

CHARTIER, P., PALZ, W. (ed.): **ENERGY FROM BIOMASS. VOL. 1.** Proceedings of the European Community Contractors' Meeting held in Copenhagen, 23–24 June 1981. — D. Reidel Publ. Co., Dordrecht—Boston—London 1982. Cloth Dfl. 65.00; US \$ 28.00.

The first volume of the Series E published by Solar Energy R & D in the European Community reports the results on five topics covered by more than 30 research contracts dealing with the Energy from Biomass Project: (1) agricultural wastes, energy crops, (2) forestry, wood wastes, (3) algae, (4) biological conversion routes and (5) thermochemical conversion routes. Individual contracts, most of them designed for the years 1980 through 1983, are carried out in the countries of EC, most of them including combined theoretical, experimental and technological studies. Nevertheless, emphasis is laid on the technological problems, dealt with mostly on pilot scale level. They include research on such plants, materials and procedures as feedstocks-wastes, *Pteridium aquilinum*, *Sparganium anglica*, catch crops, native forest trees, but also *Eucalyptus*, *Nothofagus*, coppice stands, short rotation tree plantations, mariculture on land with micro-algae, lagoon macroalgae, cultures of hydrocarbon-rich green alga *Botryococcus braunii*, methane anaerobic digestion, alcoholic fermentation, enzymatic hydrolysis of cellulose to glucose, pyrolytic and other thermochemical technologies, liquefaction and gasification equipments etc. The above list is to be accepted as a key-words selection giving some ideas about what are the studies preferred and trends of present research in the field which seems to be of such importance for the next future.

The book may serve as excellent stimulation as well as a proof how earnestly the European Community tries to stimulate progressive research and technology.

B. SLAVÍK (Pitt)

PALZ, W., GRASSI, G. (ed.): **ENERGY FROM BIOMASS. Vol. 2.** Proceedings of the Workshop on Biomass Pilot Projects on Methanol Production and Algae, held in Brussels, 22 October 1981. — D. Reidel Publ. Co., Dordrecht—Boston—London 1982. 183 pp. Cloth Dfl. 60.00, US \$ 26.00.

The second volume of the Series E published by Solar Energy R & D in the European Community deals with two above topics in the utilisation of biomass for energy production. Nine proposals for the technology of methanol production from wood were presented, of which at least four will be actually realized and completed by 1983. The second part is much more interesting for plant biologists, since it brings description of four technological suggestions for algal cultures. Two of them are devoted to the famous *Botryococcus braunii*, which with its attainable 75% content of hydrocarbons in dry matter suggests the possibility of getting petrol directly from photosynthesis. Two remaining papers deal (a) with a tubular culture system of microalga *Porphyridium cruentum* yielding 21 g dry matter m⁻² d⁻¹ at a cost of 4 to 8 FF per kg and (b) with fuel gas production by mariculture of microalgae, chiefly *Tetraselmis* in artificial ponds. This culture fixed roughly 0.8% of global radiation as methane compared with e.g. 0.12% in ethanol from sugar cane in Brazil.

Also the second volume of EC publication on energy from biomass problems offers an impressive review of the projects carried on and gives evidence of the progress being made.

B. SLAVÍK (Praha)

MACURA, P.: **ELSEVIER'S DICTIONARY OF BOTANY. II.** General Terms in English, French, German and Russian. — Elsevier Scientific Publ. Company, Amsterdam—Oxford—New York 1982. 743 pp. Dfl. 260.00; US \$ 121.00.

Recently, there is an urgent need for specialized multilanguage guides in scientific terminology helping in the study of the international scientific literature. The dictionary which has just appeared contains nearly 10 thousand of entries concerned not only with general botany, but also with agricultural chemistry, horticulture, taxonomy and other botanical disciplines. The first part is the English index arranged alphabetically with the French and German equivalents. This basic part is supplemented with the indexes in French and German, also arranged alphabetically, which refer to the corresponding numbered entries in the basic English index. The Russian equivalents are arranged numerically and alphabetically; the alphabetical part is

arranged in the same manner as the English index. The dictionary allows a quick orientation in special botanical terms and synonyms in the four languages. It is also a unique source of specialized Russian nomenclature useful not only to scientists, teachers and students interested in botany and related plant science, but also to all those engaged in industry and translating.

