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MATERIALS FOR A REVISION OF LAURACEAE II

A. J. G. H. KOSTERMANS *

SUMMARY

New species are described in *Actinodaphne* (2), *Beilschmiedia* (1), *Cinnamomum* (14), *Endiandra* (20), *Lindera* (1), *Litsea* (8).

New combinations are made in *Cinnamomum* (2), *Litsea* (2), *Neolitsea* (1).

New names are proposed in *Persea* (2), *Beilschmiedia*, (1).

One variety is created in *Cryptocarya*.

Endiandra fragrane Allen is reinstated.

Reductions, are made in *Actinodaphne* (2), *Beilschmiedia* (2), *Cryptocarya* (15), *Endiandra*, (6), *Endlicheria* (1), *Haasia* (1), *Lindera* (3), *Litsea* (41), *Persea* (1), *Phoebe* (1), *Tetranthera* (12).

New records are cited for most species.

First record of *Caryodaphnopsis tonkinensis* from New Guinea.

ACTINODAPHNE Nees

Actinodaphne ellipticibacca Kosterm., *spec. nov.* — Fig. 6

Arbor ramulis crassis perdense minutissime pilosis foliis verticillatis magnis chartaceis subobovato-ellipticis acuminatis basi breve acutis supra glabra laevia nerviis primariis plantis subtus dense minutissime velutina nervo mediano prominentibus costis utrinque 6 - 9 erecto-patentibus subarcuatis prominentibus nerviis secundariis laxe parallelis petiolis magnis inflorescentiis axillaribus et extra-axillaribus dense ferrugineo pilosis brevis infructescentiis brevis fructus obovoideo-ellipsoideus cupulis parvis.

Typus: *Pételot 5923* (L).

Tree (?); branchlets stout, densely, minutely brown pilose. Leaves verticillate, subobovate-elliptical, 9 x 23 — 15 x 36 cm, chartaceous, shortly acuminate, base shortly acutish; upper surface glabrous, smooth (densely, minutely reticulate under high power lens), main nerves flush with the surface; lower surface densely, minutely velvety pilose, midrib prominent, lateral nerves 6 - 9 pairs, prominent, erect-patent, somewhat arcuate, secondary nerves prominulous, lax, parallel. Petioles densely velvety, up to 5 cm long.

* Forest Research Institute and Herbarium Bogoriense, Bogor.

Panicles axillary and extra-axillary, pyramidal, densely, rusty villous, up to 4 cm long, laxly branched, the lowest branches up to 1 cm long, bracts caducous at anthesis. Pedicels 2 mm, villous; tube funnelshaped, 1 mm, villous; tepals ovate, 1.5 mm, outside sparsely pilose, inside glabrous; style (in female flower) 1 mm long, stigma large, peltate, staminodes small, ovary glabrous. Infructescencies 0.5 - 2 cm long; fruit obovoid-ellipsoid, up to 1.5 x 2.5 cm; cup small, rather shallow, 8 mm diam., 4 mm high, margin thin, entire; pedicel 5 mm, tapered downwards.

Related to *A. pilosa* (Lour.) Merr., but the fruit different, **much** larger and the leaves larger.

TONKIN, Chapa, open forest near 1500 m, Sept., fr., *Pételot* 5923 (BO, L, P) et fl. (female), *Pételot* 5922 (BO, L, P).

Actinodaphne kinabaluensis Kosterm., *spec. nov.* — Fig. 7

Arbor parva ramulis crassis dense atroferrugineo tomentosis foliis, verticillatis coriaceis subovato-ellipticis breve obscure acuminatis basi acutis utrinque dense ferrugineo sublanuginosis supra glabrescentia nervo mediano piano costis prominulis nerviis secundariis impressis subtus nervo mediano prominentibus costis utrinque 5-6 satis erectus ad marginem valde arcuatis nerviis secundariis parallelis gracilis prominulis petiolis longis villosis infructescentiis axillaris perbrevis dense villosis-ipedidellis longis fructus ellipsoideus subacutis cupulis tepalis erectis persistentibus.

Typus: Chew, Corner, Stainion 196 (BO)

Pole ca 8 m, straight. Branchlets thick, densely dark rusty villous - sublanuginose. Leaves verticillate, coriaceous, subobovate to subovate-elliptical, 6 x 14 — 7 x 19 cm, obscurely, shortly acuminate with sharp tip, base acute; both surfaces densely rusty-villous; upper one glabrescent, midrib almost flush with the surface, lateral nerves prominulous in a groove, secondary nerves impressed; lower surface with prominent midrib, 5-6 pairs of rather erect, slender, prominent lateral nerves, strongly arcuate at the margin; secondary nerves parallel, prominulous. Petioles densely villous, up to 4 cm long, gradually, slightly thickened towards the **base**.

Infructesoences axillary, densely sublanuginose, almost sessile, **with** few fruit; bracts caducous. Pedicel up to 7 mm long, rather thick. **Fruit** ellipsoid, turning yellow (fresh), s-lightly narrowed and apiculate at apex (according to label, styles persistent), 4 x 6 mm; cup obconical, 6 **mm** long, at apex 5 mm wide, the tepals triangular, acute, erect, 2-3 **mm** long, persistent; cupular part shallow.

N. BORNEO (SABAH), Mt. Kinabalu, Eastern Shoulder, 6°05'N, 116°36'-40'E, alt. 2600 m, July, fl., *Chew, Corner, Stainton 196* (BO, K).

Actinodaphne multiflora Bth.

Cf. Kostermans, *Bibliogr. Laur.* 33, no. 85. 1964, typus: *Barclay s.n.* (K, 2 sheets) from Tobi Isl. (not Yobi Isl.), Japen Isl. group, W. Irian.

New synonym: *Actinodaphne brassii* Allen, cf. Kostermans, *I.e.* 18, no. 13, typus: *Brass 3290* (A, K).

BEILSCHMIEDIA Nees

Beilschmiedia brachystachys Kosterm., *nom. nov.*

Cryptocarya brachybotrya Merrill (base) in *Univ. Calif. Publ. Bot.* 15: 88. 1929; Kostermans, *I.e.* 389, no. 40, typus: *Elmer 21851* (A, BO, K, L, UC), Tawao.

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

Arbor mediocris in omnibus partibus glabris ramulis gracilibus nitidus apicem versus angulatis foliis rigide coriaceis ovato-ellipticis conspicue acuminatis basi breve acutis supra nitida laevia nervo mediano costisque impressis subtus sublaevia nervo mediano sat gracilis prominentibus costis graeilis prominulis utrinque 4 - 5 marginem versus arcuatis inflorescentiis axillaris pseudoterminalibusque gracilis paucifloribus pedicellis longis gracilis floribus parvis fructibus globosus laevibus.

Typus: *Tsang 22586* (BO).

Tree 8 m, glabrous in all its parts. Branchlets slender, glossy, smooth, at apex somewhat angular; foliar bud small, hardly pilose. Leaves alternate, stiffly coriaceous, ovate-elliptical, up to 4 x 12 cm, acuminate, with sharp tip, base shortly acute; upper surface glossy, smooth, main nerves impressed; lower surface with rather slender, prominent midrib and 4-5 pairs of slender, erect-patent lateral nerves, which are strongly arcuate (especially the apical ones) at the margin, secondary nerves faint, lax. Petioles slender, up to 12 mm long, flat above.

Inflorescences axillary (pseudo-terminal), up to 6 cm long, slender, few-flowered and with few, up to 2 cm long branches. Bracts caducous. Pedicels slender, up to 5 mm long. Flowers flattish, 2 mm diam., tube short, inside densely villous, merging into the pedicel; tepals orbicular ovate, concave, acutish, hardly 0.5 mm long. Outer stamens with almost sessile, oval anthers with 2 introrse large cells; inner stamens not seen; pvary glabrous, merging into a short style with inconspicuous stigma.

Fruit globose, apiculate, smooth, 2.5 cm diam., apiculate; pedicel very-short, cylindrical, flared out under the fruit.

Related to *B. fordii*, but fewer lateral nerves, a longer inflorescence, differently shaped flowers and fruit. All the flowers are damaged by insects and no trace of the inner stamens and staminodes were found. Also related to *B. kweichowensis*, but differing in many points, according to the description.

CHINA, Kwangsi, Shap Maan Taai Shan near Kwangtung border, fruit lightgreen, Tsang 22586 (BO).

Beilschmiediopilosa Kosterm.

Cf. Kostermans, I.e. 144, no. 195, typus: *Clemens* 30235 (BO, G). This is conspecific with *B. wiewingae* Kosterm., cf. Kostermans, I.e. 154, no. 254, typus: *Kostermans* 4374 (A, BO, K, L, PNH, SING).

Among newly collected material of *B. wiewingae* some aberrant leaves were discovered which match those of *B. pilosa*.

CARYODAPHNOPSIS A. Shaw

Caryodaphnopsis tonkinensis (Lee.) Airy Shaw

Cf. Kostermans, I.e. 211, no. 5.

New record for New Guinea: Mimika, Aria (Uta), alt. 4 m, ster., bb. 32872 (BO, L); Nabire, *Kanehira* & *Hatusima* 12850 (TI), ster.

CINNAMOMUM SCHAEFER

Cinnamomum alexei Kosterm., *spec. nov.* — Fig. 9

Arbor ramulis gracilibus glabris foliis oppositis rigide chartaceis glabris ellipticis vel ovato-ellipticis acuminatis basi breve acutis supra laevia nerviis tres principalis filiformis prominulis subtus pallidiora dense minutissime sub-prominule reticulata nervo mediano costis basalibus basin aequine evanescentibus prominulis gracilibus petiolis gracilibus canaliculatis paniculis axillaribus gracilibus subglabris paucifloris tepalis ovatis acutiusculis intus subsericeis antheris anguste ovalis bilocellatis glandulis basalibus applanatis suborbicularibus sessilibus ovario glabra.

Typus: *Buwalda* 3618 (BO)

Tree, branchlets slender, cylindrical, practically glabrous, foliar bud scales pilose at margins. Leaves opposite, rigidly chartaceous, glabrous,

elliptical or ovate-elliptical, 2.5 x 5 — 6 x 13 cm, conspicuously acuminate, base shortly acute; upper surface glossy, smooth, the three main nerves filiformous, hardly prominulous, usually in a groove, lower obscurely reticulate, midrib slender, prominulous, basal nerves slender, prominulous, reaching the base of the acumen or disappearing somewhat lower. Petioles slender, 5-15 mm, canaliculate above.

Panicles almost glabrous, slender, few-flowered, axillary, 3-7 cm, main peduncle long, branching apical, very short. Tepals ovate, acutish, 2 mm, inside slightly sericeous; stamens slightly shorter than the petals; outer ones with narrowly oval anthers with 2 introrse cells, filament slender, as long as the anther; inner ones with flat, sessile, suborbicular glands; ovary glabrous, style slender, as long, stigma truncate.

Related to *C. burmanni*, but the leaves broader and larger with the basal nerves longer and a long conspicuous acumen and the flower with short tepals. Collected three times in the same area; I have tried in vain to recollect it in the same spot; the forest has been destroyed.

Named after my Indonesian fosterson Alex, who assists me in my scientific and field work.

W. JAVA, Mt. Buleud near Tjidadap, S. of Tjibeber, alt. 1000 m, Oct., fl., *Winckel 1713 6* (BO, K, L, U); Tjadasmalang near Tjidadap, Nov., *Winckel 19-06 B* (BO); Tjiharum, G. Karang, near Tjidadap, alt. 1000 - 1300 m, Dec, fl., *Buwalda 3618* (BO, K, L).

Cinnamomum angustitepalum Kosterm., *spec. nov.* — Fig. 10

Arbor mediocris ramulis cylindricis strictis junioribus apicem versus minutissime pilosis foliis plerumque oppositis perrigide coriaceis mox glabris ovatis vel ovato-ellipticis acuminatis basi breve acutis supra nitida laevia nerviis tres principalis filiformibus prominulis subtus pallida, glauca laevia nervus medianus prominulis gracilis costis basalibus pergracilis prominulis apicem vix attingentibus paniculis axillaris pseudoterminalibusque dense minute griseo lanuginosis paucifloris pauciramosis floribus subsessilibus dense griseo lanuginosis tepalibus lanceolatis.

Typus: S. 16242 (BO)

Tree 5 - 16 m, up to 30 cm diam., bark shallowly flaked. Branchlets rather slender, stiff, smooth, cylindrical, the young ones near the apex minutely pilose. Leaves opposite or sometimes alternate, very stiffly coriaceous, soon glabrous (in the flush with very minute tomentum on the lower surface), ovate or ovate-elliptical, 2.5 x 5 — 5.5 x 10 cm, acuminate (acu-

men obtuse), base acute, both surfaces smooth, above glossy, the three main nerves filiformous, prominulous, lower surface dull, subglauous, midrib slender, prominent, basal nerves slender, prominent, running' out 1 - 1.5 cm below the acumen. Petioles ca 10 mm, pilose, glabrescent, slightly channeled above.

Panicles axillary and pseudo-terminal, densely, minutely grey lanuginose, stiff, few-flowered, 2.5-7 cm long with few (up to 2cm long), erect patent branches; bracts caducous. Flowers densely grey lanuginose, subsessile; tube 1 mm deep; tepals lanceolate, ca 4 mm long, inside grey adpressed pilose; stamens 2.5 - 3 mm long with slender, narrowly oblong, obtuse or subtruncate anthers, the outer ones with two tiers of extrorse cells (the upper pair much smaller), filament ca 1.5 x as long the anther, slender; inner stamens with very narrow, long anthers, the basal cells extrorse, the upper lateral, glands flat, ovate or reniformous, stipitate up to 1/2 the filament length; staminodes thick, ovate, 1 mm on a slightly shorter stipe; ovary glabrous; style long, slender.

SARAWAK, Bintulu, Nyabau For., heath forest (kerangas) on flat land near river, March, post anthesis, *Brain anak Tada S. 16253* (A, BO, K, KEP, L, MEL, OXF, P, SAN, SING, MOSC); Kuching, Semengoh For. Res., Arboretum, alt. 100 m, April, fl., *Bojeng bin Sitam S. 16242* (A, BO, K, L, MEL, SING).

Cinnamomum calciphilum Kosterm., *spec. nov.*

Arbor parva ramulis gracilis laevis cylindricis foliis oppositis rigide coriaceis glabris subovato-ellipticis vel lanceolatis acuminatis basi breve acutis supra nitida nerviis secundariis parallelis sub-obscuris nerviis tres principalis gracilis prominulis subtus pallidiora laevia nervo mediano prominulo costis basalibus vel sub-basalibus filiformibus circa medio laminorum evanescentibus paniculis pseudo-terminalis gracilis floribus minutissime sparseque sericeis fructus globosus cupulis parvis margine integris.

Typus: S. 15285 (BO)

Small tree, 5 - 8 m tall; branchlets slender, smooth, cylindrical, near apex minutely pilose and angular; end bud pilose. Leaves opposite (some alternate), rigidly coriaceous, very soon glabrous (very young ones very minutely pilose at base below), ovate-elliptical to lanceolate, (1.5 —) 2 x 4 — 4 x 12 — 3 x 11, acuminate, base shortly acute, both surfaces (high power lens) obscurely, densely pitted, upper surface glossy with rather obscure filiform, numerous, parallel, horizontal secondary nerves, the three main nerves filiformous, prominulous, lower surface paler,

glaucous, smooth, midrib slender, prominulous, the two basal or sub-basal nerves filiformous, prominulous, reaching slightly over half the lamina. Petioles slender, 1 - 2 cm long, slightly concave above.

Panicles pseudo-terminal, slender, few-flowered, rather laxly, very minutely sericeous, 3 - 6 cm long, consisting of a long main peduncle and a few, up to 1 cm long, slender, patent branches near the apex. Pedicels 2.5 mm long, slender. Flowers very minutely sericeous (high power lens), flesh coloured (fresh); tepals ovate, acutish, 2 mm, inside sericeous; stamens 1.5 mm with narrowly oblong anthers, those of the outer two rows with 2 tiers of introrse cells, the upper ones small; inner row with basal cells extrorse, the upper minute ones lateral, basal glands round or reniformous, rather large, sessile, filaments pilose, as long as the anthers, staminodes ovate, minute, shortly stipitate; ovary glabrous, style as long, with small, capitellate stigma. Fruit globose, ca 8 mm diam., cup rather flat with entire margin, 6 mm diam., 2.5 mm high, pedicellar part slender, 4 mm, or obconical and fleshy.

SARAWAK, Bau, summit of limestone hill, "mor" soil, June, fl., *Anderson S. 13815* (BO, K, L); *ibid.*, Gunung Staat, exposed limestone ridge, July, fr., *Anderson S. 15285* (A, BO, K, L, SING); *ibid.*, Bidi, mor soil overlying limestone, Aug., young fr., *Anderson S. 20H6* (A, BO, K, L).

***Cinnamomum caudifolium* Kosterm., spec. nov. — Fig. 11**

Arbor parva ramulis pergraeilis glabris innovationibus minutissime sericeis foliis oppositis chartaceis laevibus glabris subovatis vel ellipticis perlonge caudato-acuminatis basi cuneatis supra nervo mediano costisque basalibus prominulis subtus glaucescentia nervo mediano gracile piano vel subimpresso nerviis basalibus filiformibus adscendentibus nerviis ceteris deest petiolis gracilibus subcanaliculatis bene evolutis infructescentiis terminalis brevis vix vel non ramosis sparse minutissime pilosis fructus ellipsoideus cupulis tepalibus persistentibus erectis parte basalibus obconicis.

Typus: S. 1123 (BO)

Tree 6 m, diam. 5 cm; outer bark thin, smooth, purplish brown; inner bark 1 mm, purplish brown. Branchlets very slender, glabrous. Leafbuds minutely sericeous. Leaves opposite, ovate to elliptic to narrow elliptic, 1.5 X 5.5 — 4 x 14 cm, apex with a 2 - 4 cm long, slender acumen, base cuneate, both surfaces smooth, upper one with prominulous, slender midrib and 2 basal nerves, lower one somewhat glaucous, the midrib and

basal nerves very slender, the former flat or slightly impressed, no other veins visible, the basal nerves reaching almost to the base of the acumen. Petioles very slender, glabrous, 8-10 mm long, slightly channeled above.

Inflorescences (of the para-type specimen) terminal, leafy, paniculate, few-flowered, few- and shortly (up to 1.5 cm) branched, sparsely, minutely sericeous, the partial (axillary) ones up to 9 cm long. Immature flowers densely silvery sericeous, bracts minute, caducous, pedicels up to 2.5 mm long; tepals ovate or triangular, acute, 1 mm, inside densely silvery pilose; outer stamens slightly shorter than the tepals with oblong anthers with introrse cells, the lower ones very large, the upper ones hardly visible; filaments broad, as long as the anthers; inner stamens somewhat shorter with narrower anthers with extrorse cells and two very large ellipsoid, basal glands; staminodes large, subsagittate, broad, almost sessile; ovary glabrous, merging into a conical truncate, short style.

Infructescence (holo-type specimen) terminal, 1.5 — 4 cm long, hardly or not branched, minutely pilose, fruitcup funnelshaped, rather shallow, ca 10 mm long, including the persistent, erect, enlarged, ovate, acutish, 2 — 3 mm long tepals, fruit ellipsoid, up to 9 x 14 mm.

BORNEO, BRUNEI, Temburong — Pandaxuan, wet kerangas, low terrace, alt. 10 m, Sg. Meruton, Aug., fl., *Brunig S 1141* (BO) et alt. 16 m, Aug., fr., *S. 1123* (BO).

Cinnamomum celebicum Miq.

Cf. Kostermans, l.e. 281, no. 87, typus: *Riedel in Herb, de Vriesei s.n.* (L, U), Celebes, "Balisu rinteh".

The species was described after a sterile branch, represented in L. and U., but the label does not mention the name Riedel.

Additional material makes it possible to complete the description.

Tree, 25 - 35 m high, 35 • 56 cm diam.; buttresses up to 80 cm high, out 30 - 70 cm, thick 4-11 cm; bark 0.5 - 1 mm, brown, superficially fissured; living bark 8 mm, brown-red with pungent taste; sapwood 8-11 cm, white or yellowish, aromatic; heartwood brown. Branchlets slender, glabrous, smooth, flattened and angular near the apex; end bud very minutely grey-sericeous. Leaves opposite, chartaceous, glabrous, subovate-elliptical to lanceolate, (1 x 3.5, inflorescence) 2 x 7 — 6 x 17 cm, acuminate (?), base shortly acute; upper surface glossy, obscurely, minutely, densely reticulate, the three main nerves slender, prominulous; lower surface dull, paler, midrib slender, prominulous, the two basal or sometimes sub-basal lateral nerves prominulous, running out 1-2 cm below the leaf apex, reti-

culation dense, slightly prominulous, slender. Petioles up to 15 cm, slender, concave or flat above.

Panicles axillary and pseudo-terminal, slender, up to 7 cm long, towards apex densely, minutely grey-sericeous, bracts caducous. Infructescences up to 9 cm long, few and shortly branched (up to 1 cm), slender, iglabrous; fruit ellipsoid, smooth, 9 x 15 mm with pungent cinnamon taste; cup rather thin, smooth, margin entire, 8- 10mm diam., 5 - 6 mm high; pedicellar part slender, slightly obconical, 3-8 mm long.

