

XII. BOOK REVIEWS

P.Collenette, The Geology and mineral resources of the Jesselton-Kinabalu area, North Borneo. Geol.Surv.Dept.Brit.Terr. in Borneo Memoir no.6. Govt.Printer, Kuching, 1958, 40 fig., 53 pl., 1 col.geol.map. Bound M\$ 6 or 14 sh.

This is also for the botanist an interesting book, in that it provides maps and many photographs of the fascinating Kinabalu area. There is an account of the exploration and the various routes for ascent. The geology offers aspects for the plant ecologist in soils on acid, volcanic, and ultrabasic rocks, on which there is an account on pp.124-127, derived from preliminary work by Mr Nicholson. Special mention is also made about the peat deposits near Benoni, pp.159-162. There is a bibliography and an index.--v.St.

J.Hutchinson, The Families of Flowering Plants. ed.2, 2 vols, pp. xi, viii + 792, 450 fig. Oxford, Clarendon Press, June 1959. £ 7.7.- (in U.K.).

The second edition of Hutchinson's well-known book is not so much an emended and enlarged edition as a new book for, although volume 2 is on the Monocotyledons little more than a reprint of the 1934 edition, there are major changes in the arrangement of the Dicotyledons. A minor new feature is that, as was done in the second volume of the first edition, keys are given to the families within each order, and further that keys have been given to genera in some of the small families. Compared with the first edition the number of pages has increased from 571 to 792, the number of figures from 371 to 450.

There are two main deviations from the original volume of 1926 on the Dicotyledons, viz a much heavier emphasis on difference between woody and herbaceous lines of alliance or descent, already advanced in the author's 'British Flowering Plants' (1948) and a great increase in the number of small, often monogeneric families accepted. As compared with the first edition, the number of orders has risen from 105 to 111 and of families from 332 to 411.

Separation of woody and herbaceous groups has led to a reshuffling of the Dicotyledons and has been applied à tort et à travers; for example Capparidales are now remote from Rhoeadales-Cruciales-Resedales and Araliales remote from Umbellales. Their resemblances, including also characteristic phytochemical characters, are boldly attributed to 'parallel development'. Though I believe that vegetative and habit characters have sometimes been underrated in the past, I cannot follow Hutchinson here. Why keep intact Urticaceae, Capparidaceae, and Loganiales, all comprising ligneous and herba-

ceous plants, but break up others and separate their former ligneous and herbaceous constituents so widely? Admitting a ligneous and tropical origin for Araliales and Capparidales it seems very likely that they have given rise to the mostly temperate and herbaceous Umbellales and Cruciales respectively. Both latter groups possess more specialized characters than the former and this is in keeping with such a presumed origin. Unless we give due attention to the facts provided, for example by phytochemistry, anatomy, etc. we will lose ourselves in very subjective speculation and rely on feeling rather than on facts.

The second main deviation is in the enormous numerical increase of families of Dicotyledons, although it must be admitted that most of these had already been proposed, some of them long ago, by authors other than Hutchinson. From vol.1, p.6, it appears that his main argument for their acceptance is that the smaller families, e.g. of Magnoliales, are more homogeneous in content than the larger ones formerly adopted. This seems to me a negative argument, as the same could be said if the taxa concerned had the status of subfamilies! It is axiomatic for each system that all groups become proportionally more homogeneous in descending the ranks. There would have been a definite advantage if certain homogeneous groups of the Magnoliales had proved to belong to another order. But they are kept side by side, just as the three families of the Leguminosae, the six families formerly forming the Loganiaceae, etc. This means that subfamilies, tribes or genera have merely been upgraded without any compensating or substantiating increase of knowledge about them. It is, of course, certain that these split families are natural ('natürlichen') families which can be assumed to be of one stock ('Sippe'), but the keeping them together in one order expresses the same thought for the order, i.e. be 'natural' and all its members come from the same ancestral stock. Thus nothing serious in the way of scientific discovery seems to have been gained from the splitting, which could indeed only be justified by the existence of objective criteria for the evaluation of characters as being of family rank. This brings us to our lamentable lack of such basic rules for the delimitation of the higher (suprageneric) ranks, viz the absence of an appropriate basis of the 'hierarchy' of characters. Mostly a combination of them serves as a guiding principle, and in my opinion phytochemical, anatomical, and cytogenetical evidence, being derived from parts which are likely to have escaped environmental induction (adaptation), must rank high among our criteria. Hutchinson's opinion is that:--"the delimitation of families, genera, and species is sometimes very much a matter of taste and personal idiosyncrasy, but I would

also add of judgement and experience". And though I admit that there is probably no living taxonomic botanist with more general knowledge and more overall experience than the author, it is axiomatic in any system that uncertainty about homogeneity increases upwards in the ranks. There is generally not much difference of opinion about species, and even not much about genera if they are thoroughly studied and known in all aspects, but the trouble starts with the families and specially with the orders where really serious diversity increases. If one takes homogeneity as a criterion, it is surely inconsequent, for example to split Aegiceraceae from the Myrsinaceae as a separate family but to leave Rhizophoraceae intact. I doubt the wisdom of all these splittings; they are of no taxonomical value if nothing is changed in the mutual relation between the segregates which are merely raised in rank.

