

NOTES ON THE FLORA OF JAVA, IV

by

A. G. L. ADELBERT

(Rijksherbarium, Leiden)

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The "Notes on the Flora of Java" I and II were published in Bull. Jard. bot. Buitenz., Sér. III, Vol. XVI², 107—110 (1939) and in Blumea V, No. 3, 490—525 (1945).

Next to these the present paper has two other precursors published under different titles but serving entirely the same purpose, which exists in the publishing of all the observations (including new species and nomenclatorial changes) made during the preparation of a Flora of Java under the direction of Dr C. A. Backer (see introduction to Notes II).

In the following text the emergency edition of the Flora of Java (as far as published) has been quoted, for instance, as: N. Fl. III, fam. XXV, 12 which means Noodflora, fascicle III, family XXV, page 12. Besides, one of Backer's former publications is sometimes mentioned, viz. his "Schooflora voor Java", 1911. It is quoted as Sch.fl., followed by the page-number.

It should be emphasized that, while elaborating the Flora of Java during the waryears, much material was wanting and not to be had, especially that from Herbarium Bogoriensis.

TILIACEAE, N. Fl. IVb, fam. CV (*Elaeocarpus*).

(For the other genera see Notes II).

Elaeocarpus littoralis T. et B. ex Kurz in Journ. As. Soc. Beng. XLIII, II, 132 (1874); Pierre, Flora for. de Coch. obs. ad t. 141 (1880—'99); Koord. et Val., Bijdr. Booms. Java V, 421 et 423 (1900); N. Fl. IVb, fam. CV, 5; Sch.fl. 158 and

Elaeocarpus pierrei Koord. et Val., l. c. 421 et 424; N. Fl., l. c. 6; Sch.fl. 159 — *Elaeocarpus dentata* Reinw. ex Pierre, l. c., non Vahl (1790—'94); Koord. et Val., l. c. I, 247 (1894).

The differences between *E. littoralis* and *E. pierrei* are, according to Pierre, Koorders and Valetton and Backer:

	<i>littoralis</i>	<i>pierrei</i>
1. Sepals	shortly pubescent inside	nearly glabrous inside
2. Petals	6—8-lobed at the apex	3—4-lobed at the apex
	each lobe bidentate	each lobe 1—3-cleft
3. Leaves	obovate-oblong	(obovate-)oblong- lanceo- late
	cuneate at base	acuminate, attenuate at base
	obtuse or rounded at the apex	obtuse
4. Racemes	shorter than the leaves	nearly as long as the leaves
5. Anther-tails	ca. as long as the anthers (3—4 mm)	shorter than the anthers (1½—2½ mm)
6. Carina of sepals	glabrous inside	hairy inside at the base
7. Filaments	glabrous	hairy
8. Roots	prop- and respiratory roots	no such roots

The differences, given in literature, do not cover each other and, in my opinion, are insufficient to keep the two species separate; intermediate forms occur. Among the material there were two specimens, showing the characters of *E. littoralis*, though having been collected in a mountain jungle. On the other hand, I saw two specimens of *E. pierrei*, one of which was collected below 650 m alt. and the other on the bank of a lake. The presence or absence of respiratory- and proproots could not be ascertained from herbarium-material and moreover may not be considered a criterion since plants may or may not form these, according to the nature of their habitat. The distinguishing marks 2 and 5 seem to me the best but I have the strong conviction that, as a matter of fact, the two species are identical, the phaenotype varying in accordance with habitat.

Elaeocarpus adenopus Miq., Fl. Ind. Bat. I, II, 209. (1859); Hochr., Pl. Bog. Exsicc. 26 (1904) and

Elaeocarpus longifolia Bl., Bijdr. 120 (1825); N. Fl. IV b, fam. CV, 8; Sch.fl. 161.

In *E. longifolia* I observed the following character: Stipules large, ¾—1¾ cm long, ½—1¼ cm broad, circular-ovate-oval, caducous. According to Hochreutiner this character belongs to *E. adenopus* Miq. and distinguishes this species from *E. longifolia* Bl. Hallier, however, noted on the label of Hochreutiner in the Rijksherbarium that these stipules likewise occur in *E. longifolia*. I was not able to study this question thoroughly.

Elaeocarpus floribunda Bl., Bijdr. 120 (1825); N. Fl. IVb, fam. CV, 8; Sch.fl. 161 and

Elaeocarpus glabra Bl., l. c. 122; N. Fl., l. c. 9; Sch. fl. 161.

Among the specimens of *E. glabra* in our collection occurred *E. floribunda* and *E. longifolia* Bl. as well as *E. glabra* itself. It would seem that even Blume himself could not properly distinguish between his species. Yet, *E. longifolia* can be distinguished clearly by its anther-tails. *E. floribunda* and *glabra* are very closely allied. Regarding almost all characters I found intermediate forms. The crystal-lumps¹⁾ occur not only in *E. floribunda* but can be found likewise in *E. glabra*, judging from its fruits.

¹⁾ In several *Elaeocarpus*-species all herbaceous parts show, when dried, numerous small swellings which are filled up by tiny crystal-lumps.

In *E. floribunda* the fruit is nearly smooth or shallowly grooved, the ovary densely puberulous and the plant in general is more delicate, smaller and more slender. In *E. glabra* the fruit is deeply grooved or has strong tubercles, the ovary is sparingly hairy and the plant in general is coarser and larger, especially as regards pedicels and flowers. However, in all these characters intermediate forms occur.

Elaeocarpus stipularis Bl., Bijdr. 121 (1825); Masters in Hook., Fl. Brit. Ind. I, 404 (1875); Koord. et Val., Bijdr. Booms. Java I, 251 (1894) et V, 419 et 422 (1900); N. Fl. IVb, fam. CV, 7; Sch.fl. 162 — *Elaeocarpus tomentosa* Bl., l. c. — *Elaeocarpus fissistipula* Miq., Fl. Ind. Bat. I, II, 210 (1859).

Backer, Hallier (as appears from his additions on the labels in the Rijksherbarium and in our copy of the Kew Index) and Koorders and Valetton in part V of their Bijdr. (not yet in part I) consider *E. stipularis* and *tomentosa* to be identical. In part I Koorders and Valetton mention (see also Masters) that *stipularis* always possesses 3-celled ovaries and un-tufted anthers, *tomentosa*, on the contrary, 5-celled ovaries and tufted anthers. I myself found among my material (among which authentic material of Blume) anthers without and with tiny tufts and saw a few 3-celled and two 4-celled ovaries. The fruits I saw were 1- and 2-celled, Masters also says 1-celled, Valetton mentions 3-celled ovaries, Roxburgh 5-celled ones. I also consider the two species identical, with 3—5-celled ovaries and 1—5-celled fruits.

Elaeocarpus oxypyren Koord. et Val., Bijdr. Booms. Java V, 419 (1900); N. Fl. IVb, fam. CV, 8; Sch.fl. 160 — *Elaeocarpus serrata* Bl., Bijdr. 119 (1825), non L. (1753) — *Elaeocarpus acuminata* Koord. et Val., l. c. I, 258 (1894), non Wall. ex Clarke in Hook., Fl. Brit. Ind. I, 406 (1875).

E. serrata Bl., of which I saw a specimen most probably named by Blume himself, is considered by me identical with *E. oxypyren* Koord. et Val. but not with *E. serrata* L. I follow herein Koorders and Valetton, despite the fact that I did not see the type of the last-named species but only the material in our collections.

E. serrata L. originates from Continental Asia and differs from *E. serrata* Bl. and *oxypyren* Koord. et Val. by its smaller, obovate leaves which are more or less accumulated at the twigs' ends, by the nearly glabrous petals and by the very long-tufted anthers.

Elaeocarpus obtusa Bl., Bijdr. 123 (1825); N. Fl. IV b, fam. CV, 5; Sch.fl. 159 — *Elaeocarpus holosericeus* Bl., in sched.

The points of difference with *E. obtusa*, mentioned by Blume on the label of *E. holosericeus* (written by himself) are not essential.

Elaeocarpus (Monoceras?) palembanica (-um) Miq., Sum. 408 (1862).

Koorders and Valetton (Bijdr. Booms. Java V, 421, 1900) combine this species with *E. griffithii* Mast. (recte A. Gray!). I saw the type of Miquel (3809 H. B., Toeboean, Ogan oeloe, Palembang) but it has, just like the other specimens of this species, only fruits. Hence it is impossible to ascertain whether the anthers are tailed or tufted. But judging from its fruits the species surely does not belong to the untailed group from Java. For the same reason I am not sure that the Javanese specimen Hort. Bot. Utr. 43572 has to be identified with the present species, or with *E. petiolata*

(Jack) Wall. or *E. griffithii* A. Gray; leaves and fruits are not sufficient to decide this question. The same difficulties exist regarding the numbers *Kds.* 33897 and *Vincent* 4667. The flowers of the first-named specimen are those of *E. oxypyren* and probably do not belong to the vegetative parts.

Elaeocarpus petiolata (Jack) Wall. ex Steud. (non A. Gray), *Nom.* ed. II, I, 545 (1840); *Koord. et Val.*, *Bijdr. Booms. Java* V, 420 (1900); *N. Fl.* IVb, fam. CV, 4; *Sch.fl.* 158 — *Monocera petiolata* Jack in *Malay Misc.* I, n.v. 43 (1820) — *Elaeocarpus resinosa* Bl., *Bijdr.* 122 (1825); *Koord. et Val.*, l. c. I, 254 (1894).

Elaeocarpus sphaerica (Gaertn.) K. Schum. in *Engl. et Prantl. Natürl. Pflanzenfam.* III, 6, 5 (1890); *N. Fl.* IVb, fam. CV, 7; *Sch.fl.* 162 — *Ganitrus sphaerica* Gaertn., *Fruct.* II, 271, t. 139 (1788—1807) — *Elaeocarpus ganitrus* Roxb., *Hort. Beng.* 42 (1814) n. n.; *Fl. Ind.* II, 592 (1824); *Koord. et Val.*, *Bijdr. Booms. Java* V, 419 (1900).

Aceratium oppositifolium DC., *Prod.* I, 519 (1824); *N. Fl.* IV b, fam. CV, 9 — *Elaeocarpus oppositifolia* (DC.) Miq., *Fl. Ind. Bat.* I, II, 211 (1859) — *Elaeocarpus edulis* T. et B. in *Tijdschr. Nederl. Indië* XXVII, 39 (1864); *Sch.fl.* 160.