As is often the case in *Cinnamomum*, the limp, coloured flush is so weak, that the tips of the leaves are damaged by the wind and often completely destroyed, hence in all the material, cited here no real tips are present and the rounded or slightly emarginate leaf tips are a secondary phenomenon.

CELEBES, Minahasa (Menado), Lulumbulan near Paku ure, alt. 700 m, April, young fr., *Koorders 17401* (BO, L); Mt. Klabat, Distr. Tondano, alt. 340 m, April, fr., 66. *13758* (BO, L); *ibid.*, Febr., fl., 66. *13510* (BO, L), local name "Balisu", used as a medicine; *ibid.*, 1300-1600 m, Jan., fl., *Koorders 17408* (BO, L), distributed as *C. zeylanicum*, var. *multiflorwm*; *ibid.*, alt. 300 m, village Danowudu, March, fr., 66. *5555* (BO, L); Popo Tamposo near Karuwa, alt. 300 m, ster., *Koorders 17406* (BO).

***Cinnamomum dictyoneuron* Kosterm., spec. nov. — Fig. 12**

Arbor parva vel medioeris in omnibus partibus glabris ramulis laevis rigidis apicem versus sulcatis angulatisque foliis rigide coriaceis ellipticis utrinque nitidis sensim acuminatis basi acutis supra laevia vel obscure laeve reticulata nerviis principalis gracilis prominulis subtus pallidiofa laeve prominule reticulata nervo media-no prominentibus, costis basalibus vel sub-basalibus prominentibus apicem attingentibus nerviis secundariis parallelis horizontalis paniculis axillaris pseudo-terminalibusque gracilis cupulis hemisphaericis margine integris.

Typus: *Endert 3687* (BO)

Tree, 6 - 13 m, up to 35 cm diam.; bark greyish brown; outer bark very thin, cork cambium reddish brown; inner bark up to 4 mm, laminated reddish brown. Sapwood ochre yellow. Branchlets smooth, glossy, slender, stiff, near apex angular and somewhat sulcate. Leaves opposite, very rigidly coriaceous, elliptical, 3.5 x 12 — 8 x 21 — 6 x 23 cm, gradually acuminate, base acute or cuneate, upper surface glossy, smooth or smoothly, laxly prominulously reticulate, main nerves slender, prominulous; lower surface glossy, paler, conspicuously, rather laxly, prominulously, smoothly reticulate or almost smooth, midrib slender, prominent, basal or sub-basal

nerves slender, prominent, reaching the base of the acumen, secondary nerves parallel, horizontal, prominulous. Petioles ca 8 - 10 m, concave above.

Panicles axillary and pseudo-terminal, very slender, up to 13 cm long; bracts caducous, branches few, short; pedicels very slender, up to 5 mm long. Fruit cup thin, hemispheric, margin entire, 8 mm diam., 3 - 4 mm high; pedicel slender, slightly obconical, 4 - 5 mm; fruit ellipsoid, 8 x 12 mm, apiculate.

The para-type has a more cuneate leaf base and the leaves are somewhat narrower.

E. BORNEO, W. Kutei, near Mt. Kemul, Telen R., alt. 1100 m, Sept., fr. and buds, *Endert 3687* (BO); Sabah, Mt. Kinabalu, Ranau near Hot Spring, alt. 1200 m, Febr. buds, *Singh San 24002* (BO, L).

Cinnamomum endlicheriaecarpum Kosterm., *spec. nov.* — Fig. 13

Arbor in omnibus partibus glabris ramulis angulatis foliis oppositis coriaceis ellipticis acuminatis basi breve acutis supra sublaevis nerviis tres principalis gracilis prominulis subtus sublaevis vel nerviis secundariis horizontalis parallelis obscuris nervo mediano cum nerviis basalibus prominentibus, nerviis basalibus apicem foliorum attingentibus petiolis canaliculatis infructescentiis apicalis longis gracilis fructus anguste sub-ovoideo-ellipsoideus cupulis earnosis magnis tepalibus incrassatis persistentibus parts basalibus obconicus longis earnosis.

Typus: *Brun. 5285* (BO).

Tree, 20 m tall, glabrous in all its parts; branchlets rather slender, angulate towards apex. Leaves opposite, coriaceous, elliptical (4 X 9) 4.5 x 14 — 7 x 19 cm, acuminate (acumen slender), base shortly acute; upper surface usually smooth, the three main nerves slender, prominulous; lower surface smooth, midrib and the 2 basal nerves (which reach the apex) prominent, secondary nerves horizontal, parallel, faint. Petioles up to 1 cm long, rather slender, canaliculate above.

Panicles pseudo-terminal, up to 16 cm long, slender, few-branched, the lower branches 3 cm long. Fruit rather narrowly subovate-ellipsoid, 8 X 20 mm; cup fleshy, consisting of a fleshy, obconical, 1-2 cm long pedicellar part (at apex up to 8 mm diam.), flaring out into the much enlarged, fleshy, oblong or ovate, up to 15 mm long tepals.

BRUNEI. Ulu Limbang- at Nanga selidong, 170 m alt., July, fr., *Sekalang anak Nantah Brun. 5285* (BO), "Balong" (Iban), fruit used in making Iban perfume.

Cinnamomum filamentosum (Allen) Kosterm., *comb. nov.*

Phoebe filamentosa Allen (basionym) in Mem. N. York. bot. Gd. 15: 69. 1966; typus: *Steyermark 56740* (F).

Cinnamomum filipes (Rusby) Kosterm., *comb. nov.*

Persea filipes Rusby (basionym) in Bull. New York Bot. Gd. 6: 505. 1910; Kostermans, I.e. 1219, no, 92; Kopp in Mem. N. York Bot. Gd. 14: 113. 1966, typus: *Williams 352* (US), Bolivia, Tamapiaa, Dec. 7, 10- 12 ft.

Formerly I asumed this to be *Ocotea* and Kopp suggested *Phoebe*. After having had the opportunity to study the type specimen, I am now able to place it.

Cinnamomum gracillimum Kosterm., *spec. nov.*

Arbor ramulis gracilis glabris foliis glabris oppositis chartaceo-eoriaceis anguste ovatis longe sensim acuminatis basi breve acutis supra nitida obscure reticulata nervo mediano costisque filiformibus prominulis subtus laevis nervo mediano filiformis prominulis costis basalibus filiformis medio foliorum vix attingentibus costis ceteris paucis obscuris pedicelUs gracilis paniculis pseudo-terminalis dense minutissime sericeis.

Typus: *bb 29008* (BO)

Tree 16 m, bole 10 m, diam. 30 cm; branchlets slender, smooth glabrous; end bud glabrous. Leaves opposite, glabrous, chartaceous-coriaceous, narrowly ovate, 1.5 x 5 — 2.5 x 9.5 cm, gradually long-acuminate, tip sharp, base shortly cuneate; upper surface glossy, rather smooth, the three main nerves filiformous, hardly prominulous, the secondary nerves faintly indicated; lower surface smooth, dull, the filiformous midrib prominulous, the filiformous basal to sub-basal nerves hardly reaching half the leaf length, a few, obscurely, slender lateral nerves present. Petioles slender, 5-9 mm, concave above.

Immature panicles pseudo-terminal (and axillary), up to 3 cm long, densely, minutely sericeous, few-branched, slender.

W. IRIAN, Sukarnapura (Hollandia) Distr., Berap (Nimburan), Aug., buds, *bb 29008* (A, BO, BRI, K, L, NY, P, SING).

Cinnamomum penninervium Kosterm., *spec. nov.*

Arbor ramulis glabris gracilis inovationibus minutissime griseo sericeis foliis oppositis chartaceo-coriaceis glabris subovato-ellipticis longe

graciloque acuminatis basi acutis utrinque perdense subpunctato reticulatis supra nitida nervo mediano gracilis prominulis costis filiformis vix prominulis subtus subnitidis nervo mediano prominulis costis utrinque 5-7 filiformis vix prominulis petiolis supra concavis.

Typus: *bb 5700 (BO)*

Tree 18 m, bole 12 m, diam. 40 cm. Branchlets slender, glabrous, cylindrical; end bud minutely grey sericeous. Leaves opposite (some subopposite), chartaceous-coriaceous, glabrous, narrowly ovate-elliptical, 2 X 6.5 — 4.5 x 9.5 cm, with slender, 1.5 - 2 cm long acumen (tip obtuse), base shortly acute, both surfaces somewhat pitted or very densely, minutely reticulate, upper one glossy, the very slender midrib and the filiform lateral nerves hardly prominulous, lower surface less glossy, midrib prominulous, the 5-7 pairs of lateral nerves erect-patent, filiformous, slightly prominulous, curved near margin. Petioles ca 1 cm long, slender, concave above.

The label indicates flowers, but there are none in our specimens. The penninerved leaves are outstanding.

W. SUMATRA, Tapanuli, altiplane of Toba, 900 m alt., village Pandumaan, June ster., 66. 5700 (BO, K, L), common tree.

Cinnamomum podagricum Kosterm., *spec. nov.* — Fig. 14

Arbor ramulis glabris juvenilis minute flavo--griseo sublanuginosis foliis oppositis coriaceis maturis glabris ellipticis acuminatis basi acutis supra nitida sublaevia nerviis vix prominulis subtus pallidiora laevia nervo mediano prominentibus costis subbasalibus vel basalibus prominentibus apieem foliorum attingentibus nerviis secundariis laxis subparalleliis horizontalis vel nullis nerviis basalibus extus ramificaiis petiolis sat longis paniculis axillaris laxis foliis subaequilongis dense sublanuginosis floribus subsessilis antheris interioribus subrectangularis truncatis glandulis sessilis applanatis ovario glabro stylo aequilongo stigmatate subcapitellato cupulis immaturis carnosis in pedicellum obconicum transeuntibus margine integer.

Typus: *Havel NGF 9188 (BO)*

Small tree (NGF 9188, 5 m, diam. 10 cm) ; bark brown, finely tessellated, 3.5 mm thick, underbark indistinct; inner bark red brown corky, strongly fragrant; wood straw, moderately dense, soft, fine rays, pores of medium size. Branchlets slender, smooth, glabrous, glossy, those of the

flush densely yellowish grey sublanuginose (the hairs very fine). Leaves opposite (rarely subopposite), coriaceous, elliptical (5 x 13 cm), to lanceolate-elliptical (3 x 12 — 4 x 17 cm), acuminate, base acute; upper surface glossy, glabrous, minutely punctate-pitted, main nerves slender prominulous, lower surface pale, the younger ones densely yellowish-grey pilose, mature ones glabrous, glaucous, smooth, midrib prominent, basal or sub-basal nerves prominent reaching the base of the acumen, connected by horizontal, faint, lax, parallel secondary nerves or these invisible; the outside of the basal nerves bearing prominulous, curved nerves, of which the lower one may be strongly ascending. Petioles glabrescent, up to 15 mm, canaliculate above.

Panicles axillary up to 11 cm long, rather stiff, densely yellowish-grey lanuginose with few, erect-patent and patent, short (up to 1 cm) branches. Flowers almost sessile, densely grey-sericeous; tepals ovate, acutish, 1.5 — 2 mm; stamens slightly shorter, outer ones with ovate, sometimes truncate anthers with 2 tiers of extrorse cells, filament as long as anther; inner ones rectangular, lower cells extrorse, upper smaller ones lateral, glands sessile, flat, irregularly round; staminodes pilose, very small, irregular; ovary ellipsoid, glabrous style as long, stigma subcapitate. Immature cups fleshy (rim entire), merging into a fleshy obconical short pedicellar part.

Easily recognizable by the laterally branched basal nerves, the tomentum and the shortly pedicelled flowers.

TERRITORY OF NEW GUINEA, E. Highland Distr., Kassam, alt. 1370 m, frequent in *CastaTwpsis-oak* forest, lesser canopy tree appearing grayish from the colour of the young leaves, Nov., fl., *Brass 324.28* (BO); Kainantu-Okapa Rd., 11 miles from Kainantu, 6 45 S 146 50 E, alt. 1800 m, oak forest, July, after anthesis, *Womersley NGF 2A652* (A, BO, BRI, CANB, K, L); Morobe Distr., Wau, alt. 1500 m, Febr., fl., *Sayers NGF 21699* (A, BO, BRI, CANB, K, L); Bulolo, alt. 1400 m, 7 10 S, 146 40 E, July, young fr., *Havel NGF 9188* (BO, LAE).

Cinnamomum racemosum Kosterm., *spec. nov.* — Fig. 15

Arbor parva in omnibus partibus glabra ramulis cylindricis strictis laevis foliis oppositis et alternantibus perrigide coriaceis ellipticis basi acutis vel cuneatis utrinque laxè prominule reticulatis et subnitidis nerviis tres principalis utrinque prominentibus basalibus apicem foliorum attingentibus venis secundariis parallelis horizontalis utrinque prominulis petiolicis sat longis supra concavis paniculis pseudo-terminalis aggregates brevis racemiformibus fructus ellipsoideus, cupulis sat profundis basi tepalorum persistentibus pedicellis brevis.

Typus: *Ashton S. 18310* (BO)

Tree 5 m tall, 3 cm diam., glabrous in all its part; branchlets stiff, smooth, glossy, slightly angular at apex. Leaves opposite and alternate, very rigidly coriaceous, elliptical, 5 x 13 (?) — 10 x 30 (?) cm, base acute or cuneate, midrib and the basal nerves, which reach the leaf apex prominent on both surfaces both, surfaces with prominulis, parallel, horizontal secondary nerves, the lower surface more dull with obscure, lax reticulation. Petioles 1.5 - 2.5 cm long, more or less canaliculate above.

Raceme-like panicles pseudo terminal, crowded, up to 4 cm long, few-flowered, pedicels short, 1-2 mm, either directly on the main peduncles or on, up to 2 mm long, side branches. Fruit ellipsoid-globose (immature ?), 4 x 6 mm; cup 6 mm diam. with remnants of the bases of the tepals on the rim, up to 15 mm high, the thick pedicel up to 3 mm. Tepals ovate-rectangular, acutish, 2.5 mm, inside sparsely, minutely sericeous. Stamens 2.5 mm, anthers slender, narrowly oval with 2 tiers of subequal, extrorse cells, filament slender, as long as anther; third row shorter, anthers with basal cells extrorse, apical ones smaller, lateral, apex often truncate to emarginate, basal glands round, small, sessile, ovary glabrous.

Not a single complete leaf is available and hence the length is only conjectured.

SARAWAK, Ulu Sinrok, Similajau For. Res., sloping low ridge, alt. 30 m, leached yellow sandy soil, mixed Dipterocarp forest, March, young fr., *Ashton S. 18310* (A, BO, K, KEP, L, MEL, SAN, SING), young fr. bluish green, lamina lustrous below, not pruinose; Bintulu, Sg. Binio, alt. 10 m, small tree on Kerapah and Kerangas, March, fr., *Sahari & Othman S. 8698* (BO, K, L).

Cinnamomum splendens Kosterm., *spec. nov.*

*Arbor ramulis gracilis glabris apicem versus minutissime dense ad-
presse substrigosis foliis oppositis coriaceis ellipticis parvis trinerviis
brevissime obscure acuminatis basi brevissime acutis supra glabra nitida
nerviis tres prominulis filiformibus subtus dense griseo sericeis nerviis
tres prominentibus nerviis basalibus vel sub-basalibus fere ad apicem lami-
norum petiolis gracilis sulcatis.*

Typus: Brass & Versteegh 11942(BO)

Tree, 35 m high; branchlets slender, towards apex densely, minutely strigose-sericeous. Leaves opposite, coriaceous, elliptical or sometimes subobovate- or subovate-elliptical, 1.5 x 3 — 3 x 6 cm, very shortly,

broadly acuminate, base shortly acute; upper surface smooth, glossy, midrib and the two basal or subbasal nerves very slender, prominulous, lower one densely grey, rather coarsely sericeous, midrib and the two basal nerves, which reach almost the top of the leaf, prominent, Petioles slender, 5-7 mm, channeled above.

A very characteristic species because of the small leaves and the indumentum.

W. IRIAN, Idenburg R., 15 km SW of Bernhard Camp, alt. 1800 m, Jan., ster., Brass & Versteegh 1194.2 (A, BO).

Cinnamomum sulavesianum Kosterm., *spec. nov.*

Arbor in omnibus partibus glabris ramulis gracilis cylindricisi foliis oppositis coriaceis ovatis vel lanceolatis acuminatis basi acutis supra nitida laevia nerviis primariis prominulis subtus reticulatis nervo mediano prominentibus gracilis nerviis subbasalibus prominentibus apicem foliorum attingentibus paniculis pseudo-terminalis gracilis longis vix ramosis bracteis caducis pedicellis gracilis tepalibus ovatis acutis intus subsericeis antheris anguste ovatis filamentis aequilongis ovario glabro, stylo aequilongo fructus subglobosis cupulis tepalibus incrassatis persistentibus erectis.

Typus: *Cel/II-465* (BO)

Tree up to 20 m tall, diam. 26 cm; glabrous in all its parts (except the fimbriate margins of the leafbud scales and the inside of the tepals and flower tube) ; branchlets slender, smooth, cylindrical. Leaves opposite, coriaceous, ovate (4 x 10 — 8 (- 10) x 22 cm) to lanceolate (2 x 9 — 6 x 18 cm), gradually tapered towards the apex, sub-acuminate, base rounded to acute; upper surface glossy, smooth or obscurely reticulate; the 3 main nerves slender, prominulous; lower surface dull, glaucous, rather obscurely, smoothly reticulate, midrib slender, prominent, often sulcate along the mid-line (in sicco), sub-basal nerves prominent, slender, reaching the base of the acumen. Petioles slender, 8-12 mm, sulcate above.

Panicles pseudo-terminal, lax, slender, with few, up to 2 cm long branches, up to 15 cm long; bracts caducous. Pedicels slender, 3-5 mm long. Flowers white or yellowish white, 3 mm diam.; tepals ovate to oblong, acutish, 2 - 2.5 mm, inside slightly sericeous. Stamens slightly shorter than the tepals, outer ones with slender, narrowly ovate, four-celled, introrse anthers, the filament as long as the anthers; inner ones with basal cells

extrorse, the smaller upper ones lateral, basal glands globose, shortly stipitate; staminodes hastate, 0.75 mm, shortly stipitate. Ovary slender, glabrous, style as long, truncate, inside of tube sericeous. Fruit subglobose, up to 8 x 10 mm; cup up to 8 mm wide (apex) consisting of the shallow (2.5 mm) cup itself and the enlarged, 2.5 mm long sub-erect tepals; the pedicellar part obconical, 4-6 mm, merging into the cup.

C. CELEBES, Distr. Malili, Kawata, alt. 150 m, Nov., fl., *Kjellberg* 2852 (BO, L); *ibid.*, March, fr., *Waturandang* 66 = *Cel/II-465* (BO, K, L); Usu, alt. 2 m, Jan., fr., *Reppie* 282 = *Cel/IH-57* (BO, L, SING); *ibid.*, Dec, fl., *Repine* 9b = *Ccl/IH-57* (BO, L); *ibid.*, Nov., buds, *Waturandang* 90 = *Cel/III-57* (BO, L); *ibid.*, Oct., fl., *Waturandang* 811 = *Cel/II-148* (BO, L).

***Cinnamomum turfosum* Kosterm., spec. nov.**

Arbor ramulis sat gracilis dense minutissime atro ferrugineo vel ferrugineo lanuginosis foliis oppositis coriaceis subovato-ellipticis breve sat obscure acuminatis basi breve acutis utrinque laevia nerviis principalis prominulis nerviis basalibus fere ad apicem larminarum paniculis parvis axillaris floribus dense griseo adpresse pilosis.

Typus: *Kostermans* 13075 A (BO).

Tree 10 to 20 m tall and up to 40 cm in diam.; bark smooth, inconspicuously, widely fissured, lightbrown, 1 mm thick; living bark 10 mm, dark brown red; wood dirty brownish white with a very pleasant **spicy** smell; branchlets rather slender, densely, minutely blackish brown or **rusty** lanuginose. Leaves opposite, coriaceous, elongate ovate, 2.5 X 4.5 — 4 X 9 cm (in the young specimen *Kostermans* 12974 up to 6.5 x 15 cm), shortly, obscurely acuminate, base shortly acute, both sides smooth, the 3 slender nerves prominulous on both surfaces, upper surface glabrous, glossy, lower one densely, minutely, dark rusty lanuginose, glabrescent, -glaucous, the two basal nerves reaching almost the top of the lamina. Petioles 1-1.5 cm long.

Panicles axillary, subterminal, 3.5 cm long, hardly branched, lanuginose, Flower outside densely grey adpressed pilose. Tepals elongate ovate, 4 mm.

A species characterised by its indumentum. It grows on leached, sandy, acid soils (kerangas).

