

SHAKESPEARE'S FLOWERS, by Jessie Kerr; illustrated by Anne Ophelia Dowden. 1969. Thomas Y. Crowell Co., New York. 85 pp. \$5.95.

The format of this volume is excellent: the type is very clear, the paper is of exceptional quality in order to be adequate for the remarkably fine illustrations, and the indexes and bibliography are well done. Nearly one-third of the pages contain full-page illustrations, which are delightful. The text is interesting and well written. The author states, as one reason for writing the book, that "Shakespeare liked to use flowers as images to illustrate his ideas about people." The text is probably of much greater interest to students and teachers of Shakespeare than to biologists.

Alton H. Gustafson
Bowdoin College

CELL AND MOLECULAR BIOLOGY

THE CELL, by Carl P. Swanson. 3rd ed., 1969. Prentice-Hall, Englewood Cliffs, N. J. 150 pp. \$2.50, softback; \$5.95, hardback.

This slim volume, long one of the standbys of biology students, has been made still more valuable by almost total revision to include recent discoveries in cell biology and chemistry. Nearly every chapter has been rewritten, reorganized, and expanded. The few sections to be condensed concern topics now covered by other books in the series. New illustrations have been added to the excellent ones of the 1964 edition, and these do much to enhance the text. The electron photomicrographs are especially useful in the section dealing with cell ultrastructure.

Cell structure, dealt with in one chapter in the former edition, has been expanded to three chapters. Among the subjects to receive expanded coverage are cell surfaces, endoplasmic reticulum, ribosomes, Golgi complex, mitochondria, and chloroplasts. The chapter devoted to the nucleus includes a thorough discussion of DNA and its role in cell control—material formerly divided among three locations. Several examples of human cell structure and behavior have been added, thus adding to its usefulness.

The physical structure of the book has also changed. Pages and margins are wider, print is somewhat smaller (although not critically so), and sepia toning is used on some diagrams to good effect. The revision seems to have been done in a way to improve readability, for in comparing the two editions paragraph by paragraph one finds that the new edition seems to move from topic to topic with greater facility.

Biology teachers in high schools and colleges should find this book useful; and students in advanced high school

and college courses should add it to their reading list. It is valuable both as a broad but thorough overview of a complex subject and as a review and updating of work in the field.

Elizabeth Nuckolls
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Reseda, Calif.

REPLICATION OF DNA IN MICRO-ORGANISMS. Vol. 33 of the Cold Spring Harbor Symposia on Quantitative Biology, 1968. Cold Spring Harbor Laboratory of Quantitative Biology, Cold Spring Harbor, Long Island, N.Y. 884 pp. \$20.00

This book, like the other volumes in the series, is an authoritative summary of developments in a research field that is currently highly active and of intense interest to biology as a whole. *Replication of DNA in Micro-Organisms* is primarily a review, for specialists, of work on interrelated problems, including replication of nucleic acids, intermediates in DNA synthesis, repair of DNA damaged by chemicals and ultraviolet light, genetics and control of replication, bacterial mating, and aspects of virus replication.

The general reader who happens to have a special interest in this area will find the symposium illuminating; but for others the book may be hard reading: specialists in this field, as in so many other scientific areas, have numerous concepts, words, and symbols peculiar to their discipline.

Because of inevitable publication delays the volume is not fully up-to-date. Doubtless some of the questions it treats will prove to be sterile or will lead up blind alleys. Nevertheless, as a whole this symposium gives an excellent picture of current developments and of the attitudes and interests of research workers in an exciting and truly fundamental field of biological science.

Ingrith D. Olsen
University of Washington

STRUCTURAL CHEMISTRY AND MOLECULAR BIOLOGY, ed. by Alexander Rich and Norman Davidson. 1968. W. H. Freeman and Co., San Francisco. 907 pp. \$10.00

An unusual book dedicated to an unusual man, Linus Pauling—the first man to have received two Nobel prizes: for Chemistry and for Peace. This book, written by his students, colleagues, and friends, is divided into nine major sections, as follows: the structure of proteins; the chemistry of proteins; antibodies; molecular biology; nucleic acids; hydrogen bonding, water, and ice; the chemistry and structure of smaller molecules; metals and minerals; and chemical theory. The last section includes a reprinting of Pauling's well-known monograph, *The Nature of the Chemical Bond*.



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Altogether, some 59 contributions are included; they vary from reviews of some scientific areas to original contributions. Particularly fascinating to this reviewer were articles by Cherkin ("Molecules, Anesthesia, and Memory"), Catchpool ("The Pauling Theory of General Anesthesia"), Stevenson ("Molecular Species in Liquid Water"), and Perry ("Homocystinuria: a Challenging Molecular Disease"). Something for everyone is included.

Permeating the entire book, and conveyed to the reader, is an awareness that Pauling has made major contributions to many fields of chemistry and has influenced practically every area. One senses that Pauling must be able to communicate easily with fellow scientists of different specializations, stimulating them to thinking along new and frequently novel lines. This is the kind of book one recommends to colleagues, gives to graduate students, and keeps personally in one's own library. It is also fine for "selected topics" classes. I recommend it most enthusiastically.

