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MISCELLANEOUS BOTANICAL NOTES 2*

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SUMMARY

1. *Durio cupreus* Ridley is considered to represent a distinct species.
2. *Durio wyatt-smithii* Kosterm. is reported from Borneo.
3. *Machilus nervosa* Merr. represents *Meliosma bontoeensis* Merr.
4. *Beilschmiedia brassii* Allen represents Vavaea brassii (Allen) Kosterm.
5. The author of the generic name *Heritiera* is Aiton.
6. *Heritiera macrophylla* (non Wall.) Merr. is conspecific with *H. ungustata* Pierre.
7. Some specimens from N. Celebes, attributed formerly to *H. sylvatica* Merr., belong to *H. arafurensis* Kosterm.
8. Additional note on *Heritiera littoralis* Ait. and *H. macrophylla* Wall, ex Kurz.
9. Heritiera montana Kosterm., nov. spec, from New Guinea and H. khidii Kosterm., nov. spec, from Northern Siam.
10. Additional note on *Heritiera, novoguineensis* Kosterm. and *H. pereoriacea* Kosterm. and an undescribed species.
11. *Heritiera acuminata* Wall, ex Kurz represents a distinct species.
12. Heritiera solomonensis Kosterm., nov. spec, from the Solomon Isl.
13. A note on *Firmiana bracteata* A. DC.
14. *Firmiana fulgens* (Wall, ex King) Corner is based on a mixtum compositum and has been the source of constant confusion. For the element, which occurs in Malaysia a new name is coined: F. malayana Kosterm. It does not occur in Tenasserim.
15. A revised bibliography of *Firmiana colorata* R. Br., *F. pallens* Stearn and *F. malayana* Kosterm. is presented.
16. Additional note on *Firmiana hainanensis* Kosterm.
17. Firmiana kerrii (Craib) Kosterm., *comb, nov.*, based on *Sterculia kerrii* Craib.
18. Additional specimens of *Firmiana papuana* Mildbr.
19. *Cryptocarya hintonii* Allen is referred to *Primus* as Primus hintonii (Allen) Kosterm.
20. Beilschmiedia wallichiana (G. Don) Kosterm., based on *Sideroxylon wallichianum*, G. Don, is described. Formerly it was relegated to *Litsea* by Kurz.
21. New species in Lauraceae: Beilschmiedia aborensis Kosterm., B. elegantissima Kosterm., B. lanatella Kosterm., Persea pomifera Kosterm., Ocotea scandens Kosterm. and Actinodaphne auricolor Kosterm,

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22. *Persea inaequalis* A. C. Smith represents Beilschmiedia **inaequalis** (A. C. Sm.) Kosterm.
23. New names in *Cryptocarya: Cr. lanceolata* (Panch. et Seb.) Guill. = **Cr. guillauminii** Kosterm.; *Cr. pallida* Kosterm. = Cr. **pallidifolia** Kosterm.; *Cr. parvifolia* (F. M. Bailey) Domin = Cr. microphylla Kosterm.; *Cr. vacciniifolia* Kosterm. = Cr. vaccinioides Kosterm.
24. *Cryptocarya kostermansiana* Allen represents *Beilschmiedia mexicana* (Mez) Kosterm.; *Cr. lucidula* Miq. = *Beilschmiedia zeylanica* Trim.; *Cr. mucronata* (Poir.) Spr. = **Ocotea mucronata** (Poir.) Kosterm., *comb. nov.*
25. **Garcinia graminea** Kosterm., a new species from new Guinea.

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I am extremely grateful to Dr. C. G. G. J. van Steenis, who took the trouble to go through the MSS and made many valuable remarks and pointed out several errors.

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BOMBACACEAE

DURIO CUPREUS Ridley

Following Bakhuizen v.d. Brink Sr. and Wyatt-Smith, I included this species formerly *(in* Reinwardtia 4: 88. 1959) in *D. carinatus* Mast.

Recently I could examine a specimen in the Kepong herbarium, collected in the Setapok For. Reserve in peat-swamp forest (Sarawak, Borneo), numbered For. Dept. 364, which matches exactly the type specimen of *D. cupreus* Ridley (Haviland 1803) and I have concluded, that this species is different from *D. carinatus.*

r, DURIO WTATT-SMITHII Kosterm.

Some specimens from Brunei, Borneo (Flemmich N.N.B.F.D. 48139, fl. Aug.; from B. Paku, Kep. 80131, fr. July; from Sebatu-Arur Mangan watershed), formerly included by me with doubt in D. *graveolens* Becc. (Kep. 80131 was identified as *D. conicus* by Wyatt-smith) most likely represent *D. wyatt-smithii* Kosterm.

More material is necessary to corraborate this. It would provide further evidence that the flora of the Eastern Malay Peninsula is related to that of

West and N. Borneo. The specimens cited above were obtained on loan from the Kepong Herbarium.

SABIACEAE

MACHILUS NERVOSA Merr.

Merrill *(in* Philip. J. Sci., Bot. 4: 262. 1909) based the description of *Machilus nervosa* on two specimens (Curran F.B. 10846 and Merritt 13099) of which I could examine many specimens of Curran F.B. 10846. They conform excellently with the description and consequently I accept Curran F.B. 10846 as the type specimen. The specimen Merritt 18009 could be examined in the United States Nat. Herb. It is conspecific with the specimen Curran F.B. 10846.

I believe that the species is conspecific with *Meliosma bontocensis* Merrill *(in* Philip. J. Sci. 20: 403. 1922) of which I could examine an isotype sheet (Ramos & Edaño B. Sci. 37756) in the Kew Herbarium.

As the specific epithet *nervosa* is occupied already (M. *nervosa* Koord. & Valet.), the name *M. bontocensis* Merr. stands.

MELIACEAE

BEILSCHMIEDIA BRASSII Allen

Beilschmiedia brassii Allen (in J. Arnold Arb. 23: 130. 1942) was based on the specimen Brass 3930. This fruiting specimen represents *Vavaea.* On the label is a note, that the fruit exudes a milky sap when cut, which never occurs in Lauraceae.

The species is consequently renamed: Vavaea brassii (Allen) Kosterm., *comb. nov.* (basionym *Beilschmiedia brassii* Allen).

Additional material. — W. New Guinea. Wermudena R., ster., *hb. 22489* (BO, L, SING); North R., May, fl., *Vcrsteeg 1024* (BO).

STERCULIACEAE

ON THE AUTHORITY OF THE NAME HERITIERA

In my monograph on *Heritiera* (Publication, 1, Council for Sciences of Indonesia, Apr. 1959) I attributed the generic name to Dryander (in Aiton, Hort. Kew., ed. 1, 3: 456. 1789); van Steenis (in litt.) criticised this and I obligingly in Reinwardtia (4: 465. 1959) changed the author's name to Aiton.

In J. Botany, London 50, Suppl. 3 (1912) Britten discussed the authority of names in Aiton's Hortus Kewensis. He stated categorically that neither of the Aitons wrote the botanical description of the new species (with exception of a few ones), as they did not possess botanical knowledge sufficient to enable them to undertake this. The editors of the two editions were Dryander and R. Brown.

But, as Dryander is in most cases not definitely mentioned as the author, and, apart from unpublished information, his name is not attached to the new species, I agree to accept Aiton as the author of the new names in Hortus Kewensis, unless there is published evidence to the contrary.

HERITIERA ANGUSTATA Pierre

In my monograph of *Heritiera* (Reinwardtia 4: 504. 1959) I suggested, that the Hainan specimen referred to *H. macrophylla* Merrill (in Lingnan Sci. J. 14: 38. 1935; Lau 243, also cited in Chun & How, Fl. Canton 238. 1956), might belong to *H. angustata* Pierre.

This specimen Lau 243 could be examined and I am now able to refer it definitely to *H. angustata.* The occurrence of *H. macrophylla* in Indochina and Hainan becomes improbable.

Additional material of *H. angustata* Pierre. — Hainan. Jai Chow, March, fl., *How 70302* (HK), tree, fls, pink; ibid., Apr., young fr., *How 70601* (HK), shrub, 2.5m tall; ibid., Naam Shan Leng, July, fr., *Lau 21,3* (HK, UC), tree 6m, skin of fruit eaten with Ping Long; ibid., Ue Lam, Aug., ster., *Chn Vong May* 57 et 58 (UC).

HERITIERA ARAFURENSIS Kosterm.

The following specimens, formerly attributed to H *sylvatica* should be referred here: Koorders 18052, 18053, 18054 (BO, L); Teijsmann 12747 (L); locality unknown, fr., Riedel s.n. (K).

HERITIERA LITTORALIS Ait.

In the male flower the sterile ovaries surrounding the ring of anthers may be sometimes twice as long as the anthers.

In the specimen Van Royen 4050 (BO, L) from W. New Guinea, Northwest Peninsula, Steenkool, the flowers match those of *H. littoralis,* but the single (detached) fruit in the Bogor Herbarium is rather different from that of *H. littoralis.* However, without more material at hand, I better leave this in *H. littoralis,* in which the fruit varies considerably.

HERITIERA MACROPHYLLA Wall, ex Kurz.

I had the opportunity to examine material of this species in the Dehra Dun Herbarium and could inspect a living tree in the Calcutta Botanical Garden, which makes it possible to complete the description.

The ripe fruits are up to 5,5 cm long and 3.5 cm in diam., subellipsoid, dorsal part straight, ventral part strongly convex, the apical wing long and narrow with parallel margins, up to 5 x 25 mm.

Additional material. — Assam. Lakkinpura Ladrya Distr., Jan., fr., *Purkayastha 11* (DD) ; Chittagong, Thainkali New Reserve, Teknaf Cox's Bazaar, **Jan.,** fr., *Rao 5551* (DD) ; Burma. Maymyo Plateau, Ani Sakau, alt. 1000 m, May, fr., *Lace 611)9* (DD).

Heritiera montana Kosterm., *spec. nov.* — Fig. 1.

Arbor ramulis lepidotis, foliis sub-coriaceis, subobovato-ellipticis vel ellipticis, supra glabris, nitidis, subtus perdense aureo-lepidotis, basi rotundatis vel subcordatis, apice rotundatis vel obscure acuminatis; paniculis apice ramulorum congestis, axillaribus, dense stellato pilosis, multifloris, floribus dense pilosis, breviter pedicellatis; lobis calycibus tubum latum subaequantibus, androgynophorio in floribus masculinis breve, magnis, stellato-lepidotis, antheris in annulo regulare dispositis, ovariis reductis. conspicuis, disco magno convexo, dense stellato-lepidoto.

Tree 22 m high, 40 cm diam.; bark like that of Pinus or Araucaria. Wood hard, white in outer parts, pinkish to dark red in centre; branches densely, minutely, greyish lepidote (scales not fimbriate); branches brownish grey, smooth, glossy. Stipules aciculate, small, early deciduous. Leaves alternate, subcoriaceous, subobovate-elliptical to elliptical, 4—8 x 2—4,5 cm, base rounded or subcordate, apex rounded or obscurely acuminate; upper surface glabrous, olive-green (fresh), main nerves rather inconspicuous; lower surface densely covered with an adpressed layer of tiny, coppery, fimbriate scales, midrib strongly prominent, nerves 7—8 pairs, slender, prominulous, arcuate, secondary nerves rather obscure, the lowest pair of lateral nerves sometimes more ascendant. Petioles slender, 5—20 mm, lepidote.

