

- ŠEBÁNEK, J., KOPECKÝ, F., SLABÝ, K.: Endogenous gibberellins and auxins in the stem of *Bryophyllum crenatum* in relationship to its polarity. — Biol. Plant. 20 : 138—141, 1978.
- SEMBDNER, G., GROSS, R., SCHREIBER, K.: Die Dünnschichtchromatographie von Gibberellinen. — Experientia 18 : 584—585, 1962.
- SMITH, D. R., THORPE, T. A.: Root initiation in cuttings of *Pinus radiata* seedlings. — Bot. Gaz. 138 : 434—437, 1977.

BOOK REVIEW

BARON, W. M. M.: ORGANIZATION IN PLANTS. Third Edition. — Edward Arnold, London 1979. 264 pp., £ 6.75, in English.

This very successful textbook intended for advanced work in schools or for introductory university courses was first published in 1963, reprinted in 1964, second edition appeared in 1967 and reprints in 1968, 1970, 1973 and 1974. This is the third edition — modified, supplied with new material and updated as much as possible.

The text divided into eight chapters (Organization of Cells and Tissues, Water Relations, Photosynthesis, Respiration, Mineral Nutrition, The Biochemistry of Cell Activities, Co-ordination in the Plant, Physiological Organization and the Life Cycle) offers the reader a compendious survey of plant physiology. From the pedagogical point of view, 149 excellent descriptive figures are an important help in understanding the submitted problems. Textbooks, monographs and reviews recommended for further study are listed at the end of each chapter. Appreciable attention is paid to practical techniques as each step in a scientific inquiry should be based on practical results. They are described in detail in Appendix A, which occupies almost one fifth of the whole book. Appendix B is a list of useful reagents and Appendix C is a bibliography of practical techniques. The book is well printed and arranged. Subject index is also included.

The third edition of this good textbook will be certainly welcomed by all students interested in plant physiology, botany, ecology, agronomy, forestry etc.

JANA POSPÍŠILOVÁ (Přaha)

LI, H. P., SAKAI, A. (ed.): PLANT COLD HARDINESS AND FREEZING STRESS. MECHANISMS AND CROP IMPLICATIONS. Proceedings of an International Plant Cold Hardiness Seminar Held in St. Paul, Minnesota, November 1977. — Acad. Press, New York—San Francisco—London 1978. Pp. 416. US \$ 13.95.

The book based on the seminar contributions contains comprehensive information practically about all principal fields of contemporary research of plant freezing stress responses. The papers which are mostly original experimental studies are divided into six parts covering the following topics: freezing stress, membranes, acclimation, supercooling, survival and breeding, cryopreservation and cryoprotection.

The introductory papers are devoted to the identification, definition and partitioning of freezing stresses involved in cereal and potato frost injuries. The second part defines the importance of membrane properties and composition and their possible involvement in freezing damage to plant cells. A hypothesis is proposed for a possible sequence of events caused by extracellular freezing and leading to cell death during injury (the inactivation of active transport or an alteration of phospholipid splitting enzyme activity being supposed the primary sites of freezing damage).

The third section provides a good review of present knowledge and approaches to the problems of ecological requirements and physiological and biochemical processes leading during hardening to increased frost tolerance. Special attention is paid to protein metabolism trends and to changes in water status and distribution in cells and tissues during acclimation. It is to be regretted that hardening at subzero temperatures received up to now only scanty attention. These papers the same as the contributions studying cold hardening in *Chlorella ellipsoidea* or in callus cultures of Jerusalem artichoke illustrate how much the advance of stress research is dependent on the application of new techniques and experimental procedures and on the progress in the methodology of such investigations.

The papers in the following part deal with the existence of low temperature exotherms in woody plant tissues suggesting that deep undercooling may play an important role as in frost avoidance as in other mechanisms of frost tolerance of less hardy deciduous trees. Interesting is the evidence that certain epiphytic bacteria can serve as the ice nuclei and prevent supercooling below -2 to -5°C and thus incite frost injury to tender plants in the field.

