

THREE BOOKS ON THE HISTORY OF BIOLOGY

For those interested in the history of science, there are many roads available to learning about the past. Comparison of three recent books is enlightening because of the very diverse approaches to the history of biology.

Overtures to Biology: The Speculations of Eighteenth Century Naturalists. *P. C. Ritterbush.* Yale University Press, New Haven, Connecticut, 1964. viii+287 p., 7 pls. \$7.50.

Mr. Ritterbush has written a scholarly work that covers a most fascinating period; the eighteenth century is the prelude to the period of modern biology. It was the golden age of taxonomy, having Linnaeus as its major spokesman. Mr. Ritterbush has carefully analyzed biological thinking in its relation to the history of ideas and has presented a fresh perspective. He documents the importance of newly discovered electricity and the dependence upon analogy in eighteenth century biological thinking. This is a challenging book for the diligent reader. It is packed with quotations from original sources and an extensive bibliography. The unusual illustrations from original sources help to recreate the eighteenth century in this serious study.

The Evolution of Biology. *M. J. Sirks and Conway Zirkle.* Ronald Press, New York, 1964. v+376, p., illus. \$6.00.

The second work, Sirks and Zirkle's *The Evolution of Biology* covers a broader period and is a much more general approach than that used by Ritterbush. It is not, the authors say, to be considered a detailed history of biology, but rather a survey of the developmental phases of that science. It is written for the informed reader; however, the nontrained biologist will find much interesting reading. The mass of details in the classical *The History of Biology* by Erik Nordenskiöld (English edition 1927) is lacking. Comparison is better made with two other recent English histories of biology: *A History of Biology to about the year 1900* by Charles Singer (3rd edition 1959), and *The History of Biology: an introduction* by F. S. Bodenheimer. The new Sirks and Zirkle book is more complete in its coverage of the modern period and of botanical advances, than either of the other two works, each of which approaches the subject matter differently. One can truly say that the sweep of the history of biology justifies various interpretations and the more that are available, the better for the student. The bibliography of original sources in the current work, though difficult to use, is of special value.

Tall Trees and Far Horizons: Adventures and Discoveries of Early Botanists in America. *Virginia S. Eifert.* Dodd, Mead, New York, 1965. xvii+301 p., illus. \$5.00.

The third work, written by Virginia S. Eifert, has a much different approach to the history of biology. It is written for the general reader and treats the adventures and discoveries of early American botanical explorers. As is true of many popular works, this one also has its share of errors. Some of these are major, for example giving the wrong first name to George Englemann, using obsolete scientific plant names, or having Dioscorides write a book in 512 when he had been dead for many centuries. In spite of these errors and some fictionalizing, the chapters treating John Bartram, Jane Colden, Peter Kalm, Andre Michaux, Thomas Nuttall, David Douglass, Leo Lesquereux, Henry Thoreau, John Muir, and others are easily read and are at times exciting. This is the sort of book that a high school student should enjoy. There is an ample bibliography to stimulate further reading and perhaps induce more interest in the history of botanical exploration.

These three books cover aspects of the history of biology that range widely and make available information for readers from those with no background to the professional.

EMANUEL D. RUDOLPH

Breakthroughs in Physics. *Peter Wolff.* Signet Science Library, The New American Library, New York. (paperback) 1965. 352 p. \$7.5.

An original paperback presenting excerpts from the writings of seven physicists with very brief introductions by Peter Wolff. The selections are: Archimedes, the simple machines, and the theory of buoyancy; Galileo, discoveries in the heavens, and the phenomena of gravity and free fall; Pascal, investigating the vacuum; Newton, principles of mathematics; Huygens, the wave theory of light; Von Helmholtz, the theory of force; and Einstein, relativity. Included is a list of 34 paperbacks suggested for further reading and a detailed index. This work is a companion volume to the already published *Breakthroughs in Mathematics* by Mr. Wolff in the Signet Science Library.

E. D. RUDOLPH