Panicles axillary, congested near the apex of the branchlets, multiflowered, densely brown stellate-pilose, up to 8 cm. Flowers dark-yellow with sweet, slightly unpleasant smell. Pedicels 1—2 mm, slender. Calyx-tube broad, 1,5—2 mm high with 1,5 mm long, rather fleshy, elongate-triangular lobes; inside of lobes densely pilose, inside of tube towards base glabrous; throat blackish red (fresh); torus large, convex, densely lepidote; andro-

gynophore in male flower short, 0,5—1 mm, conical, lepidote; anthers rather small in a regular ring, surmounted by the conspicuous conical clump of rudimentary ovaries. Female flowers not seen.

TYPUS. — *Van Royen 5017* (BO).

DISTRIBUTION. — West New Guinea, only known from the type locality.

The species may be differentiated from other New Guinean *Heritiera* species by the small leaves, the leafshape and especially by the very short androgynophore, the lepidote torus and the very broad calyx tube; the buds are almost ovoid-globose.

West New Guinea. Kebar Valley, ca 100 km W. of Manokwari, alt. 550 m., in Quercus - Castanopsis - Araucaria forest, in hills S. of Andjai Airstrip, alt. 790 m., Nov., fl., *Van Royen 5017* (BO, L).

Heritiera khidii Kosterm., *spec. nov.* — Fig. 2.

Arbor foliis subcoriaceis, subovato-ellipticis glabris apice obtusis basi cuneatis petiolis longis, samaris magnis, nucis ellipsoides.

Tree; leaves thinly coriaceous, glabrous, subovate - elliptical, obtuse, base shortly cuneate, 16—25 x 9—14 cm, concolorous, midrib and the slender nerves prominulous on the upper surface, more prominent on the lower one; nerves 12—14 pairs, slender, rather patent, near margin running out arcuately; petiole rather slender, glabrous, 4—7 cm long, both ends thickened.

Infructescence broad, 11 cm long, lax, glabrous; nut of samara ellipsoid, 3,5—4 cm long, 15—18 mm in diam, on a 1,5 cm long, towards apex flattened stalk; wing like a rudder, upper margin in one line with the longitudinal axis of the nut, up to 11 cm long; the widest part of the wing 4,5 cm, ventrally the wing carries on to the base of the nut; dorsally the nut has an obscure broad ridge.

DISTRIBUTION. — Northern Siam, Phrae.

The species is characterized by its large samaras, the spindle-like nut and the glabrous leaves. The type specimen consists of an infructescence and two loose leaves. The leaves may be either complete or represent foiioles of a compound leaf; Mr. Smitinand informed me, that the leaves are simple.

Although the material is poor, it represents without doubt a new species, which I have named in honour of Nai Khid Suvarnasuddhi, Deputy Director of the Royal Siamese Forest Department, who collected the specimen.

Siam. Northern Part; Phrae, Mae Sai, detached infructescence and two leaves, *Khid Suvarnasuddhi 5409* (BO, BKP).

HERITIERA *spec. nov.* — Fig. 3.

In the Singapore Herbarium a specimen is conserved, collected by Hamid (C. F. Field no. 6377, 31-5-1921), in Selangor, Ranching For. Reserve, which consists of loose samaras and loose leaves. Whereas the leaves belong most likely to a species of *Pentace,* the samaras (cf. figure) are certainly those of an undescribed *Heritiera.* The samaras are almost as large as those of *Heritiera khidii,* but the nuts are much thicker and shorter, lacking the dorsal ridge.

HERITIERA PERCORIACEA Kosterm. — Fig. 4.

Of this species I discovered 2 more trees growing on the banks of a rivulet on the South Java seacoast, between Pelabuhanratu and Tjisolok. These trees measure ca 20 m in height, they have a dark deeply fissured bark; the leaves are less coriaceous than those of the type species (which carne from a very old specimen) and are larger. The flowers are described below. A living specimen was transplanted in the Bogor Botanical Garden.

Inflorescences many flowered, 5—15 cm long, branches usually slender, covered with a dense layer of lightbrown to silvery, bushy, shortly armed stellate hairs. Pedicel slender, short. Flowers dirty reddish, suburceolate, densely shortly stellate-haired outside, with longer and towards base often simple hairs inside; up to 4 mm long, 2—2,5 mm in diam., the lobes acute, 0,75—1 mm long, somewhat reflexed at anthesis. Male flower with a flat torus, androgynophore glabrous, 1,5—2 mm long, slender, tapering, anthers in an irregular clump, topped by the small rudimentary ovaries. Female flower slightly wider with sessile, 5-ribbed, densely stellate-pilose ovary with 5 groups of sessile two-celled, sterile anthers at base; style short, glabrous, the 5 stigmas cylindrical, reflexed.

Young fruit with a conspicuous wing; the wing is shorter in the older fruit.

HERITIERA NOVOGUINEENSIS Kosterm.

From recent collections it is possible to give a description of the flowers. The panicles are densely rusty, stellate pilose, axillary, up to 7 cm long, many-flowered. Flowers shortly pedicelled, densely pilose; calyx with acute, triangular lobes. Gynaecium in female flower sessile, lepidote, with short, styles and large stigmas, bent outwards. The flowers are submature, hence it is not possible to give the size of the flowers; they are apparently much smaller than those of *H. littoralis.*

The specimen Jaheri 344 from the Key Isl. (BO) and the specimen Jensen 22 from Tual, Key Isl. (BO, C, L) might also represent *H. novo-*

guineensis. They have male flowers only, of which the androgynophore resembles that of *H. littoralis,* but the stalk is stellate-lepidote and the anthers are larger.

Additional material. — West New Guinea. Bomberai Peninsula, Fak-fak Distr., Budidi R., sealevel, *Van der Zee 11* (= *BW 3133),* June, buds (L); tree 23 m tall, buttresses 170 cm, 250cm out, 7 cm thick; bark 1—1,5mm thick; greybrown, superficially fissured, peeling off in small flakes; living bark 5 mm, pink (inside yellow-white) ; sapwood 4 cm, yellowish white; heartwood light red-brown; flowers yellow-green, inside velvety red; fruit globular, 15cm circumference; fruitwall 1—6 mm thick; mature fruit brown, local name Rahe; Tami, Res. of Hollandia, alt. 2m, Jan., ster., *B.W. 778* (L), tree 25 m tall, 40 cm in diam., butresses 190 cm high, out 180cm; bark peeling off in elongated flakes; local name: He; ibid., Jan., ster., *B.W. 774* (L).

HERITIERA PAPILIO BEDDOME AND H. ACUMINATA Wall, ex Kurz.

In my monograph (I.e. 511), I combined these two species, as the descriptions were identical. Since than I have had the opportunity to examine the type specimen of H. papilio (Beddome 204), of which the ovaries in the female flowers are glabrous, but for their apices, which are covered with long-armed stellate hairs; the stigmas are curved outwards and are almost horizontal. It is distinct from *H. acuminata.*

The species is restricted to the Western Ghats (Travancore). A specimen (Meebold 12907 (S) collected in Peermade, Travancore, at an altitude of 4000 ft., belongs here.

In sterile condition it is impossible to differentiate *H. papilio* from *H. acuminata.* The material of *H. papilio* is too scanty to verify, whether the leaves are perhaps less acuminate than those of *H. acuminata.*

The androgynophore in both species is similar, consisting of a glabrous stalk, topped by a flattened disc, of which the rim consists of a ring of 10 large anther-cells.

Of *H. acuminata* Wall, ex Kurz more material became available for examination. So far it was known from Assam and Burma. The ovaries in the female flowers are densely lepidote and so are the samaras (which are glabrous in *H. papilio).* The wing seems to be wider than that in *H. papilio* (I saw only a figure of the samara of *H. papilio).*

Additional material of *H. acuminata* Wall & Kurz:

Assam. Caehar, Barak Res., alt. 900 m, Dec, ster., *Kanjilal 4796* (DD) ; N. C. Hill, above Jating, alt. 800 m, May, fl., fr., *Kanjilal 5674* (DD); Lushai, Lengti, fr., Prazer s.n. (DD); Sylhet, Lougai distr., May, fr., fl., *Kanjilal i.934* (DD); Burma. Myitkyina Distr., Gwimarit Burma Hill Tract, alt. 1200m, Pebr., fl., *F.N. 2"Z8U* (DD).

The largest leaves are ovate, acute, up to 6 x 17 cm.; according to Kanjilal the stigmas are red.

Heritiera solomonensis Kosterm., *spec. nov.* — Fig. 5.

Arbor ramulis dense minutissime griseo-lepidotis, glabrescentibus, ramis griseis; foliis alternatibus, chartaceis, oblongis, basi rotundatis, npice rotundatis vel sub-acuminatis, supra glabris, nervis principalis prominulis, subtus perdense minute lepidotis, squamis fimbriatis, nervo mediano pro minente, nervis lateralibus utrinque 8—10, erecto-patentibus, prominulis, nervis secundariis sub-prominulis; petiolo gracile, longo; stipulis indupli-catis, parvis, lepidotis, caducis.

Tree 25 m tall. Buttresses plank-like, up to 130 cm high; bark brown, shed in small ragged pieces. Branchlets slender, smooth, densely, minutely grey-lepidote, branches glabrous, grey. Leaves alternate, chartaceous, oblong, 4—7,5 x 7—14 cm, base rounded, apex rounded or sub-acute; upper surface glabrous, midrib and nerves prominulous; lower surface under a high-power lense densely lepidote (scales fimbriate); midrib and 3—10 pairs of erect-patent nerves prominent; secondary nerves parallel, prominulous. Petiole rather slender, 1,5—2,5 cm, densely lepidote, swollen at both ends. Stipules 5—8 mm, acute, lengthwise folded, lepidote, soon caducous.

TYPE. — *Walker B.S.I.P. 245* (L).

Although the specimen is sterile, it may be easily recognized by its oblong leaves.

Solomon Is 1. Guadalcanal, Beaufort Bay, alt. 70 m, foothill rainforest, Febr., ster., *Walker B.S.I.P. 245* (K, L).

FIRMIANA BRACTEATA A. DC.

Firmiana bracteata A. DC. was based on the specimen Balansa 3743, (collected near Tu-Phap, June, fls. chrome-yellow; tree 7—8 m) and described in Bull. Herb. Boissier, ser. 2, 3: 369. 1903.

Ridley (in Kew Bull. 1934: 214) referred it to *Erythropsis colorata* as var. *bracteata* (A. DC.) Ridley, but the reduction to varietal rank was already made by Gagnepain in Lecomte, Fl. gen. Indochine 1 : 460. 1911, who called it var. *bracteosa,* without mentioning de Candolle, but basing **his** variety on the same specimen as De Candolle's *Firmiana bracteata.*

I could examine De Candolle's type specimen in his herbarium at Geneva, and Gagnepain's specimen in Paris.

As Gagnepain pointed out, the specimen does not only differ from *Firmiana (Sterculia) colorata* by the persistent, aciculate, up to 8 mm long pilose, slender bracts of the inflorescence, but also by the truncate leaf base.

In the abundant material, which I could examine, *F. colorata* has also often leaves with a truncate base, which leaves only the bracts as a differential character. I believe, that this is not a varietal character, but may be found in all *F. colorata* trees, depending on development and circumstances.

FIRMIANA COLORATA (Roxb.) R. Br., FIRMIANA FULGENS (Wall, ex King) Corner, FIRMIANA PALLENS STEARN AND Firmiana malayana Kosterm.

In my monograph of Firmiana (Communic. For. Res. Inst. Bogor 54: 7—9. 1956 and in Reinwardtia 4: 281—310. 1957), I have expounded on the three first species mentioned above. The conclusions were based solely on herbarium material at my disposal and on information of Wallich's and Roxburgh's material, provided by Mr. L. L. Forman (Kew).

Since I have had the opportunity to examine in Lucknow *F. colorata* in living condition and many specimens from Siam and Indochina, I am compelled to alter my former conclusions radically. No tree of *F. colorata* occurs any more in the Calcutta Botanical Garden. The type specimen of *Sterculia colorata* Roxburgh is conserved in the Brussels Herbarium.