Four papers in the fifth part review the present information on the dependence of frost hardiness in fruit trees on the variation of ecological factors during the winter period. They provide some practical advices or cultural measures to reduce winter and spring frost injury in various cold tender evergreens or temperate fruit crops. Evidence for frost tolerance improvement in many fruit species by breeding is given, e.g. by intraspecific and interspecific hybridization.

The results of experimental studies presented in the last part of the seminar provide the information on perspectives of long-term preservation of plant material at subfreezing temperatures but at the same time demonstrate how much work is still required before efficient, reliable and inexpensive methods and techniques for ultracold storage either of seeds or tissues and suspension cultures can be used as a routine procedure especially in plant germplasm preservation. As the experiments carried out in this field of research involved control of freezing and thawing rate the same as various prefreezing temperatures and treatment of plant material by different cryoprotectants, their results simultaneously provide new information necessary for better understanding the mechanism of freezing injury in plant tissues.

The book is well arranged and edited. All papers are presented in uniform form and large amounts of instructive figures, diagrams and tables contain all necessary information. The subject index will be a good help to the reader. It is a pity that discussions held at the seminar could not be included.

The volume fulfills what was expected from it by the organizers of the seminar, editors, participants and, of course, by readers. The proceedings practically cover all important aspects of plant frost hardiness and are not only a source of up to date information on general phenomenology in plant stress responses but provide a useful insight into basic methodology in this field of plant physiology. The book will be surely appreciated by everybody dealing with frost hardiness.

V. SEGEŤA (Praha)

MASTALERZ, J. W.: *THE GREENHOUSE ENVIRONMENT. The Effect of Environmental Factors on the Growth and Development of Flower Crops.* — John Wiley and Sons. New York 1977. 629 pp., £ 13.35.

John W. Mastalerz, professor of Floriculture at Pennsylvania State University, wrote a unique book which covers both important aspects of greenhouse flower crops cultivation: 1. principles and practices in design, construction and operation of systems controlling environment; 2. plant responses to environmental factors. This concept is reflected in the headings of different chapters: The Greenhouse Environment; Temperature; Solar and Luminous Radiant Energy; Gases; Growing Media; Water; Nutrient Requirements and Fertilization Programs; Growth Regulating Chemicals. To achieve this well balanced symbiosis of technology and physiology the author succeeded in explaining the principles of environmental physics and in relating plant response to basic physiological processes. In its ecophysiological aspects the book is focussed on the environmental control of growth and differentiation, special attention being paid to flower initiation and development. Although the approach is analytical and different factors are dealt with in successive way, their interaction is always stressed. The author escaped any temptation to describe special requirement of individual crops instead of presenting generalities.

Greenhouse climatology and the principles and practices associated with moisture retention by soils in containers are thoroughly developed within technical aspects. The book benefits from the appendices on standards for ventilating and cooling greenhouses, on heat loss formula and tables for calculating desired light flux densities. The reader will also appreciate a subject index, representative selection of literature presented at the end of each chapter and excellent graphical organization of the text.

Some minor amendments might be considered if reeditions are envisaged. The explanation is in some cases based mostly (e.g. introduction to growth regulating chemicals) on verbal text. Illustrations or tables summarizing described effects will be helpful for better understanding. The list of sources of artificial illumination and lamp fixtures seems to be limited and more of foreign experiences may be cited (e.g. Soviet ones). Blondon's generalization on substitution of light and temperature effects in plant development might be included. The photographs of plants (especially of potted specimens) are not of best quality.

This is a book recommendable to students of flower crops, to greenhouse managers and practical growers as well as to technicians concerned with the design of greenhouses and construction of equipment to control their environment. It may serve as a good example of the application of scientific approach to the solution of problems which have been often treated at simple empirical level.

