IX. REVIEWS

BAREFOOT,A.C. & F.W.HANKINS, Identification of Modern and Tertiary Woods, vii + 189 p., numerous illus. (1982, Oxford University Press, England). Cloth. £ 47.50.

This book is designed as a practical guide for the identification of fossil and extant woods with the aid of a marginally perforated card key, based on the ones devised by Clarke and perfected in the well-known Hardwood and Softwood keys published by the Princes Risborough Laboratory in 1961 and 1948 (1966) respectively. Using the cards originally prepared for Metcalfe and Chalk's Anatomy of the Dicotyledons, the Princes Risborough cards, and numerous additions to these sets, the authors have gained considerable experience with this time-honoured identification method. A microfiche of these cards can be purchased separately from the Botanical Museum of Harvard University.

Besides general chapters and appendices on for instance wood structure and variability, and how to prepare wood for microscopic examination and how to use the key cards, the main body of the book consists of a richly illustrated catalogue of diagnostic characters to be used in wood identification. It is in this section that the book shows most of its weaknesses. This is because of numerous mistakes in the choice of illustrations or misleading legends to the latter. For instance: fig. 3c (p. 24) is said to show abrupt latewood in Larix laricina, but the earlywood-latewood transition zone is not included in the photomicrograph; on p. 68 the vessels of Nyssa are said to be predominantly in multiples of four or more but the photograph illustrates vessel pairs alternating with fibres (i.e., vessel multiples in a distinct radial pattern; the latter feature is illustrated on p. 69 with examples showing no sign of such a pattern at all!); the tangential vessel arrangement of fig. 4b, p. 70 is in fact oblique; Myrica is incorrectly credited with ephedroid perforations on p. 73; Sphenostemon pictured with the most beautiful example of scalariform intervessel pits is said to show spiral thickenings instead (p. 74); long and slender pit canals are mistaken for plasmodesmata on p. 83; essentially similar fibre-tracheids in Eucryphia are classified as belonging to two fibre types (p. 87); fibres of Sleumerodendron are mistaken for vascular tracheids and crystals in the Dicotyledons are illustrated with an example from Gnetum (p. 124). The quality of many of the photomicrographs leaves much to be desired.

The main merit of this book lies in the discussion of several features which have so far been underexploited for diagnostic purposes, and in paving the way to accessibility of the Oxford cards. Use of this book by uninitiated students of wood identification may be hazardous, but the experienced anatomist may find something of use in its contents. The price is far too high. — P. Baas.

BEADLE,N.C.W., The vegetation of Australia, xxviii + 690 p., 416 fig., 91 tables (1981, Gustav Fischer Verlag, Stuttgart-New York). 8°. Cloth. DM 189.

This massive book, heavy through glossy paper, is a mine of informa-

tion, the first of its kind covering the flora of the whole immense surface of Australia. The actual vegetation accounts are preceded by four general chapters, concise, but to the point, on the environment, including geology, geomorphology, climate and soils, the floristic composition, the origins of the flora, the development of the modern flora, and the flora of the arid zone and its origin, together covering 121 pages, illustrated, as all following chapters by instructive tables, maps, and photographs. Chapter 6 deals with the clarification of the classification of the c. 80 communities (alliances and suballiances) distinguished on an overall map of the continent, and their integration with past and present climatic and edaphic conditions. The communities are largely based on dominants, size and degree of openness on a floristic basis. Obviously the author must be personally acquainted with the types, as almost all of the c. 400 excellent photographs were made by himself. The amount of field and identification work which he must have accomplished is simply unimaginable and must have cost a life-time.

Chapters 7-22 are dealing with the main structural units, the rainforest (60 pages), 8-15 Eucalyptus (200 p.), 16 heaths (45 p.), 17 alpine communities (120 p.), 18 Acacia and Casuarina communities of the arid and semi-arid zones (30 p.), 19 halophytic shrublands (15 p.), 20 natural grassland and savannahs (40 p.), 21 inland watercourses and flood-plains (20 p.), 22 swamps (freshwater and mangroves) (70 p.). All these accounts are neatly subdivided and exposed in an excellent way. The text is interspersed with instructive observations and lively comments. Great attention is given to discriminate primary and secondary vegetation types, a difficult subject in Australia because of grazing and fire, recent and ancient, natural and man-made. The instructive detail in which the communities are discussed must be of unique value, especially to Australian botanists, but also practically to agriculturists and cattle industry. A full contents and excellent index facilitates consultation. Indeed, a tremendous effort to cover, describe and explain the vegetation of a huge continent, a must for every botanist interested in vegetation, and an excellent guide for the botanist tempted to ramble in the wilds of this unique continent. Our sincere admiration and congratulation to the brave, learned author. — C.G.G.J. van Steenis.

BEEK,C.G.G.van, Een geomorfologische bodemkundige studie van het Gunung Leuser Nationale Park / Noord Sumatra, Indonesië, 187 p., illus. + 13 phot. + 2 maps (1982, thesis Utrecht). Mimeo, with printed maps. For copies apply to Geografie, Box 80 115, Utrecht, The Netherlands.

Geomorphology and soils of the G. Leuser N.P. are described, in Dutch. The map, 1 : 300,000, in two sheets, gives altitudinal zones, with contours at every 250 m, roads and main localities, and boundaries of the Park (extension proposed in the NW.). Also a block diagram is given, but I was unable to correlate all the features. Soil types are related mainly to altitude. The open 'blangs' are edaphic in origin; growth rings of Leptospermum were analyzed. Pleistocene glaciation affected Mt. Kemiri at 3100 m, perhaps down to 2850 m. There is also a G. Loser; see p. 40. Summaries in Dutch, English, Indonesian on p. 135-140. — M.J.

BRAMWELL,D. (ed.), Plants and Islands, x + 459 p., maps + illus. (1979, Academic Press, London). Hardcover. £ 24.

This book contains the revised versions of a series of talks held during the symposium 'Plants and Islands' in Las Palmas de Gran Canaria in April 1977. This symposium was organized to celebrate the 25th anniversary of the well-known botanical garden 'Viera y Clavijo'.

