Larkum, A.W.D., Douglas, S.E., Raven, J.A. (ed.): **Photosynthesis in Algae**. – Kluwer Academic Publishers, Dordrecht – Boston – London 2003. ISBN 0-7923-6333-7. XX + 4 + 479 pp., € 232.00, USD 255.00, GBP 160.00 (hardback).

The reviewed book belongs (as volume 14) to the well-known series "Advances in Photosynthesis and Respiration" directed by Govindjee. It is dedicated to algae, model photosynthetic organisms of diverse types (they belong to 12 or more Divisions). Algae differ in pigment and protein composition, their genetic bases and mutability, reactions to environment, *etc*. and are therefore, in addition to their importance in productivity in water reservoirs, very important as material for studying various photosynthetic processes and their genetic basis. The book consists of 19 chapters written by well-known photosynthesis researchers working in countries all over the world. Two of the editors were very active also as authors of chapters: Raven authored or co-authored five and Larkum four of them.

The chapters deal with all algae types, from microalgae to macroalgae, usually except *Cyanobacteria* (or blue-green algae) the molecular biology of which was analysed in detail in volume 14 of this book series. Nevertheless, some aspects of cyanobacterial photosynthesis are touched namely in chapters 9 to 11. Physiology, biochemistry, biophysics, and ecology of all other algae types are reviewed in much detail, as shown by mostly 100–200 references per chapter (the extremes are 37 and 398 references).

The three introductory chapters describe origins and diversity of algae, their pigment composition, characteristics of thylakoid membranes and plastids, natural products, *etc*. including also information on chlorophyll *b*- and *d*-containing oxyphotobacteria (typical representatives of which are *Prochloron*, *Prochlorothrix*, *Prochlorococcus*, and *Acaryochloris*). They deal also with the endosymbiotic theory of green plastid evolution.

Three chapters of the next part deal mainly with molecular genetics of algae. They describe genetic regulation of algal light-harvesting complexes, plastid genes of the often studied genus *Chlamydomonas* (volume 7 of this series dealt exclusively with this algal type), and biochemistry and regulation of chlorophyll biosynthesis (partial pathways, enzymes, intermediate products, and formation of algae chlorophylls).

The third part of the volume contains four chapters on electron transfer in photosystems 1 and 2 and functions of components of the electron transport chain, reaction centres and polypeptides, water oxidizing complex, xanthophyll cycle functioning, oxygen consumption, photorespiration and chlororespiration, mechanisms of the water-water cycle scavenging $O_2^-$ and $H_2O_2$ (also here cyanobacteria are taken into account), $CO_2$ diffusion and its concentrating paths necessary for algae photosynthesis, saccharide metabolism and algae respiration, *etc*. Four chapters of the following fourth part deal with excitation energy capturing (various models are presented), light-harvesting systems of algae with different chlorophyll composition and phylogenetic adaptation, presence and functions of chlorophylls, carotenoids, and phycobiliproteins in these systems, specific roles of phycobilisomes and typical algal carotenoids such as fucoxanthin and peridinin. Final part of the book contains four chapters dedicated to photoinhibition, effects of UV-B radiation, adaptation and acclimation changes, and specific features of marine macroalgae and symbiotic algae.

The book is supplemented with a good subject index. As usual, four colour figures precede the chapters, but they are doubled in black and white also in the respective chapters which is probably not necessary. The book brings a basic material for every laboratory dealing with algae or light-harvesting complexes.

Z. ŠESTÁK (*Praha*)