INDONESIAN E. BORNEO, Mt. Palimasen near Tabang on Belajan R., Distr., W. Kutei, mossy forest, scattered, small tree, Sept., fl., *Kostermans* 13075 A (BO, L); *ibid.*, 800 m. alt., acid, water-logged soil, young tree, ster., *Kostermans* 12974 (A, BO, CANB, K, L, NY, P, PNH, SING); Sebakis R. region, Bulungan, low sandy ridges,

Casurwina sumatrana forest, Jan., ster., *Kostermans* 9283 (A, BM, BO, BRI, K, L, P, PNH, SING).

***Cinnamomum xylophyllum* Kosterm., spec. nov. — Fig. 16**

Arbor ramulis gracilis glabris foliis oppositis perrigide coriaceis. ovatis vel ovato-ellipticis glabris acuminatis basi breve acutis utrinque laevis supra nervüs principalis tres proninulis subtus nervo mediano et nervüs basalibus subimpressis petiolis canaliculatis paniculis axillaris gracilis pauciflaris vix et breve ramosis apicem versus sparse sericeis floribus sericeis filamentis longis antheris cellulis 2 introrsis glandulis stipitatis filamentis adnatis staminodiis cordatis stipitatis ovario glabro stylus gracilis aequilongis.

Typus: *Kostermans* 13067 (BO)

Tree, 10 - 30 m high, up to 30 cm diam.; sharp, 1 m high buttresses; bark smooth, grey or mottled purple and dove grey, often with small knobs and ridges (older trees); outer bark thin; inner bark rich light orange brown, 1.5 mm, cambium honey coloured; sapwood pale buff; heartwood darkbrown with strong cinnamon smell, when freshly cut. Branchlets slender, glossy, glabrous; end bud glossy, practically glabrous. Leaves opposite, rigidly coriaceous, almost woody, glabrous, ovate to ovate-elliptical, 2.5 x 5 — 5 x 11 cm, distinctly (5 - 15 mm), broadly acuminate, base shortly acute or cuneate, both surfaces very smooth, the 3 main nerves on the upper surface prominulous, on the lower surface impressed; basal or sub-basal nerves ending somewhat below the acumen. Petioles slender, glabrous, canaliculate.

Panicles axillary (apical leaves), slender, few and shortly (5 mm) branched, towards apex very sparsely, minutely sericeous. Flowers grey sericeous, 5-6 mm long; tepals oblong, acute, 3 mm; tube well-developed; outer stamens with oblong anthers with 2 introrse cells, filaments slender, long; third row of stamens extrorse, 2-celled, the elongate globose glands on stalks as long as and adnate to the filaments; staminodes heart-shaped, acute, on long, slender filaments; ovary subglobose, glabrous, style slender, as long as the ovary, stigma inconspicuous.

Characterized by the "woody" leaves and the very unusual impressed main nerves on the lower surface. The species grows on leached-out sandy, kerangas soils.

INDONESIAN E. BORNEO, W. Kutei., Mt. Palimasen on Belajan R. near Tabang, mossy-forest, alt. 800 m, acid, waterlogged, sandy soil, ster., *Kostermans* 12981 (BO, K, L);

ibid., Sept., fl., *Kostermans 13067* (A, BM, BO, BRI, K, L, P, SING), bark dark brown with citronella oil smell, wood reddish, fls. greenish; Brunei, Bukit Biang, alt. 400 m, leached, yellow sandy soil, Apr., fr., *Drun. 369* (BO); Berakan Forest Reserve, alt. 50 m, kerangas, very old, secondary forest, May, fr., *Brun. S. 7803* (BO); fruits ellipsoid, 7 X 12 mm, apiculate, cup semi-globose, slightly ribbed, 5 mm high, 3 mm diam., rather thin, the triangular-ovate, acute, 2-3 mm long, erect, hardened tepals persistent.

CRYPTOCARYA R. Br.

Cryptocarya bidwillii Meissn.

, Cf. *Kostermans*, I.e. 388, no. 35, typus: *Bidwill* (K), Wide Bay.

New synonym: *Cryptocarya meissneri* F. v. M., cf. *Kostermans*, I.e. 416, no. 186, typus: *F. v. Mueller s.n.* (DC, NY), Hastings R.

Cryptocarya ferrea, v. *grandifolia* Lee.

Cf. *Kostermans*, I.e. 399, no. 93a, typus: *Fleury* (P). This represents *Cryptocarya ochracea* Lee.

Cryptocarya fleuryi Chevalier ex Liou Ho

Cf. *Kostermans*, I.e. 400, no. 95, typus: *Chevalier 38863* (P, 2 sheets). This represents *Cr. densiflora* Bl.

Cryptocarya glabella Domin.

Cf. *Kostermans*, I.e. 402, no. 106, typus: *Domin XII, 1909, I* (PRC), Harveys Creek & Russel R.

¹ New synonym: *Cryptocarya pleurosperma* White & Francis, cf. *Kostermans*, I.e. 429, no. 255, typus: *Kajewski 1008* (A, LE).

Through the courtesy of the Director of the Museum in Prague, I received on loan the type specimen of *Cr. glabella* Domin, which is manifestly identical with *Cr. pleurosperma* Wh. & Fr. A considerable amount of chemical investigations has been carried out on the poisonous active substance of this species (cryptopleurin).

Additional references: Barnard in *Austral. J. Sci.* 12: 30. 1949; Friedrichsen & McLMathison in *Nature* 173: 732. 1954; Marchini-Belleau in *Canad. J. Chem.* 36: 581. 1958; Gellert in *Austral. J. Chem.* 12: 90. 1959; Loder in *Angew. Chemie* 72: 923. 1960; Hegnauer, *Chemotaxon.* 4: 373. 1966.

Cryptocarya ilocana Vidal.

Cf. Kostermans, I.e. 407, no. 133, typus: *Vidal 1684* (K, L).

New synonyms: *Cryptocarya oligophlebia* Merr., cf.-Kostermans, I.e. 425, no. 230, typus: *Reillo 16155* (A), Basilan, Aug.-Sept., fl. (the same number: *Reillo 16155* in Kew represents *Cr. subvelutina* Elmer); *Litsea obscura* (Bl.) Boerl., cf. Kostermans, I.e. 867, no. 318; *Tetranthera obscura* BL, cf. Kostermans, I.e. 1414, no. 158, typus: Nova Guinea, *sine coll.*, fr. (L, 2 sheets); *Cryptocarya exfoliata* Allen, cf. Kostermans, I.e. 398, no. 90, typus: *Brass 7655* (L); *Cryptocarya triplinervis* (non R. Br.) Greshoff in Meded. Plantent. Buitenzorg 29: 133. 1900; in Meded. Dept. Landbouw 17: 48. 1913; Koorders & Valeton, Bijdr. Booms. Java 10: 214, 215. 1904; Koorders, Exkurs. Fl. Java. 2: 277. 1912; Koorders-Schumacher, Syst. Verzeichn. 1(1), Fam. 102: 40. 1910-14; Backer & Bakhuizen, Fl. Java 1: 132. 1963.

A widespread species, including perhaps also *Cr. hornet* Gillespie, *Cr. degeneri* Allen and *Cr. elegans* (Reinecke) A. C. Smith; these differ mainly by slightly larger leaves and smaller, axillary panicles.

Cr. ilocana is also represented in Australia (Kajewski s.n.).

Additional record: Kanosia, alt. 16m, Febr., buds, *Carr 11539* (A, K, L).

Cryptocarya laevigata Bl.

Cf. Kostermans, I.e. 410, no. 147a-c, typus: *Blume*, Java (L).

Synonyms: *Caryodaphne laevigata* BL, cf. Kostermans, I.e. 210, no. 5; *Cryptocarya cinnamomifolia* Merr., cf. Kostermans, I.e. 392, no. 58 b, typus: *Ramos & Edano B. Sc. 26317* (US); *Cryptocarya merrillii* C. T. White, cf. Kostermans, I.e. 417, no. 190; *Cryptocarya roemeri* Lauterb., cf. Kostermans, I.e. 432, no. 269, typus: *Roemer 15: Cryptocarya scalariformis* Allen, cf. Kostermans, I.e. 433, no. 277, typus: *Kajewski 2204* (A); *Cryptocarya trinervia* Elmer ex Merr., cf. Kostermans, I.e. 437, no. 304, typus: *Elmer 17395* (L), *16749* (L); *Cryptocarya paudflora* Lauterb. & Schum., cf. Kostermans, I.e. 428, no. 245b, typus: *Lauterbach 2332, 2846*; *Pseudocryptocarya paudflora* (Ltb. & Sch.) Teschner, cf. Kostermans, I.e. 319, no. 1; *Beilschmiedia triplinervis* Teschner, cf. Kostermans, I.e. 152, no. 244, typus: *Schlechter 17890* (BR, K); *Caryodaphne laevigata*, var. *angustifolia* Miquel, cf. Kostermans, I.e. 210, no. 5, typus: *Zollinger 3541* (U).

Var. bowiei (Hk.) Kosterm., *comb. et stat. nov.*; *Laurus bowiei* Hk. (basionym) in Hook. J. Bot. 4: 419, t. 23, 1842, cf. Kostermans, I.e. 577, no. 53; *Cryptocarya bowiei* (Hk.) Druce, cf. Kostermans, I.e. 389, no. 39; *Oreodaphne bowiei* (Hk.) Walpers, cf. Kostermans, I.e. 1157, no. 18; *Cryptocarya australis* Benth., cf. Kostermans, I.e. 387, no. 27; *Caryodaphne australis* A. Braun, cf. Kostermans, I.e. 209, no. 1, typus: *Mueller 26 et 150*.

The variety differs only by the smaller leaves, but in the northern part of tropical Australia the leaves attain the same size of those of the Malesian area. Flowers and fruit are everywhere alike, perhaps the fruit slightly smaller in the S. Australian form.

Cryptocarya oblongifolia (non Bl.). Lecomte et Liou Ho

Cf. Kostermans, I.e. 423, no. 222. In Paris the following specimens could be examined, *Béjaud 823* (2 sheets), *Harmand* (4 sheets), *Pierre 3179* (4 sheets); they represent *Cryptocarya ochracea* Lee.

Cryptocarya obovata R. Br.

Cf. Kostermans, I.e. 423, no. 223.

New synonym: *Cryptocarya multicostata* Domin, cf. Kostermans, I.e. 420, no. 204, typus: *Am. Dietrich 620* (PRC), Queensl., cf. acknowledgement under *C. glabella* Domin.

E N D I A N D R A R. Br.

Endiandra acuminata Teschn.

Cf. Kostermans, I.e. 483, no. 1a, typus: *Schlechter 16776* (BO, P, 2 sheets), Bergwälder am Kaulo, 400 m alt.

New synonyms: *Endiandra clemensii* Allen, cf. Kostermans, I.e. 484, no. 12, typus: *Clemens 1742* (A, BR, L), Sattelberg-, Morobe Distr., alt. 1000 m, paratypus: *Clemens 1848* (A, BR); *Endiandra brassii* Allen, cf. Kostermans, I.e. 483, no. 9, typus: *Brass & Versteegh 14101* (A, BO), Idenburg R., W. Irian.

Endiandra acuminata Teschn. was based on the specimens: Ledermann 9458, 9384 and Schlechter 16776. Only the last one is extant. However, it does not agree completely with the description (the leaves are not caudate-acuminate, but very shortly acuminate, the leaves are much larger than indicated: in the key 10 - 18 cm, in the protologue 10 - 14 cm, in Schlechtens specimen they are up to 10 x 21 cm, the petioles are cer-

tainly not subpatent pilose, but completely glabrous, the panicles are not 8, but 15 cm long). I believe that these discrepancies are attributable to carelessness (evident elsewhere in Teschner's paper) and I accept Schlechter 16776 as the lecto-type specimen.

Endiandra clemensii Allen is based on the specimen Clemens 1742 of which a very good duplicate is deposited in the Brussels Herbarium. The material is certainly not fragmentary, as indicated by Allen. Allen did not describe the flowers (only the size), they conform exactly to those of *E. acuminata*.

Allen indicated the leaves as glaucous, but the Brussels specimens show not the slightest trace of glaucousness.

Of *Endiandra brassii* Allen, I could examine an isotype specimen (Brass a Versteegh 14101) deposited in the Bogor Herbarium. It consists of a leafy branch, detached panicles and detached fruit- The flowers and leafy branch (flowers again not described in Allen's protologue) match those of *E. acuminata*. The fruit, however, are a puzzle. There is no *Endiandra* known with fruit of this shape with the long, slender neck at the base. Furthermore the specimen NGF 10462 has the normal fruit of an *Endiandra*. I suspect that the loose fruit of Brass & Versteegh 14101 are not Lauraceous.

Additional specimens: W. Irian, Salawati IsL, Kaloal, flatland, alt. 3 m, rather common, Oct., fls. white, fragrant, *BW 1344* (BO, L) ; *ibid.*, alt. 1 m, ster., *BW 4245* (BO, L) ; *ibid.*, alt. 5 m, swampy, ster., *BW 1362* (BO, L) ; Isl. Japen, Kaunda near Serui, Aug., buds, *Aet & Idjan 565* (BO, L) ; Manokwari Distr., Oransbari, ster., *BW 2101* (BO, L) ; Idenburg R., Bernhardcamp, alt. 350 m, ster., *Brass & Versteegh 13589* (A, BO) ; *ibid.*, July, buds, *bb. 25696* (BO, L) ; Div. Hollandia, Sidoarsi Mts., 200 km W. of Hollandia (Sukarnapura), alt. 50m, ster., *bb.9066* (BO, L), common; Terr. of Nw. Guinea, Morobe Distr., Oomsis near Lae, Jan., fr., *NGF 10462* (BO, K, L, LAE), tree 27m; *ibid.*, fl., *NGF 11610* (BM, BO, L, LAE) ; Papua, E. Highl. Distr., Kassam, alt. 1370 m, Nov., fl., *Brass 32429* (A, BO).

The leaves vary considerably in shape, one sheet of Schlechter 16776 (P) has broadly elliptical leaves (13 x 21 cm), the other sheet elliptical leaves (10 x 21 cm). The Salawati specimen *BW. 1344* has a slightly longer indumentum of the panicles and slightly more lateral nerves (9 - 11, the others 6-9).

Endiandra aggregata Kosterm., *spec. nov.* — Fig. 17

Endiandra brassii Allen in J. Arnold Arb. 23: 147. 1942, p.p., quasad spec. *Clemens* 1421.

Arbor rarmilis crassis glabris minutissime lenticellatis foliis alternantibus apicem, versus aggregatès chartaceis glabris elUpticis vel subobovato-ellipticis utrinque prominule reticulatis (nee areolatis) brevissime acuminatis vel obtusis basi breve acutis viz decurrentibus supra, costis primariis prominulis subtus prominentibus costis Utrinque 6-13 erecto» patentibus subarcuatis petiolis longis paniculis axillaris apice ramulorum aggregatès dense minutissime ferrugineo pilosis foliis multo brevioribus bracteis subpersistentibus floribus longe pedicellatis parvis,

Typus: *Clemens* 14-21 (L)

Tree, branchlets stout, glabrous, with tiny, pale lenticels; end bud minutely sericeous. Leaves spirally arranged, crowded at the end of the branchlets, glabrous, elliptical to subobovate-elliptical, 7 X 12 — 11 X 25 cm, both surfaces prominulously reticulate (not areolate), obtuse or very shortly acuminate, base acute or subcuneate, both surfaces glossy, upper one with broad, prominulous midrib and slender, prominulous lateral nerves; lower surface with prominent midrib, the 6-13 pairs of erect-patent, slightly arcuate (more at margin) lateral nerves prominent, secondary and tertiary nerves not different, reticulate. Petiole 1 - 2.5 cm long, glabrous, slightly concave above.

Panicles axillary, crowded near the apex of the branchlets, narrow, up to 12 cm long, few and shortly branched, peduncle rather stout, glabrous, towards the apex the panicles densely, minutely, rusty pilose; bracts and bracteoles subpersistent. Flower pedicels slender, up to 3 mm long, subtended by an ovate, 1.5 mm long bract. Flowers 2.5 - 3 mm diam. Tepals ovate, acute, suberect, 1-1.5 mm long; stamens 3, anthers oval with small, extrorse cells, filament broad, as long as the anthers; basal glands small, stalked.

NEW GUINEA, Morobe Distr., Wareo, alt. 700 m, June, fl., *Clemens* 1421 (BR, L).

This is based on one of the specimens of the aggregate, called *E. brassii* by Allen. It comes near Brass 6921, but differs by the obovate, apically crowded, obtuse leaves and the larger bracteoles.

Endiandra albiramea Kosterm., *spec. nov.*

Arbor ramulis albis sulcatis apicem versus minutissime adpresse pilosis foliis alternantibus rigide coriaceis obovato-ellipticis breve acumi-

natis basi cuneatis supra laevia nitida nervo mediano impresso costis filiformibus impressis subtus glauca glabra laevia nervo mediano prominentibus pustulosis costis utrinque 5-6 prominentibus subarcuatis nerviis secundariis laxis prominulis.

Typus: *Kostermans 2006* (BO)

Tree, 14 m; bark smooth, greyish. Branchlets whitish grey, grooved, glabrous, near the apex very minutely adpressed pilose; end buds with the same tomentum. Leaves spirally arranged, stiffly coriaceous, glabrous, obovate-elliptical, 4 x 7.5 — 5.5 x 9.5 cm, shortly, broadly acuminate, base cuneate; above glossy, smooth, midrib and the filiformous lateral nerves impressed, lower one glaucous, midrib prominent, minutely pustular, lateral nerves 5-6 pairs, erect-patent, slightly arcuate, prominent, secondary nerves lax, prominulous. Petioles 8-11 mm, narrowly channeled above.

Related to *E. spathulata*, but the leafshape different and fewer lateral nerves.

W. IRIAN, Vogelkop Peninsula, slope to Angi Gita lake, alt. 1700 m, ster., *Kostermans 2006* — 66. SSSiS (BO, K, L).

Endiandra archboldiana Allen

Cf. *Kostermans*, I.e. 485, no. 5, typus: *Brass 3813* (A, BO, NY). '

Additional specimen: Terr, of New Guinea, Atzera range behind 3-mile Livestock Sta., Morobe Distr., alt. 170- m, Long, 147 00 E, Lat. 6 45 S. ster., *NGF 16718* (A, BO, BRI, CANB, L), tree 20 m, diam. 25 cm, bark brown, pustular, inner bark pinkish brown, darkening in air, wood white, darkening in air, leaves yellow green, fls, dusty white.

Endiandra arfakensis Kosterm., *spec. nov.* — • Fig. 18

Arbor (?) *ramulis gracilibus apice minutissime sparse sericeis foliis alternantibus chartaceis glabris sublanceolato-ellipticis acuminatis basi acutis utrinque dense prominule areolatis et nitidis supra nervo mediano et costis filiformis planis subtus nervo mediano prominentibus costis utrinque 7-9 filiformis erecto-patentibus marginem versus arcuatis petiolis gracilis inflorescentiis brevis gracilis sparse sericeis tepalis ovatis acutis interioribus brevioribus glandulis in annulis crassis subconfluentis antheris ovalis cellulis ovalis extrorsis.*

Typus: *Mayr 184* (BO)

Tree (?) ; branchlets very slender, near the apex minutely sericeous, like the endbud. Leaves spirally arranged, glabrous, chartaceous, sublah-

ceolate-elliptical, 2.5 x 6.5 — 4 x 10.5 cm, conspicuously broadly acuminate, base acute, both surfaces glossy, densely areolate-reticulate; upper one with midrib and filiformous lateral nerves hardly prominent, lower one with prominent midrib, the 7-9 pairs of filiformous lateral nerves erect-patent, arcuate towards the margin. Petioles slender, up to 8 mm.

Panicles (detached) hardly branched, slender, up to 2 cm, towards apex minutely sericeous. Pedicels 2 mm, obconical. Tepals ovate, acute, outside sparsely sericeous, outer ones 2 mm, inner ones smaller. The basal glands more or less continuous into a fleshy ring, the top of the oval anthers with extrorse elongated cells just above the ring, the filaments very short, broad, ovary ellipsoid- ovoid, glabrous.

W.IRIAN, Arfak Mts, Ditschi, alt. 1200 m, June, fl., *Mayr 184* (BO).

Endiandra beccariana Kosterm., *spec. nov.*

Arbor ramulis apicalibus dense minutissime ferrugineo pilosis foliis alternantibus rigide chartaceis ellipticis breve acuminatis basi acutiusculis vel subrotundatis utrinque perdense minutissime areolatis supra glabra nervo mediano piano costis gracilis subimpressis subtus sparse minutissime pilosis glabrescentibus nervo mediano prominens Ubus pilosis costis utrinque 8-10 prominulis marginem versus arcuatis nervis secundariis prominulis parallelis paniculis axillaribus foliis brevioribus subglabris pedicellis longis floribus glabris tepalis repandis anguste ovatis glandulis magnis subconfluentibus antkeris late ovatis cellulis extrorsis ovario glabra stylo breve stigmatate inconspicuo.

