of the GDH-protein. Electrophoretic studies (HADAČOVÁ and SAHULKA 1973) have shown that such changes may occur in the roots incubated with nitrite.

NH_4^+ ions depressed the induction of nitrite reductase when added to the basic nutrient solution together with NO_2^- (Table 3). Lower nitrite reductase activity was not caused by the lack of its substrate in the roots, because higher NO_2^- amounts were found in the roots with depressed nitrite reductase activity, *i.e.* in the roots incubated with both NO^-_2 and NH_4^+ in the medium. The effect of NH_4^+ (in the presence of NO_2^-) on $NADH_2$ dependent GDH activity was not unambiguous and was not statistically significant.

Acknowledgement

The assistance of Miss J. Smutná is gratefully acknowledged.

References

HADAČOVÁ, V., SAHULKA, J.: The regulation of glutamate dehydrogenase isoenzymes in isolated pea roots by nitrite. — Biol. Plant. **15** : in press, 1973.

SAHULKA, J.: The regulation of nitrate reductase, nitrite reductase, and glutamate dehydrogenase in excised pea roots by some exogenous amino acids. — Biol. Plant. **14** : 308—311, 1972a.

SAHULKA, J.: The effect of exogenous IAA and kinetin on nitrate reductase, nitrite reductase, and glutamate dehydrogenase activities in excised pea roots. — Biol. Plant. **14** : 330—336, 1972b.

SAHULKA, J.: The regulation of the synthesis of glutamate dehydrogenase in excised pea roots by exogenous L-aspartic and L-glutamic acids. — Biol. Plant. **15** : 137—139, 1973.

BOOK REVIEWS

REINHOLD, L., LIWSOHITZ, Y. (ed.): **Progress in Phytochemistry.** Vol. 3. — Interscience Publishers, London-New York-Sydney-Toronto 1972. 375 pp., £ 9.50.

Six review articles of this volume written by English, Canadian and Japanese scientists deal with various important groups of plant substances, i.e. proteins, alkaloids, sterols, diterpenes and sapogenins. The introductory article of S. A. BROWN and L. R. WETTER reviews the methods for biosynthetic investigations applicable in higher plants. The applications of molecular genetics (DNA transformations, studies on organisms with blocked biosynthetic pathways) are described as well as studies of sequential synthesis, experiments with isotopic tracers and enzymes, and methods using cell and organ cultures. The special biosynthetic pathways are elucidated in papers on ergot alkaloids (R. THOMAS and R. A. BASSETT) and plant sterols (L. J. GOAD and T. W. GOODWIN). Both these papers are very carefully prepared and well-arranged. D. BOULTER reviews the investigations of amino acid sequence of plant proteins and the use of their results in evolutionary studies of higher plants. The respective methods for sequence determination and construction of phylogenetic trees are described as well as the comparison of molecular and biological information and the respective classifications. The sequence data on ferredoxins and cytochromes *c* (with tables containing the sequences for 5 and 16 plant genera, respectively) serve as an example of usefulness of the sequence method. The article on bicyclic diterpenes (J. R. HANSON) belongs more or less to the field of static biochemistry. The last review (K. TAKEDA) deals with the steroid sapogenins of the family *Dioscoreaceae*. Their isolation, structure and biosynthesis are discussed simultaneously with the content in plants (age dependent changes, distribution in individual organs) and the content of related substances. The relationship between phylogenesis, morphological characteristics and content of steroidal sapogenins in two species — *Dioscorea tokoro* MAKINO a *D. tenuipes* FR. et SAV. — is one of the presented examples of chemotaxonomical studies. — All the above-mentioned papers contain large lists of references, the necessary figures and tables. The careful editors (one of them, Prof. Y. LIWSCHITZ, unfortunately died during the preparation of this volume) did not try to unify the styles of different authors, but otherwise did their job well. The book is provided with excellent subject and authors' indexes. The printing and cover of the volume are of a traditional good quality.

Z. ŠESTÁK (*Praha*)

WEBERLING, F., SCHWANTES, H. O.: **Pflanzensystematik. Einführung in die Systematische Botanik; Grundzüge des Pflanzensystems.** — Uni-Taschenbücher Band 62. Verlag Eugen Ulmer, Stuttgart 1972. 381 S., 104 Abb., DM 19,80.

