XVI. REVIEWS

ANDERSON,J.A.R., A checklist of the trees of Sarawak, 364 pp. (1983, Dewan Bahasa dan Pustaka Cawangan Sarawak, for Forest Department, Kuching, Sarawak). Cloth Mal$ 15.00.

When Dr. Anderson retired from the Forest Department in 1973 he left the manuscript of this checklist for publication. Unfortunately publication was delayed for 10 years. It contains data on over 2500 arboreous plant species. The text consists mainly of two parts: the first is a list of vernacular names with their scientific equivalents, the second is a list of plant names alphabetically arranged by family. Each species is concisely annotated with its vernacular name(s), maximum diameter, ecology, frequency, soils, etc. Species names have been coded: the first two figures are for the family, the next two for the genus and the last two for the species. A list is given of the trees of the peat-swamp forests of which Anderson was a great expert. A small draw-back is that the literature of the last ten years has not been included. Nevertheless this is a most helpful book. — C.G.G.J. van Steenis.

ANONYMOUS — A commercial publishing house in the U.S.A., Meckler Publishing, 520 Riverside Avenue, Westport, Connecticut 06880, has recently offered for sale a number of microfiche collections of types or ancient specimens of some major American institutes and a British one: the Oakes Ames Botanical Museum (AMES), the British Museum (Nat. Hist.) (BM), the California Academy of Sciences (CAS), the New York Botanical Garden (NY), the Academy of Natural Sciences, Philadelphia (PH), the Smithsonian (US), and the United States National Arboretum (USNA) (All prices in US$).

The set of the orchid herbarium of AMES, to be published in the fall of 1984, will cost $ 1,650.00, the vascular plant type collection of CAS (175 fiches) will be $ 1,400.00, that of NY $ 7,500.00 (1213), that of PH $ 3,700.00 (454), the one of US $ 6,950.00 (1120), and the type and cultivar collection of USNA $ 450.00 (80). The standard sized fiches (105 by 148.75 mm) are in black and white and may contain up to 60 specimens each. Only from the NY set will it be possible to order separate families at $ 8.00/fiche. Separate clothbound indices to the collections (included when a set is bought) are available for the pittance of $ 125.00 and $ 200.00 for those of the first two institutes and of only $ 350.00 for the next three and $ 95.00 for the last one.

The BM issue contains the natural history collections of specimens and drawings from the 'Endeavour' voyage of Captain Cook, both botanical and zoological. It may be had in various parts at similar prices, $ 1,650.00 for the whole lot. It is not clear how much the botany alone will be, from the folder apparently $ 1,850.00, which cannot be true. The fiches are also in black/white, except for the colour drawings. The two botanical catalogues are $ 75.00 each, one for Australia and one for the remainder.

We have not seen these publications, but a few thoughts have crossed our minds.

Assuming that all fiches will be ± full, you can buy in this way a

number of important herbaria for around 12 ¢ per sheet. If you just calculate how much each sheet in your own herbarium costs this seems a very fair price. Administrators will be happy to point out, too, that you need only a similar fair-sized cupboard to store the c. 160,000 specimens with all additional curatorial, i.e. financial advantages.

It is quite understandable that these Institutes want to take the best care they can of their usually unique collections. The handling and shipping of loans always has some hazards for possible loss or damage (although we in L do not seem to have lost much, if anything, in the tens of thousands of specimens mailed over the past few years) while the costs involved are also a drain on their funds.

On the other hand it would seem that these indices will not help much to alleviate their problems. If many of the usual borrowers would buy these sets, the originating institutes would of course save money, but it seems doubtful that this ploy will succeed. Which Institute will be willing and able to invest $ 23,300.00, even considering the 10% discount on prepaid orders, or the interest-free payment terms of three years, or the free reader one gets if orders exceed $ 3,000.00? With that amount of money to spend most libraries surely will have higher priorities. There does not seem to be a reasonably proportional cost relationship with the handling and mailing expenses spread out over the years for the odd specimens wanted, either.

Even when grants could be found for their acquisition, many scientists will not find the fiches very satisfactory. In too many cases (Asclepiadaceae, Compositae, Leguminosae, Orchidaceae, etc. etc.) dissection of the flowers or inflorescences cannot be avoided to be able to decide the actual identity of the specimen. In others (Amaranthaceae, Cyperaceae, Gramineae, and so on) the essential details are already too small to be seen without a powerful magnification on the actual plant, let alone on a fiche even when of superb quality.

In short, the idea is not too bad but it probably will be thwarted by both the initial layout of expenses and the practical usefulness. It is to be hoped that now that these indices have appeared the institutes will continue to send out their types on loan. — J.F. Veldkamp.

AVÉ,J., V.KING & J.DE WIT, West Kalimantan. A bibliography, 260 pp., 3 maps (1983, Kon. Inst. v. Taal-, Land- en Volkenkunde, Bibliogr. Ser. 13. Order with the Editorial Department Kon. Inst., Box 9507, 2300 RA Leiden, The Netherlands). Dfl. 30.00.

Introductory chapters on the classification, sources and main ethnic groupings. Key, abbreviations of journals and a list of bibliographies. The 1855 titles are arranged under general works, travels, history (5 subheadings), natural sciences (incl. physiography, geology, biology, etc.), technology, economy (7 subheadings), humanities (10) and museums. An index to authors concludes the volume. — C.G.G.J. van Steenis.

BALGOOY,M.M.J.VAN (ed.), Pacific Plant Areas. Vol. 4, viii + 270 pp., 80 maps (no. 244-323) (1984, Rijksherbarium, Leiden, The Netherlands; to be ordered from the Librarian of this institute, Box 9514, 2300 RA Leiden). Dfl. 50.00, excl. bank charges, incl. mailing costs.

