

MISCELLANEOUS BOTANICAL NOTES 4*

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SUMMARY

1. New species — Lauraceae: *Cryptocarya albida* (New Guinea); *Endlicheria grisea* (S. America); *Licaria subbullata* (S. America); *Litsea chewii* (Borneo); *Litsea exsudens* (New Guinea); *Ocotea sandwithii* (Br. Guiana); *Persea cuatrecasasii* (S. America) — Leguminosae: *Crudia dewittii* and *Cr. papuana* (New Guinea). — Sterculiaceae: *Firmiana rubriflora*, *Pterocymbium macranthum* (Burma, Siam); *Pterospermum pecteniforme* (Siam). — Tiliaceae: *Brownlowia ovalis* and *grandistipulata* (Borneo); *Burretiodendron umbellatum* (Siam); *Jarandersonia spinulosa* (Borneo); *Microcos longipetiolata* (Borneo); *Trichospermum morotaiensis* (Isl. Morotai, E. Indonesia). — Verbenaceae: *Teijsmanniodendron simplicoides* (Borneo).
2. New combinations and names — Lauraceae: *Beilschmiedia fagifolia* var. *dalzellii* Meissner = *Beilschmiedia dalzellii*; *Daphnidium argenteum* Kurz = *Beilschmiedia argentata*; *Lindera cinnamomea* Ridley = *Neolitsea cinnamomea*; *Phoebe kerrii* Gamble = *Persea kerrii*; — Tiliaceae: *Brownlowia purseglovei* Kosterm. = *Jarandersonia purseglovei*; *Pentace paludosa* Kosterm. = *Brownlowia paludosa*.
3. Reductions. — Lauraceae: *Beilschmiedia argentea* Kosterm. = *B. argentata* Kosterm.; *Beilschmiedia bourdillonii* Brandis = *B. gemmiflora* (Bl.) Kosterm.; *Beilschmiedia riparia* Miranda = *B. mexicana* Kosterm.; *Caryodaphnopsis latifolia* Wang = *C. henryi* Airy Shaw; *Cryptocarya ocoteifolia* Kosterm. = *Ocotea* and *Cryptocarya* (*mixtum*); *Dehaasia titanophylla* (Airy Shaw) Kosterm. = *Dehaasia longipedicellata* (Ridley) Kosterm.; *Phoebe goalparensis* Hutch. = *Phoebe hainesiana* Brandis; *Persea chrysobalanoides* Lundell = *Ocotea*; *Persea filipes* Rusby = *Ocotea*. — Sterculiaceae: *Heritiera fischeri* Regel & Rach = *H. macrophylla* Wallich ex Kurz. — Tiliaceae: *Burretiodendron yunnanense* Kosterm. = *Craigia yunnanensis* Smith & Evans; *Columbia gamosepala* Turcz. = *Brownlowia elata* Roxb.; *Jarandersonia paludosa* Kosterm. = *J. purseglovei* Kosterm.
4. Notes — Lauraceae: *Endiandra clavigera* Kosterm., *Endiandra eusideroxylocarpa* Kosterm. — Sterculiaceae: *Brachychiton carruthersii* F. v. M. — Tiliaceae: *Brownlowia helferiana* Pierre.

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Introduction.

I herewith extend my gratitude to the Directors of the Herbaria of Copenhagen, Kew, Leningrad and Paris for their cooperation and for their hospitality extended to me.

This publication is the first part of a study, which was made possible by an invitation of the Academy of Sciences of the U.S.S.R., and by grants awarded to me by the British Council, Djakarta and the French Government (arranged by the French Cultural Attaché in Djakarta).

Moreover, a small sun was obtained from the National Science Foundation, U.S.A., within the scope of the grant to the Herbarium Bogoriense.

Dr. C.G.G.J. van Steenis went through the manuscript critically and corrected some errors; Dr. R. C. Bakhuizen van den Brink, corrected the Latin diagnoses. I highly appreciate their collaboration.

L A U R A C E A E

1. BEILSCHMIEDIA BOURDILLONII Brandis

This species (Brandis, Ind. Trees 528 et 716. 1906) was based on the specimen *Bourdillon 1894* from Travancore [K]. It represents *B. gemmiflora* (Bl.) Kosterm. *Beilschmiedia gemmiflora* is in the Kew Herbarium also represented under *B. fagifolia* Nees by the following specimens: *Stocks s.n.*, Canara and *Law s.n.*, Canara.

2. BEILSCHMIEDIA FAGIFOLIA, var DALZELLII Meissn.

The type specimen: *Dalzell* from Goa in herbarium *Stocks* [K] has narrow, glabrous leaves and an elongated fruit. The specimens: *Law s.n.* [K] from Concan and *Stocks s.n.* [K] from Jalluk Ghat belong here, but the specimens: Assam Griffith in Herb. *Hooker* 625, fr. [K], mentioned by Meissner, and *Jenkins 225*, (Hooker anno 1841) [K] from upper Assam belong to *B. robertsonii* Gamble which is very close to *B. gemmiflora* (Bl.) Kosterm., but the lower leaf surface is pilose and the leafbuds and shape of the bud scales is different. I consider var. *dalzellii* to represent a good species, which is consequently named: ***Beilschmiedia dalzellii*** (Meissn.) Kosterm. comb. nov. (basonym: *B. fagifolia*, var. *dalzellii* Meissner in D.C., Prod. 15(1): 64. 1864; the name *Beilschmiedia dalzellii* "Meissner" ex Talbot, Trees Bombay Pres., ed. 2: 282. 1902, is an unintentional error for var. *dalzellii* Meissner; it is cited as var. *B. dalzellii* Meissn.; moreover it is a nomen in synonymis).

3. *BEILSCHMIEDIA RIPARIA* Miranda

This species (Miranda in Ann. Inst. Biolog. Mexico 24: 75, fig. 1953), based on *Miranda 6872*, of which an iso-type sheet was acquired thanks to the much appreciated cooperation of Dr. Miranda himself, is specifically not different from *B. mexicana* (Mez) Kosterm.

4. *CARYODAPHNOPSIS LATIFOLIA* W. T. Wang

This species (Wang in Acta phytotax. Sinica 6: 213. 1957) was based on the specimen: *Exped. Sino - Rossica 801*, of which an isotype specimen could be examined in the Leningrad Herbarium. It represents a broad-leaved specimen of *C. henryi* Airy Shaw.

5. *Cryptocarya albida* Kosterm., spec. nov. — Fig. 1

Arbor ramulis crassis dense flavo-pilosis, foliis sparsis, ellipticis, rigide coriaceis, apice obscure acuminatis basi rotundatis vel in petiolum contractis, supra glabrescentibus, nitidis, nervis impressis, subtus densissime pilosis, ultimo glabrescentibus, costa et nervis lateralibus valde prominentibus, nervis secundariis parallelis prominulis petiolis crassis dense pilosis.

Tree, branchlets stout, covered by short, yellowish hairs. Leaves spirally arranged, stiff, coriaceous, elliptical, 10—18 × 6.5—11 cm, apex very shortly and obscurely acuminate, base rounded or contracted into the stout, 1.5—2 cm long, densely pilose petiole; upper surface glossy, glabrescent; main nerves impressed; lower surface covered by a dense layer of a tawny pubescence (which wears off, except on the main nerves); midrib and the 5—6 arcuate pairs of lateral nerves strongly prominent; secondary nerves prominulous, parallel.

TYPUS. — *Brass 31120* [K]

Although the species is sterile, it is so easily recognizable, that I have described it here. It is a common canopy tree in the tall forest of the S. slopes of Mt. Otto; I found two more sterile collections of this species amongst the collections of the British Museum (which are for the moment not available to me).

New Guinea. — Eastern Highland Distr., Mt. Otto, South slopes, alt. 2400 m, Aug., ster., *Brass 31120* [K].

6. *CRYPTOCARYA OCOTEIFOLIA* Kosterm.

Mr. A. Capuron (Service des Eaux et Forêts, Madagascar) pointed out to me, that apparently a mixing of two elements had taken place in the herbarium specimens, the fruit belong to *Cryptocarya* and the leafy branches to an *Ocotea*. Consequently the species has to be deleted.

7. *DAPHNIDIUM ARGENTEUM* Kurz

Daphnidium argenteum (Kurz in J. As. Soc. Beng. 42(2): 103. 1873; For. Fl. Brit. Burma 2: 307. 1877; Hooker f., Fl. Brit. Ind. 5: 187. 1886; *Benzoin argenteum* (Kurz) O. Kuntze, Revis. 2: 569. 1891) based on: *Kurz s.n.*, Pegu, Martaban, represents *Beilschmiedia* and should consequently be renamed *B. argentata* Kostermans, *nom. nov.* I described the same species inadvertently already as *Beilschmiedia argentea* Kostermans (New and crit. Mal. Pl. 4: 20, f. 13, 14. 1955).

8. *DEHAASIA TITANOPHYLLA* (Airy Shaw) Kosterm.

Comparison of the material of this species with that of *Dehaasia longipedicellata* (Ridley) Kosterm. and with a recent collection of this species in Kelantan by Mr. Soepadmo strengthens my former supposition, that both are conspecific; the name *Dehaasia longipedicellata* has priority. Airy Shaw referred his species to *Alseodaphne*, which has, however, 4 anther cells.

9. *ENDIANDRA CLAVIGERA* Kosterm., *descript. emend.*

Endiandra clavigera Kostermans, New and Critical Mal. Pl. 3: 10, f. 4. 1955.

Tree 20 m tall, 25 cm diameter, with buttresses up to 45 cm high and 1.5 cm thick; bark smooth, brownish; living bark yellowish brown; wood yellowish. Branchlets (under a high power lens) and part of the pedicel with small smooth, slightly elongate protuberances. Leaves up to 10 × 23 cm, base often somewhat decurrent.

Panicles axillary, 3 cm long, densely, rusty pilose, branches patent, up to 5 mm long; bracts minute, subpersistent. Flowers very tiny, 0.75–1 mm in diameter; tepals ovate, acutish, fleshy, equal. Stamens 3 with sessile orbicular (at base truncate) anthers with 2 large extrorse cells; glands none. Ovary minute, globose, glabrous, somewhat merging in a very short style with a peltate, somewhat lobed stigma. Mature fruit ellipsoid, 8 cm long, 5.5 cm in diameter on a thick woody stalk.

The species was described originally from a single collection in Sarawak (S. F. N. 35747). Additional material made it possible to emendate the description. The material of Ashton has no labels.