Islands have always enjoyed the attention of biologists interested in problems of colonization, evolution and attendant phenomena. Aim of the symposium was to review the present state of knowledge of insular floras throughout the world. To emphasize the need of further taxonomic and biologic research and to discuss measures to be taken to ensure the survival of so many endangered insular biota. A rather ambitious aim that nobody will expect to be reached. Yet a wide range of islands and subjects is covered. Approach and treatment of the subjects is diverse so that lack of uniformity can not be avoided.

The introduction by Bramwell is followed by 22 papers divided over the following four sections: 1) Origins, with papers by Sunding on origin of the Macaronesian flora, Green on the phytogeography of the New Hebrides, Lord Howe and Norfolk, Tryon on the Antillean fern flora, Moore on temperate (southern) island floras, Greuter on the evolution of the flora of the Aegean archipelago, and Renvoize on Indian Ocean island floras. 2) Endemism and Evolution, with papers by Cardona and Contandriopoulos on the western Mediterranean islands, Humphries on Macaronesia, Galloway on the New Zealand lichen flora, and Porter on Galapagos vascular plants. 3) Special Topics, with papers by Mabberley on pachycaul plants and islands, Aldridge on Sonchus in Macaronesia, Ehrendorfer on reproductive biology in island plants, Guédes on Magnolioid island plants and Angiosperm evolution, Borgen on karyology of the Canarian flora, and Gibby on evolution of Macaronesian Dryopteris. 4) Conservation, with papers by Melville on endangered island floras, Synge on botanic gardens and island plants conservation, Van der Werff on conservation in the Galapagos, Rauh on conservation in Madagascar, Lucas on the threatened plants committee of IUCN and island plants, and Heywood on the future of island floras. Each of the papers is preceded by a summary in Spanish. There is an index to subjects and another to organisms.

Botanists concerned with the Flora Malesiana area will find that few papers have direct relevance to Malesia. Therefore it is a bit surprising that a photograph of Canarium hirsutum, a species wide-spread in Malesia, was chosen as cover illustration and not one of the many spectacular insular endemics mentioned in the text. The islands in the Pacific Ocean are slightly underrepresented compared to the other Oceans. For this part of the blame goes to the reviewer, who was invited but failed to oblige. Still the book provides interesting reading to many and certainly deserves a wide circulation.

Various concepts traditionally associated with island floras are discussed, such as disharmony, adaptive radiation, long-distance dispersal, selfcompatibility and the like. Caution to use these concepts without comparison to the situation in continental habitats is needed and indeed is shown by several authors. Greuter warns against the influence of

zoologists on thoughts on evolution by botanists (p. 102). Caution is also found in Mabberley's paper on pachycaul distribution, although he leaves us in the dark about the 'ecological effect' of pachycauls (p.263). Guédes raises his finger against those who believe that the possession of primitive traits in taxa automatically implies that they are phylogenetically old. His return to the idea of a northern hemisphere origin of Angiosperms, though interesting, will not meet with general approval.

The condition of island floras varies from 'almost virgin', Henderson Island in the Pacific (Melville, p. 375), to downright appalling, e.g. Madagascar (Rauh, p. 412). In general the outlook is not a bright one. "By just simply flicking through the I.U.C.N. Red Data Books we can see that a disproportionately large number of the world's endangered species are insular endemics" (Bramwell, p. 1). Throughout the book we come across the outcry that far too little is yet known about insular floras (and I might add of continental floras as well).

The publisher is to be complimented on the quality of printing and binding. There are few errors, some of the striking ones being: arborescent (p. 49), index of insularity of Guadelupe is 0.7, not 0.4 (p. 57), the number of species on the Cap Verde Islands is 650, not 65 (p. 173). I must draw attention to some 'eyebrow raisers': Renvoize should certainly have told us more about the "50 species, all viable ... arriving at Aldabra" (p. 126); Heywood's statement (p. 437) that of the original 50,000 species on Hawaii only 20,000 remain of which only 3,000 are adequately described (figures borrowed from Degener) sounds absurd if we learn from Rauh that the very rich flora of Madagascar contains 'only' 10,000 species. More than anything else this illustrates the difference in species concepts. Another howler is Rauh's assertion (p. 409) that the plant communities on Madagascar were undisturbed before the arrival of Man. — M.M.J. van Balgooy.

CARPENTER,R. (ed.), Assessing tropical forest lands: their suitability for sustainable uses, xiv + 337 p. (1981, Tycooly, 6 Crofton Terrace, Dun Laoghaire, Co., Dublin, Ireland). Hardback US$ 55, paperback $ 38.75, developing country price $ 29.

Proceedings of a conference in Honolulu, 1979. This book, well executed, consists of two parts. The first part, covering p. 3-55, is an extensive background paper, on the land use planning process, the procedure of land classification, with topography, climate, soil, vegetation and geology briefly considered and emphasis on mapping; then come suitability assessment, specific tropical aspects, and ideas for further cooperation. A long list of references is given. It seems a useful introduction, with practical hints, like the suggestion to locate the extreme surface patterns, such as mountain tops vs. valley bottoms, streams and streambed vs. rock outcrop areas, swamps and bogs, dunes, steep cliffs and other extreme sites. These are at the opposite ends of environmental gradients. Then traverse the area from one extreme to another, along the presumed gradients (p. 26). I think that irregularities of climate are underrated, subject of an eloquent warning by Tosi (IUCN Publ. n.s. 31: 55. 1975). That soil types can be read from air photographs (p. 24) seems

overoptimistic. This introduction, coherent and well-readable if sketchy in places, has separately been published, prepared by A. H. Q u r e s h i e.a., under the same title, 69 p. (1980, East-West Center, Honolulu, Hawaii 96848, U.S.A.).

