Briggs, W.R., Jones, R.L., Walbot, V. (ed.): **Annual Review of Plant Physiology and Plant Molecular Biology. Vol. 43, 1992.** - Annual Reviews, Palo Alto 1992. - 685 pp.

Every volume of the well-known series "Annual Review..." brings a set of perfect up-to-date review articles on well chosen topics that are in focus of modern science. This is why individual reviews are so often cited and why the impact factors of these series are very high. This is true also for volume 43 of the plant physiological and genetical series.

Traditionally the prefatory chapter is reserved for memoirs of an important scientist. This time it is R.N. Robertson, plant physiologist well known by his papers on membrane functions and phosphorylation.

The 21 reviews deal with various topics at the level organelle to whole plants. T. Nelson and J.A. Langdale deal with developmental genetics of C_4 photosynthesis, checking the ontogeny of carbon metabolism from cells to leaves. V. Walbot reviews papers on mutagenesis and gene cloning using transposon tagging and T-DNA insertion. Responses of superoxide dismutase to environmental stresses and genetic engineering of this enzyme are explained by C. Bowler *et al.* Wide crosses in cereals, their prefertilization and postfertilization barriers, manipulation of alien chromatin and introduction of DNA into cereals are dealt with by M. Baum *et al.* Organization of the mitochondrial genome, transcription, RNA processing and RNA editing are the topics of a review paper by M.W. Gray *et al.* A.H.C. Huang analyzes the literature on seed oil bodies and oleosines. Structural and functional organization of tubulin, the heterodimeric protein of *ca.* 100 kDa that is a basis of microtubules, is explained by D.E. Fosket and L.C. Morejohn. Spatial organization of enzymes of various metabolic pathways in organelles is the next topic (G. Hrazdina and R.A. Jensen). Structure and regulation (activation, deactivation) of chloroplast coupling factor, its energetic requirements and inhibitors are dealt with by D.R. Ort and K. Oxborough. Structure and function of photosystem (PS) 1, its reaction centre, core, intrinsic and extrinsic proteins and light-harvesting complexes and the respective genes are explained by J.H. Golbeck. Sulfur metabolism in plants, its regulation and genetics are discussed by A. Schmidt and K. Jäger. Anion channels in plant organelles and membranes are dealt with from various aspects (also pharmacology) by S.D. Tyerman. Papers on calmodulin and Ca-dependent protein kinase as targets of intracellular signals are reviewed by D.M. Roberts and A.C. Harmon. The most important plant enzyme, ribulose-1,5-bisphosphate carboxylase/oxygenase (RuBPCO), its regulation by light, RuBPCO activase and sugar phosphates, ATP/ADP ratio, glyoxylate, *etc.*, is the next topic (A.R. Portis, Jr.). Functions of salicylic acid in plants (flowering, allelopathy, heat production, disease resistance, biosynthetic pathways, *etc.*) are dealt with by I. Raskin. T-DNA, formation of its protein complexes, and integration into plant cell DNA are the main items of the next review (P.C. Zambryski). Pathogenesis from the cell biology point of view (reaching the host, pre-penetration, penetration, establishment of the host-pathogen interface, sporulation) is reviewed by A.R. Hardham. Virus-host interactions and the respective resistance mechanisms are the next topic (W.O. Dawson and M.E. Hilf). Vesicular-arbuscular mycorrhizal symbiosis, signalling and recognition and plant defense mechanisms are explained by R.T. Koide and R.P. Schreiner. Tissue fusions (congenital and postgenital) and formation of teratoma during floral morphogenesis are the next topic (J.A. Verbecke). The last review by B. Demmig-Adams and W.W. Adams, III deals with photoprotective mechanisms and responses (removal of excess excitation energy, turnover of PS 2, xanthophyll cycle, *etc.*).

As usually, the quality and understandability of reviews is high, the frequency of graphs and tables rather low, and the amounts of references per review vary according to the topic (from 64 to 313). Author and subject indexes are perfect. The above overview shows that every researcher, teacher and student of plant physiology and genetics finds in this volume something interesting.

Z. ŠESTÁK (*Praha*)