Sarawak. — Sg. Semengoh, alt. 40 m, Dec., fr., *F. D. 1887* (= *S 204*) [SAR]; Brunei, locality unknown, fl., *Ashton s.n.* [BO]; in some of Ashton's sterile material the leaves have an entirely smooth upper surface.

10. *ENDIANDRA EUSIDEROXYLOCARPA* Kosterm., *descript. emend.* — Fig. 2

Endiandra eusideroxylocarpa Kostermans in *Reinwardtia* 5: 348, t. 9. 1960.

Tree up to 40 m high and 50 cm in diameter; buttresses 1 m high, 7 cm wide; bark scaly; living bark brown, 1 cm; sapwood pink, heartwood reddish brown. Branchlets stiff, rather slender, dark glossy brown (in sicco), compressed laterally at the nodes, apical leafbuds rounded, hard, glabrous. Leaves spirally arranged, rigidly coriaceous, glabrous, elliptical to obovate-elliptical 2—4.5 × 6—8.5 cm, top obscurely acute or rounded, base cuneate, both surfaces glossy with open prominent lax reticulation, lateral nerves 4—5 pairs, rather irregularly spaced, rather erect, slightly curved. Petiole stout, rough, 5—10 mm long.

Inflorescences consisting of a few hardly branched panicles in one leaf axil, up to 1.5 cm long, few-flowered with a scanty, minute adpressed pilosity, especially on the apical parts. Flower buds 1 mm in diam.; pedicel 2—3 mm long.

Fruit ellipsoid, russet, up to 12 × 6 cm, smooth, on a thick, 1.5 cm long, almost cylindrical stalk.

Borneo. — Brunei, Belait Distr., Andulau Forest Reserve, boundary path between Bedan and Jelutong R., primary forest on ridge at 20 meter, sandy loam, Dec., fr., *Smithies Brun. 0831* [BO, K]; Sarawak, Baram Distr., Mt. Mulu, path from Melinau Paku R., alt. 1200 m., June, buds, *Anderson 4579* [A, BO, K, L, SING].

11. *Endlicheria grisea* Kosterm., *spec. nov.* — Fig. 3.

Arbor ramulis gracilibus atro-rubris, juvenilibus adpresse pilosis; foliis sparsis ellipticis chartaceis, apice acuminatis basi acutis, supra glabris (costa et nervis lateralibus exceptis), nervis lateralibus subimpressis; subtus grisea sparse minutissime pilosa, nervis lateralibus paucis arcuatis, petiolis gracilibus, conspicuis, glabrescentibus. Paniculis axillaribus gracillimis, pilosis, floribus paucis; pedicellis filiformibus pilosis, bracteis minutissimis, tepalibus ovato-obtusis, extus pilosis, antheris ovalibus obtusis filamentis aequilongis, exterioribus introrsis interioribus extrorse-apicalis atque basis

glandulis magnis munitis, ovario glabro, stigmatibus 3-fidis; fructu ellipsoideo, cupula plana, pedicello obconico.

Tree, branches slender, glossy dark red brown; branchlets minutely, shortly adpressed-pilose. Leaves spirally arranged, chartaceous, elliptical, $2.2-3.8 \times 6-10$ cm, apex acuminate, base acute; upper surface smooth, glabrous (but for the midrib and main nerves, which have a long-persistent, minute tomentum), midrib slender, prominulous; lateral nerves slender, somewhat impressed; lower surface grey with sparse minute tomentum, midrib prominent, lateral nerves 2-3 pairs, slender, arcuate, the upper ones arcuately anastomosing, secondary nerves few, slender, reticulation none. Petiole slender, glabrous, up to 1 cm long. Panicles axillary, very slender, few-flowered, hardly branched, pubescent, up to 1.5 cm long; pedicels filiform, 1.5 mm long, pubescent, bracts minute, pubescent. Flowers 3 mm across, tepals ovate-obtuse, 1 mm, pilose outside; anthers oval, obtuse, 0.5 mm long, filament 0.5 mm long; the outer ones introrse, the inner ones extrorse-apical with large basal globose glands; ovary glabrous with a 3-cleft stigma. Fruit ellipsoid, 6×13 mm, rather pointed; cup flat, 5 mm in diameter; pedicel obconical, 6 mm long.

TYPUS. — Forest Dept. Br. Guiana, Field number W. B. 454 (Record number 5864) [K]

Related to *E. sprucei* (Meissn.) Mez; characterized by the grey, lower leaf surface, the shallow cupula and the 3-lobed stigma; flowers hermaphrodite.

British Guiana. — Kanuku Mts, 700 m, Wabuwah, Oct., fl., fr., F.D. W. B. 454 (record number 5864) [K].

12. *Licaria subbullata* Kosterm., spec. nov. — Fig. 4

Arbor mediocris foliis sparsis ellipticis usque ad subobovato-ellipticis, coriaceis glabris, apice conspicue acuminatis basi acutis, supra subbullatis, nitidis, reticulatione obscura, subtus pallidioribus, costa prominente, nervis lateralibus utrinque 8-10; paniculis axillaribus latissimis, paucae ramosis, floribus glabris, tepalis ovato-acutis, aequilongis; staminibus exterioribus sterilibus, interioribus fertilibus, cellulis extrorsis, filamentis distinctis.

Tree 10 m tall, 10 cm in diameter, occurring in Wallaba forest on white sand. Branchlets slender, smooth, grey striate, towards apex with tiny adpressed hairs, which are also present on the leaf buds. Leaves spirally arranged, coriaceous, glabrous, elliptical to slightly obovate-elliptical, $5-7 \times 13-17$ cm, apex abruptly bluntly acuminate (acumen

5—7 mm), base acute; upper surface somewhat bullate, glossy; midrib and primary nerves prominent, somewhat impressed, reticulation lax, obscure; lower surface paler, midrib prominent, lateral nerves 8—10 pairs, prominent, erect-patent, arcuate, the upper ones anastomosing near the margin; secondary nerves lax, prominulous; petiole up to 15 mm long, sulcate above.

Panicles axillary, very broad, 11 cm long, with few, up to 9 cm long slender branches; main peduncle very short, minutely, pulverulently grey-pilose. Flowers creamy, fragrant, 2 mm long, glabrous; tepals ovate, acute, equal in length. The two outer rows of stamens sterile, the inner ones fertile with extrorse anthers on distinct filaments; ovary glabrous.

TYPUS. — *F. D. F. N. 2796* (Record N. 5595) [K].

Related to *Licaria cayennensis*.

British Guiana. — 75 miles Bootica- Potara Rd., Wallaba forest on white sand, Nov., fl., *Forestry Dept. Field N. 2796* (Record N. 5595) [K].

13. *LINDERA CINNAMOMEA* Ridley

This species (Ridley in *J. Fed. Malay St. Mus.* 6: 173. 1915; *Fl. Malay Pen.* 3: 136. 1924) was based on a single collection: *Ridley 16124* [K] from Gunung Tahan; the specimen has undeveloped flower buds. It should be referred to *Neolitsea* as *N. cinnamomea* (Ridley) Kosterm., *comb. nov.*

14. *Litsea chewii**) Kosterm., *spec. nov.* — Fig. 5

Arbor mediocris foliis sparsis ellipticis vel ovato-ellipticis rigide coriaceis acuminatis basi acutis utrinque prominule gracile reticulatis, nervis supra planis, subtus prominentibus petiolis crassis faciebus inferioribus pilis minimis adpressis munitis, infructescentiis parvis glabris, fructu globoso magno cupula plana minima insidens, pedicello crasso.

Tree ca 10 m high, low branching; trunk rough, ca 30 cm diameter; branchlets covered with minute, adpressed grey hairs. Leaves spirally arranged, rigidly coriaceous, elliptical to ovate-elliptical, 8—12 × 20—24 cm, acuminate, base acute, both surfaces with rather faint, slender reticulation; upper surface smooth, the main nerves flat or slightly impressed; lower surface with a very minute tomentum of adpressed hairs, paler, midrib strongly prominent; lateral nerves 6—9 pairs, erect-patent, curved towards margin, prominent; petiole stout, glabrescent, 1—2 cm long. Young flush with a silky lower surface. Infructescence glabrous, 2—3 cm long,

*) Named after Dr. Chew Wee Lek, Botanical Garden, Singapore.

hardly or not branched. Fruit globular, reddish brown (fresh), smooth, up to 3 cm in diam.; pedicel 1 cm, thick, widened towards apex; cup pateriform, thin, ca 8 mm in diam.

TYPUS — *Chew, Corner & Stainton 166* [BO]

The label gives particulars about the flowers being umbellate, 3—4 in one inflorescence, enclosed by 3 bracts, each yellowish translucent. In the material at hand no flowers are present, but an immature infructescence, covered by adpressed minute hairs (also the pedicel).

North Borneo. — Mt. Kinabalu, Eastern shoulder, 6° 05' N, 116° 36—40' E, alt. 2100 m, July, fr., *Chew, Corner & Stainton 166* [BO, K].

15. *Litsea exsudens* Kosterm., spec. nov. — Fig. 6

Arbor foliis sparsis coriaceis obovatis usque ad late subspathulatis glabris apice breviter obscure acuminatis, basi acutis, supra nitidis, areolatis, nervis subimpressis, subtus pallidioribus, in foliis juvenilibus substantia alba obtectis, nervis lateralibus paucis, basalibus saepe adscendentibus, petiolis gracilibus; glomerulis solitariis pedunculis longis gracilibus insidentibus; bracteis involucrealibus 4, acutis; floribus glabris tubulosis, antheris ovalibus, exterioribus introrsis.

Tree, 8—25 m high and up to 33 cm in diameter, densely foliaged, common in forest substage layer, branches with round, small lenticels; branchlets glossy, darkbrown, smooth. Leaves spirally arranged, coriaceous, obovate to broadly subspathulate, 1.5—3 × 2.5—6 cm, glabrous, apex broadly, shortly, rather obscurely acuminate, base acute; upper surface glossy, smooth, pitted, midrib and basal lateral nerves slightly impressed; lower surface paler, in young leaves covered with a white substance, which wears off in older leaves (the same white substance covers the top of the branches, the young leaf buds and the youngest parts of the inflorescence, and is also present on the upper surface of young leaves), midrib strongly prominent; lateral nerves 2—3 pairs, slender, straight, arcuate near margin, the lower ones often ascending; leaf surface pitted, glossy, in the axils of the lower lateral nerves sometimes domatia, which show as bullae on the upper surface. Flower head single on a long and slender, up to 2 cm long, axillary peduncle. Involucreal bracts 4, concave, acutish, 3 mm long. Flowers glabrous, obconical in outline, 2 mm long; anthers in male flower oval, outer ones introrse on slender filaments protruding from the flower.

