

**XVI. REVIEWS***(continued from page 58)*

**Selected papers by R. C. Ching.** 1988. x + 366 pp., 2 portraits, 21 fig, 21 tab. Academic Press, Beijing. 60 Yuan (hardcover).

Studies on the fern flora of China, one of the richest in the world, by local workers began with the work of R. C. Ching (1898–1986), whose school of former students and collaborators is now rapidly expanding his pioneer work all over mainland China. During his long life Ching published over 150 papers, most of them on pteridophytes, some in collaboration with other workers. In many cases, as we now know, an understanding of the taxonomy of the Chinese representatives is crucial for an understanding of the taxonomy of an entire genus, or even family, of ferns. Thus, it is hardly surprising that many of Ching's papers had a much wider scope and influence than just in clearing up the taxonomy of Chinese fern taxa. The complete methodological innovation of fern taxonomy, where the sorus and related structures are no longer regarded as decisive for the taxonomic placement of a genus or species, but where the structure of the entire plant is taken into account, owes much to Ching's work. His fundamental paper 'On natural classification of the family Polypodiaceae' (*Sunyatsenia* 5, 1940, 201–268) is one of the 11 papers selected for reprinting in the present volume. Pteridologists would perhaps have wished to see more papers reprinted, especially such as are not readily available outside China. Further important publications to be found here are 'A revision of the Chinese and Sikkim-Himalayan *Dryopteris* with a reference to some species from neighbouring countries' (1938), 'A reclassification of the family Thelypteridaceae from mainland China' (1963), 'The Chinese fern families and genera: systematic arrangement and historical origin' (1978), and others. With few exceptions the papers, or parts of them, are in English. The reprinting is verbatim, but not in facsimile; the text has been reset (at least in most cases), and the pagination is new. Caution is therefore indicated when one wishes to use this edition for bibliographic purposes.

At the beginning of the book there is a brief introduction by R. E. Holttum summarizing Ching's importance for and contributions to fern taxonomy and a list of biographical data. Very welcome is Ching's botanical bibliography appended at the end. The interruption caused by the so-called cultural revolution is very evident and it is sad to reflect in retrospect that without this historical event Ching would have achieved even more. A list of the taxa newly described or named by Ching would have been useful.

Most appropriately the book was published on the occasion of the International Symposium on Systematic Pteridology held in Beijing in September, 1988, to commemorate Ching's 90th birthday which he most sadly did not live to celebrate. At this Symposium Ching was also commemorated in many other ways.

Pteridologists will be grateful to the Academia Sinica for re-issuing the papers contained in this volume. — K. U. Kramer.

**CORNER, E. J. H. Wayside trees of Malaya, ed. 3.** 1988. Vol. 1: xxii + pp. 1–476, fig. 1–145, pl. 1–138; vol. 2: ix + pp. 477–861, fig. 146–260, pl. 139–236. Malayan Nature Society, POB 10750, 50724 Kuala Lumpur, Malaysia. ISBN 967-99906-0-5. Price unknown.

I don't think it is necessary to introduce Corner's well-known 'Wayside Trees'. If you have never heard of it, you must know very little of the most accessible woody species of the Malay Peninsula, i.e. those along roads and ricefields, of gardens, orchards, waste grounds, seashores, riverbanks, and secondary jungles, and you should rush out to get a copy, for now, after many years, you fortunately can with the appearance of this third edition.

Those fortunate to have one of the earlier editions (1940, 1952), might still contemplate to obtain this third edition. Browsing through it the general appearance shows that changes have been more than minor. There are now two text volumes instead of one and an atlas. All the original plates without any addition or change have been included at the back of each volume with a changed numbering. They now have a quaint historic interest as well.

Volume 1 contains the Introductory chapters, little changed but for some occasional updating, keys, and the treatments of the *Acanthaceae* through *Lythraceae*. Volume 2 has the *Magnoliaceae* to *Vitaceae*, the Gymnospermae (incl. *Gnetaceae*), an appendix on tree architecture, references, and indices (English, Malay, Latin names, technical terms, plates).

The monocotyledonous woody plants are still not treated at all, you will in vain look for palms and rattans, not even the coconut (some sneaked in anonymously on pl. 118, 136, left), nypa, oilpalm, or salacca have been treated, and no bamboos or pandans, either. Bananas are actually herbs, but to many people look like trees. This was a serious omission in the previous editions, not clearly explained (p. 24), and might well have been emended this time.

Measurements have been left in feet and inches ('thumbs'), as Corner feels that these are the natural measures, metric equivalents being for the limbless.

The terminology has remained as it was, even when actually erroneous, e.g. the half inferior ovary of text fig. 10 is a perfectly superior one, but because of the extended hypanthium the free ovary is below the insertion of floral parts and stamens (flower epigynous), the ripe fruit partly exerts from the persistent hypanthium but is still free (perigynous). In a hemi-inferior ovary the hypanthium is completely adnate to the lower half (or so) of the ovary. Even when having to deal with laymen, also, the examples should be conform scientific usage. A hemi-inferior ovary is found in *Exbucklandia*, which here erroneously is called *Symingtonia* (p. 361).

The Guide to Hallé & Oldeman's tree-models (vol. 2, p. 777-779) might have been completely integrated with the chapter on the shapes of trees (vol. 1, p. 25-35). In the Guide references might have been given to the text figures, too.

The nomenclature used in previous editions has been updated, more than 200 species have changed names, i.e. about 20%, and more can be expected.

In view of the changes during the past 50 years the chapter on the 'Trees of interest' has been completely rewritten, curiously enough the parts on Johore and Singapore have been deleted.

As in the previous edition not all species of *Mangifera* mentioned in the key are more fully treated, a pity, especially as the author repeatedly points out the lack of knowledge of the species. More data would have stimulated further study. — J.F. Veldkamp.

CRIBB, R. 1988. **The politics of environmental protection in Indonesia**. Centre of Southeast Asian Studies Working Paper 48, Monash University, Clayton (Vict.) 3168, Australia. 35 pp, 2 map, 2 fig. Au\$ 5.00.

