NOTES ON JAVANESE VERBENACEAE

by

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On preparing the manuscript of the Verbenaceae for Dr C. A. Backer's "Flora van Java" it appeared to me that — in comparison with the monographic treatments of this family by Lam (5) and by Lam & Bakhuizen van den Brink (6) — several changes in the nomenclature and in the interpretation or delimitation of certain species are urgent. Although, considered in the light of more recent work on this family as it occurs in adjacent regions (2, 3, 8), a new critical revision of the Malaysian Verbenaceae seems desirable, we have to refrain from such a task, which would require a greater deal of investigation than the present author is able to afford at the time. Hence these notes are merely intended to account for the discrepancies between the treatment of the javanese species as they will appear in the afore-mentioned flora and as they are given in the recent monographs (5, 6). Still, they may prove to be a first contribution towards another revision covering the whole of Malaysia.

Alphabetical list of abbreviated references quoted in the enumeration.

1. Bakh. in Rev.: see 6.
2. Dop in F. G. I. C.: P. Dop, Verbenacées in H. Lecomte, Flore Générale de l'Indo-Chine 4, fasc. 7 & 8, Paris 1935/1936.
3. Fletcher, Siam. Verb.: H. R. Fletcher, The Siamese Verbenaceae, in Kew Bull. Misc. Inf. 1938, 401—445.
4. Hall f., Ergebn.: H. Hallier, Verbenaceae in: Die botanischen Ergebnisse der Elbertschen Sunda-Expedition des Frankfurter Vereins für Geographie und Statistik III, Med. Rijksherb. Leiden no. 37, 1918, 17—91.
5. Lam, Verb.: H. J. Lam, The Verbenaceae of the Malayan Archipelago, etc. Thesis (Utrecht), Groningen 1919.
6. Lam in Rev.: H. J. Lam and Bakhuizen van den Brink, Revision of the Verbenaceae of the Dutch East-Indies and surrounding countries, Bull. Jard. Bot. Buitenzorg Sér. III, 3, 1921. — Bakh. in Rev.: R. C. Bakhuizen van den Brink in id.
7. Merrill, Enum.: E. D. Merrill, An Enumeration of Philippine Flowering Plants 3, Bureau of Science Manila, 1923.
8. P'Ei, Verb. China: Chien P'Ei, The Verbenaceae of China, Mem. Sci. Soc. China 1, 1932.
9. Ridley, F. M. P.: H. N. Ridley, Flora of the Malay Peninsula 2, 1923.
10. Schau. in DC.: J. C. Schauer, Verbenaceae in De Candolle, Prodr. Regn. Veg. 11, 1847, 522—700.

I. The genus Garrettia in Malaysia.

On re-examining the specimens which have previously been described as *Vitex cymarioides* (cf. H. J. Lam and A. Meeuse in Blumea 3, 248, 1939), it became obvious that on account of the structure of the fruit this species cannot possibly belong to the genus *Vitex*, in which it had been placed with some doubt. The fruit characters indubitably indicate that it has to be transferred from the tribe of the *Viticoideae* to that of the *Caryopteridoideae*. Further investigation showed that the plant possesses all essential characters of the genus *Garrettia* Fletcher (cf. Kew Bull. Misc. Inf. 1937, 71), of which hitherto only a single species had been described, viz. *Garrettia siamensis* Fletcher (Siam).

Nearly all specific characters of *G. siamensis* perfectly agree with those of the plant described as *Vitex cymarioides*, but we hesitate to unite these two species on account of the following differences:

Character:	*Garrettia siamensis* [1])	*Garrettia cymarioides*
Inflorescence	dichotomously or trichotomously branched	bifurcate
Corolla lobes	glandular within	not so
Throat of corolla tube	without hairs	with a strip of rather long hairs at side of lower lip
Stamens	didynamous, the longer exsert	subequal, not or hardly exsert
Filaments	only at the very base with long hairs, glabrous for the rest, not glandular	villous and covered with stalked glands in lower half, glabrous and covered with sessile glands higher up [2])
Anthers	minutely papillose	smooth
Ovary	glabrous	densely and completely covered with glands
Distribution	North Siam	some islands near E. Java: Kangean Isl., Bawean, and Madoera

Since the type specimen of *Garrettia siamensis* is inaccessible at the time being, we cannot decide what value may be attributed to the above differences, but as far as we are able to judge, the plants certainly represent

[1]) After Fletcher from his description and figure.

[2]) This was not clearly indicated in the original description, but cf. Blumea 3, p. 249, fig. 1 h.

two distinct species, so that the following new combination has to be made: **Garrettia cymarioides** (H. J. Lam & A. Meeuse) A. Meeuse, nov. comb. — *Vitex cymarioides* H. J. Lam & A. Meeuse in Blumea 3, 248 (1939). — *Cymaria triphylla* Backer MS [1]).

II. On the identity of Verbena javanica Burm. f.

The status of N. L. Burman's *Verbena javanica,* described in his "Flora Indica" and reported to occur in Java, remained doubtful for a long time. Nevertheless, this species was transferred to at least four different genera, viz. to *Blairia* by Gaertner, to *Zapania* by Lamarck, to *Lippia* by Sprengel and, finally, to *Phyla* by Moldenke. Except Gaertner, who must have examined Burman's type (having made an analysis of the flower and of the fruit), these authors apparently did not study the original specimen.

