

Barber, J. (ed.): **The Photosystems: Structure, Function and Molecular Biology**. - Elsevier, Amsterdam - London - New York - Tokyo 1992. 557 pp., NLG 425.00.

The well-known series of monographs devoted to photosynthesis presents a fine library of modern knowledge of photosynthesis. The reviewed volume is opened by three obituaries, of R. Hill, M. Avron and D.C. De Vault. The following thirteen chapters were written by 30 scientists from 10 countries (U.S.A. 8, Israel 5, France 4, Germany 4, U.K. 3, Russia 2, Czech Republic, Hungary, Japan and Switzerland 1 each). Thus it is a real international volume.

A general information on photosystems of photosynthetic bacteria and higher plants is given by R. Cogdell and R. Malkin. In chapter 2 (L.N. Bell and N.D. Gudkov) thermodynamics of radiant energy conversion is explained. Chapter 3 (G. Renger) deals with energy transfer and trapping in photosystem (PS) 2, among others with the concept of photosynthetic unit, spectral properties of pigments in solution and in pigment-protein complexes, with antenna systems, reaction centres, and biomimetic systems. Molecular biology of PS2 is dealt with in chapter 4 (J.M. Erickson and J.-D. Rochaix), where the respective genes and their expression are discussed (situation in transgenic plants is also included). The processes connected with oxygen evolution are dealt with in chapter 5 (A.W. Rutherford *et al.*) that includes the kinetic and structural models, the manganese cluster, the roles of Ca^{2+} and Cl^- , *etc.* Protein engineering of PS2 is another chapter of genetic character (H.B. Pakrasi and W.J.F. Vermaas): here again higher plants are compared with purple bacteria. In chapter 7 I. Vass and Y. Inoue deal with thermoluminescence (among others with replacement of Q_A and Q_B by artificial quinones, effects of herbicides, temperature dependence of S-state transitions, effects of metallic ions). Chapter 8 (O. Prášil *et al.*) is on photoinhibition, localisation and heterogeneity of PS2, D1 and D2 proteins, protective mechanisms, *etc.* Herbicides affecting PS2 are the topic of chapter 9 (W. Oettmeier). The function of plastid heat shock proteins is explained by E. Kruse and K. Kloppstich (chapter 10).

Only the last three chapters deal with PS1. Its composition, organization and structure is explained in chapter 11 (O. Almog *et al.*). Next chapter (P. Setif) is on energy trapping and transfer (among others use of fluorescence decay and hole burning spectroscopy, experiments with isolated PS1 particles, P700, various types of models, *etc.*). The last chapter (D.A. Bryant) is devoted to genetics of PS1.

The monograph brings a large amount of material (individual chapters are based on 41 to 385 papers), but the chapters partly overlap (see the Subject Index, *e.g.* for genes), partly belong to other volumes (particularly vol. VIII and X of the series that were published in 1987 and 1991). On the other hand, this small time gap between reviews on similar topics shows how rapid the development of facts and ideas in photosynthesis research is.

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