J. ČATSKÝ (Praž)

ELLIOT, W. R., JONES, D. L.: *ENCYCLOPAEDIA OF AUSTRALIAN PLANTS SUITABLE FOR CULTIVATION*. Vol. I. Lothian Publishing Company Pty. Ltd., Melbourne—Sydney—Auckland 1980. 336 pp. Aust. \$ 35.—.

The cultivation and propagation of Australian plants are important not only for Australia, but also for many other countries of the world. Australian plants may be planted for cut flowers, foliage or fruit, for forestry purposes, for parks, gardens, greenhouses *etc.* A large number of species of native Australian plants are fast growing, generally they are adaptable to a variety of soil types and climates and they are mostly drought resistant.

The first part of a four-volume set deals with more general problems. In this volume, the history of Australian plants in cultivation is described and also their selection and cultivation including soil preparation, plant nutrition, the diseases, insects and animal pests and the control of these organisms. Great attention was paid to propagation from seeds and to vegetative propagation including cuttings, layering, division, grafting, budding and micropropagation with tissue cultures. The book contains an extensive list of plants suitable for growing in specific conditions in difficult soil types (calcareous, heavy clay, saline, sandy, water-logged soils), in different climatic conditions (tropical and subtropical regions, in coastal areas) and the list of plants with specific uses and features.

The volume contains over 500 illustrations (line drawings, black-and-white and colour photographs) and an extensive glossary of technical terms. It may be useful to all those working in plant science as well as the professional horticulturists. The scientific texts have been supplemented by the results of the authors' own research. A more detailed information will be given under each species in the volumes to follow.

J. ČATSKÝ (Praž)

KÖNIG, H. L., KRUEGER, A. P., LANG, S., SÖNNING, W.: *BIOLOGIC EFFECTS OF ENVIRONMENTAL ELECTROMAGNETISM*. — Springer Verlag, New York—Heidelberg—Berlin 1981. 332 pp., 142 figs. Cloth DM 162,—; approx. US \$ 75.50.

This book dealing with an attractive subject, is published within the series of "Topics in Environmental Physiology and Medicine", edited by Karl E. Schaefer. The editor himself is the author of the foreword.

The first chapters deal with the electromagnetic environment and the activity of electromagnetic processes and electrophysical forces of natural origin, including the biological response of various atmospheres. Besides natural factors, man-made electromagnetic fields and ionizing processes are also effective. These artificial sources are then specified in biologic activity of static and low-frequency fields and demonstrated in a series of clinical cases. In the following chapter entitled "Project Seafarer" the reader is informed about the application of electromagnetic fields to naval traffics and submarine equipment which utilize the frequencies in a region of 76 Hz. Numerous problems of this field are studied in genetic experiments and further deal with fertility, growth, development, magnetotactic bacteria and bird orientation and navigation. The experiments result in the determination of optimizing field parameters for behavioural detection of weak electric fields. These are followed by the biologic activity of high-frequency fields and chemophysical reactions, with the table of lethal effects of electromagnetic radiation of various frequency ranges in animals.

Fundamental applications are concluded by small air ions as biologically active agents and biometeorology. Further chapters on the divining rod phenomena are of special interest to all readers, as well as the speculations, as to whether the electromagnetic fields are to be considered a biological stress or therapies, or the electromagnetic energies in man's immediate environment,

such as all electrically powered systems and phenomena connected with the architectural biology. The technical and electrophysical terms are given in the appendices.

A broad range of scientific branches, including their practical applications and a number of illustrations, are a rich source of instruction. A representative list of references, involving approximately 800 citations, makes possible a deeper study of this topic.

M. SOSNA (Praha)

IMPROVEMENT OF OIL-SEED AND INDUSTRIAL CROPS BY INDUCED MUTATIONS. (Proceedings of An Advisory Group Meeting, Vienna, 17–21 November 1980.) — International Atomic Energy Agency, Vienna 1982. 353 pp. Austrian Schillings 600,—.