In order to solve this problem we have studied a leaf and an inflorescence of the type specimen, now preserved in the Delessert Herbarium at Geneva, which we obtained on loan through the courtesy of the director of the Geneva Herbarium, Prof. B. P. G. Hochreutiner. To him we are greatly indebted for his readiness to forward these fragments as well as a pencil sketch of the specimen.

The investigation proved that *Verbena javanica* belongs to the genus *Lippia* L. and that it is identical with the species, commonly known as *Lippia asperifolia* A. Rich. An older synonym of the latter is *Lippia alba* (Mill.) N. E. Br., based on *Lantana alba* Mill. (1768). Now that Burman's *Verbena javanica* appears to be conspecific with Miller's *Lantana alba,* the interesting question arises which specific name should be maintained, as both species were published in the same year. We were not able to decide which publication is the older one, the only date available being "1768". Accordingly, the oldest combination based on one of these names which was made in the genus *Lippia* has priority. This appears to be *Lippia javanica* (Burm. f.) Spreng. (1825), which invalidates *Lippa alba* (Mill.) N. E. Br. (1925), though unfortunately the specific epitheton "javanica" is quite inappropriate, for the plant does not occur in Java at all (see below). This leads to the following synonymy:

Lippia javanica (Burm. f.) Spreng., Syst. 2, 1825, 752; Schau. in DC. 593; Lam, Verb. 19 and in Rev. sub *L. asperifolia*; Merrill in Phil. Journ. Sci. 19, 1921, 376. — *Verbena javanica* Burm. f., Fl. Ind. 12, 1768, t. 6, f. 2. — *Lantana alba* Mill., Gard. Dict. Ed. 8, 1768. — *Verbena globiflora* L'Hér., Stirp. Nov. 23, 1786, t. 12. — *Zapania odoratissima* Scop., Delic. Fl. & Faun. Insub. 1, 1786, 34, t. 15. — *Blairia javanica* (Burm. f.) Gaertn. Fruct. 1, 265—266, 1788, t. 56. — *Zapania lantanoides* Lamk., Tabl. Encycl. Meth. Bot. 1, 1791, 58. — *Zapania javanica* (Burm. f.) Lamk. l. c. 59. — *Zapania globiflora* (L'Hér.) Willd., Spec. Pl. 1, 1797, 116. — *Verbena capensis* Thunb., Prodr. Fl. Cap., 1800, 96. — *Lantana lavandulacea* Willd.,

[1]) Duplicates distributed by the Buitenzorg Herbarium under this provisional name.

Sp. Pl. 3, 1800, 319. — *Lippia asperifolia* A. Rich. ex Marthe, Cat. Pl. Jard. Méd. Paris 1801, 67. — *Zapania globiflora* A. L. Juss., Ann. Mus. Hist. Nat. Paris 7, 1806, 72. — *Zapania odorata* Pers., Syn. Pl. 2, 1806, 140. — *Lippia geminata* H. B. K., Nov. Gen. & Sp. Pl. 2, 1818, 266. — *Lantana geminata* (H. B. K.) Spreng., Syst. 2, 1825, 763. — *Lippia capensis* (Thunb.) Spreng. l. c. 751. — *Phyla javanica* (Spreng.) Moldenke in Herter, Rev. Sudamer. Bot. 5, 1938, 2.

Lippia javanica has, if ever, never been collected in Java again. Burman received his information from correspondents and, moreover, he received a great deal of his specimens from David Kleinhof, who lived at Batavia from 1741 or 1742 to 1762, where he cultivated many plants in his garden, including species not indigenous in Java, but nevertheless subsequently labelled "Kleinhof, Java" in Burman's herbarium.

The actual type specimen is of unknown origin, but an identical specimen, also in the Herb. Burman, bearing the name "*Verbena javanica*" in Burman's hand-writing, is labelled "Kleinhof, Java", in an unknown hand-writing[1]). This may have misled Burman and it would seem that the locality cited in the "Flora Indica" is an error.

III. Miscellaneous nomenclatural corrections.

Lantana L.

Lantana Camara L., Sp. Pl. Ed. 1, 1763, 627; Schau. in DC. 606; Merrill, Enum. 380; Backer & v. Sl., Handb. Jav. Theeonkr. 1924, 187; Backer, Onkruidfl. Jav. Suikerrietgr. 7, 1934, 541; Dop in F. G. I. C. 779 — *L. aculeata* L., l. c. 627; Hall. f., Ergebn. 17; Lam, Verb. 12 and in Rev. 4; Ridley, F. M. P. 612; Fletcher, Siam. Verb. 410.

L. aculeata was for the first time recognized as a synonym of *L. Camara* by Schauer, so that the name *L. Camara* should be retained.

Phyla Lour.

Phyla Lour. is distinct from *Lippia* L., but was generally regarded as a synonym. For the delimitation of these two genera we refer to E. L. Greene in Pittonia 4, 1899, 45—46.

Phyla nodiflora (L.) Greene l. c. 46; Moldenke in Lilloa 4, 1939, 296—297 — *Verbena nodiflora* L., Sp. Pl. Ed. 1, 1753, 20 — *Lippia nodiflora* (L.) A. Rich. in Michx., Fl. Am. Bor. 2, 1803, 15; Hall. f., Ergebn. 19; Lam, Verb. 16 and in Rev. 5; Merrill, Enum. 381; Ridley, F. M. P. 612; Backer, Onkruidfl. Jav. Suikerrietgr. 7, 1934, 543 (var. *sarmentosa* only); Dop in F. G. I. C. 780; Fletcher, Siam. Verb. 410 — *Phyla sinensis* Lour., Fl. Cochinch. 1790, 66.

