**Book Reviews**


This is a charming book with excellent photographs and illustrations of fungi. It is well laid out, with an interesting story line, which adds to the discovery of the world of fungi. The identification of the different fungi to be found is easy to follow, and it should be well within the ability of an interested 7-11 year old to identify fungi from the book. The recording sheet and simple key to identification is also a bonus for this book, and will be easy to incorporate into outdoor activities.

Overall a very good book, and a well-informed introduction to the identification of fungi. There is only one point of criticism – it is a children’s book, but with no photographs or illustrations of children taking part in the activities. Children learn by doing and it would be worth considering, for further publications, incorporating some pictures of the target audience in the book.

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Most of us fortunate enough to have attended the British Mycological Society Conference The future of fungi in the control of pests, weeds and diseases at Southampton in April 1998 will have been waiting impatiently for a written record to be produced from this highly stimulating event. The result from this meeting, and another entitled Biological control agents in crop and animal protection (at Swansea, August 1999), as well as some independent contributions, is a large volume in small print, produced to a high standard of writing throughout. It contains a thorough coverage of recent literature which makes this book essential reading for anyone interested in biological control involving fungi. Further, many items of information – products, markets, legal frameworks – are not easily obtainable by non-experts from other sources.

The book is not formally divided into sections, but four broad areas are covered:- the current status of biological control (chapters 1 and 2), a consideration of fungi as biocontrol agents against the major target groups of organisms (chapters 3-6), methodological problems and solutions including strain improvement and monitoring (chapters 7-11), and safety aspects (chapters 12-13). It becomes clear from the outset that the principal survival strategy of biological control as a discipline lies in the exploitation of artificial niches created by the banning of existing pesticides by law.

This sense of realism is refreshing; the point could have been made even more forcefully by the inclusion of a chapter on the new generation of environmentally-friendly pesticides derived from fungal secondary metabolites, such as the strobilurins, as a major alternative to biological control in the search for replacements to the older chemical pesticides which persist in the environment or have other side effects.

Chapters 3-6 make up about half of the book and will be of greatest value to readers with a general interest in biological rather than specialised technical information. Unfortunately, the different groups of biocontrol fungi are rather unevenly represented. There is a very extensive coverage of entomopathogenic fungi, with a large chapter apiece on mitosporic fungi (chapter 3) and Entomophthorales (chapter 4). Chapter 3 discusses the bewildering array of environmental factors which can affect the performance of a biocontrol agent in the field, followed by some informative case-studies. Chapter 4 gives a stimulating, balanced, thoroughly referenced account of the fascinating biology and pathology of Entomophthorales. What a shame that all of the numerous illustrations were not printed in colour! Chapter 6 is a well-written account of fungi against weeds, matching the splendid talk which the senior author of that chapter gave at Southampton. In contrast, nematophagous fungi are represented solely by Verticillium chlamydosporium (Chapter 5). The greatest omission, however, is that fungi parasitising fungi were not given their own chapter, although they contribute a good third of all biocontrol products currently sold or under development.

Chapters 7-11 are sufficiently detailed to cover the
monitoring of released biocontrol agents, strain improvement especially with molecular biological methods, production and formulation of inoculum, and spray application techniques. Aspects of safety and legislation are treated in some detail in chapters 12-13, although a discussion of secondary metabolites potentially harmful to man is of questionable value, given that they are produced only under very specific conditions, and probably not to harmful levels in field situations.

The editors’ emphasis on entomopathogenic fungi is evident not only in the size of chapters 3 and 4, but also in the introduction of the unfortunate term ‘entomogenous’ as an unnecessary alternative to ‘entomopathogenic’. One author’s enthusiasm for ‘entomogenous’ fungi went so far that he even included the antifungal species Epicoccum nigrum, Gliocladium roseum, Candida sake and Ulocladium atrum in this category (p. 242).

With such a vast field to be covered, some of the above-mentioned omissions might have been inevitable. Nonetheless, the book covers an exceptionally wide range of topics, many of them in considerable depth. It is a good buy and should be on the shelves of all those involved in teaching plant pathology or researching in biological control, as well as in scientific libraries with free access to students who will find it useful as an up-to-date treatment of a fascinating area of applied biology.

Roland W. S. Weber


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There are few comprehensive treatments of yeasts in a taxonomic perspective. The standard text is the multi-authored treatise The Yeasts, a Taxonomic Study (ed. C. P. Kurtzman and J. W. Fell, 1998). It is too expensive to be attractive to mycologists with only a passing interest in unicellular fungi. This CD-ROM might offer an alternative.