The second part consists of contributions to the symposium. Those who take the title at face value will be surprised to find reports on Japan, Canada, New Zealand. From the tropics outside Malesia one account described a quick assessment of 1570 sq.km in Venezuela, another of 4000 sq.km in Mexico. As for our region, rather extensive coverage is given to Malaya, Papua New Guinea, and the Philippines. The papers on Malaya are disappointing, not taking into account the forest classification by Wyatt-Smith, nor the FAO report of 1978. The paper on Papua New Guinea, by John D a v i d s o n, builds firmly on existing knowledge, and handles many data in a practical way. The Gogol chipwood project is discussed as a main example. The two papers on the Philippines reflect the forestry problems there, and give detailed tables of soil cover (although there seems to be surprisingly little open land). Among the 38% of forested land area, only half (19.84%) is classified as closed forest. There are brief papers on Australia, Ceylon, India, Indonesia, Micronesia, Pakistan, and Thailand. — M.J.

COCKBURN,P.F., Trees of Sabah. Both volumes published as Sabah Forest Records number 10, by Forest Research Centre, Box 1407, Sandakan, Sabah, Malaysia. Volume 1 (1976) xv + 261 p., 54 pl., 16 phot. Volume 2 (1980) xiii + 124 p., 32 pl., 4 phot.

This book deals with the non-dipterocarp families in arbitrary but alphabetical order, 22 in each volume. Descriptions are given where considered necessary; many less important taxa are merely named in the keys. Full treatment received 133 sp. in 72 genera in vol. 1, 44 sp. in 47 genera in vol. 2. The larger families treated are Apocyn., Bombac., Burserac., Celastrac., Combret., Fagac., Flacourt., Legum., Logan., Stercul. in vol. 1, Alangiac. (with some forms distinguished and mapped), Casuar., Gymnosp., Elaeoc., Lecyth., Magnol., Rosac. in vol. 2. To the list of families in vol. 1: 4-9, add 8 named in vol. 2: xiii.

Reference has usually been made to precursory texts, seldom to Flora Malesiana. The text is widely spaced, not free of inaccuracies. The only Canarium fruit depicted is a dried one. But in general, the illustrations, by Yap Pak Hau, are remarkably good, and documented with collector's number. They have a value in their own right.

The volumes were in press for a long time. The author has stopped work on the subject. Since the plan was to deal with c. 260 genera, the job is now less than half completed. — M.J.

DASSANAYAKE,M.D. (ed.), A revised handbook to the flora of Ceylon, vol. 3, v + 499 p., illus. (1981, Amerind; New Delhi).

Please look up the review of volumes 1 & 2 (*pages 3601-3603*) for further particulars. This volume deals with 304 sp. in 102 genera in families Ebenaceae (add Diospyros okkesii Kostermans, Acta Bot. Neerl. 31: 125. 1982), Gentianaceae, Gesneriaceae (ed. Perad. 1: 87-106. 1973),

Labiatae, Lecythidaceae, Martyniaceae (ed. Perad. 1: 107-109. 1973), Menyanthaceae, Moraceae (ed. Perad. 1: 111-165, 1977), Pandanaceae, Pedaliaceae (ed. Perad. 1: 82-86. 1973), Rosaceae, Sabiaceae, Scrophulariaceae, Sonneratiaceae, Symplocaceae, Umbelliferae. There is no index. Novelties occur on p. 45, 60, 61, 62, 129, 160, 184, 344, 368, 378, 476.

DUKE,J.A. (ed. & major contributor), Handbook of legumes of world economic importance, xi + 345 p. (1981, Plenum Press, New York and London). 28 x 22 cm. Cloth c. US$ 60 (incl. postage).

No less than 65 contributors have treated 146 species of Leguminosae in alphabetical sequence. The book is mainly written for agronomists, but taxonomists with a broader interest will find many, not to say numerous, interesting facts. The information is conveniently arranged in the captions Name (+ common names, important synonyms, no references); Uses; Folk medicine; Chemistry (usually very elaborate); Description (concise taxonomical description); Germplasm (a fashionable term for infraspecific variation, associated with available cultivated races and chromosome numbers); Distribution; Ecology; Cultivation; Yields and Economics; Biotic factors (pollination, fungal diseases, why separated from Ecology?); and (agronomic, no taxonomic) References.

The title is slightly overdone, as timber trees are omitted (I looked in vain for Dalbergia spp., Koompassia, Intsia, Afzelia etc.) which is not explained in the Introduction. Has the editor anticipated their lost economic importance with the threatening extinction?

The information given is condensed, restricted to compiled observations and facts. Every treated species is depicted, usually the plates are copied from old publications free from copyright, and the quality varies from bad (e.g. Derris malaccensis, Calopogonium mucunoides) via reasonable (many) to good (most). The nomenclature is moderately conservative, which is always a wise choice. The most important synonyms are given, but recent changes (e.g. Glycine wightii to Neonotonia, and Voandzeia subterranea to Vigna) are not mentioned, even though this information was available in 1978 (Legume Conference, Kew).

The appendix-part of the book contains 7 extensive tables: 1 & 2 with listed toxins; 3. Ecosystematic Attributes (= tolerances, precipitation, temperature and pH of soil); 4. (Mainly coded, the) Tolerances (biotic and abiotic), Yield, Centres of diversity with main ecological factors; 5. Recommended inoculants; 6. Nutrition analysis; 7. Aminoacids compositions, followed by the General References, in which Heyne, Nuttige Planten is missing, which emphasises again the necessity to translate this rich source of information on used plants into an attainable language, which is English.

In conclusion, the book is completely filled with well-presented useful information, and I am sure it will find its way to a broad spectrum of readers. — R. Geesink.

EDIE,Harry, Ferns of Hong Kong, 285 p., 150 fig. + 15 phot. (1978, Hong Kong University Press, 94 Bonham Road, Hong Kong). HK$ 40.

According to a widespread misconception Hong Kong is at present nothing

but an enormous assembly of skyscrapers. This is quite untrue; there is even a beautiful and fairly large forest reserve. But one is not compelled to visit this to see a considerable number of interesting native ferns, a portion of the rich South-East Chinese fern flora, though, of course, high-mountain elements are lacking; the loftiest peak in the New Territories barely reaches 1000 m.

