NOTES ON THE FLORA OF JAVA, III [1])
SOME REMARKS ON THE MORACEAE OF JAVA

by

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MORUS.

See for the confusion reigning about the species of this genus Journal of the Arnold Arboretum VIII (1927), 234 seq. The only species cultivated in Java (not so much for its fruit as for its medicinal properties) is *M. australis* Poir. Formerly it went by the name of *M. alba* L. from which it differs i. a. by its shining dark-red or almost black fruits.

CUDRANIA.

Cudrania cochinchinensis (Lour.) Backer nov. comb. — *Vanieria cochinchinensis* Lour., Fl. Cochinch. (1790) 564 — *Cudrania spinosa* (Bl.) Hochr. in Bull. N. Y. Bot. Gard. VI (1910) 271.

ARTOCARPUS.

In the Gardens' Bulletin X (1939), pp. 56 seq. Corner published the results of a profound study on some cultivated species of this genus. He arrived at the conclusion that the species hitherto named (in Java) *A. integrifolia* L. f. [= *A. integra* (Thunb.) Merr.] should be called A. heterophylla Lmk. — *A. polyphema* Auct. plur. has to bear the name A. integra (Thunb.) Merr. sensu Corner non sensu Merr. This long phrase may be correct but is certainly not simplifying matters.

FICUS.

Valeton, when treating the Javanese species of *Ficus* in Koorders et Valeton, Bijdrage XI, pp. 31 seq., closely followed King's monograph. He considered it useless to describe the species afresh but had King's descriptions translated into Dutch by a person knowing nothing of systematic

[1]) II in Blumea V, 3, 1945, 490—524.

botany and possessing only a very scanty knowledge of English. The obvious result was that the translations teem with inaccuracies; nevertheless Valeton entered them without corrections in his paper, adding however, in Dutch, many well-founded remarks not rarely in flat contradiction with the translations. Hence Valeton's paper is to the Dutch reader equivocal and, on the whole, unsatisfactory. I have made new descriptions in Dutch of all Javanese species, which I intend to publish as soon as I can find time to translate them, but first my collaborators and I have to finish the Noodflora (Emergency-flora) which probably will take for some years to come all our time. In the meantime I give here beneath a few remarks on some Javanese species, recording them under the numbers under which they were published in Bijdrage XI, adding descriptions of a misidentified and of a new species.

1. **Ficus saxophila** Bl. Recorded by Blume (Bijdragen 438) for West-Java. Without any doubt this statement is incorrect; after Blume the tree was never found back in Java but repeatedly in the e a s t e r n half of the Malay Archipelago. Blume's statements in his 'Bijdragen' are often palbably untrue[1]); he was a gifted but very unscrupulous botanist.

2. **Ficus cordifolia** Bl. (non Roxb. nec K. & V.).

There is some confusion about *F. cordifolia* Bl. It is certainly not identical with the plant described by Koorders and Valeton [Bijdrage XI (1906) 57] under this name. The true *F. cordifolia* Bl. is represented in the National Herbarium at Leiden by authentic but rather scanty and bad material consisting of a branchlet bearing a few leaves and a small envelope containing one damaged receptacle. On these materials the following description is based:

Receptacles in the axils of fallen leaves on small woody tubercles; their peduncles thin, somewhat squamous, glabrous ± 1¼ cm; receptacles globose or obovoid, 2—2¼ cm across; basal bracts 3, verticillate immediately below receptacle and appressed against it, small; stomatal part of the only available receptacle lost; wall of receptacle rather thick, glabrous on the inside; flowers many, all ♀, sessile, sepals (number unascertainable) free, narrowly linear-subulate glabrous ± 2 mm long; ovary borne by a short glabrous stalk, obliquely obovoid, compressed, style subbasal glabrous, ± 1½ mm (including thick vermicular-clavate stigma); other flowers unknown as are the fruits.

