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### **BOOK REVIEWS**

Journal of Ethno-Pharmacology, an interdisciplinary journal devoted to bioscientific research on indigenous drugs, L. RIVIER and J. G. BRUHN (eds.). 1 (1) 1–102 (1979). ISSN 0378-8741. Published quarterly. Elsevier Sequoia, Lausanne (Switserland). Price p.a. S. Frs. 150.00 (approx. US \$ 79.00) including postage.

Increasing interest in medicinal plants found its expression in the establishment of a new specialized journal. This specialization is based on a growing appreciation for the empirical selection of useful plants by ancient civilizations and primitive communities from their natural resources, still unsufficiently known by western scientists. The philosophy to pay special attention to these preselected plants may interfere with a more methodical approach to evaluate systematically the medicinal value of the plant kingdom. However, the fear that empirical knowledge may be lost by changing habits of primitive communities is not imaginary and could be an excuse for focused research.

These reflections already show that the Acta-reader will find in Ethno-Pharmacology a wealth of botanical information on an interesting artificial group of plants. The well-known publisher and the careful selected editorial board are sufficient guarantee for the scientific standard of the journal.

In view of the rapidly increasing number of publications on medicinal plants (in Horticultural Abstracts an increase from 2.4% in 1965 to 6.5% in 1978 of the total number of abstracts) there seems no fear for a shortage of contributions to the new journal. How far Ethno-Pharmacology in this time of reduced expenses will find its place in private and institutional libraries beside related journals as Economic Botany, Planta Medica and Lloydia is still questionable. Nevertheless the courage of the publisher to meet this challenge fully deserves appraisal.

**G. STARITSKY** 

T. SWAIN, J. B. HARBORNE and C. F. VAN SUMERE (ed.): *Biochemistry of Plant phenolics*. (Recent advances in phytochemistry, vol. 12). Plenum Press, New York and London, 1979. 651 pages. Price \$59.40.

This book contains 19 lectures which were presented at a joint symposium of the Phytochemical Society of Europe and the Phytochemical Society of North America, held in Ghent, August 29–September 2, 1977. Even more than previous phenolic (Dublin, 1971) and enzymatic (Canterbury 1972, Oxford 1976) symposia of the Phytochemical Society, the joint session with the PSNA proved successful in gathering a very representative group of phenolic experts from all over the world. The lectures given by the invited speakers cover a large area in the field of plant phenolics. In most chapters the chemistry, biochemistry and/or enzymology of various phenolics or phenolic structures are discussed, including aspects of the shikimate pathway, the phenylpropanoid biosynthesis, the biochemistry of flavonoids – coumarins – quinones – tannins – lignin, cinnamoyl-CoA, oxidases etc. In two chapters separation techniques and spectroscopy are represented, whereas physiology, possible function and use of plant phenolics form the topic of the last four lectures.

In general, the book may not be considered to be a review on the various subjects of of plant phenolics. Most authors have chosen to cover some recent development or to floodlight some detail, and rightly so. Review articles on various phenolics, often by the same author, have recently appeared rather numerously, both in journals and in a stream of books. Like the symposium, the book has to be considered more as an interim report on the slowly developing knowledge of the various aspects in the field, offering, of course, at the same time a very useful updating. In this respect the organizers of the symposium and editors of its proceedings did an excellent job.

A drawback of this edition is the rather meagre index, omitting for instance all plant names, which

limits its use as a reference work. Therefore, and also in view of the fact that it will be outdated in a few years, I consider the price rather high for private purchase. For institute libraries, however, it provides a welcome view of the present mode of thinking of several main research groups working on phenolics.

G. J. NIEMANN

Heinz ELLENBERG: Zeigerwerte der Gefäszpflanzen Mitteleuropas. Scripta Geobotanica, Band 9. 122 pp. Verlag Erich Goltze KG, Göttingen, 2nd ed., 1979. DM 21,-.

The synoptic work gives for each of the about 2000 vascular plant species treated indicator values, three for climatic factors, and three for soil factors. The second edition contains considerably more species than its predecessor from 1974 although it still is not complete. I found rather few alterations of the "ecological behaviour" figures. Much more attention is given to the use of these figures. An important statement by the author is that the use of the Braun-Blanquet figures from the relevées is unnecessary, even undesirable, for calculations of the mean ecological figures! The second edition is enlarged by a chapter on computer handling of the ecological behaviour data.

