

## BOOK REVIEWS

E. VAN DER MAAREL (editor): *Succession*. Advances in Vegetation Science 3. Junk, The Hague, 1980 ISBN 90 6193 6101, VII + 151 pp., figs. 144, tables 62. Price: Dfl. 90,-/\$ 47,-.

Succession theory has played a central role in plant ecology since the beginning of this century. Community changes were interpreted with the classical succession paradigm. During the last ten years workers examined the empirical and experimental basis of the theory and found that it needed to be re-examined. This is the main theme of all sixteen contribution to this third volume in the series *Advances in Vegetation Science*, covering together with the second volume, the 1979 symposium of the Working Group for Data-Processing of the International Society for Vegetation Science.

The first contribution, by Sjörs, gives an introduction to the types of changes and criticizes right away one of the oldest concepts in succession theory, that of cyclical succession in bogs. Alternation of hummocks and hollows, which was for a long time considered to be the rule, must be regarded as the exception. Most structures are persistent.

Noble and Slatyer, in their contribution, criticize the Clementsian view of ecological succession, which states that several assemblages of species progressively occupy a site, each giving way to its successor until finally a community develops, able to reproduce itself indefinitely. These authors demonstrate that species do not follow one after the other but are all immediately present after a disturbance. The shifts in dominance of life forms reflect the gradual emergence and dominance of species which may have been present, but inconspicuous directly after the disturbance. The presence of species after a disturbance depends upon the propagules that survived the disturbance or that are dispersed from the surrounding area. Thus the historical factor is strongly emphasized, as is also done in the contributions by Van Hulst and by Glenn-Lewin.

A group of contributions focusses on the role of species behaviour, life history, and plant demography. This is the approach to successional processes from the population level rather than from the community level. Examples are given, based on woodland (Peet and Christensen), on shrubland (Falinski), and on lawn (Austin). This type of study opens the way to experimental analysis of causal factors.

Analysis of spatial patterns at the community level provides a way to find correlation with environmental factors that could play a causal role in temporal changes, as is shown in contributions by Spatz, and by Campbell and Van der Meulen.

Most contributions concentrate, as could be expected, on the questions: do stability and diversity increase during succession, and how are they maintained. Traubad and Lepart found a strong increase of diversity after fire in garrigue ecosystems, but a decrease after about five years to a lower level, where it stabilized. The study by Debussche, Escarré and Lepart on alternatively grazed and burnt shrubland reports similar results. Houssard, Escarré and Romane found in abandoned vineyards in the same mediterranean area, an increase for 15 years, and then after a temporary decrease another peak at 50 years, again followed by a decrease to a stable lower level from the age of 70 to 200 years. Decrease in diversity is also reported by Persson, based on observations since 1935 in a southern Swedish deciduous wood.

A functional attribute of the community that can maintain diversity is the phenological spread between species. The contribution of Jagerström and Ågren is on this theme.

Experimentally raising the nutrient status of the soil causes the dominance of one or two species (Van der Maarel). Continuous grazing, which means a continuous output of nutrients and a high turnover of nutrients, causes a threefold higher diversity compared with non-grazing (Regnell).

These sixteen papers have their value in criticising old concepts and in giving suggestions that could be used for the construction of new concepts. Their main value, however, is the presentation

of original data on changes in vegetation and whether or not they confirm hypotheses from succession theory. At this stage of the discussion, the most urgent need is the recording of basic data, and making them available. This volume is a valuable contribution to fulfill this task.

J. T. DE SMIDT

W. ESCHRICH & H. LORENZEN (eds.): *Phloem Loading and Related Processes*. Gustav Fischer Verlag, Stuttgart, New York, 1980. 380 pp., 193 figs., many tables. Price DM 89,-. ISBN 3-437-30319-8.