Old twigs brownish yellow with scaly bark, glabrous; stipules acuminate from a broad base, densely and finely hoary on the back, 1—1½ cm long; leaves alternate, ovate-cordate, broadest far above the cordate 5—7-

[1]) A few instances may be cited here: p. 53. *Capparis callosa* Bl.: in paludosis Javae insulae. This shrub never occurs in swamps. — pp. 724/725. *Evolvulus javanicus* Bl. (= *E. alsinoides* L.): in summo montis ignivomi Gede (W.-Java, alt. ± 2960 m). The plant is limited to the eastern part of the island in regions with a very dry climate, where, between 10 and 100 m above sea-level, it grows on calcareous rocks. — p. 72. *Hibiscus sabdariffa* L.: in paludosis Bataviae. It is no Javanese marshplant but an introduction from America, in Java only known in cultivation. — p. 73: *Thespesia populnea Corr.*: in cultis. The plant never occurs in plots used for cultivation but is restricted to not-swampy shores and the inner margin of broadish tidal forests.

nerved base, not or hardly acuminate, with slightly repand margins; costa rather strongly prominent beneath; lateral nerves on either side of costa 5—9 oblique-ascending, rather thin, prominent beneath; leaves between lateral nerves cancellate-veined, with the exception of the finely pubescent larger nerves glabrous above, beneath rather densely clothed with patent moderately long white soft hairs, 11—25 cm by 7½—14 cm; petiole moderately densely and finely pubescent 2½—7½ cm. Tree. For the rest unknown.

This imperfectly known species is closely allied to and perhaps not specifically distinct from *F. variegata* Bl., a tree rather common throughout Java between 5 and 1500 m above sea-level.

The tree described by Koorders and Valeton under the name *cordifolia* is quite another species, differing i. a. by the receptacles being hairy within and without and containing the 3 kinds of flowers, furthermore by the stigma consisting of 2 minute caducous lamellae; the leaves also are very different. — Koorders, who in 1889 discovered this species in Java, misidentified it as *F. melinocarpa* Bl. — Valeton (Bijdrage XI, 59), aware of this mistake, recognized it as a new species which he gave the mse name of *F. mallotoides*, but afterwards he fell into the error of identifying it with *F. cordifolia* Bl., under which name he gave a Dutch and a Latin description of it.

As has been shown above the latter identification also was incorrect; as a matter of fact it was a new species. The name *F. mallotoides* Val., having never been legitimately published has to be considered invalid. But as Valeton gave excellent descriptions of the species it is only fair to restore the name originally given by him to the tree which should be called: *F. mallotoides* Val. ex Back.

2bis **Ficus mallotoides** Val. ex Back. (*F. cordifolia* Bl. ex Val. in K. et V., Bijdrage XI, pp. 57, 60; descriptiones tantum).

Receptacles (♂ g ♀[1]), in axils of fallen or present leaves, geminate or by abortion solitary, peduncled (peduncles 1/3—1 cm, densely clothed with longer or shorter, white hairs) depressed globose, not or faintly umbonate, more or less densely clothed with patent short white hairs sometimes intermixed with a few longer ones, 1¼—1½ cm across (not yet known in a fully mature state); base broadly rounded or truncate; basal bracts 3, appressed against base of receptacle, verticillate, free or shortly connate, broadly rounded, on the back densely clothed with rather long white hairs, 1—1½ mm long; mouth of receptacle surrounded by a slightly prominent ring; apical bracts few; exterior ones horizontal or slightly slanting, broadly oval-obovate, rounded or very obtuse, hairy or glabrous 1¾—2 mm diam.; following ones horizontal, inmost ones more or less strongly deflexed glabrous; wall of receptacle rather thick (especially at base and apex), between the flowers with many patent longish white hairs); perianth pink. ♂: flowers in apical part of receptacle, rather numerous, shortly stalked

[1]) This sign denotes that male flowers (♂), gall flowers (g) and female flowers (♀) are contained in a same receptacle.

or sessile; tepals 5 or sometimes 4 free, oval-obovate or oblong-obovate rounded glabrous or hairy at base within, 2—2½ mm long; stamen 1, much shorter than perianth; filament robust much thickened upwards; anther oblique oval, emarginate 1—1¼ mm; connective not produced above the cells; no rudimentary ovary; g and ♀ flowers intermixed, copious, sessile or stalked (stalk up to 2 mm), externally almost quite alike; sepals 5 or sometimes 4, rarily 6—8, long ovate-triangular-oblong or oblong-obovate; style lateral, thin, white, in g 1½—2 mm, in ♀ 2—3 mm; stigmas of ♀ (often sticking together in centre of receptacle) consisting of 1—2 minute lamellae, in dry materials caducous; fruit small, smooth.