Stachytarpheta Vahl

Stachytarpheta cayennensis (L. C. Rich.) Vahl, Enum. 1, 1804, 208 ("*cajanensis*"); Hall. f., Ergebn. 20; Lam, Verb. 21 (in syn.) and in

[1]) This information was kindly provided by Prof. Hochreutiner.

Rev. 6 (in syn.); Danser in Ann. Jard. Bot. Buitenz. 40, 1929, 2—3 — *Stachytarpheta dichotoma* (haud Vahl) Backer in Ann. Jard. Bot. Buitenz. Suppl. 3, 1, 1910, 415; Koorders, Exk. Fl. Java 3, 1912, 133; Lam, Verb. 21 and in Rev. 6.

Stachytarpheta jamaicensis (L.) Vahl l. c. 206; Hall. f., Ergebn. 21; Lam, Verb. 22, pro parte; Ridley, F. M. P. 613; Merrill, Enum. 381, pro parte; Backer and v. Sl., Handb. Jav. Theeonkr. 1924, 188; Danser l. c. 7—8; Backer, Onkruidfl. Jav. Suikerrietgr. 7, 1934, 546; Dop in F. G. I. C. 783, pro parte; Fletcher, Siam. Verb., pro parte — *St. indica* var. *jamaicensis* (L.) Trimen, Handb. Fl. Ceylon 3, 1895, 348 — *St. jamaicensis* var. *typica* H. J. Lam in Rev. 6.

Stachytarpheta indica (L.) Vahl, l. c. 206; Trimen, l. c. exclus. var.; Hall. f., Ergebn. 20; Ridley, F. M. P. 613, Backer & v. Sl., l. c. (in nota); Danser, l. c. 5—6 — *Stachytarpheta jamaicensis* var. *indica* (L.) H. J. Lam in Rev. 7 — *St. jamaicensis* (L.) Vahl, Lam, Verb. 22, pro parte; Merrill, Enum. 380, pro parte; Dop in F. G. I. C. 783, pro parte; Fletcher, Siam. Verb. 411, pro parte.

The two last-named species are often considered conspecific, but may be easily distinguished as follows:

1a. Leaves usually obovate or even more or less spathulate, pale green in a living state, drying very pale, not or only slightly bullate, not or scarcely rugose; secondary and tertiary nervation not prominent below. Basal margin of medial leaf serrations at least twice as long as apical margin. Acumen of bract much shorter than the membrane-edged lower part. Corolla light bluish-violet . . . . . **St. indica** (L.) Vahl

b. Leaves ovate to elliptic-oblong, dark green in a living state, drying dark brown, manifestly bullate and rugose, secondary and tertiary nervation prominent below. Basal margin of medial leaf serrations less than twice as long as apical margin. Acumen of bract at least as long as the membrane-edged lower portion. Corolla deep bluish-violet . . . . . **St. jamaicensis** (L.) Vahl

Duranta L.

Duranta repens L. Sp. Pl. Ed. 1, 637 (1753); Merrill, Enum. 381 — *Duranta Plumieri* Jacq. (1763), Lam, Verb. 27 and in Rev. 8; Dop in F. G. I. C. 784; Fletcher, Siam. Verb. 411.

Geunsia Blume

This genus was combined with *Callicarpa* L. by Bakhuizen van den Brink (cf. Rev. 9). In our opinion, however, it should be maintained, a view which is also held by Ridley, Fletcher and others. For the delimitation of these two genera we refer to Hallier, Ergebn. 23 and to Lam, Verb. 29—30.

Geunsia pentandra (Roxb.) Merrill, Phil. Journ. Sci. Bot. 11, 1916, 309; Lam, Verb. 33; Fletcher, Siam. Verb. 415 — *Callicarpa pentandra* Roxb., Fl. Ind. 1, 1820, 409; Bakh. in Rev. 11; Merrill, Enum. 387 — *Geunsia farinosa* Bl., Bijdr. 1826, 819; Lam, Verb. 42; Ridl., F. M. P. 614.

It remains to be seen, whether the various species of *Geunsia*, described by Hallier (l. c. 24—32), Lam and others, which were all

reduced to *Callicarpa pentandra* by Bakhuizen van den Brink, actually belong here. In our opinion, at least part of them represent distinct species, but a detailed investigation is necessary before a definite conclusion can be drawn.

Callicarpa L.

Callicarpa rubella Lindl., Bot. Reg. 1825, t. 883; Lam in Hall. f., Ergebn. 34 and Verb. 53; Dop in F. G. I. C. 796; Moldenke in Fedde, Rep. 40, 1936, 102; Fletcher, Siam. Verb. 414 — *C. cuspidata* Roxb., Bakh. in Rev. 23, pro parte, quoad syn. *C. rubella.*

Callicarpa tomentosa (L.) Murray, Syst. Veg. Ed. 13, 1774, 130; Moldenke, l. c. 106 — *Tomex tomentosa* L., Sp. Pl. Ed. 1, 1753, 118 — *Callicarpa lanata* L., Mant. 2, 1771, 331; Lam, Verb. 79; Fletcher, Siam. Verb. 413 — *C. tomentosa* (L.) Murr. var. *lanata* (L.), Bakh. in Rev. 22.

