BROWN, C. L., SOMMER, H. E.: **An Atlas of Gymnosperms Cultured *in vitro*: 1924—1974.** — Georgia Forest Research Council Macon, Georgia 1975. 271 pp.

Gymnosperms have long occupied a prominent place in tissue culture research. Conifer embryos were cultured under sterile conditions more than 50 years ago by Schmidt (1924) and the first continuous callus cultures of haploid cells were established from the mature pollen of *Ginkgo* by Tulecke (1953). It is of significance that Tulecke later demonstrated the utility of monoploid cell lines for biochemical and nutritional studies for higher plants. Tissue from the female gametophyte opened the way for parasexual manipulations and genome modification of higher plant cells.

Since 1924, over 95 species or cultivars of gymnosperms in 25 genera and 9 families have been placed in sterile culture. Of this number, 87 species belong to the *Coniferae*, and almost half of these to the genus *Pinus*.

This Atlas includes 406 entries by 258 authors and covers the literature through the period January 1924—December 1974. Each alphabetized entry presents a quick overview of the species cultured, the conditions under which it was grown, and the portion of the plant that was placed in culture. These data are followed by the description of the culture medium or media and a brief summary of results.

In presenting the composition of the various media used in each study, the authors chose to list the references (author and year) on the basal medium adopted, complemented by specified changes in the composition or concentration of substances employed. For direct comparison of media the reader is referred to the Appendix, where four of the most commonly used inorganic formulations and the complete composition of 22 media most frequently used in the culture of gymnosperms are submitted.

The Atlas is indexed by author, species, and type of culture.

VĚRA BALATKOVÁ (*Praha*)

BEEVERS, L.: **Nitrogen Metabolism in Plants.** — Edward Arnold, London 1976, 333 pp., paperback £ 6.95, boards edition £ 14.0.

The book appeared as a volume of the series of student texts in Contemporary Biology published under the editorship of E. J. W. Barrington, F. R. S. and A. J. Willis. It deals with the occurrence, metabolism and physiological functions of the majority of nitrogen containing compounds in plants. The introductory chapter is devoted to the assimilation of inorganic nitrogen covering nitrogen fixation, nitrification, denitrification, nitrate metabolism and the entry of ammonia into organic combination. It is followed by a description of the occurrence and biosynthesis of individual amino acids and of metabolic cycles in which amino acids serve as intermediates in the synthesis of other cell constituents such as amines, amino sugars, alkaloids, glycosides, growth regulators, porphyrins and some cofactors. An important part of the book concerns nucleic acids and their constituents. The chapter on proteins includes information on their chemistry, biosynthesis and degradation. In the final three chapters dealing with nitrogen metabolism in seeds, in the whole plant and during fruit ripening and leaf senescence, the author draws attention to the importance of described metabolic events in plant growth and development.

The book is written concisely and clearly with many subtitles and contains a number of instructive tables and illustrations and a detailed subject index together with extensive literature references. It represents an excellent up to date summary of the current knowledge on the topics it covers providing a very useful source of rapid general information and of references to detailed experimental data.

J. TUPÝ (*Praha*)

FERDINAND, W.: **The Enzyme Molecule.** — John Wiley and Sons, London — New York — used Sydney — Toronto 1976. 289 pp., cloth £ 9.50, paper £ 4.50.

This neatly produced volume manages to keep balance between a thorough (and often tedious) monographic treatment of enzyme kinetics and protein structure, on the one hand, and a popular (and often superficial) text for the general public, on the other. As an undergraduate text-book it is no doubt excellent.

The book contains an introductory chapter on the role of enzymes in cells, a brief chapter on bioenergetics and kinetics (perhaps the information contained therein could be more logically included in chapter 5), two very informative chapters on the structure and properties of proteins, and on enzyme structure and function, two chapters on the kinetics of enzymes with independent

and with interacting sites, a very pleasant double section on the control of activity of enzymes with obvious emphasis on actual activity rather than enzyme synthesis, and finally two useful appendices on classification of enzymes and purification of proteins.

The book is written by an experienced university teacher and this is felt on every page of the text. In short, it is a useful book that reads as easily as a novel while conveying a great amount of information to the reader.