This attractively produced book keys out and describes almost 200 species of ferns and illustrates many of them, some on good line drawings, others on clear and well-reproduced photographs. The taxonomy and, accordingly, the nomenclature follow modern concepts of fern classification without indulging in indue splitting. A checklist includes all relevant synonyms; Chinese names are listed at the end. The introduction deals with all points important to the non-initiated and gives valuable general information, particularly on ecology. A glossary is appended at the end. Regrettably, the 'Fern Allies' are excluded. Printing errors and other mistakes are very few. Arachniodes is consistently misspelled 'Arachnoides'. The key to the species of Asplenium relies too heavily on characters of size and degree of dissection; other, more dependable characters would have been available. But as a whole the keys work very well indeed, as noted by the reviewer when he identified his own collections from the area, and the descriptions are succinct yet precise. At a price of c. US$ 13 the book is decidedly cheap. — K.U. Kramer.

EVERAARTS,A.P., Weeds of vegetables in the highlands of Java, 121 p., 88 fig. (1981, Horticultural Research Institute, Pasarminggu, Jakarta, Indonesia). Paper; probably inexpensive. Applications for a copy can be sent to the Editor, who has a limited supply.

On *page 3393* we reported on the project. It was executed by a young horticulturist with an interest in editing and phytography. Moehamad T o h a lent to the booklet his consummate pen, and thus the vulgarity of the weeds was overcome by the artistry of botanist and draftsman alike. Habit is accompanied by abundant detail; they strive for prominence but have been arranged in the available space with utmost balance.

The 'highlands' occur above 1000 m. Author selected his weeds on 29 sites all over Java; see the map on p. 8 (Too small and dark) photographs of some sites are given. The introduction deals with important crops, the role of weeds, inventory of the weed flora, factors influencing composition, origin (of the 35 species, 8 are European, 14 tropical American, not much more is certain), propagation and dispersal, and control. The next chapter is devoted to presentation and documentation. Galinsoga quadriradiata (Compositae) and Paspalum paspalodes (Gramineae) are new for Java; see p. 17.

Each of the 35 species has been alotted a double page. On the left is the drawing; the text on the right has been divided into discreet portions: family—botanical name—vernacular name(s)—description (in 7—10 lines)—seedling—distribution in Java—ecology—propagation—importance—uses—notes—pests and diseases. After this part, 26 seedlings have been drawn, then follow photographs of the seeds, with a 2—5 line description. Glossary, 92-item reference list, and index have been added.

Non-functional data and unnecessary words have been weeded out. Within his chosen frame, which bears the mark of the Backer-van Steenis tradition, Everaarts pondered every sentence, and by pruning and polishing he has acquired a craftsmanship in expression of the kind that is a lifelong benefit. Here is the note on Drymaria villosa. "A native of tropical America, introduced before 1905. The water-droplets which especially in the early morning hours may be observed on the leaves, and from which the Sundanese name, meaning 'dew herb' is derived, are no dew-droplets but are secreted by the plant itself". In the attentive eye of the beholder, the work shines like a jukut ibun. — M.J.

FLENLEY,J.R. & K.RICHARDS (eds.), The Krakatoa Centenary Expedition/Final Report, v + 196 p., illus. was published in University of Hull, Department of Geography Miscellaneous Series no. 25 (1982), in cyclostyled form (University of Hull, HU6 7RX, England). Price c. £ 2. Brief mention was made on *page 3385*. It now appears that the collections have all been numbered with the prefix KCE; a species list is given on p. 165-173.

The botanical history is described from all earlier publications. A species list is given for Rakata since 1883, differentiated in time, with annotations, and one for Anak K. since 1932. The poor vegetation of the latter is described from several plots. A piece of wood of Macaranga tanarius, a secondary species, was dated at 1½ century before the eruption.

Data of various standing are subject to impressive mathematical exercises, but discussions lack concern for the biologically important differences between dispersal by wind and by animals, even on p. 79 with regard to Dysoxylum caulostachyum. On p. 7, a relation with primary forest is suggested that is fictitious for lack of an adjacent seed source. Some standard works are missing, like the masterful monograph of the eruption by R.D.M. Verbeek (1885), and M. Fleischer's famous work on the mosses of Java (see Fl. Males. i 4: cxxv) which could have helped in the identification. — M.J.

GOLDSTEIN,Wendy (ed.), Rain forests, 107 p., many illus. (1977, Parks and Wildlife Service, ADC Bldg., 189-193 Kent Street, Sydney, NSW 2000, Australia). Paper. Au$ 6 + postage overseas.

Australia is the subject. With many names and facts, fine photographs in colour and b/w, clear diagrams and maps, it comes in the advanced-popular class. The 19 papers deal with history of exploration and (mis)-management; the forest as an ecosystem, with cycles of minerals and the role of mycorrhiza; the c. 20 types of rain forest according to Webb & Tracey (see there in the Bibliography); regeneration; animals: molluscs, arthropods, reptiles and frogs, birds (with a table of species number as related to forest types), pigeon, parrots, mammals; potential for agriculture and its limitations; rain forest localities. In itself it seems to be an expert selection of biologically important features. Missing are chapters on evolution, plant geography, migration (dealt with, however, by Webb & Tracey). Neither have profile diagrams been given; these can be

found in R.H.Groves (ed.), Australian vegetation (1981) p. 80, 81, 83. With these gaps filled (as was announced to me) a forthcoming second edition will make an almost classical introduction. — M.J.

GROVES,R.H. (ed.), Australian vegetation, 449 p., many phot., fig., maps & graphs (1981, Cambridge University Press, England). 8°. Cloth £ 27.50.

This excellent, most informative work is an invaluable complement to Beadle's book 'The vegetation of Australia', reviewed on *pages 3785-3786*. It consists of 19 essays by different authors, 3 of which represent Introductory Chapters, 11 are devoted to Major Vegetation Types, 4 to the Vegetation of Extreme Habitats, and the last one being on Conservation. Each chapter is provided with a bibliography. Naturally there is some overlapping, as the main features of Australian vegetation: the essential role of fire in past and present, the regeneration and succession, coupled with soil types and nutrient cycling, reappear in almost all essays. But each chapter is an entity pleasant to read, a compromis to conciseness and still most informative, the whole book giving a lively impression of the many interesting features of the fascinatingly varied vegetation of this huge continent. In the following account of the chapters I have for brevity refrained to mention the many author's names; they are all specialists in their field.

