

MEETINGS OF THE ROYAL BOTANICAL SOCIETY OF THE NETHERLANDS

MEETING OF THE SECTION FOR PLANT TAXONOMY AND PHYTOGEOGRAPHY ON NOVEMBER 20, 1981

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Horsfieldia inside and outside Malesia

The genus *Horsfieldia* (Myristicaceae) comprises c. 66 species, and is distributed from Ceylon and NE. India through S. China, Indo-China and Malesia to the Solomon I. and N. Australia. It is absent from the Lesser Sunda I. Apart from a few widely distributed species, viz. the well-marked *H. irya* and *H. macrocoma*, most of the species are of limited distribution. About half of these occur in W. Malesia (& Indo-China) and have predominantly 3-valved perianths. The others which have predominantly 2-valved perianths, occur East of Wallace's Line, mainly in New Guinea. This is the more peculiar because in most individual specimens (and species) the number of perianth-valves is not at all fixed: usually perianths with a deviating valve-number are found in low percentages. As regards the distributional separation there are a few more exceptions, viz. *H. crassifolia* (widely distributed in W. Malesia) has a 2-valved perianth, but the shape of the androecium closely links up with other West Malesian 3-valved species. The East Malesian *H. sepikensis*, on the other hand, has a predominantly 3-valved perianth, but its androecium links up with that of several related 2-valved species in the same area. In general the perianth character, though not strictly fixed even in the specimens, apparently has a significance connected with Wallace's Line.

W. A. VAN HEEL (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)
Development of the seed of *Horsfieldia* and *Knema* (Myristicaceae)

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W. A. VAN HEEL (1982): Note on the structure of developing seeds of *Knema* and *Horsfieldia* (Myristicaceae). *Blumea* 28(1): 53–60.

R. GEESINK (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)
American *Derris*, relict or *Lonchocarpus*?

In the N.-E. part of tropical S.-America some five woody lianas are found, as a rule regarded as *Derris* species. As for inflorescence type, flower type and pod structure they belong to the strictly S.-E. Asiatic section *Derris*.

In 1978 Sousa, reviser of the related genus *Lonchocarpus*, expressed the opinion that the winged pod of the American *Derris* species is a secondary development and, basing on inflorescence, flower type and geographic distribution, he placed these species in *Lonchocarpus* subg. *Phacelanthus*.

As no intermediates between the two rather divergent pod types are known and as the pods of the American *Derris* species fall within the variation of the pods of the S.-E. Asiatic *Derris* sect. *Derris*, this opinion is not to be applauded.

The pollen of the American *Derris* species is different from the pollen of the Asiatic sect. *Derris*, but it is within the variation in the whole genus *Lonchocarpus* as well as within the whole genus *Derris*, and so pollen morphology offers no arguments for or against the conflicting opinions mentioned.

Such arguments did come from phytochemistry: Gottlieb found a difference between the isofla-

vonoids of the American and Asiatic *Derris* species (all with the same structure) on the one hand and in the species of *Lonchocarpus* subg. *Phacelanthus* (with a more oxidized skeleton) on the other.

The correlation between the pod character and the chemical ones together with the principle that taxonomy prevails over geography strongly lead to the idea that *Derris* can be added to the list of trans-pacific taxa, compiled by Van Steenis. Beside several genera from other families, within the Leguminosae the genus *Ormosia* and the supposedly closely related genera in the Ingeae (Mimosoideae) show the same distribution pattern.

P. BAAS, E. VAN OOSTERHOUD, C. J. L. SCHOLTES and R. KOOL (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)

Leaf anatomy of the Olacaceae – phylogenetic and phytogeographic aspects

The Olacaceae show an extraordinary amount of leaf anatomical variation which lends itself well for classification purposes. Based on different combinations of characters seven groups can be distinguished within the family (not considering the aberrant *Octoknema* and *Erythralum*). Decisive characters for the classification are: secretory cavities; laticifers; silicified mesophyll cells; vascular system of petiole and midrib; supporting sclerenchyma fibres and brachy-astrosclereids in petiole and midrib; stomatal type; lignification of guard cells; development of cuticular ledges and position of lumina in guard cells; crystalliferous epidermal cells; indumentum; minute, unligified fibres associated with some of the veins; and hypodermal development. Varying characters such as occurrence and type of idioblastic mesophyll sclereids, silica bodies and crystals are of more restricted taxonomic value.

