XVIII. REVIEWS

(continued from page 324)

DUNCAN, B.D. & G. ISAAC. Ferns and allied plants of Victoria, Tasmania and South Australia. Melbourne University Press, Melbourne. 1986. xii, 258 pp., line drawings, maps, b/w photogr., 8 col. pl. In Europe available from HB Sales, Littleton Road, Ashford TW15 1UQ, U.K. £ 25.00. ISBN 0-522-84262-3.

A beautifully and lavishly illustrated, thorough account of the 128 ferns and fern-allies of the Southernmost extremities of the Australian subcontinent. For the Malesian oriented scientist primarily interesting because of the excellent view it offers of a flora that is close to the Malesian flora on the generic level (almost 90% of the genera enumerated in common) and at the same time very distinct on the specific level (hardly 16% in common). —— P.H. Hovenkamp.

GOETGHEBEUR, P. Genera Cyperacearum. Een bijdrage tot de kennis van de morfologie, systematiek en fylogenese van de Cyperaceae-genera. Thesis. Gent. 1986. 1164 pp., many figs.

It is an unfortunate fact that in many countries it is customary that a thesis is distributed in a limited edition of only a few stencilled, or photocopied specimens. This is for many reasons a great pity. The sometimes very interesting results of many years of study and research are being withheld from the scientific world and the efforts, care, time, and costs have been wasted. Educationally, it is also very important that an author sees a major publication (often his only one!) through to publication. It will increase the quality of his future ones, if any, if he experiences the workings of editors and printers.

At most a brief summary appears, which by being so short, carries little real information on the conclusions and the way that they were reached. It is, moreover, one among the many, and if not overlooked, soon forgotten.

If, moreover, nationalistic chauvinism requires that it is to be written in the native dialect or language, and when not even an extensive summary is given in a better known one, one has to fear that all work will have been for nought.

The result may be that the same subject is taken on by someone else again, who then invents the wheel all over again, instead of creating a better one. An instance of this was mentioned in these pages (B. Hansen, p. 173-178) and another one may be the present case (see also Van Steenis, Taxon 35, 1986, 121-122).

Paul Goetghebeur of Gent, Belgium, studied the Cyperaceae for a dozen years as part of the team of Van der Veken, the well-known cyperologist. As a thesis he has produced a hefty (c. 2900 gr!) volume in which he discusses the generic and supra-generic delimitation of this important family. Unfortunately his University until very recently required that theses should be in Dutch (or French), so it is of little use to anybody until poor Paul finds the time to translate the 1164 pages (fortunately many full-page diagrams) into English and finds a publisher interested enough to bring it out.

The structure of the inflorescences, spikelets, embryos, and the vegetative anatomy are extensively analyzed, and features of other fields critically summarized.

The inflorescences are explained according to the gonophyll and the somewhat similar anthocorm theories. They are regarded as being constructed of double units consisting of an axial and an axillary element. The bisexual flowers with a

non-trimerous structure is regarded as the original type: the trimerous ones have been derived from these. By reduction unisexual flowers have been derived from these, still with a rudiment of the other sex, which ultimately is lost as well. An additional technical problem is the small size of the inflorescence structures. It is therefore not surprising, that although so many eminent scientists have worked on the family, much prior research turned out to be untrustworthy, if not misleading, so about 900 species have been analyzed anew. The problems in homology, interpretation, terminology, techniques are extensively discussed. A typological flowering classification with 8 basic and 11 derived types, to which an identification key is given, resulted.

The embryo has been interpreted as lacking cotyls. The so-called cotyledon is in fact a primary axis which stops growing prematurely. Its function is taken over by a lateral axis, axillary to a suppressed organ homologous with a leaf (in some Gramineae still present as the epiblast), and carrying the coleoptile as the first leaf (prophyll). 6 basic and 11 derived types can be distinguished.

Three common and one rare type of anatomy can be distinguished: the eucyperoid type, from which the chlorocyperoid, the fimbristyloid, and the chlororynchosporoid type independently have originated.

