

specialist in his field. Of particular interest to students of biology are the chapters "Biology of the Sea," "Food from the Sea," and "Farming the Sea." Other chapters include information on some of the earlier oceanographic expeditions, such as the voyages of the *Challenger* and the *Albatross*; methods of mapping the ocean floor; the study of tides, waves, and currents; chemical constituents of the sea; mineral resources and mining of the sea; history of diving techniques and their use in underwater archeology; and an account of the increasing sophistication in design of submarines and submersible research vessels. The text is complemented by a large number of black-and-white photographs, drawings, and diagrams. Color paintings and photographs—unfortunately, poorly reproduced and one printed upside down in my copy (p. 192)—are grouped into four sections of the book and labeled "Color Essay."

The appendix includes a list of important dates in the history of oceanography and an excellent list of further references for each chapter topic.

Only a small part of this book can be considered strictly biologic in subject matter. However, the book does give an excellent review of the total scope of modern oceanography and should be considered for use as reference or textbook in the growing number of high school and college introductory-oceanography courses.

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Microbiology

THE MICROBIAL WORLD, by Roger Y. Stanier, Michael Doudoroff, and Edward A. Adelberg. 3rd ed., 1970. Prentice-Hall, Inc., Englewood Cliffs, N.J. 873 pp. \$15.95.

The long-awaited new edition is so thoroughly revised that it almost constitutes a new book. Not only are the authors among the foremost researchers in the fields of microbial taxonomy, physiology, and genetics, respectively, but theirs is also one of the best comprehensive microbiology textbooks available—perhaps the best. College students and high school teachers who have a good grasp of genetics, cell physiology, and elementary biochemistry, along with a desire to become thoroughly acquainted with the fantastic world of modern microbiology, will surely enjoy *The Microbial World*. It is certainly an excellent textbook for a high-powered upper-division undergraduate course in microbiology.

The primary aim of the book is the description of microorganisms, including their behavior. This aim has been stretched a bit: there are detailed

presentations of biosynthetic and degradative pathways and of molecular genetic mechanisms, and there is a chapter on environmental cycles of various critical elements. A full treatment of the distinctive features of procaryotic cells, in contrast with those of eucaryotic cells, includes good brief descriptions of most kinds of eucaryotic protists. Approximately three-fifths of the text is devoted to three major subjects: procaryotic metabolism, including energy production and transfer, biosynthesis, and regulation; the major types of bacteria; and bacteria-virus relationships, with attention to current theories of molecular and population genetics. There are chapters on microbial growth and population dynamics and on economic microbiology. A short history of microbiology and a discussion of pertinent techniques are included.

By far the most innovative and exciting sections are those dealing with the relationships of microorganisms with each other, with plants and animals, and with the environment. The ecology of microorganisms is treated in detail, from the evolution of symbioses to mechanisms of pathogenicity and from the effects of bacterial toxins to theories of antibody formation.

Two criticisms may be made. The absence of specific references to original literature becomes critical in the sections on molecular biology and on metabolism. Also, certain ideas about these complex matters have been generalized to the point that important exceptions are sometimes omitted.

The wide margins and the great number of fine illustrations, diagrams, and tables, as well as the lucid exposition of many difficult topics, make the book very useful as a general reference work. It is pleasant to find that excellent organization can make a comprehensive textbook such as this completely unburdensome.

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Molecular Biology

THE MOLECULES OF LIFE, by Gisela Nass. 1970. World University Library, McGraw-Hill Book Co., New York. 256 pp. \$2.45.

As a book intended for newcomers to the study of molecules present in organisms, this book has obvious merit. While emphasis is placed upon simplicity in the presentation, clarity and validity are retained. Among the themes developed are the structure, function, and regulation of the synthesis of macromolecules; structure and organization of multicellular organisms; and the types of molecules produced that serve as communication between organisms

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and within organisms. Much effort has been spent to include diagrams and photographs to assist in developing the ideas of the text. Notably, the diagrams used to show how regulation occurs in a biologic control system and how proteins are formed have real value for the beginning student. There is little emphasis on chemical terminology, but rather an emphasis on stating what happens and then illustrating it pictorially. However, there are two glossaries: one of scientific terms and another illustrating some of the methods used in research in molecular biology. An appendix details the molecular structures for many of the compounds discussed in the book. These features afford a more developed or interested student the opportunity to learn in more detail if he so desires.

If a high school biology teacher or a college biology instructor intends to teach his class something about molecular biology, this book could assist him in establishing a simplified approach to the subject. Because of its restrictive nature it would not be a book to require each student to purchase unless the course is such that there is no one large text but instead a series of smaller, more restrictive and inexpensive books, like this one.

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