The leaf anatomical groups coincide partly with the traditional classification in tribes. Main new elements of the classification are the abolishment of subfamily boundaries, and the reallocation of genera from the artificial tribes Anacoloseae and Heisterieae to different groups. A phylogenetic reconstruction using Hennigian methods has been made for the family which can be supported by data from wood anatomy, ovule morphology and information on root parasitism in the family. The derived groups of the Olacaceae show distinct links with other families of the order Santalales, such as Santalaceae, Loranthaceae, Mysodendraceae and Opiliaceae. Olacaceae are the most primitive family of the order, and its primitive members show weak links with the Celastrales.

On account of the pantropical, transpacific and transatlantic distribution of most of the leaf anatomically recognised groups, one can deduce that they must have differentiated before the breaking up of Gondwana land, and that both primitive and derived leaf anatomical characters in individual Olacaceae are very conservative and date back to Cretaceous times.

More detailed accounts will be published elsewhere.

J. F. VELDKAMP (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)

Nomenclature of *Agathis dammara* (Lamb.) L. C. M. Rich. (Araucariaceae).

It has been discovered that the lectotype specimen of *Agathis dammara* (Lamb.) L.C.M. Rich. does not belong to the species universally called by that name or by one of its synonyms, but pertains to *A. borneensis* Warb. The name must therefore be rejected under Art. 69.1 of the ICBN. However, some consider that there is but a single, polymorphous species in Malesia, in which case the type does belong to the species and rejection is then unnecessary and undesirable. The ICBN does at present not provide a satisfactory solution for this problem, where aggregate and segregate species are concerned. Similar cases are *Alchemilla vulgaris* L., *Polygonum aviculare* L., *Rubus fruticosus* L., *Taraxacum officinale* L., etc. The proposal by McNeill (Taxon 30, 1981, 637) is therefore supported, whereby a name rejected for a segregate species can be maintained for the aggregate one.

M. JACOBS (*Rijksherbarium, Postbus 9514, 2300 RA Leiden*)

New contributions of botany to conservation

Professor C. G. G. J. van Steenis is one of the prolific early authors on plant destruction and conservation in the tropics. Important points of view in his work are: 1) awareness of the vast scale of vegetation destruction by humans in past ages, 2) the climax concept, which is of great help in

recognizing vegetation types with high conservation value, 3) the genus as a working unit in plant geography and ecology, 4) Flora Malesiana reference works on exploration and taxonomic literature, which serve as essential inroads.

The large-scale rain forest depredations in Malesia, begun in the 1960's, created a need for botanical advice on conservation matters. Two main problems in this area are: i) the species richness in the rain forests, ii) the large amounts of uneven, scattered data in taxonomic literature on this richness.

The view has emerged, that the species richness – in fact, forest composition in general – offers an essential viewpoint to understand these forests in their functioning, values, and fragility. From this understanding, arguments and guidelines for conservation can be derived. To cope with the large amounts of uneven information, less is expected from data banks than from a keen selection of solid, salient facts, which serve as convincing examples to argue a case. The concept of threatened genera seems in the tropics far more fruitful than that of threatened species, for purposes of environmental education.

The botanical value of a given area is best assessed with the aid of a (partial) species list. Those species are selected of which a recent taxonomic revision is available. In it, rarity, distribution, ecology, and uses are looked up; these data are amassed to a representative sample of facts based on the best scientific evidence.

Emphasis deserve the 'non timber-values' of rain forests, exemplified in the so-called minor forest products. Their study has been unjustly neglected, and should be promoted strongly.

H. P. NOOTEBOOM (*Rijksherbarium, Postbus °9514, 2300 RA Leiden*)
The genera of tribe Magnolieae, family Magnoliaceae

The Magnolieae are divided in two groups of genera, one with flowers on a brachyblast in the axils of the leaves and thus with monopodial growth, and one with terminal flowers and sympodial growth.

The first group of genera can be further subdivided into two groups: the genus *Elmerrillia* with a sessile gynaecium and (pseudo-) syncarpous as well as apocarpous fruits, and three genera with a stalked gynaecium, *Michelia* with apocarpous fruits, *Paramichelia* and *Tsoongiodendron* with syncarpous fruits. These three genera only differ in the kind of fruits; palynologically and anatomically they are also very closely related.

Besides the growth habit, the above mentioned genera are also very similar in many other characters. They possess latrorse stamens, a character rarely occurring in the genus *Magnolia*. All other Magnolieae possess introrse stamens. Also they have the same kind of small pollen. Instead of splitting *Elmerrillia* in 2 genera, one with apocarpous and one with syncarpous fruits, it appears to me more appropriate to reduce *Paramichelia* and *Tsoongiodendron* to *Michelia*.

