PERSOONIA
Volume 17, Part 1, 153–162 (1998)

BOOKS RECEIVED BY THE RIJKSHERBARIUM LIBRARY

A.E. Bessette, A.R. Bessette & D.W. Fischer. *Mushrooms of Northeastern North America.* (Syracuse University Press. The Eurospan Group, 3 Henrietta Str., London WC2E 8LU. 1997.) ISBN 0-8156-2707-6 (hardcover), 0-8156-0388-6 (paperback). Pp. 584, 1 text-fig., many colour photographs. Price: hardcover UK £ 51.95, paperback UK £ 23.95.

The mycoflora of the northeastern part of North America is introduced in this overview of representatives of all groups of fungi, except microfungi. The area which is covered reaches from North Carolina in the south east to Kansas in the south west and Manitoba in the north west; the Atlantic Ocean is the eastern border. This book is the first attempt to make a unified survey of this area, many parts of which still await study. The book is very much an overview, as only 1500 species are described and keyed out, and of these 600 are described more fully and illustrated with colour photographs. Unfortunately, a 'rationale' for the choices made, either in the selection of the 1500, or the 600 species to treat more fully, is not given.

Fungi have been divided into 22 major groups, represented by colour illustrations of representatives from each group, while the species descriptions constitute the main part of the book, with genera arranged in alphabetical order within groups. Briefer descriptions of the non-depicted species are included within the keys. The keys themselves are not dichotomous and as many as nine alternatives are given on occasion. The user may have to work through every alternative before concluding that a fungus is not keyed out at all. In some keys one of the first steps requires knowledge that is not visible on the fruit-body itself. Several species-rich genera, e.g. *Cortinarius*, *Inocybe*, and *Russula*, lack keys entirely and are represented by only a few of the more common and distinctive species. Photographs are arranged according to the major groups and follow the treatment of the group. While small (8 or 7 per page), the quality is in most cases good. Examples of the less felicitous ones are *Squamanita umbonata* and *Strobilurus conigenoides*.

A minor point of criticism concerns the naming of authors. It looks as if a computer program has changed every 'ex' into a colon, regardless of its meaning, so strange citations are the result (e.g. *Laccaria nobilis* Mueller: Smith instead of 'Smith in Mueller'; *Pucciniastrum potentillae* Komarov: Jaczewski, Komarov, and Tranzsche; *Xylaria polymorpha* (Persoon: Mérat) Greville where the correct form is '(Persoon: Fries) Greville'). The same kind of computer abuse is probably the cause of mis-spellings of authors' names, e.g. 'Bonorden' instead of 'Bon', and 'Venturi' where 'Ventenat' is the author.

Very short introductions to mycophagy, microscopy and chemical reagents, a glossary, lists of mycological literature and guide books, and indices, both to common and Latin names, complete the work. The language is informal and the use of technical terms has been reduced to a minimum. But despite this, the book will be difficult to use. This is caused first of all by the structure of the keys, which form the most important part of the book. The lay-out of the keys, which is very quiet and pleasant on first view, becomes very monotonous without visual points of reference, and further hampers easy usage. In short, this book is neither a field guide, nor a flora, and it demonstrates that good keys are difficult to make.

A. Bidaud, P. Moënne-Loccoz & P. Reumaux. *Atlas des Cortinaires. Les Cortinaires Hinnuloides. Hors-série No. 1.* (Éditions Fédération Mycologique Dauphiné-Savoie, 70 rue Edison, F-69330 Meyzieu, France. 1997.) Pp. 157, 42 text-figs., 34 col. pls. Price: FF 350.00.