Typus: *Kostermans & Tangkilisan 14-6* (= *bb. 33835*) (BO),

Tree, up to 32 m high, diam. 40 cm; bark greyish brown, lenticellate; wood yellowish. Branchlets towards apex densely, minutely, rusty, rather woolly pilose; end buds densely, minutely rusty sublanuginose; leaves spirally arranged (in the specimen *Kostermans 934* subopposite), rigidly chartaceous, elliptical, 5 x 8.5 — 11 x 19 cm, abruptly acuminate (acumen up to 1 cm, acute) base acutish or rounded; both surfaces very densely, minutely areolate; upper surface glossy, midrib flat, the slender lateral nerves slightly impressed; lower surface rather glossy, sparsely, very minutely pilose, glabrescent, midrib prominent, lateral nerves 8-10 pairs, erect-patent, prominent, towards the margin arcuate, secondary nerves prominulous, parallel; petioles 1-1.5 cm long, glabrescent. Panicles axillary, shorter than the leaves, 4-11 cm long, glabrous, consisting of a slender main peduncle, up to 2 cm long and rather few, rather patent branchlets

of up to 3 cm long. Pedicels slender, ca 3 mm long. Tepals fleshy, explanate, narrow, sublanceolate, acutish, 2.5 - 3 mm long; glands very-large, more or less confluent in a ring, ca 0.75 mm high; anthers broadly triangular, 0.25 mm, protruding beyond the glandular ring; cells large, extrorse; ovary ellipsoid, glabrous; style hardly 0.5 mm long with inconspicuous stigma.

Related to *E. papuana*, from which it differs by the glabrous and shorter panicles and flowers, the narrower tepals and by the tomentum of the vegetative parts. Also related to *E. forbesii*, but the tomentum entirely different. Beccari noted on his specimen, that it was an undescribed species.

MOKOTAI ISL., Distr. Tobelo, N. Totodoku, alt. 30 m, May, fl., *Kostermans & Tangkilisan U6* (= *bb. 33835*) (A, BO, G, K, L, SING); *ibid.*, along Sambiki R., alt. 100 m, May, fl., *Kostermans 890* (BO); *ibid.*, alt. 30 m, May, fl., *Kostermans 85k* (BO); *ibid.*, fl., *Kostermans 934* (BO); W. IRIAN, Manokwari, Warnapi, 15 km N of Ransiki, alt. 10 m, Sept., fl., *Kostermans U8* (= *bb. 33605*) (A, BO, BR, K, L, SING); *id. U91* (= *bb. 33640*), ster. (A, BO, K, L, SING); Ramoi, buds, *Beccari 25A* (Fl, 2 sheets); Sorong, Kadamah, Aug., fl., *Main 592* (A, BO, BRI, K, L, P, PNH, SING).

Endiandra carrii Kosterm., *spec. nov.* — Fig. 19

Arbor ramulis (in sicco) atris glabris laevis foliis suboppositis ellipticis vel obovato-ellipticis percassis glabris obtusis basi acutis supra pernitida nervo mediano piano costis filiformibus impressis subtus subnitidis mox glabris nervo mediano valde prominentibus costis gracilis utrinque 6 - 8 prorninulis satis erectis pamiculis axillaris dense minutissime ferrur gineo sublanuginosis foliis subaequilongis pauce ramosis floribus sparse piloisis tepalis erecto-patentibus ovatis acutis staminibus tres antheris oblongis cellulis extrorsis filamentis brevis glandulis basalibus globosis sessilis ovario glabro stylo breve

Typus: *Carr 14330* (BM).

Tree 33 m tall; branchlets smooth, glabrous, in sicco black, end bud crusty dirty white. Leaves subopposite, very rigidly coriaceous, elliptical to subobovate-elliptical, 2.5 X 6.5 — 5.5 X 10 cm, obtuse, base acute; upper surface very glossy, glabrous, midrib flattened, lateral nerves slender, impressed; lower surface less shining, initially with a scattered, very minute tomentum, soon glabrous, midrib prominent, lateral nerves 6-8 pairs, slender, erect-patent to rather erect, straight, curved at the margin, secondary nerves obscure, parallel. Petioles glabrous, 1 - 1.5 cm long, flat above.

Panicles axillary, up to 8 cm long, the apical part densely, minutely, finely, rusty sublanuginose, branches few, short; flowers densely pilose, expanded 3 mm in diam.; tepals sparsely pilose outside, ovate, acute, 1.5 - 2 mm; inside of flower densely sublanuginose. Stamens 3, anthers oblong with extrorse cells, filaments short, basal glands globose, sessile; ovary slender, ovoid, style very short.

Related to *E. xylophylla* Kosterm., but the leaves and tomentum different, the anthers oval.

E. NEW GUINEA, Papua, Boridi, alt. 1300 m, Oct., fl., *Carr 14330* (BM, BO, K, L, SING, 3 sheets); Alola, alt. 200 m, tree 20 m, Dec, buds, *Carr 13849* (BM, K, L, SING, 3 sheets); *ibid.*, Aug., buds, *Carr 14206* (BM, BO, K, L, SING, 2 sheets); *ibid.*, April, young fr., *Carr 14892* (BM, K, L).

Endiandra dielsiana Tesch.

Cf. Kostermans, I.e. 485, no. 21, *typus: Ledermann 8885* (SING), *paratypus: Ledermann 12438*.

New synonym: *Endiandra glandulosa* Allen, cf. Kostermans, I.e. 487, no. 35, *typus: Brass 13678* (A, BO). The gland-dotted leaves and the pustular branchlets are very characteristic.

Specimens examined: W. Irian, 4 km SW. of Bernhard Camp, Idenburg R., common in mossy forest canopy layer, alt. 900 m, March, fl., *Brass 13678* (A, BO), tree 15 m, diam. 30 cm, the edges of the leaves recurved, lower leaf surface glaucous, et *13144* (A, BM, BO), tree 22 m, diam. 46 cm, bark 17 mm, dark brown, scaly, rough, with little gum, fls. white, fr. redbrown; 15 km SW. of Bernhard Camp, alt. 1580 m, Jan., fl., *Brass & Versteegh 11968* (A, BM, BO), frequent, tree 26m, diam. 46 cm, bark black, scaly, wood lightbrown, fls. white; 6 km SW. of Bernhard Camp, alt. 1200 m, Febr., fr., *Brass & Versteegh 12580* (A, BM, BO), tree 22 m, fr. green; Arfak Mts., Angi Gita lake, alt. 1900 m, Oct., buds, *Kostermans 2004* (BO, L), tree 5m; Cycloop Mts., Distr. Hollandia (Kotabaru), path Ifar-Ormu, pass between Mt. Meraribu and Mt. Baboko, alt. 1220 m, Oct., buds, *Van Roy en 3701* (BO, L), tree 22 m, bole 12 m, diam. 25 cm, common in forest dominated by Myrtaceae along creek.

Endiandra djamuensis Kosterm., *spec. nov.*

Endiandra rubescens (non Bl.) Teschner in Engl. bot. Jahrb. 58: 43 (in nota) and 414 (in clavi). 1923.

Arbor ramulis glabris laevis foliis alternantibus rigide chartaceis glabris oblongis breve obtuse acuminatis utrinque minute areolatis basi acutis supra nervo mediano piano vel vix prominulo costis obscuris subtus nervo mediano prominulo costis filiformibus utrinque ca 9 erecto-patentibus paniculis parvis axillaris laxe minutissime adpresse tomentellis braeteis caducis alabastris conicis tepalis carnosis antheris elongato pyramidalis sessilis glandulis basalibus nullis ovario stylo breve.

Typus: *Schlechter 17341* (P).

Tree, branches grey, smooth, branchlets smooth, glabrous, the apex and the end bud minutely adpressed pilose. Leaves spirally arranged, subcoriaceous, glabrous, oblong, 3 x 7 — 4 x 9 cm, shortly, but conspicuously, obtusely acuminate, base acute, both sides minutely areolate, upper surface with flat or slightly raised midrib, lateral nerves very faint, lower one with prominulous midrib, the ca 9 pairs of lateral nerves filiformous, erect-patent, near the margin arcuate. Petioles slender, 6-10 mm, flat above.

Panicles axillary, hardly branched, up to 2 cm long, laxly, minutely adpressed pilose; pedicels 2 mm. Buds conical, acute. Flowers 5 mm diam.; tepals fleshy, elongate ovate, 3 mm, almost glabrous, inside at base with a broadly triangular pulverulently aureous-pilose spot; anthers narrowly elongate triangular with large, basal, extrorse lateral cells, back pilose, 1.5 mm; glands none. Ovary ellipsoid-ovoid, glabrous, style short.

Although related to *E. rubescens* BL, the species differs considerably in leaf size and shape and the inflorescence. So far only known from a single collection (and a single sheet!).

TERR, OF NEW GUINEA, forest of Djamu, alt. 800 m, Febr., fl., *Schlechter 17341* (P, BO, fragment).

Endiandra engleriana Teschn.

Cf. Kostermans, l.c. 486, no. 24, typus: *Schlechter 19796* (BO, BR, P, 2 sheets, UC), Goridjaa, 1100 m, buds June.

New record: W. Irian, Faker, Subdistr. Sarmi, alt. 5 m, rather common, April, buds, *BW 2278* (BO, L), tree 32 m, diam. 51 cm, biggest buttresses 3 m high.

Endiandra eundenia Kosterm., *spec. nov.* — Fig. 20

Arbor ramis griseo-albis glabris foliis alternantibus coriaceis glabris ellipticis vel subobovato ellipticis utrinque dense minutissime areolatis

nerviis prirwariis supra impressis subtus prominentibus petiolis longis paniculis dense minutissime ferrugineo pilosis axillaribus ramulis subpatentibus repandis floribus subglomeratis tepalibus carnosissimis explanatis staminibus tria minuta extrorsa glandulis confluentes magnis ovario glabro ellipsoideo stylus brevis stigmatibus minute subpeltatis.

Typus: NGF 10252 (BO).

Tree 10 - 20 m high, up to 15 cm diam.; bark smooth, grey brown or grey white. Wood biscuit coloured. Branchlets rather thick, smooth, grey white; end bud with matted, white, minute, adpressed hairs. Leaves spirally arranged (rarely sub-opposite), coriaceous, elliptical to subobovate-elliptical, 6.5 x 12 — 11 x 21 cm, very shortly, broadly acuminate, base cuneate, glabrous, both surfaces densely, minutely areolate; upper surface with broad, slightly impressed midrib and lateral nerves; lower surface with prominent, often minutely pustular midrib, lateral nerves 7-8 pairs, erect-patent or rather erect, slightly arcuate, prominent; secondary nerves slender, parallel, prominulous. Petioles 1.5 - 2 cm, slightly concave above.

Panicles axillary, rather narrow, densely, very minutely, densely rusty pilose, up to 8 cm long, consisting of a stiff main peduncle with distant, patent, short branchlets; the latter in turn very shortly branched, the flowers crowded. Flowers pink with cream centre, up to 6 mm in diam. Tepals fleshy, explanate, broadly ovate, up to 1.5 mm. The basal glands in a solid, fleshy ring of 1 mm high; the anthers small, ovate, protruding, cells extrorse. Ovary ellipsoid, 1 mm, the style much shorter with an. obscure, peltate stigma.

Very characteristic by the white branchlets, the stiff panicles and the fused glands, which places it near *E. papuana*, Ltb.

TERRITORY OF N. GUINEA, Jossphstaal, Madang Distr., alt. 80 m, Lat. 4 45 S, Long. 145 00 B, Sept., fl., *White*, NGF 10252 (BO, K, L); ridge jear Tumbundi village, Josephstaal, Sept., buds, *White*, NGF 10307 (BO, L).

Endiandra faceta Kosterm., spec. nov. — Fig. 21

Arbor ramulis gracilibus glabris sparse minutissime lenticellatis foliis alternantibus glabris coriaceis lanceolatis parvis sat longe acuminatis basi acutis utrinque nitidis perobscure minutissime areolatis supra laevia nervo mediano prominulo costis vix prominulis subtus nervo mediano prominentibus costis filiformibus utrinque 7- 9 prominulis marginem- versus arcuatis paniculis axillaribus parvis foliis brevioribus paucifloris minutissime adpresse pilosis floribus subglabris tepalibus explanatis coriaceis stamini-

tres cuntheris sessilibus elongatis minutissime aureo pilosis cellulis parvis subbasalibus extrorsis glandulis deest ovario glabro stylos breve,

Typus: Carr 12195 (BM)

Tree 13m tall, branches slender, grey, smooth; branchlets glabrous, minutely, sparsely lenticellate, slender; end bud minutely sericeous. Leaves spirally arranged, glabrous, coriaceous, lanceolate, 1 x 3 — 2 x 7 cm, with a rather long (5-8 mm) slender, blunt acumen, base acute, both surfaces glossy and obscurely, very minutely, densely areolate; upper one with prominulous midrib and rather inconspicuous, prominulous lateral nerves; lower one with prominent midrib, the 7-9 pairs of very slender, prominulous, erect-patent, slightly arcuate lateral nerves prominulous. Petiole 5-8 mm, glabrous, slender, flattened above.

Panicles axillary, small, up to 2 cm, minutely, adpressed pilose (more densely towards apex), few- and very shortly branched, bracteoles caducous. Flowers ochre yellow (fresh), almost glabrous outside; tepals fleshy, explanate, rather narrowly ovate, acute, 1.5 mm, inside with a basal triangle of pulverulent hairs. The 3 fertile anthers sessile, elongate, 1.5 mm long, densely, golden, pulverulently pilose, the small, extrorse cells sub-basal (connective thick, long-produced), basal glands none; ovary ellipsoid, glabrous, merging into a short style.

Superficially like *E. microphylla* Teschn., but leaves and tomentum different, flowers and anthers entirely different.

E. NEW GUINEA, Papua, Koitake, alt. 500 m, Febr., fl., Carr 12195 (BM, BO, L, SING).

Endiandra flavinervis Teschn.

Cf. Kostermans, I.e. 487, no. 29, typus: *Ledermann 10876*.

The type specimens is apparently lost and no duplicates have been discovered. The material enumerated below conforms very well with the protologue with one exception; the number of lateral nerves is given as 5-6, however, it is mostly between 9 and 11, there are, however, in the same specimen leaves with 5 pairs of lateral nerves and other with up to 11 pairs. The specimens NGF 15488 and Saunders 547 have more elongate, narrower leaves.

New records: Territory of New Guinea, Morobe distr., Bulolo, Plantation area 1952-54, July, buds, NGF 5219 (BISH, BM, BO, K, L, SING), tree 15 m, diam. 45 cm, wood pinkish brown; *ibid.*, logging area, Long.

7 10 S, Lat. 146 40 E, alt. 800m, July, fl., *NGF 9187* (BO), tree 33 m, diam. 90 cm, bark 1.25 mm, outer bark dark red-brown, corrugated with numerous predominately vertical cracks, underbark red tan mottled, inner bark light brown with reddish lines, hardly corky, non fibrous, resinous smell, wood moderately hard and heavy, sapwood indistinct, hardwood straw with orange tinge, characterised by fine medullary rays, fine irregularly spaced bands of parenchyma and small pores, surrounded by parenchyma, calyx reddish green, corolla yellow to orange, "disc" and anthers yellow; Bulolo, alt. 1000 m, Oct., fr., *NGF 7325* (BISH, BO, K, L), tree 36 m, bole 22 m, diam. 35 cm with slight surface buttresses, bark greyish, slightly flaky, 1.25 mm, sapwood light brown, heartwood light brown, becoming chocolate brown in centre, outer surface of sapwood corrugated, fruits dark purple, most of them cylindrical-ellipsoid, mature ones subovoid-ellipsoid, 1 x 2 cm, apiculate; *ibid.*, Oct., fr., *NGF 7371* (BO, K, L), tree 33 m, fruit 1.5 X 2.5 cm, wood orange brown turning midbrown after cutting; *ibid.*, 1200m, June fl., *NGF 5281* (BO, K, L), leaves yellow green; *ibid.*, lower Inakanda logging area, Lat. 7 12 S, Long. 146 39 E, alt. 800 m, in disturbed mid-mountain rain forest on recent alluvials, with *Pangium* and *Dracontomelon*, "Horu Topo" (Garaina dialect), Nov., fl., *NGF 15488* (BO, K, L); Madang subdistr., Ramu valley, ca 5 miles SE Faita airstrip, alt. 250 m, ster., *Sounders 547* (BO), tree 27m, bole 16m, diam. 21cm, crown 5m diam., wood light pinkish brown, parenchyma in irregular bands, outer bark redbrown, longitudinally cracked, inner bark red; Sepik Distr., Yellow R. Hills, Oct., fl., *NGF 3933* (BM, BO, K, SING), tree up to 25m, bole 20 m, scarcely buttressed, diam. 45 cm, crown narrow, leaves dull green above, pale below, fls. brownish orange, calyx green, anthers dark brown, petals waxy, bark brown, flaky, vertically cracked, brown on the back inner bark brown, 4 mm thick, wood straw, sapwood undefined.

Endiandra forbesii Gamble

Cf. Kostermans, I.e. 487, no. 30, *typus: Forbes 543* (Fl, BM, K, L).

New records: Papua, alt. 70 m, Kaibo near Koporika, Milne Bay Distr., Lat. 10 18 S., Long. 150 14 E, unbuttressed tree, 23 m, bole 15 m, diam. 25 cm, bark white with brown pustules, smooth, under bark dark green, inner lightbrown, wood pale straw, rapidly darkening, fls. yellow, June, *NGF 16963* (BO, K); Morotai Isl., Subdistr. Tobelo, Tilai, alt. 25 m, July, fl., *bb. 33938* (A, BM, BO, BR, CALC, K, L, LAE, NY, SING), small-leaved; *ibid.*, Totodoku, May, buds, *Kostermans 627* (A, BO, BRI, CALC, K, L, LAE, NY, P, PNH), leaves up to 10 x 22 cm, petioles 3 cm; *ibid.*, May,

fl., *Kostermans 1689* (A, BISH, BO, CALC, K, L, LAE, NY, P, PN, SING) ;
 ibid., alt. 30 m, May, fl., *Kostermans & Tangkilisan 67 = bb. 33764* (BO,
 L), tree 22 m, bole 16 m, diam. 30 cm, fls. dark yellow, disc yellow, anthers
 dirty white; ibid., May, fl., *Kostermans & Tangkilisan 136.= bb. 33827* (A,
 BO, BR, K, L, PNH, SING).

Endiandra formicaria Kosterm., *spec. nov.*

Endiandra brassii Allen in J. Arnold Arb. 23: 126. 1942, p.p., quoad specim.
Brass 6921 (A, BO).

*Arbor ramulis minutissime pulverulents ferrugineo adpresse pilosis
 foliis altemantibus chartaceis glabris ellipticis vel subovato-ellipticis breve
 acuminatis basi cuneatis utrinque perdense minutissime reticulatis {nee
 areolatis} supra nervo mediano costisque impressis subtus nitidis nervo
 mediano prominentibus costis utrinque 7-9 erecto - patentibus prominen-
 tibus subarcuatis petiolis longis supra ccmcavis paniculis axillaris minu-
 tissime adpresse pulverulente pilosis gradlis foliis brevioribus bracteolis
 subpersistentibus minutis floribus parvis glabris intus pilosus antheris
 late oblongis cellulis magnis extrorsis filamentis aequilongis sat latis glan-
 dulis basalibus subglobosis substipitatis ovario glabro globoso stylo breve.*

Typus: *Brass 6921* (BO).

Small tree, 5 - 8 m, bark smooth, greyish brown, living bark pale brown; branches brown, smooth, usually hollow, branchlets minutely, pulverulently, rusty adpressed pilose; end bud minutely sericeous. Leaves spirally arranged, chartaceous or pergamentaceous, glabrous, elliptical to subovate-elliptical, 6 x 15 — 12 x 25 cm, shortly, obtusely acuminate, base acute or cuneate, both surfaces glossy, densely, minutely, prominulously reticulate (not areolate), upper one with impressed midrib and lateral nerves, lower one with prominent midrib and 7-9 pairs of prominent, erect-patent, slightly arcuate, lateral nerves. Petioles rather slender, 1.5 - 2 cm long, glabrous, concave above.

Panicles axillary, slender, 5 to 17 cm long, minutely, pulverulently pilose; bracteoles minute (0.5 mm), acute, persistent at anthesis. Flowers yellow (fresh), almost glabrous, up to 2 mm in diam., inside adpressed pilose; tepals ovate, erect-patent; anthers elliptical, cells large, extrorse, filaments as long, rather broad, basal glands globose, sub-stipitate; ovary globose, glabrous, abruptly narrowed into a short style, stigma inconspicuous. Staminodes ovate, acute, very small.

This might represent *E. asymmetrica* Teschn., of which no type specimen is extant, but the inadequate description does not fit exactly as to the pilosity; the characteristic of asymmetrical leaves is not very useful as such leaves may occur in every *Endiandra*. The Soegeng specimen has hollow branches (pith eaten away) and round entrance holes for ants. The perianth persists under the very young fruit.

W. IRIAN, S. part, near Inggembit, Long. 141° 0' E, Lat. 5°38'33"S, treelet 5 m, May, fl., young fr., *Reksodihardjo SIS* (A, BO, K, L); Papua, Palmer R., 2 miles below junction Black R., alt. 100 m, leaf nerves and fls. brown, June, fl., *Brass 6921* (A, BO).