Vorliegendes Kurzlehrbuch der Pflanzensystematik ist eine Einführung in die Grundlagen, Ziele und Arbeitsmethoden der modernen systematischen Botanik sowie eine Übersicht über die Gruppen des natürlichen Pflanzensystems (zuerst Bauplan, Fortpflanzungsweise und wichtigste Gruppen der Angiospermae, wo die meisten morphologischen Begriffe erklärt werden, dann Spaltpflanzen, Algen, Pilze, Moose, Gefässpflanzen: Farngewächse und Samenpflanzen — Nackt- und Decksamer). Besondere Aufmerksamkeit wurde den Pflanzen gewidmet, die für die Natur und den Menschen als Nutzpflanzen, Krankheitserreger usw. von Bedeutung sind. Dieses ansprechende, preiswerte Taschenbuch in flexiblem Kunststoffeinband enthält viele übersichtliche Tabellen z. B. der Entwicklung des Pflanzenreiches, der Entwicklungskreisläufe der Pflanzen, der Klassenmerkmale sowie 104 sehr instruktive hervorragende Abbildungen, ein Literaturverzeichnis und ein Sach- und Namenregister. Es wird bestimmt vielen Interessenten und Mitarbeitern aus anderen botanischen und verwandten Disziplinen gute Dienste leisten, da die Pflanzensystematik sie ja über das Versuchsmaterial, das sie benützen, über die verwandtschaftlichen Zusammenhänge und Entwicklung des Pflanzenreiches unterrichtet, also grundlegend und stützend für diese Disziplinen ist.

INGRID TICHÁ (*Praha*)

HESS, D.: **Pflanzenphysiologie. Molekulare und biochemisch-physiologische Grundlagen von Stoffwechsel und Entwicklung.** — Uni-Taschenbücher Band 15. Zweite Auflage. Verlag Eugen Ulmer, Stuttgart 1972. 373 S., 248 Abb., DM 19,80.

In der kurzen Zeitspanne von 2 Jahren erscheint die umgearbeitete zweite Auflage dieses für Anfänger gedachten Taschenbuches. Auf der Basis molekularbiologischer Daten behandelt es die Stoffwechsel- und Entwicklungsphysiologie der höheren Pflanzen. Der stoffwechselphysiologische Teil des Buches (10 Kapitel) behandelt zuerst die Steuerung der Merkmalsbildung durch Nucleinsauren, dann die Photosynthese, die biologische Oxidation, die Kohlenhydrate, Fette, Terpenoide, Phenole, Aminosauren, Alkaloide und Porphyrine. Im zweiten Teil des Buches, der Entwicklungsphysiologie (9 Kapitel), beginnt der Verf. mit dem Teilungswachstum, der differentiellen Genaktivitat als Prinzip der Differenzierung und fährt fort mit der Behandlung der Regulation, der Polarität, des Streckungswachstums, der Bildung von Samen und Früchten, der Keimung, des Leitbahnsystems in der Pflanze und der Blütenbildung. Das Buch ist modern, untraditionell und didaktisch sehr gut abgefasst. Es bringt eine neue, logisch zusammengestellte Übersicht über die ganze Pflanzenphysiologie, ob nun über Nucleinsäuren als Bausteine der Merkmalsbildung, über Primar- und Sekundärvorgange der Photosynthese, chemische Konstitution oder Biosynthese der Pflanzenkomponenten und -produkte; oder über Genaktivität, Differenzierung, Regulierung der Pflanzenvorgange durch Innen- und Aussenfaktoren, Transportprobleme in der Pflanze usw. Das Buch enthält 248 instruktive, meist zweifarbige Abbildungen, ein kurzes Verzeichnis der weiterführenden und erganzenden Monographien, ein Verzeichnis der Bildquellen sowie ein übersichtliches Sachregister. Die preiswerte flexible Taschenbuchform ist sehr praktisch.

INGRID TICHÁ (*Praha*)

MAURER, H. R.: **Disc Electrophoresis and Related Techniques of Polyacrylamide Gel Electrophoresis.** Second revised and expanded edition. Walter de Gruyter, Berlin, New York, 1971. 222 pp., 68,— DM (19.75 $).