After nearly nine years this is a new instalment of this important series. A supplement of 125 pages is given for the references to maps of Malesia and Pacific flowering plant taxa that appeared in this period (up to February 1, 1983). The maps that had been arranged rather haphazardly in the previous three issues are now ordered alphabetically according to family and genus. A cumulative index to the taxa depicted in all issues facilitates their retrieval.

Outsiders usually do not realise how much effort and time are required to gather the necessary information for a work like this. It is fitting therefore that the present volume has been dedicated to Ms. M.J. van Steenis-Kruseman to honour her tireless work of so many decades which next to the exhaustive bibliography of the present series has culminated in the Cyclopaedia of Collectors for the Flora Malesiana series, fondly known as the 'Green Bible'.

The first copy of the present volume was presented to her during a special occasion at the Rijksherbarium where a limited edition of an Extra Volume was shown treating her husband, Dr. C.G.G.J. van Steenis, according to the format of the PPA. This is reproduced elsewhere in this issue (pages 58 & 59).

I take the opportunity to point out that Ehrharta diplax var. giulianettii (map 277) is now also known to occur in Celebes from where it had been described as Microlaena ciliativertex by Ohwi. The holotype could not be found in BO but an isotype was present in S. — J.F. Veldkamp.

FRANKEL,O.H. & M.E.SOULÉ, Conservation and evolution, viii + 327 pp. (1981, Cambridge Univ. Press, Cambridge, New York, Melbourne; hardcover ISBN 0521 23257, paperback ISBN 0521 29889).

This excellent book explores the details of long-range genetic and evolutionary problems associated with nature conservation. It is the first book systematically to review and critically to examine the principles and practice of genetic conservation of crops and livestock. The authors argue that the purely ecological or biogeographic approaches to nature conservation are not sufficient if reasonable samples of the planet's biota are to be preserved. They point out how the understanding and application of relatively simple genetic guidelines are essential if populations of large or rare animals and plants are to maintain their fitness, and if ecosystems are to maintain their diversity and stability. They demonstrate that even large islands like Borneo, after arising from the Sunda shelf, lost part of their species. The smaller conservation areas, the more species even in historical time will be lost from them. The book examines the origin, characteristics, and usefulness of the various kinds of genetic resources of crops, forest species, and livestock, the threat to their continuing existence, appropriate measures to secure their survival, and the value and limitations of germplasm collections. This book will serve as a valuable source of information for students and research workers, and as a practical guide for all those who are concerned with wildlife and nature conservation. — H.P. Nooteboom.

GRESSITT,J.L. (ed.), Biogeography and ecology of New Guinea, vii + 983 pp. in 2 vols., 251 figs., 54 tables, 84 maps (1982, Monographiae Biologicae 42; Dr. W. Junk Publishers, The Hague, Boston, London; ISBN 90 6193 094 4). Cloth Dfl. 450.00.

New Guinea is the largest tropical island with an extreme richness in habitats ranging from mangroves to icecapped mountains. It has a complex geological history and geomorphology. The highly interesting flora and fauna are relatively little disturbed by the thin human population. These characteristics make New Guinea a dorado for biologists. Although much research has been carried out in the past century, far more has to be done. It was a good idea of the late Dr. Gressitt to bring together a number of specialists to review the state of knowledge in their fields of research.

The book is divided into two handy sized volumes. The first one has three parts. Under 'General and physical background' the climate, geology, glaciation, landforms, and soils are reviewed to give the general background. The second part by Frodin and Gressitt, 'Man and his impact on the environment', starts with a comprehensive history of the biological exploration of New Guinea. Other contributions on anthropology, archaeology, man's impact on the vegetation, and on insect pests of staple crops are also of interest to biologists to understand the importance of the factor 'man' in the environment. Archaeology has revealed the extinction of some animals, including the Tasmanian Wolf. The third part 'Vegetation and flora' covers a wide array of topics on phytogeography and ecology. Of the 13 contributions most provide very interesting reading. I may mention the 'ecological monographs' of Nothofagus and Araucaria especially, but many others are thorough and thought-provoking.

The second volume begins with parts 'Invertebrate fauna' and 'Vertebrate fauna', 19 contributions in all. They are not only of importance for botanists interested in biogeography, but even give also some information on e.g. relations between drosophilid flies and flowers, mimicry between spiders and beetles, vegetations on the back of weevils, and on fig wasps. Pratt says that most of the bird fauna is Asian in origin with subsequent evolution of and radiation into endemic families.

Part 6 gives a zoogeographical and botanical summary. In the first the conclusion is drawn that the fauna of New Guinea is primarily Oriental (Southeast Asian) and that the idea that New Guinea forms part of the Australian region is mainly based on the distribution of marsupials which are only 1/4500 of the land fauna. The botanical summary is a beautiful synthesis between geological history and phytogeography. Part 7 is devoted to conservation; it concludes that although the situation is not quite as desperate as elsewhere international financial and technical assistance is a necessity.

Each contribution is accompanied by a list of references. An index to genera and a general index conclude the second volume.

The execution of this work is of a very high standard and its contents are a must for every biologist with interests in the Australasian area. It is therefore regrettable that the price will be the obstacle for many. — W. Vink.

GRIERSON,A.J.C. & D.G.LONG, Flora of Bhutan, including a record of plants from Sikkim, Vol. 1, Part 1, 186 pp., 16 figs. (incl. 2 maps) (1983, Royal Botanic Garden, Edinburgh, U.K.). Ca. £ 11.

This is the first part of a projected series of about ten which intends to be a manual for the identification of East Himalayan plants and especially those of Bhutan. Because the flora is still so insufficiently known records of Sikkim, Darjeeling, the Assam Terai, Chumbi Valley (Tibet) and Nyam Jang Chu (Arunchal Pradesh) have been included. The treatment is admittedly preliminary also because only material represented in the British herbaria of BM, E and K was consulted. On the other hand the authors have had personal experience in the field. However, because it is the first local account since the Flora of British India works like these should be welcomed as they are a good base for the area and pinpoint taxa in need of closer inspection.