Phloem loading can be regarded as a very important motor of phloem transport. This process became the most central theme of a meeting of a selected group of international specialists during a symposium in Bad Grund, Germany, July 1979. This book contains the final manuscripts of all the 30 lectures, given during that symposium (*Berichte der Deutschen Botanischen Gesellschaft* 93 (1), 1980, Sonderausgabe). It represents the most up to date handbook of modern trends in phloem transport research. Many contributors have also written a chapter in the phloem transport volume of *Encyclopedia of Plant Physiology* (New Series, vol. I, 1975). The book can furthermore be regarded as the most recent volume of a series of symposium reports on phloem transport, which started with "Phloem transport" (Aronoff et al., eds., 1975) and continued with "Transport and transfer processes in plants" (Wardlaw & Passioura, eds., 1976).

As indicated by the topic of the symposium, the emphasis of current research in phloem physiology has switched from the mechanism of phloem transport to the processes of phloem loading and unloading. This change seems to be based on the fact that a consensus has grown that mass flow occurs inside the sieve tubes. Within phloem loading research studies on sucrose/proton co-transport have become the central theme.

The book starts with an introduction by Eschrich (in German) of 10 pages, in which a summary of the most important data from the 30 papers is presented. The first part of the book (section A) contains contributions on "Morphology and Differentiation of Source and Sinks" (pp. 13-97): Characteristics of structure and differentiation in the sieve element of lower vascular plants (Warmbrodt), The Strasburger cells - equivalents of companion cells (Sauter), vascular anatomy of angiospermous leaves, with special consideration of the maize leaf (Evert), mature phloem of perennial monocotyledons (Parthasarathy), the structure and function of C<sub>4</sub> vascular tissue (Crookston), sink to source transition of *Populus* leaves (Larson et al.), the import to export transition: experiments on *Coleus blumei* (Turgeon).

The second part of the book (section B) contains contributions on "Methods and Techniques" (pp. 99-166). Two experts on the field of microautoradiography (Bonnemain, Fritz) discuss this important tool for phloem transport research. Two contributions (Cronshaw, Catesson) present data on enzyme activities in phloem tissues, obtained by histochemical methods. Finally, a paper is presented on the measurement of turgor pressure in sieve tubes (Milburn).

Section C (pp. 167-280) on "Phloem Loading" represents the central part of the book. Papers are presented by Tanner, Geiger & Fondy, Giaquinta, Baker et al., Komor et al., Heyser, Humphreys and Smith, Pate et al., Essiamah, Smith and Milburn. "Phloem loading of sucrose" is broadly discussed. What is the mechanism? How is it controlled? Much attention is given to "proton sugar cotransport". Some data on phloem loading of amino acids are presented too. Section C presents a well balanced discussion of a rapidly growing field of research within the phloem transport area. Several papers, published after the printing of the book, also point to the strong development of this field of research.

Section D (pp. 281-378) presents data on "Phloem Unloading and Storage". Data from a broad field of research are presented, especially on transport into and storage within fruits and storage organs: Why starch as our main food supply (Frey-Wyssling), the conversion of sucrose to starch in developing fruits (Jenner), assimilate conversion in potato tubers in relation to starch deposition and cell growth (Mares and Marschner), control of import into tomato fruits (Ho), the supply of water and solutes by phloem and xylem to growing fruits of *Yucca flaccida* (Van Die and Willemse), effects of plant hormones on phloem transport in grapevines (Düring and Alleweldt), on the possible

role of ABA on phloem unloading (Tanner), effect of potassium in the assimilate conduction to storage tissue (Mengel), free space invertase, its possible role in phloem unloading (Eschrich).

Paper and printing are a very good quality; the photographs (a.o. many E. M. photographs) are of a good quality too. For scientists working on phloem transport or related fields "Phloem Loading and Related Processes" cannot be neglected. It can be recommended for use in libraries on plant physiology. For teachers in plant physiology and advanced students, it is a rich source of information. For anyone interested in "whole plant physiology" and "applied botany" the book can be useful too.

