

Introduction to Ecological Biochemistry: by J. B. HARBORNE, Third Edition, Academic Press, London, 1988. 356 pp. Hardback £34; Paperback £13.50.

It is a pleasure to welcome this new edition of Professor Harborne's introductory text on ecological biochemistry. The earlier editions played an important role in stimulating the interest of students and research workers in this fascinating and rapidly expanding area of interdisciplinary biology and the present volume is a worthy successor to them.

The book contains updated sections on the biochemical adaptations of plants to their environment, the biochemistry of plant pollination, plant toxins and their effects in animals, hormonal interactions between plants and animals, feeding preferences of insects and vertebrates, animal pheromones and defence substances and biochemical interactions between higher plants and between higher and lower plants. Summaries or conclusions have been added to each section and a new chapter

entitled "The Coevolutionary Arms Race: Plant Defense and Animal Response" has been included.

The inclusion of new material has made the new edition some eighty pages longer than its predecessor. It is, nevertheless, a concise, well-illustrated and well-balanced account which provides the reader with a broad understanding of the subject and its development. Literature references are provided at the end of each chapter and three indexes relating to subject, animal and plant names refer to the whole volume.

This book is a comprehensive text suitable for students in the biological and chemical sciences; it is also a valuable source reference for research workers. I recommend it most strongly and would suggest that the paperback is particularly good value for money, and a high priority on any student reading list.

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Dictionary of Alkaloids: by I. W. SOUTHON and J. BUCKINGHAM, Chapman & Hall, London, 1989. 1834 pages in two vols. £675 (\$1295 in North America).

Among the many classes of natural products known in plants, the alkaloids are pre-eminently important to Man because of their pronounced physiological activity and medicinal value. There are an immense range of often complex structures and their identification and structural elucidation can still represent a significant challenge to the phytochemist. In spite of the fact that many are poisonous, the reason for their synthesis and accumulation in some 20% of angiosperm species is still far from clear. Some experiments have been carried out on their chemical ecology, but the evidence for a protective role is quite limited. The fact that pyrazines and pyrrolizidine alkaloids are borrowed from plants by Lepidoptera for defensive and other purposes would certainly suggest that these classes at least are defensive agents in the plant against herbivory. The role of alkaloids in nitrogen metabolism also deserves more attention, as they can represent an important reserve of nitrogen storage.

There has been no shortage of good literature on alkaloids and ever since Henry's book "The plant alkaloids" published in 1949 there have been a wealth of publications, most notably the continuing series of monographs from Academic Press edited first by R. H. F. Manske and then by A. Brossi. However the problem with keeping up with the ever-growing number of new alkaloid structures is considerable and while there have been several earlier comprehensive listings nothing has been published in recent years. This new dictionary of alkaloids is therefore especially welcome, since it provides us with a completely up-to-date record.

This is a superb production with everything one could

wish for. For each of the 10 000 alkaloids listed, there are provided a structural diagram showing stereochemistry, physical description, biological data including occurrence and toxicity, and key references. This alphabetical list fills the first volume of 1161 pages. The second volume contains five indexes, giving entry to the main volume through name (or synonym), molecular formula, chemical abstract registry number, source or type of compound. The latter two indexes are particularly valuable to phytochemists. The species index, for example, allows one to discover that 16 alkaloids have been characterised from the autumn crocus (*Colchicum autumnale*), seven from hemlock (*Conium maculatum*), 28 from *Papaver somniferum* and no less than 45 from the periwinkle, *Vinca rosea*. Likewise, the type of compound index shows that 14 flavonoid alkaloids are listed, 35 betalains and about 150 tropane alkaloids. While trivial names are used extensively, there are a few surprises. To find coniine, for example, you have to look for it under 2-propylpiperidine, while γ -coniceine is listed as 2,3,4,5-tetrahydro-6-propylpyridine. However, the excellent indexes cope with any such nomenclatural variations.

The compiler and editor with four editorial advisers have taken four years to assemble this massive work and while they have been helped by being able to include the alkaloid entries from the dictionary of organic compounds, it nevertheless represents an enormous achievement. This whole database is available online via Heilbron and we are promised regular supplementary issues to cover future discoveries. The work is an enormous boon to scientists working with alkaloids and it should be of lasting benefit to mankind in general.

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