The genus *Cortinarius* has the reputation of being the most difficult and species-rich of all Agaricales genera. A team of French *Cortinarius* specialists has set out to tackle the genus, to provide keys to its species, with descriptions and crayon drawings for all of them. Their work is presented in the series 'Atlas des cortinaires', of which 9 volumes have appeared so far. The present volume is the first to be published 'outside' the main series and gives an overview of section *Hinnulei* in subgenus *Telamonia*, a notoriously difficult group of brown mushrooms. The book starts with a one-page philosophical introduction and an additional half-page of quotation. There mycology is defined as "un contenant contradictoire en devenir transfini" and it is asserted that the "contradictoire et le contradictoire seul" is what allows mycology to make sense. Perhaps this is why as many as 40 new species, four new varieties, and three new formae are presented. Keys are given to the infrasectional en-tities, many of which are also described as new (even stirpes are given Latin descriptions), and to the species. The user of the keys will be hampered by lack of explanation of used terms, and by the fact that in keys to stirpes characters are said to be present in the more typical members of the group. The presentation is an historical overview, followed by commentaries in which species descriptions are embedded and illustrated with black and white line drawings. Unfortunately the quality of these drawings is very poor in comparison to the excellent colour crayon drawings at the end of the book. As an illustration of French cortinariology, particularly as expressed in the works of Henry, this is an important work, though whether in practice it can be used to determine hinnuloid *Cortinarius* species is seriously to be doubted.

H. Clémençon. *Anatomie der Hymenomyceten.* (Kommissionsverlag, F. Flück-Wirth, Internationale Buchhandlung für Botanik und Naturwissenschaften, CH-9053 Teufen, Switzerland. 1997.) ISBN 3-7150-0040-6. Pp. 996, 842 text-figs. Price: SFR 80.00.

The publication of this extremely thorough monograph on the morphology and anatomy of the Hymenomycetes is undoubtedly a milestone in mycology. In the introduction the author writes that modern molecular biology, biochemistry and genetics have led to an enormous revaluation of biology, but that simultaneously a deplorable tendency has developed to neglect or even suppress research on the morphological diversity of organisms and that this book is written for those who still believe that the knowledge and the study of the total organism is essential for biology. With some understatement the author calls this book of nearly 1000 pages a modest attempt to upgrade the appreciation of organismal biology.

There are ten chapters: 1. General biology of Hymenomycetes (10 pp.); 2. The hyphae of the Hymenomycetes (cytology of the vegetative mycelium; modified hyphae) (99 pp.); 3. The mycelium (e.g. mycelial growth, hyphal fusions, differentiations, rhizomorphs, mycorrhiza, etc.) (115 pp.); 4. Bulbils, sclerotia and pseudosclerotia (65 pp.); 5. Mitospores (69 pp.); 6. Basidia and basidiospores (149 pp.); 7. Cystidia, pseudocystidia and hyphidia (83 pp.); 8. Basidiomes (fruit-body types, phylogenetic hypotheses, hyphal systems, pigmentation, etc.) (128 pp.); 9. Carpogenesis (a new set of concepts and terms is introduced) (174 pp., a book in itself); 10. Lichenized Hymenomycetes and Hymenomycetes parasitic on algae (20 pp.).

Each chapter is preceded by historical notes and is profusely illustrated. Throughout the book the author proves his great knowledge of the concerning literature, a fact also demonstrated by the bibliography of 44 pages.

It is to be regretted that this fundamental book has not been published in English, by far the most widely used language in natural sciences. Fortunately there is a long English summary at the end of the book and all captions are in German and English.

Undoubtedly this major publication will be a reference book for decades to come for all who are working with Hymenomycetes or teaching mycology.

P.W. Crous. *Mycosphaerella spp. and their anamorphs associated with leaf spot diseases of Eucalyptus.* (Mycologia Memoir No. 21, APS Press, The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN 55121-2097, USA. 1998.) ISBN 0-89054-190-6. Pp. 170, 140 text-figs., 4 tables. Price: US$ 52.00 (in USA $ 42.00).

