pression in bacteria. After a general exposition on the *lac* operon, the author considers the comparative anatomy of other bacterial operons. He introduces the subject with a short discussion of the kinds of circuit diagrams expected in positively and negatively controlled inducible and repressible systems and of the genetic predictions for regulatory elements in each case. He then considers translational control and reviews the confusing mass of experiment and hypothesis on polarity and polar mutants. The final section of the book contains three chapters dealing with replication, repair, and recombination in DNA.

The great merit of Lewin's book is that it places the hundreds of recent papers on the molecular aspects of gene expression and replication in bacteria and to a lesser extent bacterial viruses in perspective. One comes away from the book with the feeling that one has finally caught up with the literature. The book should serve not only as a superb primer for the rusty or peripherally interested geneticist but as an excellent text for a second-level course in molecular genetics.

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Microorganisms

The Yeasts. A Taxonomic Study. J. LODDER, Ed. Second edition. North-Holland, Amsterdam, 1970. xvi, 1386 pp., illus. $65.

Written by 14 specialists, this bulky treatise is based on the studies of a vast number of yeast strains, obtained from individuals and culture collections around the world. The authors have developed an array of standard procedures and media which ensure that their results are strictly comparable and reproducible by others; a precise account of the methodology is found early in the book. The book further contains: an excellent review of the sexual and asexual modes of reproduction encountered among the yeasts and of the complications they engender for yeast taxonomy; determinative keys for the identification of genera and species; and detailed descriptions of the properties of each of the recognized taxa, along with comments on the criteria used for their differentiation. It is therefore an invaluable source of information on yeasts and indispensable to anyone who has a more than passing interest in these organisms.

The classification of yeasts, like that of most other microorganisms, presents problems that stem from the paucity of characteristics that have an incontestable evolutionary significance. Some of the authors seem to believe that it is possible to formulate phylogenetic principles applicable to this group; but, however ingenious, the arguments presented rest on premises that many biologists will be reluctant to accept. I therefore found it refreshing to come across statements by other contributors that reveal a growing awareness of the precarious status of such arguments and unhesitatingly advocate the use of differential properties in a purely pragmatic manner. In the introductory section dealing with the genus *Saccharomyces*, Van der Walt clearly expresses this attitude: "The present demarcation of the genus is thus utilitarian and aims merely at providing a method of reference and communication" (p. 556–57). A scrutiny of the properties used to define the currently accepted genera and species leaves me with the impression that this holds true for most of these taxa. I therefore propose that in future editions such terms as "related" and "relationship," with their phylogenetic connotations, be replaced by less pretentious ones that imply no more than degrees of resemblance ("similar," "similarity").

With one exception, the genera are distinguished by morphological characteristics. Because the study of a yeast usually begins with a microscopic examination of the culture, this seems rational enough. But such features have occasionally been used in a misleading manner. If, for example, a yeast culture is found to contain triangular budding cells, the key to the genera unambiguously leads, by way of 1c, 2c, 6b, and 9a, to *Trigonopsis*; but such cells also occur in *Candida diddensii* (figs. 354 and 172). The genus *Candida*, comprising the non-spore-forming yeasts that produce a pseudomycelium, includes the two species, *C. glaebosa* and *C. melibiosica*, in which this feature is not apparent (figs. 186 and 218), even when they are grown under conditions that favor pseudomycelium formation (slide cultures and Dalmau plates).

The genera *Cryptococcus* and *Torulopsis* are differentiated by a single physiological property, namely the ability or inability to use inositol as a carbon and energy source. Comparable criteria serve to subdivide genera into species; morphological characteristics are no longer considered suitable for this purpose. Again, from a utilitarian standpoint, this practice may be acceptable, but it seems precarious, for it has been noted that a strain propagated over a prolonged period of time on special media may acquire new physiological properties, and it is also known that microorganisms can lose the ability to metabolize a particular substance as the result of a single-gene mutation. These facts imply that an original isolate and its progeny may be classified as different species.

These critical remarks are not intended to depreciate the value of the book as the most extensive compilation of information on yeasts currently available. It occupies a position similar to that which *Bergey's Manual* has attained in bacteriology. And just as consecutive editions of the latter have been improved by criticism of the preceding ones, it is hoped that future editions of *The Yeasts* may benefit from a careful consideration of the misgivings here expressed.

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Proteases

Structure-Function Relationships of Proteolytic Enzymes. International Union of Biochemistry Sponsored Symposium No. 37, Copenhagen, June 1969. P. DESNUELLE, H. NEURATH, and M. OTTESEN, Eds. Academic Press, New York, 1970. 310 pp., illus. $17.50.

This volume represents an attempt at a grand survey of information that has been accumulated regarding enzymes that function in the hydrolysis of peptide bonds. Necessarily, because of the diversity of proteins involved in catalyzing this hydrolytic process at differing peptide specificity sites within cells of diverse function, the quality of the available facts varies enormously with the particular enzyme. Therefore, although it contains a number of excellent articles, this symposium volume is very much a mixed bag.

As of the date when the symposium was held, three-dimensional structures to atomic resolution had been determined for chymotrypsin, elastase,