TYPUS. — *Brass 30304* [K]

Characterized by the pitted leaves with few lateral nerves, the solitary long stalked umbels and the white substance present on all juvenile parts.

New Guinea. — Eastern Highland Distr., Mt. Wilhelm, East slopes, alt. 2770 m, July, fl., *Brass* 30304 [K]; ca 5 miles W. Keglsugl airstrip, Chimbu Sub-distr., alt. 2500 m., Aug., buds, *Saunders* 795 [K] et 781 [K]; Chimbun Sub-distr., Kuru-nigl-bokwa, Kuaki R., above Toromambuno Mission, Aug., fl., *Pullen* 299 [K]; Woitape, Central Distr., alt. 1600 m, Aug., fl., *Corner & Gray* s.n. [K], this specimen has female flowers and does not show the characteristic white substance.

16. *Ocotea sandwithii* Kosterm., spec. nov. — Fig. 7

Arbor ramulis ferrugineo-pilosis, foliis sparsis, obovato-ellipticis vel ellipticis, rigide chartaceis, acuminatis, basi in petiolum contractis, margine revolutis, supra glabris nitidis nervis impressis, subtus glaucis, laxe pilosis; paniculis axillaribus brevibus, laxe pilosis; floribus tepalibus ovato-acutis aequalis, extus laxe pilosis; antheris ovalibus, exterioribus introrsis, interioribus partim extrorsis partim lateralibus, filamentis distinctis, staminodiis parvis, glandulis basalibus sessilibus magnis, ovario rudimento glabro.

Tree, 20 m high and 40 cm in diameter; branchlets covered with a rusty velvety short indumentum. Leaves spirally arranged, stiffly chartaceous, obovate-elliptical to elliptical, 4—7 × 6.5—11 cm; apex conspicuously, shortly, sharply acuminate, base contracted into the 1.5—2.5 cm long, densely, shortly, rusty-pilose petiole, margins revolute (the leaves concave); upper surface glossy, glabrous, main nerves impressed; lower surface glaucous, shortly, laxly pilose (denser on the nerves), midrib strongly prominent; lateral nerves 4—6 pairs, prominent, erect-patent, towards the margin arcuate; reticulation prominulous, dense, conspicuous. Panicles broad, dense, laxly, shortly pilose, up to 5 cm long; basal part (peduncle) very short; bracts caducous, bracteoles subpersistent. Flowers pale yellow; tepals ovate, acute, laxly pilose outside, 1.5—2 cm long, equal in length; anthers conspicuous (in male flower), oval, those of the outer 2 whorls introrse, of the inner whorl shorter, the lower cells lateral, the upper, smaller ones, extrorse, with very large sessile basal glands; filaments distinct, glabrous; staminodes 1—3, 1 mm long, consisting of a filament and a conical top; rudimentary ovary glabrous.

TYPUS. — *Wilson-Browne* S. J., *Field number* W. B. 14 (Record number 5981) [K].

The species is easily recognizable by its concave, glaucous leaves and the indumentum. Mr. N.Y. Sandwith (Kew) recognized it as an undescribed species.

British Guiana. — Komo Creek, Takutu R., Dec., fl., *Wilson-Browne*, S. J., *Field number* W. B. 614 (Record number 5981) [K]; Western extremity of Kanuku

Mts, in drainage of Takutu R., alt. 250 m, dense forest, March, buds, A.C. Smith 3113 (K, NY).

17. *PERSEA CHRYSOBALANOIDES* Lundell

This species (in *Wrightia* 1(2): 151. 1946), based on the specimen Matuda 5582, represents a species of *Ocotea*; in the material at hand most flowers are abnormally developed, a common phenomenon in *Ocotea*. The leaf reticulation points definitely to *Ocotea* and not to *Persea*. I refrain from coining a new combination in *Ocotea*, as the species may be identical with a known species of *Ocotea*.

18. *Persea cuatrecasii* Kosterm., spec. nov. — Fig. 8

Arbor ramulis crassis foliis sparsis ellipticis rigide coriaceis obtusis vel obscure acutiusculis, basi rotundatis supra glabris nitidis subtus minute pilosis petiolis brevis; paniculis foliosis subglabris ad apicem ramulorum dispositis foliis aequilongis multifloris; floribus brevipedicellatis, glabris, tepalis subaequilongis ovalis, acutis; staminibus 6 exterioribus antheris magnis ovalibus, cellulis introrse spectantibus, filamentis pilosis antheris aequilongis; staminibus tres interioribus antheris elongatis, cellulis in parte laterali, in parte extrorsis, glandulis sessilibus distinctis; staminodiis conspicuis; ovario glabro, stigmate peltato.

Tree; branchlets stout, grey, smooth, glossy; the youngest branchlets with a brown, rather woolly tomentum. Leaves spirally arranged, rigidly coriaceous, elliptical, up to 12×24 cm, top obtuse or obscurely acutish, base rounded; upper surface smooth, glabrous, the main nerves somewhat impressed in sicco; lower surface pale with a rather lax indumentum of minute, rather twisted hairs; midrib strong, prominent; lateral nerves prominent, about 14 — 16 pairs, rather patent, and straight, curved at the margin; secondary nerves prominulous; reticulation rather obscure, dense. Petiole stout, ca 1 cm long, glabrous.

Panicles axillary, appearing with the new flush, up to 20 cm long, manyflowered, almost glabrous, but for rests of twisted hairs, leafy (leaves up to 2.5 cm long, narrow); peduncle stout, the lower part without branches; flowers glabrous, ca 5 mm high, merging into a short pedicel; tepals subaequal, about 2 mm long, ovate, acutish; outer 6 stamens with large, oval, truncate anthers with introrse, large cells; filaments broad, pilose, as long as the anthers; inner 3 stamens with slightly narrower stamens with extrorse-lateral cells and conspicuous glands; staminodes conspicuous, consisting of a sterile anther and a distinct filament; ovary glabrous, style short; stigma capitellate.

Fruit depressed globose, 3 cm in diam., 2 cm high, seated on the cylindrical thick pedicel, which shows the rather indistinct thickened tepals at the top.

TYPUS. — *Cuatrecasas 23562* [F].

Colombia. Dept. del Cauca, Cordilleras Central, vertiente oriental; region of Moscopan, Hoya del Rio San José, between Aguabonita and Candelaria, alt. 2280—2350 m, Jan., fl., fr., *Cuatrecasas 23562* [BO, F, NA].

19. PERSEA FILIPES Rusby

This species (Rusby in Bull. New York bot. Gard. 6: 505. 1910) of which the type specimen (no. 352) could be examined, represents *Ocotea*; as most of Rusby's species are "bad" ones, I refrain from coining a new combination.

20. PHOEBE GOALPARENSIS Hutch.

This species (Hutchinson in Kew Bull. 1916: 190), based on the specimen: *Kanjilal, Herb. Dehra Dun 5092* (isotype in K) is conspecific with *Phoebe hainesiana* Brandis (in Hook. Icon. Pl. 29: t. 2803. 1906); the differences as cited by Hutchinson have no specific value.

21. PHOEBE KERRII Gamble.

This species (Gamble in Kew Bull. 1913: 203), based on the specimen: *Kurz 2502* [K] is referrable to *Persea* as *Persea kerrii* (Gamble) Kosterm., *comb. nov.*

LEGUMINOSAE

1. *Crudia dewitii* Kosterm., *spec. nov.* — Fig. 9

Arbor mediocris ramulis minutissime adpresse pilosis, foliis bi-(vel raro uni-) foliolatis, petiolis parvis, foliolis ellipticis rigide chartaceis obscure acuminatis basi in petiolulum brevem contractis, supra glabris nitidis, costa impressa, subtus sparse minutissime pilosis; racemis axillaribus parvis, pedunculis et florum basi adpresse pilosis, bracteis minimis acutis; alabastris 2 mm longis, pedicellis 1 mm longis.

Tree 8 m high; branchlets slender, smooth, grey; branchlets with adpressed very small hairs. Leaves spirally arranged, 2-(or rarely 1-) folioled; petiole slender, glabrous, glossy, 4—5 mm long, ending in a 2 mm long stipe; petiolules 3 mm long; folioles rigidly chartaceous, elliptical,

7—11 × 3—5 cm, top obscurely acuminate, base contracted into the petiolule; upper surface glossy, glabrous, midrib impressed, lateral nerves very slender, prominulous; lower surface dull, covered with tiny, rather scattered adpressed hairs, midrib prominent, lateral nerves (main ones) ca 8—9 pairs, straight, rather patent, slender, at 5 mm from the margin arcuately anastomosing.

Racemes in the axils of the apical leaves, 2.5 cm long; peduncle and base of the flower adpressed pilose; bracts minute, acute; flower buds 2 mm long; pedicel 1 mm long.

TYPUS. — *Lam 854* [K]

The species is close to *C. subsimplicifolia* Merr. of the Philippines, bud differs by its pilose leaves and inflorescences. An additional specimen (*Brass 908*) has folioles of up to 6.5 × 16 cm, petioles of 1.5 cm long, petiolules of 5 mm and the stipe at the end of the petiole is longer and pilose; in other respects it does not differ from the type specimen.

New Guinea. — locality not indicated, Aug., buds, *Lam 854* [K]; Papua. Thu-Vailata R., tall tree, bark scaly, pale brown; wood hard, brown; pods flat, brown; inflorescence terminal on lateral shoots, *Brass 908* [K].

2. *Crudia papuana* Kosterm., spec. nov. — Fig. 10

Arbor, foliis sparsis glabris, bifoliolatis, petiolis brevibus, foliolis ellipticis usque ad sublanceolato-ellipticis, rigide coriaceis, obscure acuminatis, basi in petiolum contractis, reticulatione conspicua, infructescentiis parvis, leguminibus oblique ellipticis, planis, basin versus angustioribus, ferrugineis, laxe prominulo-reticulatis, seminibus solitariis, ellipticis.