More than 450 species of *Eucalyptus* are currently recognized. Many of these trees were initially planted in botanical gardens and arboreta, and distributed through these to other parts of the world. Plantings of fast-growing eucalypts dominate the landscape in many parts of the world. *Mycosphaerella* leaf blotch disease is a serious epidemic, pathogenic threat to these plantations. Disease symptoms vary from early leaf abscission to general leaf spotting and even stem cankers. The dothideaceous genus *Mycosphaerella*, with more than 1800 species published, is one of the largest ascomycete genera known. Many species are pathogenic to leaves and stems of different host plants. In this book 57 species of *Mycosphaerella* and their anamorphs, associated with eucalypts, are treated with full descriptions and illustrations of microscopic details of ascospores, asci, conidia, and conidiogenous cells. Six new species of *Mycosphaerella* are presented and also several anamorph species are described as new. Keys to both teleomorphs and anamorphs are presented. The hypothesis that *Mycosphaerella* is heterogeneous, is tested, using multiple correspondence analysis (MCA) of 18 *Mycosphaerella* species with known anamorphs, testing 27 sets of multistate characters. Clustering of taxa obtained with MCA showed several distinct clusters, supporting the supposed heterogeneity of *Mycosphaerella*. The clusters found correspond to the various anamorph states, suggesting that this is indicative of various groups (genera?) within *Mycosphaerella*. Various proposals for the separation of genera, subgenera, and sections within *Mycosphaerella* are discussed. A new coelomycetous genus, *Xenostigmina*, is proposed.

This is a valuable contribution to the taxonomy and pathology of *Mycosphaerella*.

D.E. Desjardin & E. Horak. *Marasmius and Gloiocephala in the South Pacific region: Papua New Guinea, New Caledonia, and New Zealand taxa.* (In: Taxonomic monographs of Agaricales II. Eds. O. Petrini, L.E. Petrini & E. Horak.) (Bibliotheca mycologica 168, J. Cramer in der Gebrüder Borntraeger Verlagsbuchhandlung, Johannesstr. 3A, D-70176 Stuttgart. 1997.) ISBN 3-443-59070-5. Pp. 152, 22 text-figs. Price: DM 80.00.

D.E. Desjardin and E. Horak give in two parts an overview of the marasmioid taxa in New Guinea, New Caledonia, and New Zealand, based on the collections made by the second author, and the type collections of the species described from this region. The first part

focuses on the tropical regions (New Guinea and New Caledonia), whereas New Zealand is treated in the second part. Thirty-five taxa are reported from either New Guinea or New Caledonia, of which twelve are described as new. A slightly lower number of taxa is described from New Zealand, 32 in total, of which eleven are new. All taxa are fully described and depicted. This is certainly a very welcome addition to our knowledge of marasmioid fungi and a good base for further research and exploration.

H. Dörfelt & H. Heklau. *Die Geschichte der Mykologie.* (Einhorn Verlag, Postfach 1280, D-73502 Schwäbisch Gmünd, Germany. 1998.) ISBN 3-927654-44-2. Pp. 573, 177 text-figs., 38 tables, numerous portraits of mycologists. Price: DM 258.00.

Apart from a short introduction explaining, among other things, the complicated system of degrees and titles at German universities, this voluminous book consists of four parts. About half the book treats the history of mycology from antiquity till about 1990 in several chapters. Great similarity with the history of botany till the 18th century is shown. In all periods of time the interest of botanists for fungi is discussed in logical coherence with other developments in botany and other sciences. All chapters are easily readable and full of interesting details. Special attention has been paid to the first use of certain terms and to the interpretation of fungi depicted in old herbals and floras. This information is clearly and concisely presented in tables.

The second part consists of 358 short biographies of mycologists and botanists with mycological interest. Along with many references to existing historical literature, the authors have added results of their own research, especially concerning German mycologists of the 20th century. In this respect it becomes evident that several mycologists from other countries of this period are missing. Part of the biographies are accompanied by a portrait. The third part is a tabular survey from 5000 B.C. to 1993, comparing political and social events with important developments in the history of mycology and related sciences. Great attention has been paid to supply the documentation with historical and biographical annotations. There are 55 pages of references and indices to persons, organisms, and subjects.

This book presents the most complete history of mycology as yet in a single volume. For the price of the book the quality of the illustrations could have been better.

M.B. Ellis & J.P. Ellis. *Microfungi on landplants. An identification handbook. New enlarged edition.* (The Richmond Publishing Co. Ltd., P.O. Box 963, Slough SL2 3RS, UK. 1997.) ISBN 085546-246-9 (hardcover), 085546-245-0 (paperback). Pp. x + 868, 2208 black-and-white figs. in 213 pls. Price: hardcover UK £ 60.00, paperback UK £ 40.00, postage UK £ 5.00.

