Murata, N. (ed.): **Research in Photosynthesis. Vol. I.** (Proceedings of the IXth International Congress on Photosynthesis, Nagoya, Japan, August 30 - September 4, 1992) - Kluwer Academic Publishers, Dordrecht - Boston - London, 1992. LIV + 672 pp.

The Congress was attended by over 1000 active participants from 43 countries, who contributed as plenary lecturers (9), symposium speakers (106), poster presentors (about 800 posters) and discussants. These Proceedings comprise the majority of the contributions in the form of review papers and short communications. The total number of articles in these volumes is over seven hundred, which are divided into twenty-six sections according to the research fields.

The first volume is prefaced by Norio Murata. Besides obituaries and opening addresses in the introduction, this volume contains the first 4 sections: Antenna systems in photosynthetic procaryotes (36 contributions), Antenna systems in algae and higher plants (37), Bacterial reaction centre (33) and Photosystem I (35).

The first 2 sections illustrate extent of our knowledge about photosynthetic light-harvesting. Besides the reviews about evolution of structure and function in the Chl *a/b* and Chl *a/c* antenna protein family (written by B.R. Green *et al.*) and about molecular structural effects of protein phosphorylation in regulation of photosynthesis (J.F. Allen), there are too many excellent contributions; as the most significant ones can be marked: Molecular features that control the efficiency of carotenoid-to-chlorophyll energy transfer in photosynthesis (H.A. Frank *et al.*), Dynamics and mechanism of singlet energy transfer between carotenoids and chlorophylls: Light harvesting and non-photochemical fluorescence quenching (T.G. Owens *et al.*), Exciton dynamics in antennae and reaction centres of photosystems 1 and 2 (A.R. Holzwarth), S_1 state of fucoxanthin involved in energy transfer to chlorophyll *a* in the light-harvesting proteins of brown algae (T. Katoh and M. Mimuro), Identification of violaxanthin and zeaxanthin binding proteins in maize photosystem 2 (P. Dainese *et al.*), Equilibrium distribution of excited states in photosystem 2 antenna (R.C. Jennings *et al.*).

The third section starts from contribution of H. Michel's group: Structure-function relationships in photosynthetic reaction centre from the purple bacteria as revealed by X-ray crystallography (2.65 Å resolution) and from excellent V.A. Shuvalov's review, but many other contributions present the recent top techniques (*e.g.* magnetic resonance, S. Shochat *et al.*).

In the part devoted to photosystem 1, I can highlight the following contributions: Spectroscopic characterization of wild-type and genetically modified photosystem 1 (J.H. Golbeck), An insight into the assembly and organization of photosystem 1 in the thylakoid membranes (Y. Cohen *et al.*), Three-dimensional crystals of photosystem 1 from *Synechococcus sp.* and X-ray structure analysis at 6 Å resolution (H.T. Witt *et al.*).

The assortment of contributions does not dispense with some errors: Among the papers dealing antennae you will find the contribution of O. Lotan and R. Nechushtai concerning the light-regulated biogenesis of subunit V of the photosystem 1 reaction centre (p. 65), excellent ADMR study of photosystem 2 reaction centre (R. van der Vos and A.J. Hoff; p. 215), and another contribution (p. 267) of Chinese authors about photosystem 2 core complex; also D. Sofrová's study of photosystem 2 (p. 585) is placed in the first volume by mistake. However, each of four volumes has the complete and perfect author index, so you can find any contribution comfortably.

The title "Antenna systems in photosynthetic prokaryotes" is rather unfortunate for the section because there are no significant differences in the light-harvesting antennae of thylakoids in the prokaryotic blue-green and eukaryotic red algae (R. Ficner and R. Huber, p. 57; G.R. Wolfe *et al.*, p. 315); antennae of prochlorophytes (like *Prochloron, Prochlorococcus, Prochlorothrix hollandica*) are also very similar to those of chloroplasts in chlorophytes and higher plants (G.W.M. van der Staay *et al.*, p. 207); and both prokaryotes and eukaryotes are studied by similar, mainly biophysical, tools. "Antenna systems: structure and function" (Xth Congress, Montpellier) seems to be the better title for (two) section(s).

As can be seen from this overview, the proceedings are a valid source of complex information about photosynthesis research with broad spectrum of methods and techniques, from a routine

absorption and fluorescence, FT-IR, CD spectroscopy, to ESR, and NMR, or Raman, hole burning, nonlinear polarization spectroscopy in the frequency domain, to target analysis... Besides biophysical and biochemical tools, photosynthesis research witnesses impressive development of molecular biology and genetic techniques as immunoblotting, sequencing of peptides and genes, side-directed mutagenesis, expression of functioning proteins in *Escherichia coli*, and so on.

M. DURCHAN (*České Budějovice*)