Pearson, C. J. (ed.): Control of Crop Productivity. — Academic Press, Orlando—Sydney—San Diego—Petaluma—New York—London—Toronto—Montreal—Tokyo 1984. 315 pp., US $ 49.50.

This book is an homage to the inspiring teacher and supervisor of research students professor F. L. Milthorpe on the occasion of his retirement. The volume presents recent knowledge in those branches of plant physiology in which professor Milthorpe has worked and published — metabolic processes, stomatal behaviour, leaf growth and plant productivity in relation to environmental factors. In 18 chapters, written by professor Milthorpe's students, disciples, colleagues and friends, previously unpublished data, new hypotheses and viewpoints on the processes controlling crop productivity are discussed.

In the Introduction, the editor pointed out the aim of the book ". . . to contribute to shifting plant research toward more balanced and integrated view of the control of crop productivity." The remaining 17 chapters are grouped into two parts, devoted to processes controlling productivity (5 chapters) and to the control of productivity in specific crops (12 chapters). In the first part I. Cowan demonstrates the interplay between the two most important components of growth — carbon gain and water loss; N. Thorpe presents the current concept of the physiology of stomatal movements; N. Terry and C. D. Farquhar consider the involvement of photochemical capacity as a rate-controlling factor of photosynthesis; J. W. Patrick attempts to describe the control of carbon partitioning to the harvestable portion of the plant, including the integrating operation of partitioning mechanisms in the source, path and sink organs, and assesses the significance of these processes as determining the carbon transfer, and finally C. J. Pearson and W. A. Muirhead discuss the management of nitrogen availability in order to optimize crop productivity. The chapters of the second part are devoted to the effect of water stress on wheat (D. Aspinall), flowering in wheat (J. L. Davidson and K. R. Christian), seed development and quality in bean (P. B. Goodwin and M. A. Siddique), environmental and physiological controls and limitations of growth and productivity of maize and pearl millet (C. J. Pearson and A. J. Hall), temperate (D. R. Kemp) and tropical (J. R. Wilson) pastures, natural grassland (E. K. Christie), fruit (K. A. Olsson, P. R. Cary and D. W. Turner), and protected (S. W. Burrage and P. Newton) crops, mangroves (B. F. Clough), trees and forests (F. J. Burrows). The closing chapter is devoted to modelling the crop response to management and environment (J. M. Morgan). The book is complemented by Glossary of Main Symbols and an Index. It brings a lot of information and stimulating thoughts. Every research worker engaged in crop productivity and processes on which it depends, will find the book useful.

Jarmila Soláková (*Praha*)

Murray, D. R. (ed.): Seed Physiology. Volume 1. Development. — Volume 2. Germination and Reserve Mobilization. — Academic Press, Orlando—Sydney—San Diego—Petaluma—New York—London—Toronto—Montreal—Tokyo 1984. 279 + 295 pp., US $ 49.50 + 49.50 or 95.00 both.

The purpose of these books is to review present knowledge of seed development on mother plant (Volume 1) and of seed dormancy, germination and early post-germination development of seedlings (Volume 2). The first volume devoted to until recently neglected part of seed biology, synthesizes present knowledge and points out areas for future research. It consists of seven chapters. The introductory editor's chapter deals with the evolution of seed-bearing plants, identification of wild progenies of crop species, processes of domestication and with the importance of conserving genetic diversity. In the following chapter J. S. Pate describes the nutrition of developing seed. The next four chapters are dedicated to synthesis and accumulation of main reserve materials — proteins (D. R. Murray), phosphorus and other minerals (J.N.A. Lott), oligo- and polysaccharides (N. K. Matheson) and lipids (C. R. Slack and J. A. Browse). In the last chapter E. A. Bell surveys the main toxic compounds produced by seed tissues and gives examples of successful breeding or selection for lowering their amount or total removal.

Also the matter of the second volume is divided into seven chapters. In the first two V. N. Tran and A. K. Cavanah compile the structural and J. D. Ross the metabolic aspects of dormancy; in the next one W. E. Simon gives account of physical and biochemical events that follow imbibition of water by dry seeds. Metabolic regulation of polysaccharides (A. E. Ashford and F. Gubler), nitrogen and phosphorus (M. J. Dalling and P. L. Bhalla), oil and wax (R. N. Trelease and D. C. Doman) reserves mobilization is treated in the next three chapters. The final chapter is on the axis-cotyledon relationships during reserve mobilization.