Yeasts of the World is one of many CD-ROMs published in the World Biodiversity Database Series by ETI, Multimedia Interactive Software (UNESCO). The interactive database is the result of a collaboration involving recognized yeast taxonomists from nine institutions worldwide. I examined the Windows Version 2.0. Installation of the program on my PC, which runs on Windows 2000 Professional, was straightforward. A 29 MB folder is added to the ‘Program Files’ folder of the main drive. Once installed, the program runs on its own, although it is necessary to insert the CD-ROM to have access to photographs. Each time the program is started, the loading of all available databases takes about 40 sec with a moderately fast (1.3 GHz) processor.

The program is divided into six sections (introduction; glossary; species; type strains; literature; unidentified strains). Users familiar with the Biolomics, the Web database maintained by the CBS, will feel at home. Unlike the Web version, the CD-ROM has species listings (based on several strains) and individual type strains, but not other strains. The database spans 761 species. The introductory text and its hyperlinks to a glossary are excellent. I checked the glossary for how it deals with frequently misused terms and was delighted to see that the authors had agreed on correct, albeit succinct definitions.

For each species, the program provides links to morphology, physiology (CBS data), taxonomically useful gene sequences, photographs, and the literature. Many of the photos (light or electron micrographs) are spectacular (see, e.g., Metschnikowia continentalis). I would purchase the disk for the photos alone. Although the images are also available on the Web (CBS Biolomics), the ease and speed of access are far better with the disk.

The extensive list of references is up-to-date to 2000 and could be invaluable for those wishing to look up the taxonomic literature. A very strong point of the program is the ease with which one can move across various sections of the database. Unfortunately, this does not include the ability to search species entries for all specific literature citations (only the reverse is possible). A weaker point may be the cumbersome nature of data entry for new species or for identification, and the possibility that the microtitre plate method does not always give results that are compatible with methods using liquid media or replica plates.

To what audience is Yeasts of the World addressed? Clearly it is not meant to be a substitute for the standard reference, The Yeasts, a Taxonomic Study. The non-specialist will certainly benefit from the general concepts and enjoy the photographs, but will probably not find it sufficient as an introductory text or a stand-alone identification tool. Laboratories involved strictly in identification are rapidly moving away from the so-
called conventional method based on microscopy and growth tests and towards the more efficient and accurate DNA sequence comparison approach. Although DNA sequences are present on the disk, the Web databases (e.g., GenBank) benefit from being updated almost daily and does not restrict the search to any particular gene or group of organisms. Of course, Web searches can be very slow, and the BLASTn algorithm has its idiosyncrasies.

I expect that all yeast professionals will enjoy the disk for its easily accessible, high quality photographs, the species lists, and the references. I cannot see anyone with a serious interest in yeast diversity not benefiting from Yeasts of the World. It is a compact, high quality, and affordable alternative to Barnett, Yarrow, and Payne’s tome.

André Lachance


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This book is based on papers given at the 7th International Symposium on the Microbiology of Aerial Plant Surfaces, held at the University of Berkeley, California, in August 2000. Of the 22 chapters, the first three are concerned with The physical and chemical environment of plant surfaces, in particular the influence of leaf waxes on fungal and bacterial behaviour, the effect of UV radiation on leaves and their microbial communities, and the effects of nanoscale leaf surface topology. One of the six chapters in the second part, Interactions between epiphytes [sic] and their hosts, addresses a mycological topic (Adhesion of Yeasts to Leaf Surfaces). Part III, with 5 chapters, considers Interactions among microbes on plant surfaces and has one chapter on fungal matters (Ecological Processes and Interactions Occurring in Leaf Surface Fungi), in which the authors state that “The phyllosphere harbors a complex community in which fungi occupy a predominant space”. Given the acceptance of the truth of this statement, it is surprising that so many of the chapters are concerned with bacterial subjects. Part IV, Plant Surface Microbes: Agricultural Practices and Food Quality, has three papers on the biological control of fireblight, production practices affecting the potential for contamination of plants by microbial [bacterial] foodborne pathogens, and rice bacterial blight. Part V has four chapters on Modeling interactions and movements of microbes on plant surfaces and, as well as using more fungal examples than many of the other sections of the volume, will be of conceptual interest to those interested in the theoretical aspects of phyllosphere ecology. The chapter titles (and authors) are:- Leaves as Islands of Spatial and Temporal Variation: Consequences for Plant Herbivores, Pathogens, Communities and Ecosystems (Whitham & Schweitzer); Implications of a Leaf Surface Habitat for Fungal Community Structure and Function (Zak); Resource Aggregation in the Phyllosphere: Implications for Microbial Dynamics Across Spatial Scales (Kinkel, Newton & Leonard); and Aerobiology of Fungi in Relation to Capture and Release by Plants (Aylor).