King, in his treatment of *St. fulgens* (in J. Asiat. Soc. Beng. 60: 73—74. 1891), rightly stated, that there should be two Firmianas, one restricted to India, the other (which he called *Sterculia fulgens)* "is never found in India proper, having its most nothering limit in Tenasserim and extending then southward into the Malayan Archipelago".

Firmiana (Sterculia) colorata was described rightly by King; the species has densely stellate pubescent leaves when young and smaller flowers than those of his *Sterculia fulgens,* in older leaves the pilosity becomes scarce, although in leaves near the inflorescence exceptionally the dense pilosity carries on; the stellate hairs have slender, horizontal arms.

My own conclusion, that Roxburgh's description should be a mixture of two species was wrong. The pilose leaves, as described by Roxburgh, certainly belong to the flowers, although the expression "villous" by Roxburgh should refer only to very young leaves.

Sterculia fulgens Wallich ex Masters (in Hook, f., Fl. Brit. Ind. 1: 360. 1874) is a mixture, representing partly a species of Sterculia and partly a species based on Wallich 1136. As the latter should be considered the type specimen, we have to define *Sterculia fulgens* Wallich ex Masters as pro parte, referring only to Wallich 1135, the remainder being *Sterculia pallens.*

This was already stated by King. It should be stressed here, that Masters' description refers for the greater part to St. *pattens* (see below).

Examination of Wallich's *Sterculia fulgens* 1135 in the Kew herbarium revealed that it consists of 3 different specimens, representing—according to me — 2 or 3 different species; the specimens numbered 1 and 2 are from India, they are sterile and consist of large leaves with a densely pilose lower surface. Most likely they represent *Firmiana (Sterculia) pattens,* but the possibility that they are some kind of *Sterculia* should not be excluded. The third collection is from Penang, but it is again a mixture of a leaf similar to that of the first 2 parts (and apparently from the same plant as the Indian part of Wallich 1135) and a package of loose flowers, which is certainly from the species which occurs in the Malay Peninsula (which King called *St. fulgens).* One of the flowers of the package of Wallich 1135 has been displaced and is glued to the specimen no. 901 from Moulmein of *F. colorata.*

As Wallich's 1135 is a mixtum compositum, of which part of one sheet (a package of loose flowers) belongs to the Malaysian species and as it has become a source of continuous confusion and as moreover the identity of the sterile sheets if this number will be very difficult or even impossible to establish, I suggest to discard *Sterculia fulgens* Wallich ex Masters com pletely.

King (I.e. 72) described the leaves of his *Sterculia fulgens* as pilose, apparently having Wallich 1135 in mind, but he enumerated specimens from Sumatra (Forbes 2105) and Perak (King's Coll. 8673) which have completely glabrous leaves. I was completely puzzled by King's conception of *St. fulgens,* which actually represents: 1. *Firmiana malayana* (description of the flowers; the synonym *Firmiana colorata,* var. .β R. Brown; the citation of Miquel and the specimens enumerated, with exception of Wallich 1135, p.p.) 2. *St. pal lens,* or a species of *Sterculia* (description of the leaves and branches; part of Wallich 1135, viz the leaves and the citation of Wallich 1135, p.p.) 3. *St. colorata* R. Br. (citation of Kurz, For. Fl. Br. Burma 1: 139 and in J. As. Soc. Beng. 2: 117. 1874).

I have not seen authentic material, examined by Kurz, but specimens from Tenasserim, which I could examine were all *F. colorata; F. colorata* extends throughout India to Indochina.

I propose to name the Malaysian plant: Firmiana malayana.

St. fulgens Wallich ex Masters represents 1. *St. pollens* (description; part of Wallich 1135 and the specimens Strachey & Winterbottom and Falconer) 2. *F. malayana* (part of Wallich 1135, the synonym: *Firmiana colo rata,* var.*β* R. Brown and the citation Miquel, Fl. Ind. bat. 1 (2): 178).

The improved bibliography of *F. colorata* and *pollens* and a short differential diagnosis of *F. malayana* and *F. colorata* are given below.

FIRMIANA COLORATA (Roxb.) R. Brown

Firmiana colorata (Roxb.) R. Brown *in* Bennett & Brown, PL Jav. rar. 235. 1844 (quoad var. α) ;Walpers, Rep. 5: 104. 1845—46, p.p.; Thwaites, Enum. 29. 1864 (nomen) ; Trimen, Fl. Ceylon 1: 166. 1893 (as a syn. of *Sterculia colorata* Roxb.) : Masters *iv* Hook, f., PI. Brit. Ind. 1: 360. 1874 (as a syn. of *Sterculia colorata* Roxb.) ; King *in* J. Asiat. Soc. Bengal 60 (2) : 71. 1892; K. Schuman *in* Engl. & Prantl, Nat. Pfl. Pam. 3 (6): 97. 1893; Gagnepain *in* Lecomte, Fl. gen. Indoch. 1: 459. 1911 (as a syn. of *Sterculia colorata* Roxb.); Gamble, Fl. Madias 1: 107. 1935; Kostermans, Communic. For. Res. Inst. Bogor 54: 7—16. 1956 et *in* Reinwardtia 4: 285. 1957, p.p. (descript. exelud.; bibliogr. p.p.). — *Sterculia colorata* Roxburgh, PI. Coromand. 1: 26. 1795; Hort. Bengal. 5. 1814 (nomen) ; PI. Ind. 3: 146. 1832 (reprint 3: 507. 1874) ; Willdenow, Sp. PI. 2: 873. 1899; Poiret *in* Lamarck, Encycl. meth. Bot. 7: 432. 1806; Persoon, Synops. 2: 240. 1807; Steudel, Nomencl. 814. 1821; ed. 2, 2: 639. 1841; DC, Prodr. 1: 483. 1824; Sprengel, Syst. Veget. 3: 83. 1826, p.p.; G. Don, Hist. I: 517. 1831; Schott & Endl., Melet. bot. 33. 1832 (as a syn. of *Erythropsis roxburijhiana* Sch. & Endl.); Spach, Hist. Veg. phan. 3: 516. 1834 (as a syn. of *Erythropsis rox burghiana* Sch. & Endl.), p.p.; Wight & Arnott. Prodr. 63. 1834; *in* Hook. Icon. 2: t. 143. 1837; R. Brown *in* Bennett & Brown, PI. Jav. rar. 235. 1844, p.p. (as a syn. of *Firmiana colorata* R. Br., quoad var. a); Dalzell & Gibson, Bombay PI. 23. 1861; Thwaites, Enum. 29. 1864 (nomen) ; Bentham *in* Benth. & Hook, f., Gen. PI. 1: 218. 1867; M. R. Brown, Fl. Wild Fl. S. & W. India t. 8 (n.v.); Beddome, Fl. Sylvat, 32. 1872; Pfeiffer, Nomencl. 1 *(2):* 1353. 1874; Masters *in* Hook, f., Fl. Brit. Ind. 1: 359. 1874; Brandis, For. Fl. 34. 1874, p.p. (excl. *Sterculia wallichii* Falconer); Ind. Trees 84, f. 40. 1906, p.p.; Kurz *in* J. Asiat. Soc. Beng. 43 (2) : 117. 1874; King *in* J. As. Soc. Beng. 60 (2): 71 —72. 1892; Watt, Diet. econ. Prod. Ind. 6: 361. 1893, p.p.; Talbot, List Trees Bombay 22. 1894; For. Fl. Bombay 1: 141—42. 1909; Woodr. *in* J. Bombay Nat. Hist. Soc. 11: 129. 1897; Trimen, Handb. Fl. Ceylon 1: 166. 1893; id. 6 (Alston): 31. 1931; Gamble, Man. Ind. Timb. 96. 1902; Cooke, Fl. Bombay 1: 125. 1903; Gagnepain *in* Lecomte, Fl. gen. Indoch. 1: 459. 1911 (cum var. *bracteom* Gagn.); Tardieu Blot Suppl. 1: 401. 1945; Haines, Fl. Bihar & Orissa 2: 76. 1921; Ridley *in* Kew Bull. 1934; 215 (as a syn. of *Erythropsis colorata* Ridley); Parkinson, For. Fl. Andaman Isl. 101, f. 16. 1923; Craib, Fl. Siam. Enum. 1: 166. 1925; Kanjilal, Fl. Assam 1 (1): 151. 1934; Gamble & Fisher, Fl. Madras 107. 1935; Blatter and Millard, Some beautif. Indian Trees 102, figs. 1937; ed. 2 (ed. Stearn) 79—82. 1955; L. H. Bailey, Stand. Cyclop. Hort. 3: 3239. 1947; Kostermans 11. cc, p.p. — *Eryth ropsis colorata* (Roxb.) Burkill *in* Gard. Bull. S.S. 5: 231. 1931; Ridley *in* Kew Bull. 1934: 215; Benthall, Trees of Calcutta 52. 1956, f.; Mooney, Suppl. Haines, Bot. Bihar & Orissa 28. 1950 (quoad nomen) ; Kostermans 11. cc, p.p. — *Karaka colorata* (Roxb.) Rafinesque, Fl. Tellur. 72. 1838; Merrill, Index Rafin. 167. 1949; Kostermans, 11. cc. — *Clompanus colorata* (Roxb.) O. Kuntze, Rev. Gen. PI. 1: 78. 1891; Kostermans, 11. cc. — *Erythropsis roxburghiana* Schott & Endl., Melet. bot. 33. 1832; Sprengel, Syst., I.e. 83; Spach, I.e. 517; Steudel, Nomencl., ed. 2, 1: 597. 1840 et 2: 639. 1841 (as a syn. of *Sterculia colorata* Roxb.); Voigt, Hort. suburb. Calcut. 104. 1845; Masters, I.e. (as a syn. of *Sterculia colorata* Roxb.) ; Koatermana, 11. cc. *Roxbtirgh o. n*(B).

Sterculia rubicnnda Wall., Cat. 1119 D, F, G, ex Masters *in* Hook, fl., Fl. Brit. Ind. 1: 360. 1874; Kostermans, 11. cc. — *Wallich 1119 D, F, G* (K).

Sterculia fulgens (non Wall.) Kurz *in* J. Asiat. Soc. Beng. 43 (2) : 117. 1874, p.p.; For. Fl. Br. Burma 1: 139. 1877; Kostermans, 11. cc, p.p.

The species is closely related to *F. malayana,* differs by its (at least in younger stages) laxly pilose lower leafsurface (very dense in young leaves) and the smaller flower with different tomentum. The leaves are larger than those of *F. malayana* and are more acuminate. It occurs in India, Burma, Siam and Indochina. The type specimen is conserved in the Brussels' Herbarium.

Additional material. — India. Nat. bot. Gard. Lucknow, Dec, fl., *Ram Nath Verma s.n.* (A, BO, CANB, K, L, SING, P); Siam. Saraburi, Phra Buddhabat, March, fl.. *Dee Blum Peng 21* (BKH, BO).; ibid. March, fl., *Dee Bun Pheng 17* (BKH, BO); locality not indicated, Febr., fl., *Ken S5O5*(C, P) ; Cambodia, Prov. Kg. Cham, ster.. *Bëjand s.n.* (P); id., fl., *Bëjaud s.n.* (P); Laos. March, fr., *Poilane 13653* (P) ; Basin of the Sê Moun Febr., fl., *Harmand s.n.* (BO, P); Tonkin, fl., *Bov 47. X)*(P); Coehinchina. Baria, fl. *Pierre s.n.* (P).

FIRMIANA PALLENS (Wallich ex King) Stearn.