J. KREKULE (Praha)

ALVIM, P. DE T., KOZLOWSKI, T. T. (ed.): *ECOPHYSIOLOGY OF TROPICAL CROPS.* — Academic Press, New York—San Francisco—London 1977. 502 pp., \$ 29.50.

The increasing importance of tropical crops as the source of food for a great part of human population calls forth the necessity to bring together the current knowledge of the growth and physiological and production processes of plants in dependence on the environment and the cultural practice in the tropics. This book has done it. It is based to a large extent on materials presented at the International Symposium on Ecophysiology of Tropical Crops held in Manaus, Brazil, in May 1975. In sixteen chapters, scientists from nine countries review many years of experience with cultivation of single plant species such as rice (S. Yoshida), sugarcane (L. G. Nickell), pineapple (D. P. Bartholomew and S. B. Kadzimin), grasslands (G. O. Mott and H. L. Popenoe), root crops (L. A. Wilson), sweet potato (S. K. Hahn), coffee (M. Maestri and R. S. Barros), cacao (P. T. Alvim), rubber (V. H. F. Moraes), tea (R. Fordham), oil palm (J.-D. Ferwerda), coconut palm (D. B. Murray), citrus (W. Reuther), banana (E. A. Tai), cashew (M. C. Nambiar) and mango (L. B. Singh). A detailed characterization of these crops stems from the analysis of basic physiological and ecological principles underlying the relationships between plants and their surroundings, which are introduced in two opening chapters by J. L. Monteith and J. Bennema, respectively.

Ecological requirements of single crops on soil conditions and various components of macro- and microclimates (temperature, light, humidity, wind) including the factors which limit gradients of their changes in the crops (e.g. the leaf area index, canopy architecture) are discussed with respect to the anatomical and morphological features of plants and their organs, germination, growth of roots and shoots, leaf initiation and expansion, flowering, reproduction, hormonal control, CO₂ exchange, water relations, distribution of assimilates, dry matter production and yields. These are estimated on both the qualitative and quantitative levels which allow to make

comparisons between the crops. Attention is also paid to the effects of pests and diseases, some aspects of agronomic treatment (e.g. irrigation, nutrition, crop protection), varietal differences among plants, and problems of selection and engineering for higher yields.

The book is well printed and arranged and supplied with many original figures and tables which sum up accessible data. The comprehensive subject index facilitates a good orientation of the reader. Because of the interdisciplinary character of the book, it is recommended to researchers in various fields of specialization. It will be of value not only to scientists who are directly interested in tropical crops but also to those who investigate the diversity of responses of plants in different environments.

DANUŠE HODÁŇOVÁ (*Praha*)

JOURNAL OF ETHNOPHARMACOLOGY. — Elsevier Sequoia S. A., Lausanne. Volume 1 (4 issues) 1979. SFRs. 150.00.

This new interdisciplinary journal devoted to bioscientific research on indigenous drugs has been launched in January 1979. The journal edited by L. Rivier and J. G. Bruhn will publish research papers concerned with the observation, description and experimental investigation of the biological activities and the active substances of plants and animals used in the traditional medicine of past and present cultures. The journal will particularly welcome interdisciplinary papers with an ethnopharmacological, an ethnobotanical or a chemical approach to the study of indigenous drugs.

J. ČATSKÝ (*Praha*)

HILLMAN, J. R.: ISOLATION OF PLANT GROWTH SUBSTANCES. — Cambridge University Press, Cambridge 1978, pp. 157. Paperback £ 4.50, hard covers £ 9.50.

The issue of this urgently needed and highly useful book was organised by the Publication Committee and by the steering committee of the Plant Growth Substances Group of the Society for Experimental Biology of Great Britain. Sixteen contributors were asked for cooperation, all of them actively working on problems of estimation of endogenous plant growth substances, especially indole-3-acetic acid, gibberellins, cytokinins, abscisic acid and ethylene.