A. KOTYK (*Praha*)

HOFFMANN, G. M., NIENHAUS, F., SCHÖNBECK, F., WELTZIEN, H. C., WILBERT, H.: **Lehrbuch der Phytomedizin.** — Paul Parey Berlin 1976, 490 pp., 101 Figs, 62 Surveys, 13 Tab., DM 88.00.

The term "Phytomedizin" as given in the book represents a general conception of phytopathology and plant protection. Nevertheless, the authors have carefully selected a lot of examples known to crop protection practice and used them for demonstration of many general questions. Thus, the work deals with living and even open problems of theoretical and practical investigations. Simultaneously it shows a wide as well as a very detailed continuity of this scientific branch with many other life and chemical science trends. Not only university students, but also many scientists (even working in some other research branches) have got in this book a serious and very modern source of basic information; illustrations and surveys are excellent, simple and intelligible. Apparently, this is the up to date best attempt compiled in an adequate comprehensive form.

In the introduction a brief historical survey is presented in which stress is laid on both classic and recent discoveries. Several suitable examples evidence the whole scientific branch to be an important economic and economical factor. The second chapter deals with causes and agents of plant diseases and pests of crop plants in a usual scheme. Civilization troubles are stressed, *e.g.* the danger of smog. The general surveys of viruses, mycoplasma- or rickettsialike organisms, bacteria, fungi, algae, parasiting plants, and animals are compiled very successfully and esp. thoroughly with fungi and insects. The third chapter contains a general view of outer symptoms of diseases in plants in various phases of their growth. The next chapter, solving problems of disease origin and disease process, is based on modern biochemical points of view, and refers to various factors which affect the origin of a plant disease and its development as well as the pathogen itself. Changes in diseased plants stated by cytological, histological, and physiological investigations are mostly interpreted biochemically. This is followed by a survey of the known defensive mechanisms of plants and of some problems of resistance phenomena. Genetic aspects of host plant — parasite relationships are discussed briefly. The fifth chapter deals with the population dynamics and epidemiology (the authors did not use the expression epiphytology). It is imbued with ecological conceptions and mathematical methods of approach. One can read here some striking instances of intercontinental and continental spread of some plant pathogenic agents and pests. The last chapter on plant protection begins with the plant quarantine followed by measures in plant cultures, physical and chemical modes of plant protection, which are serviceably classified. The authors do not omit problems of the environment protection and originating new resistant pathogen strains as well. Biological control measures are interpreted without any excessive conclusions. Some new biotechnical possibilities of controlling plant diseases and pests (attractants, repellents, pheromones, growth and development factors) are also summarized. Finally, a concept of the integral plant protection is discussed.

The extent and contents of the book are beyond criticism. It is outstanding by its logical structure and can be recommended to all people who want to get reliable information that is often important also for another seemingly unrelated research work.

J. BRČÁK (*Praha*)

GRODZINSKII, D. M.: **Plant Biophysics.** — Israel Program for Scientific Translations, Jerusalem 1976. 236 pp. £ 18.95.

The limits between plant biochemistry and biophysics are not sharply set. Nevertheless, there are not many monographs dedicated to general plant biophysics and this is why this book written by an Ukrainian scientist was translated into English. The book was translated within the framework of the Israel Program for Scientific Translations. The time lapse between the original edition and translated edition was four years and the text has not been complemented by the author. Hence the last literature cited is from the year 1971 and the majority of references is still older. This is a shortage of this volume, which on the other hand brings an interesting information of Soviet contribution (183 references from the total figure of 529) to this scientific field.