Branchlets round, with short apical internodes; when young varying from densely hoary to glabrous; stipules involute, narrowed from a broad base, on the back densely clothed with appressed long white hairs; glabrous on the inside, ½—2 cm long; leaves often crowded on short lateral branches near tops of twigs, alternate, ovate-oblong from an oblique or equalsided slightly cordate or truncate, rarely profoundly cordate base, broadest below the middle or near the base, from there to top tapering or slightly acuminate, acute, entire or (in watersprouts) obtusely serrate, herbaceous or thinly coriaceous, above shining, smooth glabrous, beneath dull pale green, *in sicco* conspicuously pale green on both surfaces, beneath either clothed all over with patent long soft hairs or pubescent on nerves and veins only, or glabrous, penninerved from a 3-nerved base, lateral basal nerves either parallel to following lateral nerves or not; midrib strongly prominent beneath, lateral nerves on both sides of midrib 5—16 (above basal nerves) rather widely patent, almost straight but ascending near leaf-margin, thin, prominent beneath; leaves between lateral nerves cancellate-veined and reticulate, 10—24 cm by 5—12½ cm; petiole softly pubescent or glabrous, 2½—8½ cm. Lofty thick tree, conspicuous by its strongly buttressed [see Backer, Schoolflora van Java (1911) plate XI] smooth greenish grey bole, 20.00—40.00 m high. No aerial roots.

Occurs in the eastern half of Java between 10 and 750 m above sea-level in periodically dry regions.

Type-specimen: Hortus Bogoriensis VIII. D. 12, living specimen from which the photo in 'Schoolflora' was taken. Description of general habit after this specimen and after notes made by Koorders on a specimen from Mount Wilis (8934β).

6. **Ficus pilosa** Reinw. ex Blume. Sometimes with many aerial roots forming together a thick spurious trunk. Young shoots densely clothed with erecto-patent long thin yellow or brown hairs, tardily glabrescent; leaves 9—30 cm by 4—11 cm. Adult receptacles in vivo 2—3 cm across; ♂ perianth often 3-merous; style in g and ♀ lateral near apex of ovary; stigma in g flattened, in ♀ subuncinate.

11. Ficus edelfeltii King. New-Guinean species. Koorders wondered at the enigmatical fact that this in Java rather common tree was not collected there before he discovered it in 1891. The puzzle can easily be solved. The tree mentioned by Koorders and Valeton as *F. edelfeltii* is not at all that species (as described by King) but simply *F. nervosa* Heyne which was mentioned for the island by Blume (under the name of *F. magnoliaefolia* Bl.) as early as 1825 and again in 1859 by Miquel (*Urostigma nervosum* Miq. = *U. euneuron* Miq.).

The 2 species may be distinguished by the following characters:

F. nervosa Heyne	*F. edelfeltii* King (according to King, not seen by me).
Sepals in ♂ 2—3, oval-oblong, in g and ♀ 3—4, oblong or oblong-spathulate.	Sepals in ♂ and g 5, narrowly semilunar, in ♀ 4, broad semilunar.
Filament thin 1—1½ mm.	Filament thick, short.
Stigmas 2, long thin, twisted together.	Stigma 1 simple.

12. Ficus kerkhovenii K. et V. This is not a good species but simply a form of *F. procera* Reinw. ex Bl. from which it differs by no character of specific value.

30bis (not in K. et V.). **Ficus fairchildii** Back., nov. spec.