Endiandra fragrans (Allen) Kosterm.

Cf. Kostermans, Ie. 487, no. 31, typus: *Brass 7465* (A, BO), Middle FlyR.

This was reduced to *E. montana* C. T. White by L. S. Smith (in Proc. R. Soc. Queensl. 70: 29. 1959). However, *E. fragrans* differs by the shape and the size of the leaves and especially by the laterally flattened, large, oval fruit. I consider it a different species (cf. *E. montana*).

Additional material: S. West Irian, forest Ohaba, Aug., fr., *Branderhorst 19* (A, BO, K, L); trail to Tamurik, Aug., fr., *Anta 235* (BO, K, L); culta in Hort. Bogor. Oct., fls. white, *Kostermans s.n.* (A, BM, BO, BRI, CANB, C, K, L, LAE, NY, SING, US); culta in Hort. Bogor. near Presidential Palace, Jan., fr., *Reksodihardjo 191* (A, BO, CANB, G, K, L, LAE, NY, P, US).

Endiandra fulva Teschn. —

Cf. Kostermans, Ie. 487, no. 32, typus: *Ledermann 11089, 11381, 11408, 11480, 13059*.

New records: W. Irian, Distr. Hollandia, Cycloop Mts., path Ifar-Ormu, alt. 1220 m, Dec, fl., *Van Royen 5124* (BO, L), tree 25 m, diam. 60 cm, leaves dark yellowish green above, fls. light yellow, anthers black, buttresses merging gradually into the trunk, bark reddish brown, wood lightbrown, becoming red, fairly common; *ibid.*, Mt. Baboko, Oct., buds, *Van Royen 3701* (BO, L); *ibid.*, Mt. Baboko, alt. 1150 m, Nov., buds, *BW 904* (BO, L); Idenburg R., 6 km SW of Bernhard Camp, alt. 1300 m, Febr., young fr., *Brass & Versteegh 12579* (A, BM, BO), common tree of 25 m, diam. 44 cm, bark 9 mm, brown, fairly rough, wood redbrown; Papua, Alola, 1800 m, Dec, buds, *Carr 13895* (BM, K, L); Morobe Distr., **Yunzaing**, ca **1500** m, April, fl., *Clemens 2956* (A, BR).

Endiandra gem Kosterm., *spec. nov.*

Arbor ramulis gracilis glabris apice minute adpresse griseo pilosis foliis alternantibus chartaceis glabris ellipticis breve acuminatis utrinque minute areolatis basi acutis supra nerviis cum nervo mediano impressis subtus nervo mediano prominulis costis utrinque 6-8 erecto-patentibus subarcuatis prominulis petiolis gracilis infructescentiis axillaris foliis brevioribus sparse minutissime adpresse pilosis tepalis triangulari-ovatis adpresse pilosis antheris transverse oblongis cellulis magnis extrorsis glandulis basalibus orbicularis sessilis fructus ovoideo-cylindricis.

Typus: Anta 64 (BO)

Tree, branchlets slender, at apex minutely adpressed grey pilose like the end bud. Leaves spirally arranged, chartaceous, glabrous, elliptical, 3.5 X 8 — 6.5 X 15 cm, shortly acuminate, base acute, both surfaces densely, minutely areolate, upper one with slightly impressed midrib and lateral nerves, lower one with prominent midrib, the 6-8 pairs of erect-patent, slightly curved lateral nerves prominulous. Petioles slender, 1 - 1.5 cm long, sub-concave above. Infructescences axillary, 4 - 7 cm long, slender, sparsely, minutely adpressed pilose, hardly, shortly (1 cm) branched. Tepals ovate-triangular, acute, outside adpressed pilose, 2 mm; anthers transverse oblong, 0.75 mm with large, extrorse cells, basal glands orbicular, as long as the anthers (0.5 mm). Fruit cylindrical - subobovoid, up to 2.5 x 1 cm.

Closely related to *E. glauca* R. Br., but the tomentum different, the flowers apparently much smaller with smaller sessile glands.

W. IRIAN, Sakur, trail to bivouac Kiwa alt. 5 m, July, fr. young fr., Anta (Expedition Wentholt) GU (BO, G, K, L), local name: "Gem"; distributed as *E. glauca*, R. Br. The flowers were described after the remnants under the young fruit.

Endiandra glauca R. Br.

Cf. Kostermans, l.e. 487, no. 36, typus: *Banks & Solander s.n.* (BM, P), anno 1770, Illustr. Bot. Cook's Voyage t. 252, p, 81 (BM).

Aru Isl., Isl. Trangan, village Ngaibor, low, June, fls. red, fr., *Buwalda* 5394 (BO, K, L) = *bb.* 25445 (A, BO, K, L, PNH, SING); Isl. Kobroor, Dosinamalau, low, May, buds, *Buwalda* 5102 (A, BO, CANB, G, K, L, LAE, P, US); Key Isl., fr., *Jaheri s.n.* (BO, K, L); W. Irian, Najaja near Uta, June, fls. red, *Aet* (exped. Lundquist) 328 (A, BO, CANB, G, K, L, P, SING); Sorong, ster., *Beccari s.n.* (FI); Sg. Merauke, fl., *Jaheri s.n.* (BO, CANB, K, L, P); Waren, 60 km S. of Manokwari, March, buds,

Kanehira & Hatusima 13097 (BO), limestone, 300m, treelet 4m; *ibid. 13112*, buds rose (BO); Lake Daviambu, Middle Fly R., Sept., fls. pink, tree 3 m, *Brass 7762* (A, BO) et *7789* (A, BO), tree 6 - 7 m, fr. black, glaucous, Sept.; Territory of Papua, Dagwa, Oriomo R., W. Div., Febr.-March, fls. red, *Brass 594-0* (A, BO, NY), tree 5-7 m; Oriomo R., Jan., buds, *NGF 10377* (BO, K), tree 10 m, diam. 7.5 cm, grey bark, buds purple with glaucous bloom, tepals dull red; near Weam, Bensbach subdistr., alt. 33m, damp savannah grassland, Aug., fr., *NGF 33563* (A, BISH, BO, BRI, CANB, K, L, SING), fr. ellipsoid, 22 X 13 cm, tree 5 m, bark grey, shallowly fissured into small squares, inner bark orange brown, wood white; *ibid.*, Aug., fr., *NGF 33622* (A, BO, BRI, CANB, K, L, SING), tree 2.5m; Queensland, Roekingham Bay, *Dallachy*, fl. (BO, 2 sheets, **BR, LE, P**).

Endiandra havelii Kosterm., *spec. nov.* — Fig. 22

Arbor ramulis sat gracilis glabris sparse minutissime lenticellatis foliis alternantibus rigide coriaceis ellipticis breve acuminatis bast breve subcuneatis utrinque minutissime' areolatis supra nervo- mediano costisque impressis subtus pallidioribus nervo mediano prominentibus costis utrinque ca 10 prominentibus sat erectis strictis nerviis ceteris vnconspicuis petiolis sat longis supra planis paniculis fructiferis glabris axillaribus foliis longioribus pauciramosis\ strictis, tepalibus pro genera magnis glabris fructus immaturus subcylindricis.

Typus: *Havel & Kongara NGF 17291* (BO)

Tree 23 m high, crooked bole 8 m, diam. 37 cm, unbuttressed, crown broad; bark 15 mm thick, outer bark grey to red brown, smooth, except for fine fissures, underbark wine red, veined, inner bark red brown, corky, fruity smell; wood orange brown, moderately hard and heavy, characterised by irregular thin bands of parenchyma. Branchlets glabrous with tiny lenticels; end bud grey sericeous. Leaves spirally arranged, rigidly coriaceous, elliptical, 3.5 X 8.5 — 4.5 x 9.5 cm, shortly, slenderly acuminate, base shortly cuneate, both surfaces very minutely areolate; upper one with impressed midrib (basal part flush with the surface) and lateral nerves; lower paler, glaucous (fresh!) with prominent midrib, lateral nerves ca 10 pairs, rather erect, straight, curved near the margin, slender, prominent, other nerves invisible. Petioles 1.5-2 cm, flat above.

Fruitbearing panicles axillary, glabrous, up to 12 cm long, stiff, few-branched (branches up to 2.5 cm long), peduncle up to 4 cm. Tepals ovate, acute, fleshy, up to 7 mm long; immature fruit sub-cylindrical, 4 x 13 mm, apiculate.

Near *E. forbesii*, but glabrous and apparently larger flowers.

TERRITORY OF N. GUINEA, Morobe Distr., Wau Subdistr., Upper Watut, Lat. 6 50 S, Long. 146 25 E, alt. 1500 m, on banks of creek in association with *Pangium*, Oct., young fr., *Havel & Kongara NGF 17291* (BO, K, L); Yunzaing, alt. 1500 m, ster., *Clemens 3465* (BR), leaves up to 5 x 12 cm.

Endiandra impressicosta Allen . . .

Cf. Kostermans, I.e. 489, no. 42, typus: *Brass 7619* (A, BO).

New record: W. Irian, Merauke Distr., near Bajampa, Merauke R., alt. 20 m, April, fls, white, *Reksodihardjo 240* (A, BO, L), tree 20 m, diam. 25 cm, bark lightbrown, smooth, 1 mm, living bark light yellowish brown, 5 mm, wood lightbrown, rather hard.

Allen is under the wrong impression, that glaucousness of the lower leaf surface in Lauraceae is of importance as a specific character. Not only glaucous and non-glaucous leaves occur on the same plant (in the field) and non-glaucous specimens of an otherwise glaucous one are for from rare, but the plants, collected according to the Schweinfurth method and those treated for some time in a alcoholic solution of corrosive sublimate, tend to loose their waxlayer completely (cf. under *E. clemensiae* = *E. acuminata*).

Endiandra inaequitepala Kosterm., *spec. nov.* — Fig. 23

Arbor ramulis glabris lenticellatis foliis alternantibus rigide chartaceis anguste subobovato-ellipticis vel ellipticis glabris utrinque conspicue prominente reticulatis (nee areolatis) brevis acuminatis basi acutis costis utrinque 9-14 prominulis erecto-patentibus paniculis strictis axillaribus subterminalibusque dense minutissime flavo pilosis foliis brevioribus floribus dense flavo subsericeis tepalibus inaequalibus staminibus tres ovalis cellulis magnis extrorsis ovario dense piloso stigmatate gracilis.

Typus: *Carr 15172* (BM)

Tree, up to 25 m high; branchlets glabrous with tiny lenticels; branches roughish, yellowish grey; end bud hardly, minutely adpressed pilose. Leaves spirally arranged (the upper ones sub-opposite), stiffly chartaceous, glabrous, elongate elliptical to subobovate-elliptical, 4 x 10 — 8 x 25 cm, both surfaces glossy with very conspicuous, prominulous reticulation (not areolate), upper surface with flat, broad midrib, and filifor-

mous, prominulous lateral nerves; lower surface with prominent, minutely pustular midrib, the slender, 9-14 pairs of lateral nerves erect-patent, prominulous, slightly arcuate, secondary, and tertiary nerves similar, reticulate. Petioles 1-2 cm long, concave above.

Panicles axillary, pseudo-terminal, rigid, stiff, up to 6 cm long, with thick, pustular main peduncle and few, stiff branches, sparsely pilose, towards apex, densely, minutely, yellowish adpressed pilose, bracts and bracteoles caducous. Flowers cream, turning red (fresh), tube shallow; outer 3 tepals broadly ovate-triangular, acute, both sides densely, adpressed pilose; inner tepals thinner, much narrower. Stamens three, the anthers oval with extrorse large cells, which comprise the entire anther, ca 0.75 mm long, the filament rather slender, ca half as long; after dehiscence the anther is channeled at the top; basal glands not seen. Ovary subglobose, densely, pulverulently pilose, ca 1 mm; style rather slender, slightly shorter, stigma inconspicuous. Fruit ellipsoid, 3,5 x 8 cm, partly glabrous, partly with a rusty, pustular crust, pedicel cylindrical, 8 mm diam., 1,5 cm long.

A species outstanding by its reticulation, the unequal tepals, the large anther cells and the pilose ovary with slender style.

E. NEW GUINEA, Papua, Isuarave, alt. 1500 m, Febr., fr., *Carr 15370* (B, 2 sheets, BO, SING, 7 sheets); *ibid.*, alt. 1300 m, March, buds creamy white, *Carr 16082* (BM, BO, SING, sheets); *ibid.*, alt. 3500 m, Febr., fl., *Carr 15172* (BM, 2 sheets); S. slope of Hydrographers Range, near Siurane, Managalase area, N. Div., alt. 1200 m, July, fl., *Pullen 5508* (BO, L, LAE), tree 39 m.

Endiandra invasiorum Kosterm., *spec. nov.*

Arbor ramulis gracilis minutissime ferrugineo sublaniginosis foliis alternantibus coriaceis subovato-ellipticis breve late acuminatis basi acutis supra nitida laevia glabris nervis obscuris costis subimpressis subtus sparse minutissime sublanuginosa nervo mediano prominentibus costis utrinque ca 6 prominentibus gracilis subarcuatis erecto-patentibus nerviis secundariis filiformis prominuUs petiolis gracilis pilosis paniculis axillaris saepe foliis longioribus laxis dense minute ferrugineo sublanuginosis bracteolis deciduis floribus pilosis tepalibus explanatis carnosus intus glabris antheris ovalis cellulis magnis extrorsis filamentis distinctis glandulis basalibus orbicularibus sessilibus ovario glabro stylo breve.

Typus: *NGF 13129* (BO)

Tree 14 m, bole 11 m, diam. 25 cm.; bark brown with small pustules, blaze brown; wood pale straw. Branchlets slender, **densely, minutely, rusty**

sublanuginose (hairs bent); branches slender, smooth, grey, end bud densely rusty sublanuginose. Leaves spirally arranged, coriaceous, subovate-elliptical, 2.5 x 5 — 5 x 11, acuminate, base acute, both surfaces obscurely, minutely pitted (areolate), upper one smooth, glossy, midrib flat, lateral nerves obscure, slightly impressed, lower surface sparsely, minutely sublanuginose, midrib prominent, lateral nerves ca 6 pairs, slender, erect-patent, slightly curved. Petioles slender, 8-11 mm, slightly flattened above.

Panicles axillary, lax, rather narrow, 3-13 cm long, densely rusty, minutely sublanuginose, few and shortly branched; bracts and bracteoles caducous at anthesis. Pedicels 2 mm. Flowers densely sublanuginose, 5 mm diam.; tepals elongate-ovate, fleshy, explanate, 1.5mm, inside glabrous; anthers oblong, obtuse with large extrorse cells, filaments distinct, slightly shorter, basal glands orbicular, same size as the anthers, sessile. Stamens cordate, acute on a slender pilose filament. Ovary glabrous, ellipsoid, style slender, short; inside of flower densely pilose.

Belongs in the group of *E. papuana* Ltb.

TERR. OF NEW GUINEA, Central Distr., Brown R. road, 4 miles from Forest Station, Lat. 9 15 S, Long. 147 20 E, alt. 35 m, secondary forest, April, fl., *Eddowes & Maru Kumvl NGF 13129* (A, BO, BRI, CANB, K, L).

***Endiandra latifolia* Kosterm., spec. nov.**

Arbor ramulis crassis sulcatis dense minute ferrugineo sublanuginoso tomentellis foliis suboppositis rigide chartaceis late ellipticis vel suborbiculato-ellipticis brevissime acuminatis vel rotundatis basi in petiolum crassum abrupte contractis et saepe subdecurrentis utrinque minute areolatis supra glabra nervo mediano piano lato costis impressis nerviis secundariis sat obscuris impressis subtus sparse minutissime pilosis nervo mediano prominentibus costis utrinque ca 10 sat patentibus marginem versus arcuatis reticulatio prominente paniculis axillaris multifloris foliis brevioribus dense minutissime sublanuginosis pedunculis sat crassis pedicellis gracilibus floribus parvis sparse minutissime pilosis antheris ovato-oblongis cellulis magnis extrorsis filamentis antheris subaequilongis glandulis basalibus globosis parvis sessilibus.

Typus: *Hoogland U5S5* (BM)

Tree 25 - 43 m, bole 20 - 23 m, diam. up to 40 cm, crown small, compact, bark pale brown, ca 7 mm thick, somewhat flaky with shallow, fine, **longitudinal** fissures; **under bark deep purple-brown; inner bark deep brownish**

pink with some pale fibres; wood pinkish straw, darker towards the centre. Branchlets stout, sulcate, like the end bud densely, minutely, rusty sublanuginose. Leaves spirally arranged and subopposite, rigidly chartaceous to coriaceous, broadly elliptical to suborbicular-elliptical, 5 x 9 — 15 X 18 cm, very shortly acuminate or obtuse, base abruptly contracted into the petiole, often decurrent as two narrow wings; both surfaces densely, minutely pitted, upper one glabrous with flat, broad midrib, the lateral and usually the secondary ones too, impressed; lower surface sparsely, minutely sublanuginose, conspicuously, prominulously, rather laxly reticulate; midrib strongly prominent, lateral nerves (7 - 19 pairs) rather patent, arcuate, prominent. Petioles thick, 1.5-2 cm, flat above.

Panicles multiflowered, axillary, densely, minutely, rusty sublanuginose, up to 20 cm long, main peduncle stout, branches distant, up to 6 cm long; pedicels slender, 3 - 5 mm long; bracts and bracteoles minute, caducous. Flowers 2 mm diam., sparsely pilose outside, glabrescent; tepals thin, erect-patent, ovate, 1.5 - 2 mm; the 3 anthers ovate, acutish with extrorse rather large cells, the connectives slightly produced beyond the cells, filaments distinct, about as long as the anthers; basal glands subglobose, small, sessile; ovary glabrous, ovoid, merging into a very short style, stigma inconspicuous; inside of flower densely pilose.

Belongs in the group of *E. ferruginea* and *E. pilosa*; it is characterised by the leathery, very broad leaves, the minutely pitted surface, the number of lateral nerves, the indumentum, shorter than, in *E. pilosa*.

TERR, OF PAPUA. N. Distr. near Budi Barracks, Tufi Subdistr., alt. 75 m, Aug., fl., *Hoogland 4585* (BM, BO, G, L); S. slopes of Hydrographers Range, near Siurane, Managalase area, alt. 1200 m, ster., *Pullen 5568* (BO), tree 35 m; *ibid.*, ster., *Pullen 5527* (BO, L, LAE), tree 12 m; Pongani Falls, Managalase area, alt. 700 m, Aug, buds, *Pullen 5826* (BO, L, LAE); Terr, of New Guinea, Madang Distr., Ramu valley, alt. 175 m, Aug., fl., *Hoogland 5080* (BM, G, L).

Endiandra ledermannii Teschn.

Cf. Kostermans, I.e. 490, no. 50, typus: *Ledermann 6679* (SING), Sepik region, 9826, 9782; *Endiandra brassii* Allen, cf. Kostermans, I.e. 483, no. 9, p.p. quoad specim. *Carr 12683* (BO, K, NY, SING, 2 sheets).

The specimens, enumerated by Allen under *E. brassii*, actually represent the following: *Brass & Versteegh 14101* (A, BO), typus = *E. acuminata* Teschn.; *Brass & Versteegh 13589* (A) = *E. acuminata*; *Brass 6921* (A, BO) = *E. formicaria*; *Carr 12683* (BO, NY, SING, 2 sheets) = *E. ledermannii*.

Endiandra microphylla Teschn.

Cf. Kostermans I.e. 491, no. 59, typus: *Ledermann 9106*, N. E. New Guinea, K. Angusta R., Etappenberg, 850 m, fl. Oct.

New synonym: *Endiandra merrilliana* Allen, cf. Kostermans, I.e. 491, no. 56, typus: *Brass 8589* (A, BO), Dec., fl., Tarara, Wassi Kusa R., W. Div.

The type is lost. Allen differentiated her species by the different pilosity of the inflorescence, but the pilosity fits exactly the one, as described and understood by Teschner.

Moreover, Allen overlooked *E. pwpuana* Ltb., when she stated, that hers was the third species with an annular ring. According to me the ring represents the conglomerate large, sessile glands of the third whorl of stamens.

New records: MOLUCCAS, Aru Isl., Isl. Trangan, Ngaibor, alt. 30 m, June, fl., *Buwalda 5396* (A, BO, K, L); id., *Buwalda 401* = *bb. 25435* (BISH, BO, K, L, NY, PNH, SING); W. IRIAN, Merauke Distr., near Bajampa, Merauke R., alt. 20 m, Apr., fl., *Reksodihardjo 238* (A, BO, CANB, G, K, L, LAE, P, US); PAPUA, W. Distr., Wereave, 10 miles N. of Weam, Bensbach subdistr., Lat. 8 31 S, Long. 141 05 E, closed savannah forest, alt. 30 m, understory tree of 7 m, leaves yellow green above, glaucous below, fls. cream, July, *NGF 33478* (BO).

Endiandra montana C. T. White

Cf. Kostermans, I.e. 491, no. 60, typus: *Kajewski 1497* (A); *Endiandra ledermannii* (non Teschn.) Allen in *J. Arnold Arb.* 23: 149. 1942 (*Brass 74-53*).