Tree up to 25 m high; bark 1.25 cm thick, brown, smooth; blaze salmon red to white; sapwood white to red, stained; heartwood deepred. Branchlets slender, grey, smooth. Leaves glabrous with 2 folioles; petiole 4—8 mm long; petiolule 3—5 mm long, rather stout (in sicco black and transversally wrinkled), petiole ending into a slender, up to 2 mm long tip; folioles rigidly coriaceous, elliptical to sublanceolate-elliptical, 11—17 × 4—7 cm, rather obscurely acuminate, base contracted into the petiolule; reticulation dense, prominulous on both surfaces; midrib slightly prominent on upper, strongly prominent on lower surface, lateral nerves ca 9, straight, patent, slender, prominulous on both surfaces, at 4—6 mm from the margin arcuately anastomosing.

Peduncle of the infructescence 3 cm long, at its base with many tiny concave, ovate, acute bud scales (which are found also in the leaf axils);

pod dull pale brown, very laxly prominulously reticulate, obliquely elliptical, flat, 5.5×8 cm, base narrowed (the narrowed part may be up to 1.5 cm long but is lacking in the other specimens); seed one, elliptical, to slightly reniformous, up to 5×7.5 cm, consisting of a rather thin, red-brown, dull seedcoat and flat cotyledons, which inside show the same pattern as the shell of a bivalve.

TYPUS. — *McVeagh N. G. F. 8275* [K].

Womersley and Simmonds mention that the species was growing on a river bank, subject to daily inundation by high tide and that the seeds have a small aril.

New Guinea. — Papua, Western Div., Oriomo R., Dawson's sawmill, alt. 30 m., Jan., fl., *Womersley & Simmonds 5041* [K]; Oriomo R., 40 miles from the coast, rare tree, May, fr., *McVeagh N.G.F. 8275* [K].

STERCULIACEAE

1. *BRACHYCHITON CARRUTHERSII* F. v. M. — Fig. 11 a et b.

This species (F. v. Mueller in Victor. Naturalist 3: 50. 1886) was based on a flowering specimen (*Forbes 476, 904*).

Another record of a flowering specimen: *Carr 16211* from Kokeda, Papua, alt. 400 m [BO] and a fruiting specimen: *Carr 12639* [SING] from Koitake, alt. 500 m, confirms von Mueller's assumption that the species belongs in *Brachychiton*.

The obliquely ellipsoid fruit is 15 cm long and 7 cm wide and about 6 cm thick, olive-ochre in colour with a short broad tip, on an $1\frac{1}{2}$ cm thick, 2 cm long stalk-like basal part; the fruitwall is about 1 cm thick, the inside is densely covered by short brushes of stellate hairs; the seeds, pressed together are obconical, angular, densely rusty stellate pilose, 2 cm long.

Papua. — Koitaki, alt. 500 m, June, fr., *Carr 12639* [SING], tree 25 m tall; Kokeda, alt. 400 m, March, fl.; flower deep cream, suffused reddish, ochre at base, crimson inside, *Carr 16211* [BO].

2. *Firmiana rubriflora* Kosterm., *spec. nov.* — Fig. 12

Arbor parva, foliis palmatinerviis, subtrilobis, suborbiculatis glabris (axillis nervorum validorum subtus pilosis exceptis), utrinque in sicco conspicue areolatis; inflorescentiis parvis paniculatis densissime flavo stellato-pilosis ramificationibus ulterioribus pilis atro-rubris dense obtectis;

floribus tubulosis, dense rubro-pilosis; ♂ floribus androgynophoro calyce longiore sparse piloso, antheris irregulariter glomeratis; floribus femineis ovariis 5 glabris conglutinosus, stylo gracili, apicem versus diviso, brachiis 5 rubris filiformibus, stigmatibus minimis capitellatis.

Deciduous tree, ca 4—8 m high; branchlets grey, smooth, longitudinally superficially wrinkled. Leaves chartaceous, suborbicular, slightly 3-lobed, broader than long, very variable in size (11 × 10 cm and up to 21 × 20 cm), palmatinerved, glabrous, except hair bundles in the axils of the basal and secondary nerves of the lower surface, both surfaces in dried condition densely, prominulously areolate; basal nerves 6, straight, prominulous on upper surface, prominent on lower one (the lowest pair arcuate), midrib with one pair of arcuate lateral nerves (in the larger leaves up to 3 pairs); petiole of the smaller leaves 11 cm, of the larger ones up to 26 cm long.

Panicles short (1 cm), lateral and apical on the bare branches; main peduncle with a dense layer of yellow, stellate hairs, the ramifications (5 mm long) with dark-red stellate hairs. Flowers red, tubular to narrowly funnel-shaped, up to 15 mm long, covered with a dense layer of tiny bundles of stellate hairs; calyx lobes teeth-like, triangular, acute, 3 mm long; androgynophore slightly longer than the calyx, slightly pilose; in male flowers the anthers in an irregular clump; in female flowers 5 conglutinous, glabrous ovaries with a single, filiform, red, 1.5 mm long, glabrous style, which divides into 5, one mm long filiform red arms with tiny, red, capitellate stigmas; base of ovaries surrounded by large, sterile, irregularly placed anthers.

TYPUS. — *Kerr 18918* [K].

Related to *F. kerrii* (Craib) Kosterm. but this has white flowers and glabrous leaves.

Siam. — Kaw Pipi-le, Krabi, alt. 50 m, rocky limestone, April, fl., *Kerr 18918* [BO, K]; Kaw Kalut, Panj-nja, alt. 10 m, March, fl., *Kerr 17319* [K].

3. *HERITIERA FISCHERI* Regel & Rach.

Heritiera fischeri Regel & Rach, Ind. Sem. Hort. Petropol. 45. 1858; Walpers Ann. 7: 421. 1868 (nomen); Kostermans, Publ. 1, Council Sciences Indonesia 73. 1959 et in Reinwardtia 4: 536. 1959 represents *Heritiera macrophylla* Wall. ex Kurz. The type specimen could be examined in the Leningrad Herbarium; the provenance of the type specimen was a cultivated plant in the Botanical Garden of Leningrad.

4. *Pterocymbium macranthum* Kosterm., *spec. nov.* — Fig. 13

Arbor magna decidua, foliis chartaceis late ovatis basi cordatis, apice acuminatis vel obscure acuminatis, supra glabris, costis pallidis, subprominulis, subtus laxe breve pilosis, nervis basalibus 6, nervis lateralibus utrinque 6—7, erecto-patentibus, petiolis longis glabris; inflorescentiis subapicalibus virgatis glabris, rigidis; floribus campanulatis pro genera magnis, rubris, calycis lobis distinctis, androgynophoro laxe piloso antheris in anulum dispositis.

Deciduous tree up to 50 m high and 1.5 m in diameter; bark brown, coarsely fibrous and streaked reddish brown when cut; branchlets glabrous, thick, grey, striate-sulcate, the young flush with numerous, concave, ovate, acuminate, densely, minutely pilose, 5 mm long bud scales at base. Leaves chartaceous, broadly ovate, often with a "shoulder" where the longest basal nerves reach the margin, up to 12 × 17 cm, base cordate, apex acuminate or obscurely acuminate; upper surface glabrous; nerves pale, equal with the surface or slightly prominulous; lower surface more dull, laxly, shortly pilose, midrib strongly prominent; basal nerves 6, prominent; lateral nerves 6—7 pairs, straight, erect-patent, arcuate at margin, prominent; secondary nerves prominulous, laxly reticulate; petiole up to 9 cm long, glabrous.

Inflorescences virgate, glabrous, stiff, up to 9.5 cm long with few, distant ramifications (which show large scars of bracts at their base). Flowers funnel-shaped, orange-red or orange, up to 3 cm long and 2 cm diameter at apex; calyx lobes 6 mm long, triangular, acutish, margin papillose; androgynophore laxly, minutely pilose; anthers in a regular ring; pedicel slender, 6—8 mm long, broadened at apex and there articulately attached to the stalk-like, 4 mm long base of the flower.

TYPUS. — *Parkinson 5218* [K]

Easily recognizable by its large, funnelshaped, orange or orange-red flowers and the pilose lower leaf surface.

VERNAC. NAMES. — Paw kadeng or Paw khiliet (Chiengmai).

Burma. — Amherst District, Mekkrein Chaung, Dawnas, alt. 900 m, Febr., fl., *Parkinson 5218* [BO, K]; Siam. — Kao Rijai, Kanburi, alt. 800 m, Jan., fl., *Kerr 10351* [K]; Chiengmai, Chieng Dao, alt. 430 m, Febr., fl., *Winit 1863* [K]; hills between Muang Prow and Doi Chieng Dao, alt. 700 m, March, fl., *Kerr 1043* [K]; locality not indicated, *Smitinand 4385* [K].

5. *Pterospermum pecteniforme* Kosterm., spec. nov. — Fig. 14

Arbor mediocris, ramulis lepidotis; foliis sparsis ellipticis vel ovato-ellipticis, chartaceis, breve acuminatis, basi subacutis vel subcordatis, supra glabrescentibus, nervo mediano costisque subimpressis; subtus densissime argenteo-lepidotis, petiolis sulcatis dense lepidotis; fructibus ellipsoideis, marginibus post dehiscentiam undulatis.

Tree, 10—20 m high; branches grey, striate; the younger branchlets covered with a dense layer of tiny, fimbriate, silvery scales. Leaves spirally arranged, elliptical to ovate or obovate elliptical, 7.5—9.5 × 4—5 cm, chartaceous, apex shortly acuminate, base acutish to subcordate; upper surface with few microscopical, fimbriate scales, glabrescent, midrib and lateral nerves slightly impressed, reticulation dense, prominulous; lower surface silvery, covered with a dense layer of tiny, fimbriate scales, midrib prominent, lateral nerves 7—9 pairs (the 2 lower pairs starting at the petiole insertion), arcuate at margin, slender, prominent; secondary nerves thin, parallel; reticulation invisible. Petiole sulcate, densely lepidote, up to 1 cm long. Infructescence 3 cm long, fruit ellipsoid, glabrous, up to 7 cm long and 4 cm in diameter; ribs 8 mm high, after dehiscence "scalloped".

TYPUS. — *Put 674* [K]

The species is outstanding by the wavy (scalloped) margins of the valves of the opened fruit.

Siam. — Kaw Samui, May, fr., *Put 674* [K]; Kaw Jai, Surat, alt. 1200 m, Apr., fr., *Kerr 12706* [K]; Kao Taung, Krabi, alt. 150 m, nomen vernac: "Yu", fr., *Kerr 18628* [K]; Kao Pipi, Krabi, alt. 50 m, Apr., fr., *Kerr 19402* [K].

