

GENEVOIS, L.: **Mutations biochimiques chez les végétaux supérieurs.** — Masson et Cie, Paris 1973. 205 pp. 32 Figs. and 50 Tables.

The title of this book may lead to various assumptions on its content. From the standpoint of molecular genetics, most of mutations can be considered as biochemical, *i.e.* irrespective of phenotype, they should represent changes in the biosynthesis, structure, metabolism or regulation of enzymes, structural proteins, nucleic acids, lipids, vitamins *etc.* From the phenotypical point of view the term "biochemical mutations" can be understood as heritable changes in the chemical or biochemical characters, detectable by chemical and biochemical methods. Those readers who will expect this second conception will not be far from the truth. The author, professor of biological chemistry and plant physiology at the University of Bordeaux, summarized almost exclusively the literature concerning crop plants and those biochemical characters which are important in the plant breeding. Thus, mutants in the biosynthesis of chlorophylls, anthocyanins, thiamine *etc.* obtained and studied in detail either in crop plants or in model plants like *Arabidopsis thaliana*, *Oenothera*, *Antirrhinum* *etc.* were omitted.

The introducing part under the title "Spontaneous mutations" (Les mutations spontanées) mostly describes the pioneer discoveries of De Vries and his followers in *Oenothera*. Under the title "Induced mutations" (Mutations provoquées) the utilization of ionizing radiations, chemicals and grafting (!) as mutations-inducing factors is shortly mentioned. The main part of the book includes the description of heritable, quantitative and qualitative differences between varieties, lines and (to a lesser extent) induced mutants in the content of lipids in *Cruciferae*, lipoproteins in maize, tocopherols in hazel nuts, carotenoids in carrot, tomatoes and maize, ascorbic acid in fruits of fruit-trees and tomatoes, B-vitamins in maize, legumes and tomatoes, proteins and amino acids in maize, wheat, barley and legumes, naturally occurring inhibitors in plants (like antitrypsin, haemagglutinins *etc.*), substances influencing the abscission, dormancy and/or vivipary in maize, potato tubers *etc.* and purine-like alkaloids of lupines, genus *Solanum*, tobacco, *Coffea* and *Paracoffea*. One chapter deals with changes in gibberellins and other plant hormones as they are related to the nanism in tomato, pea, wheat, barley and other plants. Together with comprehensive quantitative data, the biosynthesis of mentioned substances and the influence of some physiological factors on their contents are included. The book summarizes rather the older than the newer world literature in this field up to 1970—71.

According to the content, selection of literature and of topics the book can be recommended preferentially to plant breeders and plant biochemists, geneticists or physiologists interested more in the applied than in the basic research.

J. VELEMÍNSKÝ (Praha)

TRAVERS, A. A.: **Transcription of DNA.** Oxford Biology Readers 75. Oxford University Press, London 1974, 16 pp.

This booklet brings an up-to-date summary of the information on the transcription of DNA. It starts with describing the principles of the transfer of information from DNA to RNA. The main interest is focused on DNA-dependent RNA polymerase and its structure and function is dealt with in detail. The closing chapters are devoted to different modes of transcriptional control, including some interesting general considerations on regulation of transcription in systems of different complexity and stability. It is an excellent compromise between an inevitable simplification of the pedagogue and the specialized view of the professional scientist. The illustrations (18 figures) form, as usual, an integral part of the text and help much in good understanding of the topic. Important references for further reading are included. The booklet provides competent information to every student of biology, who is not specialized in this particular field.

J. KREKULE (Praha)

THAER, A. A., SERNETZ, M. (ed.): **Fluorescence Techniques in Cell Biology.** — Springer-Verlag, Berlin—Heidelberg—New York 1973. 420 pp. 303 figures.

The book includes Proceedings of the Conference on "Quantitative Fluorescence Techniques as Applied to Cell Biology" held at Battelle Seattle Research Center in March 1972.