The result of all this work is that an affinity with the Pandanaceae, as has sometimes been suggested, and especially with Gramineae, as the more common superstition has it, seems most unlikely. On the contrary, the Juncaceae seem to represent the plesiomorphic form from which the family originated.

From the analysis of the character states their polarity has been assumed and a cladistic analysis was undertaken. Thus four subfamilies are indicated to be present: Mapanioideae, Cyperoideae, Sclerioideae, and Caricoideae, in which the second and third one appear to have no synapomorphies. These taxa are further divided into 17 tribes and 107 genera; cladograms and bubble diagrams illustrate the process, from which it becomes clear that most tribes are polythetically defined with the Cyperoideae and Caricoideae as the most distant. The author admits that taxonomic groups are relatively easily discernible, but that the assignment of a rank to these infrageneric units is rather arbitrary.

The utility of the work is much enhanced by a key to the embryo-types, and identification keys down to the genera, in which as much as possible macromorphological characters have been employed. As it should be no attempt has been made to make them illustrative of a 'natural' system. For this the even more technically cumbersome anatomical features are important.

The bulk of the book, nearly 875 pages, is dedicated to the genera which are discussed, diagnosed, and graphically depicted. Representative species are treated likewise. Some new combinations are provisorily proposed, e.g. in Phylloscirpus.

From the above the value of this study will be evident, and it is much to be hoped that it will become available to all cyperologists as soon as possible! —— J.F. Veldkamp.

HOMMEL, P.W.F.M. Landscape-ecology of Ujung Kulon (West Java, Indonesia). Thesis. Privately published, available from the author, POB 98, 6700 AB Wageningen, the Netherlands. 206 pp., 29 tabs., 11 fig., 6 app., colour map. No price mentioned.

This excellent piece of work is an elaboration of Hommel's Ujong Kulon vegetation survey, reviewed previously here (p. 67). In 12 chapters, among others on

history, climate, geology and geomorphology, landscape units, and aspects of management the author thoroughly discusses all those aspects of Ujong Kulon accompanied by an excellent coloured landscape - ecology map. In appendices lists of plant species and preference profiles to the soils are given. Students of all subjects mentioned will find something to their tastes. It is surprising that in the chapter on vegetation 39 communities could be enumerated, all with a description of physiognomy and composition, their distribution, spatial variation, and synecological interpretation. I wonder whether all those communities in the field are really as clearly defined as in the book. The chapter on the fauna deals mainly with the Javanese rhinoceros, its food preference and feeding behaviour, with a list of food plants, and habitat requirements. But due attention is given to other important species, mainly from literature. In the chapter on landscape units the suitability for the rhinoceros is discussed with a series of four maps showing aspects as availability of water, accessibility, quality and quantity of forage, and overall suitability. We congratulate Dr. Hommel with his achievement and recommend the book to all those who are interested in the various subjects treated, last but not least to the managers of nature reservations who should be interested in the management advises given. —— H.P. Nooteboom.

PEEKEL, P.G. (M.S.C.) Flora of the Bismarck Archipelago for naturalists, translated by E.E. HENTY from the msc. of the Illustrierte Flora des Bismarck-Archipels fur Naturfreunde. Office of Forests, Division of Botany, POB 314, Lae, Papua New Guinea. (1984) 617+ pp., ill. ISBN 9980-66-000-7. Price unknown.

Finally the manuscript started in the beginning of this century has been published. Its 12 volumes and 2 supplements had been laying in the archives of the Provincialate of the Mission of the Sacred Heart of Jesus, the order of which Peekel was a member, in Munster, Germany. Through the efforts of the Rijksherbarium, Leiden, copies could be made and sent around in a limited circle. One of these was of course sent to Lae, where Mr. E.E. Henty translated it into English. This final publication is a tribute to Peekel's efforts to make and save his life work through the many adversary circumstances of a tropical climate and the hard years of detainment in a Japanese prison camp.

It is clear how much a dedicated amateur can achieve with perseverance and time. Peekel spent 43 years in New Ireland as a missionary with a special interest in linguistics and botany. In this area the flora was very badly known, as the numerous species named after him attest (list on p. 604-609). His collections were studied by the scientists in Berlin and thus are mostly lost. Some duplicates are in Bogor. Fortunately his drawings and descriptions may substitute for the types. Because of this, too, this publication is of great scientific significance.