TILIACEAE

1. *Brownlowia grandistipulata* Kosterm., spec. nov. — Fig. 15

Arbor ramulis strictis cinereis foliis sparsis ellipticis coriaceis subtus sparse minutissime fimbriato-lepidotis, basi rotundatis, (parte apicali in specimine a me observato deficiente), utrinque prominulo-reticulatis, nervis basalibus 4; costis utrinque 4; petiolis crassis, longis; stipulis sessilibus permagnis, oblique ovato-ellipticis, prominule reticulatis, costis et nervis basalibus irregularibus; infructescentia subindivisa crassa, ramificationibus minutis, paucis crassis, fructibus depresso-globosis, irregulariter undulato-costatis.

Tree, 25 cm in diameter, branchlets stout, grey, stiff. Leaves spirally arranged, coriaceous, elliptical, 14 × 33 cm, base rounded, apex not present

in the specimen at hand; upper surface glabrous, glossy, midrib and lateral nerves strong, prominent, secondary nerves horizontal, prominulous, venation rather obscure; lower surface paler, glossy, on the veins and veinlets very small, fimbriate scales, midrib strongly prominent; basal nerves 4 (the outer pair small), the 4 pairs of lateral nerves prominent, arcuately running out at the margin, secondary nerves conspicuous, reticulation prominulous. Petiole stout, 5—7 cm long, thickened at both ends. Stipules very large, obliquely ovate-elliptical, 3.5×5.5 cm, often concave, top obtuse, base rounded, prominulously reticulate on both surfaces, lateral and basal nerves rather irregular, prominent; upper surface glabrous, lower one with microscopical, fimbriate scales on the nerves.

Infructescence terminal, stout (thickened towards apex), 5—7 cm long covered with tiny, shortly fimbriate scales. Fruit depressed-globose, grey, densely covered by tiny, long-fimbriate scales, 2 cm in diameter, 1 cm high, with many, small, irregular, warty ribs (2 mm high); splitting into two halves.

TYPUS. — *Esmi*, *F. D.* 1473 [K].

Characterized by the almost glabrous leaves and the large stipules.

Borneo. — Sarawak. Miri, riparian forest, July, fr., *Esmi F. D.* 1473 [K, L, SING].

2. *BROWNLOWIA HELFERIANA* Pierre, *descript. emend.* — Fig. 16

Of this species three more collections were discovered of which one (wrongly identified as *Pterospermum*) has mature fruit.

Pedicel 5 mm long; calyx tube 4 mm high, cup-shaped, lobes 2 mm, ovate, acute; petals spathulate, 5 mm long, unguiculate; stamens almost free, 6 mm long; staminodes lanceolate, as long as ovary; ovary densely lepidote, 2—3 mm, style almost glabrous, 6 mm long, stigma peltate. Infructescence up to 25 cm long on a stout peduncle, branches short, thick, fruit densely stellate-lepidote (dense, round bundles of hairs) brown, shaped like a golf stick, up to 22×26 mm.

Malay Peninsula. — 7th mile Ampang, Selangor, July, fr., *Strugnell F. D.* 11189 (SING); Siam. — Peninsular, Nakorn Srithamarat, Rawn Chibul, alt. 300 m, common in evergreen forest, flowers pinkish, scented; tree 20 m tall, 30 cm diameter, March, fl., *Sanan Thaworn* 664 [BO, BKF]; Chawng, Forest Station, west of Phatthalung, evergreen forest, alt. 1—200 m, sterile, *Sörensen, Larsen & Hansen* 640 [BO, C]; Tung Song, Febr., buds, *Put* 2380 [BO, K].

3. *Brownlowia ovalis* Kosterm., *spec. nov.* — Fig. 17

Arbor, foliis sparsis rigide coriaceis glabris, ovalibus, apice subacuminatis basi rotundatis vel subcordatis, supra nitidis, subbullatis, subtus subnitidis in nervo mediano basin versus sublepidotis, costis utrinque 4; petiolis longis, parte mediana glabra, basi apiceque incrassatis lepidotis; paniculis terminalibus, lepidotis, alabastris globosis acutis fimbriato-lepidotis.

Tree up to 25 m high and 40 cm in diameter; branchlets grey, smooth. Leaves spirally arranged, rigidly coriaceous, oval, 13–19 × 8–11 cm, top very shortly acuminate, base rounded or slightly cordate; upper surface glossy, main nerves prominulous, secondary veins slightly impressed, making the surface somewhat bullate, lower surface less glossy, glabrous or sometimes with a few tiny fimbriate scales on the basal part of the midrib; midrib strongly prominent, lateral nerves 4 pairs (the lowest pair starting at the petiole insertion, ascending), prominent; secondary nerves lax, parallel, prominulous, reticulation lax, prominulous. Petioles 4.5–8 cm long, the middle part glabrous, the two swollen ends with a dense layer of minute, somewhat fimbriate, grey scales.

Inflorescence not complete in the type specimen, terminal, stout, with a dense layer of tiny fimbriate scales, which become longer-fimbriate towards the ultimate ramifications; flower buds globose, acute, densely fimbriate-scaly; pedicel stout, up to 4 mm long, subtended by an ovate-lanceolate, lepidote bract.

TYPUS. — *Bujang F.D. 12576* [K]

The characteristic features of this species are the shape of the leaves, the long petioles and the lack of scales on the lower leaf surface.

The label indicates that the flowers are bright orange, but in the Kew material only buds are present. The thick pedicels suggest *Brownlowia* rather than *Pentace*, the ovaries are too young to make sure.

In some of the sterile material, enumerated below, the leaf tip may be up to 3 cm long and is very conspicuous, but short-tipped leaves are also present. In this sterile material the largest leaves are 11.5 × 16 cm and 11 × 20 cm; the petioles vary between 4 and 7 cm.

Borneo. — Sarawak. Arboretum Semengoh Forest Reserve near Tree no. 64, alt. 100 m, June, in bud, *Bujang F.D. 12576* (A, BO, K, L, SING).

Indonesian Borneo. — Berouw, Betemuaer, alt. 50 m, *bb. 18936*, ster. (BO, L); *18929*, ster. (BO, L); *18954*, ster. (BO).

4. *BROWNLOWIA PURSEGLOVEI* Kosterm.

This species (Kostermans in Gard. Bull. S.S. 17: 1—3, fig. 1. 1958), based on the specimen *Purseglove* P. 4662 from Mt. Pueh in Sarawak, is conspecific with *Jarandersonia paludosa* Kosterm. The latter consequently should be renamed: ***Jarandersonia purseglovei*** (Kosterm.) Kosterm. (basionym: *Brownlowia purseglovei* Kostermans, l.c.).

5. *Burretiodendron umbellatum* Kosterm., *spec. nov.* — Fig. 18

Arbor, foliis sparsis apicem ramulorum congestis subovatis chartaceis crenulatis glabris, acuminatis, basi cordatis, penninervis, petiolis distinctis; inflorescentiis subterminalibus foliis brevioribus, dense stellato-lepidotis, floribus pedicellatis umbellulatis, sepalibus ovatis acutis sparse lepidotis, petalis membranaceis glabris, staminodiis ligulatis, staminibus in floribus foemineis brevis subfasciculatis, ovario dense stellato-lepidota, 5-alata; styli 5; androgynophorio distincto.

Tree, branchlets near apex densely stellate-lepidote, the apical buds moreover with long-armed stellate hairs; branches rough, grey, glabrous. Leaves spirally arranged, chartaceous, ovate or ovate-elliptical, 5—7 × 9—13 cm, glabrous, apex obscurely acuminate, base cordate, margin crenulate, both surfaces densely, obscurely reticulate, main nerves on upper surface hardly prominent, on lower surface prominent, lateral nerves ca 6 pairs, rather erect, straight, basal nerves not well developed; petiole 6—11 mm, lepidote, glabrescent, swollen at apex.

Inflorescences pseudo-terminal, stellate-lepidote, up to 6 cm long, consisting of a short main peduncle and branching more or less pleiochasically. Flower buds acuminate; pedicel slender, 3—4 mm long; bracts none; sepals ovate, acute, lepidote outside, up to 5 mm long; petals membranaceous, elongate-spathulate, up to 7 mm long, glabrous; androgynophore 2—3 mm long, slender, sparsely stellate-lepidote. Stamens in female flower about as long as the ovary, hardly connate; anthers large; ovary 1.5—2 mm long, very densely stellate-lepidote, 5-ribbed; pressed to the cavities between the ribs are the ligulate staminodes, which are as long as the ovary. Styles 5, slender, as long as the ovary; stigmas inconspicuous.

TYPUS. — *Put 3080* [BO]

Related to *B. brilletii* by its leaf nervation.

Sia m. — Saraburi, Muak Lek, June, fl., *Put 3080* [BO, K].

6. BURRETIODENDRON YUNNANENSE Kosterm.

This species represents *Craigia yunnanensis* Smith & Evans, of which the fruit thus far was unknown.

7. COLUMBIA GAMOSEPALA Turcz.

Columbia gamosepala (Turczaninov in Bull. Soc. Natural. Moscou 36 (1): 575. 1863; *Brownlowia gamosepala* (Turcz.) Burret), of which I had the opportunity to examine the type specimen (*Wallich s.n.*, e Hort. Calcut.) in the Kiev Herbarium is — as I mentioned in my monograph on *Brownlowia* (Communic. Forest Research Inst. Bogor 73: 13. 1961) — identical with *Brownlowia elata* Roxb.

Turczaninov's specimen was from a cultivated plant in the Calcutta botanic Garden and represents either *Wallich* 1535 or 1178.

8. *Jarandersonia spinulosa* Kosterm., spec. nov. — Fig. 19

Arbuscula, ramulis lepidotis et pilosis, stipulis aciculatis strigosis et lepidotis, foliis sparsis, ellipticis usque ad obovato-ellipticis rigide chartaceis, apice conspicue acuminatis, basi rotundatis, supra glabris, subnitidis, nervis majoribus impressis, subtus opacis, densissime, minute lepidotis, costis plurimis, basalibus subascendentibus, infructescentibus lateralibus, rigidis, dense lepidotis et pilosis, calycibus depressis, cylindricis, lepidotis petalis spathulatis, staminibus fasciculatis fructibus globosis, dense spinulosus.

