Book Reviews are written by invitation from the editor. Suggestions for books to be reviewed and for book reviewers are welcome. Publishers should send brochures or (better) books to the following address: Redaktion Angewandte Chemie, Postfach 101161, D-6940 Weinheim, Federal Republic of Germany. The editor reserves the right of selecting which books will be reviewed. Uninvited books not chosen for review will not be returned.

Conformational Analysis of Medium-Sized Heterocycles. Edited by *R. S. Glass*. VCH Verlagsgesellschaft, Weinheim/VCH Publishers, New York 1988. 274 pp., DM 126.00.—ISBN 3-527-26789-1/0-89573-283-1

Is there a justification for a book which, in the form of a collection of review articles, treats heterocycles with seven to twelve atoms in the ring?

In a total of six chapters some well-known authors have here attempted to give as complete as possible an overview of this topic. Chapters 2–5 deal with heterocycles having O, N, S and P atoms in the ring, and in addition there is a chapter on small cyclopeptides. The main emphases within the chapters reflect the interests of their authors, but it is apparent throughout that an effort has been made to give as complete a survey as possible, at least through the literature references.

Medium-sized aliphatic cyclic hydrocarbons can adopt many different stable conformations, and consequently several conformers are present in equilibrium in solution or in the gas phase. Nevertheless, the book makes it clear that in heterocycles, and especially in partially unsaturated compounds, there are conformational restrictions which greatly reduce the number of stable conformations.

In Chapter 1, *D. A. Case* gives a concise review (30 pages) of computational methods for determining conformations. Quantum mechanical methods are still seldom applied to medium-sized rings, partly due to the long computing times involved (for *ab initio* calculations), and partly because of the uncertainty of the results obtained (for semiempirical methods). More space is given to force field calculations, where *D. A. Case* describes, in summary at least, the most important force field computer programs, and tests their effectiveness using cyclooctane as an example. The data given on the force fields in peptides are useful; however, the treatment of Ramachandran diagrams as applied to alanine model dipeptides seems rather too detailed (even though it was of considerable interest to this reviewer), in view of the fact that on other topics the reader is only given a few references to the original papers (e.g. in the case of the "anomeric effect"). In contrast the sections on the problem of multiple energy minima are well furnished with references, although here molecular dynamics calculations are treated rather too briefly.

In Chapter 2 *F. A. L. Anet* first sets out definitions and the conformational nomenclature for medium-sized rings, then discusses cyclic hydrocarbons, followed by the additional geometrical restrictions that are imposed on the rings by oxygen atoms, sometimes combined with (partial) double bonds. He then gives a survey of O-heterocycles, arranged according to ring size, which is as complete as existing knowledge allows. The general part of the chapter is systematically set out and makes easy reading; it provides a useful introduction, not only to this chapter but also to the other parts of the book.

In Chapter 3 *R. W. Alder* and *J. M. White* deal with N-heterocycles, using a similar sequence. Especially noteworthy are the sections on transannular interactions and bicyclic N-heterocycles, which are the author's special fields of interest. The conformations of sulfur-containing cyclic compounds, including studies using photoelectron spectroscopy, are discussed by *W. N. Setzer* and *R. S. Glass* in Chapter 4. In general, however, spectroscopic methods are mentioned only briefly in the rest of the chapters, without any detailed discussion (Chapter 6 is an exception). Medium-sized rings containing phosphorus (Chapter 5 by *L. D. Quin*) are found less frequently, and could offer a large field of research in the future. In particular few medium-sized rings containing CPC units have so far been synthesized.

In Chapter 6 *V. J. Hruby* and *P. S. Hill* present a survey of cyclic tri- and tetrapeptides, peptide antibiotics and disulfide peptides. The chapter begins with a section on analytical methods (NMR, CD, IR), describing the basic features of these techniques as applied to the conformational analysis of peptides. The exclusion of larger cyclopeptides seems rather arbitrary, since these show the same conformational features, apart from the more frequent occurrence of *cis*-amide bonds and cyclol formation in the small rings.

Thus the publishers are offering here a book which brings together a heterogeneous area of knowledge from the viewpoint of ring size; this is done in such a way that, despite having different authors, a consistent picture of conformations in medium-sized rings emerges. The book draws together, from many different areas of chemistry, a wealth of information which it would not be easy to find by searching the literature directly. It is recommended for use as a work of reference by every chemist who seeks to control conformations in reactions, complexations or rearrangements, and therefore needs to be concerned with medium-sized rings.

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Bioorganic Chemistry. A Chemical Approach to Enzyme Action. 2nd Edition. By *H. Dugas*. Springer, Berlin 1989. xv, 651 pp., hard cover, DM 98.00.—ISBN 3-540-96795-8

Bioorganic chemistry reached a high point in the fifties and sixties, mainly through the use of isotopes for elucidating biosynthetic pathways and enzyme mechanisms, but also through chemical synthetic work mimicking biogenesis; in the last few years it has been undergoing a powerful renaissance. The reason for this is a shift in research objectives, with a greater emphasis now on investigating the factors which influence biological processes, instead of merely aiming to describe the sequence of events, e.g. in terms of an enzymic mechanism. Recently, there have been efforts to gain a better understanding of the non-covalent interactions which play the key role in all biological processes. A whole new area of bioorganic chemistry that reaches far beyond the original concept of enzyme chemistry has been opened up by the magic phrase "molecular recognition". During the last