P. WOLSWINKEL

F. J. BERGERSEN (Ed.): *Methods for Evaluating Biological Nitrogen Fixation*. John Wiley & Sons. Chichester, New York, Brisbane, Toronto. 1980. 702 pp. Price £ 38.00. ISBN 0 471 277759 2.

In recent years a number of publications on biological nitrogen fixation has appeared in rapid succession (Plenum Press, 1971; North-Holland Publ. Co, 1974; Springer Verlag, 1975; John Wiley, 1977; Academic Press, 1977, 1980) and every two years there is an International Symposium on Nitrogen Fixation sponsored by the Charles F. Kettering Foundation, Yellow Springs, Ohio, U.S.A. together with some other organization, of which the Proceedings also are published in a book edition. Apparently, the study on biological nitrogen fixation is in vogue and the knowledge in this field is at the present time increasing at a fast rate.

The present volume, edited by F. J. Bergersen of the CSIRO at Canberra, Australia, contains papers of 17 contributors covering various aspects in this field. The book is organized into three main sections, i.e. Introduction, Laboratory Methods, and Methods and Field Use.

In the Introductory section under the heading "Methods, accidents and design" F. J. Bergersen quotes, after a short historical outline, a wealth of practical information and advices in particular for the beginning scientist on themes such as: How to define the problem or how to find out what is already known. He recommends to obtain statistical advice early, and to determine which controls and comparisons should be included to safeguard the objectives of the experiment, etc., etc. Thus not only "how to do an experiment" is dealt with, but "how to do it properly".

In the section "Laboratory Methods" H. Dalton deals extensively with aspects of the cultivation of diazotrophic micro-organisms. He provides apart from an up-to-date list of all species known to be able to fix dinitrogen, a short taxonomic classification and a description of main characteristics of the various species. Moreover, he presents a list of media which can be used for the cultivation of these species. While F. J. Bergersen discusses the various methods for analysing total nitrogen and non-protein nitrogen, protein measurements and methods using  $^{15}\text{N}$  and  $^{13}\text{N}$ , G. L. Turner and A. H. Gibson discuss "Indirect Methods" such as the use of the acetylene reduction assay, the utilization of other alternative substrates and the  $\text{H}_2$  evolution from nitrogenase. The methods used for the growing legumes in glasshouses and in controlled environment cabinets are discussed by A. H. Gibson and some techniques in growing and testing non-leguminous plants are presented by G. Bond and C. T. Wheeler. Details on the methodology of studying the nitrogenase *in vitro* are explained and also other enzymes involved in metabolism related to nitrogenase are not forgotten in the contributions of R. R. Eady, K. J. F. Farnden, and J. G. Robertson, whereas the preparation and experimental use of leghaemoglobin is discussed by C. A. Appleby and F. J. Bergersen. In a special section more refined techniques are presented for identifying diazotrophs by serological markers (preparation of antigens and antisera), and natural markers such as the sensitivity of these microbes to antibiotics and bacteriophages, etc. are assembled by E. A. Schwinghamer and W. F. Budman. Finally, this methodology section is concluded with a clear outline of genetical studies with diazotrophs by F. C. Cannon. Here, again true bacteriological methodology (practical information: materials and methods!) of the genetic dissection of *nif* in *Klebsiella pneumoniae*, the isolation of *Rhizobium* symbiotic (*sym*) mutants or *Azotobacter nif* mutants, the detection of plasmids and the purification of plasmid DNA is extensively discussed. Moreover, some useful instructions and laboratory advices are given for cloning *nif* structural genes (in *K. pneumoniae*) and some techniques

of DNA hybridization.

In the concluding section "Methods for Field Use", experiments on crop and pasture legumes adapting laboratory advances to field conditions are discussed by J. Brockwell, and the effect of nitrogen-fixing associations in the rhizosphere of forage grasses and grain crops by J. Döbereiner. The nitrogen fixation in natural plant communities and soils is discussed by R. Knowles, and finally nitrogen-fixing systems involving blue-green algae, i.e. cyanobacteria are treated by W. D. P. Stewart. In all these articles special emphasis is assigned to plant production techniques, techniques of measuring nitrogen fixation *in situ* in open systems (R. Knowles) or cultivation and isolation procedures (W. D. P. Stewart).