Ralph H. Kathan
University of Illinois
College of Medicine

EVOLUTION

THE COURSE OF EVOLUTION, by J. Marvin Weller. 1969. McGraw-Hill Book Co., New York. 696 pp. \$15.50.

Although this work is part of the publisher's "Population Biology" series, it would certainly be more at home in a series on evolutionary biology. It outlines the course of evolution as seen by a paleontologist. Directed to the reader with a biologic background, it is much less full of morphologic detail and esoteric vocabulary than are the books written by paleontologists for paleontologists. Detailed genealogies—about which we know little anyhow—are happily omitted. The stress is on major evolutionary trends among organisms. The author makes good use of his background as an invertebrate paleontologist, reversing the normal pattern by presenting five chapters on invertebrates to four on vertebrates. Plants are disposed of in 46 pages.

The author's familiarity with fossils is unchallenged. It is only when he attempts to present a consummating synthesis, as in his chapter "Evolution in Perspective," or tries to deal with the present, as in the chapter "Human Evolution and the Future," that he becomes pedestrian.

Perhaps because they considered paleontology something out of the past, the book designers have prepared a cover reminiscent of volumes of the mid-1930s. The sans serif type face does little to give the book a modern appearance. One worthwhile contribu-

tion in format is numbering the figures according to the page on which they appear; this makes them very easy to locate.

William V. Mayer
University of Colorado

THUS LIFE BEGAN, by Allan Broms. 1968. Doubleday & Co., New York. ix + 326 pp. \$5.95

Despite its somewhat presumptive title, *Thus Life Began* is a rather well-conceived book for two principal groups of readers. The layman will find in it an interesting summary of the events leading to contemporary frontiers of DNA research and to the heterotroph hypothesis, which is currently receiving popular news coverage. And most biology teachers should welcome the chance to brush up on some of the historical contributions of a great many individuals—contributions that led, by diverse yet pertinent paths, from the early concepts of spontaneous generation and Vitalism to the eventual formulation of the modern concept of evolution. The historical aspects seem to be well researched; they often include, as anecdotal sidelights, happenings that influenced the development of ideas but are often overlooked. The book thus possesses an interesting flavor without the boredom of detail.

Broms seems to be rather weak in his basic organic chemistry and cell physiology; this may reflect, in many cases, the problem of over-simplification. Examples of inaccurate statements are his two references to amino acid production by RNA.

The first half of the book deals with the historical development of natural selection in its modern context. The second half attempts to outline a possible evolutionary trail culminating in man; it reflects the modern consensus of scientific thought. Unfortunately, however, the approach to higher evolutionary development is seemingly based upon the "need" of the particular organism to develop certain adaptations in order to survive or to "tend upward" (p. 305). Such anthropomorphic teleology may certainly be permissible among biologists well informed on the subject of evolution; but the target audience of this book is clearly not the biologist, and therefore such license seems unwarranted.

Broms is obviously aware of the importance of genetic continuity and the role of mutation and natural selection in the evolution of species. However, he omits entirely the role of genetic drift and its importance, and he only implies the importance of genetic recombination through sexual reproduction by referring to species vigor.

All in all, I find the presentation valid. The book gives the biology teacher an opportunity to spice up the presenta-

tion of material with interesting historical information that goes far beyond the scope of ordinary texts and yet is more than a chronology of events. In other books the teacher is usually supplied with bits and pieces of biological history which may not be coherently tied together; this book provides a synthesis of events and ideas, thus sparing the teacher the laborious task of time-consuming research.

James L. Mariner
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FIELD BIOLOGY & ECOLOGY

INTRODUCTION TO PLANT ECOLOGY, by Maurice Ashby. 2nd ed., 1969. St. Martin's Press, New York. 289 pp. \$6.75.

As indicated by the author, this book is not a balanced treatment of plant ecology: it places a strong emphasis on autecology, while coverage of synecology is minimal. Major topics include soil-plant relationships, climatic and biotic factors, and surprisingly lengthy discussions of pollination, reproduction, and variation in plant morphology. Much of the coverage is not unlike that long available in American books (e.g., Oosting, Daubenmire, and Odum), but Ashby's literary approach and British background offer one a somewhat different perspective.

The book does not contain a glossary (key words appear in boldface type), but an excellent index offsets this deficiency. Contrary to the information on the dust cover, the bibliography is not impressive and is of limited value to American users, since it is essentially restricted to British publications. It is also unfortunate that the metric system is not applied throughout the book.

As has been characteristic of recent books in ecology, problems of production ecology and statistical treatment of data receive significant coverage. Unlike many texts at this level, this book includes an appendix that gives worthwhile information on many standard ecologic measurements, such as the Winkler test, measurement of transpiration rates, and compensation points, that are appropriate to an introductory college course.

Robert J. Sherman
University of Colorado
Colorado Springs

GENETICS

EXPERIMENTS IN MICROBIAL GENETICS, ed. by R. C. Clowes and W. Hayes. 1968. John Wiley & Sons, New York. 244 pp. \$5.95.

The editors and authors have produced a much-needed, easily understood manual on microbial genetics. It is well edited, and the various topics are developed in reasonable sequence. Abundant information is given about the culture types and nomenclature used with them. The organization of