R. VAN DER MEIJDEN

R. SATTLER (Editor): *Theoretical plant morphology* (Leiden University Press, The Hague). Acta Biotheoretica, Vol. 27, supplement: Folia biotheoretica No. 7, 1978, 142 pages, illustrations, tables. Price: Dutch f 46,80. ISBN 9060214382.

One of the plenary sessions of the XIIth International Botanical Congress in Leningrad in 1975 was organized as a symposium on theoretical plant morphology. This booklet contains the updated contributions of the four speakers at the symposium. The symposium aroused much discussion and three further short papers were presented. It is a pity that neither these short contributions nor a summary of the discussions are included.

Rolf SATTLER, the organizer of the symposium, presents a definition of theoretical plant morphology as the philosophical backbone of plant morphology as a whole: "theoretical plant morphology deals with the discovery (invention), formulation and analysis of morphological concepts, models, theories and their test implications". Sattler's contribution gives a good insight into the task of theoretical plant morphology within practical morphology, "an important science because structure defines life better than function".

MEYEN discusses the phenomenon of refrains in plant morphology. The common occurrence of certain refrains at any taxonomic distance is often explained by kinship or convergence; convergence is the outcome of adaptation, a result of survival of the fittest. Meyen, however, suggests that function is not the only factor in evolutionary morphogenesis, but that in ontogeny and phylogeny certain refrains can be recognized, complementing the selectionistic theories of evolution.

LINDENMAYER's contribution about "algorithms for plant morphogenesis" is of high standard, useful also for those who are not familiar with the subject and who would like an introduction into this field of science. Algorithms are sets of instruction, such as in a computer program; its biological counterpart is the pattern of development of the organism. The system is based on cellularity, thus on cell lineage with and without cell interactions. Lindenmayer claims that in many models of growth this aspect of cellularity is missing. I agree with him wholeheartedly and think that a crossfertilization between the different methods of modelling plant growth could be enlightening.

GIVNISH, basing himself on a selectionistic evolutionary approach, tries to explain form as if it were the result of evolutionary processes leading to maximizing of the difference between photosynthetic gain and inevitable transpirational costs, in terms of unproductive but necessary roots and xylem, or giving the most economic distribution of materials for support and transport. His argument is

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weakened by lack of direct experimental evidence for his theories.

The booklet as a whole discusses some fundamental problems of morphology, but does not introduce many new ideas about systematic and evolutionary problems. For those who are not familiar with the treated problems, the text is too long, often too specialized and offers heavy reading. The many typing errors are a shame and sometimes even disturbing.

G. A. PIETERS

## MAYER, H.: Gebirgswaldbau, Schutzwaldpflege; Ein waldbaulicher Beitrag zur Landschaftsökologie und zum Umweltschutz. G. Fischer, Stuttgart, 1976.

The title of this book is rather misleading, because it does not indicate that this book is restricted to the ecological and silvicultural treatment of forests of the Central European mountain areas. Its main emphasis is on the forests of the Alps and the surrounding mountain systems: the Swiss and French Jura, the Black Forest, the Carpathians and some Yugoslav areas are treated to some extent, but the Pyrenees, the Scandinavian mountains and all areas outside Europe are left outside its scope.

The author has digested a tremendous amount of publications on the subject and also drawn from his own extensive research experience. His findings are set down in nine chapters, each of which has been subdivided into numerous sections. (The table of contents occupies not less than fourteen pages.)

Mayer leaves no doubt about his view that "the forest" should be considered as a group of living systems which manifest themselves in a multitude of forms and consequently are very variable in composition, structure and ecological characteristics. Furthermore he clearly indicates how and to which measure these various types of forest can fulfil the requirements of human society. In this book particular emphasis is placed on the protective roles of forests.

Mayer makes it quite clear that it is impossible to make statements about "mountain forests" in general. Similarly he attacks the often held view that "primeval" or "natural" forests automatically will provide the best protection against environmental risks. This protection is closely linked with stand stability and this stability of "natural" forest stands is different for different forest types and also for different developmental stages within a single type. Closely adjusting to the natural species composition gives a certain guarantee for adaption to local circumstances and by this means for vigour and longevity of the trees, but management and silvicultural treatment should aim at maintaining and steadily regenerating the most stable phases of stand development. Overmature stands of declining vigour should not be allowed to arise.

The author clearly shows the multiplicity of the problems of forestry in the high mountain area's of Europe and gives an inventory of the scientific knowledge available to cope with these problems. It is a treasure of documentation, larded with critical discussions of various aspects of high mountain forestry. Part of it is difficult to read and can be understood only by consulting the literature cited, but on the whole it is a very valuable handbook.