Tota planta, bracteis ad receptaculi basin exceptis, glabra. Receptacula (♂ g ♀[1])) in axilis foliatis defoliatisve solitaria sessilia ellipsoidea basi rotundata, apice rotundata vel subtruncata, ore haud vel vix prominulo, primo aurantiaco-flava, provectiore aetate laete rubra, postremo subnigra, adulta (in vivo) 3—3½ cm longa, 2¼—2½ cm lata, basi suffulta bracteis 3, sub receptaculo ± occultis, persistentibus, 2—3 mm longis, multo latioribus quam longis late rotundatis, intus glabris, extus densiuscule vel sparse obsitis pilis patentibus brevibus longiusculisve; bracteae ostiariae horizontales ovato-triangulares acutae 2—2½ mm longae; receptaculi paries intus onustus bracteis numerosissimis patentibus anguste triangularibus acutis membranaceis 2½—4 mm longis. — ♂ : flores numerosi per totum parietem interiorem dispersi, sustenti pedicellis crassis 1½—2½ mm longis; tepala 4—5 ovalia tenuiter membranacea ± 1½ mm longa; stamen unicum; filamentum crassum, maxime ad 1¾ mm longum; anthera vix exserta, ± ¾ mm longa; thecae deorsum divergentes. — g et ♀ : flores numerosi per totum parietem interiorem dispersi, intermixti, exterius subsimiles, sessiles vel stipitibus usque ad 5 mm longis suffulti; tepala 4—5 libera ovato-oblongo-spathulata, apice acuta obtusa vel rotundata 1—2 mm longa; ovarium laeve; stylus supra medium ovarium lateralis tenuis, basi saepe decurvus et vertici ovarii appressus, hinc spurie terminalis 1—4 mm longus; stigma (in sicco facile deciduus) planum, latum; stigmatibus saepe in medio receptaculo secus margines cohaerentibus; putamen laeve.

Truncus crassus basi saepe munitus erismatibus radicalibus [2]) alte adscendentibus; ramuli pallide brunnei vel griseo-brunnei; stipulae (novellae tantum a nobis visae) fugacissimae; folia oblonga vel ovato-oblonga, basi aequalia cuneata, obtusa rotundatave, apice breviter obtuse acuminata firme coriacea 9—14½ cm longa 4—7½ cm lata penninervia, basi interdum subtriplinervia, in utroque latere costae (subtus valde prominentis) pertensa nervis lateralibus creberrimis patulis, subtus (in sicco quoque supra) prominentibus, in nervum intramarginalem manifestum confluentibus; nervi

[1]) This sign denotes that male flowers (♂), gall-flowers (g) and female flowers (♀) are contained in a same receptacle.

[2]) erisma radicale = Engl. buttress.

Ficus fairchildii Back., n. sp., in Dr Fairchild's garden at 'The Kampong', Coconut Grove, Florida. Mrs Fairchild seated on wall. Febr. 23, 1948.

interpositi [1]) quam primarii vix tenuiores, reticulatione conspicua inter sese et cum nervis lateralibus primariis connexi; petiolus 2¼—3¾ cm. Arbor rapide crescens, usque ad 20 m alta; trunco unico vel pluribus crassis brevibus, saepe munitis nonnullis radicibus grallaribus [2]) robustis; capite lato, radicibus aëreis e ramis enatis carente.

JAVA, Pasoeroean, Oemboelan (E. of Pasoerocan). alt. ± 75 m, bank of a small lake, one specimen, *Backer 37528 (type specimen)*, 23. VI. 1926 (Leiden); — Soerakarta, Karang Pandan (western slope Mt. Lawoe), alt. ?, cultivated in a private garden as a shade-tree, *David Fairchild 67502*; 7. V. 1926.

The last-named specimen I did not see myself. Seeds in 1926 taken from ripe fruits lying under it were collected by Mrs and Mr Fairchild and sent (under the number 67502) to the Bureau of Plant Industry, Washington U. S. A. From them were raised about 200 plants; some of these were planted in the Fairchild Tropical Garden round Mr Fairchild's home, The Kampong, Coconut Grove, Florida. Of the biggest of these trees, now 22 years old, Mr Fairchild recently sent me the following description: "It is 15 feet (4½ m) around at 2 meters above the soil and has 4 trunks each 1½ foot (45 cm) in diameter. These "trunks" form buttresses from which enormous roots, 20′ (6 m) or more long spread out over the limestone rocky soil. No hanging roots descend from the main branches. The trunk is about 6 feet through now. The four trunks make the whole trunk hard to measure in diameter." Under this tree, as Mr Fairchild with some pride informed me, already 4 marriages have taken place. Materials taken from this „marriage-tree" were sent to me and will be handed over to the National Herbarium, Leiden.