Specimens examined: New Guinea, Lake Daviambu, Middle Fly R., common, tree 15 m, fr., purple brown, Aug., *Brass 7453* (A, BM, BO); W. Irian, Idenburg R., 4 km SW of Bernhard Camp, alt. 800 m, March, fr., *Brass & Versteegh 1314-2* (A, BO); Morotai Isl., Mt. Para-Para, alt. 1000 m, ster., *Kostermans 1260* (BO), tree 15 m, diam. 20 cm; Queensland, *sine coll.*, after anthesis (NY); Gadgarra Res., Atherton Tableland, alt. 800 m, tree 25 m, July, fr., *Kajewski 1123* (NY); Mt. Alexander, Daintree R., alt. 1300 m, common, poor scrub on top of mountain, tree 6 m, fr. flattened slightly both sides, *Kajewski 1497* (A); Papua, Oriomo R. near Wuroi, W. Distr., ster., *NGF 2734* (K, L).

E. montana White was reduced to *E. rubescens* by White in 1938 (in *Proc. R. Soc. Queensl.* 50: 84. 1938). This reduction is certainly wrong. *Endiandra rubescens* Bl. has been currently misinterpreted, it occurs only

in Borneo and Sumatra, not in Java. The Javanese species is *E. macrophylla* Bl. Of *E. montana* the ripe fruit are yellow, those of *E. fragrans*, which are much larger are blueblack when ripe, like those of *E. rubescens* and *E. macrophylla*, the latter are not flattened at all.

Endiandra muelleri Meissn.

Cf. Kostermans, l.c. 491, no. 62, typus: *F. Mueller*, Clarence R.

New synonym: *Endiandra discolor* Benth., cf. Kostermans, l.c. 485, no. 22, typus: Queensland, Hill, *Dallachy*; *Moore*, N. S. Wales.

Endiandra papuana Ltb.

Cf. Kostermans, l.c. 493, no. 67, typus: *Branderhorst 263* (BO, L).

Material examined W. IRIAN, Dec., fl., *Branderhorst 263* (BO, 2 sheets, L); Mamberamo R., Albatros Bivouac, alt. 50 m, May, fl., *Docters van Leeuwen 9016* (BO, G, K, L, LAE, P, SING); Territory of Papua, N. Div., between Membare and Aruma R., S. of Botue village (near Kokoda), alt 350 m, Sept., fl. *Hoogland 3955* (BM, BO, G, L), fairly high, fairly open secondary forest, tree 15 m, bole 8 m, diam. 30 cm, bark dark grey brown, flaky with small flakes, underbark reddish brown, inner bark pale brown, wood straw, heartwood slightly darker, perianth cream yellow; Terr. of N. Guinea, Morobe Distr., Lae-Bulolo road, Garagos, May, fl., *NGF 11197* (BO, K), tree 25 m, diam. 60 cm, bark 7.5 mm, fragrant, outer bark dark grey with green tinge, shallowly tessellated, middle and inner bark reddish brown, only weakly fibrous, wood straw with red tinge, characterized by very uniform, fine, medullary rays and irregularly spaced, thin lines of parenchyma, calyx green with red down, corolla yellow, anther connectives red; Morobe Distr., Titapuba, alt. 900 m, Lat. 7 50 S, Long. 147 10 E on *Castanopsis* and *Araucaria klinkii* dominated ridge, mid-mountain forest, Jan., fl., *NGF 26160* (A, BO, BRI, CANB, K, L); bark finely fissured, middle red, inner creamy, wood moderate weight and hardness, fls. yellow; Oomsis near Lae, alt. 100 m, Lat. 6 45 S, Long. 147 00 E, May, buds, *NGF 10487* (BO, K, L), tree 27 m, diam. 35 cm, bark brown, red brown blaze, wood pinkish brown, petals creamy.

Endiandra pilosa Kosterm., *spec. nov.*

Arbor mediocris ramulis sat crassis perdense rufo pilosis foliis alternantibus et suboppositis chartaceis subobovato-ellipticis breve acuminatis basi acutis utrinque minute conspicue reticulato-areolatis supra glabra nervo mediano prominulo exceptis costis gracilibus impressis venis secunda-

riis paueis impressis subtus sparse minute tomentosis nervo mediano prominentibus costis utrinque ca 5 - 6 erecto-patentibus subarcuatis nerviis secundariis laxis prominulis paniculis axillaris foliis brevioribus dense minute ferrugineo tomentosis tepalibus inequalibus erecto-patentibus dense tomentosis antheris ovalis cellulis extrorsis glandulis basalibus globosis sessilis filamentis distinctis antheris aequilongis ovario glabro subglobozo stylo gracile parvo.

Typus: *Carr 14538 (L)*

Tree, 7 - 23 m; branchlets rather thick, densely rusty tomentellous; leaves spirally arranged and sub-opposite, chartaceous, subobovate-elliptical, 5 x 11 — 8 x 20 cm, shortly (5 - 10 mm) acuminate with sharp tip, base acute, both surfaces conspicuously densely, minutely, reticulate-areolate, upper one glabrous, except the prominulous midrib, lateral nerves slender, impressed, sometimes a few, impressed secondary nerves; lower surface rather sparsely tomentellous, midrib strongly prominent, lateral nerves ca 5 - 8 pairs, erect-patent, slightly arcuate, the apical ones arcuately anastomosing, secondary nerves lax, subparallel, prominulous. Petioles stout, 1.5 - 2.5 cm, densely tomentellous.

Panicles axillary, up to 15 cm long, densely rusty tomentellous, main peduncle rather stout, stiff, branchlets few, distant, the lowest up to 2.5 cm long; bracts and bracteoles small (up to 2.5 mm), ovate, acute, caducous. Pedicel rather thick, 2 - 4 mm, densely tomentellous. Flowers greenish-yellow (fresh, sub-mature), tepals unequal, outside partly densely, adpressed aureo-tomentellous, the outer ones broadly ovate, acute, 0.75 mm, the inner ones smaller. The 3 anthers oblong with extrorse, large cells, filament as long as the anther, rather slender, basal glands sessile, globose; ovary sub-globose, glabrous; style slender, slightly shorter, stigma inconspicuous.

Closely related to *E. ferruginea* Teschner (still only known from the original collection, Ledermann 8071 (L), Sepik region), but the flowers larger, pilose, the tepals unequal; the tomentum is longer than in *E. ferru-*

NEW GUINEA, Boridi, alt. 1600 m, Sept., buds, *Carr 13037 (BM, BO, K, L, SING, 2 sheets)*; *ibid.*, ca 1700 m alt, Oct., buds, *Carr 14538 (BM, BO, K, SING, 2 sheets)*.

Endiandra sericea Kosterm., *spec. nov.* — Fig. 24

Arbor ramulis apicem versus minutissime dense adpresse pilosis mox glabris foliis alternantibus vel suboppositis chartaceo-coriaceis subobovato-

ellipticis late breve acuminatis basi cuneatis utrinque obscure dense areolatis supra glabra nerviis vix prominentibus subtus minutissime laxe sericeis nervo mediano prominentibus costis utrinque ca 8 erecto-patentibus prominentibus petiolis bene evolutis inflorescentiis axillaribus gracilis brevis laxe minutissime pilosis tepalibus equalibus ovatis acutiusculis staminibus tres magnis introrsis ovarium glabrum stylus aequilongis obtusis.

Typus: NGF 20161 (BO)

Tree ca 30 m, trunk ca 15 m, diameter 30 cm; bark greyish, smooth. Branchlets near apex minutely subsericeous; branches glabrous, rather slender. Leaves alternate or sub-opposite, thinly coriaceous, subobovate-elliptical, 5 - 8 X 8 - 14 cm, broadly, shortly acuminate, base cuneate, densely pitted; upper surface glabrous, rather dull, main nerves hardly prominent; lower surface minutely, rather laxly sericeous, midrib prominent, lateral nerves ca 8 pairs, erect-patent, prominent, secondary nerves faint. Petiole 1-1.5 cm long.

Inflorescences axillary near apex of branchlets, slender, up to 2.5 cm long, minutely pilose, ramifications slender, up to 5 mm long. Flowers 2 mm diam., 1 mm high; tube very short, inconspicuous; tepals ovate, acutish, 0.75 mm long, sparsely pilose outside, densely so inside. Stamens 3, included, 0.5 mm long, glabrous; anther depressed circular with large, introrse or sublateral cells, the filament broad, as long as the anthers; each stamen flanked by 2 sessile glands, ovary glabrous, tapering into the short, as long style with inconspicuous stigma.

NEW GUINEA, Markham Point, alt. ca 400 m, Lat. 6° 45'S, Long. 146° 55' E in *Quercus* forest, Nov., fl., *Van Royen NGF 20161* (BO), distributed as *Litsea*; Morobe Distr., Oomsis, alt. 130 m, Lat. 6° 40' S, Long. 146° 45' E, in slope in dipterocarp forest, **July**, fr., *NGF 27735* (BO), tree 27 m, diam. 35 cm; bark light grey, almost smooth, small, vertical fissures, middle bark wine red, inner red brown; wood modestly hard and heavy, saywood cream, heartwood light reddish brown.

A specimen (*Henty NGF 14808*, Aug., fr., Oomsis Ridge, Morobe Distr., alt. 400 m, Lat. 6 40 S, Long. 146 45 E) consisting of a sterile branch and a loose fruit and distributed as *Beilschmiedia* belongs here. The leaves are slightly larger (15 x 7.5 cm), the petioles up to 2 cm long. The ellipsoid fruit, 7 cm long is tapered towards its base.

Endiandra sleumeri Kosterm., *spec. nov.* — Fig. 25

Arbor ramulis angulatis sat crassis pustulatis dense pulverulente flavo pilosis foliis alternantibus rigide coriaceis obovato-ellipticis brevissime

acuminatis vel obtusis basi cuneatis in petiolum crassum subdecurretibus paniculis axillaris foliis subaequilongis strictis dense minutissime sublanuginosis pedunculis pustulatis floribus parvis bracteolis caducis tepalibus aequilibus antheris pilosis subglobosis cellulis sublateralis filamentis sublongioribus pilosis glandulis sessilibus globosis ovario glabro.

Typus: *Van Roy en & Sleumer 7732 (BO)*

Tree, 25 m tall, bole 17 m, diam. 40 cm. Leaves spirally arranged, rigidly coriaceous, subobovate-elliptical, 5 x 10 — 6 x 13 cm, very shortly acuminate or obtuse, base cuneate, slightly decurrent into the stout, up to 2 cm long petiole, which is flat above; both surfaces obscurely pitted, upper one glabrous, glossy, midrib flat, lateral nerves slender, slightly impressed, lower one obscurely, sparsely, pulverulently sericeous, midrib prominent, lateral nerves ca 7 pairs, rather patent, slender, prominulous, arcuate near margin, secondary nerves faint, parallel.

Panicles axillary, narrow, densely, minutely yellowish brown sublanuginose, main peduncle stout, pustular, branchlets short, few; bracteoles caducous. Pedicels 1 - 1.5 mm. Flowers pilose, 1 - 1.5 mm diam., tepals subequal, ovate, rather thin, 1.5 mm; anthers subglobose with extrorse-lateral cells, filament rather broad, pilose, slightly longer than the stamens; basal glands sessile, globose; ovary ellipsoid- ovoid, glabrous, merging into a slightly shorter, obconical style, stigma inconspicuous; flowers inside densely pilose.

Related to *E. sericea* Kosterm., but the inflorescences stouter and longer with different tomentum and pustular.

W. IRIAN, Vogelkop Peninsula, Ije R. valley, central Tamrau Range, S. slope, path from Sudjah village to Mt. Kusemun, Aiwa R., alt. 840 m. Nov., fl., *Van Royen & Sleumer 7732 (BO, L)*, leaves light green above, pale bluish-green with brown nerves below; PAPUA, N. Div., Pongani valley near Pongani Falls, Managala.se area, alt. 630 m, Aug., fl., *Pullen 5782 (CANB, LAE)*, leaves up to 12 x 19 cm, petiole 2.5 cm; panicles up to 15 cm long, lax, the lower ramifications up to 8 cm long; tree 40 m tall, bole 128 m.

Endiandra spathulata Kosterm., *spec. nov.*

Arbor ramulis sulcatis minutissime dense adpresse pilosis foliis alternantibus rigide corlaceis obovato-oblongis subspathulatis obtusis basi subrotundatis supra laevia nervo mediano costisque impressis subtus glaucescentia glabra nervo mediano prominentibus excepta costis gracilis prominentibus utrinque 7-11 subarcuatis nerviis secundariis filiformibus prominulis parallelis petiolis brevis.

Typus: *Brass & Versteegh 11954 (BO)*

Tree 22 m, branchlets dirty white, sulcate, densely, minutely, light brown adpressed pilose; endbud with the same tomentum. Leaves spirally arranged, very stiffly, coriaceous, obovate-oblong, subspathulate, 2.5 x 6.5 — 3.5 X 10 cm, obtuse, base rounded, rarely acutish; upper surface smooth, midrib and lateral nerves impressed; lower surface glaucous, glabrous, except the minutely, sparsely, adpressed pilose, strongly prominent midrib; lateral nerves 7-11 pairs, slender, prominent, erect-patent, slightly arcuate, secondary nerves filiformous, parallel, prominulous. Petioles 5-8 mm long; narrowly channeled above.

Related to *Endiandra tooram* Baillon, but this has sublanuginose tomentum and the midrib is prominulous on the upper leaf surface. The spatulate leaves are so characteristic, that I venture to describe this sterile specimen.

W. IRIAN, Idenburg R., 15 km SW of Bernhard Camp, rare, slope at 1900 m, *Brass & Versteegh 11954 (A, BO)*.

Endiandra sumatrana Miq.

Cf. Kostermans, l.e. 496, no. 83, typus: *Teijsmann 1010 H.B. (U)* near Batang Baroe, "kajoe wada". This represents *Beilschmiedia wightii* (Nees) Hk. f.

Endiandra versteeghii Kosterm., *spec. nov.* — Fig. 26

Arhor rarmulis sat gracilis dense minutissime lenticellatis glabris foliis alternantibus rigide coriaceis glabris utrinque avato- vel subobovato-ellipticis breve acuminatis basi cuneatis supra nitida nervo mediano vix prominulo costis filifomnibus impressis subtus nerviis majoribus exceptis glabris lacuis nervo mediano prominentibus costis utrinque 7-9 gracilis prominulis arcuatis nerviis secundariis obscuris infructescentiis axillaris foliis brevioribitis obscure miutissime adpresse pilosis vix ramosis fructibus ellipsoideus.

Typus: *Brass & Versteegh 13198 (BO)*

Tree 22 m, branchlets rather slender, glabrous, with numerous, tiny lenticels, end bud minutely, densely, palebrown, pilose, like the apex of the branchlets. Leaves spirally arranged, stiffly coriaceous, both sides obscurely minutely areolate, obovate - or ovate-elliptical, 3 x 7 — 5 x 12 cm, acuminate, base cuneate; upper surface glabrous, smooth, glossy, midrib

flush with the surface (apical part impressed), **lateral** nerves **filiformous**, impressed; lower one **paler**, midrib and the slender arcuate, **erect-patent**, **7-9** pairs of lateral nerves prominent and obscurely, very minutely sericeous, secondary nerves faint, prominulous.

Infructescences axillary, hardly branched, **up to 7 cm**, **minutely pilose**; fruit ellipsoid, 22 x 45 mm, pedicel 8 **mm**, diam. at apex.

W. IRIAN, Idenburg R., 2 km S. W. of Bernhard camp, frequent on slopes at 750 m, April, fr., *Brass & Versteegh 13198* (A, BO, L).

Endiandra xylophylla Kosterm., *spec. nov.* — Fig. 27

Arbor ramulis crassis sulcatis pulverulente dense ferrugineo sublanuginosis foliis sub-oppositis perrigidis obovatis obtusis basi cuneatis in petiolum crassum subdecurrentibus utrinque perobscure minutissime areolatis supra nitida glabra nervo mediano lato subprominulo excepta costis et venis secundariis subimpressis subtus sparse minutissime sublanuginosis glabrescentibus nervo mediano late prominentibus costis utrinque 6-8 sat patentis prominentibus strictis ad marginem valde arcuatis venis secundariis prominulis paniculis axillaribus pauca ramosis crassis dense minutissime ferrugineo pilosis alabastris dense pilosis stamina tres subglobosis glabris cellulis extrorsis filamentis brevis glandulis basalibus globosis sessilibus ovario glabro.

Typus: *Carr 14610* (SING).

Tree, ca 30 m, bole 15 m, diam. 50 cm; bark finely pustulate, pale brown, middle red, inner lighter red; wood soft, pinkish. Leaves subopposite, very stiffly coriaceous, obovate-elliptical, 4.5 X 7 — 9 x 15 cm, obtuse or slightly emarginate and apiculate, base cuneate, decurrent into the thick, 1 - 1.5 cm long petiole, which is flat above; both surfaces obscurely, minutely pitted, upper one glossy, glabrous, except the pulverulently pilose, broad, slightly prominulous midrib, lateral and secondary nerves impressed; lower surface dull, sparsely, minutely sublanuginose, the strong midrib prominent, lateral nerves 6-8 pairs, rather patent, straight, prominent, at margin strongly arcuate, secondary nerves prominulous, parallel.

Panicles axillary, rather narrow, up to 8 - 15 cm long, densely, minutely, rusty sub-lanuginose, consisting of a stout main peduncle and few, short, stout branches, bracteoles ovate, acute, 1-2 mm, caducous. Flower buds conical-subglobose, 1.5 mm long, densely pilose, pedicel 5 mm. Tepals ovate, acutish. The 3 stamens small, anthers depressed orbicular with

extrorse cells, filament short, basal glands sessile, globose; ovary ovoid, glabrous, style short. Fruit ellipsoid, 30 x 14 mm, pedicel short, thick, cylindrical.

E. NEW GUINEA, Papua, Boridi, alt. 2000 m, Oct., buds, *Carr 14610* (BM, K, SING); Lala R., alt. 1700 m, Febr., fr., *Carr 15722* (BO, K, L, SING); Territory of New Guinea, E. Highlands Distr., Kassam, alt. 1370 m, Nov., buds, *Brass 32593* (BO); Central Distr., Iloilo, alt. 900 m, Lat. 9°25'S, Long. 147°25'E, Febr., fr., *NGF 26182* (BO), the wood is indicated as cream, moderately hard and heavy, whereas the *Brass 32393* specimen states, that the wood is soft and pinkish.

ENDLICHERIA Nees

Endlicheria maguireana Allen

Allen in Mem. N. York bot. Gd. 10: 68, fig. 42. 1963; typus: *B. Maguire*, *Wurdack & C. Maguire 4-2521* (NY).

This belongs without doubt in *Aiouea*. The species of *Aiouea* can always be easily recognized by the yellowish green colour of the leaves (aluminium!) and the very slender, filiformous ramifications of the inflorescence. Dissection of the flowers showed that this represents the common *Aiouea densiflora* Nees. The outer stamens are fertile (they might in some flowers not produce pollen), the third whorl is staminodial.

In Mem. N. York bot. Gd. 15: 54. 1966, Allen tries to present evidence to the instability of *Aiouea* quoting *Aiouea scandens* Ducke with a "climber" habit. I included this in *A. densiflora* and was proved right when Ducke published later a statement in Arq. Serv. florest 1(1) : 28 (1939). 1940 to the effect, that he was wrong in describing this as a climber; it was a shrub. The genera in Lauraceae are all very stable in their characteristics.

DEHAASIA Bl.

Haasia undulata T. & B.

Apollonias undulata Miquel e Hort. Bogor. 1851 (U) represents *Beilschmiedia roxburghiana* Nees.

LINDERA Thunb.

Lindera aromatica Kurz

Cf. Kostermans, I.e. 740, no. 8, typus: *Brandis s.n.* (K), Burmah, Hills of Tounyw, Karaway. This represents *Litsea cubeba* (Lour.) Pers.

Lindera bibracteata (Bl.) Boerl.

Cf. Kostermans, I.e. 742, no. 12; *Daphnidium bibracteatum* (Bl.) Nees, cf. Kostermans, I.e. 458, no. 3 (add: Tijdschr. Ind. Taal, Land & Volkenk. 16: 263. 1867); *Laurus bibracteata* Blume, cf. Kostermans, I.e. 573, no. 44, typus: *Blume s.n.* (L) in sylvis obscuris Gedeh, Salak, etc.; *Daphnidium acuminatum* (Rwdt. ex Nees) BL, cf. Kostermans, I.e. 458, no. 1; *Laurus acuminata* Reinwardt ex Nees, cf. Kostermans, I.e., typus: *Reinwardt s.n.*, ster. in Herb Guenther; isotypes in L (also the type of *Laurus microphylla* Rwdt.) and C; *Lindera acuminata* (Rwdt. ex Nees) Villar, cf. Kostermans, I.e. 738, no. 1 (includ. var. *latifolia* (Bl.) Boerl.); *Laurus microphylla* Reinwardt ex Th. & C. C. G. Nees (nomen) ex Blume, cf. Kostermans, I.e. 657, no. 239, typus: *Reinwardt s.n.*, ster. (C, L, 2 sheets); *Litsea tenuiramis* Miq., cf. Kostermans, I.e. 883, no. 441, typus: *Junghuhn s.n.* (L), 757 (BO), ster., Dieng (Java), Kaju gading; *Daphnidium caesium* (non Nees) Zollinger, cf. Kostermans, I.e. 459, no. 5b, typus: *Zoilinger 167* (L); *Daphnidium caesium* Nees, var. *glabrum*-Miq., cf. Kostermans, I.e. 459, no. 5a; *Daphnidium bibracteatum* Nees, var. *ovatum* Bl., cf. Kostermans, I.e. 458, no. 3, typus: *Blume s.n.* (L) and *Korthals s.n.* (L), Sumatra, which bears the MSS epithet under *Laurus* in Korthals handwriting.