A number of introductory chapters give a survey of previous work, a short geographical outline of Bhutan, a classification of its vegetation zones with a comparative terminology for neighbouring areas, a note on the status of conservation (huge areas of undisturbed vegetation thanks to the attitude and concern of the Royal Family, the Royal Government and its Forest Department: let's hope, with the authors, that it may remain that way!), phytogeography with a selective survey of species shared with various areas abroad.

The treatment roughly follows the Englerian System, the Gymnosperms and Angiosperms (Myricaceae - Polygonaceae) are included here. Unfortunately for a first volume a key to the families has been postponed while keys to all the species treated are not always given. When present, they often lead to an alternative between groups of taxa, of which diagnostic descriptions then have to be compared. This information might as well have been included directly into a key to facilitate identification, for the user will rely on these remarks anyway to identify his material. Especially laymen not trained in the extricacies of comparative reading will find this method unnecessarily difficult. That the reason is not always due to the uncertain delimitation of the taxa is shown by remarks that only a certain variety occurs in the area: if the circumscription of the species is uncertain, how sure can one then be of its infraspecific taxa? The keys otherwise look well, easy characters have preferably been employed, especially those visible in the field, and are usually given in the general morphological sequence which makes the leads simple to read.

Some line-drawings illustrate some of the taxa, but the inexperienced people this book is aimed at need many more. No doubt this is due to an attempt to keep the price as low as possible, but how many Bhutanese can and will buy books like this?

Recent nomenclature has been followed, local names are given, as well as relevant synonymy, and brief notes on ecology, distribution and flowering periods.

In all a neatly executed work which because of its apparently critical taxonomic and nomenclatural content and yet modest aspirations should be very useful and exemplary for local floras of the Indian subcontinent. — J.F. Veldkamp.

Holz aktuell, a journal published by Karl Danzer Furnierwerke, D-7410 Reutlingen 1, Storlachstrasse 1, Postfach 236, West Germany. Number 3, 1981, is dedicated to the ecology of the tropical forests. The language is German. This issue is important for all those who are interested in problems related to the tropical forests. It contains 14 articles, mostly written by prominent German scientists, on subjects as 'economy and ecology', 'composition and structure of rainforests', 'arable land from tropical forests - an illusion', 'why it rains so much in a tropical rainforest', 'the future of the tropical forest', 'tropical timber on the timber and veneer market in Germany', and articles related with special countries or regions as Amazonia, Chile, Zaire, Ivory coast and Cameroon. Some of the articles are discussed here. As the journal is edited by a commercial wood processing concern which also is engaged in reforestation in Brazil, it is not surprising that some of the articles are quite controversial and that several are rather optimistic regarding the possibilities of management of the tropical rainforest. Thus it is stated in the preface, apparently by directors, that the growth of timber in the United States is twice as fast as that in Canada, which has the same surface covered with forests. That is true, but when they state that the circumstances for growth in the tropics are several times more favourable than in the U.S., this is a fallacy.

Prof. Dr. Hans Lamprecht adequately discusses the composition and structure of the tropical wet forests. He is obviously aware of the very complicated structure and the intricated easily disturbed balance, nevertheless he puts forward that exploitation for timber does not disturb the forest because only very few trees are cut, even when more trees fall for making roads etc. This may be true for the local exploitation by forest dwellers, but as soon as a timber company is involved, the wood must pay, and the kind of exploitation that does not disturb the forest simply is too expensive and is never practised.

Prof. Dr. Wolfgang Weischet discusses the conversion of tropical forest to arable land, which he rightly considers as impossible for 85% of the area. He regrets that the responsible governments and organisations often are still of the opinion that tropical moist forest can be converted to arable land. In a very clear way he explains why the soil is so poor in the rainforest: because of the fast and more intensive weathering the soil contains hardly any silica (silicium compounds are soluble at high soil temperatures). And it is just these siliciumoxyde-tetrahedrons together with the aluminumhydroxyde-octahedrons that make the clayish substance which is responsible for the fertility of the soil. Important is whether the aluminum-octahedron layer is embedded in two layers of silicium-tetrahedrons, which gives a fertile clay, or whether only one layer of the latter substance is present, which gives the poor clays known as kaolinites. Because the available energy for weathering in the tropics is about 100 to 200 times as high as in moist regions outside the tropics, the soil in the moist tropics contains mostly kaolinites as clay material. The importance of the clay is that it acts as an exchanger of cations. And it is in the form of cations that the minerals, needed by the plants, must be available. The cation exchangers store the minerals in a way that the latter gradually become available for the plant roots.

When the soil contains no - or not enough - cation exchangers, all minerals are washed away and disappear in the nearby rivers. That means that fertilisers are useless, as they cannot become available for plants, either. Another cation exchanger is humus. But it is a well-known fact that in most tropical forests the soil contains hardly any of it. The microbial conversion of organic material is temperature-dependent. Above 20°C the rate of conversion accelerates, and at 28°C this rate is already several times the rate at 20°C. Therefore the organic material on the forest floor is converted in at most nine months in the tropics, while this conversion lasts several years in the temperate forests. In the tropical wet forest all minerals resulting from the conversion of organic debris immediately are used by the roots - with help of the mycorrhiza. In swidden agriculture in tropical moist forest the humus provided by the decay of the forests debris and the minerals resulting from burning the forest are just enough for one or two years of agriculture. Permanent agriculture on this kind of land is impossible for the above mentioned reasons. Therefore only young, mostly volcanic soils in the tropics can be used for permanent agriculture (through weathering they constantly supply fresh minerals). And that is the very reason why e.g. the isle of Java is so densely populated while other regions simply are too infertile and thus can only sustain a very low population density.