The first Introductory essay deals with the two floristic subdivisions of Australian vegetation, the Eucalyptus subkingdom and the Central Australian subkingdom (former Eremaea), the first being subdivided into 5 regions, the latter into 2 (desert and mulga), each region having again some provinces. The second essay is an account of the vegetation history (stressed is the potent effect of fire activity, from the geological past). The third deals with alien plants (estimated at 10% of a total of vascular plants of 15,000-20,000).

The essays on the Major Vegetation Types deal with the ecology of the Rain-forest of North Australia, their system, community types, and dynamism; the Southern Closed Forest, mainly of Nothofagus; the Tall Open Forest, fire, regeneration and succession of East Australian eucalypts, a magnificent treatment; Eucalyptus in South Australia, Woodlands, including savannahs and their many types; Acacia Open Forests, Woodlands, and Shrublands, their various vegetation types including the mulga; Eucalyptus Scrubs and Shrublands, including the mallee; Heathlands, in which species of 591 genera are involved, again with fire as an integral factor for regeneration, many species of Myrt., Prot. and Casuar. having bradysporous fruits; Chenopod Shrublands, which occupy immense surfaces in the southern half of the continent; and finally the Natural Grasslands with the problems of their dynamics, grazing and succession.

The 5 essays of the third division refer to the Vegetation of Extreme Habitats, to which are reckoned: Mangroves & Salt-Marshes; the Freshwater Wetlands, including as well swamp forests as swamp heaths and sedgelands; the Alpine & Subalpine vegetation, mostly in Eastern Australia; and finally the Desert Vegetation.

The book is concluded by an essay on Conservation of Vegetation Types,

the existing reserves, their motivation, an indication of a national system of ecological reserves, and notes on their management.

Consultation of the work is facilitated by several indexes (authors, plant names, and subjects).

A highly recommendable work, a model how the ecology of such a vast area can be covered in a fairly compact and instructive, but still very readable account, with the production of which the editor and authors are congratulated. — C.G.G.J. van Steenis.

The International Tree Crops Journal made its appearance in 1980. It is announced as the first to deal with specifically (more than Unasylva does) the development of new tree crops, agroforestry, social forestry, and reforestation. Editor Alan G r a i n g e r explains it well in his introductory paper on p. 3-14. Coverage includes the dry (sub)tropics as well. For the Indo-Malesian-Pacific region we noted papers on India: forest policy (1: 61-67), impact of social forestry (1: 69-92), Pterocarpus santalinus (1: 143-146), obstacles to tree planting (1: 147-161), Hawaii: Prosopis (1: 125-130), W. Malesia: economic plants (1: 171-181). Summaries are given in English, French, Spanish. Trees in the news mention tidbits, Book reviews are thorough, Conferences are announced. Production is simple but professional, with good printing and paper, but the title should be on the spine. It is a valuable journal to those who want to see the world's forests through the trees.

A quarterly of 80-90 pages per issue, subscription costs $ 55 in the U.S.A., £ 25 elsewhere, but half-price introductory rates for private persons can be applied for. Contact Academic Publishers, Box 97, Berkhampstead HP4 2PX, England. Editor's address is Tree Crops Institute, Braintree CM7 6RN, England. — M.J.

LIN,TSAN-PIAO, Native orchids of Taiwan, 2 vol. (1976, 1977, Ji-Chyi Wang, 236 Hsin Rong Road, Chiayi, Taiwan). Price not indicated.

Four volumes were projected, 2 were briefly seen. Species are treated alphabetically, with description bilingual in English and Chinese, flowering time and distribution, with some specimens cited. To each species a clear full-page drawing is given of habit and details. Many colour photographs are inserted, several of them very informative; photographed dissections of flowers are also given. Apparently three Herbaria have been consulted: TAI, i.e. Botany, Taiwan University; NTUF, i.e. Forestry, same university, and TAIF, i.e. Taiwan Forestry Research Institute, Taipei, where the author (born 1948) is working.

Volume 1, with 268 p., 160 col. phot., 59 phot. of dissections, deals with c. 92 species; volume 2, with 355 p., 170 col. phot., 55 phot. of dissections, deals with c. 100 species, giving some more information per species, and some additions and corrections to volume 1.

Some novelties occur. Many Malesian genera and some species are given. Execution is good, with lists of references, and indexes. We hope for the other two volumes. — M.J.

MATTHEW,K.M., Materials for a Flora of the Tamilnadu Carnatic, x + 469 p. + 3 maps + phot. (1981, St. Joseph's College, Tiruchirapalli, 620 002 India). Cloth, Rs. 100, £ 15, US$ 40.

Covers less than a quarter of Madras State, between Ponnaiyar and Cauvery Rivers, E. of the Western Ghats. The physical features are briefly described, explorations tabulated in 27 p., one example of the enormous detail in administrative matters. Collecting is described, with sites and accessibility; author comes across as an inspiring leader. Some ethnobotanical notes are given for this tribal region. Bibliography lists 86 items. Over half the book (p. 135-415) is occupied by collections cited under 2260 species. An alphabetical index to specimens would have helped quick identification; the present list is inaccessible unless one has the correct name already. Pages 419-457 give an account of the work in this church-like Herbarium (photo opposite p. 420), with catalogue of the library. Also given is a description of the Anglade Museum of Natural History in Shembaganur, which has a Herbarium of 1409 sheets. There is a field station in the Pulney Hills at 2000 m. Plans exist to develop the museum into a center for conservation and environmental education. Apparently many pockets of forest have been left; on p. 30-34 a list is given of 275 reserved forests, with a total area of over 4541 sq.km. A second volume, announced, will give descriptions, a third one, plates of the species. We hope that hereafter, Dr. Matthew will revert to monographic work. — M.J.

MEIJDEN,R.VAN DER, Systematics and evolution of Xanthophyllum (Polygalaceae), 159 p., 22 fig. (1982, Brill, Box 9000, Leiden, The Netherlands). Paper, Dfl. 60. Leiden Botanical Series number 7.

