

editorship reflects this comprehensive input; 3 editors/3 institutions/3 countries. To me, this is a most striking and appreciated feature of the book.

One fault with the book, from the point of view of a non-mycologist, is the lack of a classic and annotated phylogeny in the lead chapter by the editors; that is, granted that the largest audience for this work will and should be the mycologist/lichenologist. However, the addition of a classic taxonomic table and/or tree would have eased placement of each chemotaxonomic argument into a more generalized overview of the topic and made it easier following for the pure chemist, natural product scientist, or organic geochemist *inter alia*. For the specialist, there should be no trouble in keeping track of the various phylogenetic positions under discussion. Certain assistance along these lines was gained within Chapter 4 (Proteins in Fungal Taxonomy) by Drs. Hennebert and Vancanneyt. Additionally, treatises such as *Ainsworth & Bisby's Dictionary of the Fungi* (8th ed.; CAB International: Wallingford, Oxon, UK, 1995) are extremely helpful and should be kept handy.

There are 14 chapters in this monograph. The chapters (parenthesized value is the percentage of references dated 1990+) cover the following annotated topics: Chapter 1 (62%), editorial overview; Chapter 2 (24%), numerical analysis methodologies; Chapter 3 (76%), PCR (polymerase chain reaction) and RFLP (restriction fragment length polymorphism) analyses of DNA; Chapter 4 (17%), protein analyses using NP- (native protein), SDS- (sodium dodecyl sulfate), IEF- (isoelectric focusing), and 2D-PAGE (polyacrylamide gel electrophoresis) methods of protein identification; Chapter 5 (61%), use of isozyme to study microevolution patterns; Chapter 6 (40%), immunotaxonomy using polysaccharides, especially extracellular forms (i.e., exoantigens) as analyzed with ELISA (enzyme linked immunosorbent assay) methodologies to the species level; Chapter 7 (17%), analysis, including high-field NMR, and subdivisions of cell wall (skeletal) polysaccharides; Chapter 8 (61%), utility of the "unsaponifiable" lipids (=solubility and acetate derivation definition) including ubiquinones, steroids, and a bit on the carotenoids; Chapter 9 (23%), discussion of the fatty acids as tools for rapid identification of spoilage agents and as alternative "fats" for human consumption; Chapter 10 (19%), polysaccharides as differential characters, especially using polyol patterns for the differentiation of pytopathogenic taxa; Chapter 11 (43%), exposé of the study and use of volatiles, mainly the terpenes, long known to impart "odors", in attempts to rapidly identify aflatoxin/nonaflatoxin producing strains; Chapter 12 (43%), role and use of secondary metabolites (includes many odor, color, and allelopathic substances); Chapter 13 (7%), consideration of growth condition influences on the quality and quantity of "special" (=secondary) metabolites; and Chapter 14 (30%), use of fungal chemotaxonomy in unraveling lichen community structure.

Not only must a "review" cover the most modern state-of-the-art literature, but it must also pay homage to the past and do so in a way that allows the reader to avoid reinventing the wheel by keeping the older, often "classic", works from slipping into obscurity. *Chemical Fungal Taxonomy* contains chapters with post-1990 references ranging from a low of 7% (Chapter 13) to a high of 76% (Chapter 3), with an overall mean of 37.4%. If one examines the topics of the chapters, comparing the corresponding reference age distributions in each, then, I feel, that this monograph did, indeed, succeed in doing a good-to-excellent job in covering the literature base. That is, we expect nearly all post-1990 references in Chapter 3 (PCR and RFLP) and more "classic" references in chapters on proteins (Chapter 4), polysaccharides (Chapter 7), and carbohydrates (Chapter 10), all of which have huge older literature banks. Regarding shortcomings in the reference list, only Chapter 13 leaves one wanting for more "modern" data, and it must exist. However, this very same chapter is the one which I personally found most thought provoking. For example, "The morphological characters of classical taxonomy are phenotypic and influenced by the conditions of growth." So too, Dr. Frank goes on to explain, are the chemicals which we wish to employ as taxonomic tools. Nearly all chapters reflected upon this theme—environment influencing

specific metabolism in both qualitative and quantitative ways. This then becomes a caveat for chemotaxonomy—one must consider growth stage, growth conditions, allelopathy, build up of exogenous substances, and the like, as they likely all influence the phenotypic taxonomic chemicals.

Understandably, much of the data covered and directions suggested stem from the industrial applications of fungi (cheese, spirits, antibiotics, spoilage, etc.). However, one soon sees that underlying patterns of genetics and its encoded biochemistries are becoming more and more understood. This is of benefit not only to all dealing with the activities, products, and influences of fungi but to the biochemical generalist as well.

As detailed in this text, one of the basic tenets of chemotaxonomy is the unbiased assessment of the quality and quantity of specific biochemicals, be they direct genotypic (DNA, RNA) codes or resultant phenotypic expressions (polysaccharides, secondary metabolites), to remove uncertainty and to hopefully present a more scientifically detailed picture of each taxon. Each chapter does cover the present "state-of-the-art", and most chapters offer directions for further study. Many informative tables of taxa versus substance (+/−) are given and allow the reader to draw his or her own conclusions and directions for additional study.

In closing, I return to my lead quotation and conclude that, yes, this book does accomplish its stated purpose. I found this book to be well rounded and comprehensive. That is, it has both breadth and depth. It will, indeed, serve well those who require a source book on fungal chemotaxonomy and natural products as well. Again, the international flavor of the authorship speaks well of global cooperation. I gladly add this monograph to my reference collection.

J. William Louda, Florida Atlantic University

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**Advances in Photochemistry, Vol. 25.** Edited by Douglas C. Neckers, David H. Volman, and Gunther Von Bunau. J. Wiley & Sons Inc.: New York, NY. 1999. 223 pp. \$110.00. ISBN 0-471-32708-5.

The stated purpose of this series of books is "to explore the frontiers of photochemistry through the medium of chapters written by pioneers who are experts". Volume 25 in the series covers four topics: Flash Photolysis with Time-Resolved Mass Spectrometry, Velocity Mapping of UV Multiphoton Excited Molecules, Catalysis of Photoinduced Electron Transfer Reactions, and Laser Trapping-Spectroscopy-Electrochemistry of Individual Microdroplets in Solution.

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**Tailored Polymeric Materials for Controlled Delivery Systems.** Edited by Iain McCulloch and Shalaby W. Shalaby. Oxford University Press: New York, NY. 1999. 336 pp. \$115.00. ISBN 0-8412-3585-6.

This ACS Symposium Series 709 examines a range of polymer materials that facilitate the controlled delivery of active moieties for medical, dental, agricultural, and industrial applications. Both fundamental and applied research are covered. Although a wide range of applications are discussed, those pertinent to the pharmaceutical industry dominate.

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