It is not a complete flora of the rich archipelago, but most of the species treated are wide-spread in the cultivated lowlands of Papua New Guinea. As such it should be a very helpful manual, the more so since every species has been briefly described and is provided with a line drawing, sometimes giving details. Local names are given, and in appendices lists of the various uses in ethnobotany, noteworthy features, horticulture of the species are given. The flowering calendar should be of great local use. There is also a survey of the flora of the sea-coast. Unfortunately there are no keys to the families, genera, or species,

so some floristic knowledge is essential to have access to the contents. Some help in the terminology is given by the presence of a glossary.

A brief life history by Dr. H. SLEUMER has been added. —— J.F. Veldkamp.

PRANCE, G.T. (Ed.) Tropical rain forests and the world atmosphere. 1986. Westview Press Inc. 5500 Central Avenue, Boulder, Colorado. xxi, 105 pp., ill. ISBN 0-8133-7176-7. Price unknown. Based on a symposium that was held at the 1984 AAAS (American Association for the Advancement of Science) Annual Symposium, 1985.

Public awareness of the advancing destruction of tropical rain forest habitats has grown as has the scientific understanding of the complexity of these diverse and fragile ecosystems and the importance of their contribution to the global atmosphere. Current research demonstrates that the role of tropical forests in maintaining the equilibrium of the atmosphere may be far greater than previously believed and that the accelerating rate of forest destruction may have profound implications for the atmospheric budgets of N_2O, CH_4, CO_2, and important trace gasses. Large-scale deforestation may also have serious and unforeseen effects on climate and hydrology. The book emphasizes the relationships of biosphere to troposphere, aiming to set tropical forest ecology in the context of the global ecosystem. Case studies illustrate our increasing knowledge of these important habitats and the urgency of finding ways to preserve them. Diagnoses are accompanied by prescriptions for future policies. The chapters are: Introduction to tropical rain forests (PRANCE). 2. Tropical forests: patterns of depletion (N. MEYERS). 3. Deforestation in the Brazilian Amazon Basin measured by satellite imagery. (G.M. WOODWELL et al.). 4. Tropical forests: interactions with the atmosphere (M.B.McELROY & S.C. WOFSEY). 5. Amazon rainfall, potential effects of deforestation and plans for future research. (E. SALATI, P.B. VOSE & T.E. LOVEJOY). 6. Catastrophic drought and fire in Borneo tropical rain forest associated with the 1982–83 El Nino Southern oscillation event. (M. LEIGHTON & N. WIRAWAN). Epilogue (PRANCE). —— H.P. Nooteboom.

ROOS, M.C. Phylogenetic systematics of the Drynarioideae (Polypodiaceae). Verh. Kon. Ned. Akad. Wetensch., Natuurk., II, 85. (1986). 318 pp. Edita, Kon. Ned. Akad. van Wetensch., Postbox 19121, 1000 GC Amsterdam, The Netherlands, ISBN 0-444-85668-4. Hfl. 95.00.

Slightly modified from an earlier (1985) version presented as a thesis at the University of Utrecht, The Netherlands, also privately distributed.

An important part of this book is taken up by the philosophy of systematics (Chapter 4), methodology of phylogenetic analysis (chapter 6, co-authored by M. ZANDEE), and application of the methodology to the Drynarioideae (Chapter 7, co-authored by M. ZANDEE). The authors present a procedure that is in accordance with the stated aim (p. 20) that 'at every stage of the study the data, the criteria applied, and the decisions are explicitly presented'. However, I have not been able to find the necessary arguments for all the decisions that are taken when, in Chapter 7, the phylogeny of the Drynarioideae is tackled. Some hopefully unimportant but poorly argumented decisions have been taken to restrict the large number of possibilities that is the result of the large amount of data (31 taxa and 557 characters). First the search for all possible cladograms was stopped after 416 out of an unknown number of the best resolved ones had been found (p. 99). Therefore not all of them could be evaluated as to their impli-