Callicarpa candicans (Burm. f.) Hochr., Candollea 5, 1934, 190 — *Urtica candicans* Burm. f., Fl. Ind., 1768, 197 (err. typ. 297) — *Callicarpa cana* L., Mant. 2, 1771, 198; Lam, Verb. 68; Dop in F. G. I. C. 793; Moldenke, l. c. 109; Fletcher, Siam. Verb. 413 — *C. cana* var. *typica* Bakh. in Rev. 20 — *C. candicans* var. *typica* (Bakh.) Hochr., l. c. 190.

Urtica candicans Burm. f. was placed by Weddell (in DC., Prodr. 16, 1859, 613) as a doubtful synonym of *Boehmeria nivea* (L.) Gaudich. var. *candicans* Wedd. It was pointed out by Hochreutiner, however, that Burman's type specimen is identical with the species currently known as *Callicarpa cana* L. Linné's name has, therefore, to be replaced by that of Burman.

Premna L.

Premna timoriana Decsne., Lam, Verb. 119 and in Rev. 37 (excl. syn. *Pygmaeopremna humilis* Merrill).

Pygmaeopremna humilis was referred to *Premna timoriana* by Lam in Rev. 37, but is a distinct species. Merrill (Enum. 390) considered it a synonym of *Premna herbacea* Roxb. Junell (Zur Gynäceummorphologie und Systematik der Verbenaceen und Labiaten, Symb. Bot. Upsal. 4, 1934, 85) regards *Premna herbacea* and *Pygmaeopremna humilis* as separate species, at the same time transferring them to the genus *Tatea* F. v. Muell., so that they became **Tatea herbacea** (Roxb.) Junell and **Tatea humilis** (Merrill) Junell respectively.

P. timoriana may turn out to be only a form of *P. corymbosa* (Burm. f.) Rottl. et Willd., occurring in dry regions and is treated as such in the "Flora van Java".

Premna capitata A. Meeuse, nom. nov. — *Premna macrophylla* H. J. Lam, Verb. Mal. Arch. etc. 1919, 148—149 and in Bull. Jard. Bot. Buitenz. Sér. III, 3, 1921, 43, non *Premna macrophylla* Wall., nec A. Cheval.

The specific name "*macrophylla*" used by Lam is antedated by *P. macrophylla* Wall. Cat. nr. 1765, which, though published as a nomen nudum, was validated by Schauer in DC. in 1847 (l. c., 636), so that Lam's species had to be renamed. We chose the specific epitheton "*capitata*" on account of its capitate stigmatic lobes.

Premna grandifolia A. Meeuse, nom. nov. — *Premna macrophylla* A. Cheval. ex Hutch. et Dalz., Fl. W. Trop. Afr. 2, 1931, 272; A. Cheval. in Expl. Bot. Afr. Occ. Franç. 1, 1921, 505, nomen, non *Pr. macrophylla* Wall. ex Schau., nec H. J. Lam.

Premna macrophylla A. Cheval., like the preceding at first appearing as a nomen nudum, but published by Hutchinson and Dalziel later on, is also invalidated by *P. macrophylla* Wall. ex Schau. and had to be renamed as well.

Premna corymbosa (Burm. f.) Rottl. et Willd. in Ges. Nat. Fr., Neue Schr. 4, 1803, 87; Lam, Verb. 117; Fletcher, Siam. Verb. 418 — *Premna integrifolia* L., Mant. 2, 1771, 252; Hall. f., Ergebn. 37; Lam, Verb. 140 and in Rev. 42; Ridley, F. M. P. 619; Dop in F. G. I. C. 818 — *Pr. serratifolia* L., Mant. 2, 1771, 253; Trimen, Handb. Fl. Ceylon 3, 1895, 352 — *Pr. foetida* Reinw. ex Bl., Bijdr. 816, 1826; Hall. f., Ergebn. 38; Ridley, F. M. P. 619; Fletcher, Siam. Verb. 418 — *Pr. obtusifolia* R. Br., Prodr. 1810, 512; Merrill, Interpr. Rumph. Herb. Amboin. 1917, 450[1]) and Enum. 293 — *Pr. leucostoma* Miq., Fl. Ind. Bat. 2, 1856, 899; Lam, Verb. 149 and in Rev. 43 — *Pr. nitida* K. Schum., Fl. Kaiser Wilh.-land 1889, 121; Merrill, Interpr. Rumph. Herb. Amboin. 1917, 451 — *Premna corymbosa* var. *angustior* (C. B. Clarke) Fletcher, Siam. Verb. 419 — *Pr. integrifolia* var. *angustior* C. B. Clarke in Hook. f., Fl. Br. Ind. 4, 1885, 572; Dop in F. G. I. C. 819 — *Pr. corymbosa* var. *minor* (Ridley) Fletcher, Siam Verb. 419 — *Pr. integrifolia* var. *minor* Ridley, F. M. P. 619 — *Pr. corymbosa* var. *obtusifolia* (R. Br.) Fletcher, Siam. Verb. 419 — *Pr. integrifolia* var. *obtusifolia* (R. Br.) P'ei, Verb. China 75; Dop in F. G. I. C. 820 — *Cornutia corymbosa* Burm. f., Fl. Ind. 1768, 132, t. 141, f. 1 — *Gumira littorea* Rumph., Herb. Amb. 3, 1743, 209, t. 134 — *Folium hircinum* Rumph., Herb. Amb. 1743, 3, 208, t. 133.