Both volumes contain Plant Species and Subjects Indexes, lists of contributors and the content of the respective volume. All chapters are illustrated by well-arranged tables, synoptic graphs of good quality and photos provided with adequate legends. The books have a handy size, are well printed and have a traditionally good design of binding, fully in keeping with the high standards of the Academic Press. Both volumes should be useful to teachers, students and researchers in agronomy, plant physiology and related branches.

JARMILA SOLÁROVÁ (*Praha*)

VASIL, I. K. (ed.): CELL CULTURE AND SOMATIC CELL GENETICS OF PLANTS. VOL. 1.: LABORATORY PROCEDURES AND THEIR APPLICATIONS. — Academic Press, Inc., Orlando—San Diego—New York—London—Toronto—Montreal—Sydney—Tokyo 1984. 825 pp., US $ 85.00.

This useful volume reflects the rapidly growing progress in using tissue culture techniques in plant biotechnology, which is in most areas fully dependent on our ability to regenerate whole plants from genetically transformed cells. Nearly ten methodical books and laboratory manuals have been published in this field since 1981. This latest covers a relatively broad spectrum of procedures described in short specialized articles. Despite the fact that "... underlying concept of the (tissue culture) technique is simple and remains essentially unchanged since it was first outlined by Haberlandt in 1902" (Brown p. 2) the present book demonstrates how far in development of new approaches and deep in details this original concept was applied in development of brillant techniques which enable us to manipulate with plant organs, cells and subcellular structures and to regulate their further development.

The subject is divided into 85 chapters dealing with organization of the tissue culture laboratory, preparation of media, induction and maintenance of callus cultures, clonal propagation and with various aspects of cell suspension culture. Several chapters are dedicated to the culture of ovaries, ovules, embryos and endosperms, *in vitro* pollination, anter culture, isolation and culture of protoplasts, protoplast fusion and applications of these techniques. The book also contains brief description of procedures adapted for studies of tissue cultures: isolation of different cell organelles, transformation of cells with *Agrobacterium* sp. and Ti plasmid, induction of mutagenesis and mutant selection, freeze preservation of cells and meristems, selection of cell lines producing special secondary metabolites, *etc.* Attention is also paid to light and electron microscopy, nuclear cytology, cell cycle analysis and to special methods of plant cell investigation.

The number of chapters and methods described indicate that the book is a comprehensive source of information. It contains procedures which are selected on the basis of authors personal experience. These methods are mostly described in detail and their use does not require further reading unless a special plant material is used. Some procedures are described in several chapters dedicated to the individual crop plants.

One has to congratulate the editor who succeeded in organizing a team of more than 90 authors in such a way that their contributions are published in a uniform style, with a minimum of overlaps. This well edited book is a very good source of information for both scientists and students of plant physiology, genetics and biotechnology, in general.

M. KAMÍNEK (*Praha*)

BISHOP, J. M., ROWLEY, J. D., GREAVES, M. (ed.): GENES AND CANCER. — Alan R. Liss, Inc. New York 1984. 687 pp. £ 67.00.

The aim of this publication, representing the proceedings of a CETUS-UCLA Symposium, held in Steamboat Springs, Colorado, 1984, was to bring an overview of how genotoxic compounds, mainly carcinogens, act on the DNA level and how specific cancer genes-oncogenes elicit neoplastic growth. Readers of Biologia Plantarum will be maily interested in papers dealing with common problems of molecular biology, even if the endpoints studied and discussed in this publication mainly concern cancer. It is now widely suspected that there is a common pathway on which most genotoxic agents, including carcinogens, act. Covered are topics such as genetic damage and cancer (including a review of various types of chromosomal mutations), the role of the cellular genome in the stages of carcinogenesis, the SOS response of *E. coli* and various types of defective DNA repair. Of interest are further papers on the nucleotide incorporation opposite genotoxic lesions in DNA, the role of ADP-ribose in DNA repair and on the phenotypic restoration of repair deficiencies. The remaining papers will be of interest mainly to those engaged in specific cancer research. They are arranged under the titles: The genetics of the cancer cell

Viral models for oncogens, Oncogens in human tumors, Cellular oncogenes, Chromosomal anomalies, and Pathobiology in the tumor cell.

This publication should serve as a major reference for researches in the fields of genetics, oncology and in many related areas of medicine.

