of the benzyloxycarbonyl or *t*-butoxycarbonyl groups or plausible explanations for the well-established differential stability of these amino group protectors. Though this book is burdened by a poor English translation, it is a comprehensive reference work useful to those who are actively engaged in peptide research.

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Computer Programming for Chemists. By KENNETH B. WIBERG, Yale University. W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1965. viii + 269 pp. 16 × 23.5 cm. $12.50.

Professor Wiberg's extremely lucid book removes the last excuse a chemist might have for failing to learn computer programming. It starts with a discussion of getting numbers into and out of the computer and of simple arithmetic operations. It then discusses matrices and arrays, iterative operations and branching tests, and subroutines and function statements. Numerous examples and problems are included, with answers to the problems given at the end of the book. The principles of flow-charting are presented, and there is an excellent section on debugging, which is always a source of misery and discouragement to the beginner. The book is oriented primarily toward the various versions of FORTRAN, and a detailed dictionary of FORTRAN statements is included. FAP and MAP are presented, with examples and problems. The last chapter of the book includes some rather sophisticated examples of FORTRAN programs for handling problems in kinetics, nmr spectral analysis, and molecular orbital theory; these are described and documented in sufficient detail to make them readily accessible to the reader.

A couple of minor criticisms: A typographical error in statement number 11 on page 9 and a similar error on page 25 (I's have been replaced by numeral 1's) may cause the beginner some trouble. And the presentation of essentially identical material on EQUIVALENCE and COMMON statements, tapes, and double-prescision arithmetic in both the sections on FORTRAN II and FORTRAN IV (and, to a lesser extent, in the section on the IBM 1620 FORTRAN) seems repetitious and unnecessary. Still, this reviewer feels that Professor Wiberg's book is, for the chemist, by far the best book on computer programming he has seen. It is a pity that its price puts it out of the reach of those students who would otherwise make use of it; fortunately they can rely on McCracken's book and the IBM manuals, which are much lower in price and quite adequate.

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