

LIBRI NOVI

Antimicrobial Agents and Chemotherapy, 1966, Editor: L. GLADYS HOBBS, 772 pp. American Society for Microbiology, Ann Arbor, Michigan, 1967, \$ 15.00.

This volume is the Proceedings of the Sixth Interscience Conference on Antimicrobial Agents and Chemotherapy held in Philadelphia, Pa., October 26–28, 1966.

The introductory address by HARRY F. DOWLING, *Drugs and the Four Cultures*, is followed by scientific reports assigned by the editors to the following categories: Infectious Diseases: Experimental Studies in Animals and in Humans, 8 papers; Clinical Evaluation of Antimicrobial Agents in Humans, 29; Genetic Aspects of Drug Resistance, 4; Symposium: Epidemiology of Drug-Resistant Infections, 7; Mycoplasma, Protozoa, and Antibiotic Action, 5; Enzymatic Inhibition of Antibiotic Action, 5; In Vitro and In Vivo Action of Antimicrobial Agents, 22; Development and Evaluation of Antiviral and Antitumor Agents, 15; Production and Biological and Chemical Properties of Antimicrobial Agents and Their Derivatives, 13; Symposium: Identification Aspects of the Production and Metabolism of Antibiotics, 5; Symposium: Chemical Modification of Antibiotics, 4; Symposium: Nonpharmaceutical Uses of Antibiotics, 4.

Several reports deal with antifungal agents and will be of particular interest to mycologists. A rational approach to the treatment of systemic mycoses with amphotericin B, based on serum levels, is described. The results of treatment of fifty cases of North American blastomycosis with amphotericin B are reported in another paper. A comparison of the in vitro and in vivo activities of hamycin and amphotericin B against *Candida albicans* is reported. The susceptibility of 57 isolates of *Cryptococcus neoformans* to amphotericin B is described and the effect of treatment with the drug on the susceptibility of the isolates noted. The effect of lipoproteins on the hemolytic and antifungal activity of several polyenes is discussed. One of 25 derivatives of 4,4'-diaminodiphenylsulfone is shown to possess in vitro activity but not in vivo activity against *Histoplasma capsulatum*. α,β -Poly-DL-aspartic acid 3-aminopropylamide is reported to inhibit the growth of *C. neoformans* and *H. capsulatum*. The antibiotic flavensomycin is described as inhibiting electron transfer in *Penicillium oxalicum*. Extracts of *Calvatia gigantea*, as well as extracts of certain other plant materials, are reported to inhibit the growth of influenza virus in tissue culture and in mice. Three sele-

nadiazole derivatives are shown to have antimicrobial activity, including activity against yeasts and filamentous fungi.

Antibiotics and Chemotherapy continues to provide a means for the publication of a great amount of recent research in a single volume.

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JOHN R. RAPER. *Genetics of Sexuality in Higher Fungi*. 283 pp. Illustrated. The Ronald Press Company, New York 1966. Price: \$ 12.—

“This book is by frustration out of need”: 1) the need for a comprehensive treatment of the complex pattern of mating in the Homobasidiomycetes; 2) the need for an extensive bibliography on this subject for other investigators in this field; 3) the need to acquaint mycologists and fungal geneticists with incompatibility systems of higher fungi and all its ramifications and 4) the need to elucidate the interrelations between genetic factors, mating patterns and morphogenetic sequences. Thus, DR. RAPER explains his motivation for the *Genetics of Sexuality in Higher Fungi*.

Most of the material presented in this book consists of the notable contributions made during 1950–1965 by DR. RAPER, his collaborators and students. However, contributions by other investigators are included to compare, contrast, or wherever possible fill in some of the gaps of information present in the investigations of *Schizophyllum commune*.

The basic biology of the higher fungi, i.e., general life cycle, developmental sequence, incompatibility systems, and a historical survey of this field from 1898–1950 are found in the first four chapters. These chapters are quite readable and contrast with the heavier material which follows. Fortunately, this is occasionally interspersed with humor, for example, “the results of these efforts, as well as those of many subsequent trials, were perhaps not negative; they were, however, uninterpretable”---.