T. GICHNER (*Praha*)

GUSTAFSON, J. P. (ed.): GENE MANIPULATION IN PLANT IMPROVEMENT. — Plenum Press, New York—London 1984. 668 pp. US $ 75.00.

This publication, based on the 16th Stadler Genetics Symposium held in Columbia, Missouri, 1984, contains well-written and up-to date chapters on a wide range of approaches to plant improvement, utilizing conventional, cellular and molecular genetic techniques. The introductory papers review the history and progress of plant breeding from 1910 to 1984. The first part of the book presents ten chapters on conventional plant breeding methods. Cultivar improvement by conventional methods has been responsible for 50% or more of the yield increase of wheat, maize, soybeans, *etc.* Covered are topics such as ideotype research and plant breeding, physiological aspects of cultivar improvement, quantitative genetic principles in breeding, the pathological and entomological framework of plant breeding, *etc.* The second part of the publication deals with the use of chromosome manipulation in plant breeding and includes papers on the results of chromosome variability in wheat and the significance of doubled haploid variation. The core of this 24-chapter publication (including a list of 49 poster presentations) focuses on the possible application of gene manipulation in plant breeding. It concentrates on the use of protoplasts in plant breeding, somaclonal variation, nuclear architecture and its manipulation, molecular analysis of alien chromatin, genetic aspects of symbiotic nitrogen fixation, *etc.* According to the chapter on the prospects of gene manipulation, genetic engineering clearly provides novel approaches to solving *e.g.* resistance to pests, but "the next symposium on the role of genetic engineering in plant breeding should be held after the publication of a paper demonstrating conclusively the genetic engineering of an altered plant with a commercial value".

J. VELEMÍNSKÝ (*Praha*)

HORÁK, J., KOTYK, A., SIGLER, K.: BIOCHEMIE TRANSPORTNÍCH POCHODŮ. [BIOCHEMISTRY OF TRANSPORT PROCESSES]. — Academia, Praha 1984. 316 pp. Kčs 58.—; in Czech.

The transport of matter is among the most important tasks which all living organisms have to fulfil. Therefore the first monograph on the biochemistry of transport processes written in Czech language will be certainly appreciated by experts in a wide range of disciplines as well as by university teachers and students. The authors are very successful in the presentation of this very wide and complicated research field. They found an intermediate way between the style of a textbook giving representative treatments of selected problems and a comprehensive reference book, as well as between the physico-chemical approach giving precise mathematical laws for simplified model systems and physiological approach accentuating the structural peculiarities of different membranes, localization of transport processes within cells and the coupling with the metabolic reaction sequences.

The chapters are organized into six chapter groups. The first group is devoted to a general survey of the composition, structure, genesis of membranes and of their basic functions. The second deals with membrane transport mechanisms, especially with the comparison of the kinetics and energetics of diffusion and transport by carriers. Both these chapter groups are pedagogically excellent and offer the reader inevitable knowledge for understanding the following specialized parts. The transport of water is only very briefly mentioned, although the theory of water transport across the cell membrane is now reasonably satisfactory and straitforward, especially since the coupling of solute and water flows by applying the phenomenological equations of non-equilibrium thermodynamics. On the other hand, the fourth chapter group is a comprehensive description of the transport of organic substances: carbohydrates, organic acids, amino acids, peptides, nucleic acids, vitamins and antibiotics. The authors deal with general transport systems of each of these substances as well as with specific features of their transport in different organisms or even organs. Primary attention is given to the transport in microorganisms and in animal tissues. I am afraid that plant physiologists will be disappointed that so little attention is given to the transport in plant cells and tissues. However, I do not know any book in the world

which completely cover this broad spectrum of problems. The same organization is in the fifth chapter group concerning the transport of ions: H^+, Na^+, K^+, Li^+, Th^+, NH_3^+, Ca^{2+}, Mg^{2+}, Mn^{2+}, Zn^{2+}, Cu^{2+}, Fe^{3+}, $H_2PO_4^-$, SO_4^{2-}, Cl^-. Both these chapter groups offer very detailed information to readers. The last chapter group is devoted to the transport of macromolecules.

The high value of this book is supported by numerous graphic figured and tables. The good quality of printing should also be mentioned.

Serving both as a review of fundamental theory and a summary of up-to-date information this book should find a place in every biological library.

JANA POSPÍŠILOVÁ (*Praha*)

SATIR, B. H. (ed.): MODERN CELL BIOLOGY, VOL. 3. — Alan R. Liss, Inc., New York 1984. — 314 pp. £ 38.—.