This book is therefore different from the cited earlier books on dinitrogen fixation, because the usual descriptive character of such books is deliberately repressed and the text is intentionally focused on practical devices, giving designs of experiments, standard methods and new methods in this rather diverse field. In this aspect, it fills certainly a distinct gap since other books often suffer from detailed practical information. The various contributions give comprehensible information even for a newcomer in this field in surveyable form making it rather easy for him to find certain knowledge. The print is of good quality and includes good figures and tables. Despite of the limitation of being a multi-authored book, the various parts are well balanced and the total text is sufficiently consistent in style to make its reading easy. Only one minor deficiency can be noted, it is the nonsense plant (neither legume nor non-legume) on the dust jacket which may represent art but surely poor biological knowledge.

In summary, this book is an excellent guide for new and experienced scientists in general, and for biochemists, cellular or molecular biologists in particular. It is a laudable aim to produce such a practical compendium and the editor and the publisher are to be congratulated. It is highly recommended and it belongs in the working laboratory of every microbiologist engaged in this field.

J. H. BECKING

E. VAN DER MAAREL, L. ORLOCI and S. PIGNATTI: *Data processing in phytosociology, Report on the activities of the Working-group for data-processing in phytosociology of the International society for vegetation science, 1969–1978.*

Dr. W. Junk bv Publ., The Hague-Boston-London, 1980. 226 pp. Dfl 150,- (US \$ 79,-).

This book is a collection of papers previously published in *Vegetatio* in the period 1969–1978. They are selected by virtue of the membership of the author(s) of the working group for data-processing in phytosociology of the international society for vegetation science, and the book can therefore be seen as progress report of that group (as mentioned in the subtitle). Two papers are added which are published for the first time in this volume: Data-processing in Phytosociology: Conclusions and Perspectives by Van der Maarel et al., and Survey of Salt Marsh Relevés included in the data-bank of the working group for data-processing, by Kortekaas et al.

Unlike much other work on numerical data-processing in relation to vegetation studies, the work reported in this volume actively tries to establish and maintain links between the numerical methods, and the results obtained by these methods, and classical phytosociological methods and results. Obviously this approach has its advantages as well as its disadvantages. Classical methods were necessarily constrained by human information processing capacity, which is limited. It does not seem fruitful to constrain computer methods in a similar manner as most authors have come to realise. Neither does it seem fruitful to use classical results as the (ultimate) criterion for evaluation. Nevertheless, the extensive comparisons provided of the results obtained by applying numerical methods with the results of classical phytosociology (both with respect to the obtained classification and with respect to concepts) may be useful.

The activities of the working-group have focused on syntaxonomy, in particular of very large datasets. Less attention has been paid so far to environmental data and succession, although Van der Maarel et al. indicate the possibilities of numerical methods in these areas of research in their 'perspectives'. When the reader is aware of the particular purposes of the working group, and realises

that only a subset of the available methods are treated in this volume, the collection of papers can contribute to a smooth transition from classical phytosociology to present day "vegetation science", the term used by Van der Maarel et al. to indicate a more encompassing study of vegetation than hitherto undertaken.

P. HOGEWEG

E. KURSTAK, (editor): *Handbook of Plant Virus Infections; Comparative Diagnosis*. Elsevier/North Holland Biomedical Press, Amsterdam, New York, Oxford 1981. 943 pp. Several black and white illustrations numbered per chapter, 9 pp. of index. Cloth bound. Price US \$ 192,75/Dfl 395,-.

Virus infections of plants have long attracted attention. Crops often suffer badly from such infections, whilst wild plants frequently serve as unsuspected sources of infection for crops. Consequently, interest in plant viruses is increasing rapidly, both from agricultural and from general biological points of view.