The group of genera with sympodial growth consists of some clearly differentiated genera and again a group of closely allied genera. The clearly differentiated genera are *Pachylarnax* with a 2–8 locular capsule which is unique in Magnoliaceae and, besides, some other clearcut characters; *Kmeria* with unisexual flowers, and *Alcimandra* with – like *Michelia* – a stipitate gynaecium and stamens and pollen that are different from those of all other Magnoliaceae. The closely allied genera are: *Magnolia*, *Manglietia*, *Talauma* and *Aromadendron*. *Manglietia* only differs from *Magnolia* in having 4 or more ovules per carpel, whereas *Magnolia* has only two ovules per carpel (but in some species the lower carpels bear 3 to 4 or even more ovules). According to Baranova the species of *Manglietia* possess a unique kind of hair base. This is, in my opinion, not enough to keep the genus separate from *Magnolia*, moreover because *Magnolia* and *Manglietia* share an intermediate kind of hairbase. *Talauma* differs from *Magnolia* in the fruit only, the latter being syncarp; the same holds for *Aromadendron*. *Aromadendron* had ever been described as a genus apart from *Talauma* because of the fruits which are fleshy and desintegrate when hanging from the tree. Mr. Maxwell found a few years ago, in the Bukit Timat Nature Reservation, Singapore, a fruit which apparently had fully ripened on the tree and did not differ from any *Talauma* fruit. Prof. Hsuan Keng, Singapore, therefore joined *Magnolia*, *Talauma*, *Aromadendron* and *Manglietia*, and I am of the opinion that he rightly did so.

From the above it is clear that the development of (pseudo) syncarpous fruits in Magnoliaceae is an evolutionary trend which occurs at different places in the family. Assuming that – in Magnoliaceae – syncarpous fruits are more advanced than apocarpous fruits, it could be argued, according to the theory of Hennig, that the taxa with syncarpous fruits are synapomorph. But from other characters it is clear that this synapomorphy has resulted from parallel evolution and not from having a common ancestor. Therefore I am of the opinion that Hennig's theory, however good as a theory, is not applicable in practice. Only rarely it will be possible to prove that synapomorphy has originated by taxa having a common ancestor and not by a parallel evolution.

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Phytogeography of Polypodiaceae (Filicales) and of the genus *Platycterium* in particular

The genus *Platycterium* represents one of the few pantropical genera of Polypodiaceae. It is most diversified in S.E. Asia and E. Australia (8 species) and Africa (6 species), occurring in S. America with one species only.

The present distribution of the species recognized in *Platycterium* is discussed, starting from the phylogenetic relationships as inferred from a cladistic analysis. Centres of origin are proposed according to (1) the phylogenetic relationships as given in the cladogram, (2) the distribution areas of the present species, (3) representative alternatives regarding the distribution of the landmasses through time, (4) the criterium of parsimony relating to the total number of dispersal events (it is argued that apart from long distance dispersal through spores, events of vicariance are another possible factor for explaining distribution patterns in Polypodiaceae), and (5) the time of origin being unknown.

As a result it appears that the total number of dispersal events is equal when the most parsimonious alternative(s) out of the following two situations are chosen.

1. The centre of origin being one of the present continents. – A centre of origin in Africa is most parsimonious.
2. The centre of origin being a landmass formed by two of the present continents. – A centre of origin in Africa + Australia or in Africa + S. America is most parsimonious.

The number of dispersal events given above for the most parsimonious alternative(s) equals the number of dispersal events in case Gondwanaland is considered centre of origin of the genus.

However, when choosing vicariance as the prime factor for explaining the present distribution pattern, a centre of origin in Gondwanaland seems most likely; in case long distance dispersal is regarded the prime factor, an origin in S. Africa is obvious.

CRACRAFT, J. (1975): Historical Biogeography and Earth History. Perspectives for a future synthesis. *Ann. Missouri Bot. Gard.* 62: 227–250.

HENNIPMAN, E. & M. C. ROOS. (in press). A monograph of the fern genus *Platycterium* (Polypodiaceae).

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Palaeobotanic data for contacts between India, S.-E. Asia and Australia

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Distribution patterns in Dichapetalaceae

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Xanthophyllum (Polygalaceae) originates from Australia, not from Asia

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Architecture of the Rubiaceae