Shrub; branchlets grey, glabrous, striate; branchlets of the new flush with long, rusty bristles, interspaced by short bristles and scales. Stipules aciculate, up to 7 mm long, strigose. Leaves spirally arranged, rigidly chartaceous, elliptical to obovate-elliptical, 10—20 × 3—7 cm; base rounded, apex conspicuously acuminate ending into a sharp tip; upper surface glabrous, slightly glossy, midrib and the thin lateral nerves impressed; lower surface dull, covered with a dense layer of microscopical long-fimbriate scales with a few larger scales (and less fimbriate) on the nerves; midrib strongly prominent; lateral nerves 7—13 pairs, prominent, the upper ones arcuately connected at some distance from the margin; secondary nerves and veins very slender, prominulous; lower pair of lateral nerves almost at petiole insertion, somewhat ascending. Infructescence stiff, lateral (?), covered with the same indumentum as the younger branchlets, 11 cm long, with a 7.5 cm long, basal bare part and a few branches (the lowest up to 2 cm long); calyx (under the young fruit) depressed, 3 mm in diameter, covered with shortly fimbriate scales, topped

by a few, larger, long-fimbriate scales. Petals spatulate, 4—5 mm long, obtuse; stamens in fascicles, 4 mm long.

Fruit globose, ca 3 cm in diameter, covered with long, slender spines, the spines having in their turn small spines, which end in a strigose hair.

TYPUS. — *Ridley s.n.* [K].

The specimen, originally referred to *Mallotus*, was later referred to Sterculiaceae, where I found it. It differs from *J. purseglovei* by its thinner leaves with a different indumentum, stipules, indumentum of the inflorescence and the peculiar branched spines of the fruit.

Borneo. — Sarawak, locality not indicated, fr., *Ridley, s.n.* [K].

9. *Microcos longipetiolata* Kosterm., *spec. nov.* — Fig. 20

Arbor foliis sparsis ovato-ellipticis rigide chartaceis, obliquis, apice acuminatis vel acutis, basi rotundatis vel in petiolum glabrum longum contractis, costis paucis prominentibus; inflorescentiis laxe paniculatis, stellato-pilosis, bracteis concavis ovatis persistentibus, alabastris dense stellato-tomentellis.

Tree, up to 20 m high, buttresses 0.5×0.5 m; outer bark dippled, grey brown dull ochre; inner bark dull yellowish ochre; sapwood striped, pale yellowish ochre; branchlets grey, smooth, sulcate. Leaves spirally arranged, congested near apex of branchlets, glabrous, rigidly chartaceous, ovate-elliptical to obovate-elliptical, unequal, $11-19 \times 4.5-9$ cm, apex acute to acuminate with a sharp tip, base rounded or contracted into the slender, glabrous, 5—8 cm long petiole (which has in sicco a dark, thickened, apical part of 3—9 mm and a rather obscurely thickened base); both surfaces glossy and prominulously, very finely reticulate, midrib and the 3—4 rather steep lateral nerves (of which two are basal) prominent on both surfaces, pale, arcuate; secondary nerves slender, parallel.

Inflorescence axillary, laxly paniculate, up to 18 cm long, covered with brown, small slender, stellate hairs; the tomentum increasing in density towards the ultimate ramifications; bracts concave, ovate, acute, up to 2 mm long, densely, minutely stellate-pilose. Flower buds (young) densely, grey stellate-tomentellous, 5-ribbed.

TYPUS. — *San 19494* [K]

In the material at hand one young flowerbud was present, which made it possible to identify the genus.

Brit. N. Borneo. — Tawao, Tawao R. forest Res., alt. 200 m, July, fl., *Meyer San 19494* [K].

10. *PENTACE PALUDOSA* Kosterm.

After having completed a revision of the genus *Pentace*, I feel, that *P. paludosa* should be referred to *Brownlowia*, although the fruit are still unknown. It is related to *Brownlowia emarginata* Pierre.

Brownlowia paludosa (Kosterm.) Kosterm., *comb. nov.* (basonym: *Pentace paludosa* Kosterm. in Reinwardtia 5: 237, t. 3. 1960).

Additional material: Si a m. — Chantaburi, alt. 200 m., May, fl. white, tree 15 m. Kerr 21338 (BO, K); Ta Utem Nakawn Panom, alt. 200 m, tree 8 m, May, fls. white, Kerr 21376 [BO, K].

11. *Trichospermum morotaiensis* Kosterm., *spec. nov.* — Fig. 21

Arbor ramulis stellato-pilosis, foliis sparsis ovato-ellipticis usque ad ellipticis, rigide chartaceis, apice breve acuminatis basi cordatis vel rarius truncatis, facie superioribus glabrescentibus, inferioribus stellato-pilosis, costis subpaucis basalibus ascendentibus, stipulis falcatis lanceolatis usque ad ovatis acutis, conspicuis, infructescentiis axillaribus, fructibus dense stellato pilosis ovatis compressis, seminibus longe strigosis.

Tree up to 17 m high and 30 cm in diameter; branchlets densely stellate-pilose. Leaves spirally arranged, stiffly chartaceous, ovate-elliptical to elliptical, 13—15 × 8—17 cm, apex obscurely, shortly acuminate, base cordate (rarely truncate); upper surface sparsely, minutely stellate-pilose on veins, glabrescent (except on main nerves), main nerves slender, prominent; lower surface dull, stellate-pilose (especially on the veins), basal nerves ascendent, like the midrib and the 4 pairs of erect-patent, at margin arcuate, lateral nerves prominent, secondary nerves parallel, prominent. Stipules falcate, lanceolate or ovate, up to 10 mm long. Infructescences axillary, up to 10 cm long, having a rather slender main peduncle, branching subumbel-like into up to 2 cm long ramifications, which in turn bear the fruit in clusters of 2—4. Pedicel slender, 3—5 mm long; capsule very densely stellate-pilose (indumentum consisting of a mixture of long-armed stellate hairs and short brush-like hair-bundles), ovate, thin (parchment-like) compressed laterally, 7—10 mm long and almost as wide, slightly apiculate, dehiscent into two valves; seeds with up to 5 mm long bristles.

TYPUS. — *Pleyte 159* [K].

A common species on Morotai island, distinguishable especially by its leaf characters and small fruit.

East Indonesia. — Morotai, Sangowo R., alt. 350 m, May, fr., *Kostermans 1429* [BO, K, L.] et *1405* (BO, K, L); Totodoku (Tobelo), May, fr., *Kostermans, bb.*

43371 [BO, K, L.] et May, fr., *Kostermans 684a* [BO, K, L.]; Halmaheira, Village Coal, alt. 100 m, Sept., fr., *Pleyte 159* [BO, K, L.]

VERBENACEAE

Teijsmanniodendron simplicoides Kosterm. *spec. nov.* — Fig. 22

Teijsmanniodendron simplicifolium, var. *kostermansii* Moldenke in *Phytologia* 4: 17. 1952.

Arbor mediocris ramulis strictis gracilis, griseis, glabris ad nodis in crassatis, ramulorum ulteriorum ferrugineo-pilosum, foliis simplicibus, oppositis rigide coriaceis glabris ovato-lanceolatis longe acuminatis basi rotundatis, petiolis dense pilosis.

Tree up to 26 m high, with 18 m free bole and 45 cm in diam. Branches slender, stiff, grey, smooth, glabrous, thickened at the nodes; branchlets with a rusty indumentum of stiff hairs. Leaves simple, opposite, ovate-lanceolate to elliptic-lanceolate, glabrous, stiffly coriaceous, usually long-acuminate, base rounded, 2.5—5 × 6.5—13 cm, upper surface smooth with prominulous midrib and very slender (often somewhat impressed) lateral nerves; lower surface with lax, prominulous reticulation, midrib and the slender, strongly arcuate ca 4 pairs of lateral nerves prominent. Petioles 5—10 mm, hirsute, swollen at both ends.

TYPUS. — *b.b. 19034* [BO]

In my monograph of the genus *Teijsmanniodendron* (in Reinwardtia 1: 96. 1951) I remarked already, that this species was close to *T. simplicifolium* Merrill, but differed by the tomentum on the young branchlets and petioles.

Moldenke considered it a variety of that species (*T. simplicifolium*, var. *kostermansii* Moldenke). He included also the specimen *Endert 3625*, which, however, is certainly the true *T. simplicifolium*.

Although still no fertile material is available, the number of collections warrant description.

Borneo. — Indonesian East Borneo, Bulungan, Salimbatu, Tumah R., alt. 150 m, *bb. 11204* [BO, L.]; *ibid.*, Betemuaer, alt. 25 m, *bb. 19034* (BO, L.); North Borneo, Sandakan, Sepilok For. Res., Sample plot 17, Tree 165, *Meyer, San 19280* [BO, L].



Fig. 1. — *Cryptocarya albida* Kosterm.

