Whitton, B.A., Potts, M. (ed.): **The Ecology of Cyanobacteria. Their Diversity in Time and Space.** – Kluwer Academic Publishers, Dordrecht – London – Boston 2000. ISBN 0-7923-4735-8. 669 pp., USD 345.00, EUR 295.00, GBP 215.00 (hardbound).

Cyanobacteria (or blue-green algae) are probably the most interesting photosynthesising organisms from the point of view of phylogeny, biochemistry, physiology, and ecology. They are able to live in habitats of extreme irradiance, temperature, and salinity. They are of importance from the point of view of plant production (rice fields) and human health (toxins of water blooms). This is why a fairly voluminous book in a large format was published that certainly will find many readers. 33 authors from nine countries (10 each from the U.K. and the U.S.A., 3 from Canada, 2 each from Australia, Israel, Italy, and Kuwait, 1 each from the Netherlands and Sweden) prepared 22 chapters of the reviewed volume.

A brief preface is followed by 32 plates, each composed of two to nine representative colour photographs that demonstrate the diversity of cyanobacteria species and their habitats. They show differences in morphology of both modern and fossil cyanobacteria species, how they live in hot springs, in sea and freshwater, in deserts or polar regions, in rice fields and mangroves, in hypersaline pools and areas contaminated with heavy metals, phosphates, sodium, or oil, in mass cultures, as microbial and scytonemin-rich mats, on limestones and as stromatolites, as symbionts, *etc.* Further good black-and-white photographs are in individual chapters.

About three quarters of the chapters bring some information on photosynthesis of the respective types of cyanobacteria, on the effects of habitat and environment (irradiance, temperature, mineral elements, UV radiation, pH) on their pigment composition (chlorophylls, carotenoids, biliproteins), photosynthetic gas exchange and photosynthate formation, respiration and photorespiration, diurnal and yearly courses, and activities of photosystems and electron transfer chain. Photosynthetic fixation of ^{14}C, relationship of photosynthesis and N_2 fixation, roles of phycobilisomes, stimulation of photosynthesis by *n*-alkanes, chromatic adaptation, functions of carboxysomes, gene regulation of photosynthesis, photoprotective role of carotenoids, and pressure action on gas vesicles in cyanobacteria are among other interesting topics.

Chapter 1 gives a general information on cyanobacteria ecology, morphology, taxonomy, genetics, cultivation, *etc.* to not-specialists in this field. Chapter 2 explains fossil records: cyanobacteria were extant already 3 500 Ma ago. Chapters 3 to 13 deal with individual biotopes of cyanobacteria, from hot habitats to areas of extreme cold, from water to continuously dry places, in oil-polluted seawater (cyanobacteria mucilage functions also as immobiliser of oil-degrading bacteria and fungi), *etc.* Chapter 14 analyses the signal transduction pathways that enable cyanobacterial adaptation to the environment. Chapter 15 is on molecular responses to environmental stress, chapter 16 deals with metal toxicity. Two following chapters are devoted to ecology of two important cyanobacteria species, *Nostoc* and *Arthrospira.* Chapter 19 deals with symbiotic interactions, chapter 20 with cyanophages. A special chapter (21) describes their responses to UV radiation and the repairs of damaged photosynthetic machinery. The last chapter is on the very important topic of cyanotoxins.

Long lists of references (sometimes over 300 items) supplement all chapters. Three comprehensive indexes were prepared: of Latin names of organisms, of genes and gene products, and a detailed subject index.

Generally: a very useful book for everybody interested in biology and a must for those working in limnology and oceanography.

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