concerned with the appearances of structures. The Gaffron article on photosynthesis (272 pages) is thoughtful and very thorough; it well summarizes the rapidly advancing subject as of 1958. An advantage of a limited treatise on photosynthesis is that the myriad of early and less pertinent observations cannot be included.

The other three articles — namely, "Proteins, enzymes, and the mechanism of enzyme action" (74 pages) by Birgit Vennesland (in vol. 1A); "Cellular respiration" (105 pages) by D. R. Goddard and W. D. Bonner (in vol. 1A) and "Chemosynthesis: the energy relations of chemoautotrophic organisms" (40 pages) by M. Gibbs and J. A. Schiff (in vol. 1B)—are needed in a general treatise on plant physiology. Their essential content is drawn from the wider aspects of biochemistry and is very condensed. The article by Birgit Vennesland is interesting to read and is a reasonable integration of the action of enzymes in groups rather than separately. In a preamble the editor comments that understanding energy storage requires consideration of chemosynthesis as well as photosynthesis, which accounts for the article on chemosynthesis. Oxidation and reduction and electron transport through cytochrome systems are particularly well treated by Goddard and Bonner. Their discussion of pathways of fermentation suffers from terseness, as is so apt to be the case for this subject.

A general treatise might be assessed on the basis of its organization of the content of the subject, the selection of authors and their thoroughness and enthusiasm, the inclusion of the most recent material as well as classical aspects, and on being sufficiently vital to arouse interest. This series fully meets these criteria.

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Biology and Comparative Physiology of Birds. vol. 1. Alexander J. Marshall, Ed. Academic Press, New York, 1960. 518 pp. Illus. $14.

Birds have been used as research material by so many biologists and in so many kinds of investigations that the resulting literature has become voluminous and scattered to such a degree that it is a major task for any investigator to acquaint himself with the available data. Any attempt to bring together a critical, coordinated, modern synthesis of large segments of these fields of study is therefore apt to be welcomed by the harassed zoologist. Indeed, Marshall first decided to undertake the preparation of this work because he himself was acutely aware of the time and trouble involved in gathering the information needed for his own researches. Once embarked upon this comprehensive survey, he found it necessary to enlist the help of some 23 highly competent colleagues in England, on the continent, and in the United States, Canada, and Australia. Of the 23, 13 have contributed chapters to this first volume (volume 2 is scheduled for publication shortly): "The origin of birds" by W. E. Swinton; "Adaptive radiation in birds" and "Classification" by R. W. Storer; "Geographical distribution" by D. L. Serventy; "Development" by R. Bellairs; "The integumentary system" by M. E. Rawles; "Skeleton" by A. d'A. Bellairs and C. R. Jenkin; "Musculature" by A. J. Berger; "Blood-vascular system" by J. R. Simons; "Respiratory system" by G. W. Salt and E. Zeuthen; "Digestive system" by D. S. Farner; and "Excretion" by I. Sperber.

Each chapter begins with a carefully worded introduction, which quickly and easily orients the reader to the viewpoints and guiding thoughts underlying the presentation. After this comes a series of subheads (the number varies in the different chapters from a minimum of 3 to a maximum of 18) and finally a useful and well-selected list of literature references. It is somewhat invidious to single out special chapters for mention, but just as an example of the convenient subdivisions in which the factual matter is presented and discussed, we may take the following two. In the chapter devoted to adaptive radiation, the breakdown is as follows: introduction; problems in size, the surface-volume ratio; locomotor adaptations; feeding adaptations; adaptive radiation within families of birds; the history of adaptive radiation; references. The chapter on respiration includes: introduction; anatomy; ventilation of the respiratory tract while standing; the regulation of respiratory movements; heat regulation by the respiratory system; respiration during specialized activities; references.

The chapters vary in the amount of detailed information presented, but all seem to be not only adequate but decidedly useful and reliable digests and guides.

The book is designed not only for ornithologists but also for general biologists who may want information about a given topic in avian biology. It can be recommended heartily to both groups as a reference work and for browsing. Two indexes, subject and author, complete this notable volume and make readily available the vast number of topics surveyed in it.

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British Cup Fungi and Their Allies. An introduction to the Ascomycetes. R. W. G. Dennis. Published for the Ray Society by Quaritch, London, 1960. xxiv + 280 pp. Illus. + plates. 80s.

The author has brought together, in excellent fashion, an account of the Ascomycetes of England, of which the cup fungi form an important part. The book is issued as Number 143 of the Ray Society series (a series of impressive scientific books in many fields published since 1844. A similar work on the Ascomycetes of North America has never been published.

An introductory chapter covers effectively such topics as fungi in general, structure and classification of the Ascomycetes, taxonomy and nomenclature, and techniques recommended for those who wish to collect and study these interesting organisms. The body of the text presents concise, accurate descriptions of each order, family, and genus involved, with effective keys for their ready separation. Species are not keyed, but they are carefully, though briefly, described with emphasis necessarily on microscopic characters.

The outstanding feature of the book is to be found in the illustrations, which are from the collections of the Royal Botanic Gardens at Kew. Nearly 500 species are depicted in the 40 colored plates and more than 150 others in black-and-white plates. Even though it is restricted geographically, this book will be very useful to all who are concerned with the Ascomycetes, for a great many of the species included are of world-wide distribution.

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