This is a manual which can be recommended to anyone who uses or intends to use electrophoretic methods in his investigations of proteins, enzymes, nucleic acids, antigens, and polypeptides. Disc electrophoresis has been used succesfully — due to its high resolving power — in great many studies in different both theoretical and applied scientific fields; it is of special importance for plant biochemists and plant physiologists as it is primarily a microanalytical method. Maurer's book offers a comprehensive survey on most methodic developments known at the date of publishing and enables the user to select the most suitable technique and to avoid a loss of time while surveying the literature. In this respect, it is a real aid.

The book starts with the explanation of the theoretical background of the method. It includes the description of the formation and structure of the gel, the description of polymerization catalysts and processes, and an explanation of the molecular sieving effect in polyacrylamide

gel with equations by different authors, and important principles of electrophoresis. A chapter is devoted to the theory and practice of molecular weight determination of proteins and nucleic acids by means of polyacrylamide gel electrophoresis. Then the theory of disc electrophoresis is explained and advantages and disadvantages of this method are quoted.

After theoretical chapters methodical descriptions follow with many useful facts about the determination of acrylamide and N,N′-methylene-bis-acrylamide, about purification methods, toxicity of acrylamide, and about the equipment for disc electrophoresis. Very useful is the survey of gel and buffer systems for special application. Preparation of the gels and different modifications of the gels and of the method are also dealt with in detail as well as different staining and destaining procedures and the methods for quantitative evaluation including the detection of radioactive substances in the gels, disc enzyme electrophoresis, and disc imuno-electrophoresis.

The chapter on micro-disc electrophoresis can certainly be of special interest for those who study tissue or organ differentiation (*e.g.* the differentiation of meristematic tissues). On the other hand, the data on preparative polyacrylamide gel electrophoresis are useful mainly for those who are interested in biochemical studies which require the isolation of substances in quantities allowing further analysis by other methods. The descriprions of the methods and apparatus are supplemented by surveys of gel and buffer systems suitable for preparative polyacrylamide electrophoresis. The methodical part of the book ends with the description of gel isoelectric focusing.

The rest of the book is devoted to the applications of disc electrophoresis in clinical chemistry, to biochemical applications including enzymology, plant biochemistry, nucleic acids, and to the applications in food technology and forensic analysis.

The book contains 948 literature references, 88 figures, 16 tables, a list of manufacturers, and subject index.

J. SAHULKA (*Praha*)

CHOUARD, P., DE BILDERLING, N. (ed.): **Phytotronique et Prospective Horticole. Phytotronique II.** Compte rendu du Symposium tenu à Tel Aviv 1970. Gauthier-Villars, Paris 1972. 391 pp., 140 F. (in French and English).

The subtitle of this volume is Phytotronics II and it succeeds Phytotronics (I), the Proceedings of London's symposium, issued in 1969. Both symposia were organized due to the tireless effort of prof. Chouard, who takes every opportunity to promote personal contact and exchange of experiences in this entirely new field. The book itself is an admirable hybrid, combining some technical aspects of phytotronics with experimental results gained when using controlled environment. The volume is quite arbitrarily divided into four parts: 1. Problèms généraux de phytotronique, 2. Apports réels et possible au progrès horticole, 3. Éléments de prospective horticole, 4. Discussions, voeux et conclusions. Headed by the short history of phytotronics the first part brings an interesting account of the analysis of environmental factors, their accuracy and consistency, including some information on pottering material, culture medium *etc.* Theoretical considerations are presented together with some useful practical hints. Further chapters deal with conditioning based on dewpoint principle, measurement and simulation of diurnal and seasonal fluctuations in climate and describe some phytotronic units. The second part is focused mainly on some problems of developmental biology where the phytotrons represent useful and relevant experimental tool. Extensive factual information on flowering of *Dactylis, Scrofularia etc.* is presented. It seems a bit unfortunate that all the general conclusions of these investigations are based solely on phenomenological material. The third part is concerned for the most with new features of technical development of greenhouses. Attractive ideas are expressed in a paper on Prospective of greenhouse building, where some common points between phytotron and greenhouse are stressed. This part includes description of Hokkaido phytotron and rotating phytotron rooms (the sunlit phytorotor). The closing part is most interesting for its high standard discussion on the air movement in the phytotrons and on new light sources.