The past decade has brought major advances in our understanding of the molecular mechanisms that govern function, replication and organization of the cell. This book is the 3rd Volume in a series that provides state-of-the-art coverage of modern cell biology and related aspects of molecular biology. Two reviews included in this volume will be of common interest to all cell biologists. "High molecular weight microtubule-associated proteins" represent important components of the cytoplasm of eukaryotic cells. The other review "RNA splicing and the involvement of small ribonucleoproteins" brings data on the role of intervening sequences (introns) and on the mechanism by which the primary transcripts of nuclear genes that code for protein are spliced to form mature messenger RNA. The remaining reviews on export of protein in bacteria, mammalian zona pellucida, molecular diagnoses of human genetic disease, junctional coupling of endocrines, and on signal processing in *Dictyostelium* will be of interest to researchers involved in specific area of cell biology. Seven chapters provide an overview of a specific subject area and include current results from each author's laboratory, and a viewpoint on future research directions.

Modern Cell Biology will be appreciated by scientists interested in the basic and applied aspects of cell and molecular biology.

T. GICHNER (*Praha*)

RAVEN, J. A.: ENERGETICS AND TRANSPORT IN AQUATIC PLANTS. [MBL Lectures in Biology, Vol. 4.] — Alan R. Liss, Inc., New York 1984. 587 pp., £ 67.00.

Ten chapters of this rather voluminous book of a well-known author stem from his teaching activities in a marine biology course. Nevertheless, the publication includes both marine and fresh-water plants, both algae and macrophytes.

Basic facts on photosynthesis, energy sources for phototrophs, nutrient availability in water reservoirs, and primary assimilation processes are given in Chapter 1. The following chapters deal with the diversity of aquatic plants and their characteristics (taxonomy, growth habits, evolution, mechanochemical transductions, flagella movement, organs of primary and secondary hydrophytes), and with cell energetics and transport (redox spans in photosynthesis, proton pumps and ATP synthesis, carboxylation enzyme functions, stoichiometric relations, energy costs of various metabolic processes, *etc.*). Chapters 4 and 5 deal with photosynthesis — from radiant energy absorption to carbon fixation. Here, the amounts of photosynthetic pigments and enzymes, localization of individual components in thylakoids, photosynthetic unit sizes, primary photoreactions and activities of the electron transport chain and photophosphorylations, transport and fixation of CO_2, activities of carboxylases, the carbon fixation and photorespiratory pathways, use of bicarbonate ions in aquatic plants, and dependence of photosynthetic rate on environmental factors are given. Chapter 6 discusses dark respiration, the respective metabolic cycles, respiration in photosynthesizing cells, functions of specific enzymes, respiratory rates in different plant species, and factors controlling them. The following three chapters explain the transport processes in plants, *i.e.* transport at the plasmalemma, functions of vacuoles, and transport (apoplastic and symplastic) within the plant. In these chapters terrestrial plants are often quoted for comparison. The tenth chapter is a summary (which may serve also as a more detailed content list) with prospects for further research.

Each chapter ends with a list of references (mostly 200 to 300 items) in a short form; a good

subject index is also provided. The interesting volume will certainly be used by students, teachers and researchers in plant physiology, oceanography, limnology and other fields of science.

Z. Šesták (*Praha*)

Semi-Dwarf Cereal Mutants and their Use in Cross-Breeding II. — IAEA-TecDoc-307, International Atomic Energy Agency, Vienna 1984. 290 pp.

It is evident that decreasing plant height, primarily to reduce lodging is a major goal in cereal breeding. The improved resistance to lodging permits a fuller exploitation of nutrients and water and thus increases the yield potential of cereal cultivars. The Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development initiated in 1980 a programme on the evaluation of semi-dwarf mutants as cross-breeding materials in cereals. This publication presents the proceedings of a research-coordination meeting held in Davis, California, 1982. The introductory paper reviews the history of 3 induced mutant genotypes in barley that led to the origin of cultivars Gunilla, Pallas and Mari, known for their straw stiffness and high grain production. Subsequent papers focus on the progress in evaluation, use in breeding and genetic analysis of semi-dwarf mutants of barley, wheat, triticale and rice. The results of cytological and physiological studies have been also included, mainly studies on the cell size and number in short-culm plants, on their response to gibberellin, variation of physiological attributes, *etc.* The publication also includes a list of semi-dwarf cereal stocks, which can be used in a cross-breeding programme for short stature, and a list of Institutes and breeders working with semi-dwarf cereal mutants. The conclusions and recommendations of the FAO/IAEA meeting will be of great interest to all those engaged in cereal breeding.