An accurate account of the history of nature conservation in Indonesia is given from its origin as game reserves and natural monuments in the Dutch time to the latest regulations. Drawbacks for nature conservation, such as bands of guerrilleros moving around in the less accessible parts of Java and Sumatra in the late 1940's, the political disturbances of the 50's and 60's, the timber boom in the 70's, which in practice was nothing more than mining the forest, are mentioned. Transmigration as a cause of deforestation is given due attention. It is clearly shown that the government body for nature conservation, the PPA, was given a totally inadequate budget, and that the few things that could be done were largely funded by the World Wildlife Fund (WWF). A change in attitude in government circles which began around 1975 is mentioned, as well as the development of a national conservation strategy and the declaration of the nation's first five National Parks in 1980. (Up to now a further fourteen National Parks have been developed, bringing the protected areas to 11.9 million hectares). In 1979 Indonesia signed CITES. The author is rather enthusiastic about the transformation of Indonesia's conservation policy, but he is realistic on the subject of executing the policy. An important factor in nature conservation in Indonesia is the growing number of non-governmental organizations (NGOs) for the protection and/or study of nature, and student bush-walking clubs. As the political situation is an important factor in nature conservation, the Indonesian system is explained, including the rampant corruption. But some of the firms that started operating, favoured by a paid-for government contract, develop into self-sufficient domestic capitalists forcing the state bureaucracy to look for other means to exercise their power in the public interest. And that other means could well be nature conservation! So nature profits from economic liberalization. However, the newer argument 'that capitalists cannot be trusted not to harm the environment irreparably for short-time gains' has no easy reply. Recently regulations have come into force concerning pollution and environment degradation, environment impact analyses are required and on paper everything is perfect. It remains to be seen how the regulations will work in practice. "The bureaucracy's use of environmental protection to bolster its position is becoming apparent, too, in the government's expanding reforestation programme." Environment consciousness is raised by means of wayang puppet stories and model communities have been identified and held up as examples.

Many NGOs are now active in Indonesia in the field of nature conservation and protection of the environment. The problem is that the position of these groups in Indonesian politics is difficult. The New Order government has a profound distrust of independent social organizations, which it sees as a potential vehicle for subversion of national policy, if not the government itself. Most environmental groups occupy a terrain of fluctuating position between being banned and being compulsory incorporated into government sponsored structures in which they lose all freedom of action. This booklet gives an excellent account of the state of affairs, with valuable comments and a wealth of references. It is recommended for all who are interested in recent developments in Indonesian politics regarding the environment and in nature conservation in Indonesia. — H.P. Nooteboom.

DAVIES, R.A. & K.M. LLOYD (Eds.). 1988. *Kew Index for 1987*. 168 pp. Clarendon Press, Oxford. ISBN 0-19-854245-3. £ 17.50.

Charles Darwin by birth and marriage was a member of the Wedgwood family, and so a fair amount of his capital was derived from this firm of fine chinaware. In his studies he had often been frustrated by the difficulty of finding places of publication and the correct dates and authors of names, so he thought he should bequeath a part of his inheritance to

the purpose of publishing a series of such reference works. At first his thoughts had gone to animals, but Hooker and Huxley pointed out that for the insects alone there were already so many, that it would become a very time-consuming and thus costly project. They suggested that flowering plants would be more suitable. Thus the famous *Index Kewensis* was started by the capital derived from a pottery firm!

At first the data were manipulated manually by the famous compilers B. D. Jackson and Th. Durand, but are now processed on a computer by Messrs. M. D. Jackson (any relation?) and D. F. Martindale. After some initial problems, e.g. the erasure of the master tapes with no back-ups (!), and subsequent cession of activities by the computer company, the processing is now done in house at Kew itself. It is fairly simple to transfer data bases as these to a printing machine, so yearly issues are now distributed under the rather confusing name of 'Kew Index'. When 5 (or 10?) issues have been published the obedient computer will reshuffle the lot and a Supplement of the familiar size will be published. The fern names, which are included in the annual series will be removed to the *Index Filicum*.

The second instalment has now appeared, in which 'isonyms' are intentionally included for the first time. This term, not found in the Code, was proposed by D. H. Nicolson [*Taxon* 24 (1975) 461; 25 (1976) 477]. It refers to homonyms based on the same type, usually independently proposed new combinations. The Code calls these 'bibliographic errors of citation' (Art. 33.2, especially Example 5). The first author of course has priority, the later one(s) have produced mere literature references of no status at all, notwithstanding claims of 'comb. nov.', 'stat. nov.', 'sp. nov.', Latin descriptions, etc. — J. F. Veldkamp. (This review will appear in a modified form also in the *Acta Bot. Neerl.*)

EARL OF CRANBROOK (Ed.). *Malaysia (Key environments)*. 1988. x + 316 pp, illus. Pergamon Press, Oxford, etc. & IUCN. ISBN 0-08-028866-9. Price unknown.

'The general problems of conservation are understood by most people who take an intelligent interest in the state of the natural environment' says Prince Philip in the introduction, 'the value of this project is that it provides specialists, as well as those who have an interest in the conservation of nature as a whole, with the essential facts without which it is quite impossible to develop any practical and effective conservation action.'

'The increasing rates of exploitation and pollution are producing unprecedented environmental changes in all parts of the world', continues the Earl of Cranbrook, 'A major obstacle, which hinders the formulation of rational strategies of conservation and management, is the difficulty in obtaining reliable information. There is an urgent need for scientifically accurate, concise and well-illustrated accounts of major environments which are now or soon will be, under threat.'

It is unfortunately not a book for non-scientists, though. The subjects require previous knowledge, and specialist terms are freely used often without definition. Their various aspects and function in the Malaysian biosphere generally are briefly discussed, and the information is, although terse, very surveyable. A lot is cramped in the small space available. There is something of interest for everyone either within a speciality or, because of the overview of the subjects, outside it, which makes this a very useful manual, a compilation written by well-known specialists, who have tried to describe the natural science and the original peoples of the Malaysian Peninsula.