Excluding animal fat, about ten plant species provide the largest share of edible oil and fat production in the world. These include soy-bean, groundnuts, sunflower, oil-palm, coconut, olive, safflower, cotton, rape and sesame. To meet the need for an up-to-date status report on the improvement of oil-seed and industrial crops by induced mutations, the papers of this publication were assembled at the Advisory Group Meeting, organized jointly by the FAO/IAEA. The introductory review papers include A. Bozzini: The world production and needs of oil-seeds and vegetable oils and G. Röbbelen: Plant breeding and management. Section II covers papers on genetic improvement of crops producing primarily edible oils, e.g. rape, olive, peanuts, sesame, sunflower and castor beans. A paper is included on mycotoxins in oil crops, mainly aflatoxins, where e.g. the parent fungus *Aspergillus* commonly infest oil seeds. Sections III and IV and Annex 1 presents papers on genetic improvement of crops producing industrial raw material, e.g. non-edible oils, fibres, alkaloids, tobacco, spices and medicinal herbs and quality requirements for industrial processing. The last section surveys the importance and characteristics of the use of biomass. Included are data on the productivity and modes of utilization and challenges to plant breeders working on biomass crops. In addition, the publication contains the conclusions and recommendations of the IAEA/FAO Advisory Group on breeding, processing and utilization of products of oil-seed and industrial crops and a list of new varieties bred by mutation breeding. Readership: plant breeders and agronomists.

T. GICHNER (Praha)

WELLS, K., WELLS, E. K. (ed.): BASIDIUM AND BASIDIOCARP. EVOLUTION, CYTOLOGY, FUNCTION AND DEVELOPMENT. — Springer Verlag, New York — Heidelberg — Berlin 1982. 187 pp., 117 figs. Cloth DM 89,—; approx. US \$ 39.60.

The book reviewed has been published in the Springer Series in Microbiology edited by M. P. Starr. It is a comprehensive review of recent studies of higher fungi basidiomycetes (*Basidiomycotina*) especially those of the basidium and of the basidiocarp. This review written by 8 contributors brings taxonomic, cytological, molecular biological, physiological and biochemical aspects of this major class of fungi, ultrastructural and cytochemical studies, many descriptions, illustrations and light and electron micrographs. Morphology, ultrastructure and cytochemistry of the basidium and the basidiospores, phylogeny and ontogeny are described in Chapters 1 and 2. Recent studies of meiosis in the basidium, especially those dealing with the spindle apparatus and the nuclear envelope are examined in Chapter 3. In Chapters 4 and 5 biochemical and genetic studies, replication of DNA and genetic recombination in the initiation of fruit-body formation are described. The last two chapters inform on re-investigation of the physiology of stipe elongation, the biochemical changes of the cells (glucose, trehalose, glycogen, protein and chitin), the significance of chemical and physical components and the effects of lamellae and pillar content on stipe elongation, especially of the fungi *Flammulina velutipes* and *Coprinus cinereus*. This extensively illustrated book may be useful as a source of basic information for researchers and for students in mycology, plant biochemistry, plant physiology and plant pathology.

VLASTA ČATSKÁ (Praha)

MANIATIS, T., FRITSCH, E. F., SAMBROOK, J. (ed.): *MOLECULAR CLONING. A LABORATORY MANUAL.* — Cold Spring Harbor Laboratory, 1982. 545 pp. Paperback \$ 40.00; outside USA \$ 48.00.

As is explained in the preface, this book represents a collection of laboratory protocols used originally in the courses of molecular cloning organized in Cold Spring Harbor Laboratory in 1980–1981.

The authors claim the manual is based on procedures developed in a great deal by others. They have only compiled, verified, clarified and only in some cases introduced modifications or a new protocol. Basically, this manual was written for those with little experience in molecular cloning, nevertheless it deals with most of the methods used currently in this field. In addition, a lot of protocols have been described which are useful for noncloning experiments in the fields of experimental biology. Twelve main sections deal with the vector-host systems, propagation and maintenance of bacterial strains, the isolation of lambda phage and plasmid DNA, with enzymes used in cloning, with gel electrophoresis, with extraction, purification and analysis of mRNA from mammalian cells, synthesis and cloning of cDNA, with introduction of plasmid and phage lambda DNA into *E. coli*, the construction of genomic libraries, the identification of recombinant clones and their analysis, and with vectors that expressed clonal DNA in *E. coli*. In one of appendices most general biochemical data and techniques like buffer composition or protocol for sequencing by Maxam-Gilbert techniques are presented. In the two remaining appendices we find nucleotide sequences, restriction sites and fragments of pBR 322 and commonly used bacterial strains. The description of each method is opened by a short general explanation of theoretical principles. Where possible and necessary, tables and figures including gene maps, schedules of procedures, drawing of equipments, etc. are involved.