T. Gichner (*Praha*)

Barlow, P. W., Carr, D. J. (ed.): Positional Controls in Plant Development. — Cambridge University Press, Cambridge—London—New York—New Rochelle—Melbourne—Sydney 1984. 502 pp. £ 45.00. $ 79.50.

The idea that ". . . the developmental behaviour of a cell is determined primarily by the morphological position it occupies in the organism . . ." was expressed by H. Vöchting in 1878. The concept of positional control has been explored and elaborated recently in numerous developmental studies. The book is the first to bring together information on the contemporary investigations of plant developmental physiology, in which attention is focused on local behaviour of the cells and tissues and in which the spatial relationships are stressed. Pattern formation and the underlying mechanisms are the central topic of this book. The possible action of diffusable morphogens in intertissue and interorgan relationships is discussed. The role of ionic fluxes in transduction of the positional signals is shown. Evidence is presented of short-distance as well as long-distance positional control. The significance of minor deviations in uniformity and their severe consequences in construction of the plant is demonstrated. Polarity of growth and of pattern formation is viewed as an important event of the positional control. A hierarchical approach was adopted in revealing the causal chains of developmental events, as the formation of a plant structure is governed by its position in relation to the neighbouring structures at many levels from molecular and subcellular up to the level of a whole plant.

The book contains sixteen contributions written by experts working in different fields of plant development. Examples of positional control operating in development of algae, fungi, bryophytes and angiosperms are presented. Root and shoot formation, vascular tissue differentiation, surface growth, phyllotaxis, branching pattern, ontogenic changes in spatial relationships, inflorescence morphogenesis — are the developmental events in which positional control may be found. The book as a whole also provides a survey of modern techniques used in developmental botany. It includes special ultrastructural methods and devices for serial measurements, microsurgery, computer simulations, *etc.* The beautiful orderliness of plant formation may be traced using these methods. This excellent book may be recommended to every botanist engaged in development. It will be also helpful to other specialists in biological sciences.

Frideta Seidlová (*Praha*)

HERSCHELL, L. R., CAMPBELL, A., SANDLER, L. M. (ed.): ANNUAL REVIEW OF GENETICS, VOL. 18. — Annual Reviews Inc., Palo Alto 1984. 628 pp. US $ 27.00 (USA), 30.00 (elsewhere).

A variety of DNA sequences have been encountered in bacteria, drosophila, mammalian cells, *etc.* that indicate a widespread occurrence of mobile genetic elements - transposones. The introductory paper of the 18th Vol. of Annual Review of Genetics deals with the early years of maize genetics (M. M. Rhoades). It also includes the work of the Nobel Prize Winner Barbara McClintock — the founder of transposable genetic elements in corn. A further prove that plants are in some cases an excellent material for basic scientific studies.

The following 15 topics are reviewed in the publication: *E. coli* population genetics, trisomy in man, mouse major histo-compatibility complex, the human beta-globin gene, positive regulation in bacteria, biosynthetic pathways in yeast, yeast proteases, transposons in evolution, heat-shock response, synaptonemal complex, global bacterial regulation, silkmoth developmental genes, nematode cell lineage, animal glycosylation mutants and cellular oncogenesis. The volume also includes a cumulative index of chapter titles of volume 14 to 18.

This publication represents a concise and up-to-date account of research in modern genetics and will serve as an excellent reference and source book. A broad range of topics covered makes this volume a must for all biological libraries.

KATEŘINA PÁNKOVÁ (*Praha*)

SENGER, H. (ed.): BLUE LIGHT EFFECTS IN BIOLOGICAL SYSTEMS. — Springer Verlag, Berlin—Heidelberg—New York—Tokyo 1984. 538 pp. Cloth DM 142.—.

This book contains proceedings of the 2nd International Conference on the Effects of Blue Light in Plants and Microorganisms, held in July 1984 at the University of Marburg.

The diversity of photoreceptors, their properties, localization in cell membranes, primary events and signal transduction are discussed as well as the role of blue light in chlorophyll biosynthesis, in carotenogenesis and in the development of photosynthetic apparatus. Evidence is given for the influence of blue light on the processes of translation and transcription and on the regulation of enzymes. New results in photomovement and in ecological systems are also presented.