Merrill (Interpr. 450—451) pointed out that Linné's *Premna integrifolia* is based on *Cornutia corymbosa* Burm. f., so that the correct name for Linné's species is *Premna corymbosa* (Burm. f.) Rottl. & Willd. Linné cites as synonym Rumphius's *Folium hircinum* and *t. 134* (instead of *t. 133*), thus starting the confusion between *Pr. corymbosa, Pr. integrifolia* and *Pr. serratifolia.* Now that we consider all these names as synonyms, there is no difficulty at all and the oldest valid name (*corymbosa*) holds for the whole group of forms.

Hallier (l. c. 38) already noticed the great resemblance between forms of "*Pr. foetida*" and "*Pr. integrifolia*". and stated that they could hardly, if ever, be separated. He suggested that they might be identical. Lam went still further and united them, at the same time including several other species. Although later on several authors have tried to distinguish these (or sometimes even more) species again, there is, in my opinion, not a single character which can be used to separate them. Typical "*foetida*" is certainly quite distinct from typical "*serratifolia*" or "*integrifolia*", but when a fair amount of specimens is examined, a continuous series of intermediate forms between the extremes is found, so that they cannot

[1]) Lam in Rev. 42 erroneously cites Merrill Interpr. under *P. integrifolia* L.

be considered specifically different. We fully agree with Lam, that it is even impossible to distinguish sharply defined varieties and that it is preferable to divide the species in a number of "types" (cf. Lam in Rev. 42—43).

Premna parasitica Bl., Bijdr., 1826, 816; C. B. Clarke in Hook. f., Fl. Br. Ind. 4, 1886, 574; Lam, Verb. 112—113 and in Rev. 36 — *Pr. trichostoma* Miq., Fl. Ind. Bat. 2, 1856, 892; Lam, Verb. 128—129 and in Rev. 128; Ridley, F. M. P. 620; Fletcher, Siam. Verb. 418.

Premna pubescens Bl., Bijdr., 1826, 816; Lam, Verb. 152 and in Rev. 44 — *Pr. nervosa* Koord. et Val., Bijdr. Booms. Java 7, 1910, 186; Lam, Verb. 186 and in Rev. 41—42.

Premna oblongata Miq., Fl. Ind. Bat. 2, 1856, 893; Lam, Verb. 127 and in Rev. 38 — *Pr. oblongifolia* Merr., in Phil. Gov. Lab. Bull. 29, 1905, 118; Lam, Verb. 129 and in Rev. 39; Merrill, Enum. 392.

Vitex L.

Vitex trifolia L., var. **simplicifolia** Cham. in Linnaea 1832, 107; Hall. f., Ergebn. 41 — *V. trifolia* var. *unifoliolata* Schau. in DC. 683; Lam, Verb. 182 and in Rev. 53; Dop in F. G. I. C. 835 — *V. trifolia* var. *obovata* Benth., Fl. Austr. 5, 1876, 67 — *V. trifolia* L., var. *ovata* (Thunb.) Makino in Bot. Mag. Tokyo 17, 1903, 192; Merrill, Enum. 397; Fletcher, Siam. Verb. 432 (*V. ovata* Thunb., Fl. Jap. 1784, 257) — *V. trifolia* var. *repens* Ridley, F. M. P. 631 (*V. repens* Blanco, Fl. Filip. 1837, 513).

Chamisso's name "*simplicifolia*" has priority, being the first valid publication of the name of the variety. It is not invalidated by the name "*ovata*", though *Vitex ovata* of Thunberg, which was published as a specific name, is older.

Vitex pubescens Vahl, Symb. 3, 1794, 85; Lam, Verb. 183 and in Rev. 53; Merrill, Enum. 396; Ridley, F M. P. 632; Dop in F. G. C. I. 824; Fletcher, Siam. Verb. 435 — *V. latifolia* Lamk., Encycl. 2, 1788, 613; Hall. f., Ergebn. 44, non Mill.

Lamarck's name, though older than Vahl's *Vitex pubescens,* is invalidated by *Vitex latifolia* Mill. (1768).

Vitex quinata (Lour.) F. N. Will. in Bull. Herb. Boissier, Sér. II, 5, 1905, 431; Merrill, Enum. 396; Dop in F. G. I. C. 833; Fletcher, Siam. Verb. 434 — *V. heterophylla* Roxb., Hort. Beng. 1814, 46, nomen nudum and Fl. Ind. 3, 1832, 75; Lam, Verb. 187 and in Rev. 55; Ridley, F. M. P. 633; Fletcher, Siam. Verb. 434 — *Vitex celebica* Koord. in Meded. 's Lands Plant. 19, 1898, 560; Lam, Verb. 211 and in Rev. 56 — *Cornutia quinata* Lour., Fl. Cochinch. 1790, 387.

We are of the opinion held by most authors, viz. that *V. quinata* and *V. heterophylla* are synonyms. The first name, being the oldest, should be maintained.

Gmelina L.

Gmelina elliptica Sm. in Rees, Cyclop. 16, 1810—1811, no. 2; Merrill, Enum. 399 — *Gm. villosa* Roxb., Hort. Beng. 1814, 46, nomen nudum and

Fl. Ind. 3, 1832, 86; Lam, Verb. 217; Ridley, F. M. P. 623; Dop in F. G. I. C. 846; Fletcher, Siam. Verb. 423 — *Gmelina asiatica* L. var. *villosa* (Roxb.) Bakh. in Rev. 70; K. Heyne, Nutt. Pl. Ned. Indië Ed. 2, 1320 (1927).

