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BOOK REVIEW

REINERT, J. (ed.): CHLOROPLASTS. — Springer Verlag, Berlin—Heidelberg—New York 1980. 240 pp., 40 figs.

The 10th volume of the series "Results and Problems in Cell Differentiation. A Series of Topical Volumes in Developmental Biology", is devoted to one of the most important plant cell organelles. Under the title "Chloroplasts", the editor of the volume, J. Reinert, assembled in 8 chapters contributions of 14 authors dealing with morphological, physiological and some biochemical aspects of chloroplast development, paying attention to its complicated internal structure and factors controlling these processes.

The relationship of chloroplasts to other plastids, their classification, development and inter-conversions are dealt with by E. Schnepe in the first chapter. Th. Butterfass discusses plastid division, its coordination with cell division, and some evolutionary aspects of those problems in the second chapter. The following two chapters are devoted to genetic autonomy and synthetic capabilities of plastids. R. G. Herrmann and J. V. Possingham treat properties of plastid DNA, its structure and other, especially functional characteristics. RNA, structure and function of plastid protein synthesis machinery is treated by R. Wollgiehn and B. Parthier. Biosynthesis of particular chloroplast membranes — thylakoids, and membrane-bound enzyme systems involved in photosynthesis is discussed by F. H. Herrmann, Th. Börner and R. Hagemann from both the biochemical and physiological points of view. Special interest is paid to problems arising from the needs of cooperation of plastid and nuclear-cytoplasmic processes of genetic and biosynthetic character. Importance of an enzyme catalyzing the initial step of the Calvin cycle — ribulose 1,5-bisphosphate carboxylase — is underlined by the fact that this enzyme is examined in a separate chapter under the title "Fraction I Protein". Its author, W. Bottomley, analyses chemical properties of this protein, its physiological function and biosynthesis. A chapter concerning the effect of light, growth regulators, mineral nutrients and water stress on the development of chloroplast structure was compiled by C. Sundqvist, L. O. Björn and H. I. Virgin. In the last chapter R. M. Leech deals with the possibility of using isolated plastids as an experimental approach in the investigation of division and differentiation of higher plant plastids.

Each chapter presents a very good survey of particular problems and the latest knowledge in the field in question, as the respective authors are well-known specialists. A good knowledge of problems is also shown on rich bibliographies, which supplement each chapter. A useful subject index improves the usefulness of the book. I think that for everybody who is working on any research problem connected with chloroplasts, the reviewed volume is a valid source of information enabling better understanding in the whole range of problems connected with photosynthesis.

J. ZIMA (Praha)