Of special importance is the contribution of editor prof. H. Senger dealing with terms "blue light receptor" and "cryptochrome". Some 15 years ago the term "cryptochrome" as a laboratory nickname for the "blue-UV light photoreceptor" was proposed and used since that time without a closer definition. It was decided at the Marburg conference to use the term "blue light photoreceptors" for the group of photoreceptors absorbing below 520 nm extending into the UV region. The term "cryptochrome(s)" should be used only for those blue light photoreceptors having action spectra with peaks or shoulders at or about (±5 nm) (370), 420, 450, 480 nm as an operational term until their true chemical nature is discovered. Thus the term "cryptochrome" is equivalent to other subdivisions of blue light photoreceptors like UV-B photoreceptors. M. M. Caldwell gives a brief review on the effects of UV radiation on plants in the transition to blue light. Wavebands within UV spectrum are defined as UV-A (320—400 nm), UV-B (280—320 nm) and UV-C (less then 280 nm).

This book reflects the advance of the last 4 years in this fascinating and growing field of research.

LIBUŠE PAVLOVÁ (*Praha*)

MENHENETT, R., LAWRENCE, D. K. (ed.): BIOCHEMICAL ASPECTS OF SYNTHETIC AND NATURALLY OCCURRING PLANT GROWTH REGULATORS, Monograph No. 11. — BPGRG, Wantage. 121 pp. £ 6.00.

This monograph contains proceedings of a meeting organized by British Growth Regulator Group and Physicochemical and Biophysical Panel of the Society of Chemical Industry, which was held on 15th May 1984 in London. This meeting was focused on biochemistry and modes of action of plant growth regulators.

As endogenous gibberellins appear to be a major component of natural mechanisms of shoot extension and associated responses, four of eight contributions deal with gibberellins. W. Rademacher and coworkers inform about new types of plant growth retardants — tetcyclasis and triazoles. Both these types of retardans inhibit gibberellin synthesis by blocking the oxidative

reactions from ent-kaurene to ent-kaurenoic acid. Paclobutrazol — a broad spectrum growth retardant — affects the same steps of gibberellin biosynthesis (J. Dalziel and D. K. Lawrence). The mechanism of reactions catalyzed by 2-oxoglutarate-coupled oxidases as a basis for the search for new plant growth regulators is discussed by J. MacMillan. M. W. Kerr informs about methanoproline, a compound that inhibits proline formation and suppresses pollen production in small-grained cereals and renders them male-sterile. This effect has a special importance in breeding practice. New interesting facts on ABA metabolism are presented by I. B. Taylor. The loss of potential yield resulting from photorespiration could be lowered by suppressing the process. The possibilities to inhibit phosphoglycolate phosphatase, the first unique enzyme of the photorespiratory pathway, was studied by M. W. Kerr and D. P. Whitaker.

This book does not contain only new important facts but also shows new interesting approaches to the problem of regulation of plant growth and development.

LIBUŠE PAVLOVÁ (*Praha*)

INDUCED MUTATIONS FOR CROP IMPROVEMENT IN LATIN AMERICA. — IAEA-TECDOC-305, International Atomic Energy Agency, Vienna 1984. 356 pp.

Mutation breeding offers one of the most effective methods for crop improvement and thus can considerably help to increase the agricultural production. The Plant Breeding and Genetics Sections of the Joint FAO/IAEA Division organizes regional projects and seminars on the use of induced mutations in plant breeding. This publication represents the proceedings of a regional seminar on the utilization of induced mutations for crop improvement for countries in Latin America (Lima, Peru 1982). The aim of the seminar was to discuss the latest advances in mutation breeding and to plan future projects, especially to improve crops cultivated in Latin America. Thus the results of mutation breeding achievements cover a wide range of crops: barley, wheat, sorghum, pea, tomato, potato, oil seeds, fruit trees *etc.* The introductory invited paper deals with the choice of genetic resources needed for the achievement of relevant breeding objectives. Subsequent papers focus on the potential of *in vitro* mutation breeding as an effective tool for inducing and isolation of somatic mutations of vegetatively propagated crops, *e.g.* fruit trees, root and tuber crops. Special attention was further devoted to the main task of mutation breeding in Latin America — improvement of crop resistance to pests, tolerance to environmental stress and improvement of the nutritional value of crops. A review paper on sodium azide mutagenesis presents both its advantages (high mutagenicity, safety for its users) and its disadvantages (it is not effective in all plant species and in polyploids). The seminar was attended by 41 participants from 10 Latin America countries and by FAO/IAEA experts and the presentations are published either in English or Spanish.