This long-awaited new edition of 'Microfungi on landplants' is, as the cover indicates, an enlarged edition. This means that it is a copy of the first edition, with an additional 36 pages where corrections and 142 descriptions of fungi, not included in the previous edition, are presented. An asterisk in the margin of the original text indicates an addition or correction, which can be found in the supplement. In addition to the original 203 plates seven extra plates are included, picturing the additional fungi. The original plates are fortunately this time better printed.

The book, which only treats smaller fungi (strangely – but maybe wisely – enough, no definition is given of the term Microfungi), is organized according to hostplant, in a number of categories: the plurivorous wood and bark fungi, plurivorous leaf-litter fungi, fungi specific to trees, shrubs and woody climbers, plurivorous fungi on herbaceous plants, fungi specific to various herbaceous plants, plurivorous fungi on grasses, fungi specific to grasses, fungi on rushes, sedges, bur-reeds and reed-maces, fungi on ferns, horsetails and club-mosses, and fungi parasitic on rusts and powdery mildews. In the plurivorous categories a key is given to the genera of fungi, then the species in alphabetical order according to the genus, and in cases with several species per genus a key to the species. In the other categories everything is organized according to the hostplant, in alphabetical order. Not only some knowledge of plant names is required, the user is also supposed to be able to distinguish between different classes of fungi: within the categories plurivorous fungi, first a division is made into Discomycetes, other Ascomycetes, Hyphomycetes, Coelomycetes, and, if appropriate Uredinales and Ustilaginales. This system is continued within the other categories per hostplant. Within these classes the fungi are treated alphabetically according to genus. With the category fungi specific to trees etc., first the fungi on leaves are given, then those on fruits or seeds and finally the ones on wood and bark.

The keys and descriptions in the book are rather simple and short, and mostly lead without much difficulties to a name. Although this is the power of the book, it is in many cases insufficient for reliable identifications and additional, specialised literature should be consulted. Unfortunately the names of the fungi, which were in the original edition already sometimes out of date, have not been changed in the new edition.

Although more than 3500 species of microfungi are treated, the book is far from complete. Not surprising, since so little is in fact yet known about microfungi. The appearance of the first edition has popularized the study of small fungi enormously, but was therefore quickly sold out. It is gratifying that the book has become available again, although the extra value for those who already have the first edition is limited.

G. Guzmán. *Los nombres de los hongos y lo relacionado con ellos en América Latina. Introducción a la etnomicobiota y micología aplicada de la región. Sinonimia vulgar y científica.* (Instituto de Ecología, A.C., Apartado Postal 63, Xalapa, Veracruz, México. 1997.) ISBN 968-786306-4. Pp. xx + 356, 28 text-figs., 23 photographs. Price: US$ 30.00 (softcover), US$ 50.00 (hardcover).

This book presents a first detailed checklist for Latin American fungal names. More than 5500 common names, representing or related to approximately 1750 species of fungi, are listed in alphabetical order. About 3400 names are exclusive to Mexico. Most of the common names are in Spanish, or for Brazil in Portuguese, and in many cases also in Indian languages. There are about 2000 names of edible fungi, 250 of hallucinogenic, 300 of poisonous, 900 of phytopathogenic fungi, and many of medical, chemical, pharmaceutical, or biotechnological application. Of these common names the scientific equivalents are given, together with graphic symbols classifying the properties and applications of the fungi described. For each name the country or state (for Mexico) of origin is indicated. The information presented is based on many publications, as well as on notes by the author, collected during numerous field trips in Mexico, Central and South America during a period of more than 42 years, often with the help of specialists from the region.

J. Heilmann-Clausen, A. Verbeken & J. Vesterholt. *The genus Lactarius. (Fungi of Northern Europe – Vol. 2.)* (Svampetryk, DK-8381 Mundelstrup. 1998.) Pp. 287, numerous coloured plates and text figs. Price: DKK 250.00.

