Book Reviews[*]

Non-Timber Forest Products: Medicinal Herbs, Fungi, Edible Fruit and Nuts, and Other Natural Products from the Forest. Edited by Marla R. Emery (USDA Forest Service, Burlington, VT) and Rebecca J. McLain (Institute for Culture and Ecology, Portland, OR). Food Products Press, Binghamton, NY. 2001. 176 pp. 15 × 21 cm. $39.95 ($29.95 paperback). ISBN 1-56022-088-0 (cloth); 1-56022-089-9 (paper).

This book, which was co-published as *Journal of Sustainable Forestry* **2001**, *13* (3/4), discusses the history and current status of research on non-timber forest products, as well as the sociopolitical considerations affecting non-timber forest product management. Individual chapters range from a comprehensive overview of international non-timber forest product issues to a case study of a single county. Although medicinal herbs are mentioned in several chapters, they are not the main focus of this book, and readers interested in detailed treatments of this subject should consult one of the many other books available. Overall, this book will have its greatest appeal to foresters, ecologists, anthropologists, agricultural economists, and scientists in similar related areas.

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Advances in Flavours and Fragrances: From the Sensation to the Synthesis. Edited by Karl A. D. Swift (Quest International, Ashford, UK). Royal Society of Chemistry, Cambridge, UK. 2001. viii + 229 pp. 15 × 23 cm. £59.50. ISBN 0-85404-821-9.

This book is a compilation of sixteen of the twenty papers presented at a Royal Society of Chemistry/Society of Chemical Industry Flavours and Fragrances Conference held at the University of Warwick in 2001. The chapter titles are as follows: Structure Activity Relationships and the Subjectivity of Odour Sensation (Thomas Markert); Relationships of Odour and Chemical Structure in 1- and 2-Alkyl Alcohols and Thiols (Y. Sakoda and S. Hayashi); New Developments in Sorptive Extraction for the Analysis of Flavours and Fragrances (P. Sandra, F. David, and J. Vercammen); Application of Chromatographic and Spectroscopic Methods for Solving Quality Problems in Several Flavour Aroma Chemicals (Michael Zviely et al.); Commercial Essential Oils: Truths and Consequence (Brian Lawrence); Stable Isotopes for Determining the Origin of Flavour and Fragrance Components: Recent Findings (Daniel Joulain); Fragrant Adventures in Madagascar: The Analysis of Fragrant Resin from *Canarium madagascariense* (Robin Clery); The Effect of Microgravity on the Fragrance of a Miniature Rose, 'Overnight Scentsation' on Space Shuttle (STS-95) (Braja D. Mookherjee, Subha Patel, and Weijia Zhou); Ambergris Fragrance Compounds from Labdanolic Acid and Larixol (Aede de Groot); The Synthesis of Fragrant Cyclopentanone Systems (Helen C. Hailes); Designing Damascone- and Ionone-like Odorants (Philip Kraft); Creation of Flavours and the Synthesis of Raw Materials Inspired by Nature (Mark L. Dewis and L. Kendrick); New Results on the Formation of Important Maillard Aroma Compounds (Peter Schieberle and Thomas Hofmann); Out of Africa: The Chemistry and Flavour Properties of the Protein Thaumatin (Steve Pearce and Hayley Roth); Stability of Thiols in an Aqueous Process Flavour (Chris Winkel et al.); and High Impact Aroma Chemicals (David J. Rowe). The book concludes with a three-page subject index.

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Humic Substances: Structures, Models and Functions. Edited by Alham A. Ghabbour and Geoffrey Davis (Northeastern University, Boston, MA). Royal Society of Chemistry, Cambridge, UK. 2001. xiii + 387 pp. 15 × 23 cm. £89.50. ISBN 0-85404-811-1.

