to be a little too much "substituting into formulas." I find it helpful to emphasize the "principal equilibrium" (to borrow a term from E. L. King), calculate an approximate answer first, then check the approximation to see if it is valid. But this is a subjective matter. There is no doubt that this book will help many thousands of students understand ionic equilibria.

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Botany

Botanique. Anatomie, cycles évolutifs, systématique. Pierre-Paul Grassé, Ed. Masson, Paris, 1963. vi + 1040 pp. Illus. F. 98.

Botanique, one of a series of volumes that summarize the present state of knowledge in various fields of biology, deals with structure and life cycles throughout the vegetable kingdom, with emphasis on phylogenetic interpretation. It is designed as a textbook for French students who are working towards a first degree in biology, and it combines the knowledge of a number of specialists, each dealing with a particular group of plants. Essentially the volume falls into three parts: the first chapters are devoted to the bacteria (Prévot), Cyanophyceae (Grassé), algae (Feldmann), fungi (Chadefaud), and lichens (Abbayes); the second, which is preceded by a special chapter on the general principles of evolution (Gaussen), includes chapters on Bryophyta and Pteridophyta (Ferré), gymnosperms (Gaussen), and the morphology and reproduction of the angiosperms (Ozenda), a general chapter that precedes the systematic account of the angiosperms (Leredde) in which the families are arranged according to the system of Hutchinson. The third section, which includes an account of ecology and phytogeography (Gaussen), is of special interest.

There is no marked unevenness among the accounts; each chapter is preceded by a summary of its salient features and then enters into more detailed systematic treatment. The necessarily brief accounts are explained and illuminated by profuse and excellent illustrations, mostly black-and-white line drawings (many are originals). The excellent diagrams that illustrate growth and the life cycle in the lower orders are noteworthy in that they are the kind students delight in reproducing in examinations and workbooks. The sections that deal with the lower orders are most successful because they do not wholly dissociate biochemistry and function from accounts of structure and life history. Function is largely ignored in the discussion of form in the higher groups and, although we are promised a separate volume on plant physiology, the unfortunate tendency to overcompartmentalize botany is not resisted.

There is probably no up-to-date survey of the structure, life history, and presumed phylogeny of the entire vegetable kingdom that can compare with this volume; in addition to its undoubted value to the student, the volume will serve as a valuable reference book for the nonspecialist. The simple, lucid French will not tax the resources of the amateur linguist, although the tendency to refer to plants solely by their common name may do so.

Unfortunately there is no information about sources and there are no guides to further reading. That the work is not intended to be a complete survey is indicated (on p. 725): "Il est certain que chacun de ces paragraphes peut à lui seul, pour les Angiospermes faire l'objet d'un volume." It would have been worthwhile to indicate to what extent these volumes are already available. Certainly there is ample space in the book for references to further reading.

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Protozoology

Essays on Protozoology. H. Sandon. Hutchinson, London, 1963. 143 pp. Illus. Paper, 15s.

One can read this pleasant little book in an evening or two. In it Sandon attempts to do "what the guide-demonstrator does in a museum, namely to help the visitor to find his way by going around with him. . . ." He has brought together an interesting assortment of facts about the flagellates, amoebae, and ciliates, and he has collated the diverse topics very effectively. These three groups of protozoa are discussed with respect to their nutrition, locomotion, reproduction, osmoregulation, and various other aspects of their biology. In the introductory section on protozoa in general, Sandon comments briefly on the ecology of a variety of types, including symbionts, and on the difficulties of dealing with the possible lines of evolution among protozoa.

The text should have been warmed up a bit with some good illustrations. The only figures introduced are coupled to an appendix in which the classification of flagellates, amoebae, and ciliates is sketchily outlined. Some of these illustrations fall short of showing the details that are essential to an understanding of the principal taxa. Protozoan classification (even if the so-called sporozoa are summarily omitted) is surely not simple, and it cannot be very well explained by brief comments on the orders and a few representative genera.

There is a lively enthusiasm running through this book, and I think it will make enjoyable reading for students as well as biologists who look to the protozoa for help in their own particular studies.

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Maury's Biography

Matthew Fontaine Maury, Scientist of the Sea. Frances Leigh Williams. Rutgers University Press, New Brunswick, N.J., 1963. xxii + 720 pp. Illus. $10.

This well-written and well-printed book is a very complete biography of an energetic and surprisingly studious naval officer. The author has done an immense amount of research, and the end result far surpasses the other attempts with which I am familiar.

Maury was a controversial character during all of his adult life. For a naval officer to be accepted as an equal by the scientific community is not easy even today, and in the days before the Civil War most officers had very limited educational opportunities and were therefore not considered able to take up science. Maury also had difficulties with the Navy Department, which did not quite know how to deal with an officer engaged in scholarly work.

Maury maintained an immense correspondence, especially with European scientists, for his work was well thought