Book Reviews

Photosynthesis and Related Processes: Spectroscopy and Fluorescence of Photosynthetic Pigments; Kinetics of Photosynthesis, Vol. II, Part 1. Eugene I. Rabinowitch. New York: Interscience, 1951. 608 pp. $15.00.

The trend in books concerned with complex matters seems increasingly to be toward those written as a group effort by an assortment of specialists, under the generalship of an editor-in-chief who may or may not have a command of the subject as a whole. This trend, however, has not yet reached the field of photosynthesis. E. I. Rabinowitch is his own panel of experts surveying, as he does in *Photosynthesis and Related Processes,* the entire field, from history to descriptive biology to the quantum relations of the process—all with equal display of virtuosity.

The present volume, following its predecessor by six years, is concerned with the spectroscopy of the photosynthetic pigments and with the kinetics of the phytosynthetic process. So bulky did the materials on kinetics become that Volume II has been subdivided, more or less arbitrarily, into two parts. The present Part 1 of Volume II takes us only through the carbon dioxide and light intensity aspects of photosynthetic kinetics. Discussion of temperature, time effects, etc., will follow in Part 2.

As was the case with Volume I, a prodigious amount of information is presented—information that is critically evaluated and, in general, beautifully integrated into a lucid and well-defined picture. The reader is, in fact, continuously impressed by the ability of the author to carry through the evaluation and organization of scattered and miscellaneous information into a comprehensive and coherent picture.

Volume II deals first with the photochemistry of the chlorophylls, related porphyrins, and of the other plastid pigments. This is followed by a detailed discussion of the factors that influence light absorption by the chloroplast pigments, as well as the partition of energy among the several pigments in the cell itself. The physiological significance of pigment fluorescence is treated *in extenso.*

The study of the kinetics of photosynthesis is one of the classic approaches to the subject. Although this approach has, in the past, yielded much information of value, it cannot give us such detailed insight into the mechanism of photosynthesis as is obtainable from the studies of the pathways of energy and of carbon, as these pathways may now be studied with isolated chloroplasts or with isotopic carbon, respectively.

Concerning the 6 chapters on the kinetics of photosynthesis in the present volume the author says:

> The analysis of kinetic data, to which many pages in this volume are devoted, now seems somewhat like an attempt to reach a treasure chamber by drilling through steel walls while keys have been found to unlock the door.

Nonetheless, the reviews of carbon dioxide and of light effects in photosynthesis are not only the most comprehensive, but also the most readable, that have appeared to date. The discussions concern not only *Chlorella* in Warburg flasks but also higher plants under natural conditions, and will be of interest and value not only to workers in the field of photosynthesis, but also to ecologists and horticulturalists.

Some 56 pages of the volume are devoted to a discussion of the maximum quantum efficiency of photosynthesis. One finds no dogmatic conclusion but is left, nevertheless, with the rather definite impression that the maximum efficiency is 10 quanta used per mol of O_2 released.

Volume II, Part 1, of "Photosynthesis" is a thorough, readable, and often exciting member of a series that will be the standard reference work in the field for many years to come. It is wholeheartedly recommended to all biologists and chemists as excellent (but scarcely light) reading.

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Ecological Animal Geography (Hesse). 2nd ed. W. C. Allee and Karl P. Schmidt. New York: Wiley; London: Chapman & Hall, 1951. 715 pp. $9.50.

It was with Hesse's blessing that Allee and Schmidt, in the early thirties, undertook the translation and revision of his *Tiergeographie auf oekologischer Grundlage* (Jena: Fischer [1924]), and the resulting *Ecological Animal Geography* quickly became recognized after its publication in 1937 as the standard book on the subject.

The second edition of "Hesse, Allee, and Schmidt" follows the plan of the 1937 edition, practically chapter by chapter, with the greater part of the earlier subheads and illustrations also being retained. The text, however, shows a substantial amount of new material (an expansion by about 10%) and sufficient recasting of the old to cover the more recent progress in some modern ecological fields. Additions include treatment of territoriality in vertebrates, migration flyways of North American waterfowl, and the "phase theory" with regard to swarming locusts. Whether dealing with old or new subject matter, the revisers have worked to integrate our existing knowledge and to give the reader an interesting, understandable, and accurate over-all picture.

The present edition is comfortable to read, because of the way in which it is written and because of the confidence one feels in its authorship. Minor statements may be challenged—such as the puma hunting deer *only* at times of deep snow (p. 496) and monkeys *never* wandering farther than 4–6 km from water (p. 545)—but I don't think these detract importantly from the outstanding values of the book, which is indeed a scholarly and unique product.