After a foreword by H. R. H. Prince Philip and an introduction by the Earl of Cranbrook the physical setting, i.e. landforms, climate, soils, and geology, is summarized by H. D. Tjia. The Peninsula is part of West Malesia, or Sundaland and its present form apparently

was determined during the Mesozoic with a change from marine conditions into a continental environment in the Upper Triassic (c. 199 m.y.). The area has been tectonically stable since. In the Tertiary most of it remained above sea level, in the Quaternary sea levels of the Sunda Shelf dropped perhaps as much as 130 m, resulting in considerably lower precipitation, a more pronounced dry season, and somewhat lower temperatures.

The original vegetation was mainly a tropical rain forest, patches of which still remain in the lowlands, while the mountain forests are still less affected. Their original structure is outlined by T.C. Whitmore. Most of the types were dominated by dipterocarps, and the forests used to be taller (up to 45 m, emergents up to 80 m!) and richer in species per unit of area (up to 200+ tree species per 2 ha!) than anywhere else in the world. The various types and zones are annotated.

The so important dipterocarps were discussed in more depth by the late M. Jacobs, who thought that they originally came from Gondwanaland with a massive appearance in West Malesia about 30 m.y. At present there are 10 genera with 156 species, 26 of which are endemic. Spreading must be slow, Jacobs estimated an extension of range of only 1 km in 100 years, but according to figures given by Ng (p. 119) this may be much faster, which is also more likely.

The Peninsula is a central part of Sundaland, one of the major palm regions of the world. J. Dransfield gives a survey of the subfamilies, tribes, and genera followed by notes on growth forms, ecology, economic potential, and conservation.

Bamboos, discussed by S. Dransfield, belong to the grasses which form the economically most important family of flowering plants of the world. Its woody representatives, bamboos, are likewise of great value. It is a pity that no recent account for Malesia is available. In the Peninsula they are fairly well known. Next to a number of cultivated species, sometimes with unknown origin, there are only 6 or 7 native genera with 28 species, of which, however, not less than 19 are endemics, 4 with few extant localities. A brief survey is given of taxonomically important characters, growth form, and ecology.

The difference between herbs and woody plants is tenuous, and I agree with R. Kiew that the distinction between families as *Umbelliferae* and *Araliaceae*, *Labiatae* and *Verbenaceae* is overemphasized. Whatever the definition of herbs, they are very abundant in the area, about as numerous in species as are the woody plants. More than half belong to only 8 families, 4 of which are monocots, with the orchids being the largest by far. Most are epiphytic because of their demand for light, a reason why the numerous sun-loving exotic weeds cannot invade the forest. The forest species are native ones, with a high level of endemism, and many have an extremely narrow distribution. With the destruction of their habitat the threat of their extinction is even greater than that of woody species, and conservational measures are urgently needed. Kiew briefly outlines their various habitats, requirements, growth and life forms, and biology.

A special group of plants, mainly herbs, are the ferns, most of which live in the forest. There are over 500 species in the Peninsula, about as many as in the whole of Africa, according to R.E. Holttum, who has studied them for so many years, and here briefly sketches some aspects of this fascinating group.

The fungi stoke the power plant of the forest, says E.J.H. Corner, as they play such an important role in the cycle of nutrients of the forest. Yet they are the least known and least studied of all plants, and as few as 1% has been adequately presented today! Identification is therefore nearly impossible and much work is still needed. Base of all future research, as in higher plants, are adequate collections, and a few notes on how to make them are given.

F.S.P. Ng discusses the general biology of the trees, outlining the various communities. The usual evergreen condition can be divided into four types, with the most dominant one of leaf-exchange, i.e. flushing of a new set of leaves when the old one is shed, was only recognized 15 years ago! Climate and age apparently influences which type an individual will choose. What makes a tree? Why are some 84 m tall, others only 30 cm? Ng in a single subchapter points out the problems. He has been a long-time student of the phenology (the study of recurrent phenomena) of tropical trees and devotes the rest of his chapter to various aspects of that fascinating subject. He points out that a tree is a colony of autonomous shoots, to which may be added that the various buds finally leading to seeds undergo different selective pressures in time and space, so the progeny of the various sides of a tree at various times is not necessarily as similar as that of many animals, where eggs may be formed at an early developmental stage. What implication does that have if one applies the mainly zoologically based evolutionary theories to plants? A list for diverse fruit types is given, showing that their nomenclature is insufficient. With 'pulp' ariloid structures are intended (p. 120). An achene is not just a small nut, but an unicarpellate, one-seeded fruit derived from a superior ovary, where testa and pericarp have become completely fused, as in grasses. *Vernonia* has a cypsela, which is derived from an inferior ovary. The fruit of *Ficus* is a syncarp well-known as a fig.

Nature left by itself is in a fine balance, and the tropical rain forest has been around for a very long time. Man, however, in his selfish arrogance thinks he can 'manage' it better, and so the forest in Malaysia has dwindled from an extent of nearly 100% in 1900 (c. 13 M ha), to 72% (9.5 M) in 1960 to 47% (6.2 M) in 1982. S.M. Nor gives a balanced and lucid discussion of the various schemes (RIF, MUS, SMS) to match Nature's decreasing gifts to the ever increasing demands, especially of the West. Nor thinks that industry can and will adapt to changing, i.e. dwindling, resource supplies. That somehow it will have to be obvious, but in time? Most loggers have not yet been made aware of their responsibility.

M.K.b.M. Khan, in a similar vein, discusses the history and future of animal conservation strategies. However, since 1964, sustained efforts to create more wildlife reserves and national parks, e.g. the Endau Rompin Park (See Chapter XI in this Bulletin), have not produced results. It appears that the increased scarcity of suitable development land, added to the perceived rigidity of wildlife legislation (and not to mention the vested interests of the logging lobby and the competition between State and Federal agencies), has deterred State Governments from allocating land for conservation. He estimates that the lowland rain forest will be gone in 10–15 years, so time is running short. The Malayan Nature Society is one of the best-known NGO for conservation and has saved endangered species and conservation areas. The WWF is of course also active, but Khan says that more Malaysians ought to be involved in its activities. He gives a table showing the losses of Primates due to deforestation between 1957 and 1975, which are between 23% and 57%, more recent figures should have been given which no doubt would show an even worse situation. I would like to see a similar survey for e.g. Spermatophytes. In an appendix the existing and desirable National Parks, Wildlife Reserves and Sanctuaries are briefly described.