Lindera pipericarpa (Miq.) Boerl.

Cf. Kostermans, I.e. 765, no. 102; *Polyadenia pepericarpa* Miq., cf. Kostermans, I.e. 1312, no. 14, typus: *Teysmann s.n.*, Rau & Manda, slope 2 - 4000 ft.

Synonym: *Tetranthera diepenhorstii* Miq., cf. Kostermans, I.e. 1389, no. 63, typus: *Diepenhorst s.n.*, Priaman (K).

Lindera turfosa Kosterm., *spec. nov.* — Fig. 28

Frutex vel arbor parva ramulis gracilis perdense minutissime atroferugineo sublanuginosis foliis alternantibus chartaceis elongato ovatis sensim longe acuminatis basi in petiolum contractis supra glabra laevia nervo mediano gracile et costis filiformis prominulis exceptis subtus minutissime subaureo-ferrugineo sublanuginosis nervo mediano prominentibus costis utrinque 5-6 prominulis arcuatis petiolis brevis inflorescentiis axillaribus fasciculatis dense minutissime sureo-ferrugineo sublanuginosis.

Typus: *Kostermans 8136* (BO)

Trailing shrub or small tree, up to 4 m tall; branchlets slender, densely, minutely, rusty sublanuginose. Leaves alternate, chartaceous, elong-

ate ovate, 2.5 x 7 — 5.5 x 9.5 cm, gradually long-acuminate with sharp tip, base contracted into the slender, 5-6 mm long petiole; upper surface smooth, glabrous, except the slender, prominulous midrib and lateral nerves; lower surface minutely aureous-rusty sublanuginose, midrib prominent, lateral nerves filiformous, prominulous, 5-6 pairs, arcuate (strongly at margin), secondary nerves obscure.

Inflorescences axillary, densely rusty sublanuginose, minute, the umbel buds on 1 - 2 mm long peduncles, the inflorescence itself hardly developed.

S. INDONESIAN BORNEO, Sampit Distr., alt. 5 m, peat swamp forest, common, Aug., buds, *Knstermans SIS6* (A, BO, K, L, SING); W. Borneo, Pontianak, buds, *Teijsmarin s.n.* (BO), leaves up to 3.5 x 13 cm, up to 8 pairs of lateral nerves.

Lindera venosa (Meissn.) Benth.

Cf. Kostermans, ! c. 780, no. 149, typus: *Griffith (692) 4308*, fl., Bhotan, towards Oongan Wat, alt. 2000 m (K, 2 sheets).

Synonyms: *Tetranthera species* Griffith, cf. Kostermans, I.e. 1432, no. 236b; *Daphnidium venosum* Meissner, cf. Kostermans, I.e. 464, no. 21; *Lindera megaphylla* Hemsley, cf. Kostermans, I.e. 757, no. 76, typus: *Faber s.n.* (Kiukiang Mts), *Henry 1112, 1284, 2195, 3010 et A, 3151, 3345 et A, B, 4508, 6609, 7525, 7618, 7848 A*; *Lindera oldhamii* Hemsley, cf. Kostermans, I.e. 763, no. 97a, typus: *Oldham 455, Ford 49*; *Benzoin oldhamii* (Hemsley) Rehder, cf. Kostermans, I.e. 170, no. 60a; *Lindera touyunensis* (Lév.) Chun, cf. Kostermans, I.e. 776, no. 143; *Benzoin touyunense* (Lév.) Rehder, cf. Kostermans, I.e. 176, no. 86; *Litsea touyunensis* Lév., cf. Kostermans, I.e. 887, no. 454, typus: *Bodinier & Martin, Cavalerie 1*; *Lindera pricei* Hayata, cf. Kostermans, I.e. 767, no. 108, typus: *Price 199* (K); *Benzoin pricei* (Hay.) Kamikoti, cf. Kostermans, I.e. 172, no. 68.

LITSEA Lam.

Litsea accedens (Bl.) Boerl.

Cf. Kostermans, I.e. 785, no. 2, typus: *Korthals s.n.*, ster. (L), Pulu Lampai, *Motley 824* (K) et Celebes (L).

New synonym: *Litsea singaporensis* Gamble, cf. Kostermans, I.e. 881, no. 425, typus: *Ridley 2118, 3372, 389k, 4135, 4826, 5065, 5736, Hullet 5738*, Borneo: *Ridley 9075*.

Litsea acerina Bl.

Cf. Kostermans, Ie. 785, no. 4, typus: *Blume s.n.*, Mt. Pulosari, „kaju tandjang" (L). This represents *Neolitsea cassiaefolia* (Bl.) Merr.

Litsea albicans (Kurz) Hk.f.

Cf. Kostermans, Ie. 787, no. 12; *Tetranthera albicans* Kurz, cf. Kostermans, Ie. 1374, no. 5; typus: *Kurz s.n.* (K), Pegu, This represents *Litsea laeta* (Wall, ex Nees) B. & H,

Litsea alveolata Allen

Cf. Kostermans, Ie. 787, no. 16, typus: *Brass 9559* (A),

New synonym: *Litsea versteeghii* Allen, cf. Kostermans. Ie. 892, no. 479, typus: *Brass & Versteegh 11162* (A).

Litsea aureo-sericea Kosterm., *spec. nov.*

Arbor parva ramulis gracilis apicem versus minutissime depresso pilosis foliis alternantibus chartaceis subovato-eltipticis acuminatis basi utrinque laxe prominule reticulatis supra glabra nervo mediano costisque vix prominulis subtus junioribus dense subaureo-sericeis adultis glabris glaucis nervo mediano prominentibus costis utrinque 3-4 erecto-patentibus arcuatis petiolis gracilis umbellulis cum pedunculis glabris axillaris glabris

Typus: *Carr 14-983* (SING)

Treelet 3 m; branches slender, greyish, smooth, branchlets near apex very minutely adpressed pilose; end bud minutely sericeous. Leaves spirally arranged, chartaceous, subovate-elliptical, 2.5 x 7 — 6 x 12.5 cm, acuminate, base acute, both surfaces laxly, prominulously reticulate; upper one glabrous, the midrib and lateral nerves slightly prominulous or the basal part impressed, lower one in young leaves densely sub-aureous-sericeous, in adult leaves glaucous and glabrous (punctate), midrib prominent, lateral nerves 3-4 pairs, erect-patent, arcuate, prominulous. Petioles slender, 1-1.5 cm, apical part slightly concave. Immature umbels glabrous, peduncles slender, up to 5 mm, one or two on a hardly developed axillar inflorescence, subtended by slightly pilose, folded, tiny ovate, acute bracts. Adult umbels on 1 cm long, slender, glabrous peduncles; the involucre bracts glabrous, broadly ovate, 3 mm; flowers few, tubular part and pedicel obconical, 1.5 mm, tepals ovate, very sparsely pilose, 1 mm; staminodes present; ovary ovoid, glabrous, style short, stigma peltate, cushion like.

NEW GUINEA, Papua, Boridi, alt. 1000 m, secondary forest, Nov., buds, Carr 14983 (SING); *ibid.*, Nov., fls. cream, Carr 13416. (SING).

Litsea buinensis Kosterm., *spec. nov.*

Arbor in omnibus partibus glabris foliis obovatis obtusis basi sensim atenuatis utrinque obscure dense reticulatis supra nervo mediano costisque prominulis subtus nervo mediano prominentibus costis utrinque 15-17 erecto-patentibus prominulis petiolis crassis infructescentiis axillaris cupulis parvis fructus ellipsoideus.

Typus: Schodde {& Craven) 3777 (L)

Spreading tree of 15 m, diam. 20 cm; bark smooth, pustular, dark brown, blaze pale red brown, wood pale cream. All parts glabrous. Leaves spirally arranged, obovate, up to 12.5 X 23 cm, obtuse, base gradually attenuate, both surfaces faintly, densely reticulate, upper surface with broad, prominulous midrib, the lateral nerves prominulous; lower surface with prominent midrib, the 15 - 17 pairs of lateral, prominulous, slender nerves erect-patent, straight, at the margin arcuate, secondary nerves prominulous, parallel; petioles stout, 1 cm long, flat above.

Peduncled umbels on axillary, up to 7 mm long short-branches. Cupula small, 8-10 mm in diam., 4-5 mm deep, thin, merging into a 5 mm thick pedicellar part; umbel peduncle (in fruit) stout, up to 1 cm long; fruit ellipsoid, 2 x 3 cm, apiculate.

S slope of Lake Loloru crater, ca 17 miles N of Buin, primary montane forest, alt. ca 900 m, f r., Schodde & Craven 3777 (L).

Litsea catubigensis Kosterm., *spec. nov.*

Arbor ramis crassis glabris laevis in sicco subrubris apicem versus angulatis perdense minute ferrugineo-tomentellis foliis suboppositis chartaceis late ellipticis vel ellipticis apiculatis vel obscure acutis basi acutis supra glabra laevis subtus dense minutissime ferrugineo-tomentellis nervo mediano prominentibus costis utrinque 8-11 erecto-patentibus subarcuatis prominentibus reticulatio obscure petiolis longis fructus axillaribus sessilibus subglobosis cupulis sat plants.

Typus: Ramos B. Sc. 24555 (US)

Tree, branches thick, glabrous, smooth, (in sicco) redbrown, towards the apex very densely, minutely, rusty tomentellous. Leaves sub-opposite, chartaceous or thinly chartaceous, broadly elliptical or elliptical, 7 x 13 —

13 x 32 cm, apiculate or obscurely acute, base acute; upper surface glabrous, smooth, midrib and lateral nerves flush with the surface; lower surface densely, minutely rusty tomentellous, midrib prominent, lateral nerves 8-11 pairs, erect-patent, somewhat arcuate-prominent, reticulation obscure. Petioles cylindrical, glabrous, 2 ~ 2.5 cm long. Fruit sessile, axillary; fruit subglobose, apiculate, 1 cm diam.; cupula 10 - 13 mm diam., 5 mm deep, rather thin.

Characterized by the very large, subopposite rusty; velvety leaves and the sessile small fruit cup.

PHILIPPINES, Samar, Catubig R., Febr.-Mar., fr., *Ramos B. Sc.* 24555 (A, US, 2 sheets) et 24221 (US), with very large leaves.

Litsea collina Moore

Cf. Kostermans, I.e. 805, no. 90, typus: *Forbes 538* (K), Sogeri, buds.

New synonyms: *Litsea perglabra* Allen, cf. Kostermans, I.e. 862, no. 351, typus: *Kajewski 2414* (A); *Litsea racemosa* C. T. White, cf. Kostermans, I.e. 870, no. 384, typus: *Walker B.S.I.P.* 272 (K), Solomon Isl.

Litsea cordata (Jack) Hk.f.

Cf. Kostermans, I.e. 807, no. 98; *Tetranthera cordata* Jack, cf. Kostermans, I.e. 1387, no. 52.

New synonyms: *Litsea perrottetii* (Bl.) Villar, cf. Kostermans, I.e. 862, no. 353; *Tetranthera perrottetii* Blume, cf. Kostermans, I.e. 1417, no. 174, typus: *Perrottet 89* (L, 2 sheets); *Litsea flexuosa* (Bl.) Boerl., cf. Kostermans, I.e. 818, no. 146; *Tetranthera flexuosa* Blume, cf. Kostermans, I.e., 1392, no. 79, typus: *Forsten s.n.* near Tondano, Celebes (L).

Litsea costalis (Nees) Kosterm., *comb. nov.*

Alseodaphne costalis Nees (basionym) in. Wallich, PL As. rar. 2: 72. 1831; cf. Kostermans, I.e. 65, no. 14, typus: *Wallich 2594 B* (BM, DC), Singapore.

The type specimen consists of detached leaves only and it took a long time, before I discovered that it is conspecific with the common *Litsea megacarpa* Gamble (cf. Kostermans, I.e. 846, no. 264).

Litsea crassifolia (Bl.) Boerl.

Cf. Kostermans, I.e. 808, no. 103; *Tetranthera crassifolia* Blume, cf. Kostermans, I.e. 1387, no. 55, typus: *Mutter s.n.*, ster., Borneo, G. Karran (L) and *Korthals s.n.*, ster., Borneo (L).

New synonym; *Litsea palustris* Kosterm., cf. Kostermans, I.e. 860, no. 335, typus: *Anderson 9197* (BO) ; add the references; Smythies, Common Trees Sarawak 76. 1965 and Anderson in Gard. Bull. Singapore 20 (2): 198. 1963.

Litsea deccanensis Gamble

Cf. Kostermans, I.e. 811, no. 116, typus: *Wight Herb. 2531*, fl. (K), Balyrnputty near Coimbatore, 7 Oct. 1849.

New synonym: *Litsea tomentosa* (Heyne ex Wallich, Cat. 2550. 1830) Nees, cf. Kostermans, I.e. 886, no. 453 b, typus: *Heyne, July 1801* (LE); *Litsea tomentosa* Bl. (1826) has priority over *L. tomentosa* Nees (1831).

Litsea engleriana Teschn.

Cf. Kostermans, I.e. 815, no. 135, typus: *Ledermann 9830, Schlechter 17049* (UC).

New synonym: *Litsea bernhardensis* Allen, cf. Kostermans, I.e. 793, no. 40, typus: *Brass & Versteegh 13568* (L).

Litsea elliptica Bl.

Cf. Kostermans, I.e. 814, no. 131, typus: *Blume, Mt. Salak* (L), Huru madang.

New synonyms: *Litsea petiolata* Hk. f., cf. Kostermans, I.e. 863, no. 355, typus: *Maingay 1265 (= 1998)* (K), Penang; *Litsea odorifera* Valetton, cf. Kostermans, I.e. 858, no. 324, typus: (Icon. Bog. 3: t. 276), *culta in Hort. Bogor.* (BO) ; *Litsea nigricans* (Meissn.) Boerlage, cf. Kostermans, I.e. 854, no. 305; *Tetrantkera nigricans* Meissner, cf. Kostermans, I.e. 1413, no. 152, typus: *Barber & Motley 325* (K, 3 sheets), buds, Labuan, Borneo.

Litsea ficoidea Kosterm., *spec. nov.* — Fig. 29

Arbor ramulis griseis sulcatis glabris apicem versus minutissime dense pilosis foliis glabris alternantibus subcoriaceis subovo-vato-ellipticis acuminatis basi acutis supra laevis nervo mediano piano costis pergracilis impressis subtus nervo mediano prominentibus costis utrinque 9-13 gracilis prominentibus erecto-patentibus prope marginem arcuatis nerviis secundariis sat obsouris parallelis petiolis longis gracilis infructeseentiis brevis minutissime dense ferrugineo pilosis vix ratnosis cupulis semi-globosis dense pilosis in parte pedicellorum obconicum sensim attenuatis fructus ellipsoideus.

Typus: *S. 15837* (L)

Tree, up to 27 m tall, 35 cm diam. Bark smooth, pale brown and grey mottled, inner bark brownish, cambium pale; sapwood yellowish white. Branches pale grey, glossy, sulcate; branchlets pale grey, near the apex densely, minutely pilose, endbud with the same, very minute, adpressed tomentum. Leaves spirally arranged, rather leathery, glabrous (very young ones densely, minutely adpressed pilose underneath), elongate subobovate-elliptical, 4.5 x 13 — 8.5 x 25 cm, shortly acuminate, base acute; upper surface smooth, midrib flat, lateral nerves filiformous, impressed; lower surface with strongly prominent midrib, the 9-13 pairs of lateral nerves prominent, slender, erect-patent, arcuate and running out near the margin; secondary nerves obscure, parallel; lower surface often glaucous. Petioles slender, 2-3 cm, slightly concave above near the leafblade, conspicuously dark grey (fresh!).

Infructescences on twigs and branches, short, 2-4 cm, densely, minutely rusty pilose, sulcate, rather thick, hardly (1 cm long) or¹ not branched. Fruit cup pale orange (fresh), pale brown (dried), elongate semi-globose, strongly wrinkled (like brains), up to 2.5 cm long and up to 2.5 cm wide, the upper, slightly narrower part of 3 - 7 mm thinner and smooth (not wrinkled), the base merging into an obconical, wrinkled, 1-3 cm pedicellar part. Fruit ellipsoid, slightly tapered upwards, up to 2 x 3 cm.

BORNEO: Sarawak, Distr. Bintulu, Labang For. Res., Dec, fr., *Ilias Paie S. 15837* (A, BO, K, L, SING); *ibid.*, yellow, sandy clay soil, low, undulating hills, primary mixed dipterocarp forest, March, fr., *Ahston S. 18055* (A, BO, K, KEP, L, P, SING); Sabah, Beaufort Distr., Beaufort Hill, April, fr., *San 35101* (BO, L), leaves up to 6.5 x 15 cm; Temburong, mile 1 1/4 Bangar Batu-Asas Rd., alt. 130 m, March, fr., *San 17112* (A, BO, BRI, K, KEP, L, SING);

Litsea garciae Vidal

Cf. Kostermans, I.e. 821, no. 160.

Synonyms: *Cylicodapkne garciae* (Vidal) Nakai, cf. Kostermans, I.e. 449, no. 17; *Litsea calophylla* (Miq.) Mansfeld in Kulturpfl., Beih. 2: 74. 1859 (name not in Index Kewensis); *Tetranthera calophylla* Miq., cf. Kostermans, I.e. 1382, no. 34a, typus: *Junghuhn s.n.*, f 1, Java (L); *Litsea griseola* Elmer, cf. Kostermans, I.e. 829, no. 184, typus: *Elmer 9242* (L, US), Tayabas, Lucban, Luzon, May, fr.; *Litsea macrophylla* Elmer, cf. Kostermans, I.e. 845, no. 252 c, typus: *Elmer 13316* (L, LE, US); *Litsea roxburghii* (Nees) Hassk., cf. Kostermans, I.e. 873, no. 396, typus: *Teijsmann Herb. Hasskarl* (L); *Lepidadenia wightiana* Nees p.p., cf. Koster-

mans, I.e. 723, no. 31; *Cylicodaphne sebifera* (Bl.) Blume, cf. Kostermans, I.e. 454, no. 49; *Litsea sebifera* (Bl.) BL, cf. Kostermans, I.e. 878, no. 413 c; *Cryptocarya sebifera* Reinwardt ex Blume, cf. Kostermans, I.e. 434, no. 282 (nomen), typus: *Blume 2011* (L, 2 sheets), fl., Java; *Dodecadenia robusta* (Bl.) Moritzzi, p.p., cf. Kostermans, I.e. 478, no. 4, typus: *Zollinger 317* (LE, P); *Litsea persella* Ridley, cf. Kostermans, I.e. 863, no. 354, typus: *Ridley 12429* (K), Kuching, fl. Sept.; *Litsea kawakamii* Hayata, cf. Kostermans, I.e. 835, no. 216; *Tetradenia kawakamii* (Hayata) Makino & Nemoto, cf. Kostermans, I.e. 1368, no. 27, typus: *Tashiro & Kawakami*, Aug. 1912 (US).

Litsea globifera Kosterm., spec. nov.

Arbor in omnibus partibus glabris ramulis angulatis foliis alternantibus submembranaceis ellipticis vel lanceolatis usque ad suboblanceolatis breve acuminatis basi subcuneatis utrinque sublaevis supra nervo mediano profunde canaliculatis costis obscuris subtus pallidis nervo mediano valde prominentibus costis filiformibus prominulis utrinque 5-8, petiolis profunde canaliculatis grocilis longis umbellulis solitariis axillaris pedunculatis glabris cupula plana parte pedicellorum obconico.

Typus: *Ramos B. Sc. 19515* (US)

Tree, glabrous in all its parts; branchlets angular near the apex; end bud pulverulently grey-pilose. Leaves spirally arranged, thinly chartaceous, elliptical to lanceolate to suboblanceolate, 3.5 x — 5 x 14 cm, shortly (5 mm) acuminate, base subcuneate; both surfaces almost smooth, upper one with narrowly, deeply channeled midrib, the lateral nerves obscure, lower one pale, midrib strongly prominent, lateral nerves filiformous, prominulous, 5-8 pairs; erect-patent (the subbasal ones more ascendent). Petioles slender, 1.5 - 2.5 cm long, slitlike, deeply channeled.