Prof. Dr. Fredo Rittershofen discusses the dangers and chances for the Amazonian rainforest. He also points to the dangers of overexploitation. But he also states that the forests cannot stay an ecological reservation because Brazil needs them for the development of the country. Especially the forest on the 'terra firma' with its very poor soils are fit for controlled forest use. The results of 20 years research show that the use of suitable rejuvenation methods with a real increase of valuable timber is applicable without damage to the ecosystem (I am afraid that 20 years is not enough. How will that forest look after some centuries of exploitation? Probably the ecological balance will be highly disturbed, the number of species a mere fraction of what it would be without exploitation, and moreover there is a good chance that the soil will be exhausted when timber is extracted at a scale that is profitable to both timber companies and government.)

Prof. Dr. H.C. Gerhard Speidel comes in his paper: The Amazone forest, a challenge to scientist, technicians and politicians to the conclusion that undisturbed biological reserves should comprise 40-50% of the total forest area.

Prof. Dr. Hansjurg Steinlin gives an excellent exposition on the future of the tropical forests. He reaches the conclusion that softwoods can be produced through cultivation, that valuable hardwoods and veneer woods will become rather rare and accordingly more expensive, but that they still will be sufficiently available in the future, also when most of the forests disappear. The real danger of the disappearance or disturbance of the forests is the worsening of the conditions of life on great surfaces of this world. It will negatively effect the production of agriculture and animal husbandry in many developing countries that already face problems in feeding their constantly growing populations. And last but not least more than half of the genetic resources of this world

will be lost forever and the impact on the world climate cannot be foreseen.

Several authors come to the conclusion, citing the FAO figures, that timber extraction is only a minor cause for loss of forest and that agriculture is the most important. That may be true for some regions, in others building the logging roads and opening the forest is followed by invasion by men. These people, the poor and landless in often overpopulated countries, start with a kind of swidden agriculture that is not adapted to local circumstances. They destroy what is left of the forest by the timber companies, often leaving a semi-desert in a place once covered by excellent primary forest. Who is to blame, the poor people without means of living or the timber companies? — H.P. Nooteboom.

HOMMEL,P.W.F.M., Ujung Kulon vegetation survey. Preliminary results, including a landscape-ecological map (scale 1:75,000) (WWF/IUCN Project 1963). A World Wildlife Fund Report (1983) vi + 85 pp., maps, tab.

This is a very useful report not only because it gives a good description of the vegetation types but also because it is accompanied by a landscape-ecological map of the National Park, the only accurate topographic map available for the area. Until the maps in preparation by the Indonesian Topographic Service are ready, this map is the only one reliable for the topography of this 40,000 ha stretch of land. That it is preliminary is due among others to the fact that identification of the many collections takes a long time. The Rijksherbarium staff, especially Dr. Van Balgooy, tries to help.

Accurate photo-interpretation and evaluation of data collected during two years of field work have resulted in a very good classification of landforms, soil types and plant communities. The map is accompanied by two cross-sections through the terrain which give a good picture of altitudinal variation together with vegetation.

For future researchers a detailed and very useful outline of the procedures followed is given.

A fortunate coincidence was that Mr. H. van Reuler, a MAB-UNESCO soil scientist, could assist in his field of science which added much to the value of the work.

Chapters are included on topography, history, climate, geology and geomorphology, soils, vegetation, landscape units, and aspects of management.

We congratulate WWF and Mr. Hommel with the completion of this extremely valuable work. — H.P. Nooteboom.

HUANG,TSENG-CHIENG, Principles of taxonomy of higher plants, 870 pp., figs., graphs, maps (1983, National Institute of Translation, Taipei, Taiwan). Hardcover c. US$ 12.50, paperback c. US$ 11.50. In Chinese.

A very full textbook of 16 chapters on vascular plants. Fundamental teaching material for second year classes is incorporated in 8 chapters: introduction, history of plant taxonomy, literature of plant taxonomy, field studies and management of an herbarium, concepts of taxonomic units, nomenclature, features of plants and external morphological characters. Eight other chapters are intended for advanced courses: botanical

Latin, micro-morphological characters, characters of fossil plants, cytogenetics, biochemistry, application of data from related fields, systems of classification and plant geographical areas of the world. Various indices (names, terminology, persons, key words) complete the volume. This is a work with which students in Taiwan can be congratulated. — C.G.G.J. van Steenis.

JACOBS,M., Herman Johannes Lam (1892-1977), the life and work of a Dutch botanist, 271 pp., 35 fig., 37 photographs, bibliogr. (1984, Rodopi, Amsterdam; ISBN 90 6203 545 0). Dfl. 60.00.

The author of this biography, Dr. Marius Jacobs, was a pupil and during many years a co-worker of Lam. In the later years of Lam's life they became close friends. Both men had much of the same interests and a certain likeness in cast of thought and so the biographer could successfully enter into the personal peculiarities of his subject. The result is a highly sensitive and vivacious description of Lam's rather complicated personality in such a way that the text evokes lively reminiscences in everyone who has known Lam and in his mind's eye he sees him as teacher, director, or colleague.

Dr. Jacobs took the initiative for this work and Lam allowed him a number of biographical talks in which he unveiled many facets of his more or less private views on such issues as physics and metaphysics, life and after life. Jacobs could also make use of interviews with people who had known him, itineraries, letters, newspaper clippings, notes, and albums with photographs. Based on these documents he sketches us Lam as a botanist, participant in scientific expeditions, teacher and organiser of scientific congresses and as director of the Rijksherbarium. Lam's thesis dealt with the Verbenaceae; his studies on the Burseraceae (genus Haplolobus) led him to the domains of comparative morphology and phylogeny. The conclusion must be that Lam as a botanist was more inclined to reflection than to experiment and that his theory on stachyospory and phyllospory as the two fundamental conditions which may occur in the Cormophyta rested more on speculative thoughts — interesting as they might have been — than on scientific facts. Although many of his ideas in morphology, geography and phylogeny altered considerably in recent decades, Lam's teachings were very interesting, because he always demonstrated the interdependence of the various aspects of systematic botany: plant structure and plant dispersion can only be understood in relation to time.