MELIACEAE, fam. CXLVIII.

Toona sureni (Bl.) Merr., *Interpr. Rumph. Herb. Amboin.* 305 (1917) — *Swietenia sureni* Bl., *Cat. Gew. Buitenzorg* 27 (1823) — *Cedrela febrifuga* Bl., *Bijdr.* 180 (1825); *Koord. et Val.*, *Bijdr. Booms. Java* III, 197 (1896); *Sch.fl.* 218 — *Cedrela teijsmanni* Hassk., *Hort. Bogor.* I, 133 (1858) — *Cedrela inodora* Hassk., l. c. 131.

I did not see the types of *C. teijsmanni* and *inodora* Hassk. but I examined the specimen *Kds.* 4866 of *C. teijsmanni* (without flowers), cited by Koorders and Valetton. They rightly say that the species differs from *C. febrifuga* Bl. only by its remarkably densely puberulous leaves. Most probably it is a form of *C. febrifuga*. Even in the specimen *Kds.* 4866 one can observe how the indumentum of the underside of the leaves is apt to disappear. Besides, I found a specimen under the name of *C. febrifuga* Bl., var. *velutina* *Koord. et Val.*, which perfectly accorded with *Kds.* 4866.

Concerning *C. inodora* Hassk., also Koorders and Valetton declare to be hardly able to distinguish this species from *C. febrifuga*. They mention the glabrous petals, the leaves already in a young state perfectly glabrous and the white heart-wood as distinguishing marks. Hochreutiner (*Pl. Bog. Exsicc.* 72, 1904) says that the distinguishing marks, mentioned by Hasskarl, fit entirely and that the fruits have fewer lenticels and no spongy tissue inside of the valves. The last-named characters I likewise observed in *C. febrifuga*. Moreover, also glabrous petals and leaves occur in this species. The only available specimen of *C. inodora* seemed to me identical with *C. febrifuga*.

From the descriptions of Hasskarl *C. toona* Roxb., *febrifuga* and *inodora* Hassk. can be hardly kept apart; they pass into each other.

Toona sinensis (Juss.) Roem., *Syn. Hesper.* 139 (1846) — *Cedrela sinensis* Juss. in *Mém. Mus. Par.* XIX, 255, 294 (1830); C.DC. in DC.,

Monog. Phan. I, 743 (1878); Sch.fl. 219 — *Cedrela serrata* Royle, Illustr. Bot. Himal. 144, t. 25 (1839); C.DC., l. c. 742; Koord. et Val., Bijdr. Booms. Java III, 204 (1896) — *Toona serrata* (Royle) Roem., l. c. — *Cedrela serrulata* Miq., Sum. 508 (1862).

C. de Candolle gives as a distinction between *C. serrata* Royle and *C. sinensis* Juss. that the former has only 5 stamens and the second 5 stamens and 5 staminodes. This cannot be correct, since Royle himself mentions in his original description 5 stamens and 5 staminodes. The explanation of this discrepancy lies in the fact that the number of staminodes varies from 0 to 5.

Again, Roemer gives as a distinction between the same two species that the first one has paripinnate, the second imparipinnate leaves. Jussieu also mentions in his original description imparipinnate leaves, but Backer, C. de Candolle, Koorders and Valetton all say paripinnate. Because of the absence of the type of *C. sinensis* I could not decide this question and have kept close to the opinion of the last-named authors, which fitted in with our material. I may add, that formerly the pari- or imparipinnateness of leaves was gathered from the total number of leaflets; nowadays only the leaf-apex is taken into consideration.

Xylocarpus granatum Koen. in Naturf. XX, 2 (1784); A. Juss., Mém. Mel. 92, t. 20, n. 22 (1830) — *Carapa obovata* Bl., Bijdr. 179 (1825); C.DC. in DC., Monog. Phan. I, 718 (1878); Koord. et Val., Bijdr. Booms. Java III, 189 (1896); Sch.fl. 217 and

Xylocarpus moluccensis (Lmk.) M. Roem., Syn. Hesper. 124 (1846) — *Carapa moluccensis* Lmk., Encycl. I, 621 (1785); C. DC., l. c. 719; Koord. et Val., l. c. 193; Sch.fl. 217.

As regards these species I suppose that a confusion and interchange by the different authors has taken place concerning the character of the incision of the teeth of the staminal tube. The following statement gives the opinion of the different authors:

	<i>C. obovata</i>	<i>X. granatum</i>	<i>X. moluccensis</i>
Backer:	acutely bifid	acutely bifid	entire or lobed
Adelbert:	irregularly lobed <i>type</i>	emarginate ¹⁾ <i>original description</i>	bifid or with specimens, affected by insects. irregularly lobed <i>specimens from original country</i>
Kds.-Val.:	irregularly lobed	?	entire
Juss.:	?	bifid	= bifid
C. DC.:	subrounded	bifid	= bifid

¹⁾ This is mentioned by Koen, for the filaments by which name he indicated the teeth of the staminal tube. The staminal tube itself was called nectarium by him.

The notes in italics indicate from where I got my observations.

The = sign indicates which species have been considered identical.

I could not make out with perfect certainty how far these three species are identical but I assume that *C. obovata* = *X. granatum*, particularly

so since also Merrill looks upon them as identical on account of the obovate, rounded leaves.

Turraea humilis (Blanco) Merr. in Philipp. Gov. Lab. Bur. Bull. XXVII, 30 (1905); Spec. Blanc. 208 (1918); Enum. II, 359 (1923) — *Plagianthus humilis* Blanco, Fl. Filip. ed. I, 526 (1837) — *Turraea pumila* Benn., Pl. Jav. Rar. I, 183 (1840); Sch.fl. 200.

The two specimens, cited by Merrill for *T. humilis* and which are represented in our collection, agree perfectly with the Koorders specimens of *T. pumila* (no type). Again, the original description of *Pl. humilis* also fits in with that of *T. pumila* except for some inaccuracies (especially the number of cells of the ovary). Merrill considered in his original description of *T. humilis* both species identical; afterwards (in Spec. Blanc.) he kept them apart and finally he wrote in his Enum.: “= *T. pumila* F. Vill. non? Benn.”. Personally, I consider the two species identical.

Melia dubia Cav., Diss. VII, 364 (1789); Sch. fl. 201 — *Melia composita* Willd., Sp. pl. II, 559 (1799); Koord. et Val., Bijdr. Booms. Java III, 9 (1896) — *Melia candollei* Juss. in Mém. Mus. Par. XIX, 258 (1830) — *Melia bogoriensis* Koord. et Val., l. c. 18.

Melia sempervirens Sw., Prod. Veg. Ind. Occ. 67 (1788).

Of this species I had neither type nor original description at my disposal. It is mentioned by Swartz for Jamaica in a second description (Fl. Ind. Occ. II, 737, 1800). A specimen from this locality, examined by me, agreed entirely with *M. sambucina* Bl. (a species identified with *M. azedarach* L.), which is exactly what the Kew Index indicates.

However, in our collection there is also a form of *Melia* with deeply incised leaflets, considered by Baeker to be *M. sempervirens* Roxb. (Sch.fl. 202), though described by Roxburgh as *M. sempervirens* Willd. (Fl. Ind., Carey-ed. II, 395, 1832), and by Willdenow as *M. sempervirens* Sw. (Sp. pl. II, 559, 1799). The form in question agreed perfectly with the description by Baeker, fairly well with that by Roxburgh, less well with that by Willdenow (who speaks of “foliola profundius et magis inaequaliter serrata”¹⁾) and least of all with that by Swartz himself (who speaks only of “inaequaliter serrata”¹⁾). The description by Swartz agrees better with *M. sambucina* Bl., a fact already stated above.

We have to examine whether *M. sempervirens* Sw. is indeed identical with *M. sambucina* Bl. and *M. azedarach* L. and whether the form with deeply incised leaflets is *M. sempervirens* Sw. or a separate species. In the last case, however, it would be illegitimate to call it *sempervirens*.

Having no types, I could not examine this and other questions thoroughly. In the elaboration of the Flora of Java I have kept for the moment the form with deeply incised leaflets under the name of *M. sempervirens* Sw., not identifying it with *M. azedarach* L. Likewise I have classed the remaining material for the time being in *M. azedarach* L. and *M. dubia* Cav., also without having seen any types.

Antelaea azadirachta (L.) Adelb., nov. comb. — *Melia azadirachta* L., Sp. pl. 385 (1753) — *Antelaea javanica* Gaertn., Fruct. I, 277 (1788)²⁾ —

¹⁾ Italics mine (Adelbert).

²⁾ Hallier (Rec. Trav. Bot. XV, 33, 1918) wrongly reduced this species to *Melia composita* Willd., from which it can be distinguished at once by its 5-celled ovary.

Azadirachta indica Juss. in Mém. Mus. Par. XIX, 221 (1830); Koord. et Val., Bijdr. Booms. Java III, 21 (1896); Sch.fl. 202.

Sandoricum koetjape (Burm.) Merr. in Philipp. Journ. Sc. Bot. VII, 237 (1912).

Of this species I found two specimens with serrate leaves, a character nowhere mentioned in literature.

Dysoxylum gaudichaudianum (A. Juss.) Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 15 (1868); C.DC. in DC., Monog. Phan. I, 518 (1878) — *Didymocheton gaudichaudianum* A. Juss. in Mém. Mus. Par. XIX, 231 (1830) — *Turraea decandra* Blanco, Fl. Filip. ed. I, 347 (1837); Merr. in Philipp. Gov. Lab. Bur. Bull. XXVII, 30 (1905) — *Dysoxylum amooroides* Miq., l. c. 16; C. DC., l. c.; Koord. et Val., Bijdr. Booms. Java III, 84 (1896); Sch.fl. 203.

Two specimens of *Dysoxylum gaudichaudianum* of Zollinger (no type) and the original description of *Didymocheton gaudichaudianum* all agreed perfectly with *D. amooroides* (type examined). Koorders and Valetton do not mention *Dysoxylum gaudichaudianum* at all, C. de Candolle for a reason unknown to me keeps the species separate, Miquel also keeps them apart but copies the description and adds: "non vidi". I consider them identical.