J. VELEMÍNSKÝ (*Praha*)

THORNBER, J. P., STAEHELIN, L. A., HALLICK, R. B. (ed.): BIOSYNTHESIS OF THE PHOTOSYNTHETIC APPARATUS. MOLECULAR BIOLOGY, DEVELOPMENT AND REGULATION. — Alan R. Liss, Inc., New York 1984. 405 pp., £ 60.00.

Sometimes the editorial inventions are not particularly clever. Thus the reviewed volume consists partly of papers published in volumes 22, 23, 24 and 25 of the Journal of Cellular Biochemistry in the years 1983 and 1984. The remaining 13 papers are published only in this proceedings volume. Many articles may thus be cited in two manners, with two page numbers, and eight of them even as being published either in 1983 or 1984. To increase the mess, in the list of contents the sequence of papers is different from that in the volume, and only the foot page numbers are given here. I wonder how many erroneous references in the literature will be induced by this arrangement.

Generally, all presented papers are the proceedings of a symposium organized by the University of California at Los Angeles and held in April 1983 in Keystone, Colorado. 113 of its participants [mostly from the U.S.A., with guests from England (14), the Federal Republic of Germany (5), Israel (5), Switzerland (5), France (4) and Canada (2)] are authors of the communications. These cover six main topics dealing with the photosynthetic apparatus: organization, functions and dynamics; effects of irradiance; chloroplast genome; biosynthesis and assembly

of components; agricultural applications; bacterial photosynthetic membranes. The number of studies of photosynthetic bacteria (including cyanobacteria) and mutants, of genetic problems and herbicide action is very high. Only a few papers are rather loosely connected with photosynthesis. The majority of articles present original experimental results; those of a review character are quite few.

The volume brings interesting information on many problems actual for the photosynthetic and genetic research: orientation in its content is facilitated by a good subject index.

Z. Šesták (*Praha*)

Wiessner, W., Robinson, D. G., Starr, R. C. (ed.): Compartments in Algal Cells and Their Interaction. — Springer-Verlag, Berlin—Heidelberg —New York—Tokyo 1984. 241 pp., DM 98.—; approx. US $ 35.70.

A specialized symposium with the same title as the proceedings volume was held in September 1983 in Göttingen in the F.R.G. Only nine months after this meeting a perfectly printed volume appeared in the series "Proceedings in Life Sciences". Its 24 articles were written by 62 authors from eight European countries and the U.S.A.

The most important topics are the differences in compartmentation in various taxonomic groups of algae, chloroplast genome and its organization, expression of chloroplast and nuclear genes, its regulation by metabolites, and their interaction with metabolic processes. The main aspect is chloroplast and alga development, often in synchronized cultures. Characteristics like photosynthetic gas exchange, activities of photosystems and enzymes, amounts of chlorophyll biliproteins and individual proteins, *etc.*, belong to those often used. Special problems like endosymbiosis, cell surface-flagellum relationships, contractile and autophagic vacuoles, Golgi apparatus and plasmalemma, mitochondria and microbodies, glycollate metabolism, and heterocyst biochemistry are also dealt with.

The text is supplemented with two indexes: taxonomic and subject. The book was prepared carefully, nevertheless, the following discrepancies between the data on title page of the volume and footnote references at the beginning of each paper (and hence in reprints) will certainly introduce unnecessary errors in references to these articles: the second editor is either D. G. Robinson (title page) or D. Robinson (footnotes), the book was published either in Berlin—Heidelberg—New York—Tokyo (title page) or Berlin—Heidelberg (footnotes). The review character of the majority of articles will certainly ensure that this book will often be read and cited by algologists, plant physiologists, biochemists and geneticists.

Z. Šesták (*Praha*)

Hartley, D., Kidd, H. (ed.): The Agrochemicals Handbook. — The Royal Society of Chemistry, Nottingham 1983. £ 90.000; US $ 171.00.