The middle chapters describe the relationship between heterokaryosis and incompatibility factors; the formal genetics of the incompatibility factors regarding the number of factors and structure in both bipolar and tetrapolar species and some of the genetic causes of the disruption of incompatibility control.

Chapter 8, which deals with the BULLER phenomena i.e.; the dikaryotization of homokaryons by dikaryons and related phenomena of internuclear selections, diploidy, nuclear exchange, and somatic recombination, is the most complex both in presentation and because the precise genetic factors determining these ancillary phenomena and the mechanisms by which they occur are still unknown, despite the efforts of a number of investigators.

The final chapters describe the roles played by the incompatibility factors in the morphogenetic sequence of events in dikaryosis in tetrapolar Basidiomycetes accompanied by a model explaining the regulatory action of the *A* incompatibility factor based on a repressor like regulatory system having a dual-regulator-gene; and lastly some compelling arguments for the derivation of bipolar and homothallic Basidiomycetes from an ancestor having a tetrapolar incompatibility system.

In general, DR. RAPER fulfills his objectives, however, as he indicates in the text, further investigations are necessary to elucidate fully the genetics of sexuality in higher fungi.

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CORNER, E. J. H. A monograph of cantharelloid fungi. vi + 255 p., 135 fig., 5 colored pl. *Annals of Botany Memoir* 2. Oxford University Press, 37 Dover Street, London W. 1, England. Price £4.10 s.

CORNER has written another book on the pattern of his Monograph of *Clavaria* and Allied Genera (1950). This one covers the cantharelloid fungi, a group defined in the classical sense of homobasidiomycetes with fleshy, pileate, gymnocarpic basidiocarps having the hymenial surface smooth, or with obtuse gill-folds, or even meruloid. The genera included are *Arrhenia* (with 1 species), *Cantharellula* (1), *Cantharellus* (64), *Caripia* (1), *Craterellus* (10), *Dichantharellus* gen. nov. (1), *Geopetalum* (1), *Gloeocantharellus* (1), *Gomphus* (16), *Goossensia* (1), *Hygrophoropsis* (6), *Leptoglossum* (16), *Nyctalis* (i.e., *Asterophora*) (2), *Pseudocraterellus* (9), *Pterygellus* gen. nov. (1), *Rimbachia* (1), and *Trogia* (46). The group is admittedly artificial. CORNER accepts the prevalent notion that a simple hymenial surface is in some cases primitive, in others derived from lamellate and perhaps poroid and toothed hymenial surfaces.

The format of the book is excellent, the text scholarly without being pedantic, and the illustrations superb. An alphabetical arrangement of generic, infrageneric, and specific descriptions makes them easy to locate; and the numbering of couplets (or in some cases, unfortunately, triplets or quadruplets) is a simple, welcome improvement in the keys over those in *Clavaria* and Allied Genera.

CORNER's first-hand knowledge is mainly of tropical fungi; however the book covers the species of the world, as far as possible. This means, of course, that some descriptions are based on the

literature and are subject to the error and incompleteness usually thereby introduced. Except for types, CORNER rarely cites specimens; therefore one often cannot tell what his acquaintance with material, living or dead, is. One basis for judging how well a description might represent its taxon is thus lacking. CORNER belittles herbarium mycology, and this rankles, especially since he himself practices it. Herbarium mycology is inadequate alone, but it is also, in systematic studies, an essential complement of work in the field and laboratory. Data obtained from herbarium specimens by a person whose knowledge of a fungal group is at the monographic level should be more complete, exact, and relevant than data provided by pre-modern authors or by those whose knowledge of the group is more superficial or incidental. If nothing else, a monographer can provide confirmation, which is desirable.