The attention is focussed on extraction of phytohormones from plant material and their purification by means of solvent partitioning, chromatographic techniques using DEAE cellulose, polyvinylpyrrolidone or Sephadex LH-20. Moreover, gas chromatography combined with mass spectrometry identification and "preparative" and "analytical" high performance liquid chromatography are also discussed.

This book gives not only general information about methods and new techniques used for the estimation of endogenous plant growth substances but also includes criticism of described techniques and above all brings much useful advice resulting from contributors' personal experience.

LIBUŠE PAVLOVÁ (*Praha*)

HILYARD, N. C., BIGGIN, H. C.: PHYSICS FOR APPLIED BIOLOGISTS. — Edward Arnold Publishers Ltd., London 1977. 223 pp. £ 4.95.

Physical methods and physical approaches continue to be of increasing importance in biological sciences. The authors of the book "Physics for Applied Biologists" employed their many-years' experience at the Sheffield Polytechnic for publishing a work which is an outstanding, well-balanced introduction to physics along with its application to biology. Physics is presented here as an integral part of biology, but at the same time emphasis is laid on physical measuring methods, evaluation of information and elucidation of physical processes on the molecular level. The book is assigned first of all to degree and diploma students, but it will well serve the biologists who come across physical problems.

The publication is divided into 12 chapters, of which the first two deal with fundamental questions of force, motion, energy and wave motion, the third with the atomic and molecular structure of matter. This introduction to physics is followed by Chapters four and five, devoted to spectroscopy and electricity. A very important and useful Chapter six covers both extensively and intensively the problems of measurement and evaluation of data for biological purposes. The following chapter involves the spectroscopy including the utilization of up-to-date techniques. Chapter nine deals with thermics, molecular motion, fusion and evaporation, heat conduction, capillarity and measurement of surface tension. Of interest is Chapter 10 describing the properties

of solid substances, the measurement of the stress-strain behaviour and the relationship between structure and properties. This is followed by solutions, measurement of viscosity, viscoelasticity and viscous flow. The last two chapters deal with radioactivity, dosimetry, radiobiology and protection from radiation. They include valuable passages on disintegration laws, interaction of radiation and matter, various types of detectors of ionizing radiation and measuring techniques, and doses. The passages on the effect of radiation on biological processes on molecular, cellular and whole-body levels are of the same importance. This is also true of maximum permissible doses, and protection from external and internal sources.

Each of the chapters mentioned contains a set of questions enabling the reader to check his knowledge. Numerical results of exercises are given at the end of the book. The International System of Units (SI) is consistently used throughout the text.

This book will find a broad applicability with all biologists.

M. SOSNA (*Praha*)

SATTLER, R. (ed.): *THEORETICAL PLANT MORPHOLOGY*. Acta Biotheoretica Vol. 27. (Suppl: Folia Biotheoretica No. 7.) — Leiden Univ. Press, Leiden 1978. 142 pp. D. Guilders 45.—.

The booklet contains four main papers of the symposium on "Theoretical Plant Morphology", which was organized by Dr. R. Sattler (McGill University, Montreal, Canada) at the XIIth International Botanical Congress in Leningrad, 1975. With respect to the large time span between symposium and publication all manuscripts have been enlarged and up-dated.

In the first introductory paper (R. Sattler) the definition of theoretical plant morphology is given: it means the discovery, formulation, and analysis of morphological concepts, models, theories, and their test implications. One may distinguish between descriptive, comparative, evolutionary, functional, genetic, and developmental plant morphology. The modern approaches in these disciplines are stressed.

