

I might suggest that if Lavoisier had been the model for the whole volume, the result would have been superlative.

The book is handsomely printed, with very few printing errors, and with appropriate illustrations. The index greatly enhances the utility of the volume, although it is not without fault. Wiegleb, for example, who receives separate treatment in the text, is not to be found in the index. The price of the volume—\$25—seems excessive.

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Experimental Phycology

Physiology and Biochemistry of Algae.

Ralph A. Lewin, Ed. Academic Press, New York, 1962. xxvii + 929 pp. Illus. \$32.

Ralph Lewin, the editor of this volume, states that "It is designed as a guide book, primarily for research workers and advanced students. . . ." That purpose has been well-fulfilled. Anyone who wishes to learn about any aspect of experimental phycology will begin here to gain access to the literature through May, 1960, as well as to a few more recent papers. There is no other inclusive treatment of this field in any form; this book's precursors are restricted either in scope or in size—Fogg's monograph on the metabolism of algae (Methuen, 1953), Blink's brief article on the physiology and biochemistry of algae in the *Manual of Phycology* (Chronica Botanica, 1951), and Myer's review of the physiology of algae in volume 5 of the *Annual Review of Microbiology* (1951).

The text proper (826 pages) consists of 55 separate articles contributed by 57 authors. The average chapter contains 12 pages of text and 3 pages of references (about 65 references per chapter). In keeping with the purpose of the book, the references include full titles. The longest article (31 pages) is by Stadelmann on permeability; the shortest (4 pages by McLaughlin and Zahl) is devoted to endozoic algae.

The articles are grouped into four sections. These sections and randomly chosen illustrative chapters are: Nutrition and Metabolism, consisting of 17 chapters covering such topics as light reactions in photosynthesis by Marcia Brody and Seymour Brody, fermentation by Gibbs, enzyme systems by Ja-

cobi, nitrogen fixation by Fogg, nucleotides and nucleic acids by Iwamura, and inorganic micronutrients by Wiessner; Composition of Cells and Metabolic Products, with 13 chapters including those on storage products by Meeuse, mucilages by O'Colla, chorophylls by Bogorad and volatile constituents by Katayama; Physiology of Whole Cells and Plants, made up of 19 articles on such topics as salt and osmotic balance by Guillard, intracellular movements by Haupt, cell division by Hase, nuclear-cytoplasmic interactions by Richter, sporulation by Erben, and biochemical genetics by Ebersold; and Physiological Aspects of Ecology, made up of six articles including those on freshwater algae by Talling, seaweeds by Biebl, and lichens by Ahmadjian.

The last 100 pages of the book are devoted to three appendices and an author index, a subject index, and a taxonomic index. Appendix A, prepared by Silva, lists all algae mentioned in the book according to their taxonomic positions, with notes on taxonomic questions. Appendices B and C are each two-page afterthoughts, one on the uptake of radioactive wastes, by Eppley, and the other on antibiotics from algae by Ralph Lewin, the editor.

The consistent style of the chapters is a tribute to the editor, who must have done rather more rewriting than is implied in his apologetic statement—"The more abstruse syntactical features of some of the contributions were smoothed over as far as possible." English is not the native tongue of 18 of the contributors.

There is little point in commenting on the problems an author faces in attempting to discuss respiration or the light reactions in photosynthesis more or less strictly in terms of work done with algae; the difficulties are self-evident. Many of the articles reflect the fact that most facets of biochemistry and many of physiology are universal among life forms and assume an air of artificiality when considered only on the evidence derived from particular kinds of organisms. Nor is it worth much comment to chide the editor for his slightly supercilious dismissal (in his preface) of the continuing progress in the older, established aspects of phycology—taxonomy and the anatomy and morphology of life cycles. The need for competent people in these areas has perhaps never been so pressing as it is now that the intensity of research on the oceans has been increased at the behest of the United

States government. The space devoted to taxonomy in the volume belies the impression given by the editor in his opening remarks.

This book attests to the mass of information available on the physiology and biochemistry of algae. It indicates that the time is ripe for some ambitious or dedicated scholar to prepare a unified and fully integrated textbook on the physiology of the algae, a book like those already available for the higher plants and the fungi. Such a textbook is needed for use in those undergraduate or graduate courses in algal physiology that already exist and also to stimulate the development of more courses on this subject in the colleges and universities.

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Studies on Speciation

The Taxonomy and Speciation of *Pseudophonus*.

A subgenus of *Harpalus*: Harpalini: Carabidae, known to occur in North America. George E. Ball and Joseph N. Anderson. Catholic University of America Press, Washington, D.C., 1962. xii + 94 pp. Illus. \$3.95.

Few detailed studies of "problem" groups of invertebrates are available to the nonspecialist speciationist. This one, which deals with a group of widespread and readily obtainable ground beetles, opens a fertile field for investigation. Beetles include one-fourth or more of the known species of animals, yet their study has been disproportionately neglected. *Pseudophonus* is the subgenus of *Harpalus* (Coleoptera: Carabidae) that includes the ubiquitous and extremely common *H. pennsylvanicus*. Before Ball and Anderson made this painstaking study, even a specialist could differentiate *H. pennsylvanicus* from its close relatives only with considerable difficulty and uncertainty.

The authors treat only North American representatives of the subgenus, of which 12 species are recognized. The taxonomy of the group is difficult, and a unique feature of this monograph is a special chapter entitled "Problems of identification." The unusually complete discussion of taxonomic characters employed makes the book readily intelligible to the nonspecialist. The final