There is no doubt that fluorescence techniques become important research tools in both biochemistry and cell biology. These proceedings clearly illustrate the complementary nature of the information obtained by fluorescence microspectrophotometry techniques applied mainly to the analysis of biological solutions, activity and organization of the cell at the molecular level, and the findings of microscope cytofluorometry.

The book contains 36 papers and these are divided into 5 parts: (I) — Introductory papers with two reviews demonstrating the utilization of fluorescence polarization and techniques for fluorescence lifetime measurements. — (II) — deals with the instrumental and standardization requirements for microscope fluorometry and microspectrofluorometry on single cells. The papers open the way into the quantitative fluorometric ultramicroanalysis at microscope level. (III) — contains the papers dedicated to the cytofluorometric determination and analysis of cellular substances (proteins, DNA, chromosomes, chromatin, biogenic monoamines). (IV) — has been used for the papers dealing with investigation of enzyme reactions and transport mechanism and containing the application of microscope fluorometry to the measurement of enzymatic activity at the level of the single cell and its compartments. — The papers in the last Part (V) deal with the use of fluorescent substances as molecular probes to the study of the configuration, conformation and reaction sites of biological macromolecules.

The rapid orientation is facilitated by the subject index. Only two botanical papers are presented in this book (KRAAYENHOF, R.: Atebrin and related fluorochromes as quantitative probes of membranes energization. CASPERSSON, T.: Fluorometric recognition of chromosomes and chromosome regions.).

The material of this book will be very useful for all who are studying and interested in biochemistry, cytomorphology, cytodifferentiation and transport phenomena on molecular organells (chloroplasts). The book is well produced.

J. ULLMANN (*Praha*)

PROBLEMY FOTOENERGETIKI RASTENII. Vypusk 2 [Probleme der Photoenergetik der Pflanzen. 2. Band]. — Alma-Ata 1974. 292 S. 0,35 Rbl.

Ausführliche Zusammenfassungen der Vorträge, die auf der 3. Allunionskonferenz über Photoenergetik der Pflanzen vom 8.—11. Oktober 1974 in Alma-Ata, Kasachische SSR gehalten wurden, sind der Inhalt vorliegenden Büchleins. Nach sieben einleitenden Vorträgen über die Entwicklung, Ziele und Perspektiven der Photoenergetik sowie die praktische Ausnützung der Resultate in der Landwirtschaft verlief die Konferenz in fünf Sektionen und 23 Demonstrationen. Die Vorträge der ersten Sektion waren den physikalischen und chemischen Mechanismen der biologischen Transformation der Lichtenergie gewidmet: sie behandeln z.B. die Lichttransformation in den Primärvorgängen der Photosynthese, die Fluoreszenzvorgänge, die Transformation von Laserstrahlen. Die nichtphotosynthetische Transformation der Lichtenergie und der Licht-Stoffwechsel in Pflanzen und Mikroorganismen wurden in Sektion II behandelt, wo besonders einige Vorträge über Photorespiration, über die Aufgabe der Glyoxisome und Peroxisome sowie Mitochondrien bei diesem Vorgang von Interesse sind. Sektion III: „Photostimulierung und deren Ausnützung in der Landwirtschaft“ ist mehr praktisch ausgerichtet und behandelt den Einfluss von konzentrierten Sonnenlichtimpulsen, Xenonlampenlicht, Laserstrahlen oder γ -Strahlung auf das Pflanzenwachstum und -entwicklung, den Stoffwechsel und die Produktivität bei Nutzpflanzen und Massenkulturen von Algen. Sektion IV „Photomutagenese und Photomutationsselektion“ fasst Ergebnisse auf dem Gebiet der Strahlen-genetik und Pflanzenzüchtung zusammen und Sektion V ist den physikalisch-technischen Fragen der Photoenergetik der Pflanzen wie Mess- und Belichtungsvorrichtungen, automatische Kultivierungsvorrichtungen u.ä. gewidmet. Der Band enthält im ganzen die Zusammenfassungen von 133 Beiträgen, die nur in russischer Sprache verfasst worden sind. Sie sind nicht illustriert und ohne Literaturnachweise.

INGRID TICHÁ (*Praha*)