His most far-reaching achievements, however, are those as Director of the Rijksherbarium, an institute which he found in a rather deplorable condition when he assumed his post there in 1933 and which under his directorship was transferred into the world's leading institute concerning botanical studies of the Malay Archipelago. Particularly the incorporation of the Flora Malesiana Project (1949) into the Rijksherbarium programme, by which it became possible that staff members of the Rijksherbarium could participate in it, was a very important event and moreover, saved this magnificent enterprise, when the transfer of sovereignty brought about a deep crisis between Indonesia and the Netherlands. A second decision of lasting importance has been, that under Lam's directorship the study of the local flora of the Netherlands could be accom-

modated in a special department of the Rijksherbarium with its own staff.

In conclusion, this Lam-biography is a valuable contribution to recent botanical history, written by an able and competent author, with the strength (personal acquaintance) and weakness (the absence of remoteness in time) inherent to any work on contemporary history. It is very sad to add that Dr. Marius Jacobs did not live to see the book in its final state: he died unexpectedly on 28 April 1983, when the preparations for the publication of his book were already in an advanced state. — P. Smit.

JERMY,A.C. & K.KAVANAGH (eds.), Gunung Mulu National Park, Sarawak, 279 pp., figs., photographs, maps (July 1982, recvd. Jan. 1984, Sarawak Mus. J. 30, n.s. no 51, Special Issue 2). Mal$ 10.00.

In 1977-1978 the Royal Geographical Society of London together with the Sarawak Government launched a 15 month survey of some 560 km² of rain forest on the borders of Brunei and Sarawak, the newest and largest National Park of Sarawak named after its highest elevation, G. Mulu. On this Dr. A.C. Jermy of the BM (Nat.Hist.) gave a full account of the extent and purpose previously (Fl. Mal. Bull. 32, 1979, 3197-3198). This huge multinational and multidisciplinary expedition was most successful. For a ridiculously low price an outline of the results is now embodied in a most valuable account of several aspects. The many photographs give an excellent picture of the very rich diversity of the Park from swamp forest to subalpine vegetation at 2376 m, and a great variety of soils and bedrock among which the huge limestones with their many caves. Some hundred scientists of all sorts had an unexpected opportunity for research in the field.

In this volume a general account of the survey of the Park is given by Jermy, one of the main organisers, J. Proctor, deals with the place names, R.P.D. Walsh gives a survey of the climate and examines the hydrology and water chemistry, H.A. Osmaston & M.M. Sweeting discuss the geomorphology, A.C. Waltham & B. Debb deal with the geology, D.B. Brook c.s. describe the caves, I.C. Baillie c.s. the soils (with a large map), J. Proctor c.s. give studies of four forest types, while P. Kedit wrote an ecological survey of the life of the Penan people.

In all it is a magnificent survey of a first rate primary rain forest reserve. Everyone who is concerned with rain forest conditions and their conservation should have this book. We eagerly look forward for the second volume. Together they will give a good insight on the management of such vital parks. The Sarawak Government, the Royal Geographical Society and the two main promotors of the undertaking, Dr. Jermy and Dr. Anderson are warmly congratulated with this achievement. — C.G.G.J. van Steenis.

JOHNS,R.J., Common forest trees of Papua New Guinea, ed. 2 (1983), mimeograph; 3 parts, 140 pp. together. Forestry Department, Papua New Guinea University of Technology, P.O. Private Bag, Lae, Papua New Guinea. Kina 2.50 each.

A revised edition of a work originally published by the Office of Forests (1976-1978). The first three parts cover the Gymnosperms (part 1) and the Angiosperm orders Amentiferae, Piperales, Proteales, Ranales, Santalales and Urticales. Keys and figures sustain the often very brief text. — J.F.Veldkamp.

MERRILL,E.D., Plant life of the Pacific world, ed. 2, xvii + 297 pp., figs. (1981, Koeltz, Koenigstein, West Germany). DM 46.00.

This apparently updated reprint of Merrill's famous and useful booklet of 1945 I did not see, but the original version is still very useful and interesting, to be recommended as an elementary botanical guide for the area. As usual with this publisher it is too expensive, though. — J.F.V.

MOORE,D.M., Flora of Tierra del Fuego, 396 pp., 283 figs., 8 pl. (26 col. photogr.), 42 sets of maps (1983, Anthony Nelson, England, and Missouri Botanical Garden; ISBN 090 4614 050).

Dr. Moore has published a superb flora. The general chapters contain besides the introduction accounts of the geology, geography, climate and soils, the history of exploration, the vegetation types and the geographical affinities. Genera and species are keyed out and described with critical revisions. Almost all taxa have been depicted and have been provided with a map. The colour photographs belong to the best I have ever seen, 6 of vegetation and 20 of species in their habitat.

The reason that this brief review of a non-Malesian work has been included here is the fact that such an accurate account is most welcome to those who study plant geography of the austral regions, especially for the information on the genera also occurring in subalpine New Guinea. — C.G.G.J. van Steenis.

MORLEY,B.D. & H.R.TOELKEN (eds.), Flowering plants in Australia, 416 pp., 230 figs. (often in colour), many maps (1983, Rigby Publ., in Europe to be ordered from Lansdown/Rigby Int., 5 Great James St., London WC1; ISBN 0 7270 1477/3). 4°. Recommended retail price Austr.$ 65.00.

In Fl. Mal. Bulletin 35 (1982) 3799 I have already announced this large work which in size and design is along the line of Heywood's 'Flowering plants of the world'. Its purpose is to provide a complete account of the genera of Gymnosperms and Angiosperms of Australia for a wide spectrum of people. There is no general key but within each family there is one to the genera. It differs further from Heywood's work in that references are given and in some families individual treatments by specialists are more detailed, e.g. in the Gramineae. The systematic account is preceded by some concise chapters on the geological history of Australia, aboriginals and plants, European exploration, a survey of the (216) families arranged according to Cronquist's (1981) system, and a glossary. The editors were assisted by 70 specialists for various families or genera: a very large knowledge is thus incorporated in this magnificent volume (3-column print) illustrated by so many excellent, often original figures with each family, which makes it a joy to leaf through it. There are some errors but remarkably few in such a large work, e.g. Sphenostemon should be omitted on p. 39, Ganophyllum on p. 191, Microsemma (p. 136) should be called Lethodon, Pygeum (p. 144) is Prunus, Datiscaceae are omitted, although Tetrameles occurs in Queensland.