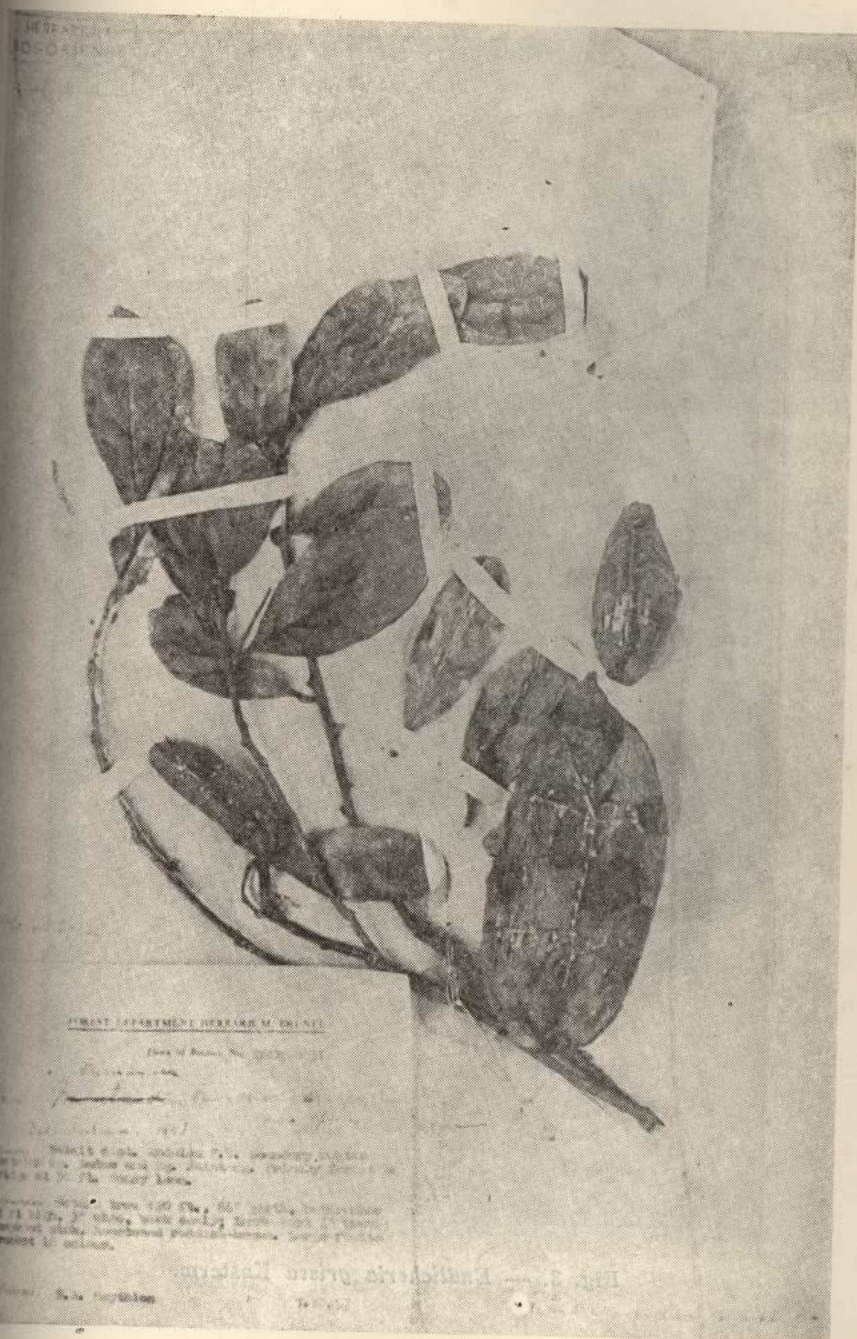


Fig. 2. — *Endiandra cusideroxylocarpa* Kosterm.



Fig. 3. — *Endlicheria grisea* Kosterm.

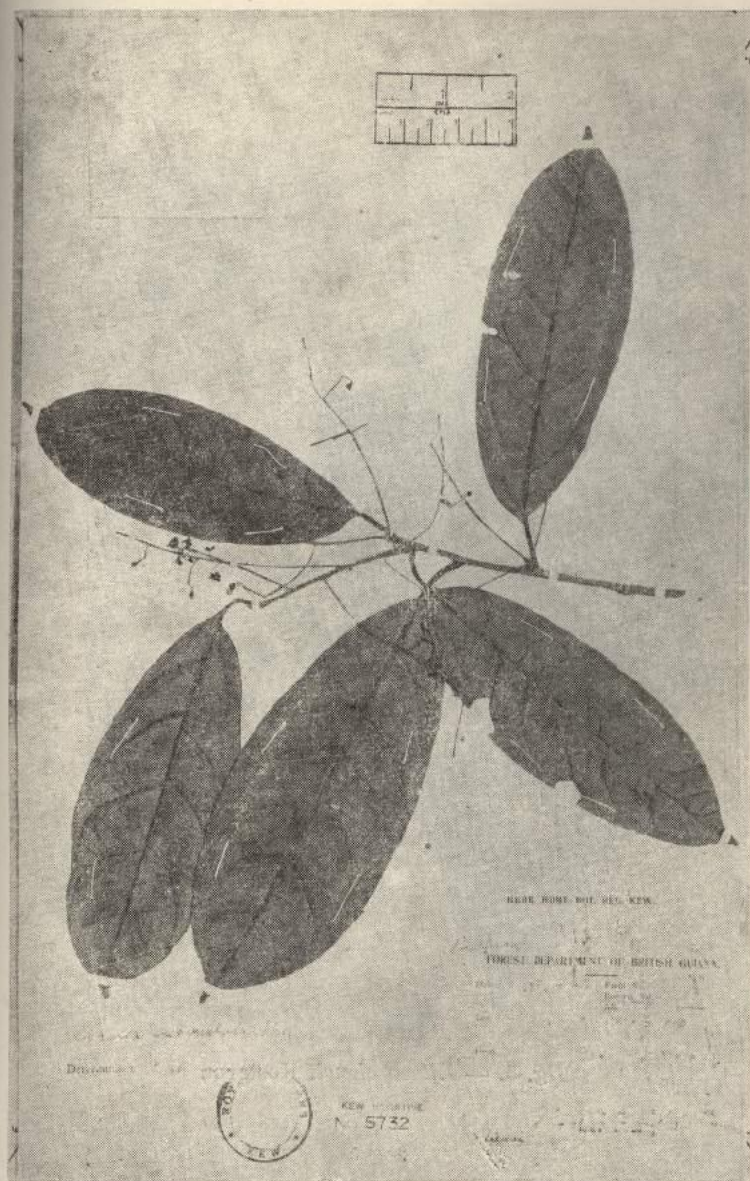
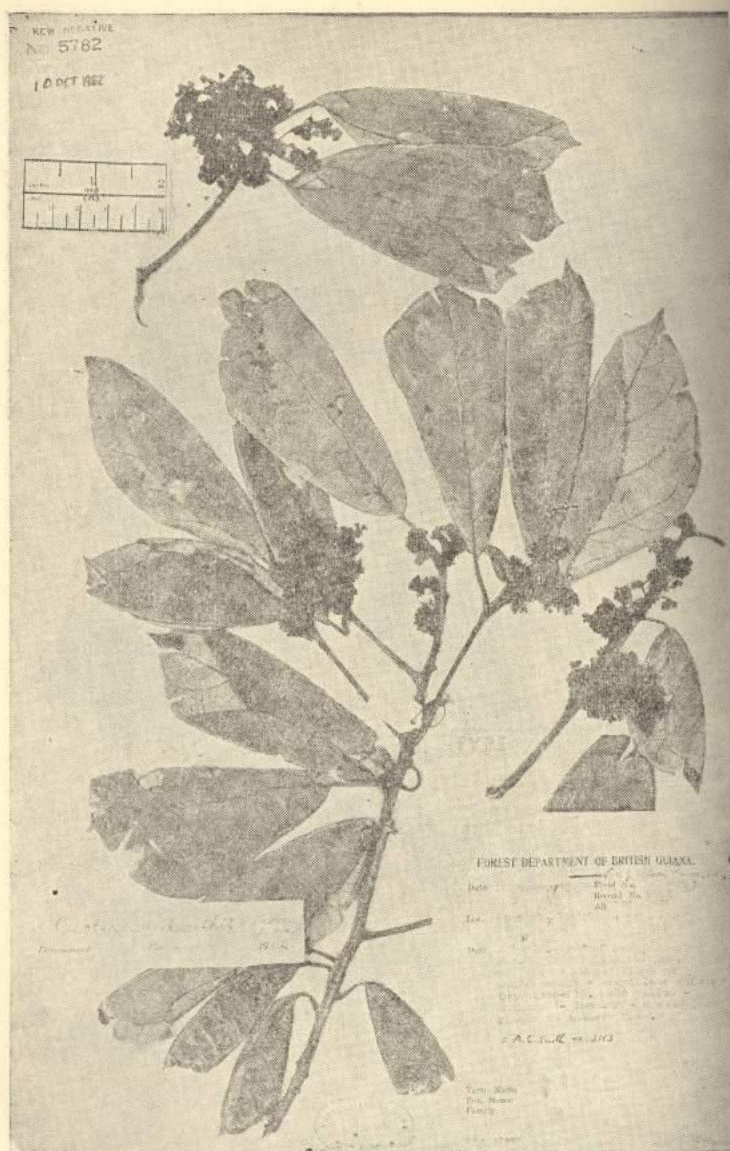
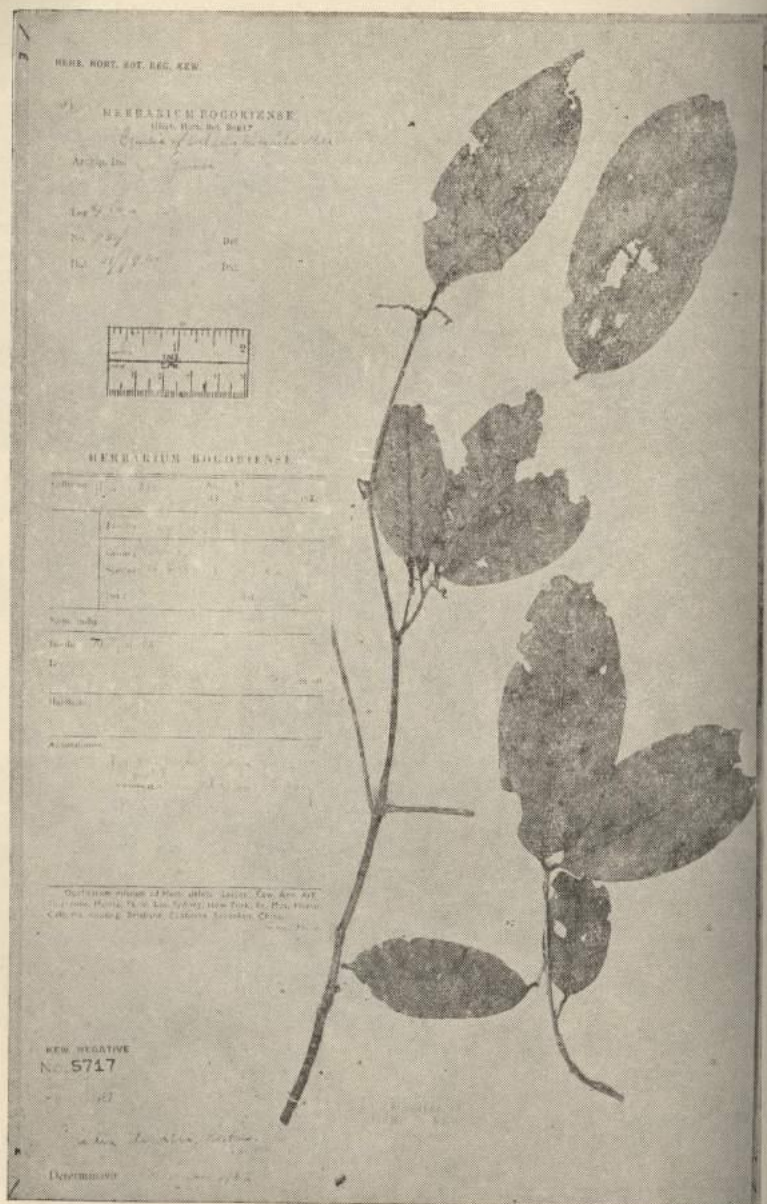


Fig. 4. — *Licaria subbullata* Kosterm.