Phylogenetic aspects of plant form, the nomothetical theory of evolution, are the topic of the following article (S. V. Meyen). A. Lindenmayer shows how plant morphogenesis can be approached by use of cellular algorithms and by computer programs based on these algorithms. In this way not only growth processes and form generation can be efficiently simulated but also the underlying mechanisms can be programmed into the simulation and thus better understood, too. Very interesting is the last, most comprehensive article by T. J. Givnish concerning ecological aspects of plant morphology: leaf form in relation to environment. What are the optimal leaf size, shape or thickness having in mind transpirational costs and photosynthetic gains of the leaf? The paper presents several simple models for evaluating ecological patterns in leaf size, shape, and thickness based on physiological studies (the effects of leaf temperature on rates of photosynthesis, respiration, and transpiration, the effect of leaf size on leaf temperature and transpiration rate, etc.). The research indicates that one must also study roots in order to understand the form of leaves. New measurements as 1) the metabolic cost of arranging for the supply of a unit flow rate of water or 2) the photosynthetic response envelope to temperature, are suggested.

The articles are arranged as usual, they are illustrated by some figures and contain lists of literature. It is a pity that some misprints occur in the text and in the references. Nevertheless, the book is very interesting to read. It will be useful for specialists in botany: morphologists, paleobotanists, taxonomists, ecologists, physiologists, and also biogeographers, biophysicists or philosophers.

INGRID TICHÁ (*Praha*)

SUTHERLAND, I. W. (ed.): *SURFACE CARBOHYDRATES OF THE PROKARYOTIC CELL*. — Academic Press, London 1977. 472 pp.

I. W. Sutherland joined forces with I. L. Roth, S. G. Wilkinson, M. Duckworth, K. Jann and B. Jann, A. A. Kindberg, W. F. Dudman, and A. Markowitz to bring forth a volume that attempts, in a comprehensive way, to describe the structure, synthesis and functions of surface carbohydrates of prokaryotic cells. The book is doubtless a fine achievement, with a wealth of information contained in its numerous tables and some splendid photographic plates.

One learns here about polysaccharides of the cell wall as well as of the exopolysaccharides exuded by the cell to form a capsule or a slimy envelope. One can find here information on the composition and the antigenicity of bacterial lipopolysaccharides with its almost endless variability of fine structure. There is in the book a fine chapter on the teichoic acids and a most interesting one on enzymes catalyzing the dependence of bacterial polysaccharides. A valuable

chapter is devoted to the interaction of the surface polysaccharides with environmental factors, and a chapter which has radiation sensitivity in its title but in fact presents a well-rounded treatise of the genetics of sugar anabolism in bacteria.

It is perhaps inevitable that a book by several authors on a relatively narrow subject will contain some overlapping passages. It would certainly increase its readability if, in the next edition, the editor provided cross-references throughout the book and left out some sections and tables that occur more than once (e.g., p. 131 and p. 267).

These, however, are minor shortcomings and, on the whole, this is a very useful and pleasant book to have on one's shelf.

A. KOTYK (*Praha*)

ELLENBERG, H., ESSER, K., MERXMÜLLER, H., SCHNEPF, E., ZIEGLER, H. (ed.): FORTSCHRITTE DER BOTANIK. MORPHOLOGIE, PHYSIOLOGIE, GENETIK, SYSTEMATIK, GEBOTANIK. Band 40. — Springer-Verlag Berlin—Heidelberg—New York 1978. 495 S. 148,— DM. US \$ 81.40.