Other lengthy chapters are devoted to mammals (H.S. Young and the Earl of Cranbrook), birds (D. Wells), termites (N.M. Collins), butterflies (H.S. Barlow), the hydrology and zoology of the freshwaters (Earl of Cranbrook and J.I. Furtado), and last, but not least, the indigenous peoples, the 'Orang Asli' (A.T. Rambo).

Here, again, we have a volume written with the best of intentions, but no doubt missing

those that are most responsible for the issues: the politicians and business men, most of whom take no interest at all in the continuing health of their golden goose, and profit as much as they can. They should especially reread Khan's article a few times and act upon his recommendations. — J.F. Veldkamp.

EDDY, A. 1988. **A handbook of Malesian mosses. 1. Sphagnales to Dicranales.** iii + 204 pp., 165 fig. British Museum (Nat. Hist.), London. ISBN 0-567-01038-7. Price unknown.

To bryologists working on Malesian mosses, the floras of Java (Fleischer, 1904–1923) and the Philippines (Bartram, 1939) are indispensable tools. Both are outdated and of limited use for other parts of Malesia. Moreover, Bartram's general introductory key is of little practical use and Fleischer did not present one. Thus, access to the field is limited in practice to those who have a major herbarium available and to an equally extensive library containing the many scattered taxonomic and floristic publications on the subject.

It has been Eddy's ambitious purpose to remove this obstacle by preparing an up-to-date concise moss flora, aiming at 'a practical and reasonably comprehensive aid to the identification of Malesian mosses, presented in a form that requires a minimum of bryological expertise on the part of the user.' The present fascicle is the first of five planned. It contains the introduction, a glossary, the treatment of the groups indicated in the title (with some exceptions), and a bibliography of papers published before 1986 relating to these groups. A general introductory key will not be given until the whole of the flora has been dealt with, but in each family treatment keys are given to the genera and the species. The descriptions appear compact but sufficient, and there are useful illustrations of nearly all species as well as very brief (and not always accurate) notes on distribution, ecology and other matters. Many new combinations, changes in rank and reductions to synonymy are presented.

At a first glance, this is the flora needed to open up the field to those working outside the main centers. Unfortunately, it took little effort to prepare the following selection of examples of omissions, inaccuracies and mistakes, not to mention printing inaccuracies and errors.

Contrary to statements in the Introduction several groups one would expect to find will be treated in the next fascicle. These include among others the *Leucobryaceae* and the Dicranaceous genus *Brothera*. These groups, moreover, are missing from the key to the genera of Dicranales as well; the same holds for *Oncophorus* (though *O. wahlenbergii* is treated in full) and the ecostate *Braunfelsia enervis*. *Dicnemoloma* (now *Sclerodontium*) figures in the key but its Malesian species is treated under *Leucoloma*. No keys are given to the species of *Ceratodon* and *Brotherobryum*; the key to the species of *Braunfelsia* is presented in the form of a non-dichotomous draft version. Keys and descriptions sometimes are not in the same tenor. One example: the leaf cells of *Fissidens serratus* are said to measure 15–20  $\mu\text{m}$  in the description, but c. 20  $\mu\text{m}$  in the key (as opposed to less than 12  $\mu\text{m}$ ), which may lead to misidentification since they often do not exceed 12  $\mu\text{m}$ .

Species are missing, including some of good standing (e.g. *Campylopus laxitextus*, *C. sericeoides*, and *C. thwaitesii*). We are assured that new reductions have been indicated, but many such indications are missing. Eddy has preferred to leave out some synonyms that are readily available elsewhere, but he may have omitted indispensable ones too, or has failed to indicate important new identifications. Thus, one is left to surmise only that all collections formerly identified as *Leucoloma walkeri* have been assigned to *L. mittenii*, and that these are not considered conspecific.

*Pseudoracelopus misimensis* figures in the key to the species of Polytrichales and has been illustrated, but is absent from the text. *Dawsonia altissima* figures in the same key and appears in the text twice, both times as a synonym: once of *D. beccarii* and the second time for a misinterpretation of *D. gigantea* – and that is the plant meant in the key, not *D. beccarii*. *Fissidens asperisetus* figures twice as well: as an accepted species and as a supposed synonym of *F. hollianus*. Judging from his description, Eddy's accepted species is in fact *F. asperifolius*.

There are examples of names that have been misinterpreted because the author has not seen the types: *Fissidens punctulatus* figures in the synonymy of *F. perpusillus*, but its type has nothing to do with that species and is more like *F. elmeri*. The type of *F. papillosus* closely resembles *F. serratus*, and not the plant described in the 'Handbook'; Eddy's *F. robinsonii* probably represents *F. subangustus* (not treated).

Despite its shortcomings Eddy's book presents beginners with a tool to tackle the diversity of Malesian mosses and it will surely stimulate interest: it is better to have a provisional regional flora than to have no flora at all, particularly since a 'definitive' revision of the Malesian moss flora is not yet under way. However, no one should assume that the moss flora of Malesia is well known now, and well reflected in the present book. Nevertheless, Eddy's undertaking is a most laudable one, and we sincerely hope and trust that we shall have to take back these negative comments in reviews of the following fascicles. — A. Touw.

KOYAMA, T. 1987. *Grasses of Japan and its neighboring countries*. x + 582 pp., 17 + 188 fig., 2 pl., 2 col. pl. Kodansha, Tokyo. Order from Scientific Publications department, The New York Botanical Garden, Bronx (NY) 10458, U.S.A. \$ 145.00 in U.S.A., \$ 150.00 elsewhere. ISBN 4-06-201008-9 (Japan).