Firmiana pallens (Wallich ex King) Stearn *in* Blatter and Millard, Some beauti ful Ind. Trees. 80. 1955; Kostermans, Comm. For. Res. Inst. Bogor 54: 16. 1956 et *in* Reinwardtia 4: 293. 1957, f. 4—6; F. v. Mueller *in* Victor. Nat. 3: 48. 1866 (combina tion indicated, but not printed). — *Sterculia pallens* Wallich ex [Voigt, Hort. suburb. Calcutta. 105. 1845, nomen]; King *in* J. Asiat. Soc. Bengal 60 (2) : 73. 1891; Hochreu tiner in Bull. Inst. Buitenzorg 10: 22. 1904 (nomen); Brandis, Ind. Trees 84. 1906; Haines, Bot. Bihar & Orissa 2: 77. 1921; Kostermans, 11. cc. — *Etythropsis pallens* (Wall, ex Voigt) Ridley *in* Kew Bull. 1934: 215; Kostermans, 11. cc. — *Falconer 289* (K).

Sterculia fulgens Wallich, Catal. 1135, p.p. ex Masters *in* Hook, f., Fl. Brit. Ind. 1: 360. 1874; Kurz *in* J. Asiat. Soc. Beng. 43 (2) : 117. 1875 et For. Fl. Brit. Burma 1: 139. 1877, p.p.; King, I.e., p.p., quoad specim. Wallich 1135, p.p.; K. Schumann *in* Engl. & Prantl, Nat. Pfl. Fam. 3 (6): 97. 1895, p.p.; Haines, I.e., p.p. (as a syn. cf Sf. *pallens)* ; Kostermans, 11. cc, p.p.

(?) *Firmiana colorata* (Roxb.) R. Brown *in* Benn. & Brown, PI. Jav. rar. 235. 1844 (p.p., quoad var. *β)*;* Walpers Rep. 5: 104. 1846, p.p.; Kostermans, ill. cc, p.p.

Sterculia wallichii Falconer (non G. Don) ex Brandis, For. Fl. N.W. and Centr. India 34. 1874. — *Unknown coll. 26* (K).

Erythropsis fulgens (Wall, ex Kurz) Ridley, Fl. Mai. Pen. 1: 277. 1922 (quoad nomen tantum).

Firmiana fnlgens (Wall, ex Mast.) Corner, Ways. Trees Mai. 1: 610. 1940 (quoad nomen tantum).

Clompanus fulgens (Wall.) O. Kuntze, Rev. 1: 78. 1891; Kostermans, 11. cc. (quoad nomen).

The description of *F. pallens* as given in my monograph, still stands.

* If the leaves of Wallich 1135 are indeed *F. pollens.*

Firmiana malayana Kostermans, *spec. nov.*

Firmiana colorata (non R. Br.) Miquel, Fl. Ind. bat. 1 (2): 178. 1859 (excl. var. β et y et spec. Korthalsii); King *in* J. Asiat. Soc. Bengal 60 (2) : 71. 1892, p.p. (quoad cit. spec. King's Coll. et Forbes); (non R. Br.) Koorders & Valeton *in* Meded. Planten tuin Buitenzorg 14: 160. 1895 (excl. spec. Korthalsii); Atlas, t. 406. 1914; Koorders, Exk. Fl. Java 2: 598. 1912; Koorders — Schumacher, Syst. Verz., Fam. 178: 20. 1913; Backer, Schoolfl. Java 1: 135. 1911; Merrill *in* Philip. J. Sci. 14: 246. 1919; Enum. Born. PI. 380. 1921; Adelbert *in* Backer, Fl. Java (Nooduitgave) 4 b, Fam. 107: 25. 1944; Kostermans, Communic. Forest Res. Inst. Bogor 54: 7—16, f. 1—3. 1956 et *in* Reinwardtia 4: 285. 1957, f. 1—3 p.p. (quoad descript. et synon. p.p.). — *Sterculia colorata* (non Roxburgh) Moritzi, Verzeichn. 28. 1845—46 (nomen); Hasskarl *in* Tijd schr. Nat. Gesch. 12: 115. 1845 (nomen); Masters *in* Hook, f., Fl. Brit. India 1: 359. 1847, p.p. (quoad cit. Java); King, I.e., p.p.; Koorders & Valeton, I.e., p.p.; Backer, Schoofl., I.e.; Ridley *in* Kew Bull. 1934: 215 (as a syn. of *Erythropsis colorata).* — *Erythropsis colorata* (Roxb.) Burkill *in* Gard. Bull. S.S. 5: 231. 1931; Ridley *in* Kew Bull., I.e.; Adelbert, I.e. — *Sterculia fulgens* (non Wall.) Kurz *in* J. As. Soc. Beng. 43 (2) : 117. 1874, p.p.; For. Fl. Brit. Burma 1: 139. 1877, p.p.; King, I.e., p.p.; Koster mans, 11. cc., p.p. — *Erythropsis fulgens* (Wall, ex Mast.) Ridley, Fl. Mai. Pen. 1: 277. 1922, p.p. (quoad specim.) ; Burkill, Diet. econ. Prod. Mai. Pen. 1: 95(7. 1935, p.p. (quoad spec.); Nayaranaswami *in* J. As. Soc. Bengal N.S. 27: 346. 1931. — *Firmiana fulgens* (Wall, ex King) Corner, Wayside Trees Malaya 1: 610. 1940 p.p. (quoad specim.).

Arbor foliis ab initio glabris, axillis nervorum primariis pagina inferiore pilosis exceptiSj forma variabilis, palmatinerviis; inflorescentiis racemifor mibus dense rufo stellato pilosis, floribus usque ad 3 cm longis.

Tree up to 25 m tall; leaves (also the very young ones) glabrous, but for the axils of the main nerves on the lower leafsurface. Flowers up to 3 cm long (in *F. colorata* 1—2 cm long); the stellate hairs are less bushy than those of *F. colorata.*

An extensive description may be found in my monograph.

TYPUS. — *Kostermans s.n.* (BO).

DISTRIBUTION. — Malay Peninsula, Sumatra, Java, Borneo.

The species was found by me native in Java in the Udjung Kulon Reserve (S.W. Java), where it occurs scattered, at sealevel.

It has been collected once only in Sumatra, twice in Borneo, S. of Kuching (N. Slope of Mt. Penrissen alt 700—900 m, Aug., fl., Jacobs 5007 (G, K, L, SAR, US) and a sheet, marked: Native collector 25 (Sarawak) in Paris which consists of a package of flowers of *F. malayana* and two loose leaves of *Mallotus albus* M.A.; in the Malay Peninsula it is not uncom mon especially not in the Northern part.

Apart from the glabrous leaves and the larger flowers, it may be also distinguished from F. *colorata* by the shape of the leaves; the apex of the lobes is shortly, broadly acuminate; in *F. color ata,* which has larger leaves, the tips end in a long and very slender acumen. Lobed leaves are the rule in *F. colorata,* they are the exception in *F. malayana.*

All the specimens from India and Siam, as enumerated in my monograph represent true *F. colorata.*

Bogor, Culta, Dec, fl., *Koatermane a.n.* (A, BO, BRI, BM, CAL, CANB, G, K, KEP, L, NY, P, PNH, SING, US).

FIRMIANA HAINANENSIS KOSterm.

Firmiana colorata (non R. Br.) Merrill in Lingnan Sci. J. 13: 63. 1934.

Of this species, flowering material has come to my attention, which enables me to complete the discription.

The flowers have about the same size of those of F. *colorata* (up to 17 mm long) and are smaller than those of F. *malayana.* They differ from both species by the much shorter-branched stellate hairs (hence the flowers do not look so woolly). The inside of the calyx and the androgynophore are covered with stellate hairs with such small arms that those on the androgynophore are almost scale-like.

Hainan, between T'ang K'in (Din-Kio) and Po T'eng Chi (Bo Dang), Ngai Distr., Apr., fl., *H. Fung 20056* (BO, TI, UC), tree 13m tall, flowers red; Yaichow, Apr., fl., *How 70591* (HK).

Firmiana kerrii (Craib) Kosterm., *comb. nov.*

Sterculia kerrii Craib (basionym) *in* Kew Bull. 1915: 424. —- *Kerr 2866* (K).

Tree ca 15 m tall, branches thick, densely pale yellowish-brown stellate pilose; leaf scars large; branches glabrous, smooth. Bark greyish black, cut brown with yellow streaking, 0,5 cm thick. Leaves (old, deteriorated ones picked from the ground) chartaceous, broadly ovate, 9—15 x 8—13.5 cm, 5-lobed, the two lower lobes short, rounded, the 3 upper ones longer, acute or acuminate, base shallowly cordate, both surfaces rather densely prominently reticulate; upper surface glabrous, smooth, the slender nerves prominulous; lower surface densely stellate-pilose, 7 nerves radiating from the petiole insertion, midrib and the 2 almost as long upper lateral nerves each with about 4, rather erect, prominent lateral nerves, arcuately anastomosing at the margin. Petiole glabrescent, slender, 8 cm, slightly thickened at both ends.

Inflorescences congested near apex of the leafless branchlets, up to 4 cm long, densely dirty whitish, lanuginose stellate-pilose, hardly or not branched, main peduncle thick, bracts not seen. Pedicel 2—3 mm, densely stellate-pilose. Female flower: calyx cream-coloured, tubular or campanulate-tubular, ca 1 cm long; lobes lanceolate, up to 12 mm long, inside glabrous but for the throat which has a broad collar of long stiff hairs, outside densely stellate-lepidote. Androgynophore glabrous, 15 mm long, bearing at its top a pateriform, almost flat to cupshaped thin disc on which the 5 two-celled anthers are attached; the usually 3—5 ovaries free, glabrous, slender, merging into glabrous styles which are as long as the ovaries, topped *lay* the reflexed, conspicuous almost clubshaped stigmas; disc flat. Carpels glabrous, pendulous, pale brown, partly purple-red, papery, reticulately veined, ca 4 cm long on a 5 mm long stipe with one or 2 cream-coloured seeds at the margin near the base; fully opened they are almost flat, ovate with an apiculate top, ca 2 cm in diameter.

DISTRIBUTION. — Doi Chiengdao, Chiengmai, northern Siam, alt. 1100—1770 m.

VERNAC. NAME. — Paw Tap.

This seems to be an ornamental species of *Firmiana*, characterized by its woolly, dense stellate tomentum, the very long calyx lobes and the peculiar disc on which the anthers are attached.

The fruit are likewise ornamental by their purplish red colour.

As all Firmianas this one flowers on the bare tree.

Siam. Northern Part, Chiengmai, Mt. Chiengdao, E. slope, alt. ea 1100 m, scattered in dry deciduous forest on rocky ridges, Pebr., fl., fr., *Smitinand 4S303 (— For Dept. Siam 10935)* (BKF, BO, L) ; ibid., alt. 1770 m, fl., *Kerr 2866* (K).

FIRMIANA PAPUANA Mildbr.

The following additional specimen could be examined: *van Roy en 3780*, Oct., fr., in Quercus forest between Waterfall camp and Ifar, West New Guinea, distr. Hollandia, Cycloop Mts, alt. 600 m (BO, L); tree 22 m, bole c. 17 m, diam. 60 cm. Leaves dark green above, light greyish green below. Seeds olive green, along brownish yellow capsule. Bark soft, light grey. Wood cream, relatively hard. Buttresses up to 2 m by 0,8 by 0,2 m, stem with horizontal ridges.

ROSACEAE.

CRYPTOCARYA HINTONII Allen.