Another source of the author's multiplication of families is the fact that through the conservative attitude of former leading systematists several 'anomalous genera' had, often with doubt, been added to larger families. Though a number of these genera have lately appeared to be misplaced or misinterpreted and hence transferred or reduced as synonyms, there remain a number which are outstanding and deserve special attention indeed. The author has probably in a number of cases succeeded in finding a better place for them, but a considerable number now figure as monogeneric families. Although I find no reason to put monogeneric families under taboo, they create another serious difficulty, viz that of distinguishing 'family characters' from 'generic characters', and in the case of a monospecific genus even from 'specific characters'. Such 'characters' can only be "sorted out" in hierarchical rank by comparing and contrasting them with those of neighbouring groups, but this is in turn hampered by their uniqueness or by regarding them as so isolated that such comparisons are not made. In this tentative deductive way such monotypic families are then fitted in the system but one has no certainty about the standing of these characters, as it is well-known - and is in my opinion one of our greatest problems - that the status of one character as defined by its constancy may be different in different groups; according to circumstances it may be of specific, generic, or family value. Compare for example simple and compound leaves in Crotalaria, Aesculus, and Sapindaceae, or the diversity of habit in Ficus or Vernonia. After all a family character is only one which is shared by all genera, otherwise it is a 'tendency' and shared by many genera ("usually this, usually that"). It is the combination of such characters which is a characteristic of natural families (and all

other taxa). With monotypic families one is very much in doubt of such combinations.

The only advantage for botanists, who are more or less specialized on certain regions of the globe, like myself, is that we are here more closely confronted with the anomalous genera, now raised to family rank; treated thus they now will more likely attract the full interest of the reader, which they would probably escape if they were appended to large families.

As in the first edition the introduction contains a list of 24 general principles adopted for the classification of flowering plants; in each entry are given the primitive ancestral state of the character and its modern equivalent. The author seems really to identify primitive with old in the geological sense. I cannot see any proof of this parallelism, and it leads to intentionally tortuous thinking, as e.g. under no.19. "Free carpels (apocarpy) are more primitive and from them connate carpels resulted; sometimes, however, when the carpels have remained loosely united during evolution they may again become quite free: example: Asclepiadaceae." This and other instances seem to me *deus ex machina*. In our way of thinking, and this idea has been introduced long ago, we may assume these derivations merely from the standpoint of structure, and speak about primitive and secondary, but how old the groups are, and how old the characters, is still a mystery. It may as well be surmised that with the origin of a structural plan ("Bauplan") structurally primitive and secondary characters originated simultaneously in a subsequent development of forms on this new level.

It has sometimes been assumed that if we knew all the fossil plants that it would be extremely easy to reconstruct the evolution of the Angiosperms which are (probably!) a geologically rather recent group and show at present a great diversity. I wonder whether this is true because there seems to be so much uncertainty in their classification as is demonstrated by the new scheme presented in this book.

In comprehensive, concise works like this, one must allow for some omissions and errors. Unfortunately we find too many to fall under that excuse. Thus *Susum* is rightly *Hanguana* and is according to reliable modern information *Liliaceous*, related to *Xerotes*; *Brugmansia* is properly *Rhizanthus*; *Paracryphia*, an anomalous genus, is omitted (*Eucryphiaceae*?); *Nothofagus* has up to 7 flowers in a cupule; *Nymphoides cristata* has keeled corolla-lobes and cannot be identified by means of the key to the genera of *Menyanthaceae*. *Cuscuta* has been removed from *Convolvulaceae*, with which no convolvulaceous specialist will agree; it belongs to them in the same way as *Cassytha* to the *Lauraceae*. *Mitrastemon* has been omit-

ted in the key to the genera of Rafflesiaceae. More serious are the errors, cq. omissions in the geographical data, which I have carefully checked for Malaysia. About 90% of the distributional maps are inaccurate or erroneous as far as Malaysia is concerned and these errors could easily have been avoided as correct maps or data have been published, many in Flora Malesiana. Some random omissions are: the 2nd species of the genus *Batis* occurs in New Guinea; one species of *Anisophyllea* is in tropical America; *Trimenia* extends from Celebes to Fiji. The same holds for the distributional data in the text: *Apodanthes* is in W.Australia; *Saururus* occurs also in SE.-E.Asia and Philippines; *Selaginaceae* occur also in Asia; *Basella* is probably not native in Asia, but 3 species are in Madagascar; *Acaena* was reported from New Guinea 70 years ago; *Gaimardia* occurs also in New Guinea; *Centrolepis* is also in Indo-Malaysia from Siam to New Guinea; *Engelhardtia* occurs also throughout Malaysia, *Hymenosporum* also in New Guinea, *Citriobates* also in Malaysia, *Trigoniastrum* throughout west Malaysia, etc. etc. *Hippocastaneaceae* are reported from Malaya but do not occur there, etc.

The work is very nicely printed on thick paper; I would have preferred to have it on slightly thinner paper and in a single volume, as the first volume with the Dicots is now without a full index, which proves to be a nuisance; an index to family names of Dicotyledons is hidden in volume 1 on p.101-103.