Methods are described in great detail so that they can directly serve as a laboratory protocol. List of references and an Index close this very successful compilation. Without doubt this book represents one of those basic manuals that become soon unavoidable in all DNA cloning laboratories.

J. VELEMÍNSKÝ (*Praha*)

VAN DER PIJL, L.: *PRINCIPLES OF DISPERSAL IN HIGHER PLANTS.* — Springer Verlag, Berlin — Heidelberg — New York 1982. 215 pp. Cloth DM 59.80; approx. US \$ 26.60.

This is a third and revised edition of the book which appeared 15 years ago. Van der Pijl, professor of botany at the University of Indonesia and University of Nijmegen, made a further progress in the work set up by Ridley's comprehensive volume on the dispersal of plants throughout the world and by Müller-Schneider's *Verbreitungsbiologie der Blütenpflanzen*.

The book emphasizes ecological aspects of plant dispersal and attempts to outline its general principles. Another sympathetic facet is the quotation of examples from tropical ecology which often provides, I believe, more fundamental knowledge than the temperate one. The actual state of world vegetation is considered as a result of long-term effects of ecological factors and corresponding adaptations in plant physiology, anatomy and morphology.

The introduction on literature acquaints the reader with history of studying plant dispersal and with achievements of German, English, Russian and French schools.

Very useful is the chapter on terminology, which relates zoological and botanical terms and introduces their use in world's languages. Further chapters deal with general principles of dispersal during plant development and with relations between flowers, seeds and fruits. The dispersing agents are classed in detail. An interesting view is taken in the chapter where biocoenoses are considered with regard to their ability to accept dispersing species. The biology of germination is used when discussing plant establishment in a given environment. The role of man in plant distribution is dealt with in the final chapter. Its scope is unfortunately rather limited.

The book is logically subdivided and well illustrated. It contains general subject index and index of plant and animal species. The book will appeal to both specialists in ecology and carpobiology and teaching botanists as an excellent textbook and as an important source of biological information.

ZUZANA JOSEFUSOVÁ (*Praha*)

DOMMERGUES, Y. R., DIEM, H. G. (ed.): *MICROBIOLOGY OF TROPICAL SOILS AND PLANT PRODUCTIVITY*. — Martinus Nijhoff/Dr. W. Junk Publ., The Hague—Boston—London 1982. 328 pp. Dfl. 160.00; approx. US \$ 69.50.

The book reviewed is the fifth volume in the series of *Developments in Plant and Soil Sciences*. In the individual chapters the facts and concepts are presented by leading experts in the field of soil microbiology and chemistry (19 contributors from 8 countries). In recent years, the introduction of new plant cultivars and the extensive use of fertilizers have increased crop yields, but intensifying of agricultural methods has often led to depleting soil fertility. The aim of this book is primarily to explain that microbial activity of soil in the tropics is very high and therefore very important in soil fertility. Nitrogen is an essential element for crop production and therefore also the main problem of this book. The first seven chapters deal with problems associated with the nitrogen balance in tropical agrosystems, symbiotic nitrogen fixation of tropical legumes with *Rhizobium* strain, heterotrophic nitrogen fixation in paddy soils with soil and especially rhizosphere bacteria (*Azotobacter*, *Azospirillum*, *Clostridium*, *Spirillum*, *Pseudomonas*, *Flavobacterium*, *Arthrobacter*, *Bacillus* etc.), symbiotic nitrogen fixation of non-legumes with rhizobial and actinomycetous root nodules, nitrogen fixation of blue-green alga *Anabaena* in symbiotic association with aquatic plant *Azolla*, and the denitrification especially in paddy soil of rice culture. Symbiotic associations between fungi and plant roots, endomycorrhizae in tropical agriculture, their ecology, interactions with other soil microorganisms and the use of vesicular-arbuscular mycorrhizae as biofertilizers for tropical plants are described in Chapter eight. The next chapter deals with ectomycorrhizae which are not so common in the tropics as endomycorrhizal fungi, but they are very important in the afforestation of poor lands. In the last chapter, the significance of the biological sulfur cycle in rice production is described.