The book contains six chapters. The first of them is dedicated to the most important process of the living world — Photosynthesis. It begins with the explanation of action spectra and quantum yields of photosynthesis by discussing the form and composition of chloroplasts, photosynthetic pigments and their forms *in vivo*, and the concept of photosynthetic unit. The two-photosystems-principle of electron transport chain is explained together with the explanation of function of individual components of the chain, redox reactions, and mechanisms of excited states of pigments and energy migration in phptosystems I and II. The different kinds of photophosphorylation are explained by means of the chemi-osmotic hypothesis, together with the models of ion transport across the thylakoid membrane, proton pumping, and light-induced changes in chloroplast volume. Oxygen production in photosynthesis, functions of carotenoids in photosynthetic mechanism, EPR studies, induction effects in gas exchange, transient changes in photosynthetic pools, and the respective control mechanisms close this chapter. Chapter II deals with the phytochrome system, the reactions controlled in this way, optical properties and chemical structure of phytochrome, effects of red and far-red spectral region, energetics, phytomorphological effects, phylogenetic contingency, *etc.* Biophysics of the plant cell membrane is dealt with in Chapter III. Detailed explanation of membrane structures, their functions in active transport of ions, compartmentation of cell metabolism and balance of pools are the main topics of this Chapter. Chapter IV explains the principles of radiation biology of plants; it deals mainly with ionizing radiation. The induced injuries concerning nuclei, cells, multicellular organisms and their tissues and organs (apical cells, seeds, *etc.*) are described together with their quantitative evaluation. The resistance and protection are emphasized, together with the possibilities of exploitation of positive radiation effects in plant selection, *etc.* The shortest (11 pp.) Chapter V deals with the biological clock, demonstrating these life rhythms on the plasmodium movements, zygote formation, cell division, photoperiodic reactions, *etc.* Biophysical and mathematical modelling of plant processes is the topic of the last chapter. Graphs used in studying the pathways of metabolism, and metabolic rates and their thermodynamics are explained together with the respective equivalents. Models of photosynthesis are especially mentioned, *e.g.* those dealing with the resistance to CO_2 transfer (called here diffusion resistances, not distinguishing individual phases of the process).

The book is clearly written; nevertheless the old problems of translations are apparent also here, *i.e.* the dissimilarity of styles of both languages, the science progress during the interval between writing the original and reading the translation. The content seems to be incomplete: the topics as mitochondria and respiration energetics, water transport, movements of cells and organelles, *etc.* are not dealt at all or only briefly mentioned. Some obsolete terms appear (photolysis of water), old units (mμ, cal) were not replaced by the valid SI units. The subject index is very general, there is no author index. The book is well printed by a photo-offset technique, and has an aesthetic binding.

Z. Šesták (*Praha*)

Hess, D.: **Pflanzenphysiologie. Molekulare und biochemisch-physiologische Grundlagen von Stoffwechsel und Entwicklung.** Uni-Taschenbücher 15. Vierte, neu bearbeitete Auflage. — Verlag Eugen Ulmer, Stuttgart 1976. 379 S. 270 Abb. 19,80 DM.

In der kurzen Zeitspanne von 6 Jahren erscheint schon die vierte Auflage dieses Taschenbuches, es wurde auch ins Englische übersetzt, und das alles spricht ohne weiteren Kommentar von den ausgezeichneten Eigenschaften dieser Publikation. Bei unverändertem Preis sind in der vierten Auflage einige Seiten dazugekommen und besonders die Zahl der Abbildungen wurde auf 270 erhöht (vergleiche Besprechung der zweiten Auflage in Biologia Plantarum 15 (4) : 302, 1973). Im Text wurden die wichtigsten Fortschritte hauptsächlich in den molekularbiologischen Kapiteln berücksichtigt, ein Kapitel über Photorespiration (Glykolatweg), Peroxisome und Glyoxysome neu eingefügt und der Abschnitt Sekundärvorgänge der Photosynthese um die Biochemie des C4-Dicarbonsäureweges, das C4-Syndrom, die räumliche Kompartimentierung der Photosynthese bei C4-Pflanzen und den diurnalen Säurezyklus der Sukkulenten erweitert. Kleinere Ergänzungen wurden im Kapitel Leitbahnsystem vorgenommen. Der Text hat durch den Fettdruck der Teilüberschriften zu einzelnen Absätzen an Übersichtlichkeit gewonnen. Sollte man nicht auch IAA statt IES gebrauchen, wenn schon RNS und DNS in RNA und DNA umgewandelt wurden?

Ingrid Tichá (*Praha*)