Der 40. Band der Fortschritte der Botanik enthält 28 Beiträge, die wie üblich die neuesten Kenntnisse in den oben genannten Disziplinen der Botanik in Form von Literaturübersichten zusammenfassen. In der morphologischen Sektion sind es im cytologischen Teil die neuen Ergebnisse über Microbodies und Struktur und Biosynthese der Zellwand der Pflanzen (E. Schnepf und W. Herth), über Cytologie und Morphogenese prokaryotischer (G. Drews) und eukaryotischer Zellen (G. F. Leedale). Im morphologischen Teil bringt W. Hagemann die neuen Angaben zur vergleichenden Morphologie des Vegetationskörpers einschliesslich der Blüten von höheren Pflanzen, U. Hamann zur Embryologie und Pollenmorphologie und H. Uhlarz zur Struktur des sekundären Pflanzenkörpers. Die Sektion Physiologie enthält sieben Beiträge: über die Elektrophysiologie der Zellen und den Membrantransport (F.-W. Bentrup), über die enzymatische Regulation der C3-, C4- und CAM-Photosynthese und der Photorespiration und den Assimilatentransport (E. Latzko und G. J. Kelly), über den Stoffwechsel von organischen Säuren bei CAM-Pflanzen (W. Kluge), über den Phenylpropanoid-Stoffwechsel (H.-R. Schütte), über Pflanzenwachstum und Wuchsstoffe (K. Dörffling), über Pflanzenentwicklung (G. Fellenberg) und über lichtorientierte Chloroplastenbewegungen (E. Schönbohm). Die Review in der genetischen Sektion sind diesmal der Replikation (W. Wackernagel), der Rekombination (C. P. Hollenberg), den Mutationen und Krebs (H.-J. Rhaese), der Genstruktur und der Genetik des Kohlenstoffhaushaltes von Pilzen (F. K. Zimmermann), der cytoplasmatischen Vererbung (G. Michaelis und E. Pratje) und der genetischen Kontrolle der sexuellen Fortpflanzung von höheren Pflanzen (R. Blais) gewidmet. Die in diesem Band umfangsreichste taxonomische Sektion behandelt die Systematik und Phylogenie besonders der grünen und blaugrünen Algen (D. Mollenhauer), die Taxonomie und Phylogenie von Pilzen (E. Müller), die Systematik der Flechten (H. Hertel), Bryophyten (W. Frey) und Farne (D. Meyer). Die geobotanische Sektion schliesslich informiert über neue Ergebnisse zur Florenkunde und über neue Floren- und Kartenwerke (E. J. Jäger), über die Geschichte der Flora und Vegetation des Quartärs (B. Frenzel), über neue Ergebnisse der soziologischen Geobotanik (R. Knapp) und der Blütenökologie (S. Vogel). Der Band ist mit einem Sachregister und Inhaltsverzeichnis ausgestattet und tadellos in Offsetdruck herausgegeben worden. Es ist sehr schwierig über einen Band von Review zu referieren, doch muss bei den Fortschritten der Botanik hervorgehoben werden, dass die einzelnen Übersichten mit maximaler Sorgfalt, kurz und übersichtlich zusammengestellt sind und ausführliche Literaturverzeichnisse (Zitationen in Kurzform) enthalten. Die meisten Beiträge sind in Englisch, acht in deutscher Sprache verfasst worden. Ich bin davon überzeugt, dass auch dieser Band der Fortschritte der Botanik schon ungeduldig von der grossen Familie der Botaniker erwartet wird.

INGRID TICHÁ (*Praha*)

ALEXANDROV, V. YA.: CELLS, MOLECULES AND TEMPERATURE. Conformational Flexibility of Macromolecules and Ecological Adaptation. (Ecological Studies Vol. 21.) — Springer-Verlag Berlin—Heidelberg—New York 1977. 330 S. 74 Abb. 90,— DM. US \$ 39.60.

Vorliegende Monographie von Prof. Alexandrov aus dem Laboratorium für Zytophysikologie und Zytoökologie von Komarov's Botanischem Institut der Akademie der Wissenschaften der UdSSR in Leningrad fasst die 25jährigen Erfahrungen und Kenntnisse des Autors und seiner Schüler und Kollegen zusammen. Das Buch ist überwiegend auf den Resultaten und Forschungsergebnissen des Verfassers und seiner Schüler aufgebaut und wurde von V. A. Bernstam aus dem Russischen ins Englische übertragen. Es behandelt die Beziehungen von Pflanzen,