The book has been attractively produced and is well illustrated. Some readers may lack the indexes. There is no need to argue that the topics are too scattered, as the contemporary phytotronics realy covers very wide field. In general: a recommendable book to all who either intend to design a conditioned room or who intend to use it.

J. KREKULE (*Praha*)

BLACK, M.: **Control Processes in Germination and Dormancy.** Oxford Biology Readers series No. 20, Oxford University Press, Ely House, London, 1972, 16 pp.

This booklet deals mostly with the germination of cereals and stresses the role played by gibberellic acid in regulating this process. Different types of seed dormancy and their control are further described. Many of these phenomena are presented in terms of molecular biology. Some basic information on phytohormones and phytochrom system are also provided. The work is written in clear, lucid style and accompanied with excellent illustrations. It may be argued that too many topics are dealt with in this relatively short review which brings about inevitably certain simplification. We should bear in mind that the simplification is always inherent to this kind of literature. It is a good example of a literature which helps to develop biological inteligence and supplies competent information to everybody who is not specialized in this particular field.

J. KREKULE (*Praha*)

CLOVES, F. A. L.: **Morphogenesis of the Shoot Apex.** Oxford Biology Readers series No. 23, Oxford University Press, Ely House, London, 1972, 16 pp.

This booklet is concerned mostly with the classification and anatomical description of shoot apices. The morphogenetic activities (leaf and flower differentiation, vascular bundle formation are also dealt with. It is a sort of excellent Reader's Digest in biology which does not overhelm the students with too many details and all the actual information are well balanced. The illustrations, drawings and photographs, possess high didactic value and are of good quality. Important references are included. Recommendable reading for everyone who wishes to have better insight into this interesting topic.

J. KREKULE (*Praha*)

C. T. DE WIT and H. VAN KEULEN: **Simulation of Transport Processes in Soils.** — Centre for Agricultural Publishing and Documentation, Wageningen 1972. 100 pp., in English. Hfl. 15.—.

This book represents the first volume of the Simulation Monographs, the series on computer simulation in agriculture and its supporting sciences. Its purpose is to interest scientists in the simulation of the transport processes in soils.

The most important transport processes in the soils are transport of heat, water, solutes in water (ions, organic substances) and gases (CO_2, O_2, water vapour). These processes are characterized by a simultaneous change in the amount of energy or material with time and place and can be described by partial differential equations. Because it is difficult to solve a great number of them sufficient for the solution of practical problems research workers and students in Wageningen are engaged in the simulation of these processes. They used Continuous System Modeling Program (CSMP) developed by IBM for its 360 series of machines. This very interesting book brings together results of their projects. It is introduced by general principle of transport processes and each of five following chapters (Flow of Heat, Transport of a Salt, Diffusion of Ions, Transport of Ions in Soil, Infiltration of Water in the Soil) represent basic approach to the process deal with and simulation program for it. The book is well produced and illustrated with 35 graphic figures and parts of print-plotted output of the programs. To read the book fruitfully, it is necessary to have basic knowledge of soil science, mathematics and FORTRAN.

J. POSPÍŠILOVÁ (*Praha*)

BIOLOGIA PLANTARUM — Published for the Institute of Experimental Botany of the Czechoslovak Academy of Sciences, Flemingovo 2, 160 00 Praha 6-Dejvice, by Academia, Publishing House of the Czechoslovak Academy of Sciences, Vodičkova 40, 112 29 Praha 1. — Printed by Státní tiskárna, závod 4, Sámova 12, 101 46 Praha 10. — Annual subscription rate (6 issues) for Czechoslovakia Kčs 66.—. Orders and subscriptions in Czechoslovakia are accepted by PNS, admin. odbor tisku, Jindřišská 14, 125 05 Praha 1. Orders from socialist countries should be placed with ARTIA, Ve Smečkách 30, 111 27 Praha 1.

Sole agents for all Western countries Dr. W. Junk N. V., Publishers, 13, van Stolkweg, The Hague, The Netherlands. Annual subscription: Volume 15, 1973 (6 issues) Dutch Gilds 50.—. This number was issued in July 1973.