The manual includes all the herbaceous grasses from Japan, incl. the southern Kuriles, the Ryukyus, the Bonin Islands, and a considerable number of taxa from Sakhalin, Korea, N.E. China, and Taiwan. As many of the lowland grasses have a considerable distribution in S.E. Asia its uses goes far beyond this area. The format is similar to that of the famous Manual of the Grasses of the United States by A. S. Hitchcock (1935, 1951) giving keys to genera and species, and the descriptions appear to be original and extensive. The usually full-page line drawings are clear and illustrative. Browsing through the work showed an enormous wealth of information and its great usefulness in the agrostology of the area.

It was printed privately in a limited number of copies, and the ones for sale have an exorbitant price, whereby few will be able to afford and use it. As in Hitchcock's work a survey of the synonymy is given at the end, which for the taxonomist is extremely useful. A lot of work must have gone into its compilation. It is to be regretted that, contrary to Hitchcock's manual, no types and their whereabouts, nor basionyms have been included. This would have helped tremendously in the cases of publications in Japanese or Chinese script, often in journals or books not easily obtainable elsewhere.

It is to be expected that for the area this book will be the key source of information. Alas, it does not represent the state of the art of the 80's, but rather that of the mid-60's, when the manuscript was finished. In the past 25 years a lot has happened in agrostology, and although Koyama says that he has tried to update the manuscript, he has clearly missed some recent literature with its distributional, taxonomic, and nomenclatural additions and changes. Thus *Centotheca* and *Lophatherum* are now regarded as herbaceous bambusoids, either as a special tribe, or as a subfamily by itself (Soderstrom, Taxon 30, 1981). *Muhlen-*



*bergia* is an Eragrostideae (Soderstrom, Contr. U.S. Nat. Hb. 34/4, 1967), or forms a separate tribe close to it (Pilger, Bot. Jb. 76, 1954).

Comparing the manual with some Leiden publications on grasses, I note that the nomenclature of *Digitaria* (Veldkamp, Blumea 21, 1973; Clayton & Renvoize, F.T.E.A. 1982) does not follow current usage: so *D. adscendens* is *D. ciliaris*, *D. chinensis* is an enigmatic species, only known from its type, intended is *D. radicata*, *D. microbachne* and *D. pluriens* (sic) are *D. setigera*, *D. pertenuis* and at least part of *D. ischaemum* are *D. violascens*, *D. stricta* is an Indian endemic, intended is perhaps *D. abludens*, although I have not yet seen it from Taiwan. *Chikusichloa* occurs also in Malesia (Veldkamp, Blumea 26, 1980). *Zoysia matrella* subsp. *tenuifolia* is a nomenclatural synonym of subsp. *matrella*; the taxon described is in fact var. *pacifica* Goudswaard (Blumea 26, 1980). The lectotype of *Eriachne* is *E. squarrosa*; *Eriachne armitii* in Asia is a misapplied name for this (Van Eck-Borsboom, Blumea 26, 1980). *Arthraxon okamotoi* is a synonym of *A. hispidus* (Van Welzen, Blumea 27, 1981, 271, 277), the anthers are described as 1.5–2 mm long, but are 0.5–1 mm in the key. See Van Welzen also for his discussion of the forms recognized by Ohwi and copied here. *Agrostis alba* is a synonym of *Poa nemoralis*, while the combination has been used for what is now known as *Agrostis stolonifera* s.l., see the revision of *Agrostis* for Malesia (Veldkamp, Blumea 28, 1982), cited by Koyama, where it was also indicated that *Agrostis nipponensis* must be replaced by *A. valvata* Steud. *Thaumastochloa cochinchinensis* and *Th. chenii* are two varieties of one species of *Heteropholis* (Sosef & De Koning, Gard. Bull., Singapore 36, 1983); that these are both forms of *Mnesithea laevis*, and that *Hackelochloa* was also reduced to *Mnesithea* (Veldkamp et al., Blumea 31, 1986) came perhaps too late for the printer's copy. *Trisetum bifidum* occurs also in New Guinea (Veldkamp & Van der Have, Gard. Bull., Singapore 36, 1983). *Aulacolepis* is a later homonym to be replaced by *Aniselytron* (Korthof & Veldkamp, Gard. Bull., Singapore 37, 1984). *Anthoxanthum luzoniense* is reduced to a subspecies of *A. japonicum*, which is highly interesting, as Ms. Schouten (Blumea 30, 1985) regarded it as a variety of *A. horsfieldii*, an older specific epithet, and restricted to Mt. Pulog. If correct the taxon suddenly gets an enormous extension of its area! Ms. Schouten also convincingly argued that *Hierochloa* cannot be maintained as a distinct genus, whereby *H. odorata* has to be called *A. nitens* now.

Further browsing caused some more frowning. That Koyama rigorously has abolished the varietal level is his business, and a lot of new combinations have resulted from this. Yet, he, and his editors, ought to have been consequent: the last taxon treated is *Coix lacryma-jobi* var. *ma-yuen*, while on p. 498 it is a subspecies ('comb. nov.'). *Agrostis trinii* Turcz. (1856) is not a provisional name at all, and hence taking precedence over *A. flaccida* Hack. (1899) makes Koyama's *A. flaccida* subsp. *trinii* superfluous.

It is to be wished that Koyama will find the opportunity to update this much needed grass flora for a second edition, and then will be able to publish it in a more affordable form, for notwithstanding the above criticism, this is a very useful work. — J.F. Veldkamp.

POLUNIN, I. 1988. *Plants and flowers of Singapore*. 160 pp., 220 col. pl. Times Editions, Singapore. ISBN 9971-40-114-2. Sing\$ 29.90.

Dr. Polunin, a retired Associate Professor of the Medical faculty, National University of Singapore, has been first in Malaysia, and now Singapore, since 1948. A keen naturalist and photographer, he has traveled widely in S.E. Asia where he gained a vast amount of knowledge about nature as well as filming and photographing what he has seen.

'Plants and flowers of Singapore', part of a series of nature books produced by the publisher, is more than just a collection of colourful photographs since the text has been studiously researched and is written in a style that both scientists and non-scientists can understand and learn from.

The book opens with succinct chapters about Singapore: the history of its floristic research and botanists, climate, original and present natural vegetation, as well as ornamental and commercial kinds with excellent habitat photos to illustrate his descriptions.