A unique book, warmly recommended as a first well-illustrated account of all the genera of Australia. — C.G.G.J. van Steenis.

PANCHO,J.V., Vascular flora of Mount Makiling and vicinity (Luzon, Philippines), part 1, 476 pp., 147 figs. (1983, Kalikasan, Suppl. 1. To be ordered from Kalikasan, P.O. Box 361, U.P. at Los Banos College, Laguna 3720, Philippines). US$ 30.00.

This local flora replaces Merrill's Flora of Manila (1912, repr. 1968) but is more extensive in that it covers also the native forest flora of Mt. Makiling, a well-known extinct volcano, 1100 m high, c. 65 km southeast of Manila and because many more cultivated species found on campuses have been included. It was found that 'A modern text principally for use in the identification of plants growing on Mt. Makiling and its vicinity - of which the University of the Philippines at Los Banos is the most prominent academic component - has been a long-standing necessity. There is an urgent need for some basic guide for the growing number of persons whose work or interest involves an understanding of the vascular plants of Mt. Makiling.'

This is the first of 5 volumes, the bigger dimension being caused by three factors: the larger lettertype, the increase of taxa treated (225 families, 949 genera, c. 2000 species versus 136 families, 600 genera and c. 1000 species in the Flora of Manila), and the profuse illustrations. Whereas in the Flora of Manila native plants were in the minority they here occupy a substantial place with many native families making it more representative of the Philippine flora as a whole (e.g. Aceraceae, Balanophoraceae, Chloranthaceae, Dipterocarpaceae, Juglandaceae, Fagaceae, Rafflesiaceae, Triuridaceae, etc.). Concise general chapters precede the taxonomical text including an original key to the families.

The author who worked for some 15 years on this manual is to be congratulated for his excellently printed and admirably illustrated achievement. — C.G.G.J. van Steenis.

ROYEN,P.VAN, The alpine flora of New Guinea, vol. 4, pp. 2405-3516, figs. 712-1008, plates 171-227 (8 Feb. 1983, J. Cramer, Vaduz, FL-9490 Vaduz, Switzerland; ISBN 3 7682 1246 7).

This is the final voluminous volume of three, containing the taxonomy of the alpine flora of New Guinea which involves 84 families. Sampling showed that the whole work includes c. 340 genera with c. 1110 species. Among the families treated here the Compositae are the largest, followed by the Rubiaceae, Rosaceae, Myrtaceae and Scrophulariaceae; among the larger genera are Schefflera and Trigonotis. All taxa have descriptions with keys to the genera and species. A very great virtue of the work is the ample illustration, all provided with details. Of each name the holotype is mentioned, a general distribution of the taxa is given often with collections cited, and the ecology. Some complaints of Jacobs in his rather unkind review of volume 2 (Fl. Mal. Bull. 34, p. 3615) have been filled: on p. 3453 Van Royen explains that he has followed Thorne's system; he provides an index to native names (p. 3457) and a complete index to scientific names in which it is indicated which species and other taxa have been described as new, while synonyms have been printed in italics. In this volume again there is a fair sprinkling of newly proposed species. Alien introductions are few.

The future will have to show in how far this account is complete and

reliable but it should be realised that for several families and genera the record rests on previous monographical work. As to its completeness it is a great pity that alpine exploration in the Snow Mountains of Irian Jaya has been hampered during the past two decades, for here the alpine flora will be richer and more diverse than in Papua New Guinea where most collections now come from.

If I compare the present account with what was known half a century ago there has been a tremendous increase showing a richness formerly unthought of. Though the present work cannot be final and contains as the former a number of inaccuracies, unfortunately also in the keys, it will be a useful tool for all who have to deal with conservation, ecology and plant sociology in this precious realm of nature. — C.G.G.J.van Steenis.

STANLEY,T.D. & E.M.ROSS (eds.), Flora of South-Eastern Queensland, vol. 1 (of 3), iv + 545 pp., 6 maps, 80 figs (Jan. 1984, Queensland Department of Primary Industries, Misc. Publ. 81020; ISBN 0 7242 1760 6). Hardcover Austr.$ 20.00, postage intrastate Austr.$ 3.00, interstate and overseas Austr.$ 6.00.

This new Flora covers the Burnett, Darling Downs, Moreton and Wide Bay Districts and is arranged according to Melchior's system in the 12th edition of Engler's Syllabus. All native and weedy species of the Apetalae and part of the Choripetalae up to Sapindaceae (inclusive) have been treated here. The Proteaceae will appear in volume 2 as its revision could not be finished in time for inclusion. In the introduction general features of the area are given, e.g. climate, physical features, soils, vegetation types, all illustrated by maps. There is a useful glossary with some figures. Keys are provided down to the infra-specific taxa. The latter are only briefly discussed, the higher ones have diagnostic descriptions. The family key is adapted from the one made by Clifford & Ludlow (1972) (see Fl. Mal. Bull. 28, p. 2378). It is fairly long (815 couplets) and usually based on single characters, which may cause problems when they are absent or multi-interpretable (e.g. presence of latex will be difficult to establish in dried specimens unless explicitly recorded, which it usually is not). As in so many keys complete material is required, e.g. female and male flowers when a plant is dioecious. For a local flora this seems inadmissible. What to choose anyway when asked (lead 19) 'All flowers unisexual' vs. 'Most flowers bisexual' and you have a male or female flower? Inspect more flowers of your precious material? Rather not. It might have been noted in lead 21 that landplants may have compound leaves as well (see lead 26). For backtracking the originating lead when far away should have been given. Streptothamnus beckleri cannot be identified as it is a climber (340). Instead one is lead to bisexually flowered (!) species of Menispermaceae (341). The correct name for Oxalis corniculata var. preissiana (p. 398) is O. perennans Haworth. The book is well-illustrated and well-produced. It has been looked forward to for a long time and should satisfy local and foreign botanists even longer. — J.F. Veldkamp.