The second volume in this series is dedicated to the genus *Lactarius*. The introductory chapters give an extensive account of the macroscopical and microscopical characters of the genus, the infrageneric classification, ecology and food value of the genus. The keys to the species are followed by detailed species descriptions supplemented by at least one coloured photo and line drawings of spores, cystidia and pileipellis. These generally are of good to excellent quality. Data on geographical distribution and a long list of references complete the book. It is a very attractive book, the first of its kind for the genus in many years, that certainly will find its way to professional and amateur mycologists. Unfortunately, the authors introduce a new, rather confusing terminology for pileipellis types. Regretfully they did not discuss these new terms in a broader mycological circle before introducing them, thus causing confusion. The keys lay too much stress on ecology, particularly the host tree, which will cause difficulties for the user. The most serious problem within this book is probably formed by the rather unequal species concepts used by the three authors, varying from rather narrow (*L. trivialis* versus *L. utilis*; *L. vietus* versus *L. syringinus*) to far too broad (*L. fulvissimus*, *L. rubrocinctus*). Also similar nomenclatoral problems lead to different solutions as is shown by introducing new species names for *L. cremor* and retaining the doubtful name *L. rubrocinctus* at the same time. It is also rather risky to synonymize Northamerican taxa with European ones without knowing the real variation and geographical distribution of the taxa involved (*L. duplicatus* versus *L. lapponicus*).

J. Keller. *Atlas de Basidiomycètes vus aux microscopes électroniques*. (Union des Sociétés Suisses de Mycologie. Sold by Flück-Wirth, CH-9053 Teufen, Switzerland. 1997.) Pp. 173, 14 text-figs., 324 plates with 1658 SEM- and TEM-graphs. Price: FRS 95.00.

The text of this book is in French with rather extensive summaries of conclusions in German and English. The first aim of the author was to present a work, as complete as possible, on the ultrastructure of the spore walls of Aphyllophorales. For the sake of completeness, studies of a certain number of Heterobasidiomycetes, Boletales, Agaricales, and Russulales have been added. In 324 plates of very high quality on glossy paper four to six figures are presented with ultrastructural details. Scanning electron micrographs generally show small basidiomata, basidia, basidiospores, cystidia, hyphae, and crystals. Transmission electron micrographs show details of thin sections of basidiospores, spore walls, parentosomes, apiculi, and spore ornamentation. For the description of basidiospore wall layers and structures Clémençon's terminology is followed. To understand the structure of mature basidiospore walls it was often necessary to study the ontogeny of the different wall layers. In general, for each family a description and discussion are given of ultrastructural details of the spore wall, the basidiospores, the basidium, and other structures, like apophyses, dolipores, hyphae, and cystidia. This atlas is indispensable for those interested in the structure or relationship of basidiomycetes.

M. Magnes. *Weltmonographie der Triblidiaceae*. (Bibliotheca mycologica 165, J. Cramer in der Gebrüder Borntraeger Verlagsbuchhandlung, Johannesstr. 3A, D-70176 Stuttgart. 1997.) ISBN 3-443-59067-5. Pp. 177, 48 text-figs., 2 plates. Price: DM 96.00.

This thesis is a world-wide taxonomic revision of the ascomycete family Triblidiaceae of the order Rhytismatales. This family was proposed by Rehm (1888) with two genera, and strongly extended to eleven genera by von Höhnel (1918, 1924). More recently the Triblidiaceae were anew defined by Hawksworth & Sherwood (1982) with *Triblidium* and *Pseudographis*, and extended by Eriksson (1992) with *Huangshania*. These three genera are also included in the present study. The family is characterized by the hemiangiocarpic fruitbodies, the presence of both paraphyses and paraphysoids, and its ascus structure. A more profound account of these characters in this and related families of the Rhytismatales is missing. Efforts to obtain cultures of *Triblidium* species were not successful, since the ascospores failed to germinate. The author recognizes and describes four species of *Triblidium*, and two species each in *Pseudographis* and *Huangshania*. About half the book is devoted to genera and species excluded from the Triblidiaceae. Most of these taxa are also presented with full descriptions and drawings of microscopic details. A key is included to representatives of the Triblidiaceae and species that could be kept for these with a hemiangiocarpic or pseudohemiangiocarpic development and growing on bark. It is an important contribution to an up to now poorly known family of ascomycetes.