As a whole, this book may be an excellent source of appropriate research methods and strategies for maintaining and improving soil fertility in the tropics for microbiologists, soil scientists, agronomists and ecologists.

VLASTA ČATSKÁ (Praha)

BURTON, W. G.: *POST-HARVEST PHYSIOLOGY OF FOOD CROPS*. — Longman, London—New York 1982. 339 pp. £ 16.00.

Although I am not a crop physiologist, I was attracted by the book reviewed by its clear conception, comprehensive form and much common plant physiological, biophysical and biochemical knowledge. The book is concerned less with details on individual food crops than with broad principles, biased in favour of those which are of obvious practical importance.

First, the role of food crops in nutrition as sources of energy, proteins, vitamins, as fibres, etc. and the relevance of post-harvest physiology are treated. After a short description of the structure of the harvested fruits and materials the physiological implications of structure for water movement, loss and uptake, CO₂ and O₂ exchange, respiration and heat balance are analysed. The author then summarizes post-harvest changes in food crops: the maintenance and replacement of functional components as organelles, membranes, enzymes, and the changes in various constituents important for nutrition or quality of the crops (carbohydrate balance, nitrogen and lipid contents). The mechanisms of these changes are also mentioned. The processes of ripening and senescence of fruits under normal and abnormal (effects of damage, disease, stresses) conditions are followed. The book ends with practical conclusions of how to manipulate the post-harvest period to extend storage life and to increase storage effectivity for various crops. The book contains an appendix of common and scientific names of subjects mentioned in the text, a list of references, and subject and author indexes.

The book is well-arranged, illustrated by numerous figures and tables, and well-printed. It is of interest not only to workers in agriculture and food industry but it can be highly recommended to a broad spectrum of readers for its deep physiological fundamentals.

INGRID TICHÁ (Praha)

MARAMOROSCH, K., RAYCHAUDHURI, S. P. (ed.): *MYCOPLASMA DISEASES OF TREES AND SHRUBS*. — Academic Press, New York—London—Toronto—Sydney—San Francisco 1981. 362 pp. US \$ 29.50.

The papers presented at the Third Working Party Conference on Mycoplasma Diseases organized by the International Union of Forestry Research Organization, together with some

additional chapters by outstanding contributors including the foremost world authorities and discoverers of plant mycoplasmas and spiroplasmas are recorded in this most interesting book. Diseases induced by vascular-limited walled bacteria, another group of fastidious prokaryotes, are included, too. There are described nearly thirty very important yellows diseases in woody perennial plants. Some of them have spread progressively over the recent years, devastating large forest tracts (*Santalum album* spike disease), destroying palm trees (lethal yellowing of coconut palm), and damaging the crops in fruit trees (*Prunus* X-disease, pear decline, apple proliferation, the greening and stubborn disease of citrus *etc.*), and in forest and ornamental trees and shrubs. Yellows diseases which are often lethal are most serious particularly in perennial woody plants, which once infected remain infected for life. The topics further include the problems of isolation and identification of these new fastidious prokaryotes, of their transmission, chemotherapy and plant disease control methods. The papers recorded in this superlative and very readable book help to clarify some of the current issues in this rapidly developing field of plant pathology and should appeal to those interested in plant mycoplasma diseases in forest pathology, in entomology and in disease control.

MARIE ULRYCHOVÁ (Praha)

LEMONTT, J. F., GENEROSO, W. M. (ed.): *MOLECULAR AND CELLULAR MECHANISMS OF MUTAGENESIS*. — Plenum Press, New York—London 1982. 387 pp. US \$ 52.50.