The introduction and continuous improvement of techniques of virus isolation and characterization, most of which have derived from molecular biology, have greatly facilitated the accumulation of information about viruses. Using such information, order is now gradually emerging out of chaos, and plant virus taxonomy (classification and nomenclature) is finally becoming established. Taxonomy allows storage, retrieval and even prediction of information, is essential for communication, and presents a fascinating image of the immense diversity of "life"; this is also true for viruses although, of course, they are usually considered to be non-living.

The present book illustrates this diversity among over 600 plant viruses distinguished so far by describing the 25 virus groups recognized by the International Commission for the Taxonomy of Viruses (ICTV). A final chapter deals with viroids, the smallest known plant pathogens. An introductory chapter on plant virus taxonomy discusses the history and present status of plant virus nomenclature and classification which, because the species concept is untenable for viruses, is not Linnaean.

It is impossible to discuss each of the 27 chapters of the book individually, or to do full justice to such an extensive publication in a brief review. Forty authors contributed material and several have well established reputations. The merits of the book are attributable to the personal qualities of contributors rather than to the expertise of the editor who, as a medical virologist, is less familiar with plant diseases and plant viruses. A striking feature of the book is the lack of uniformity between chapters in scientific emphasis, method of organization of data, and extent of information and illustration. Nevertheless, the book contains a wealth of information and is authoritative because no other comparable comprehensive text is available.

Its aims parallel those of the CMI/AAB Descriptions of Plant Viruses, a continuing loose-leaf system which started in 1970 and only recently began to add descriptions of better known groups. Emphasis of that British undertaking is on individual viruses, whereas the present book concentrates on virus groups recognized by the ICTV.

Special criticism concerns the title of the book which is unclear. Emphasis throughout the book is on viruses rather than on infections and diseases, and several of the authors are virologists rather than pathologists. As cause and effect are not clearly distinguished, the subtitle "comparative diagnosis" is ambiguous. Diagnosis in its widest usage means "a concise technical description of a taxonomic entity giving its distinguishing characteristics" (Webster's Third New International Dictionary, unabridged, 1976). Thus, diagnosis (from *diagignoskein* = to distinguish) presupposes comparison, so the adjective comparative is superfluous. In this context diagnosis is a synonym of identification, a term widely used for recognition of something that has been characterized previously but increasingly adopted for demonstration that something has an identity of its own, is a separate entity. Virus identification with the aim of recognition often leads to the description of something new. In both common language and pathology, diagnosis refers to recognition of a disease and this is reliable only when determined etiologically. Actually, the book is mainly concerned with plant virus taxonomy as a basis for etiological diagnosis of plant virus diseases, or just with "comparative plant virology". The importance of various techniques of virus identification would have justified

an additional introductory chapter on virus identification and diagnosis.

Lay-out, printing and illustration are excellent. The book will be invaluable for a number of years to all interested in plant viruses and virus diseases, as well as to those interested in order and diversity at the "threshold of life". Unfortunately, the price will be a drawback for the individual purchase.

L. Bos

H. E. WEBER: *Revision der Sektion Corylifolii (Gattung Rubus, Rosaceae) in Skandinavien und im nördlichen Mitteleuropa*. Sonderbände des Naturwissenschaftlichen Vereins in Hamburg 4, Paul Parey, Hamburg und Berlin, 1981. Paperback, 229 p., 42 illustrations. DM 68,-.

This book provides a regional treatment of a both taxonomically and nomenclatorally difficult group of brambles of hybridogenic origin with participation of *Rubus caesius* L. The region treated encompasses the Scandinavian countries, Denmark and The Netherlands, the German Federal and Democratic Republics and Poland north of the line the Hague, Arnhem – Enschede, Rheine – Minden – Hannover – northern Harz mountains – Berlin – Seelow – Kostrzyn – Bydgoszcz – Gdansk. 41 Species with more or less wide dispersion are treated exhaustively; a large number of taxa of limited distribution or doubtful status are mentioned briefly in an appendix. Moreover, the book includes dichotomic and synoptic keys for the widely distributed species.