The other 2/3 of the book includes representative examples of Singapore's present flora arranged in 29 categories, e.g. aquatics, ornamental annuals, cultivated orchids, forest trees, fruits, spices and flavourings, etc. Each photograph, in vivid colour, includes a caption which has the botanical name of the plant, its family, English and Malay common names, short notes on the habit, habitat, characteristic botanical features, distribution and country of origin, and for many the synonyms, relationships with animals, ethnobotanical and medicinal uses, chemical properties, and cultivation notes. There is also a reference given for each entry to verify his notes and consult if further information is desired. A glossary, bibliography, and index appear at the end.

While not being overly scientific in his approach, Dr. Polunin has produced a book that has its value for students, popular readers, and scientists. The introductory chapters do, in fact, have ideas that Singaporeans as well as readers in other nations in the region should heed. Economic and urban development have eradicated most of the original vegetation of Singapore, so much so that many species are no longer there. There is a plea for rational, not indiscriminate, planting of roadsides and urban gardens by using more native species and fewer introduced ones. The epiphytes that once adorned many large roadside trees in Singapore were officially condemned as being parasites and subsequently destroyed; a rash and irrational decision. Dr. Polunin suggests that nature can be conserved and partly recovered if official decision makers consider all the biological consequences of, for example, removing a tree, planting monocultures, and considering land reclamation.

The book has several shortcomings, none serious, that require correction. The map depicting the northern boundary of the Malesian flora does not, as it should, include the Philippines, while the temperature graph is quite inaccurate. There are several nomenclatural errors, e.g. tapioca is *Manihot esculenta* (not *M. utilissima*), *Etilingera elatior* is the correct name for *Nicolaia elatior*, *Rhoeo discolor* is a synonym of *R. spathacea*, and a few others. Dr. Polunin's use of several family names does not conform to those used in regional floras, e.g. *Lamiaceae* = *Labiatae*, *Poaceae* = *Gramineae*, *Asteraceae* = *Compositae*, while he gives the three subfamilies of the *Leguminosae* family status.

There are occasional errors in the text. One of the most serious of these is the repeated use of 'flower head' for inflorescences of, for example, coconut palms, various legumes with panicles, and *Heliconia*. The 'flesh' surrounding the seeds of *Artocarpus* is not from the stamens, which are in a separate 'flower head', but from the bracts and calyx of the female flowers. Perhaps editorial meddling is sometimes responsible for some errors as these under *Peltophorum pterocarpum*, where 'the leaflets are often out of alignment' and the seeds can be hastened to germinate by 'malreatment', and the introductory note that the 'first word' of the scientific name is capitalized. I certainly do not agree that cauliflory ['flower heads which issue from the trunk or branches' (i.e. ramiflory!)] is common in or characteristic of tropical forests, or that such a condition has some sort of 'benefit' for the species. His claim that climbers, e.g. rattans and *Bauhinia*, have 'thin, flexible stems' is certainly an understatement since many of them, especially the latter, have stems over

30 cm diameter and are often quite woody and inflexible. Finally, the 'instant trees' planted along Singapore's roads are not from rooted branches, but from severely pollared (mostly *Pterocarpus indicus*) trees.

In general, with the wealth of information presented, Dr. Polunin is to be complimented on his writing and the taking of most of the photos in the book. An expanded second edition is certainly encouraged. His second book in the series, 'Plants and flowers of Malaysia', was recently published and I am eagerly awaiting my copy. I hope that Dr. Polunin will find time to do similar work for other S.E. Asian countries since there is a definite need for such books. — J.F. Maxwell.

**RAUH, W. Tropische Hochgebirgspflanzen.** 1988. 206 pp, 212 fig (most in col.), 39 pl. Springer Verlag, Berlin, etc. ISBN 3-540-18933-5 or 0-387-18933-5. DM 98.00.

Rauh has here arranged his more than 50 years experience with these vegetation types and their components, mainly in South America, but also in New Guinea, as the many references to and pictures of Mt. Giluwe and Mt. Wilhelm attest.

When visiting the high mountains of the tropics one is struck by the similarity in growth forms of plants belonging to the most divergent groups that form a vegetation type known in South America as the páramo, but which occurs in Malesia as well. Above the treeline the vegetation consists of species with usually thin branches forming dense thickets interspersed with open places with grasses and forbs (the subpáramo of Cuatrecasas). Higher up the shrubs disappear and are replaced by grasslands and hard cushion associations (superpáramo), which peter out when approaching the snowline. Remarkable is that the vegetation is patchy unlike the closed 'Matten' of the alpine vegetation of temperate Europe and America.

At this altitude, in New Guinea generally above 3000 m, a number of factors put severe constraints on life and growth: rapid daily, but not seasonal changes in microclimate with ground temperatures ranging between several °C below 0 to 50 or more above, a high relative humidity (75% and more) because of rain, clouds, and mists, an acid soil (pH c. 4), high ultra-violet radiation. Selective factors are strong and adaptations tend to produce convergent forms. Germination, growth, flowering, and fruiting must take place at low temperatures without a resting period. Growth is continuous but slow, usually resulting in short internodes and individuals with possibly very high ages.

Rauh extensively explains the various growth forms from their branching systems. The main element of the páramo is formed by tussock forming grasses, e.g. in New Guinea *Danthonia archboldii*, *Deschampsia klossii*, and *Poa keysseri*.

Impressive are the 'Schopfrosettenpflanzen', a diverse group of perennials without or with stems, that may be more or less thick, elongated, branched or not, bearing terminal tufts of leaves. In Malesia there are not so many examples of this, while South America and Africa abound in them. Widely spread with us are the treeferns, e.g. *Cyathea atrox*, while some *Rhododendrons* also show a tendency to this growth.