cations (p. 100). In both cases the restriction has been introduced for practical reasons and introduces an unwanted element of arbitrariness. The most serious decision that seems to be inconsistent with the stated aims is the acceptance of two genera that are not a result of the cladistic analysis, but are introduced somewhere between p. 103 and 104, at a point where I would have expected to see a number of smaller groups recognized as suggested by cladograms 7.1 to 7.6. After all, one can sympathize with the authors when they seem to despair that taxonomic procedure perhaps cannot be expressed in a rigid, unambiguous way (p. 118: 'Probably, the quantitative criteria and those derived from biological theory a reconsideration of their restricted aims.

Those who are not particularly interested in the methodology of cladistics may prefer to skip some of the the first chapters, or even turn to the taxonomic part directly. 32 species are here accounted for, with keys to genera and species, nomenclature, descriptions, distribution, ecology and summaries of collector's notes. The remaining notes concern infraspecific variation and some characters not mentioned elsewhere. Appendices include a tabular account of the characters used, distribution maps of all species, and histograms of altitudinal zonation. An index of collections is also included, and an index to taxonomic names.

There are few changes in the delimitations of the species, but unlike most other treatments of the Drynarioid ferns Roos distinguishes only two genera, viz., Drynaria and Aglaomorpha. I have not been able to find an argument that accounts for the recognition of only two genera. It cannot be convenience (the key to the two genera needs 10 leads, leading to either genus 5 resp. 6 times), nor is it a necessary result of the phylogenetic analysis presented in earlier chapters. Roos is certainly right in rejecting the traditional, monotypic, genera. I fear, however, that, with results that seem to point to a further subdivision, the recognition of a large genus Aglaomorpha does not serve nomenclatural stability.

The information is not always easily accessible. For although 32 species are accounted for and described, only 31 may be keyed out. The remaining species (A. nectarifera) turns out to be based on a single, poorly preserved collection. Elsewhere this is postulated to be a sister species to A. cornucopia, but neither in the key, nor in the notes to either species is the reader's attention drawn to this. The species are numbered and presented in an order that is left unexplained, with no. 1-16 following no. 17-32. The descriptions are very detailed, and to be interpreted correctly they need to be read alongside the explanatory notes on the characters in chapter 5. There are no cross-references to some of the illustrations of characters given in chapter 5.

Is there so little which is positive to be said? Certainly not. This book presents a gallant attempt to establish a methodology for the reconstruction of phylogenies and the interpretation of phytogeographical patterns. It presents many ideas for practically the first time (a much earlier version of the same method was used by Geesink, 1984, Scala Millettiearum). It should be studied attentively by all those interested in this subject. Those whose main interest is the classification of the Drynarioid ferns, however, are left with a revision that leaves most specific delimitations unchanged and is difficult to use. —— P.H. Hovenkamp.

WHITTEN, A.J., M. MUSTAFA & G.S. HENDERSON, The ecology of Sulawesi, xxi + 777 pp., 64 plates, 43 in colour, 324 fig., Gadjah Mada University Press, POB 144, Bulaksumur, Yogyakarta, Indonesia. 4°. Also to be ordered from Sinauer Associates, Sunderland (Mass.) - 013775, U.S.A. ($ 25.00, cloth $ 50.00), Foris Publications, Dordrecht, The Netherlands, and Heffers Bookshop, 20 Trinity St., Cambridge, U.K. ($ 25.00, cloth $ 35.00).

Tropical ecology in a beaker — this book is a pure vintage mead of a class rarely seen on the market. The authors' style makes for easy reading, and the presentation of material drawn from a vast range of literature, much of which is not readily available, is excellent. There are little maps showing the distribution of limestone and ultrabasic rocks, mangroves, mud flats, and coral reefs. The important physical and biological principles are clearly explained for each ecosystem and the reader is then guided to more detailed studies, helped on the way by the numerous figures, sketches, and graphs supplemented here and there with tables. At first sight the information flow regarding the botanical aspects ends at the unknown and undocumented, certainly this is true for the vegetation of limestone and ultrabasic soils. Here one immediately feels the need for more information, but one has to admit that the research has not yet been performed. In this respects the book indirectly highlights gaps in the research by specialists.