STAFLEU,F.A. & R.S.COWAN, Taxonomic Literature / A selective guide to botanical publications and collections, with dates, commentaries and types, ed. 2, vol. 4; P-Sak, ix + 1214 pp. (1983, Bohn, Scheltema & Holkema, P.O. Box 13079, Utrecht, The Netherlands). Dfl. 292.00 (IAPT members have a 20% reduction when a cheque is enclosed with their order; in view of bank charges and mailing costs it is perhaps better to inform for an exact price first).

Jacobs has given an ample review of the first volume of this most important work (Fl. Mal. Bull. 30, 1977, 2880). It is a pleasure to announce this volume. Two more are planned and perhaps a seventh one to contain the full index and Addenda, the whole work expected to be complete by 1988. — C.G.G.J. van Steenis.

SUTLIVE,V.H. e.a. (ed.), Blowing in the wind / Deforestation and long-range implications, pp. 277-514, illus. (Studies in Third World Societies 14, 1981, issued by Anthropology, College of William and Mary, Williamsburg, Virginia 23185, U.S.A.). Mimeo, US$ 10, together with no. 13 $ 17.50.

See for review of no. 13 Fl. Mal. Bull. 35 (1982) 3758-3759.

Margery L. Oldfield (pp. 277-346) describes the importance of tropical forests both to societies residing in the tropical latitudes and societies living in other areas as well.

Pedro A. Sanchez (pp. 347-410) describes the soils of the world's humid tropical regions and their geographical distribution.

Robert E. Dickinson (pp. 411-442) summarises our knowledge of the possible effects of tropical deforestation on climate. After estimating the extent of tropical forests and their conversion he describes their effects on microclimates and regional and global climate. Deforestation obviously has far more immediate effects on microclimates but if sufficiently extensive can modify the climate of large regions in the vicinity of deforested areas and could increase significantly the level of carbon dioxide.

A. Henderson-Sellers (pp. 443-486) identifies five changes to the environment which can be traced to the removal of tropical forests. She concludes that the threat posed by climatic changes resulting from land clearance and agricultural practices may not be restricted to the region of surface modification. The model results have suggested that global scale climatic changes may occur. Thus land clearance and management schemes in tropical regions must be carefully designed so that both local environmental degradation and increases in the global carbon dioxide are minimised.

George Sherman (pp. 487-511) describes the Toba Batak of North Sumatra who 'farm grassland as well as irrigable and low-bush fallow fields'. The Bataks are astute readers of plant-soil relations and their concepts and folk categories of fertility are significantly different from notions of temperate zone farmers and soil scientists. Sherman's analysis of Batak strategies and world view is important because it recognises that commonly held notions about the irremedial degradation of grasslands are obviously incorrect.

Dickinson's and Henderson-Sellers' articles prove that of the impact of widespread deforestation on climate nothing is certain. Even the presumptions about evapotranspiration before and after deforestation are

different with various authors. And that makes a considerable difference in the results of computer simulations. As the biomass of the tropical rainforest per surface area is the largest of all vegetations in the world and the physiological activity is enormous throughout the year, continuously requiring water uptake through the roots of which 98% is transpirated, it seems improbably that evapotranspiration lessens after cutting the forest. Besides, there are many indications of greater run-off after deforestation demonstrated by increased flooding downstreams. — H.P. Nooteboom.

SUTTON,S.L., T.C.WHITMORE & A.C.CHADWICK, Tropical rain forest: ecology and management, 498 pp., many figs., graphs, tables, maps (1983, Blackwell Scientific Publ., Oxford; ISBN 0632 01142 4).

This is the outcome of a symposium held at Leeds in 1982 at the 21st anniversary of the Tropical Group of the British Ecological Society. In some papers new work is described, some based on new techniques for working in the upper canopy. The last session was devoted to forest conservation. Chapters of special interest are on the tridimensional structure (Richards), epiphytes (Benzing), fruiting seasonality (Leighton), decomposition and nutrient cycling (Anderson, Ashton, Baillie, Gong), mycorrhiza (Janos) ecological principles of rain forest conservation (Ng). Various other papers concern management and interactions between animals and plants. — C.G.G.J. van Steenis.

TAGAWA,H. (ed.), Researches on the ecological succession and the formation process of volcanic ash soils on the Krakatau Islands, 120 pp., illus., tables (1984, Interim Report of Grant-in-Aid for Overseas Research in 1982 and 1983, Kagoshima Univ.).

An interim report based on research by members of the Faculty in 1982-1983. There were 4 teams, 2 geophysical, 1 geological and 1 ecological. A large chapter is dedicated to the study of soils and soil profiles, some correlated with dominant species. A second chapter deals with the vegetation and succession supplemented by a list of species collected. Whether the specimens were all really critically identified is not certain: I have seen part of the collections and at least the occurrence of a 'Haplophragma' is erroneous. This was Radermachera glandulosa recorded earlier. Finally there is a chapter on the fauna with lists of phytofagous insects, scale insects and galls, termites, ants and other soil animals, vertebrates and crabs. — C.G.G.J. van Steenis.

TEAS,H.J. (ed.), Biology and ecology of mangroves, 188 pp., many maps, photographs, plates (Tasks for Vegetation Science 8, 1983, Dr. W. Junk Publ., The Hague, Boston, Lancaster; ISBN 90 6193 948 8). Cloth Dfl. 160.00, US$ 64.00.