Bakhuizen van den Brink made this species a variety of *Gm. asiatica* L., but we prefer to maintain it as a distinct species. *Gm. elliptica* was combined with *Gm. villosa* by Schauer in DC. Prodr. 11, 1847, 679, so that the species is now commonly known as *Gm. villosa* Roxb., but Smith's name is older and should be maintained.

Clerodendrum (Burm. ex) L.

Clerodendrum inerme (L.) Gaertn., Fruct. 1, 1788, 271; Lam, Verb. 251; Bakh. in Rev. 77; Merrill, Enum. 401; Ridley, F. M. P. 624; Dop in F. G. I. C. 854; Fletcher, Siam. Verb. 426 — *Clerodendron neriifolium* Wall., Cat.1828, no. 1789; Schau. in DC. 660; Fletcher, Siam. Verb. 425 — *Clerodendron Commersonii* (Poir.) Spreng., Syst. 2, 1825, 758 — *Volkameria inermis* L., Sp. Pl. Ed. 1, 1753, 637 — *Volkameria Commersonii* Poir. in Lamk., Encycl. 8, 1808, 688.

Cl. inerme and *Cl. neriifolium* cannot be regarded as distinct species, for they are linked by a continuous series of intermediate forms.

Clerodendrum nutans Wall. ex D. Don, Prodr. Fl. Nepal. 1825, 103; Wall. Cat. 1828, no. 1793 and in Bot. Mag. 1831, t. 3049; Hall. f., Ergebn. 72; Bakh. in Rev. 81, excl. syn. *Cl. penduliflorum* Wall. — *Clerodendron laevifolium* Bl., Bijdr. 1826; Lam, Verb. 266.

In Java only in a cultivated state.

Clerodendrum disparifolium Bl., Bijdr. 1826, 809; Hall. f., Ergebn. 73; Lam, Verb. 250; Ridley, F. M. P. 625; Fletcher, Siam. Verb. 426 — *Clerodendron laevifolium* Bakh., in Rev. 80, non Blume.

Clerodendrum eriosiphon Schau. in DC. 662; Backer in De Trop. Nat. 5, 1916, 92; Hall. f., Ergebn. 73 — *Clerodendron calamitosum* L., Lam, Verb. 256—257, pro parte — *Clerodendron disparifolium* Bakh. in Rev. 83, non Blume.

Bakhuizen van den Brink misinterpreted Blume's species *Cl. laevifolium* and *Cl. disparifolium*. A study of Blume's specimens in Herb. L.-B. showed, that *Cl. laevifolium* is a synonym of *Cl. nutans* Wall., a plant which occurs in Java only in a cultivated state, though Blume apparently erroneously states, that it occurs in primary forests on Mt. Salak and Mt. Gedeh. A study of the type of *Cl. disparifolium* Bl. reveals, that this is Bakhuizen van den Brink's "*Cl. laevifolium*". The name *Cl. disparifolium* was used by Bakhuizen van den Brink for a third species, viz. *Cl. eriosiphon* Schau. (which is mentioned by him as a synonym).

Clerodendrum incisum Klotzsch var. **macrosiphon** (Hook. f.) Baker, in This.-Dyer, Fl. Trop. Afr. 5, 1900, 308; Bakh. in Rev. 80 — *Clerodendron macrosiphon* Hook. f. in Bot. Mag. 1883, t. 6695; Backer in De Trop. Nat. 5, 1916, 87.

Clerodendrum premnoides A. Meeuse, nom. nov. — *Clerodendron macrosiphon* (Baker) Pieper in Engl. Bot. Jahrb. 62, 1928, Beibl. 80, non Hook. f. — *Premna macrosiphon* Baker ex Henriques in Bolet. Soc. Brot.

10, 1892, 148; Baker in This.-Dyer Fl. Trop. Afr. 5, 1900, 290; Hutch. et Dalz., Fl. W. Trop. Afr. 2, 1931, 270 & 272.

Clerodendron macrosiphon Pieper, based on *Premna macrosiphon* Baker from W.-Africa, is invalidated by *Cl. macrosiphon* Hook. f. and had to be renamed.

Clerodendrum phyllomega Steud., Nomencl. Ed. 2, 1, 1840, 383; Schau. in DC. 674; Miquel, Fl. Ind. Bat. 2, 1856, 878; Koord., Exk. fl. v. Java 3, 1912, 139 — *Clerodendron macrophyllum* (haud Sims) Bl., Bijdr. 1826, 809; Hall. f., Ergebn. 73; Lam, Verb. 282; Bakh. in Rev. 81.

Cl. macrophyllum Bl. (1826) is invalidated by *Cl. macrophyllum* Sims, Bot. Mag. 1825, t. 2536 (= *Cl serratum* [L.] Moon).