This handbook on chemicals used in agriculture is an updated translation of the German-language publication W. Perkow: Wirksubstanzen der Pflanzenschutz- und Schädlingsbekämpfungsmittel published by Paul Parey Verlag. The following agrochemicals are covered: herbicides, fungicides, insectides, acaricides, rodenticides, nematicides, molluscicides, growth regulators, pest repellents, synergists and antioxidant preservatives. Data on individual products include common, chemical and trade names, chemical and physical data, mode of action, analysis of residues, uses, crop tolerance, formulation types, toxicity to mammals, fish and bees, compatibility with other products, degradation and metabolism, precautions, antidotes and medical treatment. Information on each agrochemical is printed on a special sheet and at regular intervals (approximately once every 6 months) updated sheets will be published to be inserted into the handbook. Additional data on active ingredients, the range of formulation available, Chemical Abstracts Service Registery Numbers, details of mixed products *etc.*, not present in the German book have been included in the English version.

A very useful handbook for all those using agrochemicals or studying their effects.

J. Šatava (*Praha*)

KRUEGER, R. F., SEIBER, J. N. (ed.): TREATMENT AND DISPOSAL OF PESTICIDE WASTES. — American Chemical Society, Washington, D. C. 1984. 368 pp., US + Canada $ 64.95; Export Price $ 77.95.

Disposal of pesticide wastes is a global problem that industrialized nations now have begun to confront systematically. The objective of this publication, based on a symposium held at the 186th Meeting of the American Chemical Society, Washington, 1983, was to discuss chemical, physical and biological techniques of disposal of pesticides containing wastes. The introductory section of the publication deals with the US regulations of pesticide disposal and includes a survey of current disposal practices. The second part presents field-scale demonstrations of various technologies used for pesticide disposal. Discussed are the possibilities of incineration of pesticide wastes, the disposal of pesticide waste in lined evaporation beds, degradation of pesticides in controlled water-soil systems *etc.* The concluding part of this 20 chapter volume includes data on recent technology developments: a description of a large scale UV-ozonation degradation unit, the degradation methods of phosphorothioic ester pesticides, abiotic hydrolysis of sorbed pesticides, *etc.* Modern techniques of genetic engineering are expected to improve the degradation of pesticide wastes by microorganisms. A transfer of degradation capabilities from *Bacillus megaterium* to *B. subtilis* by extrachromosomal genetic elements-plasmids is reported in detail in a special chapter.

This book, published as Vol. 259 in the ACS Symposium Series, is designed for agricultural hygienists, toxicologists and agricultural chemists.

J. ŠATAVA (*Praha*)

ELLENBERG, H.: VEGETATION MITTELEUROPAS MIT DEN ALPEN IN ÖKOLOGISCHER SICHT. — Eugen Ulmer Verlag, Stuttgart 1982. 3rd Ed. 399 pp., DM 120,—.

The fact that three editions of Ellenberg's textbook appeared within a short time interval demonstrates its high professional standard and broad interest of experts in the publication.

In essence, the third edition does not differ from the second, which was reviewed in Biologia Plantarum in 1980. Major changes were made only in the third E section of the book. The original content of Chapter II was omitted and replaced by comments on the changes in the phytocoenological system, and in Chapter III the survey of vegetation units and their characteristic species was extended and modified to comply with the most recent knowledge. Both the text and bibliography were complemented with citations of new publications.

This third edition of the manual is sure to be welcome by all those interested in plant studies as a basic source of information on the vegetation of Central Europe.

JIŘINA SLAVÍKOVÁ (*Praha*)

LOCKERETZ, W. (ed.): AGRICULTURE AS PRODUCER AND CONSUMER OF ENERGY. — Westview Press Inc., Boulder 1982. 146 pp. US $ 23.50. Supplied by Bowker Publ. Comp., Epping, Essex, England.

This volume of the American Association for the Advancement of Science Selected Symposia (78) is based on the papers of a symposium which was held at the AAAS Annual Meeting in Toronto, January 1981, and was sponsored by AAAS Section 0 (agriculture). It deals with problems of imminent global significance in man-governed biosphere of our blue planet. In spite of being predominantly devoted to the economic part of the problem (such as the effect of rising energy prices and self-sufficiency of small farms with respect to the energy supply) the book brings in its seven papers most interesting information and ideas on the topics of a very general and biologically serious pertinence. The problem of growing crops for energy production and of using organic residues for direct and indirect energy production (including biogas) are discussed from many points of view. In addition to these papers, judicious concluding comments by the editor make the book a very stimulating reading.

B. SLAVÍK (*Praha*)