Turraea decandra Blanco, judged from the original description, agrees wholly with *D. amooroides*. Merrill also identifies the two species but only because of Perkins recognizing two specimens of *T. decandra* as *amooroides*.

Dysoxylum alliaceum Bl., Bijdr. 172 (1825); Koord. et Val., Bijdr. Booms. Java III, 47 (1896); Sch.fl. 203 — *Dysoxylum fraternum* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 25 (1868); Koord. et Val., l. c. 54; Sch.fl. 204 — ? *Dysoxylum glabrum* C. DC. in DC., Monog. Phan. I, 483 (1878); Koord. et Val., l. c. 53; Sch.fl. 204 — ? *Dysoxylum nagelianum* C. DC., l. c. 504; Koord. et Val., l. c. 55; Sch.fl. 204.

Of *D. fraternum* Miq. four specimens of Junghuhn were at hand, two of which, named by Miquel and with localisation "Java?" (as mentioned in the original description), I choose for syntype. I consider this species identical with *D. alliaceum* Bl. It is very variable, the flowers may be 4—5-merous and contain 5—10 anthers. All types could be examined.

Of *D. nagelianum* and *glabrum* there was no material available. Hence I am not quite sure but, like other authors, I have got the strong impression that these species are nothing but forms of *alliaceum*. The former differs especially by its entirely glabrous ovary and its externally glabrous disc, the second by its on the outside finely and shortly hairy calyx and its on both sides hairy staminal tube.

Dysoxylum sericeum (Bl.) Adelb., nov. comb. — *Azedarach ramiflorum* Noronh., n. n. in Verh. Batav. Gen. V, ed. I, Art. IV, 5 (1790) — *Epicharis cauliflora* Bl., Bijdr. 166 (1825) — *Epicharis sericea* Bl., l. c. — *Dysoxylum ramiflorum* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 10 (1868); Koord. et Val., Bijdr. Booms. Java III, 39 (1896); Sch.fl. 205.

A combination *ramiflorum* (Noronh.) Adelb. would be inadmissible because of the n. n. of Noronha; the combination *cauliflorum* (Bl.) Adelb. because of there existing already a *Dysoxylum cauliflorum* Hiern. in Hook. f., Fl. Brit. Ind. I, 549 (1875).

Dysoxylum caulostachyum Miq. in Ann. Mus. Bot. Lugd. Bat. IV,

12 (1868); Koord. et Val., Bijdr. Booms. Java III, 34 (1896); Sch.fl. 205.

It did not seem correct to me to combine this species with *D. ramiflorum* Miq. (types of both extant) because of the difference in inflorescence and in indumentum of the calyx being too conspicuous and the want of intermediate forms. All other characters, however, are almost perfectly the same. Hence, when sterile, the species *caulostachyum*, *ramiflorum* and *densiflorum* are indistinguishable.

Dysoxylum excelsum Bl., Bijdr. 176 (1825); Koord. et Val., Bijdr. Booms. Java III, 56 (1896); Sch.fl. 207 — *Dysoxylum lampongum* Miq., Sum. 503 (1860), exclus. var. β — *Dysoxylum excelsum* Bl., var. *hasseltii* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 20 (1868) — *Dysoxylum macrothyrsum* Miq. in Ann. Mus. Bot. Lugd. Bat. l. c. — *Dysoxylum hasseltii* (Miq.) Koord. et Val., l. c. 64 — *Dysoxylum excelsum* Bl., var. *parvifolium* Koord. et Val., l. c. 61.

A variable species! The distinction between *D. hasseltii* and *D. excelsum* seemed to me untenable after having studied the types, because of the presence of a series of intermediate forms.

Koorders and Valetton mention also a variety *parvifolium* of *D. excelsum* which, as they say, differs especially by its panicles composed of 3-flowered cymes. In the very poor type this indeed is the case but also in specimens of the true *D. excelsum* this character can be observed. And two specimens, determined by Koorders and Valetton as var. *parvifolium*, did not show the character at all. Judging from the very poor material I see no reason to separate the variety from the typical form.

Finally, I found among the material of *D. excelsum* some specimens (among which one of the syntype of Blume!) which rather deviate from the norm and on which perhaps a variety could be based. Because of the fact that only one of these specimens possesses flowerbuds, I refrained from taking a definite decision. The flowers are 5-merous; calyx and corolla entirely glabrous; staminal tube sparingly hairy on both sides; anthers 10; disc sparingly pilose on both sides; ovary 3-celled, sparingly hairy; style with some hairs at the base; stigma cylindrical. Primary lateral nerves ecarinate, secondary ones less conspicuous cross-barred and with more than 2 mm interspace.

Koorders and Valetton identify *D. macrothyrsum* Miq. with *D. excelsum*. In the original description of *macrothyrsum* Miquel mentions as a synonym: *D. lampongum* Miq., exclus. var. β . And *lampongum* has been validly described! If so, Miquel should have reserved the name *macrothyrsum* for that var. β of *lampongum* and his *macrothyrsum* should be *lampongum*. *Lampongum* itself appeared to be identical with *excelsum* and the said var. β with *D. arborescens* Miq. The synonymy has to be as mentioned above and under *D. arborescens*.

Dysoxylum arborescens Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 24 (1868); Koord. et Val., Bijdr. Booms. Java III, 76 (1896); Sch.fl. 207 — *Goniocheton arborescens* Bl., Bijdr. 177 (1825) — *Dysoxylum lampongum* Miq., var. β Miq., Sum. 503 (1860) — *Dysoxylum kunthianum* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 13 (1868) — *Dysoxylum halmaheirae* C. DC. in DC., Monog. Phan. I, 488 (1878) — *Dysoxylum rubrum* Merr. in Philipp. Gov. Lab. Bur. Bull. XXXV, 32 (1906).

Dysoxylum multijugum (Bl.) Adelb., nov. comb., non Arn., n. n. — *Heynea multijuga* Bl., Bijdr. 168 (1825) — *Dysoxylum cyrtobotryum* Miq., Sum. 504 (1860), non var. β , *borneensis* Miq. — *Dysoxylum blumei* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 25 (1868); Koord. et Val., Bijdr. Booms. Java III, 73 (1896); Sch.fl. 208.

The oldest name of this species is *Heynea multijuga* Bl. When Miquel classed the species in the genus *Dysoxylum* he changed the specific epithet into *blumei* because of there existing already a *D. multijugum* Arn. This name being a n. n., the specific epithet *multijugum* can be maintained.

D. cyrtobotryum Miq. has already proved to be identical with the species cited above. The var. *borneensis*, however, which has not been mentioned for Java, differs so much from *D. multijugum* that I take it to be a separate (new?) species. In this variety the fruits are 4-celled, obovoid, 4-lobed, with indented apex. In *multijugum* they are 1-celled (?), spool- or pearshaped.

Among the Leyden material of *D. multijugum* there occur some specimens (*Kds.* 23803, 23493 and 7565, *Bakhuizen van den Brink* 3556, *Dakkus* 250 and *Backer* 25453) which considerably differ from the typical form, especially by the far more conspicuous venation of the leaves, the rather elevated and carinate primary lateral nerves of which several were bifurcate at the end, the smaller, caudate leaves and the more glabrous rachides of the leaves. The specimens seem to form at least a new variety, perhaps even another (new?) species. I could not yet take a decision because of the specimens being sterile.

Dysoxylum vrieseanum C. DC. in DC., Monog. Phan. I, 491 (1878); Koord. et Val., Bijdr. Booms. Java III, 72 (1896); Sch.fl. 207.

A species, collected in Java a long time ago of which there seems to be preserved no material at all. It was said to differ from *D. multijugum* especially by its racemes, being approximately as long as the whole leaf (in *multijugum* shorter), the acute teeth of the calyx (in *multijugum* obtusely triangular), the disc being glabrous on both sides and the staminal tube being finely hairy on both sides. C. de Candolle saw in the Kew Herbarium a specimen, collected by De Vriese in Java.

Dysoxylum biloculare Koord. et Val., Bijdr. Booms. Java III, 95 (1896).

Of this species 3 specimens were at hand: *Kds.* 5027, 10979 and 4978, sterile and with the leaves cut off. They resemble a good deal the exceptional specimens of *D. multijugum* (Bl.) Adelb., mentioned above but I did not observe any bifurcate nerves and the conspicuous venation shown by *multijugum*. Both forms will have to be compared later on. I failed to recognize the characteristic features of the italicized parts in the original description which may be meant as particularly distinguishing marks. Further, the inflorescences are panicles!

Chisocheton junghuhnii (Miq.) Adelb., nov. comb. — *Schizochiton junghuhnii* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 30 (1868) — *Chisocheton junghuhnii* Miq. ex Kew Index I, 517 (1895).

In the Leyden collection a sterile specimen is found, originating from "Herb. Reinwardt", which is probably *Ch. junghuhnii* (Miq.) Adelb. It cannot be decided whether the indication "Java" on the label is reliable.

Most probably this species (of which the type from Sumatra was

present) is identical with *Ch. sandoricocarpus* Koord. et Val., or the latter may be a variety of the former. If so, *junghuhnii* is the oldest name. I could not observe any other difference than that *junghuhnii* has more obovate, smoother leaves with conspicuously longer, narrowly cuneate, acute bases.

In the Kew Index several species of *Chisocheton* are erroneously mentioned to be published by Miquel in the *Annales* (l. c.). They all are mentioned there under the generic epithet *Schizochiton*. Therefore, the new combinations, given by the Kew Index, are invalid and herewith are legitimated by me:

Chisocheton amabilis (Miq.) Adelb., nov. comb. — *Schizochiton amabile* Miq. in *Ann. Mus. Bot. Lugd. Bat.* IV, 27 (1868).

Chisocheton ceramicus (Miq.) Adelb., nov. comb. — *Schizochiton ceramicum* Miq., l. c. 29.

Chisocheton paucijugum (Miq.) Adelb., nov. comb. — *Schizochiton paucijugum* Miq., l. c. 30.

Chisocheton spectabilis (Miq.) Adelb., nov. comb. — *Schizochiton spectabilis* Miq., l. c. 29.

Lansium domesticum (Corr. emend. Jack in *Trans. Linn. Soc.* XIV, I, 115 (1823); Koord. et Val., *Bijdr. Booms. Java* III, 180 (1896); *Sch.fl.* 215 — *Lansium javanicum* Koord. et Val. ex Moll. et Jansonius, *Mikrographie des Holzes* II, 176 (1908).