Fig. 6. — *Litsea exsudans* Kosterm.



Fig. 9. — *Crudia dewitii* Kosterm.

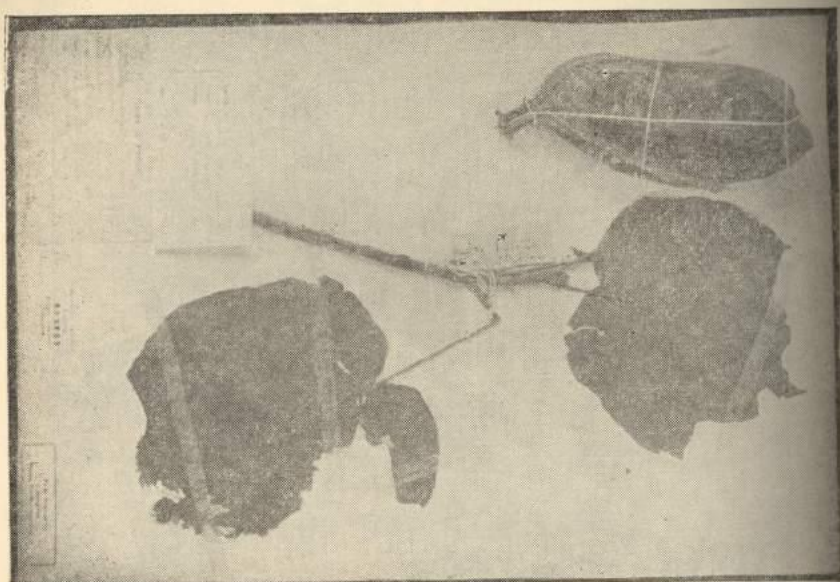
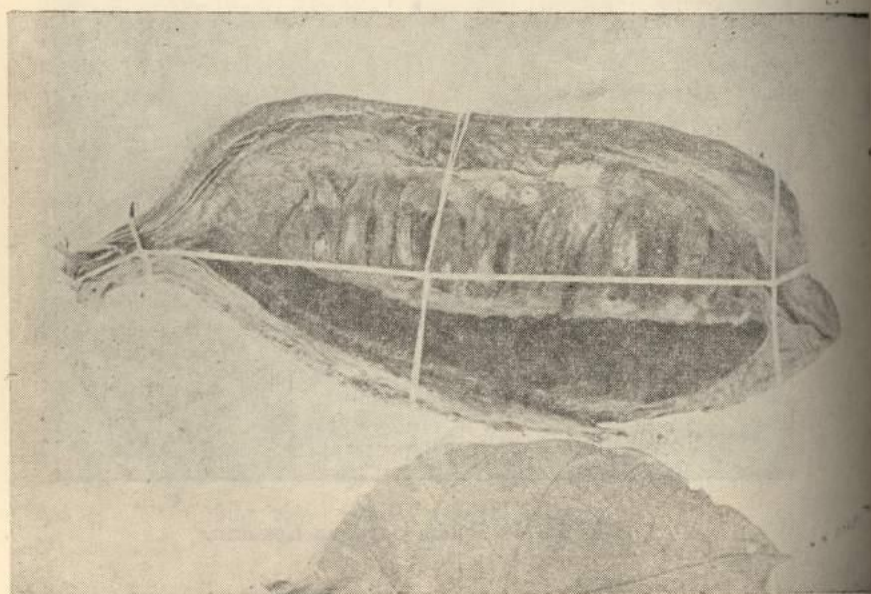


Fig. 11 a et b. — *Brachyctenium carruthersii* F. v. M.



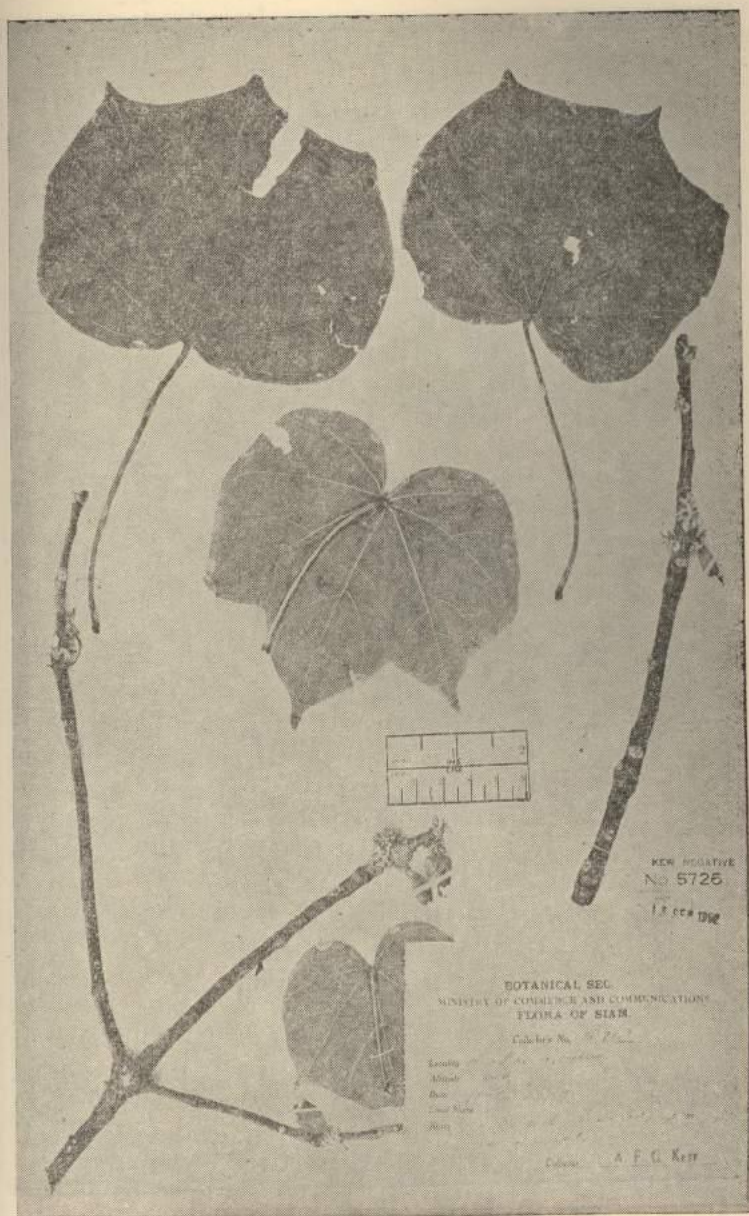


Fig. 12. — *Firmiana rubriflora* Kosterm.



Fig. 13. — *Pterocymbium macranthum* Kosterm.



Fig. 16. — *Brownlowia helferiana* Pierre



Fig. 17. — *Brownlowia ovalis* Kosterm.

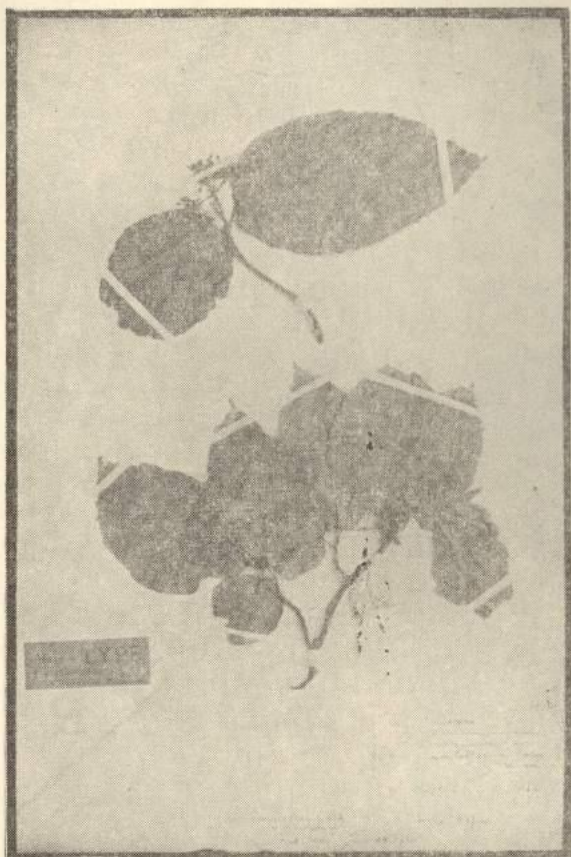


Fig. 18. — *Burretiodendron umbellatum* Kosterm.



Fig. 19.— *Jarandersonia spinulosa* Kosterm.



Fig. 21. — *Trichospermum morotaiensis* Kosterm.

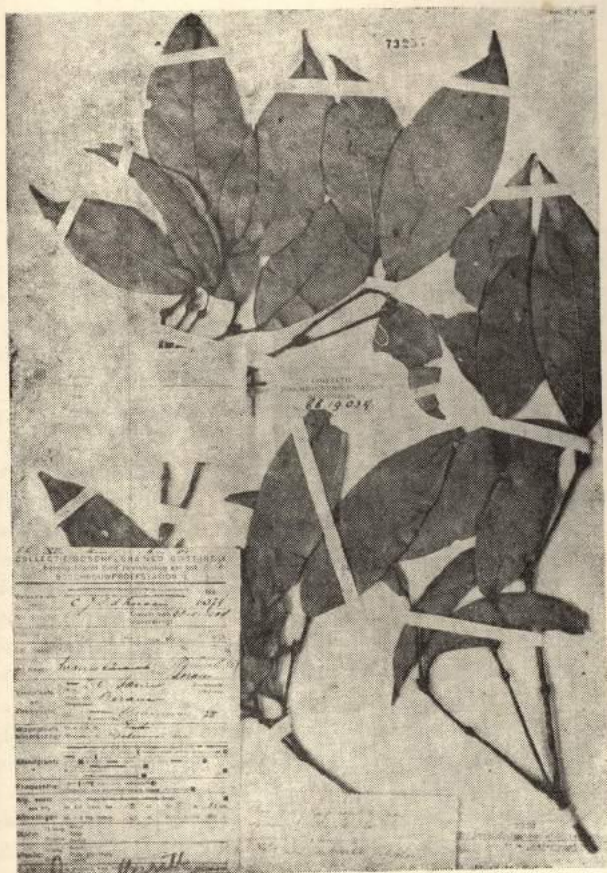


Fig. 22. — *Teijsmanniodendron simplicoides* Kosterm.