This species, published in J. Arnold Arbor. 26: 423. 1945, was based on the fruiting specimen Hinton 13737. It represents a species of *Primus*,

which I was unable to match with one of the named specimens of this genus, represented in the U.S. National Herbarium. I therefor venture to rename it: Prunus hintonii (Allen) Kosterm., *comb. nov.* (basionym: *Cryptocarya hintonii* Allen).

LAURACEAE.

Beilschmiedia wallichiana (G. Don) Kosterm., *comb. nov.* — Fig. 6

Sidero.rylon wullichianum G. Don (basionym), Gen. Hist. 4: 28. 1838; DC, Prodi-. 8: 185. 1844; Hook, f., Fl. Br. Ind. 5: 180. 1886. — *Sideroxylon rugosum* Wallich, Catal. 4158 (nomen nudum) ; Hook, f., I.e. — *Litsea rugosa* (Wall.) Kurz in Flora 55: 172. 1872 (excl. syn. *Tetranthera ochrascens* Miq.) ; Hook, f., I.e. (excl. syn. *T. ochrascens* Miq.) ; Curtis, Catal. fl. PI. and Ferns Penang 66. 1892. — *Malapoenna rugosa* (Wall.) 0. Kuntze, Rev. Gen. PI. 2: 573. 1891. — Wallich 4158 (K).

Small tree, 1,5 m tall; branches grey, irregular; branchlets densely pale-brown, minutely pilose; apical buds acute, 3 mm long, densely adpressed strigose. Leaves crowded near apex of branchlets, alternate (the top ones whorled), papyraceous, subobovate-elliptical, 18—30 by 7—10 cm, base acute, top usually with a long, rather slender acumen, both surfaces densely, prominulously reticulate, glabrous, except the midrib, which is minutely adpressed strigose; nerves 9—12 pairs, rather patent, arcuate, prominent. Petioles densely, minutely pilose, 10—15 mm. Upper leaf surface rather harsh to the touch. Inflorescences axillary below the new flush, consisting of very short, few-branched panicles, up to 2 cm long, densely, minutely adpressed strigose; main peduncle up to 1 cm with (soon caducous) bracts, leaving large scars; basal bracts 1—2 mm long, ovate-orbicular, concave. Pedicels 2—3 mm, rather slender. Flowers sparsely, minutely pilose, tube short, 1 mm, lobes 3 mm long, acutish. Stamens glabrous; filaments about 2 mm (inner ones slightly longer), pilose at base; anthers elongate, larger, those of the outer stamens introrse, of the inner row extrorse; basal glands large, globose, shortly stipulate. Staminodes almost sessile, large, depressed ovate-triangular, leafy, acute. Ovary glabrous, merging into the slender, long style; stigma inconspicuous.

DISTRIBUTION. — Siam, Northern Malay Peninsula.

The species is related to *Beilschmiedia clarkei* Hook, f.; it is a small tree. The iso-type sheet in Calcutta still shows the remains of the short inflorescence. Curtis already remarked, that this obscure specimen was probably not a *Litsea.*

Siam. Kuan Po, Salut, alt. 20 m., Jan., fl., *Kevr 13820* (K, P); Malay Peninsula. Penang, fl., *Wallich 4158* (CAL, K, L) ; Perak, Larut, alt. 300 m, Nov., fl., *King's Coll. 2570* (CAL).

Beilschmiedia elegantissima Kosterm., *spec. nov.* — Fig. 7.

Arbor parva ramulis dense minute villosis; foliis chartaceis, ellipticis, glabris (basi nervo mediano sparse pilose exceptis), conspicue prominulo-reticulatis, basi breve, apice conspicue acuminatis; paniculis glabris, perlaxis, gracillimis, longis; pedicellis ramulisque filiformibus; petalibus aequilongis, glabris, filamentis brevis; ovario glabro.

Slender, small tree, 7 m high; branchlets near apex densely, minutely villose; apical buds villose, slender, acute, up to 8 mm long. Leaves alternate, chartaceous, glabrous (except base of midrib below), elliptical or oblong, 6—16 by 2,5—7 cm, base acute, apex acuminate (but often rounded), both surfaces conspicuously, prominulously reticulate and glossy; midrib on upper surface somewhat impressed; nerves 12 pairs, densely, minutely villose, up to 15 mm.

Panicles axillary, very lax, glabrous (a few hairs at base), up to 20 cm long, branches very slender, pink (fresh), the lowest up to 7 cm. Pedicels filiform, 4—7 mm. Flowers glabrous; tepals equal, ovate-triangular, 1,5—2 mm long, acutish, inside with a few hairs; tube shallow, silky pilose. Stamens 1 mm, glabrous; anthers oblong, filaments less than half the length of the anthers; outer ones with introrse, inner with extrorse cells; basal glands large; staminodes heart-shaped, acute, 0,5 mm; ovary glabrous, style as long as ovary; stigma inconspicuous.

TYPUS. — *Parkinson 5216* (K).

DISTRIBUTION. — Burma, Dawna Range.

By the conspicuous leaf reticulation and the pilosity of the branchlets, the species resembles *B. tsangii* Merr., which has, however, much smaller and differently shaped leaves and smaller panicles.

The specimen Lace 5642 belongs here, although it has leaves of 20 by 11 cm, petioles almost 3 cm long and slightly thicker leaves. The infructescence has some tiny hairs. The young fruit is ellipsoid, 2 by 1 cm.

Burma. Distr. Amherst, Mekhrein Chaungkya, Dawna Range, alt. 1000 m, Febr., fl., *Parkinson 5216* (DD, K); Kaw Ngaw Strawn, Dawna Range, alt. 1200 m Jan., young fr., *Lace 5642* (K); ibid., West face, alt. 700 m, March, fl., *Burkill 80254* (BO, CAL).

Beilschmiedia lanatella Kosterm., *spec. nov.* — Fig. 8.

Arbor vel frutex, ramulis et inflorescentiis et foliis pagina inferiore dense pilosis; foliis chartaceis, ellipticis, acuminatis; floribus dense pilosis, pedicellatis; staminibus 6 exterioribus breviter stipitatis, antheris ovato-acutis, introrsis, staminibus 3 interioribus subaequilongis, gracilioribus,

introrsis, glandulis globosis sessilibus ornatis; staminodiis magnis, cordatis, acutis, breviter stipitatis, ovario piloso in stylum aequilongum sensim attenuato; stigmate inconspicuo.

Shrub, 2—5 m, or small spreading tree about 7 m high. Branches slender, grey, branchlets densely brown pilose. Leaves alternate, elliptical, 8—15 by 3—7 cm, base shortly cuneate, apex acuminate with sharp tip; upper surface glabrous, glossy, smooth, midrib and lateral nerves slightly impressed; lower surface with a rather lax to dense indumentum of brown hairs, midrib prominent, nerves about 8 pairs, prominent, curved near margin, other venation obscure. Petiole densely pilose, glabrescent, 1—1,5 cm.

Inflorescences axillary below the new flush, laxly paniculate, 1—3 cm long, densely pilose, few-flowered. Flowers pale yellow, about 2,5 mm long, densely sericeous; tube shallow, short, tepals ovate-acute; stamens about 1 mm, the outer 6 ones with ovate-acute anthers with introrse cells, filaments, broad, shorter than anthers; inner 3 more slender, connective protruding beyond the extrorse large cells; basal glands small, globose, sessile; staminodes conspicuous, cordate, acute, on a very short stalk; ovary subglobose, pilose, merging into an as long style with inconspicuous stigma.

Fruit (of para type) ellipsoid, smooth, 4 cm long.

TYPUS. — *Winit 1711* (BK).

Siam. Muang Kawng, Cheng dao, alt. 900m., May, fl., fr., *Kerr U32* (BO), para-type; Lampong me Peng, alt. 1200 m, June, fl., *Winit 1711* (BK).

Beilschmicdia aborensis Kosterm., *spec. nov.* — Fig. 9.

Arbor, ramulis apicem versus dense minutissime sericeis, mox glabns; foliis subopppositis chartaceis oblanceolatis, apice obscure acuminatis, basi sensim acutatis, utrinque conspicue laxe prominule reticulatis, supra glabris nitidis, subtus perparce minutissime adpresse pilosis; petiolis distinctis; fructus subobovoideus glabris.

Tree; branchlets towards apex minutely sericeous, soon glabrous. Leaves sub-opposite, chartacous, oblanceolate to obovate-elliptical, 2,5—5 by 8—14 cm, top obscurely acuminate or rounded, base gradually acute; both surfaces prominulously, rather laxly reticulate; upper surface glabrous, glossy; lower dull with scattered very small adpressed hairs, midrib prominent, lateral nerves 7—9 pairs, slender, prominulous, arcuate towards margin; petiole 5—10 mm long. Fruit (detached) ellipsoid to subovoid, 4 by 3 cm.

TYPUS. — *Burkill 36742* (K).

Perhaps related to *B. clarkei,* the leaves different.

Eastern Himalaya. Outer Abor Hills, Than Arryat, Sibpur, fr. *Burltill 36742* (BO, K).

Beilschmiedia inaequalis (A. C. Smith) Kosterm., *comb. nov.* — Fig. 10.

Persea inaequalis A. C. Smith (basionym) in Phytologia 1: 118. 1935 — *Krukoff 4770* (NY).

A species characterized by the chartaceous leaves and especially by the unbranched very slender inflorescences with opposite flowers subtended by small bracts. The flowers are certainly those of a *Beilschmiedia* and this is strengthened of the opposite leaves.

The sterile specimen Ecuador, Rosario, Eggers 15791 (C, NY) has glabrous leaves, but corresponds in other respects with the type specimen.

It was tentatively included in *Persea americana* by Kopp, but this in certainly not justified.

Persea pomifera Kosterm., *spec. nov.* — Fig. **11.**

Arbor ramulis juvenilibus sericeis; ramis glabris lenticellatis; foliis alternantibus, coriaceis, glabris, ellipticis vel subobovato-ellipticis vel oblanceolatis, basi cuneatis, apice rotundatis; supra obscure minute areolalo-reticulatis vel sublaevibus, nervo mediano impresso, subtus glaucis, dense minute areolate-reticulatis; nervis lateralibus tenuibus; petiolo gracile, conspicuo; paniculis paucifloris vix ramosis, foliis subaequilongis vel minoribus, glabris; fructu globoso, pedicello vix incrassato tepalis persistentibus imposito.

Tree, up to 20 m high. Branchlets minutely sericeous, apical bud with many depressed budscales at base; branches greyish brown, lenticellate, glabrous. Leaves spirally arranged, glabrous, coriaceous, elliptical to subobovate-elliptical or oblanceolate, 5—12 by 2—5 cm, base cuneate or acute, apex obtuse or rounded, upper surface obscurely areolate-reticulate, midrib impressed, nerves very faint; lower surface glaucous, densely minutely areolate-reticulate, midrib prominulous, nerves about 10 pairs, rather straight, very slender. Petioles up to 2.5 cm, slender.

Panicles below the new flush, 2—9 cm long, few-flowered, hardly branched near apex, minutely, sparsely sericeous. Pedicels 3—5 mm. Flowers 3—4 mm long, sparsely, minutely sericeous; tepals elongate, acutish, equal, 3—4 mm long; anthers oval, 1 mm; filaments slightly longer, glabrous (except at base); glands large, shortly stipitate; staminodes thick, ovate-acute, pilose, shortly stalked; ovary glabrous merging into the 1,5 mm long

style with inconspicuous stigma. Fruit globose, 3 cm in diam on a hardly thickened, up to 7 mm long pedicel, crowned by the persistent, patent or later reflexed, about 3 mm long broadly ovate, acutish, glabrous tepals.

TYPUS. — *Wang 36377* (NY).
DISTRIBUTION. — Hainan.