Humic substances are defined as "complex amorphous mixtures of highly heterogeneous, chemically reactive yet refractory molecules, produced...in the decay of biomatter ...through random chemical alteration of precursor molecules". As such, they are effectively highly complex natural products, and they represent a real challenge to chemical understanding. Their study requires the use of divergent techniques from solid state NMR to molecular modeling and classical analytical chemistry. This edited volume contains thirty chapters derived from the Humic Substances Seminar V held at Northeastern University, Boston, in March 2001. Its contents are grouped into seven sections: History, Philosophy, and Spectroscopy; Data, Mobility, and Stability; Masses, Similarities, and Properties; Models and Theories; Images, Oxidation, and Humification; Organic Ores and Analysis of Commercial HSs; and Plant Growth Stimulation and Antimutagenesis, and it concludes with a 15-page subject index. It provides a good overview of the current state of research on the structure and function of humic substances.

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Handbook of Combinatorial Chemistry. Vols. 1 and 2. Edited by K. C. Nicolaou (Scripps Research Institute and University of California, San Diego), R. Hanko (Bayer AG, Leverkusen), and W. Hartwig (Bayer AG, Wuppertal). Wiley-VCH Publishers, Weinheim. xxxi + 609 pp (Vol. 1), xxxi + 503 pp (Vol. 2). 17 × 24 cm. $345.00. ISBN 3-527-30509-2.

These volumes provide a compendium of contributions from many teams of authors. Yet the strong editorial control ensures that these contributions blend almost seamlessly into a united whole—a considerable accomplishment rare in works of this sort. Any biases in the presentations are minor, and there is little visible emphasis on the contributions of the authors in comparison with those from others in the field.

Volume 1 focuses on General Topics. This reviewer particularly liked the introduction on Combinatorial Chemistry (by David Coffen and Joachim Luithle), which lays

[*]Unsigned book reviews are by the Book Review Editor.

down principles that represent the modern view of the value of combinatorial chemistry, rather than "The founding (but flawed) principle...that, given a sufficiently large and diverse set of compounds to test, the discovery of an ideal drug for any disease state would be statistically unavoidable". A highly useful section on automation by Marcus Bauser and Hubertus Stakemeier gives an up-to-date and highly objective assessment of instrumentation. Several teams split up the major task of covering useful reactions for solid-phase supported chemistry, and these sections provide a valuable supplement to many recent reviews. The chapter by Christopher Corrette and Conrad Hummel on reductions was found to be particularly thorough and well organized.

Volume 2 focuses on Specific Topics in Drugs, Catalysts and Materials Discovery. The introductory chapter by K. C. Nicolaou and Jeffrey Pfefferkorn on natural product synthesis by solid-phase methods provides a highly important, objective, and scholarly exposition of achievements that represent the pinnacle of the art. A later section on design criteria (by Josef Pernerstorfer), which contemplates the key question of which structural motifs are reasonable targets in the development of new drugs, starts out with great promise, but does not get beyond elementary examples. A representative and interesting case study on the production of an erythropoetin sensitizer is provided by a team from Bayer, which chronicles lead development from initial screening of 650,000 compounds. A very valuable contribution is provided by Pamela Sears and Chi-Huey Wong, who explore the synthesis of complex carbohydrates (making the difficulty of the chemistry easily assimilated by the nonspecialist reader!). The reviewer is indebted to Markus Eckert and Ulrich Notheis for pointing out, in their excellent chapter on Process Development, that "some of the underlying ideas and strategies are as old as the science of chemistry itself". A multiauthored treatise on Combinatorial Methods in Catalysis covers a very wide range of applications, from metal-binding ligands and enzyme mimetics to very exotic applications. A very similar team also explores materials science applications. Volume 2 is a gold mine for specialists seeking to broaden their thinking. I have only two regrets: first that there is no overall assessment of the successes, failures, and future of the combinatorial approach, in comparison to that of structure-based or logical drug design; and second that there is little discussion of the merits and failings of peptides. Over the past decade, peptides have been much denigrated by medicinal chemists as potential drugs, but not only are they of great historical interest but they are also experiencing somewhat of a revival as privileged structures par excellence!

Despite these minor quibbles, overall these two volumes are a tremendous resource and are highly recommended.

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