Amoora grandifolia (Bl.) Walp., *Rep.* I, 429 (1842) — *Aphanamixis grandifolia* Bl., *Bijdr.* 165 (1825) — *Amoora aphanamixis* Roem. et Schult., *Syst.* VII, 1621 (1829—'30); Koord. et Val., *Bijdr. Booms. Java* III, 119 (1896); *Sch.fl.* 33 — *Amoora spec.* Koord. et Schum., *Syst. Verzeichn.* I, fam. 140, 33 (1910—'13).

Amoora trichanthera Koord. et Val., *Bijdr. Booms. Java* III, 123 (1896); *Sch.fl.* 216.

In the description given by Koorders and Valeton some characters are mentioned, which, even after repeated examinations, I could not observe, viz. petals connate at base, staminal tube shortly hairy inside, ovary small, triangular, stigmas 3, straight. It should, however, be stated that I had only one flowering specimen at my disposal, which moreover was not the type.

Aglaia heptandra Koord. et Val., *Bijdr. Booms. Java* III, 132 (1896); *Sch.fl.* 210.

Up to now the fruits of this species were unknown. When the fruiting specimen: *Herb. Jungh.* 45, *Plantae Jungh. ineditae* 207 is indeed *A. heptandra*, then the berries are densely stellately pubescent, 1-celled, 1-seeded, with woody pericarp, ca. 3 cm long and 2½ cm broad; seed ovoid, ca. 2 mm long.

Aglaia angustifolia Miq., var. β , *horsfieldiana* C. DC. in DC., *Monog. Phan.* I, 617 (1878); Koord. et Val., *Bijdr. Booms. Java* III, 173 (1896); *Sch.fl.* 211.

Backer says of this species: "Collected in Java a very long time ago", Koorders and Valeton mention: "wanting in *Herb. Kds.*". In the Leyden Herbarium there are some Javanese specimens under that name but they appeared to be juvenile forms of *Sapindus rarak* L. I have struck out the species for Java.

Aglaia sulingi Bl., Bijdr. 170 (1825); Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 44 (1868); Koord. et Val., Bijdr. Booms. Java III, 146 (1896); Sch.fl. 213.

This species has, after Blume discovered it on Mount Soeling near Buitenzorg, never been recollected and has become somewhat obscure because of the absence of a clearly assignable type in Herb. Kds. Only Miquel remained as indicator of what *A. sulingi* really was. His description suggests originality. Besides, one of the two specimens in our collection bears his handwriting. This specimen I have chosen for a lectotype.

Aglaia latifolia Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 42 (1868); Koord. et Val., Bijdr. Booms. Java III, 138 (1896); Sch.fl. 214 — *Aglaia mucronulata* C. DC. in DC., Monog. Phan. I, 601 (1878); Koord. et Val., l. c. 142; Sch.fl. 214 — *Aglaia euryphylla* Koord. et Val. in Koord. et Schum., Syst. Verzeichn. I, fam. 140, 37 (1911) n. n.

De Candolle mentions for *A. mucronulata* a 1-celled ovary. This statement seems to have been based upon a wrong observation because I had the type at hand and saw a 3-celled, 3-seeded ovary.

Aglaia elaeagnoides (Juss.) Bth., Fl. Austral. I, 383 (1863); Koord. et Val. Bijdr. Booms. Java III, 135 (1896); Sch.fl. 214 — *Aglaia roxburghiana* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 41 (1868); Koord. et Val., l. c. 147; Sch.fl. 214.

Aglaia argentea Bl., Bijdr. 170 (1825); Koord. et Val., Bijdr. Booms. Java III, 160 (1896); Sch.fl. 215.

Very variable species of which several forms can be distinguished as varieties. As regards Java the following remarks might be made: Even the forma typica is variable in many respects but in this case the characters pass into each other to such a degree that splitting up was neither possible nor useful. I saw specimens with densely lepidote and with nearly glabrous petals, anthers inserted at the base and at the top of the staminal tube (both in the syntype), capitate stigmas on style and sessile stigmas, conical and cylindrical stigmas, an old specimen with 3—5 leaflets per leaf, etc.

I have dropped the var. *cordulata* C. DC. (in DC., Monog. Phan. I, 618 (1878); Koord. et Val., l. c. 161). The only distinguishing mark, given by De Candolle is the cordate base of the leaflets but in the description of the typical form he also mentions: leafbase subcordate. Koorders and Valeton describe the leafbase as more or less symmetrical and rounded. This is not right, the type of Blume also possesses cordate leafbases.

The varieties *angustata* Miq. (Fl. Ind. Bat. I, II, 543 (1859); Koord. et Val., l. c. 164) and *multijuga* Koord. et Val. (l. c. 165) I have not kept apart any longer as the points of difference have no varietal value.

Maintained was the var. *splendens* Koord. et Val. (l. c. 166) under which I brought together all specimens with acute to obtuse base of leaflets. Koorders and Valeton mention a 3-celled ovary for this variety (as contrasted with the typical form with 2-celled ovaries) and on account of that and other characters they raised it to specific rank (Icon. Bog., t. XIV, 1901). Because of my material being sterile I could not study these characters but, judging from the variability within the species *argentea*, I am inclined to maintain it as a variety.

As authentic material Koorders and Valeton mention, besides a few specimens from Kds. Herb. (on which the view, given above was based), also the specimen: *Culta in Hort. Bog. III. B. 34*. This specimen, as do some other non-Javanese specimens, looks indeed very different and may perhaps be worthy of another specific or varietal name.

Which of the two groups has to be considered the true species or variety *splendens*? I have, for the moment, considered *splendens* to be a variety of *argentea* based upon the material from Herb. Kds. It is, perhaps, superfluous to mention that there are also intermediate forms between *splendens* and the typical form of *argentea*; leaves with cordate and with acute base may occur on the same plant.

Finally, a new variety, to which my attention was drawn by Dr C. G. G. J. van Steenis, may be mentioned here:

***Aglaia argentea* Bl., var. *stellati-pilosa* Adelb., nov. var.** — Differt a typo paniculis, calycibus (extus), ovariis, baccis, rachidibus foliorum, petiolis, paginis inferioribus foliorum stellato-pilosis (in typo stellato-squamatis). Characteres transitorii existunt.

J a v a: Noesa Kambangan, Limoes Boentoe, alt? (not higher than ca. 100 m alt.): *Amdjah 210* (fl. on 18-XI-1907): type in Herb. Lugd. Bat. (comm. ex Herb. Hort. Bot. Bog.).

***Aglaia acuminatissima* T. et B. in Nat. Tijdschr. Ned. Ind. XXVII, 42 (1864); Koord. et Val., Bijdr. Booms. Java III, 175 (1896).**

No more than Koorders and Valeton did I see the type and therefore I cannot take a decision as to an eventual identity with *A. aspera* T. et B. Nevertheless I believe they are the same. In any case, all specimens of *acuminatissima* in our collection were *aspera*. I have not kept the species apart for Java.

***Aglaia javanica* Koord. et Val. ex Koord. in Meded. 's Lands Plantentuin XIX, 381 (1898) n. n.**

Type absent. I believe the 3 specimens in our collection are all *A. argentea* Bl., var. *splendens* Koord. et Val.

***Aglaia subgrisea* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 54 (1868); Koord. et Val., Bijdr. Booms. Java III, 176 (1896).**

Sterile type present. Probably identical with *A. heptandra* Koord.* et Val. The specimen deviates by its leaflets being more densely stellately hairy beneath.

***Aglaia polyphylla* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 56 (1868); Koord. et Val., Bijdr. Booms. Java III, 175 (1896).**

Type extant with flowerbuds far too young for examination. Presumably a juvenile form of *A. longifolia* T. et B.

***Aglaia oligocarpa* Miq. in Ann. Mus. Bot. Lugd. Bat. IV, 45 (1868).**

Type extant, together with two Javanese (?) specimens of Jungkuhn. The latter are doubtless identical with the type but I have my doubts about the exactness of the labels, especially because one of them bears the same number as the type from Sumatra. I have dropped the species for Java.

***Aglaia winckelii* Adelb., nov. spec.** — *Ramuli* apice pulverulento-stellato-pilosi (ut in *A. aspera* T. et B. *dubiosum* an sint *pili* vel *squamuli*). *Folia* imparipinnata; rachis subteres, ut *ramuli pilosa*, 47½—68 cm; foliola

12—19, oblongo-lanceolata, in parte inferiore rhachidis insuper saepe ovata, in parte superiore insuper obovata, basi nunc aequalia, acuta vel rotundata nunc inaequalia, uno latere anguste cuneata, altero late cuneati-rotundata, apice saepissime valde caesa, sed statu integro probabiliter acuta, obtusa vel acute vel obtuse acuminata, supra glabra, subtus praecipue basi et in nervis pilis stellatis sparsis parvis multiramosis obsessa, integra, papyracea, nervis primariis subelevatis 12—21, nervis secundariis subconspicuis et venis inconspicuis, $8\frac{1}{2}$ — $25\frac{1}{2}$ cm longa, 2—9 cm lata; petioluli subteretes, ut rhachis foliorum pilosi, 6—27 mm. *Inflorescentiae* permagnae paniculiformes, late ramosae, axillares, pilis stellatis vel squamulis stellatis minimis pulverulentis munitae, 45—76 cm. *Flores* ca. $1\frac{1}{2}$ mm longi (majores quam in *A. aspera* T. et B.); pedicelli ut inflorescentiae pilosi, 1—2 mm. *Calyx* 5-lobatus, extus pilis stellatis parvis munitus, intus glaber; lobi rotundati vel obtusi, ciliati. *Petala* 5, basi connata, ovalia, inaequalia, concava, conniventia, glabra. *Tubus stamineus* basi constrictus, margine irregulariter exsculptus, sine lineis incrassatis, glaber; antherae 5, ovali-oblongae, in parte superiore tubi inclusae, summum extremo apice e tubo exsertae, glabrae. *Ovarium* minimum argenteum, stellato-squamatum; stigma sessile, oblongum, teres, crassum. *Fructus* adhoc ignotus.