The most astonishing aspects of research in mutagenesis is the tremendous progress made in understanding the molecular and cellular mechanisms of mutagenesis and the diversity of applications of new assays for mutagenicity. The 20th Volume in the series Basic Life Sciences brings presentations of a symposium, held in April, 1981 in Gatlinburg, Tennessee. The main aim was to cover the most important fields of research in fundamental mutagenesis to date and to promote greater interaction between investigators working on different problems and organisms. The introductory section: "Cellular responses to mutagenic agents" includes review papers on the mechanisms of induction of mutations and DNA repair. The subsequent section: "Mutagenesis at specific sites" describes important investigations concerning new methods for construction of specific mutants and for definition of the specific location and nature of point mutations. Papers in the 3rd section: "Mutators, antimutators and DNA replication errors" are focused on the action of DNA polymerases, the effect of DNA lesions on DNA synthesis and on the mechanisms of base-transitions mutations. It is becoming clear that complex changes in DNA, *i.e.* mutations other than single base-pair changes, are biologically important and perhaps the primary determinants in evolution. These complex changes include transposon-promoted DNA rearrangements — transpositions, inversions, deletions *etc.* These DNA changes are covered in section 4: "Transposable elements and spontaneous mutations". The papers presented in the section: "Chromosomal and nonchromosomal DNA" were directed at exploring nuclear and mitochondrial repair and in the concluding section an overview is given by J. W. Drake on the perspectives in molecular mutagenesis. Every research worker engaged in mutagenesis will find the book of interest.

T. GICHNER (Praha)

THORPE, T. A. (ed.): *PLANT TISSUE CULTURE. METHODS AND APPLICATIONS IN AGRICULTURE*. — Acad. Press, New York—London—Toronto—Sydney—San Francisco 1981. 379 pp. \$ 23.50.

This book presents the proceedings of a symposium based on the UNESCO Training Course on Plant Tissue Culture, sponsored by UNESCO and held in Sao Paulo, Brazil, in 1978. It is written as a laboratory manual of plant tissue culture technology. The book is divided into two sections. The first deals with methodology and the second emphasizes the applications. The methodological section contains chapters dealing with requirements for tissue culture facility, nutrition and media, characteristics of cultured plant cells and their growth, embryogenesis and morphogenesis, protoplast techniques including fusion, mutagenesis *in vitro*, meristem culture, cryopreservation and cytological techniques. All these chapters are written in a very condensed form. However, data important for practical use of tissue culture techniques are presented in detail

(e.g. specification of equipment and facilities). Composition of the most frequently used media and ways which save labour and time for their preparation are described. Numerous data on plant regeneration are summarized in tables containing not only all crop species from which plant regeneration has been documented but also techniques used in each particular case.

The second part of the book contains two chapters of rather general importance *i.e.* dealing with androgenesis and *in vitro* fertilization, and chapters on *in vitro* techniques applied to rice, sugar cane, coffee, forest trees and on the biogenesis of secondary products *in vitro*. Readers will find in these "applied" articles not only information about the use of *in vitro* methods for improvement of a particular crop, but also stimulating ideas for application of this knowledge to other crops.

As often occurs in books containing closely related chapters some data appear twice in articles written by different authors. Otherwise the book is well-edited and represents a useful source of basic knowledge and laboratory manual to all who are interested in application of tissue culture techniques in agriculture.

M. KAMÍNEK (Praha)

JEFFCOAT, B. (ed.): ASPECTS AND PROSPECTS OF PLANT GROWTH REGULATORS. Proceedings of a Symposium held jointly by the British Plant Growth Regulator Group and the Dutch Committee for Plant Growth Regulators at the International Agricultural Centre, Wageningen, Holland, November 1980. Monograph 6. BPGRG, ARC Letcombe Laboratory, Wantage 1981. XI + 249 pp.

This is another from the series of Proceedings of symposia organized by British Plant Growth Regulator Group with the aim to provide a forum for exchange of ideas between workers in fundamental and applied research in the field of growth substances. The scope of the topics is as usually wide and ranges from molecular biology to economic aspects of development of new growth regulators. The problems of the use of growth regulators are not restricted, as is often the case, to processes of growth and development. The possibilities of affecting main metabolic pathways such as photosynthesis and photorespiration are also explored.

The book is, somehow arbitrarily, divided into five parts. It starts with excellent introduction by Bruinsma, who succeeded in summarizing all the topics the symposium was dealing with. The first chapter — Plant Growth Regulators in Plant Development — quotes examples of phytohormones production or concentration as related to well defined physiological processes such as seed germination, cotyledon development, rooting, flowering and leaf senescence.

The second chapter — Plant Growth Regulators in Cell Biology — is focussed on hormonal control of assimilate transport, water regime, photosynthesis and photorespiration and prospects of practical use of growth regulators in these special areas.