J. J. WESTRA

TIBOR SIMON. Vegetationsuntersuchungen im Zempliner Gebirge. Abgrenzung zönologischer Einheiten unter Anwendung quantitativer und rechentechnischer Methoden; Vorstellung der zytozönologischen Analyse. Akádemiai Kiadó, Budapest, 1977, 350 pp. 62 phot., 46 figs., 3 maps, 22 tab. ISBN 963-05-1251-3. Price \$22.00.

This work forms part 7 of the series: "The vegetation of hungarian landscapes". It is devoted to a geologically and geomorphologically varied mountain area which forms a southward extension of the Carpathian mountains. The book starts with the usual introduction to the abiotic conditions and then describes the plant communities of the area in detail. The author considers himself as an

exponent of the Braun-Blanquet approach, with an inclination towards "objective" methods of analysis and synthesis. His introduction to the Braun-Blanquet approach and its difficulties is unsatisfactory. Instead of a really critical account we mainly find a list of European workers using this approach, which is unrepresentative and contains spelling errors and plain mistakes. Problems of homogeneity and representative sampling and of numerical perspectives of synthesis are ill-treated, whereas a good treatment would have been rather easy with so many good recent accounts available. The numerical procedure adopted by Simon is too simple (calculation of chi<sup>2</sup> values for pairs of releves and construction of dendrites) and the phytosociological synthesis does not seem to have benefited at all. The association tables contain single releves in which no clear order can be distinguished. The species are listed according to the syntaxon they represent and this does not contribute much to a clear table structure either. Still the descriptions of the types, the documentary photographs and the synecological interpretations with data on Zólyomi's indicator values for temperature, moisture situation and pH, make the book valuable.

Some interesting details of the study are: relation between diploids and polyploids in different ecological species groups, relation between these results and Zólyomi's indicator values, and a key for the determination of the various communities.

The book is well produced, the German language is used in an acceptable way, but a summary in English is missing.

E. VAN DER MAAREL

### MARGIT KOVÁCS. Beziehung zwischen Vegetation und Boden. Die Bodenverhältnisse der Waldgesellschaften des Måtragebirges. Akadémiai Kiadó, Budapest, 1975, 365 pp. 130 figs., 98 tab. ISBN 963-05-03999-9. Price \$23.00.

This monograph is vol. 6 of the series: "Die Vegetation ungarischer Landschaften", edited by B. Zólyomi and published by the official Publishing house of the Hungarian Academy of Sciences. It deals with the plant communities of the Mátra mountains which form the inner part of the north Hungarian Carpathian mountains and reach an altitude of 1014 m.

The forest communities are extensively described with special reference to the relations between vegetation type and soil type. In total 12 associations ranging from the lower steppe forest zone to the higher montane Beech zone are described. The phytosociological approach follows the Braun-Blanquet method, but the phytosociological tables are arranged in a peculiar (and not satisfactory) way.

The species are listed per syntaxon they are supposed to characterize. Roman constancy figures are presented sometimes per association or lower syntaxon, sometimes per region or zone.

The main value of the study is the very thorough description of the soil types belonging to the vegetation types. This description is accomplished by an environmental interpretation of 350 releves as to the indicator value of plant species for temperature, moisture conditions and pH (based on Zólyomi's data). The central part of the study is a detailed analysis of the soil physical and chemical properties, which starts with a description of the soil development in a succession series from open rock to *Spiraea* scrub.

Valuable information is presented on nitrogen mineralisation and cellulose decomposition. Maybe these results could have been elaborated further to achieve a real synecology of the forest types involved.

The book is well produced, the German is quite acceptable, but a summary in English is missing. E. VAN DER MAAREL

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H. WAGNER and P. WOLFF (Eds.), New Natural Products and Plant drugs with Pharmacological, Biological or Therapeutical Activity. Proc. First Internat. Congr. Medicinal Plant Research, Section A, held at the University of Münich. 286 pp., 152 Fig., ISBN 3-540-08292-1. Springer-Verlag Berlin, Heidelberg, New York 1977. Price DM 70.-.

The relevance of research on natural products is among other things determined by their potential biological, pharmacological or therapeutical activity. In view of the everdiminishing financial means available for scientific investigations the editors of this book plead for a broad interdisciplinary approach and collaboration in the field of medicinal plant research. This development has to be accompanied, however, by improvement and refinement of methods of analysis.