Java: W. Java, Priangan, G. Bèsèr near Tjidadap, S. of Tjibeber, ca. 1000 m alt.: *Winckel 322* (fl. on 10-X-1918): type in Herb. Lugd. Bat.; same data: *Winckel 322b*; Priangan, Takoka, ca. 1000 m alt.: *Kds. 39546* (15-III-1902), (distributed as *A. odoratissima* Bl.).

This species belongs to the group of *A. aspera* T. et B. and *A. longifolia* T. et B. It cannot be identified with the former because of the different flower-structure. The flowers of *longifolia* are unknown to me. By the leaves the three species cannot be distinguished. The reason why I have not identified my species with *A. longifolia* is that, though neither Koorders and Valetton nor anybody else describes the flowers of the last-named species, I am not quite sure whether there are not any flowers to be found in Herb. Bog. since the species was formerly cultivated in Hort. Bog. Moreover, the species was collected by Teijsmann on Mount Salak and it is not out of the question that it may be recollected there in future. The best solution seemed to me to describe *A. winckelii* provisionally as a new species.

Walsura trijuga (Roxb.) Kurz. in Journ. As. Soc. Beng. XLIV, II, 148 (1875) — *Heynea trijuga* Roxb., Hort. Beng. 33 (1814) n. n.; in Sims., Bot. Mag. t. 1738 (1815) — *Heynea sumatrana* Miq., Sum. 505 (1860); Koord. et Val., Bijdr. Booms. Java III, 4 (1896); Sch.fl. 217.

SAPINDACEAE, fam. CIL.

Cardiospermum halicacabum L., var. *luridum* (Bl.) Adelb., nov. comb. — *Cardiospermum luridum* Bl. in Rumphia III, 184 (1847).

The variety differs from the typical form only by its larger fruits (ca. 3 cm long, $3\frac{1}{2}$ cm broad; in the typical form $1\frac{1}{2}$ —2 cm long, $2\frac{3}{4}$ cm broad).

Allophylus cobbe (L.) Bl. (s.l.) in Rumphia III, 131 (1847); Koord. et Val., Bijdr. Booms. Java IX, 146 (1903); Sch.fl. 261.

In his monography (in Engler, Pflanzenreich, Sapind. I, 1933) Radlkofer kept 6 species out of the numerous synonyms which are related to the complex *A. cobbe*, viz.: *A. cobbe* (L.) Bl. (s.s.); Radlk., l. c. 594; *A. glaber* (Roxb.) Radlk., l. c. 566; *A. racemosus* (L.) Radlk., l. c. 568; *A. javensis* Bl.; Radlk., l. c. 578; *A. sumatranus* Bl.; Radlk., l. c. 586 and *A. timorensis* (DC.) Bl.; Radlk., l. c. 587. These species are more or less distinguishable but their differences are so trivial and moreover nullified by intermediate forms that I suggest to consider them varieties or forms of *A. cobbe* s. l. In our Flora of Java I have united them under that name.

E. J. H. Corner in Gard. Bull. X, 1, 38 (1939) also takes all Malayan forms of *Allophylus* together under the name of *A. cobbe* (L.) Bl. and subdivides that species into 5 varieties, which are, however, distinguished otherwise than the species of Radlkofer.

Sapindus trifoliatus L., Sp. pl. 367. (1753); Radlk. in Engler, Pflanzenreich, Sapind. I, 656 (1933); Sch.fl. 261.

Backer says (in sched.) that the descriptions and materials do not answer the description by Linnaeus. The latter does not say more than: "foliis ternatis". Because of the absence of the type and the statement of 4—6 leaflets by different authors I could not decide whether the determination of our material was right. Radlkofer does not mention anything about it, only: "folia 2—3-juga (interdum 1½-juga)" and further on that he considers the name as not fitting and absurd. For this same reason Vahl had already altered the name into *laurifolius*. However, the leaves inserted near the inflorescences, are often trifoliolate. The specimen seen by Linnaeus may have been incomplete.

Lepisanthes montana Bl., Bijdr. 238 (1825); Koord. et Val., Bijdr. Booms. Java IX, 165 (1903); Sch.fl. 263 — *Lepisanthes sessiflora* Bl. in Rumphia III, 153 (1847); Radlk. in Engler, Pflanzenreich, Sapind. I, 734 (1933).

L. sessiflora is considered by Radlkofer a separate species, differing from *montana* by the membranous leaflets and the sessile flowers. Of both I examined the type and I could ascertain that these characters do not hold good. By Koorders and Valetton the species is identified with *L. blumeana* Koord. et Val. and distinguished from *montana* on account of gibbosities on the scale of the petals, a character also mentioned by Radlkofer. According to my observations there are indeed little elevations which look like gibbosities but these are nothing else than folds in the scale, such as occur likewise in *L. montana*. Anyhow, they are quite different from the conspicuous horns of *blumeana*.

Lepisanthes blumeana Koord. et Val., Bijdr. Booms. Java IX, 168 (1903); Sch.fl. 263,

Lepisanthes heterolepis Bl. in Rumphia III, 153 (1847); Radlk. in Engler, Pflanzenreich, Sapind. I, 734 (1933) and

Lepisanthes angustifolia Bl., l. c. 154; Radlk., l. c. 735.

I am not yet sure of the identity of these species. Radlkofer unites the two first-named ones, but *L. heterolepis*, of which I saw the type seems to me to agree far better with *L. montana* Bl. (type also extant), especially in the vegetative parts. *L. blumeana*, of which unfortunately the type was not available, possesses typically different leaves. The flowers of *heterolepis*

deviated strongly from *montana* as well as from *blumeana*. I had no Javanese material of *heterolepis*, so I have put it aside.

Concerning *L. angustifolia* Bl., Radlkofer keeps this species apart but, judging from the authentic material from Sumatra, I think it very much like *blumeana*, from which it differs only by the leaves. The two Javanese specimens are still more like *blumeana* but as they are sterile, they may also be confounded with *L. pallens* (Bl.) Radlk., a species of which Radlkofer himself thinks that it may be identical with *angustifolia*. Whether the latter is identical with *blumeana* could not be ascertained but in our Flora I have brought all the Javanese material together under the name of *blumeana*.

Otophora amoena (Hassk.) Bl. in Rumphia III, 142 (1847); Koord. et Val., Bijdr. Booms. Java IX, 172 (1903); Sch.fl. 263. — *Otophora spectabilis* Bl., l. c.; Koord. et Val., l. c. 171.

These species are connected by gradual transitions in density of indumentum, number of petals and anthers.

Schleichera oleosa (Lour.) Merr., Interpr. Rumph. Hb. Amb. 337 (1917) — *Pistacia oleosa* Lour., Fl. Cochinch. II, 615 (1790) — *Schleichera trijuga* Willd., Sp. pl. IV, 2, 1096 (1805); Koord. et Val., Bijdr. Booms. Java IX, 177 (1903); Sch.fl. 264.

Xerospermum noronhianum Bl. in Rumphia III, 100 (1847); Koord. et Val., Bijdr. Booms. Java IX, 182 (1903); Radlk. in Engler, Pflanzenreich, Sapind. I, 946 (1933); Sch.fl. 265.

This species is separated by Radlkofer from the other species mentioned by him for Java on account of the fact that it possesses secretory cells beneath the epidermis, a microscopical-anatomical character, useless for a popular flora. The other distinguishing marks were either not sufficiently specific or unverifiable (fruits were often wanting). Besides, I had little or no material of the species of Radlkofer in question. Therefore I have, in the Flora of Java, brought together all these species, as enumerated below, under the name of *X. noronhianum* Bl., without having the intention to suggest, by doing so, their identity.

X. fallax Radlk. in Fedde, Repert. XVIII, 340 (1922); in Engler, l. c. 942; *X. testudineum* Radlk. in Fedde, l. c.; in Engler, l. c. 941; *X. xanthophyllum* Radlk. in Flora CXVIII—CXIX, 400 (1925); in Engler, l. c. and *X. brachyphyllum* Radlk. in Records Bot. Surv. Ind. III, 3, 348 (1907); in Engler, l. c. 942.

Arytera xerocarpa (Bl.) Adelb., nov. comb. — *Euphoria xerocarpa* Bl., Bijdr. 234 (1825), excl. fructu descripto, qui ad *Xerospermum noronhianum* Bl. pertinet — *Arytera litoralis* Bl. in Rumphia III, 170 (1847); Koord. et Val., Bijdr. Booms. Java IX, 216 (1903); Sch.fl. 269.

Mischocarpus sumatranus Bl. in Rumphia III, 168 (1847); Radlk. in Engler, Pflanzenreich, Sapind. II, 1298 (1934).

Radlkofer mentions this species also for Java, though interrogatively and on flimsy grounds. Considering the slight difference with *M. sundaicus* Bl. it is possible that *M. sumatranus* hides itself in the material of that species. In *M. sumatranus* the primary lateral nerves extend to near the leaf margin and run some way along it before anastomosing conspicuously. Besides, the meshes of the venation are coarser, the disc and anthers hairy,

the fruit-stalks twice as long as the fruit proper, the leaves 8—10-foliolate. In *M. sundaicus* the primary lateral nerves keep rather far from the leaf-edge and anastomose much earlier and more conspicuously.

Dodonaea viscosa (L.) Jacq., Enum. pl. carib. 19 (1760); Radlk. in Engler, Pflanzenreich, Sapind. II, 1363 (1934); Koord. et Val., Bijdr. Booms. Java IX, 227 (1903); Sch.fl. 270.

Very variable species of which Radlkofer distinguishes several varieties and forms. For Java he mentions the var. *vulgaris* and of that variety four forms.

At first sight, especially in Java, it seems as if in *D. viscosa* a coastal form and a mountain form can be distinguished on account of the following observations:

1. A remarkable difference in habitat between the two forms.
2. The coastal form is glabrous, possesses ♂ flowers and obovate-spathulate leaves; the mountain form is hairy and has unisexual flowers and elongate-lanceolate leaves.
3. The distinction between coastal and mountain form, based on point 2, seems to correspond with a separation between the forms *repanda* and *burmanniana* of Radlkofer on the one hand and his forms *schiedeana* and *waitziana* on the other.