The examples of the possible role of growth regulators, exogenous and endogenous, in crop yield and related processes are given in the chapter — Prospects of Plant Growth Regulators in Crop Production. The reader gets acquainted with hormonal control of bolting in sugar beet, tillering and ear formation in wheat, development of tomato fruit and dry matter distribution in bulbous plants.

The chapter — Mode of Plant Growth Regulators — deals mainly with binding sites for phytohormones. Besides, it contains Trewavas's call to abandon hormonal concept of plant growth substances and an article on steroid hormones in plants and on models to describe the effects of growth regulators.

The final chapter is dedicated to problems of screening new regulators and of analysing plant regulators market. The prospects do not seem, after all, so gloomy as may be expected from current data on the sale and use of growth regulators.

It is an excellent book and the Programme committee has done a good job in gathering such selection of competent speakers.

J. KREKULE (Praha)

McLAREN, J. S. (ed.): *CHEMICAL MANIPULATION OF CROP GROWTH AND DEVELOPMENT*. — Butterworth Scientific, London 1982. 564 pp., £ 37.50.

The book contains Proceedings of the 33rd Easter School in Agricultural Science, held at Sutton Bonington in March 1981. The Easter School gathered 170 delegates from the branches of academical research, industry and practical agriculture. Judging from the scope and level of the contributions its aim to summarize existing knowledge, recent developments and future potential of the use of plant growth regulators (PGR) has been successfully fulfilled. Besides the problems of the most effective use of PGR in important crop plants and the control which resides mostly in assimilates redistribution or local changes of growth rate, new targets for PGR action are also considered. I have in mind the possibility of regulation of the rates of processes such as respiration, photosynthesis, transpiration and process control which includes activities of rate limiting enzymes, *e.g.* ribulose biphosphate carboxylase. In this framework the utilization of "plant anabolics" to enhance production of specific compounds is also tackled. This "new philosophy" which is reflected in the book stems at least partly from the growing recognition that further increase in the yield might be difficult without increasing total biological yield. Other general aspects stressed in the book are: the use of cell culture systems for studying the chemical and genetic effects of PGR, problems of controlled delivery of PGR, and plant breeding potential of genetic variation of phytohormone systems. The whole volume comprising 35 contributions is divided into XI parts. Introduction (2) — the number of contributions in brackets — summarizes the use of PGR in field crops and describes strategies in developing new PGR. The second part is entitled Physiological processes and general topics (7) and focuses mainly on the PGR control of some general metabolic processes. Following are the parts devoted to various crops as root crop (2), oilseed rape (1), sugar cane (1), tobacco (1), soybeans (3), corn (2), vegetables (2), cereals (10) and grasses (4). A list of common and chemical names of PGR and subject index are also provided. Possibly, the publication is the most comprehensive summary written within the last decade on the current situation and further prospects of the use of PGR in agriculture.

J. KREKULE (*Praha*)

LOEWUS, F. A., TANNER, W. (ed.): *PLANT CARBOHYDRATES I. INTRACELLULAR CARBOHYDRATES* Encyclopedia of Plant Physiology, New Series, Vol. 13 A. Springer Verlag, Berlin — Heidelberg — New York 1982. 918 pp., 103 figs. Cloth DM 298,—; approx. US \$ 132.40.

This volume of Encyclopedia together with volume 13 B (devoted to extracellular carbohydrates) present a comprehensive assessment of the current viewpoint in plant carbohydrates with emphasis on those aspects which impinge on physiological processes of growth and development. The first section of the volume discusses the occurrence, metabolism, and function of monomeric and higher saccharides of fungi, algae, and higher plants. Sugar nucleotides, polyhydroxylated acids, amino sugars, polyols, branched-chain sugars, and cyclitols receive detailed treatment. Sucrose and other plant-related disaccharides and oligosaccharides are examined in detail. The second section is devoted to macromolecular carbohydrates which occur intracellularly, *i.e.*, starch and other reserve polysaccharides, glycoproteins, glycolipids, and steryl glycosides. The final section deals with physiological processes such as secretion, storage and mobilization of carbohydrate reserves, and sugar transport.

This basic reference work on plant carbohydrates, written by twenty eight foremost specialists, ranks with the foregoing volumes of Encyclopedia thanks not only to its high scientific value, but also to its technical and esthetic layout.