In conclusion I cannot conceal some disappointment, as this is not the book I had expected. It has the virtue of presenting a general world survey with a useful key, numerous illustrations, and some new information. Nobody else commands so much experience and detailed knowledge of the shapes of plants. Nevertheless to me it seems in many places extremely subjective, with phylogenetic speculations often providing an unsure foundation; it abounds in small errors which could easily have been avoided and I doubt very much the utility of the far-going family splitting which seems in some cases inconsistent and distinctly without reason.--v.St.

H.C.D.de Wit (ed.), Rumphius Memorial volume, sponsored by "Greshoff's Rumphius Fonds", acting under the patronage of "Het Koninklijk Instituut voor de Tropen", Amsterdam, 1959. 8°, v + 462 pp., 3 fig., 3 pl., 27 page-size photographs. Clothbound £ 4.10.-; \$ 12.50.

This is an attractive addition to the *Rumphius Gedenkboek* of 1902, in which light is thrown on many facets of Rumphius's work omitted in the former work, e.g. *Algae* (Zaneveld), *Fungi* (Boedijn), *Useful plants* (van Slooten), and a checklist to the *Herbarium Amboinense* (de Wit). Unfortunately

the latter list contains many omissions, errors, and inaccuracies although it did not pretend to be more than a bibliographic and nomenclatorial attempt to bring Merrill's Interpretation up to date. It should never have been published in this state. The zoological evaluation of the Rumphius's "Rariteitkamer" has been worked out for Mammals and Birds (van Bemmelen), Fishes (de Beaufort), Crustacea (Holthuis), Echinoderms (Engel), and Corals (Bayer and Boschma). There is a concise attractive introduction by De Wit. The nicely bound book is printed on good paper and there are many illustrations.

T.B. Worthington, Ceylon Trees. The Colombo Apothecaries' Co. Ltd. 1959. 80, pp. (ix) + 429 + 11 pp. (index), map, 429 fotogr. (10 x 10 cm). Clothbound RS.40.--.

More than 40 years ago Mr Worthington came out to Ceylon as a youngster in the tea-planting business; he remained there all his life and is still living in a bungalow above Kandy. He acquired a fancy for knowing all about the qualities and characters of Ceylon trees, their identity, timber, floral and vegetative properties. He gradually assembled a library and a (properly poisoned) herbarium, and along with the herbarium a large collection of wood samples. In this way he acquired a unique knowledge of Ceylon trees, native and introduced. He received help from the late Dr Alston and other botanists and forest officers. He started also to make photographs of living materials at close-up range; he made these photographs underway in the field, carrying in his car a construction of his own permitting to have all photographs comparable to distance, size, and even background. In this book all samples are reproduced at one third of the natural size.

As the author states in his introduction the photographs are intended for the new-comer who wishes to identify at least some of his trees. Each photograph is appended with notes on colours and other useful characteristics and vernacular names, to afford additional help in identification. Of the 429 species 330 are indigenous (and of these 111 are endemic to Ceylon), and about 100 are exotics (among which 29 Australian). About 50 exotics have become naturalized.

In 1956, during the Kandy Symposium, I have been invited to pay Mr Worthington a visit and observed the passionate care he takes for his hobby. He was then just engaged in having made trials for reproduction in print. It must be a great satisfaction to him that the book is now out and has been so well executed; it is entirely printed on glossy paper of good quality. I assume it will be widely used by Ceylon residents. It contains many field data unknown. It is a

striking example how an isolated amateur in the tropics can forge his hobby into a useful tool by great love and care of his subject and tenacity to bring it to an end.

Asking him how he has come to so peculiar a hobby, he wrote me that when he was about ten years old he was sitting up in a tree (*Acer campestre*) watching his brothers playing with their rabbits, when the branch broke and he was decanted on to his head amongst the rabbits and brothers and that he since then had been more observant of the habits of trees.--v.St.

H.H.Zeijlstra, Melchior Treub. Pioneer of a new era in the history of the Malay Archipelago. Published by the Royal Tropical Institute, Amsterdam, 1959. 80, 127 pp., 16 illustr. Buckram 15 sh. or \$ 2. Orders to the Royal Tropical Institute, Mauritskade 63, Amsterdam, Holland.

Admirable sketch of the life and work of the most famous tropical botanist of modern time who built, during three decades (1880-1910) a very large scientific centre for pure and applied biology in Java. Starting as a focus in the Botanic Gardens, this enterprise ended in a complete Department of Agriculture, Forestry, and Fisheries. The book gives an impressive picture of Treub's mental background and his erudite and outstanding personality. The reason for publishing this biography is not only to honour his memory at the centenary of his birthday, but is rather based on the fact that Treub's ideas towards organization and co-ordination of research in the fields of pure and applied science are still of actual value. This made it desirable that this work should also appear in an English version and thus be accessible also to those who are not in command of the Dutch language, in which the original address in 1951 was held.

The edition is financially supported by the "Treub Maatschappij" and the "Prins Bernard Fonds" which made it possible to offer this nice book at such a low price.--v.St.