

The present volume is derived from a symposium held by the Phytochemical Society of Europe in London in April 1984. There are details of other alkaloids besides those of poppies—indeed isoquinoline alkaloids occur in the Annonaceae, Cactaceae and Leguminosae (*Erythrina*) and the alkaloids of these plant groups receive up-to-date reviews. In summary, this is an attractive, well-illustrated

and reasonably priced review volume and I am sure it will interest many other phytochemists besides those working immediately in this field.

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Biosynthesis and Biodegradation of Wood Components: edited by TAKAYOSHI HIGUCHI. Academic Press, London, 1985. 679 + xvi pp. £99.00.

Like 'All Gaul' this substantive and comprehensive book, the first on wood biochemistry, is divided into three parts: (i) the structure and chemistry of the major components of wood cell walls; (ii) the metabolism and synthetic function of cambial tissue, the function of organelles involved in biosynthesis, and the biosynthesis both of the major cell wall components of wood and wood extractives; and (iii) the microbial degradation of cellulose, hemicelluloses and lignins and of wood extractives.

This is a useful book. Granted there is occasional repetition but it is no more than is to be expected in a compilation of this kind. The whole book to which the editor, Takayoshi Higuchi himself has made elegant and knowledgeable contributions in his chapters on 'The Biosynthesis of Lignin' (Chapter 7) and on 'Degradation Pathways of Lignin' (Chapter 20) is well annotated and indexed.

The section on structure of wood cell walls (Chapters 1–3) is well documented pictorially with good quality photographs of scanning and transmission electron micrographs and ultraviolet photomicrographs, techniques available for investigating lignin distribution. The second section (Chapters 4–15) is, not surprisingly with such a wide range of topics and with a corresponding number of authors, a little uneven in depth. However, several chapters are timely reviews of recent developments in their respective fields; those particularly relevant and

up-to-date are written by the reigning masters in the respective subjects, for example 'Biosynthesis of Flavonoids' (Hans Grisebach), 'Biosynthesis and Metabolism of Phenolic acids and Monolignols' (G. G. Gross), 'Biosynthesis of Stilbenes' (H. Kindl). An excellent, readable and well referenced chapter on the 'Biosynthesis of Terpenoid Wood Extractives' (Chapter 15) concludes this section.

In many ways, the third section (Chapters 16–22) is from a biotechnological point of view the most exciting. These chapters, on biodegradation of cellulose (Chapter 17), of hemicellulose (Chapter 18) and the degradation of wood by microorganism (Chapter 16), contain full references to 1984. Contributions and complementary approaches to the chemistry of lignin biodegradation demonstrate clearly the rapid progress in this field. It is evident that some discrepancies exist between the results from studies on the fungal degradation of lignin model components (Chapter 20) and from studies on the fungal degradation of lignins in wood (Chapter 19).

This book is well produced, but even by present day standards the unit cost of the book is high; nonetheless, the information content more than compensates for the price. In my view the authors have achieved their objective of writing a useful up-to-day reference book for professional chemists, biochemists and wood technologists and conceivably some final year undergraduates.

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Advances in Botanical Research Vol. 11: edited by J. A. CALLOW and H. W. WOOLHOUSE. Academic Press, Orlando, 1985. 205 pp. £42.

The latest volume in this now well established review series has four diverse topics: Laser light scattering in biological research, the transport and fixation of inorganic carbon by marine algae, the biochemistry of seed gums and hemicelluloses and *Welwitschia mirabilis*. There is thus something here for most plant scientists. Laser light scattering is a new technique which permits the study of

dynamic events within the plant without destruction and with regular samplings at very short time intervals. The basic principles are explained and some biological applications, e.g. to the observation of cytoplasmic streaming in plant cells, are discussed. The second chapter deals with the experimentally difficult photosynthetic system of marine algae. Recent work on the properties of algal RUBISCOs and on variations in carbon assimilation among the different algal groups is reviewed in some detail.

The third chapter considers that problematical group of

polysaccharides in the cell wall of seeds—the gums and hemicelluloses—the function of which may be either storage or structural or both. Preliminary experiments aimed at determining the function are described but it is clear that much more needs to be done. The final chapter is devoted to that most remarkable and bizarre of all plants—*Welwitschia*—a gymnosperm of a sort but an organism that is almost impossible to classify. It is phylogenetically of an ancient lineage and still somehow survives—although threatened by plant hunters—in a natural habitat with considerable drought stress in the

Southern Namib desert. Although it has some CAM characteristics, it does not appear to be a functional CAM plant and CO_2 is taken up during the day, via open stomata. Thus, it suffers tremendous water loss and yet survives in a rainless desert while many other plants die; clearly, a miraculous plant and one worthy of conservation and further physiological investigation!

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Disease Resistance in Plants: by J. E. VANDERPLANK. 2nd edn. Academic Press, Orlando, 1984. 194 pp. \$34.50.

Anyone expecting a conventional discussion of modern research on disease resistance mechanisms in plants will be sadly disappointed by this book; the author, for example, dismisses phytoalexin endeavours in one sentence as due to 'much barking up the wrong tree'. He also discusses at some length the sink-induced loss of resistance in certain field crops, which is based on the curious concept to a biochemist that high sugar content in the leaves is a requirement for disease resistance in such plants. There is also much here about Vanderplank's favourite terms—horizontal and vertical resistance—and he discusses again his theory relating protein polymor-

phism to vertical resistance. Among a variety of pathological situations, the potato-*Phytophthora* and the cereal rust interactions tend to predominate in illustrating these various ideas.

Vanderplank's saving grace is that he combines a grasp of plant pathology with one of plant breeding and is deeply concerned to advance our understanding of the resistance-susceptibility duality of higher plants. He has a highly individual, incisive style which I enjoyed and I am sure biochemists working on disease resistance mechanisms will benefit from this text, in spite of its idiosyncratic non-biochemical approach.

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Plantes Médicinales: Therapeutique, Toxicité: by CHRISTIANE VIGNEAU. Masson, Paris, 1985. 300 pp. F 350.

There is currently a revival of interest in medicinal plants in many countries and a number of similar publications to this have appeared in English. This paperback is presumably intended for the French medical profession and interested laymen. Four aspects are covered: plant identification, the active principles, the therapeutic efficacy and finally the possible toxic effects. Identification is aided by a number of colour plates, together with line drawings but there are no keys. Vernacular French and Latin names are both given.

Much is taken for granted in relating active principles to beneficial effects. The fact that various flavonoids have

been isolated from *Potentilla erecta*, for example, and that the plant extract is reputedly anti-inflammatory does not necessarily mean that this activity is due to the flavonoids that have been characterized. Arnica, also listed under the anti-inflammatory heading, is recorded as containing the unlikely active principles of carotene and manganese! The work is well referenced and thoroughly indexed. It comprises a useful dictionary of medicinal plants, but the reader needs to remember that the beneficial effects ascribed to many of these plant extracts remain to be established by proper clinical investigation and modern phytochemical analysis.

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