Hainan. Locality not indicated, Jan., fr., *Wang 30377* (NY); Sept., fl., *Wang 34142* (G) et *34302* (G); Ling-hui, alt. 600 m, Oct. Young fr., *How 73798* (G).

CRYPTOCARYA KOSTERMANSIANA Allen.

This species (J. Arnold Arbor. 26: 423. 1945) was based on the specimen: Smith P. 2418 (A), which represents *Beilschmiedia mexicana* (Mez) Kosterm.

CRYPTOCARYA LANCEOLATA (Panch. et Séb.) Guill.

Guillaumin's combination (Bull. Soc. bot. France 71: 1105 (1924). 1925) is a later homonym of *Cr. lanceolata* Merrill (Philip. J. Sci. Bot. 12: 12V 1917) and is consequently renamed: Cryptocarya guillauminii Kosterm. nom.nov,

CRYPTOCARYA LUCIDULA Miq.

This species, published by Miquel in 1856 (Fl. Ind. bat. 1 (1): 922), was based on a specimen, collected by Horsfield near Banjumas, Java. The type specimen is preserved in the Horsfield herbarium in the Kew Herbarium and represents a *Beilschmiedia* species, probably *B. zeylanica* Trim. Miquel himself already remarked that the flowers were not unlike those of *Beilschmiedia.*

CRYPTOCARYA MUCRONATA (Poiret) Spr.

Sprengel, Syst. 2: 271. 1825; Nees, Syst. Laur. 657. 1836; Meissner in DC, Prodr. 15 (1): 258. 1864; Kostermans in Receuil Trav. bot. néerl. 34: 575. 1937; Lemée, Fl. Guyane fr. 1: 656. 1955 (basionym: *Laurus mucronata* Poiret) should be referred to *Ocotea* as Ocotea mucronata (Poiret) Kosterm., *comb. nov.*

CRYPTOCARYA PALLIDA Kosterm.

As *Cr. pallida* Kosterm. (Bull. Jard. bot. Bruxelles 27: 182, f. 15. 1957) is antedated by *Cr. pallida* Merrill 1909, it is renamed: Cryptocarya pallidifolia Kosterm., *nom. nov.*

CRYPTOCARYA PARVIFOLIA (F. M. Bailey) Domin

As this name (Biblioth. Bot. 22 (89): 676 (= 122). 1925) is antedated by *Cr. parvifolia* Merrill 1925, it is renamed Cryptocarya microphylla Kosterm., *nom. nov.*

CRYPTOCARYA VACCINIIFOLIA Kosterm.

As this name (Bull. Jard. bot. Bruxelles 27: 187. 1957) is antedated by *Cr. vacciniifolia* Stapf, 1915, it is renamed: Cryptocarya vaccinioides Kosterm., *nom. nov.*

Ocotea scandens Kosterm., spec. *nov.* — Fig. 12.

Arbuscula (?) *scandens; ramulis gracilibus, glabris laevibus, innovationibus minute pilosis; foliis rigide chartaceis, glabris, oblanceolatis, cuspidato-acuminatis. utrinque dense prominulo-reticulatis, petiolatis, costis arcuate anastomosantibus, supra impressis, subtus prominentibus. Infructescentia axillaris subapicalis, glabra; cupula semiglobosa, verrucosa, margine dentata; bacca ellipsoidea, laeve, cupula multo superante.*

Climbing or trailing treelet or shrub. Branchlets slender, smooth, glabrous. Apical bud acutish, covered with adpressed, minute hairs. Leaves alternate, rigidly chartaceous, glabrous, oblanceolate, 5—11,5 x 2—3,5 cm, base acute, top caudate-acuminate, both sides densely prominulously reticulate; upper surface glossy, midrib prominent, nerves impressed; lower surface paler, dull, midrib prominent, nerves prominulous, ca 8—10 pairs, arcuately anastomosing at some distance from the margin. Petiole 3 mm, canaliculate above. Infructescence appearing before and just below the new flush, glabrous, hardly or not branched, 5 cm long. Fruit-cup semi-globose, about 1 cm high, covered with rusty warts, margin with subpersistent tepais; berry ellipsoid, 1,5—2 cm long.

TYPUS. — *Benoist 982* (P).
DISTRIBUTION. — French Guiana.

The species is characterized by the caudate, reticulate leaves, the warty cups and the scandent habit. It is said on the label that it is a climber. I believe, that it was a trailing shrub.

French Guiana, St. Jean, March, fr., *Benoist 982* (BO, P).

Actinodaphne auricolor Kosterm., *spec. nov.* — Fig. 13.

Arbor parvis; ramulis gracilis dense minute aureo-sericeis; foliis verticillatis, rigide coriaceis, late obovato-ellipticis, basi cuneatis, apice abrupte acuminatis; supra glabris, obscure subareolatis, subtus dense aureo-sericeis.

nerviis valde prominentibus, lateralibus paucis; petiolis longis; inflorescentis sessilis, glomeratis, bracteatis; floribus sessilibus, sericeis; femineis tubo gracilis; ovario glabro, stylo longo, stigmate inconspicuo.

Treelet, 12 m, diam. 10 cm, little and open-branched at apex; bark smooth, brown; living bark 3 mm, pale. Wood dirty white; branehlets slender, densely minutely aureo-sericeous. Leaves verticillate, rigidly coriaceous, obovate-elliptical, 6,5 x 10 to 12 x 18 cm, base cuneate, apex abruptly acuminate, tip sharp; upper surface glabrous, smooth or obscurely areolate-pitted; midrib and lateral nerves prominulous; lower surface densely bronze or golden sericeous; midrib strongly prominent; lateral nerves 3 pairs, erect-patent (the lowest pair often more or less ascendant) strongly prominent; secondary nerves faint, parallel. Petiole densely, minutely sericeous, up to 3 cm long, sulcate above; the dried leaves are somewhat bullaie.

Inflorescence clusters sessile, bracteate, up to 1 cm in diameter. Bracts concave, ovate-acute, sericeous outside. Female flowers sessile, 4—5 mm long, trumpet-shaped, silky outside; tepals 1—2,5 mm, ovate-acute; tube slender; ovary glabrous, style long, stigma inconspicuous; sterile stamens 1—1,5 mm long with slender, glabrous filaments and oval anthers.

TYPUS. — *Kostermans 12929* (BO).

A species easily recognizable by the dark golden lower leaf surface and the few lateral nerves. The species is confined to the "elphin forest" zone on Mt. Palimasen. It occured scattered.

East Borneo, West Kutei, Mt. Palimasen near Tabang on Belajan R., alt. 800 m., Sept., fl., *Kostermans 12929* (A, BM, BO, CAL, CANB, K, **KEP, L, LAE, NY, P, SING, US).**

GUTTIFERAE.

Garcinia graminea Kosterm., spec. *nov.* — Fig. 14.

Arbor (?) *in omnibus partibus glaber; ramulis gracilis, in sicco rubro-brunneis, nitidis; joliis papyraceis linearis petiolatis, nervis obscuris, floribus flavus, flos femineis sub inovationis axillaribus, subsessilibus; sepalis quator, petalis quator; ovario cylindrico, stigma magno, verrucosa; fructus globosus* (?), *stigmate sessilibus ovalis, verrucosis, sepalis persistentibus.*

Tree (?) glabrous in all its parts; branehlets slender, smooth, glossy, redbrown (dried), slightly flattened and enlarged at the nodes. Leaves papyraceous, linear, 3—7 cm long, 1,5 mm wide; midrib slightly raised, other veins obscure; lower leafsurface paler than upper one.

Flower solitary, almost sessile, axillary in the apical leaves. Mature flowers not seen. Buds yellow, globular, 2 mm; sepals 4; inner ones depressed orbicular, 2 mm; outer ones orbicular-obovate, 2 mm; margins somewhat fimbriate; marginal part very thin, towards base fleshy; petals 4, suborbicular; female flower with a broad conical ovary, topped by the ellipsoid-orbicular warty stigma, one stamen present with a broad spoonlike anther and a thick filament. Fruit globose (?), green, juicy, about 2 cm in diameter; **stigma oval,** warty, sessile, about 4 mm long; seeds flat.

TYPUS. — *Versteegh B.W. 910* (BO).
DISTRIBUTION. — West New Guinea, Cycloop Mts.

A species easily recognizable by its leaves. In the specimen at hand only a single flowerbud was present. The fruit was flattened out completely during the process of drying.

West New Guinea. Res. Hollandia, Cycloop Mts. (Ifar Ormu), alt. 1050 m., Nov., fl., fr., *Versteegh B.W. 910* (BO, L).