The species comes nearest *F. elastica* Roxb. which may be easily distinguished by the following characters:

Receptacles geminate, only 1—1½ cm long, yellowish green, when young entirely enclosed by a calyptriform coriaceous-fleshy bract, afterwards circumsciss at the base, falling off and disclosing the shortly stalked receptacle; basal bracts 3, caducous; style lateral quite near top of ovary, hooked at apex. Stipules (unique in the genus) very conspicuous, connate into a long mitre abruptly terminated by a long point, bright red on the outside, paler within, 7—30 cm long, soon falling off. Leaves 7½—30 cm by 5—16½ cm, thickly coriaceous. Old trees provided with many aerial roots descending from the branches until they reach the ground and then increasing much in thickness.

I respectfully dedicate this fine species to him who was the first to collect it (as far as I know at present; the Buitenzorg herbarium being as yet inaccessible), the eminent American scientist and collector Dr David Fairchild [3]).

[1]) i. e. lateral nerves emitted from the costa between the main lateral nerves and parallel to these.

[2]) radix grallaris = stilt-root arising from the basal part of the trunk.

[3]) David Grandison Fairchild, born April 7th 1869, East Lansing, Mich. U.S.A., graduated 1888, began in 1889 his scientific career as a phytopathologist. In 1895 he accompanied the then Director of the Buitenzorg Botanical Gardens (= 's Lands Plantentuin = Hortus Bogoriensis), the unforgettable Melchior Treub (of whom he stood much in awe) to Buitenzorg where he was given a table in the Botanical Laboratory and

32. **Ficus religiosa** L.

Only in a few of the receptacles examined by me I could find ♂ flowers and always but few; in most receptacles I could find no ♂ flowers at all.

33. **Ficus superba** Miq. As already pointed out by Koorders and Valeton the description given by King is not quite correct. The very caducous stipules are linear, 5—10 cm long. The receptacles are placed on short axillary branchlets in the axils of crowded squamiform bracts. With long intervals a couple of receptacles develop in the axil of the then undermost one of these scales, which thereupon falls off. Adult receptacles measure 2—2¼ cm across; their basal bracts, as King rightly says, soon drop, leaving a very narrow rim as mentioned by Valeton. Leaves 12—25 cm by 6—13½ cm; petiole 4—20 cm. Grows frequently (not exclusively) near the sea as an epiphyte high up on other trees. Rather common on old coral islands.

34. **Ficus infectoria** Roxb. and 35. **Ficus glabella** Bl. These two species pass imperceptably into each other; they show no constant points of difference and had better be united into a collective species which should be called *F. glabella* Bl. s.l.

41. **Ficus melinocarpa** Bl. This species had better be transferred to the section *Covellia*. It is often confounded with *F. fistulosa* Reinw. ex Bl. and *F. lepicarpa* Bl. The older twigs of all of these 3 species are hollow. They may be distinguished by the following characters:

Leaves reticulate but not conspicuously cancellate-veined between primary lateral nerves, quite glabrous (also on lower part of upperside of midrib). Receptacles either on old wood or on foliate or defoliate young twigs, distinctly stalked; basal bracts 1—1½ mm long; (♂ ♀) receptacles glabrous within; tepals of ♂ flowers 2—3; perianth of ♀ pouch-like; ♀ receptacles either glabrous of pubescent within; ♀ perianth wanting or minute, obconical, truncate; style shortly hairy near apex.
F. fistulosa Reinw. ex Bl.