Monograph. The area extends from S.India/Ceylon and SE. Asia to NE. Australia and the Solomons, or the other way round if, as author thinks, the genus is of Australian origin, with west-Malesia as a secondary centre. The former 110 species have been reduced about half; since many novelties were added, there are now 95 species. As localities of the types have not been given, new species cannot be entered in e.g. the Kew Index without verification. An index to specimens will probably be issued as work on the whole family for the Flora Malesiana proceeds; localities could there be added.

The family as a whole is placed near Malpighiaceae (although I doubt if there "the fruit is very often a capsule", p. 21) — Vochysiaceae — Trigoniaceae. Xanthophyllum is thought to belong to a derived tribe of the Polygalaceae, not to a family on its own. Within the genus, 8 entities are distinguished in 7 subgenera (key on p. 62). Many aspects are discussed in the introduction. Xanthophyllum occurs mostly in the lowland rain forests. Not one species crosses Wallace's line; more subgenera occur E than W of it. Pollination in bud seems common. Endosperm is consumed as the embryo develops. Phylogenetic reasoning largely bypasses the fruit for lack of data. Work on pollen was not included but may follow. Hennigian cladistics applied as a method to single out evolutionary lines proved rather unproductive in this case. Nine plates by Ruth van Crevel add to the fine execution. — M.J.

MESSER,J. (ed.), Rainforest Habitat, 57 p., many illus. (1981, Australian Conservation Foundation, 672B Glenferrie Road, Hawthorn, Vic. 3122, Australia). Paper, A$ 4.50 post free.

A collection of 17 popular articles from Habitat Australia, in dense print, with fine colour pictures. On p. 55 a detailed map depicts the forests of N. Queensland with their status. Two historical sketches describe the early rain forest exploitation, with their false expectations and enormous waste. The Daintree-Bloomfield region with Idiospermum is illustrated as a symbol of the beauty and threat. Eucalyptus resinifera, producing sugary sap, feeds birds and possums. More animal life is described in a nice overview article. Values are set forth in two papers, with points of conflict tabulated on p. 20. Several papers deal with conservation action, the last one proposing a network of reserves. A wide public will read this finely executed book with pleasure; for further reading take up Goldstein. — M.J.

SCHWEINFURTH,U. e.a. (eds.), Forschungen auf Ceylon II, 216 p. (1981, Steiner, Box 5529, D-6200 Wiesbaden, W. Germany). Paper.

A collection of papers for geographers, in German (with English summary at the end of each), and hence perhaps of limited circulation, but valuable enough to mention here. Volume I (contents opp. p. 216) dates of 1971. Work emanated from Südasieninstitut, Box 103066, Heidelberg, West Germany.

After an informative introduction, U. S c h w e i n f u r t h on p. 15-34, 6 fig. discusses the area NE of Adam's Peak (now Pidurutalagala), to the Kunckles and beyond, where the climate is very irregular, a problem region infested with malaria, subject of a British report of 1889-1890. E. S c h m i d t - K r a e p e l i n, on p. 35-83, 20 fig., in a paper on run-off, discusses extensively the frontier between the dry and the humid part. Sketch maps illustrate the 'hydrometeorology' in different parts of the year. Data cover half a century. H. J. v o n L e n g e r k e, on p. 85-115, 10 fig., described a destructive typhoon in 1978, with account of the damage, compared with previous cases. On p. 117-141, 11 fig., H. S c h w e i n f u r t h - M a r b y described and mapped activities of tea small holders, whose area is increasing, a sign of change in society. T. G l ä s e r, on p. 143-181, 22 fig., described traditional fisheries under the influence of the monsoon. Winds are too strong for big boats, and catches remain modest. H. B e c h e r t, on p. 183-192, discusses shape and place of Buddhist temples. On p. 193-216 an essay review summarizes autochthonous literature, scarce outside Ceylon, on historical subjects. Production is fine. — M.J.

SEEBER,G., H.-J.WEIDELT & V.S.BANAAG, Dendrological characters of important forest trees from eastern Mindanao, 440 p., 253 fig., 48 phot. (1979, GTZ, Eschborn). Mimeo, paperback, DM 22.60 plus postage. Order from TZ-Verlag, Bruchwiesenweg 19, D-6101 Rossdorf 1, West Germany.

Introduction on characters, with instruction to make punchcards. Descriptions, often partial, are given for c. 237 sp., with leaves drawn to show venation and size. Apprehension expressed on p. 4-5 is under-

standable: see what I found in 50 pages. Acer niveum should be called A. laurinum (Fl. Males. i 4: 592. 1954). Parinari comes under Chrysobalanaceae or Rosaceae, not Amygdalaceae. Pygeum is a synonym of Prunus (Blumea 13: 25. 1965). Dracontomelum edule comes under D. dao (Fl. Males. i 8: 470. 1978). Mangifera philippinensis comes under M. monandra (ibid. 432). Canarium multipinnatum comes under C. hirtum (Fl. Males. i 5: 287. 1956), so does C. racemosum. Collections were made in the form of fallen leaves. Apparently the book was prepared without any idea of the present state of taxonomy. A pity of the money that went into it. — M.J.

SHAW,H.K.AIRY, The Euphorbiaceae of Sumatra. Kew Bull. 36 (1981) 239-374, 12 fig., map. Copies obtainable from Royal Botanic Gardens, Richmond, Surrey TW9 3AB, England, £ 7.50 if collected, £ 8.50 if mailed.

Similar in scope like the parts reviewed on *pages 3616-3617*: keys are given, the sequence is alphabetical, genera are described, sometimes with discussion, species are listed with references, range (see the arbitrary subdivision of the island on p. 357) and notes. Quite some varieties and new synonyms are given. The number of genera is 60, with Loerzingia as the only remaining endemic, that of species is 273, with 37 or 13.5% endemics, or if the doubtful endemics are included, 48 or 17.6%. Also treated here are Antidesma (Stilaginaceae) with 17 sp. of which 1 endemic; Galearia and Microdesmis (Pandaceae) with 4 and 1 sp., none endemic.