Yet I believe that the separation in coastal and mountain form can, in general, not be maintained and that the strong divergency between them in Java is only accidental. This I concluded from the following observations:

1. From an examination of non-Javanese material appears that the coastal type can occur also in the mountains and
2. That there are numerous intermediate forms between them.
3. Radlkofer mentions for several of his forms both habitats and the morphological distinction between his forms is not very clean-cut.

However, much material, cited by Radlkofer for Java, was not available, i. a. that from the Buitenzorg Herbarium.

Hence I am of the opinion that a subdivision into varieties and forms, irrespective of habitat is, at least provisionally, preferable to a separation into a coastal and a mountain form, though the habitat may influence the outward appearance.

It is remarkable that the on the whole frequent coastal form has been met with until now, along the N.-coast of Java, only in the surroundings of Batavia and Soebah.

Cubilia cubili (Blanco) Adelb., nov. comb. — *Euphoria cubili* Blanco, Fl. Filip. 287 (1837) — *Cubilia rumphii* Bl. in Rumphia III, 101 (1847) n. 2; Koord. et Val., Bijdr. Booms. Java IX, 143 (1903); Sch.fl. 268 — *Cubilia blancoi* Bl., l. c. n. 1; Radlk. in Engler, Pflanzenreich, Sapind. I, 923 (1933).

This new combination is admissible, being not a complete tautonym.

ANACARDIACEAE, fam. CLIII.

Gluta renghas L., Mant. II, 293 (1767); Koord. et Val., Bijdr. Booms. Java IV, 94 (1896); Sch.fl. 280 — *Gluta velutina* Bl. in Mus. Bot. Lugd Bat. I, 183 (1850).

Bouea gandaria Bl. in Mus. Bot. Lugd. Bat. I, 204 (1850) — *Bouea macrophylla* Griff., Pl. Cantor 15 (1854); Notul. IV, 420 (1854); Koord. et Val., Bijdr. Booms. Java IV, 98 (1896); Sch.fl. 280.

The paper by Griffith concerning the plants of Dr Cantor, containing the original description of *B. macrophylla*, *B. burmanica* and *B. microphylla* Griff. has, in my opinion, only been validly published in 1854, in Journ. As. Soc. Beng. In that place the paper is preceded by a note mentioning that "some years before" it had already been printed but, (probably) because of the discontinuation of the larger paper of which it was intended to form part, not published. When we adhere to the year 1854, the synonymy is as mentioned above.

Bouea oppositifolia (Roxb.) Adelb., nov. comb. — *Mangifera oppositifolia* Roxb., Hort. Beng. 18 (1814) n. n.; Fl. Ind. I, 640 (1820 Ed. I or 1832 Ed. Carey?) — *Bouea burmanica* Griff., Pl. Cantor 14 (1854); Koord. et Val., Bijdr. Booms. Java IV, 101 (1896); Sch.fl. 280. — *Bouea microphylla* Griff., l. c. 15; Notul. IV, 423 (1854).

See the remark to the preceding species.

Spondias mombin L., Sp. pl. Ed. I, 371 (1753) — *Spondias lutea* L., Sp. pl. Ed. II, 613 (1762—'63); Koord. et Val., Bijdr. Booms. Java IV, 111 (1896); Sch.fl. 280.

Backer gives this identification in ms.; according to the Kew Index *Sp. mombin* is identical with *Sp. purpurea* L. Merrill (Enum. Philipp. pl. II, 471, 1923) also gives *Sp. purpurea* for the Philippines but without addition of *mombin* or *lutea* as synonyms. Koorders and Valetton mention *Sp. lutea* without the synonyms *mombin* or *purpurea*.

Because of the absence of types and the fact that the different authors either are silent on the matter or contradict each other it was not possible to state exactly what is the relation between these three species. The most probable synonymy is that mentioned above because of the description of *lutea* being fairly well literally the same as that of *mombin*. Presumably Linnaeus has altered the name of his original *mombin*.

Spondias cytherea Sonn., Voy. Ind. II, 222 (1782). — *Spondias dulcis* Forst. f., Prod. 34 (1786); Koord. et Val., Bijdr. Booms. Java IV, 108 (1896); Sch.fl. 281.

Lannea wodier (Roxb.) Adelb., nov. comb. — *Odina pinnata* Rottl. in Ges. Naturf. Fr. Berl. Neue Schr. IV, 209 (1803) n. n. — *Odina wodier* Roxb., Hort. Beng. 29 (1814) n. n.; Fl. Ind. II, 293 (1824 or '32); Koord. et Val., Bijdr. Booms. Java IV, 140 (1896); Sch.fl. 282. — *Habertia grandis* Dennst., Schluess. Hort. Malab. 30 (1818) n. n. — *Rhus odina* Buch.-Ham. ex Wall., Cat. n. 8475 (1828) n. n. — *Lannea grandis* (Dennst.) Engl. in Engl. et Prantl., Pflanzenfamilien, Nachtr. I, 213 (1897).

Rhus rufa T. et B. in Nat. Tijdschr. Nederl. Ind. XXVII, 52 (1863) — *Melanococca tomentosa* Bl. in Mus. Bot. Lugd. Bat. I, 236 (1850) — *Rhus retusa* Zoll. ex T. et B., Cat. Hort. Bog. 230 (1866); Koord. et Val., Bijdr. Booms. Java IV, 119 (1896); Sch.fl. 282.

It was illegitimate to call the species *tomentosa* because of there existing already a *Rhus tomentosa* L. (1753).

Semecarpus heterophylla Bl. in Mus. Bot. Lugd. Bat. I, 187 (1850); Koord. et Val., Bijdr. Booms. Java IV, 124 (1896); Sch.fl. 284. — *Seme-*

carpus albescens Kurz in Journ. As. Soc. Beng. XL, II, 51 (1871); Koord. et Val., l. c. 129; Sch.fl. 284.

The two species are connected by numerous intermediate forms.

SOLANACEAE, fam. CXC.

Brugmansia candida Pers., Syn. I, 216 (1805); Safford in Smith. Rep., 537—567 (1920); in Journ. Wash. Ac. Sc. XI, 173—189 (1921); Van Steenis in Trop. Nat. XXX, 33—38 (1941).

I have treated the Javanese material of this species, for which Backer mentions a deciduous calyx and nearly linear fruits, and that which might be called *Br. arborea* (L.) Adelb. only under the name of *candida*. According to Safford, *Br. candida* Pers. is not identical with *Datura arborea* L. Because of insufficient material I could not study this question thoroughly. I have, however, the impression that the distinguishing marks, given by Safford, are not conclusive (he himself gives no descriptions and saw perhaps not enough material); on the other hand it is not impossible that the two species are really different, that *D. arborea* also occurs in Java and that the two species have been mixed up. Therefore I mention here the differences, given by Safford:

Corolla longer than 20 cm; edge of limb between the teeth entire or rounded; calyx persistent; fruit oblong (measures!) (*Datura arborea* Ruiz et Pavon, non L.) *Br. candida* Pers.

Corolla not longer than 17 cm; edge of limb between the teeth cordate or retuse; calyx deciduous; fruit ca. globose, ca. 6¼ cm long and ca. 5½ cm broad (*Datura arborea* L.) *Br. arborea* (L.) Adelb., non Auct.

Datura ferox L., Diss. Dem. Pl. in Amoen. Acad. III, 403 (1753); Miq., Fl. Ind. Bat. II, II, 666 (1857); Koord., Exkurs. fl. III, 168 (1912); Van Steenis in Trop. Nat. XXX, 36 (1941).

This species, belonging to the same group as *D. stramonium* L., is mentioned by Miquel for Malabar "and other regions of the Netherlands' Indies", in which he was followed by Koorders. According to Backer (Kritiek Exkursionsflora 40, 1913) this record is based on an incorrect determination. There exists not the slightest evidence that this species occurs in Java.

Datura metel L., Sp. pl. 179 (1753) non Auct.; Safford in Smith. Rep. 537—567 (1920); in Journ. Wash. Ac. Sc. XI, 173—189 (1921); Van Steenis in Trop. Nat. XXX, 33—38 (1941).

Because of a mixing up of names the name *D. metel* L. was given by most authors to another species *D. innoxia* Mill. till Safford put an end to this confusion. Since this species might also occur in Java and hide under the material of *D. fastuosa* L. (as the true *D. metel* is called in Java) I may mention here that *D. innoxia* differs from *D. metel* by its rather densely grey-white pubescent stems, petioles, pedicels, leaf nerves (leaves?) and calyx (hairs longer than in *D. metel*), the 10-angulate corolla limb with 10 short little teeth (in *D. metel* mostly 5-lobed with conspicuous incisions between the lobes and 5 rather long points) and the shortly white-hairy fruits with thinner, softer spines.

It should be stated, however, that there exists a densely white-hairy form of *D. metel* too (forma *alba*).

Physalis angulata L., Sp. pl. 183 (1753) — *Physalis pseudo-angulata* Bl., Bijdr. 706 (1825).

The last mentioned species, of which I saw the type, is not identical with *Ph. minima* L. as Backer and the Kew Index supposed.

Capsicum L.

The different species of *Capsicum* are so much alike of form (and of description) that insight into the genus is only possible after monographical study. Till then, the elaboration in the Flora of Java is of comparatively little value, I deemed it sufficient there to classify all Javanese species into two groups under the names of *C. frutescens* L. and *C. annuum* L. I think this classification, in the main, to be correct.

Miquel (Fl. Ind. Bat. II, II, 657, 1857) enumerates many species. It was not possible to study them. I believe that *C. conoides* Mill., cited by him, is identical with *C. frutescens* and that *C. cordiforme* Mill., *C. longum* DC. and *C. tetragonum* Mill. all are *C. annuum*. *C. minimum* Roxb. (material from India) and the lectotype of *C. fastigiatum* Bl., identified with it, are both *C. frutescens*. Of *C. dulce* Hort. (= *tomatiforme* Fingerhuth), *C. bicolor* Jacq. and *C. pyramidale* Mill. no material was at hand.

Like other authors, I consider *C. baccatum* L. a variety of *C. frutescens* with globose fruits and *C. grossum* L. a variety with ovoid-globose fruits of *C. annuum*.

Capsicum violaceum H., B. et K., Nov. Gen. et Sp. III, 49 (1818); Fingerhuth, Monog. Caps. 23 (1832).