Leaves conspicuously cancellate-veined between primary lateral nerves, hairy at least on lower part of upperside of midrib. Receptacles on the twigs. Style of ♀ glabrous.

carried out investigations on the Fungus-gardens of the Termites (not published). In 1896 he began, at first (1896—1903) under the auspices of Barbour Lathrop, a long and very fruitful series of travels over a great part of the world for the purpose of collecting plants valuable for introduction in America. During this period of travelling which lasted till 1944 he visited Africa, Argentina, Australia, Bali, Brazil, British India, Ceylon, Chile, China, Cochinchina, Columbia, Egypt, Fiji, Guatemala, Hawaii, Italy, Japan, Java (3 times, lastly in 1926 when he discovered the above described Ficus and I had the pleasure to meet Mrs and Mr Fairchild), the Mediterrancan countries, the Moluccas, New Guinea, New Zealand, Panama, Persia, Peru, Philippines, Samoa, Siam, Sumatra, Venezuela and West Indian Islands (i. a. Bahama Islands, Jamaica, Trinidad). He collected and shipped to Washington upwards of 150 000 shipments of living seeds and plants, many of which have now become valuable plant industries. In 1897 he organized the Office of Plant Industry at Washington of which he was in active charge from 1903—1925; he helped to organize several expeditions (i. a. that of Frank N. Meyer to China); these expeditions brought in over 50 000 introductions. He built up Introduction Gardens in South Florida: one of them near his present abode, The Kampong (Coconut Grove) where he still lives, enjoying the peaceful fruits of his unremitting labours. He is the author of 67 papers among which the interesting books: *Exploring for Plants* 1930, *The World was my Garden* 1941, *Garden Islands of the Great East* 1943, *The World Grows Round my Door* 1947. In 1914 he was elected president of the American Genetic Association which honourable post he still holds. In recognition of his eminent services he was loaded with honours.

Receptacles stalked; basal bracts 2—3 mm long; tepals of ♂, ♂ and ♀ 5—6, well-developed, free, narrowly spathulate, 1½—4 mm long, often very unequal.
F. melinocarpa Bl.

Receptacles sessile; basal bracts 4—10 mm long; tepals of ♂ 3; perianth of ♂ pouch-like; tepals of ♀ united into a minute obconical truncate or obscurely toothed cup.
F. lepicarpa Bl.

42. Ficus ampelas Burm. Often a trunk-clasping epiphyte but in Java never a true climber.

52. Ficus conjugata Miq. This species has never been collected in Java (main island). The type-specimen hails from the small island Dwars-in-den-Weg in the Sunda-straits, which administratively falls under Java.

53. Ficus aurantiaca Griff. In The Garden's Bulletin X, part 1 (1939) pp. 82 seq. Corner gave an excellent review of the subgenus *Synoecia* to which this species belongs. He arrived at the conclusion that the name *F. aurantiaca* Griff. had better be abandoned. The very rare Javanese plant should be named *F. trachycoma* Miq.

55. Ficus callicarpa Miq. Not seen by me; exact status unknown. It may be a form of *F. punctata* Thunb.

61. Ficus leucantatoma Poir. Should be called *F. septica* Burm. f.

70. Ficus villosa Bl. May be easily distinguished from the other Javanese species belonging to the same group by its densely patently villous receptacles crowned by a tubiform 1—2 mm long beak which is hairy on the inner side. This beak is often concealed by the long hairs on the top of the receptacle.

73. Ficus diversifolia Bl. Should be called *F. deltoidea* Jack. The leaves of the Javanese specimens show large brown spots in some of the nerve-axils beneath. The female receptacles contain but few flowers with conchiform thick-fleshy tepals.

76. Ficus toxicaria L. Should be called *F. padana* Burm. f.

78. Ficus fulva Reinw. ex Bl. This is the species of which Treub (Ann. Jard. Bot. Buitenzorg, Serie 2, III, pp. 124—154) described the apogamy under the wrong name of *F. hirta* Vahl.

79. Ficus alba Reinw. ex Bl.
80. Ficus leucoptera Miq.
81. Ficus tricolor Miq.
} These 3 species should be united and called *F. grossularioides* Burm.f.

Rectification to Blume VI, 1, 1948, p. 308, note, line 12 from bottom: the odd 150.000 items of living seeds and plants mentioned, were the total collected by the entire staff of the 'Office of Plant Introduction' since Dr Fairchild started it in 1948.