

## Third generation of organic chemistry

John Mann

**Advanced Organic Chemistry: Reactions, Mechanisms and Structure, 3rd Edn.** By J. March. Wiley:1985. Pp.1,362. \$39.95, £41.40.

**Introduction to Organic Chemistry, 3rd Edn.** By Andrew Streitwieser Jr and Clayton H. Heathcock. Macmillan/Collier Macmillan:1985. Pp.1,197. Hbk \$34, £40; pbk £17.95.

MARCH'S *Advanced Organic Chemistry*, now in its third edition, has always been much more than a textbook. A fair indication of its scope can be gained from the facts stated on the dustjacket: 600 reactions considered in detail, and 10,000 references provided including 5,000 new to this edition. The book is designed for the advanced undergraduate or the post-graduate, though it commences with a good "revision course" in structure and bonding, reactive intermediates, acids and bases, and photochemistry. No mention is made of specialized topics such as primary and secondary metabolites, polymerization and so on, because the author believes these are best dealt with in monographs or review articles.

The vast bulk of the book, 870 pages in all, is thus devoted to the 600 reactions and their mechanisms. One novel feature in this edition is the use of IUPAC reaction names, and these are given in bold type; so, for example, hydrolysis of anhydrides becomes "hydroxy-de-acyloxy-substitution" and the Wittig reaction is an example of "alkylidene-de-oxo-bisubstitution". Mercifully, the old reaction names are provided in ordinary type.

The main strength of the book is the wealth of references. The Wittig reaction, for example, merits no fewer than 131 of them taken from the research literature or from books and reviews, together with 10 others to *Organic Syntheses*. It is the latter that are often the most useful, since they allow immediate access to tried and tested recipes for a particular reaction. At the end of the book there are two useful appendices, one giving information about use of the research literature, and the other providing a classification of reactions by type of compound synthesized.

### Textbooks supplement — prices

Where possible both dollar prices in the United States and sterling prices in Britain are given in the bibliographical details for each book. Export prices will generally be higher. If a dollar or sterling price is not cited, the book is not available in one of the two countries. However readers should check both price and availability of books before ordering.

thus allowing the reader to identify the relevant sections in the text. Comprehensive author and subject indices (170 pages in all) round things off.

The price of the hardback will deter many potential purchasers, and the publishers would do well to issue an international student edition. The book would then be widely used, and deservedly so.

For all its merits, *Advanced Organic Chemistry* lacks colour. That, according to Streitwieser and Heathcock in the preface to *Introduction to Organic Chemistry*, is what students need in order to "spotlight" key pieces of information. Again this is a third edition, and two-tone illustrations are a new feature of the book, bringing it into line with most of the standard textbooks on this subject.

There are now a large number of excellent organic texts for undergraduates, and

any choice between them must be largely subjective. This book has a particularly good chapter on NMR spectroscopy; a much expanded chapter on sulphur, phosphorus, and silicon chemistry; and molecular orbital theory now has its own chapter. One other useful feature is the inclusion of a number of "typical experiments" with experimental details, which provides a useful reminder to the student reader that chemistry is still an experimental science. Finally, a Student Study Guide (not seen by me), prepared by Paul A. Bartlett, is available, and if the preface is to be believed this should be almost as valuable as the main text, with its answers to problems, appendix of reactions and so on. □

John Mann is a Lecturer in the Department of Chemistry, University of Reading, Whiteknights, Reading RG6 2AH, UK.

## Ways of industry

R. B. Wilcockson

**The Chemical Industry.** Edited by C. A. Heaton. Blackie: 1986. Pp.359. Pbk £15.95.

THE aim of this book, which complements a previous volume edited by Heaton (*An Introduction to Industrial Chemistry*, published by Blackie in 1984), is to provide a readable account of the principal sectors of the chemical industry. Taken together, the two volumes generally succeed well in covering this wide field concisely yet thoroughly. However their complementary nature is not readily apparent until one reads the introduction to the present volume, and it might have been better to use a common title and designate the books Volumes 1 and 2. The material in this book is set much better into context after reading the chapters "Sources of Chemicals", "The World's Major Chemical Industries" and "Petrochemicals" in its companion text (the rest of which deals with the more managerial and technology orientated aspects of the subject).

In the new book, six sectors of the chemical industry are covered, each by a different author, while a seventh chapter looks into the future more generally. Each account follows a nicely structured common format of brief history, present position, major products and the future. As in any such compilation, the chapters vary somewhat according to the background and approach of each author, as well as to the nature of the subject matter itself.

Chapter 1 ("Polymers") thoroughly covers processes and the importance of product properties, and helpfully explains the myriad abbreviations used as indus-

trial shorthand for the range of polymer products now available. Next comes an account of dyestuffs, with particular emphasis on chemical structures and synthesis routes, and then a concise but coherent chapter on a collection of inorganic chemical topics (the chlor-alkali, sulphur, nitrogen and phosphorus industries). Chapter 4 on pharmaceuticals concentrates largely on the extensive range of products and the influence of regulatory requirements on new product development; despite the diversity of pharmaceutical chemistry, this account would have benefited by inclusion of some synthesis routes with reference to starting materials and processing methods. Chapter 5 ("Agrochemicals") covers product types, environmental constraints and selected processes, and Chapter 6 the topical field of biological catalysis and biotechnology. The latter is an admirable review of a complex area in which the author wisely views the available and potential technologies as valuable tools rather than a panacea for all future processing needs.

Finally, the editor briefly discusses the current situation and picks out some trends for the future. Here, in considering computer applications, reference should perhaps have been made to the growing importance of automated batch-processing for speciality chemicals.

The books naturally lean towards British practices, but are set within a worldwide context. While a different arrangement of chapters would have helped each of the volumes stand better in its own right, together they should indeed prove useful both for students and for general reference, particularly in view of the educational trend towards a case-study approach to product technology. □

R. B. Wilcockson is a Lecturer in the Department of Chemical Engineering, Loughborough University of Technology, Loughborough LE11 3TU, UK.