Clerodendrum Buchanani (Roxb.) Walp., Rep. 4, 1844, 108; C. B. Clarke in Hook. f., Fl. Br. Ind. 4, 1885, 596; Bakh. in Rev. 91 — *Volkameria Buchanani* Roxb., Hort. Beng. 1814, 46, nomen nudum, and in Fl. Ind. 3, 1832, 60 — *Clerodendron Buchananii* Herb. Roxb. ex Wall., Cat. 1828, no. 2653, nomen nudum — *Clerodendron infortunatum* (haud L.) Bl., Bijdr. 1826, 811 — *Clerodendron fallax* Lindl., Bot. Reg. 30, 1844, t. 19, fig. 2; Walp., Rep. 4, 1844, 108 — *Clerodendron Blumeanum* Schau. in DC. 669; Hall. f., Ergebn. 78; Lam, Verb. 299 — *Petasites agrestis* Rumph., Herb. Amb. 6, 1743, t. 49.

Roxburgh's *Volkameria Buchanani* was described from specimens which were "received from Dr. Buchanan at Luckipore where the plant is found wild" and "afterwards received from the Moluccas" (Roxb. l. c.). This species was combined with *Clerodendrum foetidum* by D. Don in his Prodr. Fl. Nepal. 103 (1825), but, as was pointed out by C. B. Clarke, this reduction was incorrect, for Roxburgh described *V. Buchanani* as an erect shrub with cordate leaves, the flowers in terminal corymbs and the corolla tube five or six times longer than the calyx, whereas Don's species (the type of which is extant in the British Museum ex herbario Hamilton) proved to be identical with *Caryopteris grata* Benth. and Hook. f. [1]) and is a climbing shrub with elliptic leaves, axillary inflorescences and the corolla tube shorter than the calyx lobes.

According to Clarke, Roxburgh's type specimen (Wall. Cat. no. 2653) is not in the Herb. Wallich, which seems to indicate that it is lost. From the study of the plate in Roxb. Icon. Ined. at Kew, Clarke was able to conclude that there is no reason to believe that *Volkameria Buchanani* has ever been found in Nepal or in Br. India and suggests that it is a "species from Celebes and the Moluccas". We may conclude from this that Roxburgh's statement "received from the Moluccas" holds true.

Hallier in Ergebn. 83 mentioned *V. Buchanani* as a doubtful synonym of *Clerodendron Rumphianum* De Vr. ex Miq., but this is certainly an error, for the last-named species has glabrous leaves covered with many small scales below, more or less elongated inflorescences and the corolla tube only up to twice as long as the calyx, whereas Roxburgh stated that the leaves are downy, and that the inflorescence is a corymb.

[1]) On account of the priority the correct name for this species is *Caryopteris foetida* (D. Don) Thellung.

Bakhuizen van den Brink identified it with the species afterwards described as *Clerodendron Blumeanum* by Schauer, but he did not give any reason for this reduction.

In our opinion, Schauer's *Cl. Blumeanum* is indeed the only species occurring in the Moluccas to which Roxburgh's ample description is applicable; especially the small calyx is characteristic, further the cordate, pubescent leaves and the corolla lobes which are all turned to one side.

In the reduction of *Petasites agrestis* to *Cl. Buchanani* we follow Hallier and Bakhuizen van den Brink. Merrill, in Interpr. Rumph. Herb. Amb. 455 (1917), identified it with "*Clerodendron speciosissimum* Paxt." (= *Clerodendrum speciosissimum* Van Geert), but this is an error. Robinson's specimen (Reliquiae Robinsonianae no. 303) from Amboina, regarded by Merrill as representing *Petasites agrestis* and determined by him as *Clerodendron speciosissimum* Paxton, in fact is *Clerodendron Blumeanum* = *Clerodendrum Buchanani*. *Cl. speciosissimum* is a native of Java and Madoera and is found elsewhere only in a cultivated state, whereas both *Petasites agrestis* and the species of Robinson 303 are said to grow wild in abundance in Amboina.

Clerodendrum Petasites (Lour.) A. Meeuse, nov. comb. — *Volkameria Petasites* Lour., Fl. Cochinch. 2, 1790, 388, excl. syn. Rumph. — *Clerodendron viscosum* Vent., Jard. Malm. 1803, t. 25; Walp., Rep. 4, 1844, 108; Hall. f., Ergebn. 63; Bakh. in Rev. 90 (excl. syn. *Cl. confusum* Hall. f., see Rev. Addit. II—III); P'Ei, Verb. China 130 — *Clerodendron infortunatum* L., Schau. in DC. 667, pro parte; Miq., Fl. Ind. Bat. 2, 1856, 876, pro parte; C. B. Clarke in Hook. f., Fl. Br. Ind. 4, 1885, 594, excl. syn. *Cl. viscosum*; *Cl. infortunatum* (haud L., nec Bl., nec Lindl.) Lam, Verb. 284—285; Dop in F. G. I. C. 859; Fletcher, Siam. Verb. 430.

The nomenclature of this species, currently known as "*Clerodendron infortunatum*" is rather intricate. *Clerodendrum infortunatum* L., Sp. Pl. Ed. 1, 1753, 637 was — judging from Linné's references to Hermann (Mus. Zeyl., 1717, 25, 29) and to Burman (Thes. Zeyl. 1737, 66, t. 29) in Sp. Pl. and in his Flora zeylanica 1748, 104, no. 232 — based on Ceylon material either from the Herb. Hermann, or received from Burman. Anyhow, it is obvious that the name of *Clerodendrum infortunatum* L. should be reserved for the Ceylon species, which was extensively described later on by Trimen in Handb. Fl. Ceylon 3, 1893, 361 and which is apparently endemic in Ceylon. Gaertner, in Fruct. 1, 1788, 271, t. 57, f. 1, described the fruit also from Ceylon material (extant in H. L.-B.).