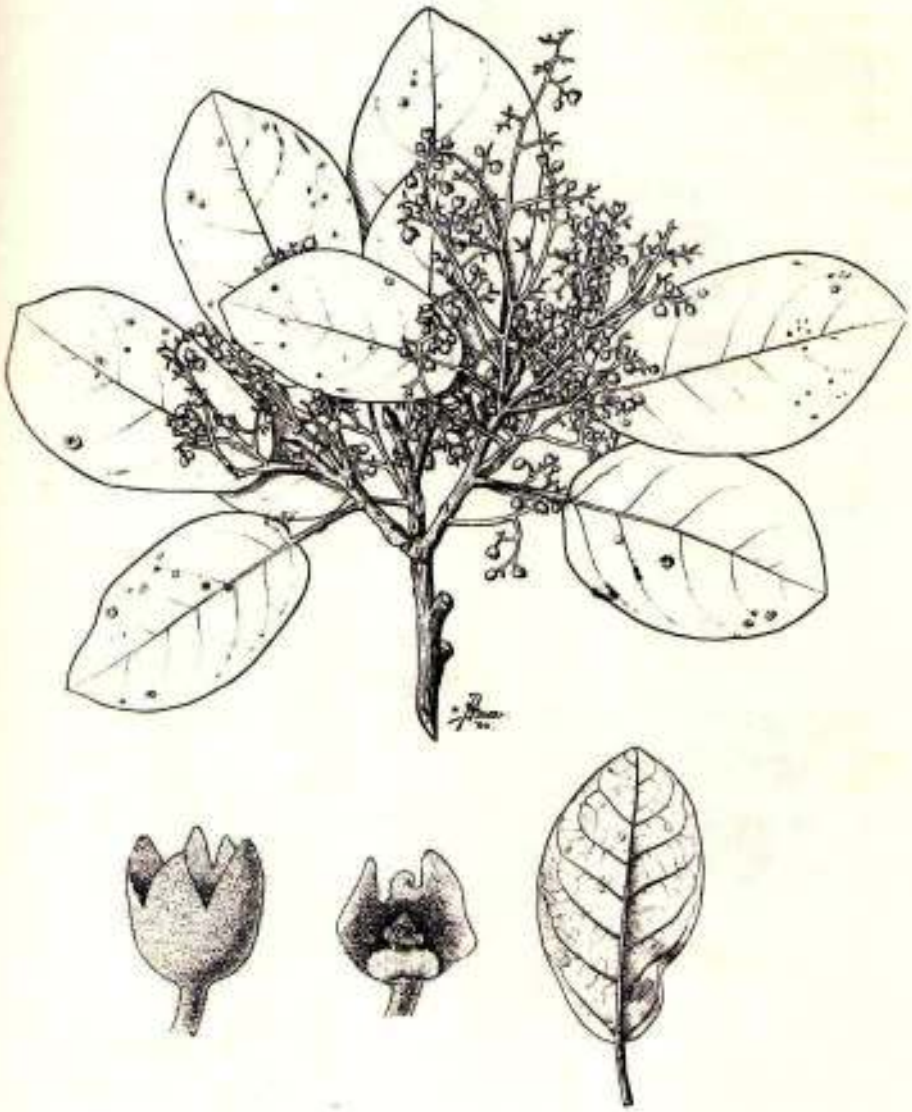
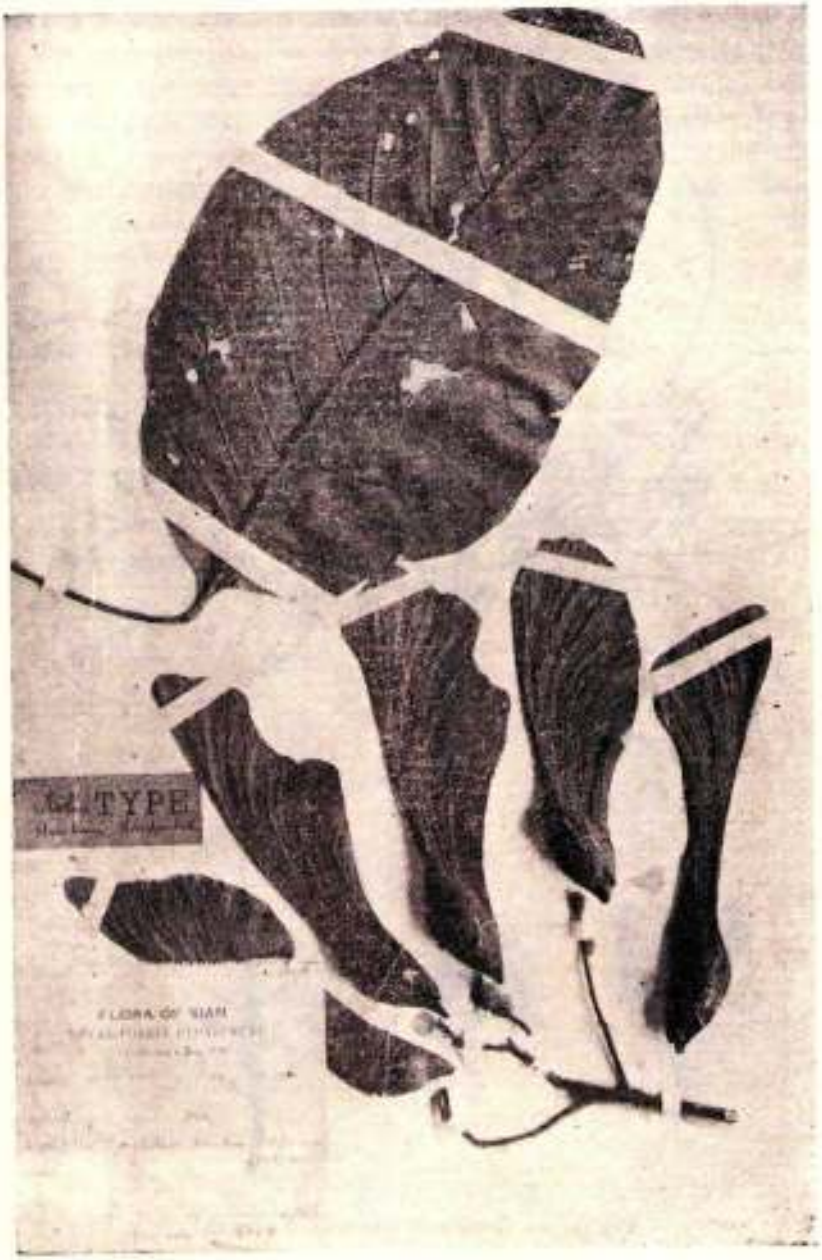
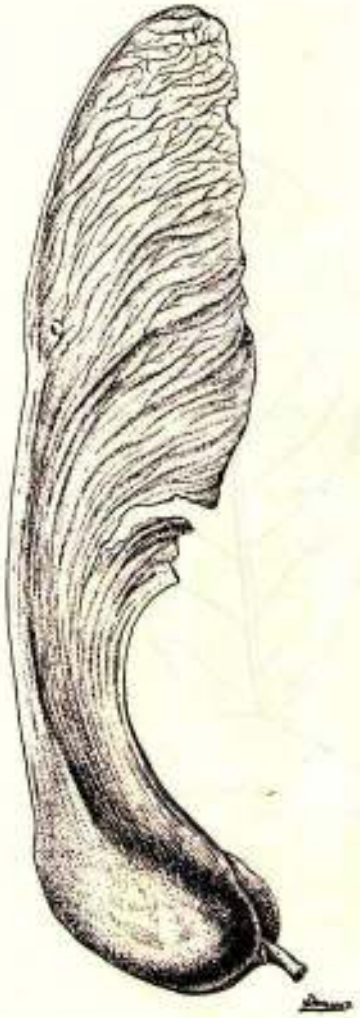


Fig. 1. — *Heritiera montatana* Kosterm.



Pig. 2. — *Heritiera khidii* Kosterm.



Pig. 3. — *Heritiera spec.* — After *Humid F.N. 6377* (BO).

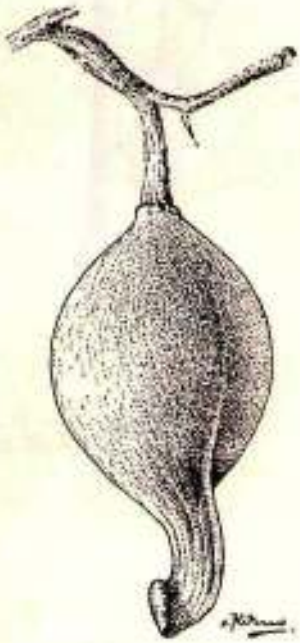
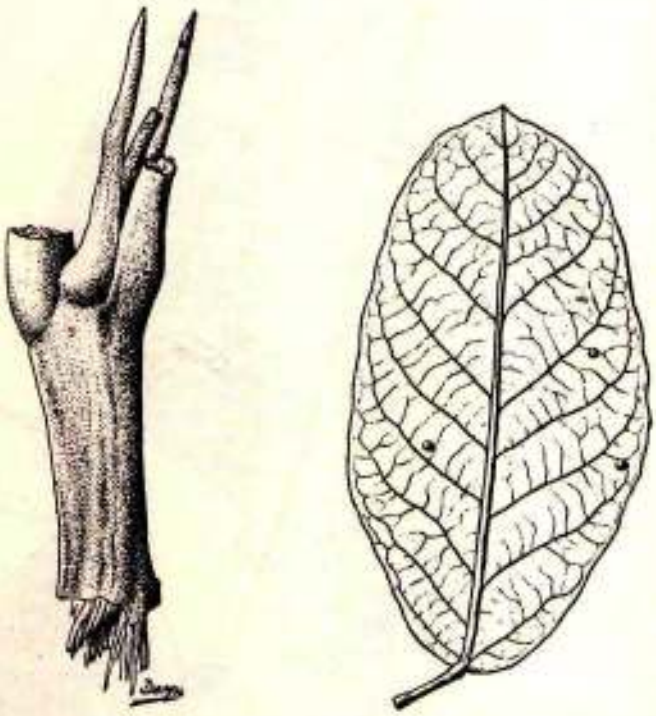


Fig. 4. — *Heritiera percoriacea* Kosterm.



Pig. 5. — *Heritiera solomonensis* Kosterm., leaf and (enlarged) stipules.

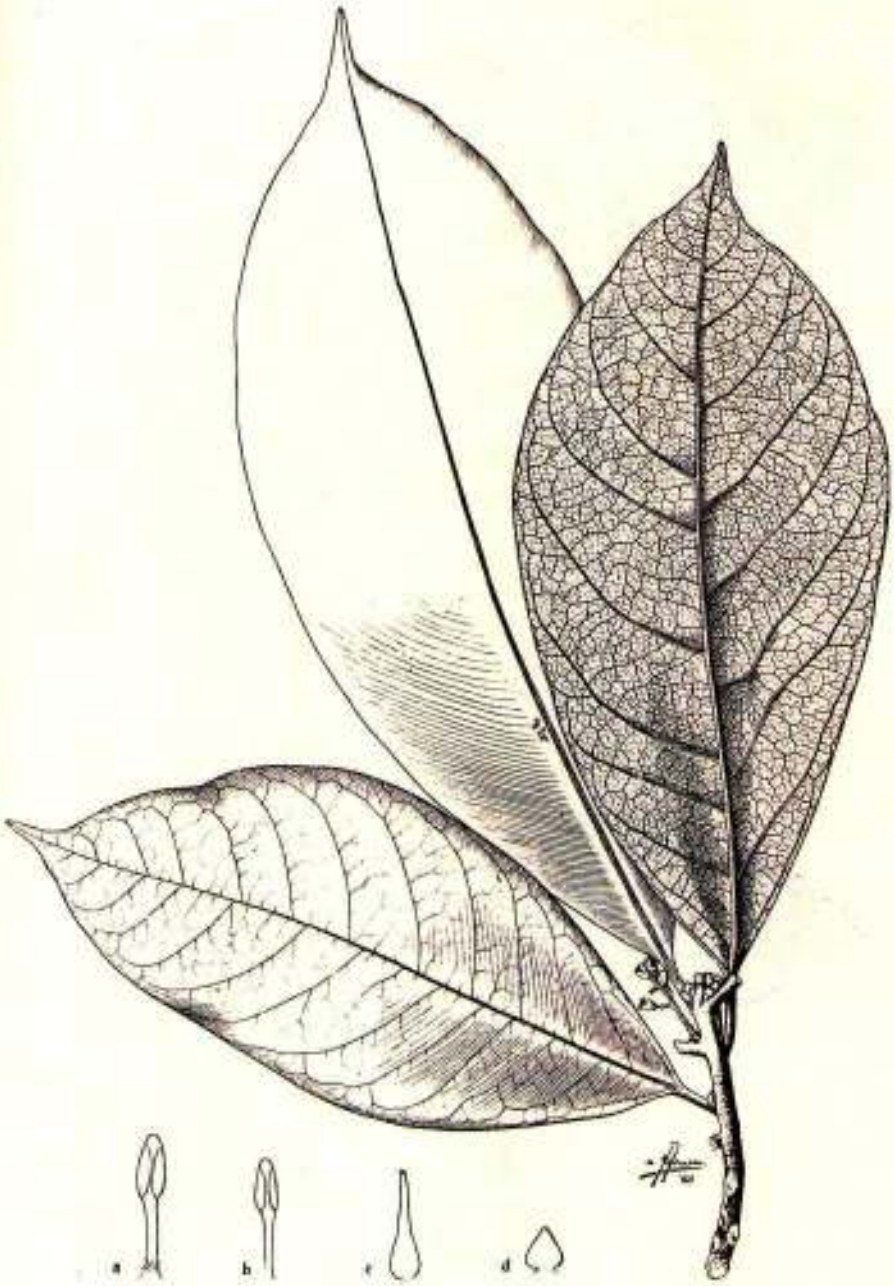
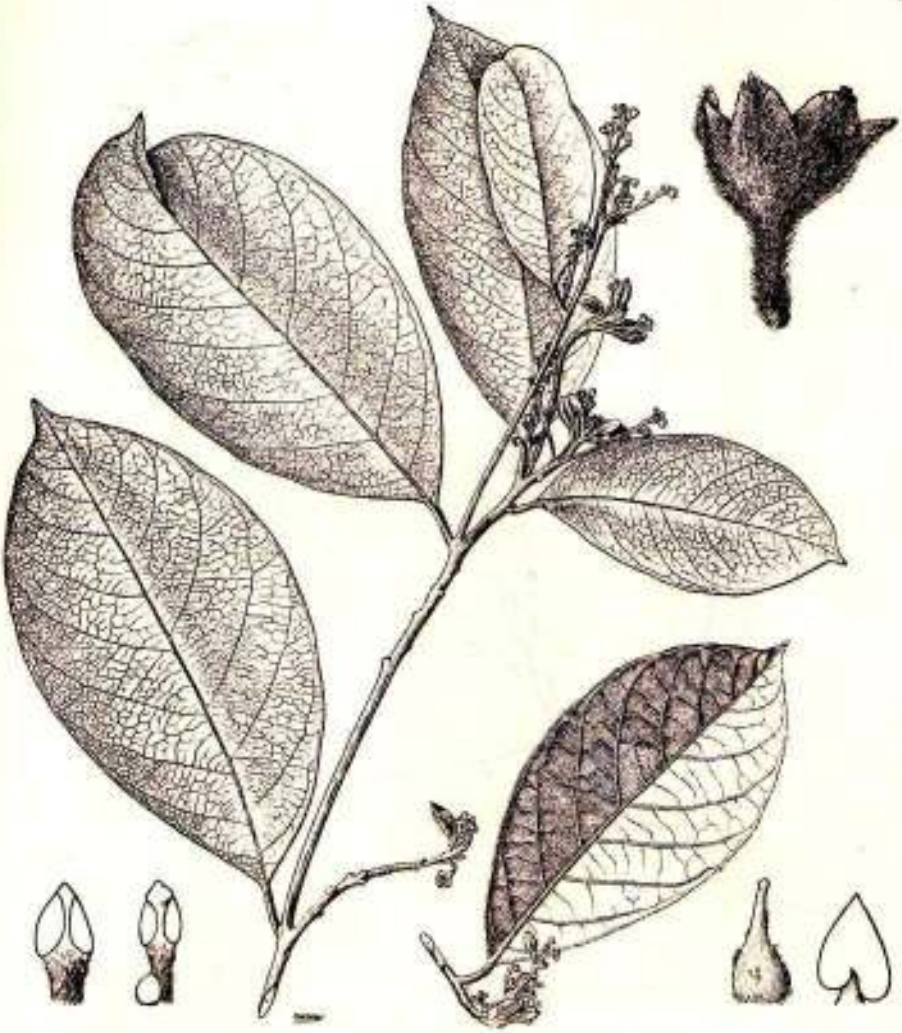