J.-M. Moncalvo & L. Ryvarden. *A nomenclatural study of the Ganodermataceae Donk.* (Synopsis Fungorum 11, Fugiflora, P.O. Box 95, Blindern, N-0314 Oslo, Norway. 1997.) ISBN 82-90724-18-7. Pp. 114. Price: unknown.

The major part of this booklet consists of a list of 386 species epithets, considered at one time or another to be related to one of the genera of the Ganodermataceae (Aphyllophorales, Basidiomycotina). Of each name its place of publication, typification, and nomenclatural status are given. The names accepted in the Ganodermataceae are discussed and referred to one of the 'groups' corresponding with the eight genera distinguished by the authors. New combinations have been omitted purposely. Eventual modern descriptions based on the study of authentic material are specially mentioned. In a 'taxonomic and geographic summary' the names are listed according to these taxonomic 'groups' and the main geographic regions of the world.

M. Moser & W. Jülich. *Farbatlas der Basidiomyceten. Lief. 14.* (Gustav Fischer Verlag, Wollgrasweg 49, 70599 Stuttgart. 1996.) ISBN 3-437-25506-X. Pp. 36, 77 col. pls. Price: unknown.

This fourteenth issue of the loose-leaf atlas of European basidiomycetes contains photographs of species belonging to the following genera in the Agaricales: *Agaricus, Amanita, Camarophyllus, Clitocybe, Conocybe, Coprinus, Cortinarius, Cystoderma, Entoloma, Galerina, Hebeloma, Hohenbuehelia, Hydropus, Hygrophorus, Hypholoma, Inocybe, Lepiota, Macrolepiota, Marasmiellus, Marasmius, Melanoleuca, Naucoria, Omphalina, Psilocybe, Ripartites, Stropharia, Tectella, Tricholoma, Tubaria*, and *Volvariella*. The genera *Conocybe, Coprinus, Entoloma*, and *Tricholoma* are with twelve or more species represented. Genus descriptions of *Campanella, Macrolepiota, Ripartites*, and *Tectella* are given. As in other issues of this series the quality of the photographs and the state of the depicted mushrooms are very variable.

M. Moser & W. Jülich. *Farbatlas der Basidiomyceten. Lief. 15.* (Gustav Fischer Verlag, Wollgrasweg 49, 70599 Stuttgart. 1997.) ISBN 3-437-25506-1. Pp. 200, 150 col. pls. Price: DM 98.00.

The fifteenth issue of this loose-leaf atlas contains photographs of species belonging to the following genera: *Faerberia* and *Pleurotus* (Polyporales), *Boletus*, *Suillus*, and *Xerocomus* (Boletales), *Clitocybe*, *Conocybe*, *Cortinarius*, *Crepidotus*, *Entoloma*, *Hebeloma*, *Hygrophorus*, *Hypsizygus*, *Inocybe*, *Leucocoprinus*, *Leucopaxillus*, *Macrocystidia*, *Mycena*, *Mythicomyces*, *Phaeogalera*, *Pholiotina*, *Psathyrella*, *Pseudoomphalina*, and *Tricholoma* (Agaricales). Genus descriptions of *Faerberia*, *Arrhenia*, *Haasiella*, *Hypsizygus*, *Mythicomyces*, *Ossicaulis*, and *Rickenella* are provided. Photographs of many rarely depicted species are included, and the quality of the plates varies from moderate to excellent.

M. Núñez & L. Ryvarden. *The genus Aleurodiscus (Basidiomycotina).* (Synopsis Fungorum 12, Fugiflora, P.O. Box 95, Blindern, N-0314 Oslo, Norway. 1997.) ISBN 82-90724-19-5. Pp. 164. Price: unknown.