Botanically, it is surprising that no reference is given to Koorders' 'Minahassa' (1898) and its supplements I - III. There there are numerous plates of plant species, better than those included here. Further, Koorders probably attempted the first ecological work on the vegetation of Celebes by discussing the vertical zonation of the vegetation (tree species) of G. Klabat, enumerating the species at 400-800 m, 1300-1500 m, 1600-2000 m. The Sarasins also published photographs of the forest and mossy forest of G. Klabat. The cover of this books refers to a publication of the latter authors, 'Die Landmollusken von Celebes' with 31 plates, who also visited the limestone areas of the Maros - Tonas Hills. This would suggest that the statement on p. 485 that 'the snails of the limestone hills have not been studied' may not be accurate. It is understandable that the present authors may not have had access to some of the older literature.

The environmental impact of man is amply treated in each section, e.g. coral reef and logging damage are both well covered. Of special interest is the clear analysis of swidden versus shifting (slash-and-burn) agriculture to be found in Chapter 9 (with colour plate 53b). This is so often misunderstood by planners and officials. 'Swidden agriculture can be a rational use of man power and land on sustained yield principle'. Unfortunately the mobility of swidden farmers usually clashes with established land tenure and occupancy concepts. The Chapter on 'Resources and the future' gives a balanced assessment of the problems future generations will face.

Agro-ecosystems receive attention and we are informed of a review article on insect pests on coconut palms made some 40 years ago, but no reference given. Considering the vast amount of literature referring to this simple artificial ecosystem I missed a more detailed approach comparable to that of rice fields. I felt that both ecosystems could serve for 'grass root' ecological studies.

The Chapter on urban ecology delightfully amplifies the idea of personal contact with living organisms and their ecology — here more 'back yard' ecology for schools. Ecology certainly begins at home and it is nice to see the inclusion

of two colour plates of house gecko's to emphasize this (one, pl. 60b, is reproduced here to show that they and pharao ants both have a taste for sugar). The idea that ecology begins at home is not new as I have come across an article by F.X. Williams (Philip. J. Sc. 35, 1928, 53-115), where there is also a reference to a book by Stebbing (Insect intruders in Indian homes, no date). There seems to be a great scope here for schools and colleges.

There is quite a discrepancy between the reproduction of the 43 colour plates. In my copy especially pl. 54 and pl. 55 were appalling and in striking contrast to pl. 43, an Eucalyptus deglupta trunk. The selection of some plates, e.g. pl. 55a of a coconut plantation, may be questioned. There are some plates of bird paintings by S.V. Nash. I particularly liked pl. 31, Pittas, and pl. 39b, Kingfishers. On the last page we are told where to draw the line but I am left with a wish to avoid reality and be able to do a 'Mary Poppins' and jump into pl. 28, 'Morning in Lore Lindu National Park', and climb upwards towards the summit vegetation such as illustrated in pl. 46b. I hope I would not have to use the highly reduced maps of Chapter 1 (Conservation areas) to get there, though.

If you can afford to buy a single book on tropical ecology, only, this is it! It summarizes a vast amount of general literature and research. I certainly read the zoological oriented sections with pleasure and would have had to have gone to a great deal of effort to have obtained a fraction of the basic references. Hence I feel sure that Dr. Whitten's team has more than achieved its aim to provide a background information for the book's target readers. Indeed, the productions Dr. Whitten seems to have created a new ecological niche in the bookshelves filling the gap between old naturalist's publications, long out of print, and modern detailed research papers in scattered journals. Ecological exploitation of a new niche can have surprising results. Let us hope that this explodes beyond the shelf and helps to stimulate a degree of environmental awareness under teachers and students in the tropics, so that they will draw a different line than their elders.

All in all this book is a gem reaching out to a wide range of users, particularly as there is, I assume, also an Indonesian edition. One can only hope that they have printed enough copies. —— C.E. Ridsdale.

N.B. The second, corrected edition of The ecology of Sumatra was expected to appear in November 1987 (See p. 193 for review).