In the forested parts the trees (e.g. *Dacrycarpus*) usually have a single bole, but a densely branched crown, while, if there are several relatively thick boles, usually with a recognizable main bole, one can speak of tree-shrubs, e.g. in *Rhododendron*. Shrubs, defined as woody plants with an explicit basal branching system without a distinct main bole, are, of course, represented in numerous species. Adaptation to the climate is especially evident from the form and structure of the leaves, sclerophylly, velutinous indument, etc. Some special forms are the shrubs with scale-like leaves, for instance *Detzneria*, and the *Epa-*

*cridaceae*, and those with needle-like ones, the ericoid or microphyll shrubs, e.g. *Drapetes ericoides*. In South America and Africa there are many shrubs with thorns of various derivation. These are possibly a defense against large herbivores, which have died out in New Guinea a long time ago. In New Guinea we have *Rubus*, *Myrmecodia*, and the herbaceous *Papuzilla* species (now *Lepidium*). Low dwarf shrubs, up to about 40 cm high, are also represented in many species, e.g. of the *Ericaceae*. A special case is formed by the creeping shrubs, the 'Spaliersträucher', of which we do not have so many, e.g. *Coprosma archboldiana*.

A very extreme case is formed by the cushion plants, of which there are very many in South America. There they are sometimes so dense and hard that they can only be broken up with an axe. In New Guinea they are smaller and not so hard, e.g. *Astelia papuana*, *Oreomyrrhis azurellacea*, *Poa inconspicua*, *Rhododendron aizoides*, *Rh. saxifragoides*. Dense cushions may be formed in marshy places, the hard cushion associations, with *Danthonia oreoboloides*, *Centrolepis philippinensis*, *Eriocaulon* spp., *Oreobolus* ssp., and mosses in which many small herbs grow. In drier places vast stands of *Gleichenia vulcanica* may be found. Species that form succulent cushions seem to be absent in New Guinea, perhaps because they occur in the *Cactaceae*, *Crassulaceae* and certain groups of *Euphorbiaceae* that are absent in Malesia. Some species of *Eriocaulon* in a way come close.

The indigenous herbs in the New Guinea páramo are all perennial (some introduced species are said to be annual in their native country). Some form rosettes only during their vegetative phase, when the flowering branches are formed that die off after fruiting, e.g. in *Geranium*. Others have stolons which may produce new rosettes some way off, e.g. *Gunnera macrophylla*, or mats as in *Keysseria radicans*. The differences with plants that form rosettes from which leafless peduncles arise does not seem very clear in New Guinea, except perhaps in clearcut cases, e.g. *Ranunculus*, *Trachymene novoguineensis*.

Because of the absence of any climatic changes there is no need for true geophytes, e.g. plants that survive with subterranean parts, although bulbs are formed by certain orchids, e.g. *Dendrobium* spp., and spectacular chambered tubers by *Hydnophytum* and *Myrmecodia*, but these have a different origin.

If one is interested in the high mountain flora of the tropics, one should read the text carefully and study the many growth diagrams summarized at the end. Enriched by the knowledge displayed here, the next trip will be even more rewarding. A comparison with the growth forms found in the high mountains of the Philippines, Mt. Kinabalu in Sabah, and G. Leusir in N. Sumatra, which Rauh apparently did not visit, would be rewarding. Only the introduction of Van Royen's Mountain Flora of New Guinea was apparently known to him, otherwise many more Malesian examples could have been cited. I have tried to include a few in the above.

It is a great pity that the text is in German, a language few in South America and perhaps none but some expatriates in Malesia can read. A Spanish and English edition would reach a much wider public, provided also that a more reasonable price will be asked, for I fear that now few will be able to afford the book in any language and the experience of half a century will remain unnoticed. — J.F. Veldkamp.

RUBELL, K. *Tropical rain forest in South-East Asia — a pictorial journey*. 1986. xiii + 234 pp., many col. pl. Tropical Press Sdn. Bhd., 29 Jalan Riong, 59100 Kuala Lumpur, Malaysia. ISBN 967-73-0013-X. \$ 32.00 (incl. surface mail).

In this chapter I have reviewed the Earl of Cranbrook's 'Malaysia (Key environments)'.

This pictorial survey should be placed beside this, as it shows the beauty of the richnesses of the tropical rain forests, which may soon be lost forever. Ken Rubeli is a superb photographer and with his lens has caught the essence of the rain forest. Here, in the remote Netherlands, I have shown it to various visitors at my home, who stared in wonder at its marvels, the huge trees beyond their experience, the beauty of foliage, flowers, animals, rivulets, and rivers. In these pictures the experience of a virgin forest with its richness and multitude of forms has been vividly caught in its shades and lights. It may be regarded as a 'coffee table book' by those who have never experienced the wonders of the forest, but for those who have ventured into its humid shades it is a book to leaf through again and again, as it has immortalized the beauty of the place. On expeditions one often carries a camera to document the scientific exploration, but one never has the time, patience, and eye to take pictures like these. To all 'insiders' I recommend this pictorial expedition to Northern Sumatra, Peninsular Malaysia, Sarawak, and Sabah, as it depicts the things we have seen, and would like to have brought home to show the lagers behind where we were and what we saw. — J.F. Veldkamp.

SALDANHA, C.J. (Ed.). 1985. *Flora of Karnataka. 1. Magnoliaceae to Fabaceae*. ix + 535 pp., 62 fig., 18 col. pl., 3 maps, 1 tab., 1 graph. A.A. Balkema, POB 1675, 3000 BR Rotterdam, The Netherlands. ISBN 90-6191-427-2. Dfl. 84.00. (incl. VAT).

First volume of probably 6 for the S.E. coastal state of Karnataka in India. Its flora and vegetation types are briefly introduced and the taxonomic history summarized. There is no floristic comparison, but the tropical flora has many relations with the Malesian one at least at the generic level. As such it is a useful work for future comparison. Keys are given down to the families, although mainly based on single characters, which occasionally will be difficult for an amateur. A glossary is unfortunately absent. If one knows what a cyathium is, one does not need the key, if one doesn't know it will be difficult to get to the *Euphorbiaceae*. If one does not have complete material consisting of flowers and fruits, it will be impossible to distinguish between *Pittosporaceae* and *Turneraceae*. Of course better characters could have been used here. The *Cyperaceae* do have terete nuts and the stigmas are often so long that one could easily mistake them for styles. In fact the 2 styles mentioned for the *Gramineae* I would regard as stigmas, the true style(s) usually being absent. There are much better characters to distinguish between the families!