New for Java? While studying *Capsicum* I received a description by Backer of a specimen from Buitenzorg. This description was insufficient for a reliable determination, but it agreed most of all with the description of Fingerhuth of the present species. However, it should be remarked that Fingerhuth mentions 7-merous flowers whilst the description by Backer is silent regarding this point.

Solanum torvum Sw., Prod. Veg. Ind. Occ. 47 (1788); Koord. et Val., Bijdr. Booms. Java IX, 266 (1903).

Solanum comitis Dun. in DC., Prod. XIII, I, 345 (1852) and

Solanum poka Dun. in Poir., Encycl. Suppl. III, 768 (1813).

Because of the absence of any original material it was not possible to me to compare these 3 species properly. It is not impossible that they are identical or only of varietal rank. The descriptions of *S. comitis* by Dunal, Backer and Van Steenis do not agree entirely and are mixed up with characters, given by Dunal for *S. poka*. Because of a decision being impossible I have kept the species separate in the Flora of Java as best I could.

Solanum cyanocarphium Bl., Bijdr. 700 (1825) and

Solanum sarmentosum Nees in Trans. Linn. Soc. XVII, 58 (1834).

Backer believed these species to be identical. Judging from the descriptions only I could not decide this question. The only difference should be the procumbent and rooting stems in *S. sarmentosum* but the material of that species in our collection certainly was not identical with *S. cyanocarphium*.

Solanum ferox L., Sp. pl. Ed. II, 267 (1762),

Solanum involucreatum Bl., Bijdr. 701 (1825) and

***Solanum lasiocarpum* Dun., Hist. Solan. 222 (1813).**

These three species are brought together in the Flora of Java under the name of *S. ferox*. The Javanese forms were distinguished as follows (the given characters, however, do not run concurrently and pass into each other; it seems advisable to consider the two last-named species as varieties of the first):

S. ferox L., s. s.: Upperside of leaves mainly clothed with equicentral stellate hairs; spines subulate.

S. involucreatum Bl.: Upperside of leaves clothed mainly with stellate hairs with one erect arm, longer and stronger than the other ones, simple hairs may also occur; spines acicular. This is the main form in Java.

S. lasiocarpum Dun.: Very densely hairy, leaves moreover squamulate.

***Solanum indicum* L., Sp. pl. I, 187 (1753) excl. *Solanum americanum* Pluk. — *Solanum torvum* Sw.; Auct. in operis div. — *Solanum indicum* L.; Nees in Trans. Linn. Soc. XVII, 55 (1834),**

***Solanum torvum* Sw., Prod. Veg. Ind. Occ. 47 (1788); Koord. et Val., Bijdr. Booms. Java IX, 266 (1903) — *Solanum americanum* Pluk., Alm. 350, t. 225, f. 6; L., l. c., in syn. — *Solanum indicum* L., l. c., exclus. descrip. Fl. Zeyl., Hort. Cliff., Roy Lugdb., Robert ic., Dill. Elth. and**

***Solanum junghuhnii* Miq., Fl. Ind. Bat. II, II, 649 (1857) —? *Solanum graciliflorum* Dun. ex Poir., Encycl. Suppl. III, 763 (1813).**

These three species are, by different authors, combined and identified in different manners. They suffer from an entanglement which I cannot clear away satisfactorily owing to the absence of types.

The upshot of my study of literature is as follows: Linnaeus mentions in Sp. pl. I, 187 *S. indicum* and cites four descriptions, all primarily based on the picture of Dillenius (Hort. Elth. 362, t. 270, f. 349), cited by Linnaeus, a picture and description of Burman (Thes. Zeyl. 220, t. 102) and the picture and description of Plukenett (Alm. 350, t. 225, f. 6), the last author describing an American form.

Later on it was stated by Swartz (l. c.) that this basal material was heterogeneous, the American form being quite another plant, and he separated it as *S. torvum* Sw., giving an adequate description and, moreover, the differences with *S. indicum* L., based on Dillenius and Burman. It is difficult to ascertain whether Swartz was right; picture and description of Plukenett do not form a criterion. But Swartz was one of the few, perhaps the only one, who examined the Herbarium of Linnaeus concerning this question. I take the opinion of Swartz for granted.

This mixture of descriptions, given by Linnaeus, has caused confusion. Apparently subsequent authors did not clearly understand the conception of Swartz (see the remarks of Nees under *S. indicum* and *S. torvum*, l. c.); they often classed the true *indicum* under the name of *torvum*. Finally, it was not exactly known what *indicum* L. actually was. Nees redescribed this species, based on a study of literature and some plant specimens of Wallich (l. c.). Later botanical authors cited it as *S. indicum* Nees, perhaps thinking that this was the original form and that *indicum* L. was identical with *torvum* Sw.

It is obvious that the name *indicum* L. has to be maintained, based on Dillenius and Burman and of course on the Herbarium of Linnaeus. *S. indicum* Nees most probably is identical with *S. indicum* L.

petiole but in this case these leaflets are more alike the other leaves, more conspicuously petiolate and neither reflexed into the leaf axil nor nearly conduplicate.

Solanum melongena L., Sp. pl., 186 (1753).

Dunal subdivided this species into many other ones (whilst he allowed the name *S. melongena* L. to disappear, reducing it as a synonym to *S. esculentum* Dun.). These species have been brought together again under *S. melongena* by other authors. In the Flora of Java I have acted likewise, also because I had no occasion to study all these separate species. I could only examine *S. pseudo-undatum* Bl., *S. ovigerum* Dun., *S. trongum* Poir. and *S. undatum* Lmk. all of which I referred to *S. melongena* L.

Solanum nigrum L., Sp. pl. 186 (1753).

Just as with the preceding species I have brought together under this name numerous species which had been separated in the course of time. After due examination I have united with *S. nigrum*: *S. anacamptocarpum* Dun., *S. alpinum* Zoll., *S. viscidissimum* Zoll., *S. uliginosum* Bl., *S. rhinozethis* Bl., *S. judaicum* Bess., *S. rumphii* Dun., *S. bromoense* Kuntze (an obscure species, said to be 3 m high), *S. villosum* Lmk. (this species is kept separate in Europe but in Java it seems to be connected with the *nigrum*-group by numerous intermediate forms), *S. nigrum* L., var. *uniflorum* Miq. (a peculiar form, remarkable by its deviating habitus consisting in a rich, rosette-like ramification immediately above the ground) and *S. nodiflorum* Jacq.

The last-named species was, until now, identified with *S. nigrum* but according to very recent genetical examinations (oral information) these species differ. Literature on this subject was not yet available. I was not able to discover any morphological difference.

Solanum seaforthianum Andr., Bot. Rep. t. 504 (1797—1804).

In the descriptions a much smaller number of leaflets and simple upper leaves are mentioned, characters which are not found in the Javanese specimens. In a MS. by Van Steenis it is mentioned that, according to Bitter, in Java this species only occurs in the var. *disjunctum* O. E. Schultze. This variety may have more leaflets but I could not trace its original description.

Solanum trilobatum L., Sp. pl. 188 (1753); Burm., Fl. Ind. 57 (1768).

This species is mentioned by Burman with the addition: "D. Pryon, a quo saepius ex Java missum". I have not any evidence of it really occurring in Java but I have introduced it in our Flora to be quite on the safe side.

Solanum tjamaoel Hort.; Van Steenis. MS., nomen provis.

Van Steenis writes: "A species resembling this one (viz. *S. quitoëense* Lmk., after the description of which that of *S. tjamaoel* follows) was imported at Paroengkoeda (Salak) ca. 25 years ago, it has similar fruits as the preceding species (viz. *S. quitoëense*) but differs by the numerous short patent straight spines mainly on the twigs, whilst the upperside of leaves is densely clothed with fine stellate hairs. This species bears the probable wrong name "*tjamaoel*". I did not see this species myself.

Solanum superficialis Adelb., nov. spec. — *Planta* inermis glabra. *Caulis* basin versus subteres vel obtusangulus, apicem versus valde angulo-

sus. *Folia* versus ramulorum apices fere alternantia, simplicia, saepe bina (tunc in eodem jugo valde inaequalia), plerumque lanceolata, interdum oblonga et obovata, basi anguste cuneata, acuta, in petiolum decurrentia, obtusa, acuta vel obtusiuscule vel acute acuminata, integra, herbacea (in typo subcrassiora), nervis majoribus applanatis carnosus et nervis tenuibus impressis (characteribus nervorum in typo minus conspicuis), 4—22 cm longa, 2—8½ cm lata; petiolus carnosus, applanatus (in typo minus), ½—4 cm longus. *Inflorescentiae* cincinniformes, interdum semel bifurcatae, in axillis vel prope axillas jugorum foliorum, multi (usque ad 30)-florae, subsessiles, compactae, 1½—2½ cm longae; pedicelli angulati, sursum sensim incrassati, 6—10 mm longi. *Calyx* cupuliformis, in margine superiore obtuse 5-angulatus, sub fructu laeviter 5-lobatus (lobi late rotundati), margine interdum brevissime ciliatus, ceterum glaber, carnosus, ca. 2 mm longus. *Corolla* alte 5-partita, laciniis lanceolatis, acutis, apice cucullatis brevissime pilosis, in utroque latere membrano munitis, in alabastro valvatis, 5—6 mm longis; tubus perbrevis. *Stamina* 5, faucibus inserta; filamenta perbrevia; antherae apicem versus sensim dilatatae, basi saepe cordatae, apice dehiscentes poris lateralibus postea basin versus in rimam elongatis, glabrae, 2½—3 mm longae. *Ovarium* 2-loculare, multiovulatum, glaber; stylus apice incurvatis, glaber, 4—5 mm; stigma haud dilatatum. *Bacca* globosa, glabra, calyce accreto suffulta, polysperma, 6—9 mm in diametro; semina obovoideo-reniformia, applanata, margine incrassato, 3—4½ mm in diametro.

Java: W. Java, Priangan, Kartamana-estate, ca. 1600 m alt.: *J. J. Smith* 641 (in bud and fr. on 20-IX-1911): type in Herb. Lugd. Bat.; Mount Papandajan (fl.): in Herb. Lugd. Bat. sub no. 908, 245—262 (distributed as *S. blumei*); *Jungkuhn* (fr.): in Herb. Lugd. Bat., *Plantae Junghuhnianae ineditae* n. 404 (distributed as *S. blumei* Nees, forma *grandifolia* Miq.); sine loco (in bud): in Herb. Lugd. Bat. sub no. 908, 245—256 (distributed as *S. blumei*).

