The criticisms which have been offered clearly apply to the theory rather than to its treatment by the author, and it would be ungenerous not to add that he has provided an eminently readable and lucid account of the origin and evolution to date of the neo-Darwinian theory, which will be welcomed by many students.

L. A. HARVEY

THE GENUS *ACHLYA*

The Genus *Achlya*

Morphology and Taxonomy. By Terry W. Johnson, Jr. (University of Michigan Studies—Scientific Series, Vol. 20). Pp. xv+180 (22 plates). (Ann Arbor, Michigan: University of Michigan Press; London: Oxford University Press, 1956.) 36*s*. net.

DURING the past few years increasing interest has been taken in those families of fungi which have their main representatives living in aquatic habitats. They are usually called aquatic fungi though several are found in soil, a habitat first indicated by Butler in 1907 for some species of *Pythium*.

Achlya is the largest genus in Saprolegniaceae, with about a hundred described 'species'. It is characterized by the zoospores on discharge from the zoosporangium immediately encysting outside the orifice to form a loose, hollow, spherical cluster. Saprolegniaceae were last treated fully by W. C. Coker in 1932 in a monograph which stimulated research and, as a consequence, is now in need of much amplification. The present monograph is an excellent example of how such work should be done.

Understandably, some of the older specific descriptions were confused for, as likely as not, they dealt with a mixture of fungi rather than a single entity. In the present study more than 800 isolates and numerous specimens have been examined; all species have been redescribed from living or preserved material where available.

The introduction (18 pp.) gives an excellent survey of special points in the genus: vegetative characters; asexual and sexual reproduction; germination; historical summary of taxonomy; occurrence; collection; isolation and culture; preservation of cultures; taxonomic criteria; terminology. *Achlya* may be found in almost any freshwater source and in a diversity of soil habitats. A large number of different 'baits' have been used in the past, but present-day students "have come to utilize hempseed 'bait' almost exclusively for the collection, propagation, and maintenance of their isolates"—as many of us did forty or so years ago.

In the systematic account the genus is divided into three subgenera, *Achlya*, *Centroachlya* and *Subcentrica*, according to how the oil globules are arranged in the mature oospore.

Following a definition of the subgenus there is a key to its species. The species, with its synonymy, is fully and clearly described, followed by a list of the material examined and one of recorded collections. A longer or shorter note gives reasoned and useful information on matters of taxonomy and the like. Each species is clearly figured in the plates. Two sections deal with "Taxa of doubtful affinities" and "Excluded Taxa".

The monograph is set out clearly, with well-reasoned discussions, and the publishers have done their part equally satisfactorily. The only two points I would criticize are: the constant use of the term taxon, where species is more appropriate, and the uncertain treatment of names of species published after 1935 without Latin diagnoses and, therefore, illegitimate. The author provides a Latin diagnosis for one such species, which appears as *Achlya diffusa* Harvey ex Johnson, but discusses certain others, as he must, though, in effect, 'the names do not exist'. The only other new name is *Achlya cambrica* for *A. americana* var. *cambrica*, which Trow described in 1899 and which played so prominent a part in the violent discussions about sex in Saprolegniaceae which lasted for several years.

The modern tendency is to narrow species concepts but, as the author himself says, the trend in the present work is to broaden them, which it is clear he has done as a result of extensive study.

JOHN RAMSBOTTOM

COLORIMETRY

The Measurement of Colour

By Prof. W. D. Wright. Second edition. Pp. ix+263. (London: Hilger and Watts, Ltd., 1958.) 52*s*. net.

THE first edition of this book (1944) must have gained Prof. W. D. Wright many friends. No other author has taken such pains to explain in simple terms the principles of colorimetry, its applications and field of usefulness. The objective of still greater clarity has motivated some of the re-writing of the second edition, which at the same time brings in new material—a section on colour television, for example—and jettisons some earlier descriptions of now obsolete visual instruments. That considerable difficulties are experienced by those newly approaching the measurement of colour is undeniable. Yet the concepts involved are essentially simple and the mathematics required is elementary. Two probable stumbling blocks for the tyro are first, his own preconceived but mistaken idea that a sensation is being measured for which some particularly subtle method will be needed, and secondly—a purely technical difficulty—the use in colorimetry of the trichromatic or T-unit. One of the main improvements in this second edition is in the explanation of the T-unit, which is now carried through without any admixture of luminosity considerations. A metallurgical analogy of the T-unit is also provided which may help some. But one wonders whether the real solution would not be to rid colorimetry of the T-unit altogether. In my opinion much would be gained in clarity and even in economy of treatment by developing the subject from the three colour-matching functions and by regarding all problems as in principle three-dimensional ones to be handled in terms of tristimulus values. The transition to the usual two-dimensional chromaticities can easily be made at any stage, and no explicit introduction of a T-unit would be needed. From his comments on p. 109, Prof. Wright appears to be half converted to this view. If he would cross the Rubicon there is little doubt that other colorimetrists would follow.

With an extension of the standard colorimetric system of the International Commission on Illumination (C.I.E.) in prospect, the fuller account now given of the work—due principally to the author and Mr. J. Guild—which led to the 1931 system, is most opportune. Another good feature is the expanded treatment of colour atlases and of subjective judgments of colour and colour differences. This omits theore-

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