Part VI, the final chapter, is a review of the Contribution of phyllosphere microbiology to science and agriculture, by Morris & Kinkel. It begins with attributing the formal initiation of phyllosphere research to the ‘seminal publications of Last and Ruinen in 1955 and 1956’, and goes on to consider the effects of studies of phyllosphere biology on general microbiology, food science, plant pathology and plant biology.

The book is well produced, from computer generated copy which is well edited and with few typographical errors and inconsistencies of style, on good quality paper. Whilst, because of the heavy bacteriological emphasis, it is not a ‘must have’ text for all mycologists, it contains sufficient of interest to be worth a look for many applied mycologists, and to be worth having in a library.

M. J. Richardson


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The emphasis of Plant Life of Edinburgh and the Lothians is, as might be expected, on the vascular plants, but it also contains a complete bryophyte flora and numerous useful chapters establishing the background e.g. landscapes, geology, climate and soils of the area. It also
covers history, both botanical and of the botanists who have studied it; and the phytogeography and habitats and land use in the region. It has a comprehensive chapter on macrofungi (20 pp.) by Roy Watling, a shorter section on microfungi by Stephan Helfer and a further item on lichens by Brian Coppins. In the chapter on macrofungi the subject of mycological identification and recording is first addressed from a historical point of view and taxonomic detail is linked to the mycologists who made the identifications. The scene is set in both space and time as the local habitats are discussed, attention focused on their fungal specialities and occasional year dates are given for records old and new.

Throughout the chapter, rare and familiar species receive mention in equal measure. It closes with a preliminary but extensive listing (about 4500 records) of the non-lichenised fungi recorded in the Lothians.

Until now, although much mycological work has and is being pursued north of Hadrian’s Wall, few reliable listings of local species have been available. Mycologists have long become accustomed to regular finds of species stated to be ‘uncommon’ in UK publications or, conversely, gratified to find a (supposedly) ‘common’ species. This commentary and list of fungi will provide a sound basis for mycologists who live in or visit the Lothians of Scotland and may even lend a thrill to the chase as non-listed specimens are coveted! Like other chapters (a total of 19) of this useful and attractive book, the chapter on macrofungi is an admirable combination of readability and reference source.

Eunice Smith


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This is a model modern taxonomic revision of a prominent complex within the Nectria-like fungi. Classifications of the Hypocreales have changed quite significantly in the last five years, resulting in the separation of Nectria in its traditional sense into a large number of groups within several families. Bionectria as previously understood was centred on the Nectria ochroleuca group, with Clonostachys anamorphs which were once lumped in with Gliocladium. Anamorph classification within the Hypocreales is ferociously complex, and this monograph is a useful contribution towards the large task of simplifying their classification and relating it more closely to teleomorph taxonomy.

The publication commences with a comprehensive but not verbose introduction, dealing with a historical overview, materials and methods, teleomorph and anamorph generic concepts, ecology, review of characters, and a description of molecular data and trees. All is clear and well-argued, with the small exception of a short section on polarity and evolution of character states which I found a little hopeful in its interpretation. The molecular data are based on beta-tubulin and rDNA sequences. Much of this has been published elsewhere, but I would have welcomed a little more discussion on these topics.

A series of six keys follows, including one to teleomorph genera similar to (or potentially confusable with) Bionectria, one to relevant anamorph genera within the Hypocreales, anamorph- and teleomorph-based keys to Bionectria and Clonostachys species, and separate keys for species with greenish conidia. I haven’t tested these in detail, but they appear to work as well as any dichotomous key can to groups of closely related species.

The formal monographic treatment divides Bionectria into six subgenera, based on stroma and ascoma morphology. Some of these are clearly natural taxa, with corresponding characters from ascospore and anamorph, and are monophyletic judging from molecular data. Others are less well delimited, for example subgenera Epiphloea and Uniparietina which have similar anamorphs and cluster together, which suggests that ascomatal characters are not entirely reliable measures of evolutionary descent.

Species accounts are expertly prepared, with comprehensive descriptions, excellent drawings and black-and-white photographs, separate information on collections on natural substrata and in culture, typification, specimens examined and notes. The long lists of specimens in many cases emphasizes the efforts which have been put into the preparation of this monograph.

This will doubtless not be the last word on classification of this prominent group of ascomycetes, but it will be a long time before the work needs serious revision. It will be an indispensable and authoritative practical guide.

P. F. Cannon