The testing of the keys with my own collection of *Corylifolii* from the northern Netherlands was moderately successful. This may be due to the variability of these taxa which – generally speaking – are less stabilized than those of the section *Rubus*.

Batologists will be grateful to the author for his painstaking research of the vast literature and herbarium collections on which this book is based. It is an indispensable guide for further work on this difficult, but fascinating section of the genus *Rubus*.

F. M. MULLER

A. J. P. OORT: *Nutritional requirements of Lactarius species, and cultural characters in relation to taxonomy*. Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Natuurkunde, 2e Series, vol. 76. North Holland Publishing Company, Amsterdam, Oxford, New York, 1981. 95 pp., 23 fig., 25 tab., 4 col. pl. Paperback. Dfl 70,-; US \$ 29,75.

The author has worked with pure cultures of 30 species of the genus *Lactarius*, a rather large genus of mainly mycorrhizal Agaricales (s.l.), which were collected in western and central Europe and Canada. After a detailed chapter on material and methods of investigation some data on the morphological variation within and between the isolates are given. Although the author states that some cultural characters have diagnostic value, he only gives very brief descriptions which are not standardized. Microscopical details are omitted completely.

The chapter on nutritional and vitamin requirements is the most interesting part of the book. Experiments have been conducted with varying temperatures and initial pH's, various growth factors (thiamine, biotin, folic acid and inositol), different carbon sources (carbohydrates, lipids) and nitrogen sources (peptone, casamino acids, amino acid mixtures, asparagine, glutamic acid and glutamine, ammonium compounds) and, finally, with the replacement of yeast extracts by nicotinic acid and other vitamins. For these experiments a limited number of strains has been used (usually 6, all belonging to different species, of which four from the section *Dapetes*). Thus no taxonomic conclusions can be drawn, although these are sometimes inferred.

A relatively large number of isolates was available from the section *Dapetes* and here macroscopical characters on various media have been compared; *Lactarius semisanguifluus*, *L. deterrimus* and *L. deliciosus* (incl. var. *piceae*) were indistinguishable, while *L. sanguifluus* and *L. hemicyaneus* dif-

ferred significantly.

The book is well printed and the colour photographs are a welcome addition. Unfortunately some of these lack certain details in the bright parts, while the diagrams on the adjacent pages are superfluous, because the strains on the plates are numbered.

J. A. STALPERS

**P. F. WAREING and I. D. J. PHILLIPS:** *Growth and differentiation in plants.* Pergamon Press, Oxford, 1981, 3d edition, 343 pages, \$ 20.00 (paperback).

This third edition is the extensively revised successor of "The control of growth and differentiation in plants", the second edition of which appeared in 1978. The shorter title involves an extension of the contents, mainly by the addition of a first and a final section. These two sections are rather short and contain the usual material of textbooks on the subject. Section I, "Structural and morphological aspects of development", gives a survey of the development of plant cells and some of their organelles (the mitochondria being omitted), and of the growth and differentiation patterns of the plant organs. It terminates with an introduction into exponential growth and relative growth rate determinations. The final Section IV deals with gene expression in pro- and eucaryotic organisms.

In between, covering three quarters of the book, is the far more interesting part, consisting of the Sections II and III on, respectively, the internal and the environmental control of plant development. The internal control is exerted by the phytohormones, of which the synthesis, mechanisms of action, interference by synthetic regulators and, particularly, their action in the physiology of the whole plant are described. A chapter on the aseptic culture of plant tissues and organs *in vitro* concludes this section. The other section deals with growth movements, photomorphogenesis, and the regulation of flowering, dormancy, senescence, and abscission.

The authors, authorities in the area of control and regulation of plant development, are quite in their element here and it is often a delight to follow their critical evaluation of the present state of such problems as apical dominance or phototropism. In these sections the book more than once rises from the level of a textbook for students to that of an exciting scientific debate.

