Ke, B.: **Photosynthesis. Photobiochemistry and Photobiophysics.** – Kluwer Academic Publishers, Dordrecht – Boston – London 2001. ISBN 0-7923-6334-5. 763 pp., USD 243.00, EUR 281.00, GBP 175.00.

This is volume 10 of the already well known series "Advances in Photosynthesis", edited by Govindjee. Each of its volumes is devoted to a special field of photosynthesis. Volumes 1 to 9 were multi-author books (for reviews of the first seven ones see Photosynthetica **32**: 244, 1996; **33**: 159-160, 432, 1997; **34**: 561-562, 178, 1997; **37**: 32, 586, 1999). This volume is a special case, a fairly thick book written by only one author. It was prepared by Dr. Bacon Ke, now retired specialist who spent many years of fruitful scientific work in the Charles F. Kettering Research Laboratory in Yellow Springs (I first met him there in 1968 and often recall this pleasant visit). As he writes in the Preface, a few years ago he wrote a textbook for Chinese students entitled "Photosynthesis: Photons, Excitons, Electrons, Protons, Ions, and Their Interactions with the Photosynthetic Membrane" which emerged in 1991 in Anhui Educational Publishing House. As editor of Photosynthetica I suppose that this book has been read by many students and researchers in China because the quality of papers that our office has received in the last decade from Chinese colleagues has immensely increased in comparison with those we received, say, twenty years ago. On the basis of the mentioned book written in Chinese Dr. Ke prepared this monograph, increasing and updating the size and scope of text and selecting more explanatory illustrations.

The result is excellent: In 36 chapters all photosynthetic reactions that take place between 10^{-12} and 10^{-3} s, from primary charge separation to water oxidation, are described in detail and understandably explained. The reader gets not only the present state of knowledge but learns also the development of ideas and models. All facts are demonstrated in numerous figures and tables, which explain composition, structure, physical properties of photosynthetic complexes, their spectra, changes during reactions, models, genetic bases, *etc.* Seventeen colour plates show the most important models and structures of acting substances and complexes. The book contains altogether 18 stereo diagrams of macromolecules and protein complexes. A note on p. 730 explains how to view the stereograms with naked eyes (unfortunately, I did not succeed to my satisfaction, but this is certainly my fault). Each chapter is supplemented with two lists of references: those cited in the text and those especially recommended for further reading. And, as in previous volumes, there is a list of abbreviations and a detailed subject index.

Chapter 1 is a 46-page overview of photosynthesis. It contains all information that also students in fields such as physiology, ecology, and production of photosynthesis should know. The following 35 chapters are divided into five sections. The first section deals with bacterial photosynthesis (9 chapters – chemical composition, crystal structure, bacteriochlorophylls and bacteriopheophytins, light-harvesting and reaction centre complexes, electron donors and acceptors, electron transport schemes, specialities in green bacteria and Heliobacteria, chlorosomes, cytochromes, *etc.*). The second section is on photosystem 2 (7 chapters – light-harvesting chlorophyll-protein complexes, roles of pheophytin, carotenoids, and phycobiliproteins, phycobilisomes, electron donors and acceptors, P680, D1 protein, photoinhibition, *etc.*). The third section explains structures and reactions connected with oxygen evolution (7 chapters – role of manganese, S-state transitions, extrinsic polypeptides and inorganic ionic cofactors, electron donors to $P680^+$ studied by EPR spectroscopy and optical spectroscopy, Y_Z, charge recombination, thermoluminescence, *etc.*). Next section deals with photosystem 1 (10 chapters – membrane, complexes, and crystals, light-harvesting and reaction centre complexes, P700, iron-sulfur proteins, P430, FeS-X, roles of phylloquinone, plastocyanin, ferredoxin, ferredoxin-$NADP^+$ reductase, *etc.*). The last section (2 chapters) is on proton transport and photophosphorylation (cytochrome complexes b_6f and bc_1, chemiosmotic theory, ATP synthesis and the respective enzymes).

The preparation of such comprehensive monograph certainly required an immense effort of the author. Only reading the respective literature and selecting important facts and proper illustrations must have taken months and years of tedious study. Nevertheless, allow me one remark to a minor detail: why are units other than those of the SI-system (cal, Å) or old-fashioned terms (molecular weight) used in some paragraphs?

My summary is: if you wish to learn all details connected with the so-called "light-reactions" part of photosynthesis and how it functions in all types of photosynthesising organisms, buy this book. It is certainly the best recent one in this field.

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