J. LUŠTINEC (*Praha*)

MILES, J.: *VEGETATION DYNAMICS*. — Outline Studies in Ecology. Chapman & Hall, London 1979. 80 pp., 29 figs., £ 1.95.

In the series Outline Studies in Ecology another ecologic monothematic book was published, devoted to the study of vegetation dynamics. Vegetation is studied from the point of view of its changes in time and this point of view is followed consistently in all instances.

Processes which lead to the vegetation changes in space and are necessarily connected with changes in time are discussed in the introducing chapter. The main part of this book is devoted

to the analysis of vegetation succession, — primary and secondary. Fluctuation and seasonal changes as well as those induced by changes of environment are also studied. A special chapter deals with processes of vegetation regeneration and cyclic changes caused by senescence of plants. The last chapter gives results of the study of the influence of pasture on the changes in the vegetation composition.

In all the chapters concrete examples are presented and shown in graphs or tables.

The book is valuable chiefly owing to its uncommon conception. Dynamic approach to vegetation problems allows the author to analyse the processes which cause an enormous variability in structure and organization of vegetation. The knowledge of processes leading to these changes is fundamental for the comprehension of vegetation organization and thus for the feasible human influence upon it. The book is very interesting not only theoretically, but it also brings useful information for applied ecological branches, *e.g.* agriculture, forestry, preservation of nature and landscape ecology.

JÍŘINA SLAVÍKOVÁ (*Praha*)

CLARK, W. R., GOLSTEIN, P. (ed.): *MECHANISMS OF CELL-MEDIATED CYTOTOXICITY*. — Plenum Press, New York—London 1982. 597 pp., \$ 69.50.

Cell-mediated cytotoxicity is a rapidly growing area of biological research. Many new techniques for demonstrating the fundamental mechanisms, by which certain cells are able to kill other cells, have been described over the last few years. The main aim of the Workshop held on September, 1981, in Carry-le-Rouet, France, was to provide information on relevant current research and to compare and integrate what is known on cytotoxicity. The introductory section presents papers on the morphological and physiological aspects of cytotoxic activity. The readers of *Biologia Plantarum* may be interested in papers dealing with the role of plant lectins and phytohemagglutinin in studying cell-mediated cytotoxicity. Section II includes papers on cell lysis, membrane attack, the involvement of proteases and phospholipases in various lytic systems and the relation of cytotoxicity to inhibition of metabolic pathways, *e.g.* DNA synthesis in nuclei and respiration in mitochondria. Section III covers the use of antisera, monoclonal antibodies and cloned effector cells in the study of cell-mediated cytotoxicity. Each section is opened by an introductory paper and is accompanied by excerpts from the discussion. This detailed and up-to-date coverage of cell-mediated cytotoxicity will provide useful information to those involved in cell biology and immunobiology.

T. GICHNER (*Praha*)

RICKWOOD, D., HAMES, B. D. (ed.): *GEL ELECTROPHORESIS OF NUCLEIC ACIDS: A PRACTICAL APPROACH*. — IRL Press Limited, Oxford—Washington DC 1982. 242 pp., £ 8.50.

Since the successful fractionation of RNA by gel electrophoresis in the middle of the 1960s, spectacular advances have been made in the development of this separation technique and its applications in many areas of nucleic acid research. The first three chapters of this volume are devoted to the most frequently used electrophoretic and related methods of RNA and DNA separation on polyacrylamide, agarose and combined gels, including denaturing and two-dimensional gel systems, sample preparation procedures and applications of radioisotopic techniques. The next two chapters treat the methodology of nucleic acid sequencing and describe in detail DNA sequencing by the chain-terminator and chemical methods, the isolation, terminal-labelling and specific cleavage of RNA for sequencing, and the technique of separation and characterization of DNA and RNA fragments by gel electrophoresis. Chapter 6 is concerned with the methods and problems of gel electrophoresis application in separation of nucleosomes, ribosomes and polysomes. The volume concludes with a survey of DNA and RNA molecular weight markers and a list of suppliers of specialist items for electrophoresis. The text is accompanied by many instructive illustrations and very practical detailed laboratory protocols in well-arranged tables. The aim of the editors to provide detailed techniques and general information for current use of gel electrophoresis in nucleic acid research has certainly been achieved and the book is to be highly recommended as a basic manual to laboratories working in this field.

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