

For teachers who are looking for a new method of presenting botany to first year students this program is very complete. The student comes in contact with materials that are usually only emphasized in a laboratory on page one. Each class member may proceed at his own pace. He will have a manual-study guide and a set of tapes to instruct him. All directions are clearly stated and outlined. Excellent line drawings, photographs, and diagrams are included. Sometimes the procedures are so explicitly presented that some students may find them too elementary. Any beginning student of botany who is having difficulty with the course will find the approach helpful. He may review the taped scripts as often as he wishes. Able students will progress rapidly.

The information provided on the tapes is the source material for answering the questions, completing the charts, and labeling the drawings in the manual. This course makes it necessary for the botany department to have more than one tape recorder available for students.

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PLANT BIOLOGY: A CONCISE INTRODUCTION

by Ross H. Arnett, Jr. and George F. Bazinet, Jr. 4th ed. 1977. The C.V. Mosby Company (11830 Westline Industrial Drive, St. Louis, Missouri 63141). 553 p. \$10.95.

In this concise botany text, the authors attempt to maintain a balanced coverage of all branches of the subject. At the same time, they blend the traditional botanical subject matter with the more recent in an acceptable manner. An emphasis is placed upon the need for basic factual information to be mastered before modern botany can be appropriately understood. The text is thus organized in a traditional phylogenetic sequence after introductory chapters on systematics, basic chemistry and cytology. The subject of bioenergetics follows the plant kingdom survey and precedes the treatment of plant physiology, genetics, evolution and ecology.

The text seems well-written and readable. As with any concise treatment, however, much necessary explanation is lacking. In the genetics section for example, no mention other than the punnet square mechanism for determining Mendelian ratios is presented. With the awareness of ecological problems, the authors have revised the section of

the text dealing with plant genetics, evolution and ecology. Several features enhance the utility of this basic book: (1) an appendix which contains an abbreviated plant classification which is keyed to 23 well illustrated plant life cycles; (2) A seventeen page glossary; and (3) 726 illustrations; all black and white photos or line drawings.

This new edition should be considered for advanced biology courses in high school, for introductory and survey courses in college and as a reference for all biology teachers.

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ANATOMY OF SEED PLANTS

by Katherine Esau. 2nd ed., 1977. John Wiley and Sons (605 Third Avenue, New York 10016). 550 p. \$16.95.

An author may be tempted when writing a new edition merely to correct errors and add a few cosmetic changes. One need only compare the editions of this book to realize that Katherine Esau has thoroughly revamped her short text in plant anatomy.

The new book is larger, more appealing to the eye, and representative of the many strides made in plant anatomy during the past 17 years. Pages are larger, a two-column format is now used, and a more readable type face is introduced. Illustrations are brighter and clearer. Definitions in the glossary have been reworded, and even some reused figures have been modified. Literature references, which are used extensively, have been updated. A very thorough index, essential in a text of this type, is provided.

Ultrastructure, nearly ignored in the first edition, is highlighted in new chapters on the cell and the cell wall; elsewhere it is interlarded generously. Esau has included explanations of the functions of the structures described, and she candidly acknowledges controversy in the interpretation of anatomical and physiological data.

Anyone needing a textbook in plant anatomy should consider adopting this one. For biologists who want a good reference in that field this book will suffice except for aficionados who require the more elaborate detail found in books like Esau's *Plant Anatomy* (2nd ed. 1965. J. Wiley).

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General Biology

BIOLOGY

by Claude A. Villee. 7th ed., 1977. W.B. Saunders Company (West Washington Square, Philadelphia, 19105). 980 p. \$15.95.

This impressive textbook illustrates at once what is right and what is wrong with biology courses today. I had an earlier edition of Villee in my first college biology course. By the time a book has been translated into Polish, Russian, and Chinese and has survived to the 7th edition in English it can rightly claim to be a classic. The first edition of *Biology* appeared in 1950, the 6th in 1972. All those years have produced a book that is polished, reads well and contains remarkably few errors or misprints. The type is large and easy-to-read; the format is excellent for teaching.

Each chapter is followed by questions and a list of supplementary readings. A fine glossary, excellent bibliography and adequate index are at the back of the book. However, the appendix on physical and chemical concepts is woefully inadequate for a student to handle the level of biochemistry in the text. I found reading the book a fascinating review of biology for me. The sections on energetics and biochemistry are excellent and in many ways superior to similar material in books for more advanced courses. That is probably only to be expected from one of the foremost biochemists in this country. The wealth of material is such that one could almost teach four years of zoology from it. Although plant biology is much improved in this edition, 15% of the text devoted to plants cannot do more than introduce the subject.

Can one complain of too much of a good thing? As Szent-Gyorgyi has noted (*Science* 146:1278) too often we give students dry bones rather than meat. As teachers of biology we must whet our students' appetites for knowledge, teach them the excitement of creativity, give them fire not ashes from the altar of learning. Do we need to overwhelm students with biology textbooks approaching 1000 pages in length? Despite the disclaimer in the preface, it really is an encyclopedia of biology. Students will not be attracted to biology by books such as Villee's. This good, gray book is both scholarly and drab. Attention seems to be focused on a myriad of details rather than unifying themes of life. In use of color and imaginative format Villee's book suffers by comparison with several competitors now on the market. With only a nod to the plant kingdom it does not qualify to be called a biology text. Although it is an excellent source of