

## Book reviews

**Plant Taxonomy and Biosystematics**, 2nd edn. Clive Stace. Cambridge University Press, Cambridge. 1989. Pp. 264. Price £30 Hardback. ISBN 0-7131-2955-7

This is a new edition of a book which was first published in 1980, therefore, whilst inevitably much of the content remains unchanged, it presents an opportunity to indicate the new directions that plant taxonomy has taken over a period of almost a decade. The new edition is at first sight more concise than the old, with 264 pages against 279, but this is a false impression because it has been published in a larger, undoubtedly more handsome format from which both text legibility and presentation of illustrations benefit. This new edition is in fact longer than the first but only marginally so, and with only two newly titled sections; 'Modern Phylogenetic Methods (Cladistics)' and 'Vicariance Biogeography'. Elsewhere the text has been more subtly changed with new paragraphs or simply changes of emphasis, and some additional or improved illustrations and photographs. An example from the excellent chapter on chromosomal information where the first edition statement, 'In mosses, on the other hand, the presence of sex chromosomes has not been substantiated' becomes in the second 'The existence and types of sex-chromosomes in bryophytes is discussed by Newton<sup>309</sup>' gives the flavour of many of these fine-tunings and updates. Another litmus test is that the new edition contains some 490 references with a cut-off in 1987, compared with 381 and a cut-off in 1978 in the first.

This book is in the Davis & Heywood *Principles of Angiosperm Taxonomy* mould, that about one-third is devoted to the historical development and changing concepts of taxonomic theory, one-third to the discussion of how different disciplines, anatomy, cytology, phytochemistry, etc. can influence and sometimes illuminate our knowledge of taxonomic relationships, and one-third to taxonomic practice and the role of the herbarium and library etc. Unlike such books as the classic but rather wooden *Taxonomy of Vascular Plants* by Lawrence, this book does not attempt to characterize any taxonomic groups, therefore some knowledge of, for example, angiosperm families is necessary to appreciate fully the many examples where the impact of new data on various named taxa is discussed. There is likewise no attempt at an encyclopaedic approach but, rather, this concise text functions as a good lecture course by introducing topics and providing an overall orientation. Readers who really want to get to grips with any particular aspect, however, must be prepared to chase up the usually copious literature references provided.

Plant taxonomy has seen numerous 'new dawns' by way of disciplines including biosystematics, numerical taxonomy, primary/secondary semantide sequencing etc., which promised to drag this awkward science, with its obstinate

reliance on dried plant specimens, *gestalt* perception, and eighteenth and nineteenth century literature into the arena of 'hard science' and respectability. Clive Stace has been a practising (as opposed to theoretical) 'multidisciplinary' taxonomist for long enough to appreciate better than most the achievements of 'formal' or 'orthodox' taxonomic practice and its continuing utility, and one of the admirable features of this book is its dispassionate analysis of the strengths and weaknesses of a series of potential inputs into taxonomy. Each discipline is viewed as a potentially valuable additional tool which, for some taxa, may powerfully revitalize our understanding of relationships, but without supplanting the orthodox core. In this vein the treatment of cladistic developments is both welcoming and cautious, and the use of worked examples with the same group of grass genera for a phenetic-numerical analysis and a cladistic one is instructive. An oddity in this section is that Fig. 2.6, which was stranded virtually high and dry amidst a discussion of Eichler's *Planzenfamilien* in the first edition, remains so in this new book despite the extra focus on cladistics. This figure uses cladistic terms such as synapomorphy and symplesiomorphy, which the reader must wait a further two chapters to be defined.

A surprisingly disappointing feature, particularly as molecular techniques are quite rightly singled out in the preface of this book as having an impact on plant taxonomy in the 1980s, is the meagre space devoted to this area. Only two additional paragraphs with some five references cover the exciting possibilities offered by DNA restriction fragment analysis, and even with the constraint of a bibliographic cut-off in 1987, a number of important, pioneer papers, e.g. by Palmer and collaborators on chloroplast DNA studies in such diverse genera as *Lycopersicon*, *Brassica* and *Pisum*, have been omitted. I take the same cautious view to 'new dawns' as Stace, but the combination of cladistic analysis of molecular biological data promises to be an exciting but of course polemical newcomer to the taxonomic process and more information on this topic would have been welcome.

In summary, this is a model concise guide to plant taxonomic theory and practice which can be strongly recommended. To what audience the book is addressed is a matter of some conjecture. The first edition was targetted as a text for University undergraduates, but given the almost total demise of plant systematics teaching in British Universities, the book is more likely to reach the hands of a young postgraduate researcher (perhaps a molecular biologist?) who will be able to use it to discover what plant taxonomy is really about.

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