ested in maintaining living cells by freezing.

The last half of the book is devoted to specific microchemical and histochemical methods for locating and determining carbohydrates, proteins, nucleic acids, lipids, minerals, enzymes, and enzymatic activity. The excellent results that can usually be obtained by the complementary use of microchemistry and quantitative histochemistry are emphasized, but limitations, such as those found in the analysis of minerals, are also discussed. The two chapters on enzymes are particularly interesting and worthwhile, and the final chapter is an excellent account of autoradiographic methods. The book is well illustrated throughout.

Both the simplicity and the clarity of this work are to be lauded; but a danger does exist in that some morphologists may oversimplify the biochemical implications and physiologists may get the impression that all morphological problems can be solved by the procedures in this book. However, close cooperation between workers in the two disciplines should terminate in the resolution of such possible obstacles.

ROBERT A. PATERSON
Department of Botany,
University of Maryland

Textbooks of Botany

The Science of Botany. Paul B. Weisz and Melvin S. Fuller. McGraw-Hill, New York, 1962. xi + 557 pp. Illus. $8.95.

Plants: An Introduction to Modern Botany. Victor A. Greulach and J. Edison Adams. Wiley, New York, 1962. xvi + 545 pp. Illus. $7.50.

An Introduction to Plant Biology. Dale C. Braungart and Ross H. Arnett, Jr. Mosby, St. Louis, Mo., 1962. 411 pp. Illus. $11.

A college teacher selecting a textbook of botany, or anyone interested in a volume from which they can learn about plants as subjects of scientific investigation, has a number of choices, among which are the three volumes reviewed here. One, *Plants: An Introduction to Modern Botany* by Greulach and Adams, is planned for use in a one-semester course, or for the semester devoted to botany in a biology course. It is pared to size by omitting the extended treatment of the plant kingdom, but it could be the text for a two-semester course, if supplementary material is used. The other two texts are for two-semester courses at the introductory college level.

Weisz and Fuller's book, *The Science of Botany*, and the one by Greulach and Adams, are new approaches to college botany, both successful and welcome. In both, the newer information, concepts, and insights that have been gained in biological and biochemical research are fully integrated, from the beginning, into the topics covered. In so many textbooks—for example in *An Introduction to Plant Biology* by Braungart and Arnett—DNA and the gibberellins and other "new" topics are discussed, but the conceptual implications of recent advances have not changed their descriptive approach to many topics. In fact, Braungart and Arnett's book is a traditional textbook with the occasional unfortunate twist that plants are made to fit pedagogical categories common to zoological thinking. One example is the paragraph on movement, in which movement is listed as a characteristic for distinguishing living things from nonliving. In an effort to make plants seem alive, movement is discussed without a clear distinction being made between turgor movements and changes in position which result from growth. Their description of plant life histories is printed on green paper, and bound together in a center section. If such a presentation makes it possible to reduce the emphasis on life histories, it may be a desirable innovation; that the histories, as they are usually presented, kill the interest of many students is well known. But an interesting treatment would be a more desirable solution. Unfortunately, the book contains far too many errors, in the text figures and their legends and in the written presentation. It is a harsh but inescapable conclusion, in my opinion, that there are better traditional botany texts.

A word more should be said about the two textbooks with the refreshing, new approach: *Plants: An Introduction to Modern Botany* by Greulach and Adams and *The Science of Botany* by Weisz and Fuller. Greulach and Adams provide (in an appendix) the chemistry that is needed to understand much of modern botany. They discuss the origin of life in the last chapter. Weisz and Fuller start with the origin of life and develop their presentation; they immediately introduce the chemical facts and concepts which they then use throughout the book. It will not be an easy textbook for students, but it should be an interesting one because it is challenging. The six parts of *The Science of Botany* are: The living world; The world of plants; Metabolism; Self-perpetuation: The steady state; Self-perpetuation: Reproduction; Self-perpetuation: Adaptation. The four sections of *Plants: An Introduction to Plant Biology* are: Man and the world of plants; Levels of plant organization; Plants in action; and From generation to generation.

All three texts are well illustrated. Photographs and diagrams are, with very few exceptions, well enough reproduced for a student to easily see what is described. The very excellent, and numerous, explanatory diagrams in Weisz and Fuller merit particular commendation. (Incidentally this is not the Fuller of Fuller and Tippo's well-known text.) Weisz and Fuller quickly make clear complicated botanical and chemical information. Students who have little or no chemistry should be able to understand not only what is known about the physiology of live plants, but also developmental morphology and the role of plants in the scientific world and in man's world. The same "feel" for the plants as biologically and humanistically important is achieved by the approach of Greulach and Adams. This cannot be said with equal force for the book by Braungart and Arnett.

HARRIET B. CREIGHTON
Department of Botany and Bacteriology,
Wellesley College

Marine Mollusks

Marine Molluscan Genera of Western North America. An illustrated key. A. Myra Keen. Stanford University Press, Stanford, Calif., 1963. x + 126 pp. Illus. $4.50.

Although this book is only 126 pages long, it contains diagnostic characters for all the genera of shell-bearing marine mollusks found along the west coast of North America from the Mexican boundary to the Arctic Ocean. The following classes are included—Gastropoda, Pelecypoda, Amphineura, Scaphopoda, and Cephalopoda. Each genus is illustrated with one or more very acceptable line drawings, and the illustrations appear on the same page on