this monograph, have no such doubts and acknowledge that an understanding of allelopathy is important not only for interpreting patterning in natural ecosystems but also for maximizing plant yields in agriculture, horticulture and forestry. The first book devoted to allelopathy was published in 1972 and it stimulated research in this area, so much so that an increasing number of papers appear each month in the primary literature. It is only right and proper that the author of that first edition should provide us with a revision, which incorporates the findings of the last decade.

The first edition seemed to me to be rather poorly organized in its subject matter and it is pleasing to report that the sequence of topics is now more logically presented. After an introductory chapter concerned with nomenclature, there follow two chapters on manipulated ecosystems, one on plant pathology (a very weak contribution) and then five on natural ecosystems, dealing in turn with the patterning of vegetation, the effects of algal growth, field succession, seed germination and the nitrogen cycle. The final five chapters then cover the chemistry of allelopathic agents, the factors affecting their production, their movement between plants, their likely mechanisms of action and their effectiveness *in vivo*. Finally, there is an extensive 48 page bibliography. This is one of the most valuable features of the book, though the references to the phytochemical literature are somewhat out-of-date.

One fault of the first edition was its anecdotal style, the author being content in many cases to report results with little critical comment but this has been partly remedied here and the whole reads very much better than before. Undoubtedly, this second edition will be valued for the completeness of coverage of the subject. In my view, the most important evidence supporting the phenomenon of allelopathy are the experiments of Cornelius Muller and his students carried out during the 1950s and 1960s and rightly Rice devotes much space in chapter 5 to these data. It is disappointing that none of the work carried out since then has really added a great deal to these pioneering experiments. However, the publication of this second edition may once again stimulate further experimentation and we may well see the critics of allelopathy having to eat their words in the years ahead.

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The Families of the Monocotyledons: Structure, Evolution and Taxonomy: by R. M. T. DAHLGREN, H. T. CLIFFORD and P. F. YEO. Springer, Berlin, 1985. 520 pp. DM 294.

For as long as I can remember, phytochemists wishing to relate their findings to systematics at the higher levels of classification among the flowering plants have been in a quandary. Thus, taxonomists such as Cronquist, Takhtajan and Thorne have each produced a different system of classification and it is never quite clear to the outsider which one he should relate to. Furthermore, the reasons why particular families are grouped together in various orders and superorders are not always made clear in the taxonomic literature. The present volume, which treats only the monocotyledons, is especially welcome since it provides an integrated system which is supported by extensive character analysis and where the evidence is discussed and the decisions taken are explained. Additionally, places in the classification where affinities are still unclear are carefully indicated. Even better, the available phytochemical evidence has also been used when appropriate.

This monograph is, in fact, the third dealing with monocot classification by the indefatigable author Rolf Dahlgren to have appeared in the same number of years. Previous accounts have assembled the relevant biological and chemical data (Dahlgren and Clifford, 1982) and provided cladistic analyses of these data (Dahlgren and Rasmussen, 1983). However, this book stands on its own and can be used without extensive reference to the two earlier works, since their findings are summarized and recapitulated here. What we have in this book is a reasoned argument for a particular classification of the 100 or so families into 21 orders and 10 superorders. The evidence for this system is then outlined, with accounts of the morphological concepts, the chemical features, the evolutionary concepts and the distributions of the character conditions. This takes up the first 100 pages. The remainder is then an outline of the classification, family by family, with line drawings illustrating the key morphological features of each family. Chromosome numbers are given, geographical distribution described and ornamental and economic uses mentioned.

There are two drawbacks, which must be mentioned. Firstly, this book has been published in advance of the monocotyledon volume in the series "The Families and Genera of Flowering Plants" which will provide a complete listing at the generic level. Without having the advantage of these lists, the book is thus not comprehensive; while in the smaller families all the genera are usually mentioned, this is not so in the larger families. This disadvantage is counterbalanced by the fact that other taxonomists have been consulted for the taxonomic treatments of the more important families (e.g. Dr. Goldblatt for the Iridaceae, etc.) so that the family treatments have considerable authority.

The second drawback is that the chemical evidence is not completely up-to-date. Unfortunately, again, the authors have not had the advantage of consulting R. Hegnauer's updating of his monocot volume in *'Chemotaxonomie der Pflanzen'* volume 7, which is actually in press at the moment. Having said that, it is pleasing to see that the recent survey by Harris and Hartley of UV fluorescence in cell walls (due to attachment of ferulic acid residues) does get a mention. There are, however, a

number of minor errors. For example, the characteristic flavonol of *Eriocaulon* is quercetagetin, not myricetin as given on p. 396; anthocyanins have *not* been studied as far as I am aware in the Xyridaceae in spite of the statement on p. 390; and the characteristic flavone conjugates in the Poaceae, etc. are sulphated, not sulphurated. Again, chemotaxonomic studies do not often get a mention in the detailed family accounts. The 1966 flavonoid survey of Lemnaceae by McClure and Alston, which usefully supports a phyletic trend in the family from *Spirodela* to *Wolffiella*, is not included. Obviously, not everything could get in and it is good that phytochemical evidence is taken seriously, which is a big advance on most earlier treatments of monocot classification.

Apart from minor quibbles, this book has to be regarded as the definitive treatment. It is a must for anyone interested in these plants and will become the standard work for many years to come. For phytochemists, it could be the starting point for many future investigations, since the authors usefully indicate where conflicting evidence and uncertainties still exist in their classification. It is also not outrageously expensive for what it is and should be made available in chemistry as well as in botany libraries.

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