Polyamine Protocols—edited by David M. L. Morgan, in the series *Methods in Molecular Biology*, Vol. 79, Humana Press, Totowa, New Jersey. 1998. 186 pp. $59.50. ISBN 0–89603–448–8.

In the first chapter of this compilation of polyamine methodology, the editor gives an excellent overview of the present status of polyamine research, supported by 147 references. Regrettably for readers of *Phytochemistry*, the emphasis throughout this book is on animals and micro-organisms; even so, many of the pathways and structures which are described occur ubiquitously in living cells, indicating their universal importance.

For ornithine decarboxylase assay, very sensitive techniques based on the use of labelled ornithine are described by Tabib, and by Coleman and Pegg. Methods for the assay of arginine decarboxylase, an important plant enzyme, are not given, though similar principles may be used for the assay of this enzyme. The possibility of artefactual CO_2 generation in plant systems from carboxy-labelled ornithine by an oxidative process without the formation of putrescine is very important in plant extracts, but is barely mentioned in the text. Contributions by Shantz, Wiest and Pegg consider the generation of the aminopropyl group from *S*-adenosylmethionine, and the subsequent formation of spermidine and spermine. Chapters by Wallace, Evans and Blankenship describe the assay of enzymes concerned with *N*-acetyl polyamine derivatives, which are principally found in animals. The polyamine-coumaric acid amides which occur widely in plants are not considered in this book. Assay methods for di- and poly-amine oxidation systems which depend on peroxide and pyrroline generation are described by Storer and Ferrante, and David Morgan gives assay methods for the enzymes (principally mammalian) which oxidatively convert spermine to spermidine and on to putrescine. HPLC separation of the benzoylated and dansylated polyamines are described by Morgan and Hunter. Post-column derivatization with fluorescamine is used for the HPLC determination of amines and amino acids by Hunter and Fairlamb, and Madhubala gives the now well-established dansylation method for polyamine analysis by TLC. In the next chapters, measurement of polyamine transport is described by Morgan and by Le Quesne and Fairlamb, while polyamine efflux, effects on cell growth, and the tetrazolium assay for cell viability are considered in the last three chapters by Wallace and Mackarel, Denton and Morgan.

The index is very brief, but otherwise the presentation is good. This is a book written principally by and for animal biochemists, and for this purpose it must be a great success. The observation of Coffino, quoted by Morgan, that "polyamines are doing some important things, but we do not know what they are" must also be true in plants. Many of the techniques described here should also be useful for plant biochemists who are interested in discovering what these "important things" might be. For any workers aspiring to study these compounds in plants, this book could provide a useful source of new ideas.

Long Ashton Research Station TERENCE A. SMITH
Bristol, U.K.

Insecticides of Natural Origin by SUKH DEV and OPENDER KOUL, Harwood Academic Publishers, Australia, 1997, pp. 365. £78. ISBN 3–7186–5913–1.

Natural insecticides are of academic interest in that their occurrence in plants suggests that they may be accumulated by plants in response to insect herbivory. Commercially, they are of continuing interest as lead compounds for the synthesis of more potent and environmentally friendly pesticides. That this is so is apparent from the great success of the synthetic pyrethroids, which today command some 30–35% of the world market in agricultural insecticides. A book listing most of the known plant insecticides must therefore be a welcome addition to the plant science literature. Unfortunately, this volume under review does not come up to the highest standards in terms of information and useability.

The book opens with a brief introductory chapter, reviewing the main classes of insecticide and their natural sources. The rest of the book lists the 200 or so known natural insecticides, including those from higher plants, micro-organisms and marine organisms. For each entry, there is a name, a chemical structure, a source, a profile for insecticidal activity and a few key references. So far so good, but it is not immediately clear in which order the compounds are listed. In fact, close inspection shows that they are in sequence according to biosynthetic origin, with hydrocarbons being followed by terpenoids of increasing complexity, etc. This important piece of information is nowhere revealed in the text, so that it is unclear how to access the information. This was realised after the book was put into production, so that an index to chemicals and organisms is inserted behind the back cover. Unfortunately, this must have been done in a hurry, since it is incomplete and it is impossible to locate the entry for compounds beginning with the letter N, e.g. nicotine, in the main section. It is also a pity that plant families are not included in the main part of this dictionary, although the authors in the introduction point to the richness of natural insec-

ticides in certain families. My final complaint is that the book only covers the literature up to 1992, so that some of the most recently discovered insecticidal molecules cannot be found here.

School of Plant Science
University of Reading

JEFFREY B. HARBORNE

Medicinal Natural Products: A Biosynthetic Approach. PAUL M. DEWICK. Wiley (Chichester), 1997, £80 (cloth), £29.95 (paper).

In a recent survey of the top twenty best-selling drugs (*Account Chem. Research*, 1996, **29**, 112–113) eight were either natural products or were analogues of natural products. This situation thus differs little from the one that existed two hundred years ago when morphine was first extracted in a pure state. At that time, most medicines were either of natural origin (herbal medicines) or were inorganic salts. Certainly the initial reason for the study of natural product chemistry, was the desire to know more about the chemical constituents of opium, cinchona extract, herbs and spices, etc. Once the structures had been established, attempts were made to synthesise the molecules and to explore the modes of biosynthesis. Underpinning all of these endeavours, was a pervading interest in the pharmacology and toxicology of natural products.

Any author of a textbook on natural products has to decide which of these aspects to cover, since coverage of all of them is usually precluded if the book is to have a reasonable size and price. Paul Dewick has written his book primarily for undergraduates of pharmacy courses, though it would be equally suitable for medicinal chemists or pharmacologists. Biosynthetic pathways to all classes of natural products are covered in some detail, with discussion of the mechanisms of the chemical reactions involved. Purists might argue that there is very little mention of experiments using isotopic labelling, but this would be to miss the point that this is a book that stresses the biological activity of the natural products, rather than the intimate details of the biosynthetic investigations.

The various sections (enclosed in boxes) that describe these biological properties are numerous, highly informative and very up-to-date. There are, for example, highly topical sections on taxol, the squalestatins, the 'endogenous cannabinoid' anandamide, and the clinically important inhibitors of steroid metabolism like formestane and finasteride. These are complemented by extensive coverage of the more 'mainstream' pharmacologically important products like the ergot alkaloids (6 pages), penicillins and cephalosporins (10 pages), opiates (6 pages), cardiac glycosides (7 pages), peptide antibiotics and toxins (12 pages), etc.

The quality of the production of the book is superb, full stereochemistry is given for all structures, and there are excellent lists of pertinent books and reviews at the end of each chapter. Paul Dewick's enthusiasm for his subject is much in evidence, and this book will be both welcomed and enjoyed by all those who want to know the basic facts about medicinal natural products.

Department of Chemistry
University of Reading

JOHN MANN