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Volume 24 of the well known series "Advances in Photosynthesis and Respiration" has a subtitle naming the key enzyme of this system. This is similar to the title of previous volume 22 that deals with photosystem 2 (PS2) and its key enzyme is water:plastoquinone oxidoreductase (for review see Photosynthetica **45**: 120, 2007). The volume 22 is by only about 5 % thicker than the reviewed volume 24 is, even if one usually thinks that PS2 is studied much more often than photosystem 1 (PS1).

The huge amounts of pages show that all aspects of the photosystems are analysed in detail. Nevertheless, I wonder what part of this collection of recent information will be valid after say 10 years. In any case, it will remain a valid thesaurus of findings or theories, because such voluminous books are rarely read cover to cover. This book series stresses the increasing importance of genetics in photosynthesis research: volume 24 presents, in addition to the traditional Subject Index, also three special indices: Organism Index, Mutant Index, and Gene and Gene Product Index.

Forty chapters of volume 24 were written by 79 authors, most of them being leading scientists in universities and institutes all over the world, including also the recently often neglected Russia. The four introductory chapters deal with the history of studying this part of photosynthetic electron transfer apparatus. They were written by pioneers of this research such as Anthony San Pietro, Richard Malkin, Bacon Ke, Paul Mathis, and Kenneth Sauer. The story started with three papers published in 1951 and I read the one prepared by Daniel Arnon and presented in Nature probably as a first paper dealing with photosynthesis soon after its appearance.

The following 36 chapters are divided into ten parts. The part entitled "Molecular Architecture" contains four chapters on structure, function, and regulation of PS1 in cyanobacteria, algae, and higher plants, on association of PS1 with the light-harvesting complex (LHC) 2, and with stromal subunits. Part III deals with pigment-protein interactions, accessory chlorophyll proteins, LHC1, and acceptor and donor sides of PS1. Two chapters of Part IV describe ultrafast optical spectroscopy (including the respective techniques) of PS1 and its long-wavelength chlorophylls. Next part (2 chapters) is on genetic manipulation of ligands, quinones, Fe-S centres, plastoquinone, and α-tocopherol.

Part VII includes eight chapters on spectroscopic studies of cofactors (P700, phylloquinones, donors, acceptors, and intermediates), showing not only results but also information on research methods (EPR, FTIR, TRSS, measurement of membrane potentials, *etc*.). Six chapters of part VII (Kinetics of Electron Transfer) deal with components of the transfer path and with the respective enzymes and intermediates (ferredoxin, flavodoxin, thioredoxin, plastocyanin, cytochromes, *etc.*). Assembly and turnover of PS1, iron-sulfur clusters, the reducing side, and their genetic basis is the next main topic.

Modelling of processes and units is dealt with in almost every chapter of the book. Four chapters especially on modelling are collected in Part IX; they deal with thermodynamics of PS1, its optical spectra and light harvesting, and with reaction centres. Part X describes cyclic electron transfer around PS1, and photoinhibition and protection against it. The final part is on evolution of PS1 and its components (cytochrome and plastocyanin).

Similar to other volumes of this series, also this one deserves to be on bookshelves of every laboratory interested in photosynthesis research. Those who will buy the electronic version will easily find references to the source articles. Comparison of colour figures on plates and black-and-white ones in the text shows how their instructiveness can be improved by using colour print.

Z. ŠESTÁK (*Praha*)