In this small book a synopsis is given of the genus *Aleurodiscus* (including *Acanthobasidium, Acanthophysellum, Acanthophysium, Aleurobotrys, Aleurocystidiellum*, and *Gloeosoma*). The taxonomic arrangement, important character states, and ecology are briefly discussed. Illustrations elucidate the most important terms, though a glossary is not provided. A synoptic key and a dichotomous key to the species are given. It is unfortunate that geographic characters are used as important steps in the dichotomous key, as little is known about the distribution areas of the species, and quite a few species have been recorded from widely separated parts of the earth. A second problem with the keys is the choice between dendrohyphidia and acanthophyses, elements which both may have widely branched apices. All 71 species referred to *Aleurodiscus* are described, and illustrated with black-and-white drawings. The book does not claim to be a monograph because, in most cases, the descriptions have been based on the type collection only, though sometimes on fresh specimens collected by the authors. Six out of the 71 species are described as new. The book is completed with a list of species names which have been referred to the genus. Despite shortcomings and typographical errors this book is a useful guide to an interesting group of fungi and can form the basis for more detailed research.

M.E. Palm & I.H. Chapela (Eds.). *Mycology in sustainable development: expanding concepts, vanishing borders.* (Parkway Publisher, Inc., Boone, North Carolina, USA. 1997.) Pp. 306. Price: unknown.

The book is a compilation of papers presented during a workshop with the same title held in San Diego, California, August 1995. After an introduction by the editors, the book contains four contributions on Mushroom as Non-timber Forest Products, including the Pine Mushroom Industry in Canada, and Matsutake harvesting in the United States, and four contributions on the Inventory and Monitoring of Fungal Biodiversity in the USA and Mexico. Four contributions are devoted to environmentally friendly technologies, including the use of mycorrhizae and fungal biocontrol in Ecosystem Sustainability. The final chapter deals with diversification of markets and novel fungal products.

D. Puntillo. *I licheni di Calabria.* (Monografie XXII, Museo Regionale di Scienze Naturali, Via Giolitti 36, 100123 Torino, Italy. 1996.) ISBN 88-86041-17-9. Pp. 229, 4 text-figs., 42 plates with 8 colour photographs each, 100 distribution maps. Price: L 120,000 + postage.

Of the about 10,000 collections of lichens and lichenicolous fungi in the herbarium of the University of Calabria (CLU), c. 8,000 are collected in Calabria. This book presents an annotated alphabetical list of 856 species and subspecific taxa of lichens recorded from Calabria. A single species, *Arthonia calabrella*, proved to be new for science, 19 are recorded for the first time from Italy and 164 are new from Calabria. For each taxon the collections are cited for the different provinces of the region and comments are given on taxonomic variability, geographic distribution, and growing conditions. Macroscopic details of many species are presented in 335 excellent colour photographs. From a special study on the phytogeographic structure of the Calabrian lichenflora, it appears that most of the 13 phytoclimatologic groups distinguished for Italy are represented in the region, showing that this lichenflora presents a great biodiversity.

S. Raidl. *Studien zur Ontogenie an Rhizomorphen von Ektomykorrhizen.* (Bibliotheca mycologica 169, J. Cramer in der Gebrüder Borntraeger Verlagsbuchhandlung, Johannesstr. 3A, D-70176 Stuttgart. 1997.) ISBN 3-443-59071-3. Pp. 184, 84 text-figs. Price: DM 90.00.

In this thesis 19 species of higher basidiomycetes, forming ectomycorrhizae in culture with seedlings of coniferous trees, have been investigated. Standard descriptions of the rhizomorphs are given, considering the structure, development, and eventual interaction with pollen. Each description and chapter ends with a discussion, while there are also a special chapter with discussions and a recapitulation of discussions. In a special root chamber system the mycelial growth has been followed in vivo. Of each species under study all steps of mycelial ontogeny are depicted in detailed drawings. Three types of rhizomorphal systems can be distinguished, differing in structure and extension. The four species of *Suillis* studied showed exactly the same structure and development of their rhizomorphs. Characters playing an important role in the ecology of ectomycorrhizae are the extension of the rhizomorphal system, the ability to form ring-shaped structures and hyphal fans, the frequencies of backward oriented branches and substrate adhesion hyphae, and the tendency to form vessel-like hyphae with frequently dissolved septa. This is a valuable enlargement of our knowledge about the ontogeny of ectomycorrhizae. The editors should have considered the great number of partly blank pages and the duplication of a large part of the chapter on the collections examined.