Sumatra: *Korthals* (in bud): in Herb. Lugd. Bat. sub no. 908, 245—1275 (distributed as *S. spec.*).

The angles of the calyx coincide with the ends of the nerves and are more or less thickened, nevertheless, the species does not belong to the genus *Lycianthes* in which the calyx-teeth are inserted just below the edge of the calyx. In the fruiting calyx of *S. superficialis* the difference with *Lycianthes* is more conspicuous.

Lycianthes levis (Dun.) Bitt. in Abh. Nat. Ver. Bremen XXIV, 484 (1920) — ? *Lycianthes subtruncata* (Wall.) Bitt., l. c. 478.

Cestrum elegans Schlecht. in Linnaea XIX, 261 (1847) — *Meyenia purpurea* Heynh. ex Kew Index II, 222 (1895), (errore relata ad Heynh., Nom. II, 404, 1840).

The name *purpurea* has no priority because that name of Heynh. does not occur in the place cited by the Kew Index and is not to be found.

Cestrum calycinum H., B. et K., Nqv. Gen. et Spec. pl. III, 45 (1818), folio ed. — *Cestrum calycinum* Willd. in Roem et Schult., Syst. veget. IV, 808 (1819).

Judging from the dates Humboldt, Bonpland and Kunth are the legitimate authors. Besides, on page 352 (l. c.), which dates from 1820 (see Bull. Torr. Bot. Club. 29, 583—598, 1902) they accuse Willdenow of irregularities, such as the describing of wellknown species as new ones and they say on page 355 (l. c.): "*C. calycinum* Willd., l. c. p. 808 est nostrum p. 45".

Cestrum parqui l'Hér., Stirp. Nov. 73 (1784—'85); Francey in Candollea VII, 38 (1936).

The form with dark violet or dark red flowers and longer stalked, ovate-oblong leaves with a rounded base, originally separated as *C. foetidissimum* Jacq., var. *pallidissimum* Dun., is considered by Backer a separate species but it is united by Francey with *C. parqui* because of the characters passing into each other. As far as I could ascertain, the forms are actually different but the difference is so slight that only the creation of a var. *pallidissimum* of *C. parqui* is justifiable. Especially the form with dark red flowers points to a hybrid or intermediate form, also on account of still other characters.

Brunfelsia uniflora (Pohl) D. Don in Edinb. N. Phil. Journ. (1829) 85 — *Franciscea uniflora* Pohl, Pl. Bras. Ic. I, 2, t. 1 (1827) — *Franciscea hopeana* Hook. in Curt. Bot. Mag., t. 2829 (1828) — *Brunfelsia hopeana* Benth. in DC., Prod. X, 200 (1846).

The species is rather variable, especially in the length of the corolla-tube and in the shape of the leaves. Both characters led Hooker to describe *Fr. hopeana* as different from *Fr. uniflora* Pohl. Bentham, however, united the two species under the name of *Br. hopeana* and declared to have seen the two different leaf-forms on a same plant. According to my observations intermediate forms exist. Hooker ascribes the more obovate leaves to *uniflora* but Pohl neither mentions nor figures such leaves. Again, according to Hooker the obovate leaves would go with the short corolla-tube but I saw obovate leaves combined with long corolla-tubes. All this indeed speaks for the identity of both species, in which case the valid name is the one mentioned above.

Schwenckia americana L., Gen. Ed. VI, 567 (1764).

The occurrence in Java seems questionable. In the Herbarium of the Wageningen Agricultural College there occurs a specimen of Molhuysen from Besoeki (E.-Java) which appeared to be *Schwenckia americana* L. The genus is indigenous in America and Africa which is no unsurmountable objection. But Molhuysen asserted to have found in the region mentioned several species (of different families) which are indigenous in the said countries and which were met with nowhere else in Java and never before nor after him. All things considered, it is highly impossible that in Java these plants were really collected in a wild state.

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** = nov. spec.; * = nov. comb.; synonyms in italics.

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tomatiforme Fingerhuth	328	fraternum Miq.	316
violaceum H., B. et K.	328	gaudichaudianum Miq.	316
Carapa moluccensis Lmk.	314	glabrum C. DC.	316
obovata Bl.	314	halmaherae C. DC.	317
Cardiospermum halicacabum L.		hasseltii Koord. et Val.	317
*var. luridum Adelb.	322	kenthianum Miq.	317
luridum Bl.	322	lampongum Miq.	317
Cedrela inodora Hassk.	313	var. β Miq.	317
febrifuga Bl.	313	macrothyrsum Miq.	317
var. velutina Koord. et Val.	313	*multijugum Adelb.	318
serrata Royle	314	multijugum Arn.	318
serrulata Miq.	314	nagelianum C. DC.	316
sinensis Juss.	313, 314	ramiflorum Miq.	316, 317
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*sericeum Adelb.	316	<i>sambucina</i> Bl.	315
vrieseanum C. DC.	318	sempervirens Roxb.	315
<i>Elaeocarpus</i> Burm.	310, 311	sempervirens Sw.	315
<i>acuminata</i> Koord. et Val.	312	sempervirens Willd.	315
<i>adenopus</i> Miq.	311	<i>Meyenia purpurea</i> Heynh.	332
<i>dentata</i> Reinw.	310	<i>Mischocarpus sumatranus</i> Bl.	324
<i>edulis</i> T. et B.	313	<i>sundaicus</i> Bl.	324, 325
<i>fissistipula</i> Miq.	312	<i>Monocera petiolata</i> Jack	313
<i>floribunda</i> Bl.	311, 312	<i>Monoceras</i> Jack	312
<i>ganitrus</i> Roxb.	313	<i>Odina pinnata</i> Rottl.	326
<i>glabra</i> Bl.	311, 312	<i>wodier</i> Roxb.	326
<i>griffithii</i> A. Gray	312, 313	<i>Otophora amoena</i> Bl.	324
<i>holosericeus</i> Bl.	312	<i>spectabilis</i> Bl.	324
<i>littoralis</i> T. et B.	310, 311	<i>Physalis angulata</i> L.	328
<i>longifolia</i> Bl.	311	<i>minima</i> L.	328
<i>obtusa</i> Bl.	312	<i>pseudo-angulata</i> Bl.	328
<i>oppositifolia</i> Miq.	313	<i>Pistacia oleosa</i> Lour.	324
<i>oxyphyren</i> Koord. et Val.	312, 313	<i>Plagianthus humilis</i> Blanco	315
<i>palembanica</i> Miq.	312	<i>Rhus odina</i> Buch.-Ham.	326
<i>petiolata</i> Wall.	312, 313	<i>retusa</i> Zoll.	326
<i>pierrei</i> Koord. et Val.	310, 311	<i>rufa</i> T. et B.	326
<i>resinosa</i> Bl.	313	<i>tomentosa</i> L.	326
<i>serrata</i> Bl.	312	<i>Sandoricum koetjape</i> Merr.	316
<i>sphaerica</i> K. Schum.	313	SAPINDACEAE	322
<i>stipularis</i> Bl.	312	<i>Sapindus laurifolius</i> Vahl	323
<i>tomentosa</i> Bl.	312	<i>rarak</i> L.	319
<i>Epicharis cauliflora</i> Bl.	316	<i>trifoliatum</i> L.	323
<i>sericea</i> Bl.	316	<i>Schizochiton</i> Spreng.	319
<i>Euphoria umbili</i> Blanco	325	<i>amabile</i> Miq.	319
<i>xerocarpa</i> Bl.	324	<i>ceramicum</i> Miq.	319
<i>Franciscea hopeana</i> Hook.	333	<i>junghuhnii</i> Miq.	318
<i>uniflora</i> Pohl	333	<i>paucijugum</i> Miq.	319
<i>Ganitrus sphaerica</i> Gaertn.	313	<i>spectabile</i> Miq.	319
<i>Gluta renghas</i> L.	325	<i>Schleichera oleosa</i> Merr.	324
<i>velutina</i> Bl.	325	<i>trijuga</i> Willd.	324
<i>Goniocheton arborescens</i> Bl.	317	<i>Schwenckia americana</i> L.	333
<i>Haberlia grandis</i> Dennst.	326	<i>Semecarpus albescens</i> Kurz .	326, 327
<i>Heynia multijuga</i> Bl.	318	<i>heterophylla</i> Bl.	326
<i>sumatrana</i> Miq.	322	SOLANACEAE	327
<i>trijuga</i> Roxb.	322	<i>Solanum alpinum</i> Zoll.	331
<i>Lanea grandis</i> Engl.	326	<i>americanum</i> Pluk.	329
*wodier Adelb.	326	<i>anacamptocarpum</i> Dun.	331
<i>Lansium domesticum</i> Corr.	319	<i>auriculatum</i> Ait.	330
<i>javanicum</i> Koord. et Val.	319	<i>blumei</i> Nees	332
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<i>montana</i> Bl.	323, 324	<i>cyanocarphium</i> Bl.	328
<i>pallens</i> Radlk.	324	<i>esoulentum</i> Dun.	331
<i>sessiflora</i> Bl.	323	<i>ferox</i> L.	328, 329
<i>Lycianthes Hassk.</i>	332	<i>graciliflorum</i> Dun.	329, 330
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<i>subtruncata</i> Bitt.	332	<i>indicum</i> L.	329, 330
<i>Mangifera oppositifolia</i> Roxb.	326	<i>indicum</i> Nees	329, 330
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<i>Melia azadirachta</i> L.	315	<i>judaicum</i> Bess.	331
<i>azedarach</i> L.	315	<i>junghuhnii</i> Miq.	329, 330
<i>bogoriensis</i> Koord. et Val.	315	<i>lasiocarpum</i> Dun.	329
<i>candollei</i> Juss.	315	<i>macranthum</i> Dun.	330
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<i>Melia composita</i> Willd.	315	<i>mauritianum</i> Scop.	330
<i>dubia</i> Cav.	315	<i>melongena</i> L.	331

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<i>ovigerum</i> Dun.	331	<i>mombin</i> L.	326
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<i>rumphii</i> Dun.	331	<i>sinensis</i> Roem.	313
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<i>uliginosum</i> Bl.	331	<i>noronhianum</i> Bl.	324
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