The Roman numbers in the family key do not refer to forthcoming volumes, as I first thought, but to the number of times the family has occurred in the key so far. What may be the use of that? It would have been more practical to give the pages of the families included in this volume instead of just family numbers, which are not repeated in the running head lines. For the genera no pages are given, either, and although they are arranged alphabetically, a quick perusal is not made easier. The taxa are briefly diagnosed, with some synonymy, rough distribution in- and outside the area, some ecological and flowering notes, vouchers, vernacular names, and uses, if any.

Despite the above criticism it is a very useful book and I'll be looking forward to see the following volumes. I want to congratulate Father Saldanha and his collaborators with this achievement. — J.F. Veldkamp.

**TAXON 37/3** (1988) is dedicated to the Symposium 'Tropical Botany: Principles and Practice', held in Zeist, the Netherlands, from 28 September to 3 October, 1986, at the occasion of the 350th anniversary of the University of Utrecht, the Netherlands, and the

retirement of Dr. F. A. Stafleu. These proceedings make fascinating reading and covers many aspects of modern and classical taxonomy. The subjects of the congress lean heavily towards neotropical botany, but there were many speakers who dealt with more general topics that will be of interest to the readers of this Bulletin. Thus Van der Hammen gave a brief account of the factors that have influenced the origin and evolution of the tropical flora in general. Prance and Campbell gave the distressing story of the present state of tropical floristics compared to the swift extinction rates of its subject. Contrary to what is necessary the collection rates in the areas with the greatest emergency is declining while tropical forests are 'converted'. In Insular Malesia alone they indicate 10 areas for urgent exploration. Raven looking at tropical floristics tomorrow estimates that at least 20% of total higher plant species in the world (c. 60,000) are faced with extinction in the next decades: a reiteration of a well-known yet always depressing story about unwillingness to learn about and practice sustainable land use in the tropics.

On the more taxonomic level Ashton makes the case that ecological characteristics can provide valuable evidence for species delimitation in complex floras such as those of tropical rain forests and discusses current evidence on the biological nature of rain forest tree species.

In line with Utrecht's interests in the *Annonaceae* several speakers discussed taxonomic progress in the *Magnoliidae*. Gottsberger reviewed the reproductive biology of primitive Angiosperms in general and interpreted that winteraceous pollination modes and life strategies are close to ancestral conditions with cantharophily a derived condition. Le Thomas has examined the variation of the apertural areas in the pollen of *Annonaceae* and reported a large variation and hence the difficulty in defining the various types. Weberling analyzed the inflorescence structure in primitive Angiosperms where there is a range of diverse forms with monotelic inflorescences prevailing by far. Beautifully illustrated! Vink reviewing a number of characters of the *Winteraceae* has attempted a cladistic analysis from which he concluded that *Tasmannia* and *Drimys* s. s. are most likely congeneric. Behnke reported on the sieve-element plastids, phloem protein, and their use in the study of the evolution of the *Magnoliidae*. According to him the *Atherospermataceae* are just as distinct from the *Monimiaceae*, in which they are generally placed, as other families allied to the latter.

Quite a different topic is the current use of interactive computerized databases from which descriptions, keys, and other information may be gleaned. Pankhurst exemplified some uses for the desktop PC, while Allkin and Bisby demonstrated the design and structure of structured taxonomic databases. Gómez-Pompa and Nevling reflected on their experiences with floristic databases when writing the Flora of Veracruz and pointed out the problems facing such a project in undeveloped countries: (multi-)institutional floristic projects seems the only viable long-term solution.

Stearn contributed a paper on the scant knowledge Linnaeus had of the tropical flora. Most of his knowledge was based on literature and the few species in cultivation. His 'apostles' often brought back the common ruderals that had been spread pantropically by commerce and slavery whereby he could have no concept of the bewildering variety actually present. Thus his use of 'India' was rather loose and presently may cause confusion, for he sometimes meant both the West and East Indies as well as China!

In view of Stafleu's accomplishments in bibliography Ewan reviewed the work and life of 5 famous bibliographers, 'jackdaws' as the famous Vail uncomplimentarily called them (you have to be one to know one, I guess): Dryander ('Old Dry'), Pritzel (who went mad: do you have to be that for this work or does it drive you to it? A worrying thought), Sabin,

Rehder, who started on his bibliography of cultivated trees and shrubs 4 days before his 77th birthday and finished it when he was 85 (at least there is hope of a long life in this business!), and the famous Nissen.

The final paper given by Stafleu outlines the prehistory and history of the IAPT. He tells us the fascinating story of perseverance of a few scientists that gave us IAPT, Taxon, Regnum Vegetabile, incl. TL-2, ING, Index Herbariorum, the Codes of Nomenclature, etc., without which a taxonomist's life would be so much more difficult. Stafleu fits well into the flock of jackdaws. — J.F. Veldkamp

### Material requested

Wanted: ripe fruits of *Capitularina involucrata* (Valck.Sur.) Kern (Cyperaceae) for embryological research. This rare species grows in the swampy parts of lowland primary forests of New Guinea and the Solomon Islands. It is easily recognized by its quadrangular, septate stem (up to 1 m tall), and head-like inflorescences surrounded by up to 8 large, plicate, leaf-like bracts (for a good figure, see Fl. Males. I, 7, 1974, 459). Vouchers will be very welcome, too.

Please send to Dr. P. Goetghebeur, Laboratorium voor Morphologie, Systematiek en Ecologie van de Planten, K.L. Ledeganckstraat 35, B-9000 Gent, Belgium.

### Miscellaneous note

We do not write, nor are we likely to, of dryforest, moistforest, thornforest, temperateforest, evergreenforest, monsoonforest, Mediterraneanforest, seasonalforest, temperate-deciduousforest ... It is therefore inconsistent and illogical to run together the noun and adjective when referring to that forest type what occurs in perhumid tropical climates. In my view, therefore, rain forest is strongly to be preferred to 'rainforest'. — T.C. Whitmore.