Most novelties went into precursors, a few are yet announced on p. 374; of these, Cleistanthus tenerifolius will be described in a later issue. — M.J.

SYNGE,H. (ed.), The biological aspects of rare plant conservation, xxviii + 558 p., illus. (1981, John Wiley, Baffins Lane, Chichester PO19 1UD, England). Cloth, £ 30, US$ 84.

The editor is serving on the IUCN Threatened Plants Committee at Kew; on *pages 3419-3421* we overviewed its activities. Its task appears greater and more complex with every conference it organizes, but its grasp is also growing. This conference, held in July 1980 at Cambridge, was the first to venture outside the circuit of botanical gardens. Presented were 42 papers in 6 sections: documentation, tropical forests, rarity, autecology, (re)introductions, and protected areas. Synge himself wrote a nice introduction on the worldwide and staggering problems of plant protection, in the light of the World Conservation Strategy and the Global 2000 Report, both at the time hot from the press.

Some countries are rich in money and poor in species; in rain forest regions it is the other way; most participants came from the former, looking at things accordingly. Relevant to our region are the following papers. S. K. J a i n & A. R. K. S a s t r y, Techniques and constraints in survey and conservation of threatened plants and habitats in India, p. 59-66: practical notes. R. B. G o o d & P. S. L a v a r a c k, The status of Australian plants at risk, p. 81-91, 2 fig.: distribution and conservation categories, with numbers, sketch map of reserves, lines of action. N. M y e r s, Conservation needs and opportunities in tropical moist forests, p. 141-154: values, depletion patterns, areas in danger,

refugia, Amazonia, some world data. Author's plea for multiple use of conservation areas is dangerous for the many small and scattered populations, it will lead to an unobtrusive but real process of species extinction. P. S. A s h t o n, Techniques for the identification and conservation of threatened plant species in tropical forests, p. 155-164: the patchiness of our knowledge necessitates approximation. Limited fruit dispersal and distribution are major criteria; the concept of rarity defies precision. A formerly proposed minimum area of 2000 ha seems far too small. Author's belief in ex-situ conservation to me seems untenable as there are far too many species, no provision is made for pollinators and seed dispersers, and the human effort involved is unreliable over long spans of time. J. G. T r a c e y, Australia's rainforests, where are the plants and how do we keep them? p. 155-168, 1 fig.: features of main types, with notes on some species (the number is given as 1316 but also as 3116, and in the table I count only 737). Better integration of forestry and conservation pleaded. J. D r a n s f i e l d, The biology of Asiatic rattans in relation to the rattan trade and conservation, p. 179-186: species numbers for 8 areas are tabulated. Ethnobotanical significance explained. Different growth forms and silviculture. Stands of the c. 20 elite species deserve cultivation, to be set up together with the local people.

The role of taxonomy is duly emphasized. Strangely absent is any concern with plant-animal interaction so crucial for survival. On p.170, cassowaries are mentioned as possible consumers of Idiospermum seeds; that is about all. So we hope for another conference.

Production of the book is high standard, so is the price. As all royalties will be channelled to plant conservation projects, everyone is heartily encouraged to buy it. — M.J.

TIREL,C. & J.JÉRÉMIE, Flore de la Nouvelle Calédonie et Dépendences vol. 11, 182 p., many illus. (1982, Muséum National d'Histoire Naturelle, 16 Rue Buffon, 75005 Paris, France). Paperback.

This new volume contains a revision by Mme Tirel of the Elaeocarpaceae (Elaeocarpus, 30 sp., 28 endemic; Dubouzetia, 6 sp., 5 endemic; Sloanea, 9 endemic sp.) and revisions by Jérémie of the Monimiaceae (Hedycarya, 8 endemic sp. and the monotypic endemic Kibaropsis), the Amborellaceae (monotypic endemic family), the Atherospermataceae (the monotypic endemic Nemuaron), the Trimeniaceae (Trimenia, 1 endemic sp.) and the Chloranthaceae (Ascarina, 2 endemic sp.).

Descriptions and keys are excellent. Maps are given of every species showing not only horizontal and vertical distribution, but also flowering time. At least one species of every genus is amply illustrated (Jérémie made his own drawings).

Dubouzetia novoguineensis A.C.Sm. of New Guinea is reduced to a variety of D. elegans B. & G. Perhaps these taxa should have been given the status of subspecies in view of their geographic separation.

Printing is good and there are only a few minor shortcomings: Elaeocarpaceae can have as few as 5 stamens and the ovules are not always pendent (p. 4), Peripentadenia (Australia) is not mentioned (p. 5), Elaeo-

carpus rotundifolius is not shown for Lifu on map 1 (p. 16) and Piptocalyx also occurs in New Guinea (p. 165). This in no way detracts from the quality of the work with which the authors are to be congratulated. — M.M.J. van Balgooy.

TOELKEN,H.R. (ed.), Flowering Plants in Australia, c. 450 pp., 230 fig. (of which 114 b/w line drawings), 150 maps (1982, State Herbarium of South Australia, Adelaide, S. Australia). Price c. $ 35-40.

Advance announcement of this work, which in size, format and purpose is along the line of Heywood's 'Flowering Plants of the World'. It is compiled through the efforts of 70 contributors. The purpose is to give a profusely illustrated account of the families of Gymnosperms and Angiosperms of Australia for a wide spectrum of people. It differs from Heywood's work by the addition of generic keys, references, and in certain families individual treatments by specialists are more detailed, e.g. in the grasses. The contents of the book are: Introduction; Acknowledgements; The history of the Australian flora (a paleontological review); Plants and Aboriginal life; Plants and European exploration; Glossary; Family descriptions; Index. — C.G.G.J. van Steenis.

VOGELENZANG,L., Guide to the prices of antiquarian and secondhand botanical books (1970-1979) / Cryptogamic literature (Algae, Desmids, Ferns, Fungi, Lichens, Mosses, Phytopathology, Phytoplankton, v + 517 p. (1982, Boerhaave Press, Box 1051, Leiden, The Netherlands). Offset, paper cover. Dfl. 90.

