Delmer, D.P., Bohnert, H.J., Merchant, S. (ed.): **Annual Review of Plant Biology. Vol. 53, 2002.** - Annual Reviews, Palo Alto 2002. XII + 629 pp. Individual price USD 67.00 (USA), 72.00 (elsewhere), institutional price 180.00 (USA), 185.00 (elsewhere). ISBN 0-8243-0653-8.

I do not like changes in titles of traditional book series or journals, even if I understand that sometimes they are done in relation to science progress. In 1988, starting with volume 39, the title of these excellent and high impact annual books has been changed from "Annual Review of Plant Physiology" to a fairly long "Annual Review of Plant Physiology and Plant Molecular Biology". After 14 years further change was imposed leading to a much shorter title "Annual Review of Plant Biology". This will certainly bring some mess in references to this series. The change in title was accompanied also by a change in editors: the main editor R.L. Jones was replaced by one of the formerly associate editors, D.P. Delmer, and a new associate editor, S. Merchant, was supplemented. Nevertheless, I am happy that these changes did not influence the scope and content of this series.

Volumes of this series usually start with a story of life and carrier of some well-known scientist in plant sciences. This time it is A.A. Benson, one of the discoverers of photosynthetic carbon cycle, that usually bears the name of Calvin. Most of us know that it should be better known as the Benson-Calvin cycle, because the research done by Benson is at least as important as that done by Melvin Calvin. Benson tells in his funny way his *curriculum vitae* in science and I learned in this article that he was active also in some other research fields such as wax esters, salmon research, arsenate in the sea, methanol in plant productivity, *etc.* He adds also some curious views opposing the metric system most of us love so much. But generally it is a fine reading!

The start with photosynthesis brings me to listing further reviews dealing with this topic. Ribulose-1,5-bisphosphate carboxylase/oxygenase is a fairly often reviewed subject. This time R.J. Spreitzer and M.E. Salvucci centred the review on the enzyme structure (subunits, activase) and regulation. In near future, the enzyme function may be improved by mutations. J. Xiong and C.E. Bauer analyse the evolution of photosynthetic complexes (pigments, reaction centres, cytochromes, *etc.*) and phyllogenetic tree in the wide span from methanobacteria to higher plants. Modelling in this field is certainly interesting. Chlororespiration (G. Peltier and L. Cournac) is an interesting topic between photosynthesis and respiration in which plastoquinones are very important. Their non-photochemical reduction and oxidation, analysis of recent models, role of electron carriers in plastids and chloroplasts, cyclic electron transfer, and effects of abiotic stresses are explained. B.A. Diner and F. Rappaport review some aspects of primary photochemistry of photosystem 2 in comparison with bacterial photosynthetic paths and centres. Photosynthesis is also one of the aspects of a review on marine diatoms (A. Falciatore and C. Bowler) that describes also their rather strange cell division and cell wall biogenesis, sex, perception of environmental signals, and phyllogeny.

G. Galili reviewed biosynthesis and catabolism of lysine, one of the essential amino acids in metabolism of animals and men. Roles of phytochelatins and metallothioneins in heavy metal detoxification and homeostasis, their enzymatic or gene-encoded synthesis and regulation are the topics of review by C. Cobbett and P. Goldsbrough. Nitrate ion is used in plants also as a signal for plant metabolism and formation of plant architecture. Regulatory functions of this ion in local and long-range signalling are analysed by B.G. Forde. Acclimation to temperature stress, functions of heat-shock proteins, detoxification of active oxygen species, activities of glycinebetaine and membrane lipids, *etc.* are reviewed by K. Iba. Signalling of salt and drought stress and functions in these systems of protein kinase, phospholipids, and abscisic acid are the main topics of the review prepared by J.-K. Zhu. Molecular genetics of auxin signalling (signal perception and transduction) is the topic of review by O. Leyser. The current knowledge of biochemical, regulatory, structural, genomic, and evolutionary aspects of the α-ketoacid dehydrogenase complexes is explained by B.P. Mooney *et al.*

Lipid peroxidation and the lipoxygenase pathway, their localisation in cells, their genetic and metabolic profiling, interactions of plants with pathogens, insects, or abiotic stresses are reviewed by I. Feussner and C. Wasternack. Insect herbivory is an important plant physiological and pathological topic. The respective terminology, elicitors and wound-elicited responses, indirect defences, co-ordination of responses, *etc.* are summarised by A. Kessler and I.T. Baldwin.

The paper of J.C. Fletcher deals, both from anatomical and genetic side, with maintenance of shoot and floral meristem in the model plant *Arabidopsis*. Signal acceptors, transduction, and feedback are the main topic. V. Demidchik *et al.* review new literature on non-selective cation channels active in the plasma membrane, tonoplast and other endomembranes. Anatomical, biochemical, and molecular aspects of leaf and fruit abscission, pod and anther dehiscence, and other cell separation processes are described by J.A. Roberts *et al.* How xylem and phloem are differentiated from meristematic cells, which patterns are formed, what is the importance of genes and growth substances for these developments, and how to study these processes are the main topics of the paper by Z.-H. Ye. Control of

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photomorphogenesis in plants by phytochromes, kinetic properties of these substances, their intercellular localisation, and genetic and molecular studies of their signal functions are explained by F. Nagy and E. Schäfer. Root graviotropism, its function in morphogenesis, tip-curvature responses, gravisensing, mechanosensing, signal transduction and transmission, and auxin fuctions in these processes are reviewed by K. Boonsirichai *et al.*

Rice is an important model for comparative genomics of plants: both its reproductive development and defence signalling are the basis of the article prepared by K. Shimamoto and J. Kyozuka. The use of *Physcomitrella patens* as a model in moss genetics and mutagenesis studies is based on its simple developmental pattern (D.G. Schaefer).

Generally, the book contains 22 specialised reviews of a high quality, supplemented with figures (some of them in colour) and tables and lists of full references. The highest number of references (198) belongs to the review on non-selective cation channels. The subject index is as usually very detailed. It is probably not necessary to recommend the reviewed volume of this well-known and often used book series.

Z. ŠESTÁK (*Praha*)