Tieren und Mikroorganismen zu hohen Temperaturen. Der Inhalt ist in acht Kapitel eingeteilt. Zuerst werden die Modifikationen der Thermoresistenz von Zellen behandelt, gemessen z. B. als Geschwindigkeit der Protoplasmaströmung, der Zilienbewegung, der Plasmolysis, der Chloroplastenbewegungen, Photosyntheserate usw. Durch supraoptimale Temperaturen kann man eine gewisse Erhöhung der Thermoresistenz erreichen (Abhärtung); ähnliches gilt auch für niedrige Temperaturen. Die Thermostabilität ändert sich im Laufe der Pflanzenentwicklung, wird durch Wassermangel, Versalzen, Beschädigung der Pflanze usw. beeinflusst. Die primäre Thermoresistenz von Tier- und Pflanzenzellen, von deren Proteinen, ist an die am Standort überwiegenden Temperaturen angepasst und sie äussert sich als genotypische Unterschiede innerhalb einer Art und zwischen den Arten. Des weiteren werden die biologische Bedeutung der Modifikation der Proteinthermoresistenz in Laufe der Ontogenese und Phylogenese von Organismen und die biochemischen Mechanismen, die diesen Veränderungen zu Grunde liegen, behandelt. Die optimale Funktion der Proteine ist durch eine gewisse Konformationsflexibilität (Semistabilität — nicht zu feste und nicht zu labile Struktur) bei gegebener Temperatur, die wiederum die mittlere Temperatur des Organismus auf seinem Standort darstellt, gewährleistet. Die Begriffe Aktivationsenergie und Temperaturoptima der Enzymaktivität werden erläutert. Weiter wird die Regulierung der Konformationsflexibilität der Proteine im Laufe der phänotypischen und genotypischen Temperaturadaptationen behandelt. In ähnlicher Weise wird die Thermostabilität einer anderen Gruppe von Makromolekülen — der Nukleinsäuren, wo jedoch ähnliche Gesetzmässigkeiten gelten, bearbeitet. Ebenfalls Fettsäuren werden bei Temperaturänderung härter oder flüssiger. In einem Epilog am Ende des Buches werden nochmals die wichtigsten Punkte zusammengefasst. Es folgt ein Literaturverzeichnis und Sachregister. Das Buch ist illustriert (schwarzweisse Abbildungen und Tabellen) und tadellos ausgestattet.

Vorliegende Monographie bringt also eine Konzeption zur Erklärung der Temperatureinwirkung auf lebende Zellen und stützt sich dabei auf molekularbiologische Gesetzmässigkeiten. Das bestimmt den weiten Interessentenkreis von Ökologen bis Biologen verschiedener Fachrichtungen.

INGRID TICHÁ (Praha)

WOOLHOUSE, H. W. (ed.): *ADVANCES IN BOTANICAL RESEARCH*. Volume 6. — Academic Press, London—New York—San Francisco 1978. 342 pp. £ 16.00, \$ 33.25, in English.

This volume contains five comprehensive reviews from quite distinct branches of botany. The first of them deals with nitrogen uptake and assimilation. Special attention is paid to ecological considerations. The second is engaged in plant-water relations. It is focussed on the transport of water on cellular level. Physical approach to the problems based on thermodynamics of irreversible processes aids to elucidate some relevant questions. The author of the third paper is interested in chromosome evolution in higher plants. He presents some principal mechanisms of chromosome change based on the results which he obtained during chromosomal and taxonomic studies of a large living collection of the *Commelinaceae*. The fourth article is devoted to taxonomy and phylogeny of the *Bryophyta*. The author gives an account of recent work on their cytogenetics and biosystematics. The last review deals with plant resins, their chemistry, biochemistry and chemotaxonomy, sites of resin synthesis, structure of resin-secreting glands, function of external and internal resins and ecological significance. Each article is illustrated with many figures and tables and supplied with a detailed list of references. Author and subject indexes are included.

A steadily increasing number of scientific papers is published every year, too many to be looked up. Thus good and up-to-date reviews like those presented in this volume are certainly a great profit to the reader. In my opinion, volumes specialized to a definite scientific branch will be still more attractive.

JANA POSPÍŠILOVÁ (Praha)