A.Y. Rossman, R.E. Tulloss, T.E. O'Dell & R.G. Thorn. *Protocols for an all taxa biodiversity inventory of fungi in a Costa Rican conservation area.* (Parkway Publ., Inc., P.O. Box 3678, Boone, NC 28607, USA. 1998.) ISBN 1-887905-05-7. Pp. xviii + 195, 4 text-figs., 4 tables. Price: US$ 35.00.

This book is a report of a workshop, which was organized in order to develop protocols for a possible all taxa biodiversity inventory of fungi (ATBI) in the Area de Conservación Guanacaste in Costa Rica. The workshop session was held in 1995, with participation of 25 mycologists from ten different countries, all expert in a different field of mycology. The

120,000 hectares large reserve has a varied vegetation and elevation, with biotopes varying from mangrove vegetation to dry forest, and includes rain forest and cloud forest at an altitude of 1200–1500 m. The number of fungi expected to occur in the selected area was estimated at about 50,000 species. Up to now, not much is known about the mycoflora in the region, therefore a great impact was expected for mycological studies in Costa Rica and adjacent regions.

The book consists of some theoretical chapters in which the backgrounds and terminology of this pilot project are given, together with the goals, management and time frame of the research. The other chapters deal with sampling protocols, as there are procedures for collecting all different classes of fungi and how to handle them, protocols for isolation and culturing fungi, sampling protocols for fungi associated with living plants or other fungi, woody substrate, aquatic substrates, and animals. The last chapter contains useful references. The project was planned to last seven years, of which the first two would be in the form of a pilot project. A large sum of money would be involved for this ambitious and unique project. Sadly enough the project has stopped now due to economical and political circumstances. What remains is this book with protocols for an inventory of all kinds of fungi, surely a useful contribution to the planning of any kind of such an all taxa inventory anywhere in the world.

R. Watling & E. Turnbull. *British Fungus Flora Agarics and Boleti. Vol. 8. Cantharellaceae, Gomphaceae and amyloid-spored and xeruloid members of Tricholomataceae (excl. Mycena).* (Print and Publications Section, Royal Botanic Garden Edinburgh. 1998.) Pp. 189, 134 text-figs. Price: UK £ 12.50.

This volume of the well-known flora contains two rather unrelated groups of mushrooms: the Cantharellaceae and Gomphaceae with four genera, and part of the Tricholomataceae with 17 genera (amyloid-spored) and 14 genera, respectively (xeruloid taxa). It is stressed in the introduction that several of the genera are still poorly known and in need of further revision. This applies particularly for the genera *Melanoleuca* and *Hemimycena*. Also the status of the xeruloid genera as a natural group is a matter of discussion. The flora follows closely the concept of the preceding volumes. The keys are not always very clear, and do not in all respects correspond with the descriptions of the species. Not all species are represented with figures. These figures are of varying quality.

Z.L. Yang. *Die Amanita-Arten von Südwestchina.* (Bibliotheca mycologica 170, J. Cramer in der Gebrüder Borntraeger Verlagsbuchhandlung, Johannesstr. 3A, D-70176 Stuttgart. 1997.) ISBN 3-443-59072-X. Pp. 240, 175 text-figs. Price: DM 110.00.

We are relatively well informed about the macromycetes of Japan, but about those of the vast territories of China we still know relatively little. In the present monograph 47 species of *Amanita* from southwestern China are treated, nine of which are new and 15 others had not been recorded from China before. The descriptions are very detailed and the line drawings exquisite and highly informative. The author accepts section *Caesarea* as distinct from section *Vaginatae* and proposes to transfer the *A. citrina*-group from section *Phalloideae* to section *Validae*. There are keys to the infrageneric taxa and to the species of each section. An impressively long list of references is added. Let us hope that more of such excellent monographs will follow.