Contains over 4500 titles (not Russian), offered during the above period. Author, title, edition, pages, prices with year, sometimes a higher and a lower one. All were taken from catalogues; wild and ignorant ones have been omitted. Very useful to assess libraries to be put up for sale, or the value of institutional libraries, one of our main working tools. A second volume on phanerogams is in preparation. Author is librarian of the Rijksherbarium.

WEBB,L.J. & J.G.TRACEY, Australian rain forests: patterns and change. In A. Keast (ed.), Ecological biogeography of Australia, p. 605-694, 9 fig. (1981, Junk, The Hague).

Mainly on Queensland's 20,000 sq.km. It summarizes much of the authors' work, giving a balanced, detailed, informative picture, providing a context for the present situation, with many references. Twenty types with characteristics are tabulated, but structural typology is less prominent than in Webb's earlier papers (p. 619). Extensive analysis revealed 3 main floristic regions: A south of the tropic, B in the NE, and C in between and westward. A list of 545 genera with coded range inside and outside Australia is given, 103 are endemic. The ranges of genera are expressed in 17 categories, with much overlapping, however.

Pollen findings point to a high occurrence of rain forest angiosperms 120-79 thousand years ago, followed by some oscillations in humidity, with an increase and forest expansion since 8000 years, to the present isohyet of 1300 mm. The argument that the Australian rain forest flora is Gondwa-

nic rather than Malesian leaves me in doubt, as most of the genera do occur in New Guinea, and only have different ranges beyond.

A more popular version of this paper was given by the same authors, in R.H. Groves (ed.), Australian Vegetation, p. 67-101, 8 fig. (1981, Cambridge University Press). Profile diagrams, absent in the former, are on p. 80, 81, 83. — M.J.

WHITMORE,T.C. (ed.), Wallace's Line and plate tectonics, xii + 91 p., illus. (1981, Clarendon Press, Oxford). Cloth.

Plate tectonics provides an understanding of continental drift, which was worked out by W. Hamilton in Tectonics of the Indonesian region (1979, reviewed on *pages 3607-3608*). The present book examines geology as well as plant and animal distributions East and West of the Line, in 8 essays by 7 authors, in two-column print.

Geologist Audley-Charles gives one series of maps with the position of land masses around the Indian Ocean every 20 million years, and another series with the positions of the E. Malesian islands in more detail. (East and SE. Celebes, which together with Sumba, Timor and all of the Moluccas are thought to be of Australian origin — see map on p. 28 — are drawn in the first series as if they always were in their present place, however.) The collision between Laurasian and Gondwanean elements is dated about 15 million years ago, and took place in Celebes; thus a migration route into New Guinea was established.

The biological aspects are dealt with by Cranbrook (formerly Medway) for the vertebrates, by Dransfield for the palms, and by Whitmore for some other selected plant groups. Cranbrook thinks that ecological as well as geological factors have limited an eastward dispersal. Celebes, formerly populated by proboscideans, can hardly have been a centre of evolution, and now has features of an oceanic island with relics. If a line is to be drawn, it should circumscribe Celebes. Dransfield lists the palm genera with their limits in the region and numbers of species, and analyzes the (poor and not particularly well-known) palm flora of Celebes. He concludes that, while many distribution patterns coincide with Wallace's Line, "there are, however, many features of distribution not yet explicable, largely because we still know so little of intra- and intergeneric relationships, especially in the big genera Calamus and Licuala" (p. 56). Areca and Veitchia, too, are problem genera as for their dispersal and speciation. Whitmore compares the ranges of a few Sundaic and Papuasian genera, with maps given. The Fagaceae, however, defy explanation. Assumption of a shard detached early off NW. Australia and drifted North (p. 22 and 80) might be convenient. "This shard has not been found though it may lie in Assam."

Whitmore's suggestion that botanist H.J. Lam, who "in the mid-thirties" (actually 1930) first espoused Wegenerian views and propounded collision of Australia/New Guinea with western Malesia, soon abandoned the idea, could not be substantiated by perusal of the cited paper. Neither was Lam "ahead of accepted botanical dogma" insofar as he followed up ideas expressed by botanist E. Irmscher in 1922, although in 1919 his thesis carried a proposition on the value of Wegener's theory for plant geography.

Zoologist L.D. Brongersma, in a comment on H.C. Raven (Arch. Néerl. Zool. 2: 240-246. 1936, not mentioned) concluded that as many Wallacean lines can be drawn as there are (groups of) genera. For all advances in geology, these wry words still seem to hold good. — M.J.

WOMERSLEY,J.S., Plant collecting and herbarium development / A manual, xi + 137 p., 20 sketch fig. (1981, Technical Paper 33, FAO, Via delle Terme di Caracalla, Rome 00100, Italy). Mimeo, paper cover. Probably inexpensive.

Covers largely the same ground as Fosberg & Sachet, Manual for tropical Herbaria of 1965 (see *pages 1285-1289*), which has c. 1½ times the number of words. Written by the long-time head of one of the best-organized Herbaria in the tropics, this is a most practical instruction book, not without some human advice (consideration for the private life of the local botanist, p. 125; some new cups and saucers for the staff room may be welcomed, p. xi). Once again, the subject turns out to be extensive and complex (well-indexed, however), yet we'd wish for several more aspects: a discussion of Reaping the Harvest (*pages 2020-2037*) in connection with identification lists, of flower dissection (*page 2527*), and of Collaboration of taxonomists and draughtsmen (*pages 2846-2853*). The instructions for collecting in special plant groups deserved to have been extended with Utricularia (*pages 2831-2832*), Impatiens (*pages 3435-3436*), Zingiberaceae (*pages 2599-2601*), and perhaps stipules (*page 2207*) and lianas (*pages 2613-2614*) of which wood samples should be preserved in liquid. Some more discussion to compare pros and cons would have been illuminating, e.g. in the matter of boxes vs. cabinets, and of strapping vs. glueing, each of which being meaningful in a different system. Preidentification is another important subject to dwell upon. References 21. — M.J.