Book Reviews

Inorganic Syntheses
Volume 29
Russell N Grimes (ed)
Wiley–Interscience, New York, 1992
427 pages. $82.50
ISBN 0 471 54470 1

In 1933 a group of inorganic chemists at an American Chemical Society meeting in Chicago conceived the idea of a series of volumes giving 'detailed and tested methods for the synthesis of inorganic compounds'. Six years later these ideas came to fruition with the publication of Volume 1 of *Inorganic Syntheses*. The range of compounds covered in this original volume now appears very modest, because the scope of inorganic chemistry has rapidly widened beyond its traditional boundaries in recent years. The original board of editors made the decision that every experimental procedure would be independently checked in another laboratory before being accepted for publication. This rule has been strictly observed in subsequent volumes and continue to be one of the major strengths of the series; also, each procedure carries detailed warnings of any known hazards associated with the preparation.

Volume 29 is produced to the high standard we have come to expect for this series. The range of chosen topics would have staggered our colleagues of the 1930s; besides a well-balanced coverage of Main Group and coordination compounds, the syntheses of many organometallics and clusters are included. Furthermore, the title of the series does not prevent the inclusion of experimental details for making pentamethylcyclopentadiene and several 'organic' superconductors—their addition simply serves to emphasize the breadth of interest of the modern inorganic chemist.

As a teacher as well as a researcher, I find that *Inorganic Syntheses* provides a useful source of information on compounds which are of interst to undergraduate students. Thus, descriptions for making KrF_2, XeF_2 and XeF_4 are welcome; the dehydration of metal chloride hydrates using $(CH_3)_3SiCl$ will be included in Year I lectures; hexasolvates of metal dichlorides with such weakly donating solvents as nitromethane, ethanol, acetone and methyl cyanide may enter our laboratory classwork; the synthesis of silenes and of metal halides such as CrF_5, $NbCl_3$ and $NbCl_4$ will interest our final-year students. Whilst appreciating that this use of *Inorganic Syntheses* was not quite that anticipated at its conception, it does show how useful this series can be, even to the non-research chemist. I strongly recommend that colleagues urge their libraries to purchase this, and subsequent, volumes of *Inorganic Syntheses*.

A G MASSEY
Loughborough University of Technology, UK

Ylides and imines of phosphorus
A. William Johnson
Wiley, New York, 1993
614 pages: £74
ISBN 0 471 5221 71

This is A. William Johnson's second monograph on ylide chemistry, and has been prompted by the development of this field since the first was published in 1966. It has two stated aims: firstly to provide a basis for further original research and secondly to allow chemists to become familiar with the state of phosphorus ylide and imine chemistry today.

The work moves through an introductory chapter into a theoretical description of the bonding in ylides and their properties and preparation, followed by chapters on the reactions of phosphonium ylides including the Wittig reaction and its modifications. The later sections deal with other phosphorus ylides and finally transition-metal complexes with ylides.

The book is well presented, giving easy access to information, with clear structures and equations. Each chapter ends with a chronological list of reviews on that topic and an extensive list of references (over 3150 selected references in total). This format allows the book to be 'dipped into' for information on a specific aspect of the subject as well as providing a thorough overview, thus achieving its stated aims.

In summary, this is a book that should prove valuable to both new and established workers in phosphorus ylide and imine chemistry and has much to recommend it.

P. TEESDALE SPITTLE
De Montfort University, Leicester, UK

Introductory Chemistry for the Environmental Sciences
R. M. Harrison, S. J. de Mara, S. Rapsomanikis and W. R. Johnston
Cambridge Environmental Chemistry Series 4
Cambridge University Press, 1991
363 pages: Soft cover $29.95
ISBN 0 521 27639 X

This is an undergraduate text aimed primarily at students studying environmental sciences or ecology and it is intended to give such students the necessary background to the chemical principles required to understand today's environmental issues. Starting at a basic level, the authors introduce the student to atomic structure and the nature of chemical bonds before