Fig. 6. — *Beilschmiedia wallichiana* (G. Don) Kosterm. — After *Ken- 13820* (Bangkok) : a and b respect, outer and inner anther; c. ovary; d. staminode.



Pig. 8. — *Beilschiniedia lanatella* Kosterm.

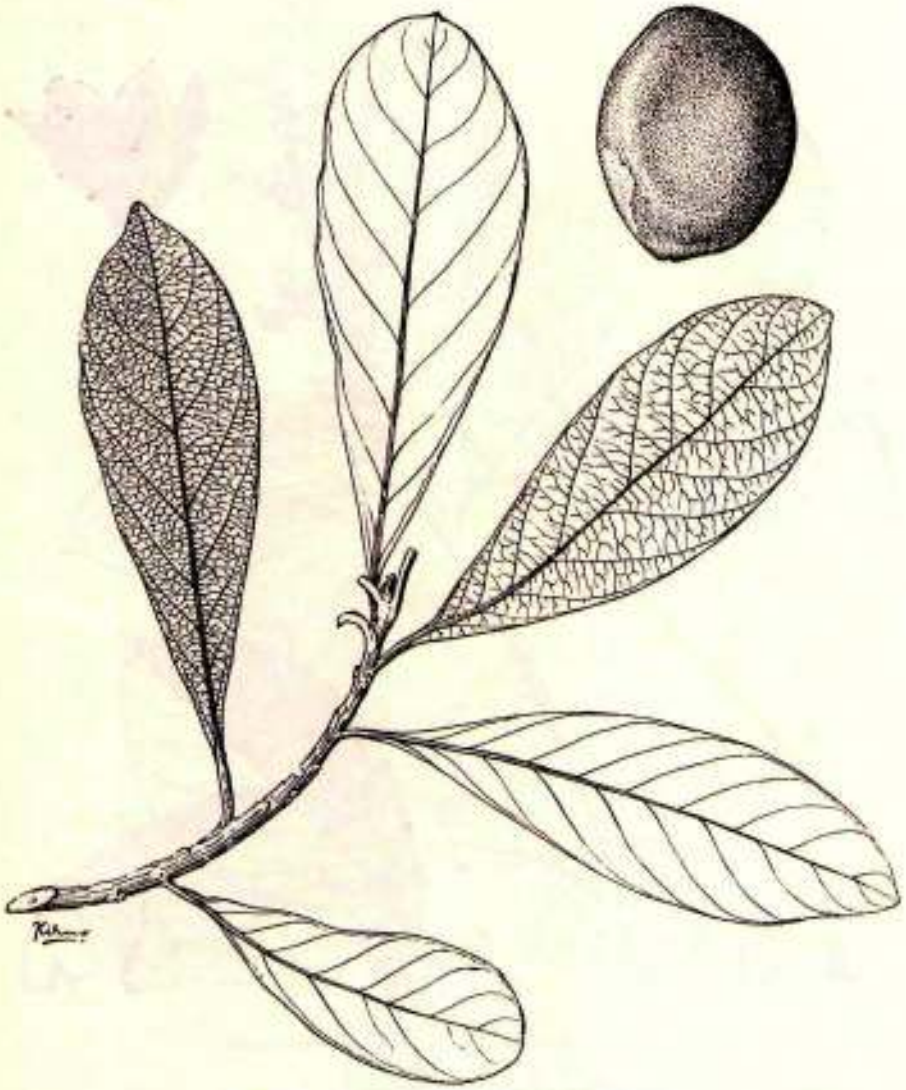


Fig. 9. — *Beilschmiedia aborensis* Kosterm.

Fig. 10. — *Beilschmiedia inaequalis* (A. C. Smith) Kosterm. — After *Kruhoff 4770* (BO).

Pig. 11. — *Persea pomifera* Kosterm.

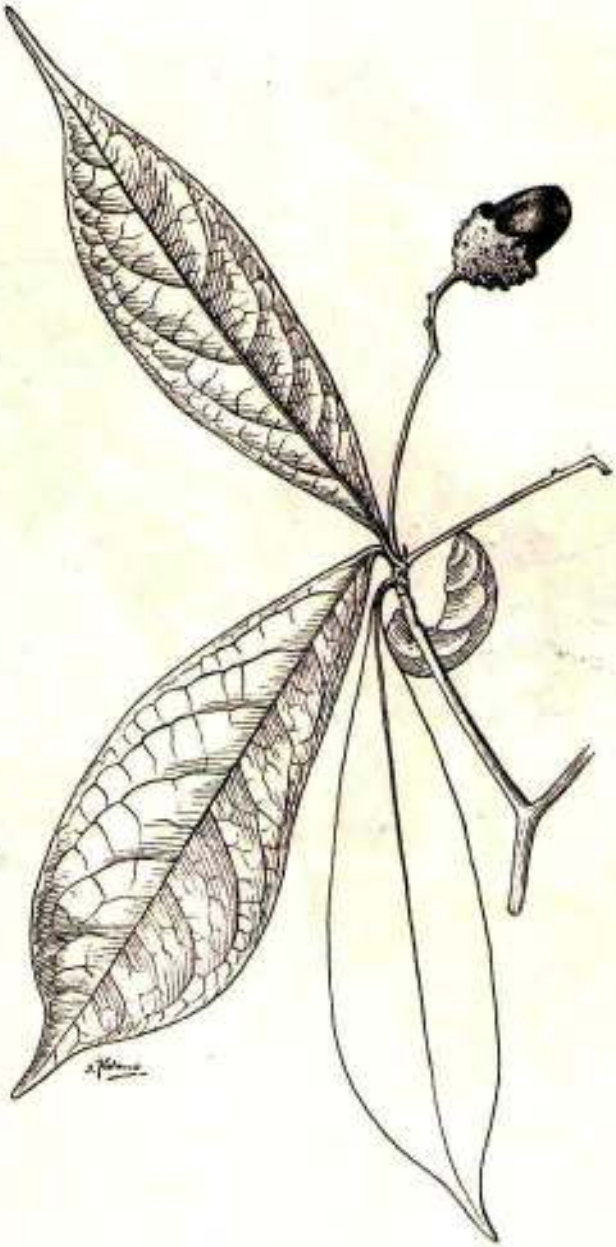


Fig. 12. — *Ocotea scandens* Kosterm.

Fig. 13. — *Actinodaphne auricolor* Kosterm.

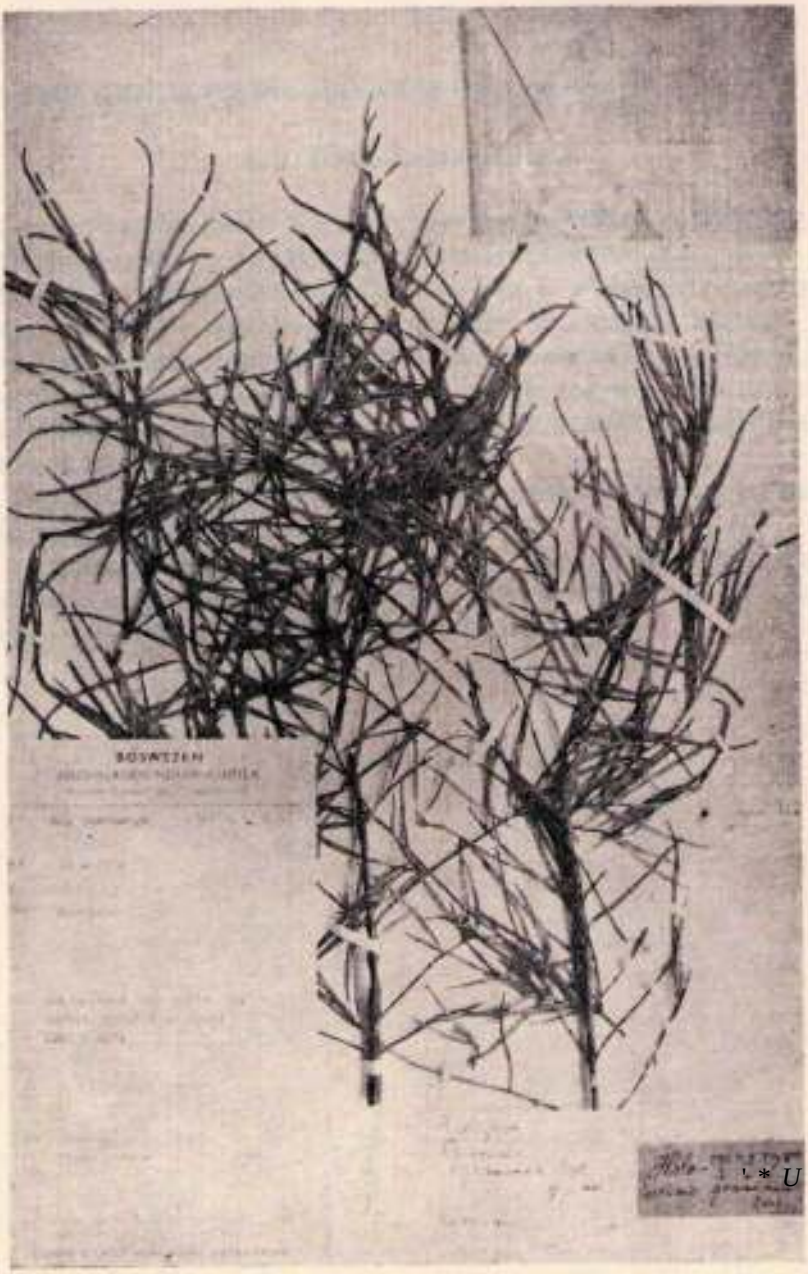


Fig. 14. — *Garcinia graminea* Kosterm.