With the exception of *Trogia*, which I shall return to later, I find little to argue with in CORNER's taxonomic conclusions. After being lulled by the initial, explicit definition of the cantharelloid group and then delighted by the discussion of gill-fold ontogeny in the brief introductory chapter, I was jarred to find *Cantharellula*, *Nyctalis*, and some of the species placed in *Trogia* in the systematic portion of the book. *Polyozellus*, however, is mentioned only in brackets in the generic key. But these things are minor and need no excuse in a monograph of an artificial group. *Cantharellus* is defined as differing from *Craterellus* in having an incurved, epinastic pileus margin; gillfolds, if present, that are formed by thickening of the pileus trama; and, in most species, clamp connections. These differences provide justification for maintaining two genera, whereas a difference in configuration of the hymenial surface, commonly used in North America to separate *Cantharellus* and *Craterellus*, does not. Species having colored, often ornamented spore walls, usually included in *Cantharellus* by North American authors, go into *Gomphus* (*C. clavatus*, *C. floccosus*, *C. kauffmanii*, et al.) or *Gloeocantharellus* (*C. purpurascens*).

A classification proposed by CORNER would be expected to take hyphal systems into account, and the present one is no exception. Most genera are monomitic. *Geopetalum* has both generative and skeletal hyphae in the trama. *Dichantharellus* is also dimitic, in a sense, because of the dichophyses in the stipe. These structures plus the hymenial gloeocystidia and the unclamped hyphae will cause some mycologists to place the genus in the Hymenochaetaeaceae. The description of this family will then be even more diffuse, because of some of the other significant characteristics of *Dichantharellus*; and the convenience of the family as a taxonomic unit will be further reduced. This is too drastic a result of the supposition that the characteristics shared by most of the genera indicate common ancestry and phylogenetic separation from other groups of homobasidiomycetes.

CORNER recognizes and names two new categories of hyphal

systems. Their distinctive elements are cells that become very long, inflate to a fusiform shape, and develop thickened walls. The hyphae so formed may be clamped. In combination with typical generative hyphae, they make a sarcodimitic system. They constitute a sarcotrimitic system when combined with generative hyphae that develop narrow, septate, thick-walled outgrowths resembling binding hyphae in their interweaving course of growth.

Trogia sensu CORNER is essentially a one-character genus containing most of the sarcodimitic and sarcotrimitic homobasidiomycetes. (Also sarcodimitic are *Mycenella*, which CORNER suggests may be united with *Trogia*, and *Rimbachia*, whose separation from *Trogia* is difficult to understand in view of the diversity CORNER permits in the latter genus.) So defined, *Trogia* is an omnium gatherum of fungi with mycenoid, omphalioid, pleurotoid, cantharelloid, and stereoid basidiocarps. To plagiarize CORNER's criticism of the order Agaricales sensu SINGER (1962), this concept of *Trogia* goes beyond the bounds of understanding when it expects the mycologist to look for such diverse fungi in one genus.

CORNER's phylogenetic speculations are interesting even if one disagrees with some of the taxonomic conclusions associated with them. He believes that, generally speaking, large basidiocarps have evolved into small, branched into simple and then in some cases into pileate, and multipileate into unipileate. With these bases and considering other characteristics as well, he suggests several possible evolutionary lines in the homobasidiomycetes. The discussion is tempered by a reminder of how few of the world's fungi we know well and how essential a knowledge of the tropical species is to an adequate classification and theory of evolution of the homobasidiomycetes. A Monograph of Cantharelloid Fungi is a major step toward that goal. I suspect that the clue for the book's *raison d'être* is in a statement in the introductory chapter: "If I may judge from the interest awakened in the clavarioid fungi [by *Clavaria* and Allied Genera], another need is fulfilled." Admirably, I would say.

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C. BOOTH. The Genus *Cylindrocarpon*. Commonwealth Mycological Institute, Mycological Papers 104: 1-56, 2 plates. Kew, Surrey, England, 1966. 17s 6d.

In this revision of the genus *Cylindrocarpon*, 27 species and six varieties are accepted, including six new species and one new variety. One transfer at the varietal level in the genus *Nectria* is also included. Where perfect states are known, these fall in the genus *Nectria* or

one of its segregates. The work is based primarily on cultural studies and so far as possible authentic cultures have been examined. Two well-known names have had to be rejected: *C. mali* on the priority of *C. heteronema*, and *C. radiccicola* both on the priority of *C. destructans* and the early confusion of *C. radiccicola*. Six species and two varieties are unconfirmed or excluded, but brief descriptive or other notes are given. Nomenclature is based on the assumption that DONK's proposal for the conservation of *Cylindrocarpon* WOLLENW. over *Fusidium* LK. ex FR. is accepted. It is of interest to note that in this paper the author is strictly interested in the correct names for species of *Cylindrocarpon*. Where *Nectria* or other perfect states are involved the correct name in *Nectria* is presented, but only second to the correct name in *Cylindrocarpon*, even though this means erection of a new species in *Cylindrocarpon* to accommodate previously unrecognized imperfect states of recognized *Nectria* species.

