Gräber, P., Milazzo, G. (ed.): **Bioenergetics**. – Birkhäuser Verlag, Basel – Boston – Berlin 1997. ISBN 3-7643-5295-7. 539 pp., SFR 248.00, DM 298.00, öS 2176.00 (hb).

The reviewed book is volume 4 of the series Bioelectrochemistry: Principles and Practice. It is dedicated to the memory of Giulio Milazzo, called "the father of bioelectrochemistry". Twelve chapters of the book were prepared by 18 scientists, from Germany (9), the Netherlands (3), the U.K. (2), and France, Hungary, Italy, and Switzerland (1 each).

Nonequilibrium thermodynamics is the topic of Chapter 1 (D. Walz). In the following chapter, general aspects of global bioenergetics are dealt with by H.V. Westerhoff *et al.*: photosynthesis, its energetics, use of photosynthates in food chain, photosynthesis as free-enthalpy source beyond food, phylogeny of photosynthesis, *etc.* are dealt with. In chapter 3 (B.A. Melandri) vectorial bioenergetics is explained, including electron transfer in photosynthetic bacteria and halobacteria, types of ATPases, oxidative and photosynthetic phosphorylation, sodium bioenergetics, *etc.* Energetics of aerobic and anaerobic bacteria is the next topic (M. Blaut and G. Gottschalk): metabolism of phototrophic bacteria is also included.

A fairly large chapter 5 (E. Haag and G. Renger) is devoted to chloroplasts, their structure, composition, and functions, including pigment complexes, photosystems, carbon metabolism and other metabolic pathways, transport of substances across the envelope and other membranes, and photoregulation of chloroplast functions.

Chapter 6 (G. von Jagow *et al.*) describes the mammalian mitochondrial respiratory chain. More detail on photosystem 2 and water oxidation in various types of photosynthetic organisms is in chapter 7 (G. Renger). Chapter 8 (P. Mathis) describes the reaction centre of photosystem 1 in oxygenic photosynthesis, its functions and genetics. The cytochrome b_6fIbc_1 complexes are the next topic (G. Hauska and M. Büttner). Next chapter (P.R. Rich and A.J. Moody) is on cytochrome *c* oxidase, the terminal electron transfer complex in mitochondria. The special chapter 11 (L. Keszthelyi) deals with the photocycles based on bacteriorhodopsin and halorhodopsin in *Halobacteria*. Last chapter (P. Gräber) describes the structure, function, and regulation of H+-ATPases from chloroplasts.

This is practically a textbook explaining in an understandable way the physicochemical aspects of biological processes, with an emphasis on photosynthesis as the basic synthetic process in nature. Models, equations, and methods of determination are included in most chapters. On the other hand, the lists of references (present in a short form, without article titles) include only the basic literature and serve thus mainly as sources for further reading. Also the subject index includes only the main items. I recommend the book to both students and scientists: it will serve them well.

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