Another species described as *Clerodendron viscosum* by Ventenat is quite distinct from *Cl. infortunatum*, but was often confused with it (cf. Hallier l. c. 63—65). It has a rather wide geographical distribution, ranging from Br. India and South China to the Malay Peninsula, Sumatra and Java. Loureiro's binomial *Volkameria Petasites* was based on *Petasites agrestis* Rumph., Herb. Amb. 6, 1743, 108, t. 49, but his description was from a different plant, so that he actually described a new species. This species was combined with *Clerodendrum viscosum* by Walpers and Bakhuizen van den Brink, with "*Cl. infortunatum*" (inclus. *Cl. viscosum*) by Schauer and with "*Cl. infortunatum*" = *Cl. viscosum* by Dop. Loureiro's statement "Hab. in dumetis Cochinchinae", indicates that *Volkameria*

Petasites is some wild Indo-Chinese species. In our opinion, the only species occurring in these regions to which Loureiro's description is applicable, is *Cl. viscosum* Vent. However, Loureiro's name antedates Ventenat's, so that this necessitates a new combination.

Cl. infortunatum L. was confused with *Cl. adenophysum* Hall. f. by Bakhuizen van den Brink. The specimens from Sumatra and Borneo quoted by him in Rev. 91 under *Cl. infortunatum* all belong to *Cl. adenophysum.*

A fourth related species, which was also confused with *Cl. infortunatum* or with *Cl. viscosum*, and consequently remained unnoticed for a long time is:

Clerodendrum confusum Hall., f. Ergebn. 65; Lam, Verb. 290; Bakh. in Rev. Addit. II—III, excl. syn. *Cl. adenophysum* Hall. f.

The following key may be helpful to distinguish these four species:

1a. Corolla glabrous outside, calyx slit down to 1/4 of its length, leaves bullate at base in the axils of the palmately ascending nerves and bearing scale-like glands in the hollows; *Sumatra, Borneo* . . . . . **Cl. adenophysum** Hall. f.

b. Corolla manifestly hairy outside, calyx slit down for more than 1/3 of its length, leaves not bullate 2

2a. Corolla tube about as long as calyx, calyx slit down for about 1/3—1/2 of its length, innovations greyish-pubescent; *Sumatra, Java, Karimon Djawa* . . . . . **Cl. confusum** Hall. f.

b. Corolla tube distinctly longer than calyx, calyx slit down for more than 1/2 of its length, innovations ochraceous- or ferruginous-pubescent 3

3a. Pubescence of corolla ferruginous, calyx lobes with prominent midrib, leaves on lower surface with minute glands and with a number of larger glands near the base and near the midrib; *Ceylon* . . . . . **Cl. infortunatum** L.

b. Pubescence of corolla whitish, calyx lobes without prominent midrib, leaves often with minute glands on lower side, but never with larger glands near base or midrib; *India and South China to Sumatra and Java* . . . . . **Cl. Petasites** (Lour.) A. Meeuse

Clerodendrum japonicum (Thunb.) Sweet, Hort. Brit. 1826, 322; P'Ei, Verb. China 141 — *Volkameria japonica* Thunb., Fl. Jap. 1784, 255 — *Clerodendron squamatum* Vahl, Symb. 2, 1794, 74; Hall. f., Ergebn. 81; Lam, Verb. 302; Dop in F. G. I. C. 862 — *Clerodendron japonicum* Makino in Bot. Mag. Tokyo 17, 1903, 91 — *Clerodendron coccineum* H. J. Lam, Verb. 296 — *Clerodendron squamatum* var. *typica* Bakh., in Rev. 93.

Congea Roxb.

Congea velutina Wight, Icon. 1850, t. 1497, 3 or 1566 (*sic!*); C. B. Clarke in Hook. f., Fl. Br. Ind. 4, 1885, 603; Bakh. in Rev. 101; Dop in F. G. I. C. 908 — *Congea Forbesii* King & Gamble in Kew Bull. 1908, 114; Lam, Verb. 337 — *Congea tomentosa* (haud Roxb.) Hall. f., Ergebn. 86; Lam, Verb. 338.

As far as we can see from the scanty material in the Leyden Herbarium, the plants cultivated in Java all belong to the form of *C. velutina* with four-leafed involucre. It is not clear whether Ridley in F. M. P. 640 (in nota) meant this species or the true *C. tomentosa* Roxb.; at any rate Hallier no. 247 (in H. L.-B.), collected at Singapore, where it was cultivated, belongs to *C. velutina.*

Avicennia L.

Avicennia alba Bl., Bijdr. 1826, 821; Hall. f., Ergebn. 87; Ridley, F. M. P. 641; Fletcher, Siam. Verb. 443; Moldenke in Herb. Lugd.-Bat. and in "The geographic distribution of the Avicenniaceae and certain genera of the Verbenaceae" (stencilled, issued Sept. 20, 1939) — *Avicennia marina* (Forsk.) Vierh., var. *alba* (Bl.) Bakh. in Rev. 207 and in Bull. Jard. Bot. Buitenz. Sér. III, 3, 1921, 207; Merrill, Enum. 407; Dop in F. G. I. C. 894.

This species differs, in my opinion, from the typical *A. marina* in so many respects, that a separation seems justified, which view is also held by Moldenke, who is preparing a monograph of the genus.

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