As proceedings of an international congress (Münich 1976) the twelve chapters of this book correspond to the subjects of the plenary lectures delivered. As for their contents these chapters represent the different approaches of current research on biological active compounds from plants and micro-organisms. The first two chapters critically review the usual methods of pharmacological screening and evaluation of plant extracts and natural products, and the problems encountered thereby are discussed.

Characteristic of modern and practical investigations is that experiments aim at a definite biological activity starting with crude extracts; evaluation is continued if relevant with fractions and isolated pure constituents. Recently found natural compounds (from 1970 onwards) with antitumour and cytotoxic respectively antibiotic activity are reviewed in the third and fourth chapter. The following three chapters deal successively with alkaloids, mono- di- and sesquiterpenoids, and saponins.

The great variety of pharmacological and therapeutical effects which are displayed within each of these compound classes becomes apparent in these surveys of recent results.

A special approach to research of biological activity of natural products is demonstrated in the chapter on dimeric compounds. The biological or pharmacological action is reviewed here with respect to the structural relation between monomers and dimers of for example lignans, hypericins and coumarins.

The ninth chapter comprises a diverse collection of recent results with biological active constituents from Indian medicinal plants.

The next two chapters deal with plant neolignans and flavanolignans. Although in the treatment of the neolignans emphasis is on their chemistry and biogenesis the author, by giving a clear survey of the enormous structural diversity within this class of compounds, succeeds to demonstrate the potential of biological activity yet to be explored. As for the flavolignans the chapter deals in particular with the biological and the therapeutical effects of silymarin on the liver.

This book closes with a chapter on the modification of natural compounds in the modern drug synthesis. The author advocates the use of molecular structures of natural substances as a model for the synthesis of drugs. Apart from a treatment of actual synthetic modifications the author deals with modifications on the basis of biochemical concepts. Especially from the latter field important developments are to be expected in the future.

In conclusion it may be stated that this book comprises a collection of papers on actual developments in the field of the biological, pharmacological or therapeutical treatment of the subjects and the up-to-date literature references make this book very valuable for research workers, lecturers and students in this field.

R. P. LABADIE

# D. L. LAIDMAN and R. G. WYN JONES (Ed.): Recent Advances in the Biochemistry of Cereals. Academic Press, London, 1979, XVII + 391 pp., \$ 18,60.

The Phytochemical Society of Europe seems to have adopted a new principle. Judging from the titles of the previous 15 Annual Proceedings, each one was apparently meant to cover the current biochemical knowledge of a single aspect of plants in general. The volume under review, however, is concerned with various aspects of a single group of plants, the cereals. As a result of this inside-out approach, the reader is induced to think that biochemistry of cereals is some special kind of biochemistry, which it certainly is not. This soon becomes evident on reading the first four chapters of the book, where inorganic solute transport and compartmentation are considered. On several occasions the authors relate the results they obtained with cereals to those obtained with non-cereal, even animal, objects. Cereals happen to be used mainly because they formed suitable objects for the study of phenomena that may occur in many other plants. On the other hand, that is precisely what makes these four chapters of general interest to the reader who wants to brush up his biochemistry.

A similar line applies to the fifth chapter, which enters upon membrane protein and phospholipid turnover in dormant seeds, to the next three chapters, on germination processes, and also to the ninth and tenth chapters, on synthesis of carbohydrates and proteins in the developing cereal grain, respectively. In the reviewer's opinion, these last two chapters might have gained in general interest if the authors had looked for more parallels with anabolic processes in other developing plant seeds.

With chapters 11 and 12, the book turns from processes in (cereal) plant cells to the chemistry of wheat proteins and lipids, respectively, and the role these play in dough-mixing and bread-making. In chapter 11, on wheat proteins, also some histology of developing endosperm, and a section on genetics of wheat proteins are included. The author correctly refers to important other reviews but fails to mention C. F. Konzak's excellent and comprehensive paper on the genetic control of composition and properties of wheat proteins (Advances in Genetics, vol. 19, 1977). Nevertheless, this chapter, by its very heterogeneity, is most informative to those interested in cereal science and technology. The same holds for chapter 12.

The volume concludes with five shorter communications, viz. chapters 13 and 14 on  $\alpha$ -amylase in developing and germinating cereal seeds, ch. 15 on identifying wheat varieties by means of electrophoresis, ch. 16 on synthesis and transport of proteins in barley endosperm, and ch. 17 on transfer cells in the subaleurone layer of wheat endosperm.

For the most part this book makes very readable matter and, since it appears to cover two different areas, it should be recommended to biochemists and cereal chemists alike.

G. J. DOEKES

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