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F. C. DEIGHTON & K. A. PIROZYNSKI. Microfungi. II: *Brooksia* and *Grallomyces*; *Acrogenotheca ornata* sp. nov.; the genus *Xenosporium*. Commonwealth Mycological Institute. Mycological Papers 105: 1-35, 1 plate. Kew, Surrey, England. 1966. 10s 6d.

The material in this "Paper" is divided into three chapters, the first two of which are authored as indicated in the title, the third by the junior author alone. The following includes material from the abstract published in the issue.

Brooksia tropicalis HANSFORD and *Grallomyces portoricensis* F. L. STEVENS, two widespread foliicolous fungi in the wet tropics are redescribed and their distribution in tropical forests is discussed. *Grallomyces* is shown to be a Hyphomycete and not a member of the Mycelia Sterilia as hitherto supposed. The spores are pigmented, multiseptate, branched and produced from annellophores. The branches are terminated by light-colored attachment organs which are not phialides.

A new species of *Acrogenotheca* (*A. ornata*) is described. This foliicolous fungus, of more limited distribution, possesses sculptured mycelial hyphae similar to those of *Brooksia* and *Grallomyces*, and ascospore characters resembling those of *Brooksia*.

After critical examination of the types of *Xenosporium* and *Xenosporella*, the two genera are considered synonymous. Consequently the four species so far described in *Xenosporella* are transferred into *Xenosporium* and a new species, *X. africanum*, is added. These are helicosporous fungi with "secondary conidia."

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M. B. ELLIS. Dematiaceous Hyphomycetes. VII: *Curvularia*, *Brachysporium*, etc. Commonwealth Mycological Institute. Mycological Papers 106: 1-57. 1966. 17s 6d.

In a monographic treatment of *Curvularia*, 29 species, one variety and one forma specialis are described and illustrated with line drawings. Of these, three are assigned as imperfect states to the genus *Cochliobolus*. In the nomenclator of the perfect states, the *Curvularia* stage is listed as a synonym with no attempt to give a correct citation although this is usually unnecessary. Three new species and one transfer from *Helminthosporium* are proposed. One of the new species, *C. comoriensis* BOURIQUET & JAUFFRET, was published in 1955 without a Latin diagnosis and is validated here.

Nine species of *Brachysporium* are described and illustrated with line drawings. A key is presented as well as new species, *B. pulchrum*, from Tristan da Cunha. *Endophragmia australiensis* BEATON & M. B. ELLIS is described as a new species from Australia. The new genus and species, *Endophragmiopsis pyrozynskii* are described by ELLIS from India. Both are well illustrated with line drawings.

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SZABÓ, D.: Medical Colour Photomicrography. With 103 figures in black and white, and 16 plates in color. Akadémiai Kiadó. Publishing House of the Hungarian Academy of Sciences. Budapest. 135 pp. 1967. Price: \$ 8.—.

The book consists of three parts. The first describes the methods of color photomicrography: formation of images, illumination and the photosensitive material for color photomicrography. The second part, amply illustrated with photomicrographs, mostly in color, describes the procedures, special methods of investigation and the sources of faults. The third part deals with the means for processing color photographic materials and the special chemicals required for this purpose. The Polaroid Land color process is described in the last section of this part. The whole text is excellently written, the translation by P. PALOTAY is most satisfactory. Special mention should be made of the color plates which are gems of the book reproduction technique on heavy, high glossy stock and whose beauty is certainly unsurpassed. The physical appearance of this small volume documents the highest development of the Hungarian book printing. It is most warmly recommended for physicians and biologists as a guide in their work for scientific documentation.

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