The 20 chapters of this book by various authors can be divided into some 7 categories of subjects. Geology: fossils from Grand Cayman Reef (S of Cuba), c. 1500-2000 years old and upper Carboniferous coal of Cordaitean mangrove in Iowa. Local mangroves: descriptions and analysis of mangroves in Fukien (China), Princess Charlotte Bay and Townsville (N. Queensland), survey of Australian mangroves with the distribution of each

species mapped (dots), New Guinea and New Zealand. Faunal: mangrove fishes of New Guinea and faunal communities in Australia. Single species: ecology of cryptovivipary in Aegiceras seedlings and albino propagules of Rhizophora mangle, probably due to a recessive allele following selfing. Succession in zoned mangroves with a discussion of mangrove 'climax', a term which as a 'steady state' concept loses its meaning in this mobile gradient vegetation type. Decomposition of leaf litter discussing food chains and analysis of nutrients. Impact of sewage and oil spill: 5 chapters, e.g. the role of Phycomycetes in degrading cellulose, chitin and keratin all over the world; capacity of mangroves towards enrichment by degrading organic wastes from sewage seems rather high (Bombay, Darwin, South Africa) and impact of oil spills in the New World in which it is surprising to learn that mangroves suffer less than anticipated because of the mobile environment and their capacity of regeneration.

The chapters are rather concise but well-composed and readable. Botanically some are of distinct interest: in continental China mangrove depauperates towards the North in the same way as in the East Asian island chain, it ends in China at 27°20'N with stands of Kandelia kandel, whereas in the islands it ends with the same species in Kyushu at 31°N. The chapter on Australian mangrove species is most instructive because of the 33 detailed maps; Dolichandrone spathacea is for the first time recorded from Australia on the north tip of the Cape York Peninsula.

An instructive well-executed book aptly dedicated to the memory of the late Dr. V.J. Chapman, Auckland, who spent much of his very active life on the study of the coastal life of algae and mangroves. — C.G.G.J. van Steenis.

TINSLEY,B., Singapore Green, a history and guide to the Botanic Gardens, 139 pp., col.illus., map (1983, Times Books International, Singapore; ISBN 9971 65 136 X).

It is a small octavo booklet profusely illustrated by pen drawings and excelling in colour photography of sites in the gardens, individual plants and portraits of main botanists who have in the course of time directed the Garden towards its important position. The charming booklet contains a glossary, a list of items to make a stroll more pleasurable, suggestions for photography, a chronology of main events, indices to common and botanical names and a clear map of the Gardens. It makes a great attraction to visitors and will add to its popularity: the plants, atmosphere and history become vividly alive. — C.G.G.J. van Steenis.

WIT,H.C.D.DE, Aquarium planten, ed. 4, 463 pp., 127 figs., 111 col.photographs (4 Sept. 1983, Hollandia BV, Beukenlaan 16-20, 3741 BP Baarn, The Netherlands; ISBN 90 6045 172 4). In Dutch.

This excellently printed and profusely illustrated, very much extended edition is a boon for aquarists. Of course especially for those who are in command of the Dutch language. Species are amply described and discussed. Seven categories have been discerned: floating plants, submerged floating species, rooting rosette plants with linear leaves without petioles, idem with petioles, rooting plants with floating leaves, creeping plants with erect leaves, and species with erect or ascending stems. In

each group the species have been arranged alphabetically by genus and species.

Of various larger genera keys are provided to the species: Anubias, Aponogeton, Cryptocoryne, Echinodorus, Lagenandra and Nuphar.

The colour plates are informative and of superb quality while the text contains a large amount of original observations and critical remarks on ecology, flower biology and morphology, all observed in the living state.

Several new species have been published here validly! — C.G.G.J. van Steenis.

WIJNANDS,D.O., The botany of the Commelins, viii + 232 pp., many illus., 64 col.plates (1983, A.A.Balkema, Rotterdam; ISBN 90 6191 262 8).

This magnificent scholarly work intends to give a taxonomical, nomenclatural and historical account of the plants depicted in the Moninckx Atlas and the four books by Jan and Caspar Commelin on the plants in the Hortus Medicus Amstelodamensis, 1682-1710. The historical background is illustrated by a map showing the source areas of the plants spanning the globe, except Australia and western North America. South African plants are a major part of course. Almost all belong to the greenhouse plants and very many are still grown in this way in Europe. There are biographies of the two Commelins. The plants are listed by alphabetically arranged families and almost all are provided with ample information on the nomenclature, earlier names, distribution, year of introduction, etc. The notes are critical and testify the great dedication, knowledge and work on which the data rest. Many plates are identified here for the first time with the aid of specialists. Many plates from the Atlas have been reproduced. Some 350 species have been included. There is a light sprinkling of new combinations and even an odd new species. A fair number of the species is also cultivated in the Malesian tropics and some wild ones from that area have also been taken up. Biographical notes of the persons connected with the Commelins have been added. — C.G.G.J. van Steenis.

REQUEST FOR RUTACEOUS SEEDS

Mr. D.T. Jones would be most delighted to obtain samples of viable rutaceous seeds from any region of the world for study and for establishing a germplasm collection of living plants in Malaysia. Seeds from the Indo-Malesian region would be preferred, particularly from the genera *Atalantia, Clymenia, Feroniella, Hesperethusa, Limnocitrus, Monanthocitrus, Oxanthera, Pamburus, Pleiospermium, Severinia, and Wenzelia*. Additional genera would be equally welcome and need not be restricted to the Aurantioideae. Any seeds sent must be accompanied by a phytosanitary certificate. For seeds of Citrus spp. the Malaysian authorities have requested that 'seeds be free of mucilaginous material and immersed in a 1% solution of 8-hydroquinoline sulphate for less than one minute before drying and packing'. Mr. Jones would be willing to exchange (rutaceous) seeds if the material requested is available with him. Please send correspondence and material to: Mr. D.T. Jones, Department of Botany, University of Malaya, Kuala Lumpur, West Malaysia.