The book is well produced, in a better format and with more illustrations, of a good quality, than in the previous editions. However, as a paperback it can hardly stand the intensive reading it deserves by students and teachers interested in plant development.

J. BRUINSMA

**H. SENGEL (editor):** *The blue light syndrome.* Springer, Berlin, Heidelberg, New York 1980. XVI + 665 pp., 432 figs., 85 tables. DM 98,- = c. US \$ 57.90.

The book contains 60 papers read at the 1979 congress on phenomena in plants induced by blue light. Some papers report on original work by the authors, others are literature surveys; most authors confine themselves to the literature of the last decade.

The "blue light syndrome" of the title is restricted to phenomena mediated by yellow pigments. The question as to which yellow pigment is responsible still remains unanswered, but in a number of articles useful contributions are given to the list of possibles.

In higher plants blue light effects are not only mediated by yellow pigments, but by phytochrome as well. Interaction between specific yellow pigment effects and phytochrome effects impede the analysis. Therefore much attention is paid to the blue light effects in microorganisms (Fungi, Rhodophyta, Phaeophyta) where presumably phytochrome is lacking.

With regard to higher plants blue light effects on the development of chloroplasts and on carbohydrate and nitrogen metabolism receive much attention, whereas phototropism is hardly touched upon.

The book can be recommended as a good source of information for workers on the subject.

G. BLAAUW-JANSEN

H. G. RICHTER: *Anatomie des sekundären Xylems und der Rinde der Lauraceae*. Verlag Paul Parey, Berlin und Hamburg, 1981. 152 p., many ill. (incl. colour plates), 13 tables, DM 64.-, paperback.

This book is the result of a detailed anatomical study of 2000 wood samples and 400 bark samples belonging to 40 genera of the Lauraceae, and provides a synthesis of implications for identification and classification of fossil and extant taxa and for utilisation of Lauraceous timbers as can be deduced from their microscopic structure. Extensive accounts of the individual genera are being published separately in the IAWA Bulletin New Series published at the Rijksherbarium, Leiden, the Netherlands.

Dr. Richter excellently documents and illustrates the wood and bark anatomical diversity in this taxonomically difficult family and provides many interesting suggestions for a natural classification of the family as a whole and for certain apparently artificially delimited genera in particular. The considerable variation in each individual character is enormous, and the comprehensive inventory of this variation in a doubtlessly natural family provides an example of general interest to the comparative anatomist, because it shows how related genomes can produce such diverse expressions in for instance type of secretory cells (oil or mucilage cells), pit size, parenchyma distribution, sclerenchyma differentiation in the bark, vessel-ray pitting etc. Yet it is possible to make a satisfactory anatomical diagnosis for the family as a whole.

There is little scope for criticism of this publication which is pervaded with German thoroughness in the best sense. Probably the record of vested pits in some Lauraceae is erroneous, and editorially a slip has been left uncorrected in that tables 11 and 13 at the end of the book refer to chapter numbers which have not been adopted in the text.

In conclusion this publication can be warmly recommended, not only for libraries of specialised Institutes of Forest Products and Systematic Botany, but for all with an interest in comparative wood and bark anatomy.

P. BAAS

## ANNOUNCEMENT

*7th International Symposium "Morphology and Anatomy", Amsterdam, spring 1983*

The 7th international symposium on "Morphology and Anatomy of vascular plants", organised jointly by the Royal Netherlands Botanical Society and the Deutsche Botanische Gesellschaft, will be held in Amsterdam on 28 February – 3 March 1983. The programme includes lectures and posters on evolutionary, biological and systematic aspects of: 1. structures related to pollination, fertilization, seed dispersal and germination; 2. wood and leaf structures; 3. teratological structures. Contributions on other themes may also be presented.

*Those interested to participate please contact:*

Dr. W. A. van Heel, Rijksherbarium, Postbus 9514, 2300 RA Leiden, The Netherlands.

A detailed programme including information on accommodation and costs should become available by October 1982.