Book Reviews

World of Life: A General Biology. Wolfgang F. Pauli. Boston 7: Houghton Mifflin, 1949, 653 pp. $5.00.

Wolfgang Pauli's new book *The World of Life* is designed to be a main reading source for a general biology course. As such it is quite original in its organization, being based on the view that a textbook benefits as much from an underlying thesis or a general principle to be expounded as does any other type of book. Usually we find in a biology textbook no continuous flow of ideas and no fundamental pattern except for whatever organization the subject matter may itself possess, so that we are accustomed to such chapter headings as "Protozoa," "Coelenterates," "Flatworms," "Mollusks," and "Arthropods." Thus, the average textbook tends to be a compendium of data, observations, and hypotheses, and it leaves synthesis and organization to the student reader who, we may guess, will be so lost in the welter of detail as to lose sight of the forest for the trees. Happily, *The World of Life* does not share this tendency with the average textbook with which we are familiar.

The thesis of Dr. Pauli's book is the evolution of living things. After setting the stage with Parts One and Two ("Backgrounds: The Physical World," and "The Nature of Life"), the author discusses the principle of evolution in Part Three, and gives an evolutionary treatment of the plants in Part Four, and a similar treatment of the invertebrates and vertebrates in Parts Five and Six. In Part Seven he discusses the physical basis of heredity (the "raw materials of evolution") and the implications genetics has for human survival and evolution. Woven into this pattern are the structural and functional aspects of the parts of the many organisms described in the book.

The World of Life has several unfortunate aspects. Dr. Pauli, assuming that his general biology student may have no knowledge of chemistry and physics, tries to make up for this deficiency by offering an elementary review of general physics and chemistry in a futile section of eighteen pages. Consequently, he is forced to omit from consideration many important biological problems whose formulation and study require a more solid grasp of modern physical and chemical principles and data. Among the fundamental problems that are either treated inadequately or left out of the book are: autocatalysis; differentiation, growth and morphogenesis in terms of chemical changes; the relation between genes and metabolic processes; the physicochemical nature of mutations; the integration and coordination of metabolic events. Yet discussions of these problems and the ways in which they are being attacked certainly belong in a college student's main reading source in biology.

Another serious defect of the book is its failure to instruct in the scientific method. It has the style of a "Book of Knowledge," too often asserting and presenting the final story without indicating how such a story was developed. Opportunities are sadly missed to demonstrate the weeding-out of alternative hypotheses that explain given phenomena, and to differentiate between hypotheses that are meaningful and those that are not. Indicating how modern biologists have arrived at their concepts would have made a wonderful lesson in the methods and aims of science.

The student reader will also have to be guarded against such incautious and hasty generalizations as: "It seems quite clear that particular genes determine the *presence of the specific enzymes* essential for the individual chemical steps of metabolic processes" (italics mine); and again, in a caption to a figure showing various types of specialized cells in a multicellular organism: "Each [of these cells] has the same kind of chromosomes, and hence the same genic components."

What are serious faults in a book for a college course, making it probably unsuitable for use there, may be negligible in a book for senior high school or junior college students. For them, the highly readable style, the attractive instructive format, and the illustrative material may well make up for such defects.

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Scientific Book Register

Research in Medical Science. David E. Green and W. Eugene Knox, Eds. New York: Macmillan, 1950. 492 pp. $6.50.

The Chemistry of Heterocyclic Compounds: The Heterocyclic Derivatives of Phosphorus, Arsenic, Antimony, Bismuth, and Silicon. Frederick George Mann. New York-London: Interscience, 1950. 180 pp. $5.25.

Science Is a Sacred Cow. Anthony Standen. New York: E. P. Dutton, 1950. 221 pp. $2.75.

Advances in Electronics, Vol. II. L. Marton, Ed. New York: Academic Press, 1950. 378 pp. $7.60.

La Biologie des Lépidoptères. P. Portier. Encyclopédie Entomologique, Vol. XXIII. Paris VI^{e}: Paul Lechevalier, 1949. 643 pp.

Coagulation, Thrombosis, and Dicumarol: With an Appendix on Related Laboratory Procedures. Shepard Shapiro and Murray Weiner. New York 25: Brooklyn Medical Press, 1949. 131 pp. $5.50.

Hematin Compounds and Bile Pigments: Their Constitution, Metabolism, and Function. R. Lemberg and J. W. Legge. New York: Interscience, 1949. 745 pp. $15.00.

The Emotional Life of the Ill and Injured: The Psychology and Mental Hygiene of Rehabilitation and Guidance. Arthur Jess Wilson. New York 23: Social Sciences Publs., 1950. 416 pp. $4.75.

Third Symposium on Combustion and Flame Explosion Phenomena. Baltimore: Williams & Wilkins, 1949. 748 pp. $13.50.