Book Reviews

Alkaloids: Chemical & Biological Perspectives, Volume 9. Edited by S. W. Pelletier. Pergamon: Oxford, 1994, 286 pp., hardback. £ 78. ISBN 0-08042-089-3.

Organic chemists who are involved in synthesis are always interested to see how colleagues devise new ways of assembling complex natural products. The nitrogen heterocycles that are found in the majority of alkaloids provide a rich source of structures and it is no surprise that new examples continue to be discovered. More sophisticated analytical procedures continue to allow the isolation and characterisation of novel compound types that exercise the skills involved in structure determination as well as in synthesis. The present volume exemplifies all that we expect, including, in addition non-heterocyclic examples and the pharmacology and chemoecology of some compound types.

The importance of taxol in cancer chemotherapy and progress towards the goal of viable and flexible syntheses is well known. An account concerning the discovery, structure determination, as well as the problems associated with obtaining meaningful supplies of the natural compound and analogues, is written most interestingly, by the investigators involved in the original isolation. The widespread interest in the mycotoxic fumonisins has been further stimulated by their reported carcinogenicity. They are the other non-heterocyclic group of alkaloids whose structure determination and biological effects are reported.

The remaining chapters are concerned with more traditional alkaloids that belong to the indole, isoquinoline, and pyrrolizidine groups. They are all dealt with by experts in the specific areas involved. The chapter on the syntheses of indole derivatives of the macroline/sarpagine groups is one of the longest of the reviews. Interest in the species Alstonia originated in the use of of those plants in folk medicines and the use of (+)-ajmaline in the treatment of arrhythmias is well documented. This biological aspect has provided the focus for many investigations. The modern recognition that stereoselective synthesis should be a primary objective has led to much effort in this area and is well exemplified in this chapter. The pharmacological data reported on many of the products reported in the chapter further emphasises the importance of stereo-controlled synthesis. Another route to biologically active compounds involves the isolation of novel alkaloids from tissue and cell cultures. The short chapter on the production of monoterpenoid indole alkaloids from Aspidosperma quebracho-blanco is another of the highlights for this reviewer.

The number of pyrrolizidine alkaloids that have been discovered has increased considerably in recent years. Potential hepatotoxicity and their role in plant-insect relationships, together with the interesting feature that they are most frequently found stored as the non-toxic N-oxides makes their study an area of significant interest. Their chemistry and biological properties and chemoecology are surveyed in some detail. The loline group of pyrrolizidine alkaloids was surveyed in volume eight of this series.

The longest review is concerned mainly with the isoquinoline alkaloids of the genus Erythrina. The other genera that produce the tetracyclic erythrinane spiroamine system, are also considered. In addition to synthetic studies of this group, there are sections on occurrence and isolation, structure determination, biosynthesis, and pharmacology.

The editor is to be congratulated for once again assembling an interesting collection of reviews by well known practitioners in this area of natural product chemistry. The ninth volume in the series provides a good starting point for in literature searching for new entrants to the areas covered as well as helping more experienced researchers. The reviews are all well produced from good quality camera-ready copy. Perhaps the editor will be able to persuade his authors to use, in addition to a standardised font, the same line-spacing and structure drawing preferences in the next volume.

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Progress in Heterocyclic Chemistry, Volume 6. Edited by H. Suschitzky & E. F. V. Scriven. Pergamon: Oxford, 1994, 341 pp., hardback. £ 95. ISBN 0-08042-086-9.

This volume is the latest in a by now established series, and follows very much the format of its predecessors. Thus it contains critical reviews of the 1993 literature in heterocyclic chemistry, and a

couple of one-off reviews on current heterocyclic topics. The first of these reviews is a very interesting and timely chapter on the halogen-dance reaction by Johannes Fröhlich (Vienna), which should be fascinating to a wider range of organic chemists than the strictly heterocyclic audience. The second review is from Albert Padwa (Atlanta) and consists of a selection of examples of the use of heterocycles as vehicles for organic synthesis. The selections, taken largely from the last 10-15 years, are presented in a new departure as reaction schemes with nil to minimal commentary, but with original source references. The selection is illustrative rather than comprehensive, but gives a useful overview of the very wide range of synthetic uses to which heterocycles have been put. The remainder of the chapters in the volume are the more regular contents of this series; coverage is arranged by ring size (from three to eight-membered and larger) and then by number and type of heteroatoms; thus under the overall banner of five-membered rings, for example, there are separately authored sections dealing with thiophenes and Se or Te analogues, pyrroles and benzo derivatives, furans and their benzo derivatives, systems with more than one N atom, with N and S (Se) atoms, with O and S (Se, Te) atoms, and with O and N atoms. The practice of using camera ready manuscripts from an international range of authors with no apparent overall house style, for example for structure presentation, leads to an inconsistency of appearance of the articles, and although this is less marked than in some earlier volumes in the series, it does detract from the overall impression created by the volume, given the currently available facilities for desk-top production of articles. The coverage is wide-ranging, and although there is still unsurprisingly a preponderance of aromatic systems in the chapters dealing with five- and six-membered rings, an increase in the material relating to saturated systems is noticeable. A detailed reading of the chapters involving the areas with which I am most familiar leads me to the conclusion that the selection of material, and the comment on the included citations, is authoritative, and I am sure this is also true of the remaining sections. I found that simply scanning the pages led me to alight on several reports of interest to me, that I might otherwise have missed in these days of journal overload. The authors' styles are generally very readable. Citations continue to given in the idiosyncratic abbreviated form pioneered by Comprehensive Heterocyclic Chemistry, but for newcomers to this system, the learning curve is thankfully short ! The price of this series remains very reasonable, especially for the softcover version, and this volume should certainly join its predecessors on the personal bookshelves of all heterocyclic chemists, as well as in the libraries of the chemical industry and academia.

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