Axillary, single, stalked umbels, stalk glabrous, 5-10 mm; cup flat, 6 mm diam., the wavy rim only 1 - 1.5 mm wide on a 5 - 7 mm obconical pedicellar part.

Near *L. rubicunda* Kosterm., but fewer lateral nerves and the cup only 6 mm in diam. with a tiny, wavy rim of only 1-1.5 mm.

Differs from *L. macropoda* by the narrowly channeled midrib on the upper surface.

PHILIPPINES: Prov. Cagayan, Luzon, Febr., fr., *Ramos B. Sc. 14552* (US), the fruit flattened globose, 1.5 cm in diam.; Mt, Banajao, Prov. Tayabas, Luzon, Jan., fr.,

Ramos B. Sc. 19515 (US), the globose fruit 18 mm in diam.; Prov. of Cagayan, Luzon, Jan., fr., *Cm-ran F.B. 17798* (US); *ibid.*, Jan., fr., *Ramos B. Sc. 13924* (A).

Litsea glutinosa (Lour.) C. B. Robinson

Cf. Kostermans, I.e. 826, no. 175; *Sebifera glutinma* Loureiro, cf. Kostermans, I.e. 1349, no. 3a, typus: *Loureiro s.n.*

Synonyms: *Litsea undulata* Zippel ex Blume, cf. Kostermans, I.e. 890, no. 464a, typus: *Zippel* (L); *Litsea fruticosa* Spanoghe ex Blume, cf. Kostermans, I.e. 819 no. 154a, typus: *Spanoghe s.n.* (L), Timor, *Tetranthera salicifolia* Zollinger ex Moritz, cf. Kostermans, I.e. 1425, no. 204c, typus: *Zollinger 1834* (P); *Litsea laurifolia* (Jacq.) Hooker f., p.p., cf. Kostermans, I.e. 839, no. 230a; *Tetranthera laurifolia* Jacquin, cf. Kostermans, I.e. 1403, no. 122a {*cum var.*} ; *Litsea sebifera* Persoon, cf. Kostermans, I.e. 876, no. 413a; *Litsea tetranthera* (Willd.) Persoon, cf. Kostermans, I.e. 884, no. 445b; *Tomex tetranthera* Willdenow, cf. Kostermans, I.e. 1436, no. 12; *Tomex sebifera* Willd., cf. Kostermans, I.e. 1435, no. 11; *Tetranthera sebifera* (Willd.) Spr., cf. Kostermans, I.e. 1425, no. 206a, typus: *Herb. Stephanianum 7530* (LE); *Tetranthera involucrata* (Roxb.) Nees ex Sweet, Kostermans, I.e. 1368, no. 25; *Laurus involucrata* Roxb., cf. Kostermans, I.e. 642, no. 185c; *Tetranthera roxburghii* Nees, p.p., cf. Kostermans, I.e. 1424, no. 201b; *Daphnidium macrophyllum* Bl., cf. Kostermans, I.e. 462, no. 13, typus, *Blume*, ster. (L), Java, littore Sawarna, "Hahaoean"; *Polyadenia grandifolia* Miq., cf. Kostermans, I.e. 1310, no. 5, typus: *Hasskarl s.n.*, coast of Savarna, Java; *Tetranthera hispidula* Zippel ex Blume, cf. Kostermans, I.e. 1399, no. 107, typus: *Zippel 58/e* (L, 3 sheets), Amboina, buds; *Tetranthera mono-petala* Roxb., p.p., cf. Kostermans, I.e. 1410, no. 144, quoad *Hohenacker 795* (G); *Tetranthera capitata* Roxb. ex Wall, ex Nees, cf. Kostermans, I.e. 1383, no. 36, typus: *Wallich 2554 K* (S); *Tetranthera apetala* Roxb., p.p., cf. Kostermans, I.e. 1378, no. 14a, quoad *Wallich 255i/h* (L, 2 sheets), *Wallich 2554/L* (G), *2554/L* (G), *2554* (G), *2554/Y* (G); *Litsea baractanensis* Elmer, cf. Kostermans, I.e. 792, no. 35, typus: *Elmer 10993* (K, L, LE); *Litsea brassii* O.C. Schmidt, cf. Kostermans, I.e. 794, no. 48, typus: *Brass 813* (K), *743* (K); *Litsea littoralis* (Bl.) Villar, cf. Kostermans, I.e. 842, no. 240; *Tetranthera littoralis* Blume, cf. Kostermans, I.e. 1406, no. 127, typus: *sine coll.*, sine num., Sumatra (L, 3 sheets) et *Blume*, Java, Zuiderstranden, fl. (L); *Tetranthera polycephala* Wallich ex Meissner, cf. Kostermans, I.e. 1419, no. 182, typus: *Wallich in Herb. Birman 172* (US, fragment).

A very variable species as to leaf shape and tomentum, the different varieties have to be correlated.

***Litsea kinabaluensis* Kosterm., spec. nov.**

Arbor ramulis glabris sulcatis lenticellatis apicem versus minutissime pulverulente pilosis foliis alternantibus perrigide coriaceis junioribus subtus argenteo-sericeis adultis subtus glabris griseis laevis vel minutissime reticulatis ellipticis usque ad lanceolato-ellipticis acuminatis basi cuneatis vel acutis supra laevia subtus nervo mediano prominentibus costis utrinque 6-9 erecto-patentibus usque ad sub-erectis prominulis subarcuatis petiolis sat longis inflorescentiis axillaris immaturus dense minutissime brunneo pulverulente pilosis infructescentiis glabris pedunculis usque ad 1 cm longis cupulis parvis margine tenuis fructus subellipsoideus.

Typus: *Clemens* 33053 (BO).

Tree, up to 27 m high, branches rather rough, branchlets sulcate, minutely lenticellate, at apex pulverulently pilose. Leaves spirally arranged, very rigidly coriaceous; young ones sericeous on the lower surface; adult ones on the lower surface glabrous, grey-white, smooth or very minutely reticulate, only the filiformous, parallel secondary nerves distinct, elliptical, 5 x 12 — 7 x 18 cm to lanceolate-elliptical, 2.5 x 11 — 5 x 16 cm, acuminate with sharp tip, base cuneate or acute; upper surface smooth, midrib flush with the surface; lower surface with prominent midrib, the 6-9 pairs of lateral nerves erect-patent or rather erect, prominulous, somewhat arcuate. Petioles 1 - 2.5 cm long, flat above (at base slightly concave).

Inflorescences axillary, immature, minutely, densely, brown, pulverulently pilose. Infructescences glabrous, the umbelbearing branches 1.5-2 cm long; umbel peduncles up to 1 cm long; cup small. 6-7 mm in diam., 3-5 mm high with thin margin, base merging into the somewhat fleshy, sub-obconical, up to 5 mm long pedicellar part; fruit sub-ellipsoid (immature), 6 x 10 mm, apiculate.

SABAH, Kinabalu, Tenompok, alt. 1700 m, May, buds, / & *M. S. Clemens* 29685 (BO,UC), racemes up to 4 cm long; Keebambang R., alt. 1300 m, April, buds, J. & *M. S. Clemens* 34369 (BO, UC); Colombon R., alt. 1500 m, June, buds, / & *M. S. Clemens* 32484 (BO, UC); Marai Parai, alt. 1700 m, J. & *M. S. Clemens* 33053 (BO, K, UC); *ibid.*, ster., J. & *M. S. Clemens* 33188 (UC).

***Litsea longistaminata* (Liou) Kosterm., comb. et stat. nov.**

Litsea garrettii Gamble, var. *longistaminata* Liou Ho, Laur. Chine et IndocMne 196. 1932 et 1934 (basionym), cf. Kostermans, l.e. 821, no. 162, typus: *Henry* 12802 (US), Szemao, fl., Dec.

Differs from *L. garrettii* by the much larger leaves, the more numerous (more than 10) lateral nerves, the shorter and thicker petioles, the much larger flower umbels. It is related to *L. cuttingiana* Allen and *L. santapau* Kosterm. (ined.).

Litsea ovalauensis Kosterm., *spec. nov.*

Arbor ramulis minute dense ferrugineo tomentellis foliis alternantibus subchartaceis ovato-ellipticis late obtusis basi cordatis subauriculatis supra subareolato-reticulatis glabris nervo mediano piano exceptis gracilibus impressis subtus areolato-reticulatis glabris eostis primariis et secundariis minute tomentellis exceptis costis utrinque 12-14 subpatentibus marginem versus arcuatis prominulis nerviis secundariis parallelis prominulis petiolis tomentellis longis.

Typus: *Cpt. Wilkes s.n.* (US).

Tree; branchlets minutely, densely, rusty tomentellous. Leaves spirally arranged, thinly chartaceous, ovate-elliptical, 8 X 18 — 13 X 24 cm, broadly obtuse, base cordate, subauriculate; upper surface subareolate-reticulate, glabrous, except the midrib, which is flush with the surface, lateral nerves slender, impressed; lower surface areolate-reticulate, glabrous, except the minutely tomentellous main nerves, lateral nerves 12 - 14 pairs, rather patent, arcuate near the margin, prominulous, secondary nerves prominulous, parallel. Petiole cylindrical, rather slender, densely rusty tomentellous, 3 - 7 cm long.

The species does not match any of the Fiji species; it is easily recognizable.

Fiji I si., Ovalau, ster, *Cpt. Wilkes s.n.* (US).

Litsea quadrangularis Kosterm., *spec. nov.*

Arbor ramulis glabris laevibus nitidis quadranglaribus et sulcatis foliis alternantibus chartaceis glabris ellipticis sensim acutis vel obscure sensim acuminatis basi acutis in petiolum contractis supra laevia nervo mediano basin versus subimpressis eostis filiformibus planis vel subimpressis subtus sublaevis nervo mediano prominentibus eostis utrinque 9-11 filiformibus prominulis erecto-patentibus marginem versus arcuatis petiolis sat longis subcanaliculatis infructescentiis axillaris dense pulverulente griseo pilosis ramulis pedunculiferis brevis vel nullis pedunculis umbellorum distinctis cupulis sub-semiglobosis fructus subglobosis.

Typus: *Ramos B.Sc. 7877* (US).

Tree, branchlets glabrous, smooth, glossy, quadrangular and sulcate in between the angles; end bud densely grey, pulverulently, adpressed pilose. Leaves spirally arranged, chartaceous, glabrous, elliptical, 6.5 X 14 — 9.5 x 24 cm, gradually acute or obscurely, gradually acuminate, base acute or contracted into the 1.5-2 cm long, somewhat channeled above, petioles; upper surface smooth, midrib slightly impressed towards its base, lateral nerves faint, filiformous, flush with the surface or sub-impressed; lower surface almost smooth, midrib prominent, lateral nerves 9-11 pairs, filiformous, pronunulous, erect-patent, arcuate at margin.

Infructescences axillary, densely pulverulently grey pilose. The umbel bearing branches up to 1 cm long or none; umbel peduncles up to 1 cm long. Fruit cup thin, subsemiglobose or flatter, 6-7 mm diam., ca 3 mm high, neck 2-3 mm, rather slender; immature fruit subglobose, 7 mm diam.

Philippines, Luzon, Prov. of Cagayan, April, fr., *Ramos B. Sc. 7877* (US); Palawan, ster., *Cenabre, Deproza & Roque F. B. 30182* (UC, US).

Litsea rangoonensis (Meissn.) Hk.f.

Cf. Kostermans, I.e. 870, no. 385; *Tetranthera rangooneTisis* Meissner, cf. Kostermans, i.e. 1421, no. 193, typus: *McClelland s.n.*, buds (K). This represents *Litsea umbellata* (Lour.) Merr.

Litsea schlechteri Teschner

Cf. Kostermans, I.e. 875, no. 410, typus: *Schlechter 18002* (UC).

New synonym: *Litsea mafuluensis* Allen, cf. Kostermans, I.e. 845, no. 253, typus: *Brass 5279* (A).

Litsea sessilis Boerlage

Cf. Kostermans, I.e. 880, no. 420; *Cylicodaphne sessiliflora* Meissner, cf. Kostermans, I.c. 454, no. 52, typus: *Motley, Barber 126* (K); *Cylicodaphne sessiliflora* Meissner, cf. Kostermans, I.e. 454, no. 51.

New synonym: *Litsea ellipticibacca* Merr., cf. Kostermans, I.e. 814, no. 132, typus: *Ramos B.Sc. 1397* (K, US), 2266 (K, US), Sandakan.

Litsea timoriana Spanoghe

Cf. Kostermans, I.e. 885, no. 452, typus: *Spanoghe* (L), Timor.

New synonyms: *Tetranthera discolor* Blume, cf. Kostermans, I.e. 1389, no. 66, typus: Timor, *Zippel 53/a* (L. 5 sheets); *Litsea riparia* (Bl.) Boer-

lage, cf. Kostermans, I.e. 872, no. 392; *Tetranthera riparia* Blume, cf. Kostermans, I.e. 1422, no. 198, typus: *Zippel 77/d* (L), Banda; *Litsea tuberculata* (Bl.) Boerlage, cf. Kostermans, I.e. 888 no. 460; *Cylicodaphne tuberculata* Blume, cf. Kostermans, I.e. 455, no. 56, typus: Sumatra *sine coll.* (L); *Litsea stickmannii* Merr., cf. Kostermans, I.e. 882, no. 430, typus: *Robinson 470 et 471* (K, L), Amboina.

Litsea tomentosa Bl.

Cf. Kostermans, I.e. 886, no. 453a. 1964.

Synonyms: *Litsea samarensis* Merrill, cf. Kostermans, I.e. 875 no. 404, typus: *Ramos B.Sc. 17541* (K), fl. April - May 1914, Samar, a rather glabrous form; *Actinodaphne samarensis* (Merr.) Merrill, cf. Kostermans, I.e. 39, no. 113; *Litsea membranacea* Elmer, cf. Kostermans, I.e. 847, no. 269, typus: *Elmer 8961* (K, LE), paratype: *Elmer 10811* (LE); additional specimen: *Elmer 15278* (K), Irosin, Mt. Bulusan; *Tetranthera vestita* Nees, cf. Kostermans, I.e. 1429, no. 225b; *Tetranthera cuneata* BL, cf. Kostermans, I.e. 1388, no. 58, typus: Celebes, *sine coll.*, (G); *Litsea cuneata* (Bl.) Boerl., cf. Kostermans, I.e. 810, no. 108a (*Litsea, cuneata* (Bl.) Boerl., cf. Kostermans, I.e. 108b. represents probably *L. noronhae* (BL).

Litsea umbellata (Lour.) Merr.

Cf. Kostermans, I.e. 889, no. 462; *Hexanthus umbellatus* Loureiro, cf. Kostermans, I.e. 539, no. 1, typus: *Loureiro s.n.*, (L).

Synonyms: *Tetranthera faginea* Miq., cf. Kostermans, I.e. 1391, no. 75, typus: *Junghuhn* (U), Angkola; *Litsea amara* Blume, cf. Kostermans, I.e. 787, no. 17, typus: *Blume* (L), Java, Huru hiries; *Tetranthera amara* (Bl.) Nees, cf. Kostermans, I.e. 1375, no. 8; *Tetranthera capitulata* Miq., cf. Kostermans, I.e. 1383, no. 37, typus: *Junghuhn s.n.* (L), Pengalengan; *Tetranthera fruticosa* (Reinw. ex Nees) Nees, cf. Kostermans, I.e. 1393, no. 86a; *Laurus fruticosa* Reinwardt ex Nees, cf. Kostermans, I.e. 627, no. 152, typus: *Reinwardt s.n.* (L), Java, buds; *Tetranthera xanthophylla* Blume, cf. Kostermans, I.e. 1431, no. 233, typus: Sumatra, *Herb. Waitz* (L, 3 sheets), buds; *Litsea xanthophylla* (Bl.) Boerlage, cf. Kostermans, I.e. 896, no. 498; *Tetranthera acuminatissima* Blume, cf. Kostermans, I.e. 1374, no. 2, typus: Sumatra, *Herb. Waitz* (L, 2 sheets), a large-leaved specimen; *Litsea rangoonensis* (Meissn.) Hooker f., cf. above.

Litsea varians (Bl.) Boerl.

Cf. Kostermans, I.e. 891, no. 473; *Tetranthera varians* Bl., cf. Kostermans, I.e. 1429, no. 221, typus: *Praetorius s.n.* (L), Sumatra, ster., *Mutter s.n.* (L), Borneo, fr.. Kajo barito incolarum, Celebes, buds (L).

New synonym.: *Litsea micrantha* Merr., cf. Kostermans, I.e. 847, no. 273, typus: *Ramos B.Sc.* 17505 (US).

Litsea verticillata Hance

Cf. Kostermans, I.e. 892, no. 480a.

New synonym: *Litsea multiumbellata* Lee, cf. Kostermans, I.e. 851, no. 291, typus: *Pierre 643* (K, 2 sheets, LE, P, UC) (var. *montana*).

Litsea. viridis Liou Ho

Cf. Kostermans, I.e. 894, no. 484, typus: *Poilane 1466* (P).

This represents *Litsea elongata* Hk. f., cf. Kostermans, I.e. 814, no. 134. Perhaps *Litsea acutivena* Hayata belongs here too.

LICARIA Aubl.

Misanteca alata (Miranda) Miranda

Miranda in Bolet. Soc. bot. Mexico 29: 15. 1965 repeats the same arguments as Lundell, 30 years ago, that a genus should not be established on a sterile specimen. In this I agree (as I did 30 years ago), but faced with the task of renaming practically all species at any rate, I preferred to go back to the oldest generic name: *Licaria* Aublet. Miranda is certainly wrong, when he believes that in Lauraceae it is impossible to recognize a species in sterile condition. I boast, that I am able to do so with species of the revised genera, I collected moreover *Licaria gulanensis* Aublet myself in Trinidad in 1959 in fruiting condition and I had no difficulty to recognize the species in the field.

NEOLITSEA Merr.

Neolitsea auricolor (Kosterm.) Kosterm., *comb. nov.*

Actinodaphne auricolor (basionym) Kostermans in Reinwardtia 5: 396, t. 13 (1960). 1961, cf. Kostermans, Bibl., I.e. 17, no. 7, typus: *Kostermans 12929* (A, BM, BO, CAL, CANB, K, KEP, L, LAE, NY, P, SING, US).

PERSEA Miller

Persea albida Kosterm., *nom. nov.*

Persea pallida Mez & Pittier in Bull. Herb. Boissier, Sér. 2, 3: 231. 1903 (base), cf. Kostermans, I.e. 1244, no. 209b; Kopp in Mem. New York Bot. Gard. 14: 25. 1966, non *Persea pallida* (Nees) Oliver, cf. Kostermans, I.e. 209a.

Persea buchtienii O.C. Schmidt

In Kapp's monograph of American *Persea* (Mem. N. York bot. Gard. 14: 31. 1966) the species *Persea sphaerocarpa* (Winkler) Kosterm. was overlooked.

This species is conspecific with *P. buchtienii* and as its base, *Beilschmiedia sphaerocarpa* Winkler, antedates Schmidt's name by 22 years, *P. buchtienii* becomes a synonym of *Persea sphaerocarpa*.

Persea caerulea (R. & P.) Mez

Kopp, I.e. 34 cites wrongly as a synonym: *P. pyrifolia* Nees & Mart, ex Nees and at the same time omits the synonym: *P. skuichii* Allen,

Persea kurzii (King ex Hk.f.) Kosterm.

Cf. Kostermans, Bibl. Laur. 1233, no. 146. 1964. New synonym: *Persea kerrii* (Gamble) Kosterm., cf. Kostermans, I.e. 1233, no. 141, *typus: Kerr 2502* (K, 3 sheets).

Material examined: Siam, Nakawn Panom, Febr., fl., *Kerr 8469* (K); Lang Suan, Febr., fl. *Kerr 11868* (K); Wienchang, Mar., fl., *Kerr 20723* (K); Lampun, Mar., fl., *Kerr 3155* (K); Surin, Febr., fl., *Put 643* (K); Korat, Dec., fr., *Put 2258* (K); Annam, Laobao, prov. Quang Tri, Apr., fr., *Poilane 1342* (K).

Persea mutisii H.B. K.

Kopp, I.e. 14: 73. 1966 omits to mention, that I reduced *P. pachytelepala* Lasser already in 1965 (in *Reinwardtia* 7: 144. 1965).

Persea willdenovii Kosterm., *nom. nov.*

Persea pyrifolia Nees & Mart, ex Nees in *Linnaea* 8: 50. 1833 (base), cf. Kostermans, I.e. 1251, no. 240b; Kopp, I.e. 14: 32. 1966, non *Persea pyrifolia* (Don) Spr., cf. Kostermans, I.e. 1250, no. 240a.

PHOEBE Nees

Phoebe steyermarkiana Allen

Allen in Mem., l.e. 10: 74, fig. 41. 1963, typus *Steyermark & Wurdack 981* (NY).

I have not seen the type specimen, but the figures are clear enough to detect that this is no *Phoebe*, but an *Ocotea*, provided that the fruiting specimens belong to the same species as the flowering one. The fruitcup and small staminodes as well as the short filaments point all to *Ocotea* and not to *Phoebe* (= *Cinnamomum*, as to the American species).

A-

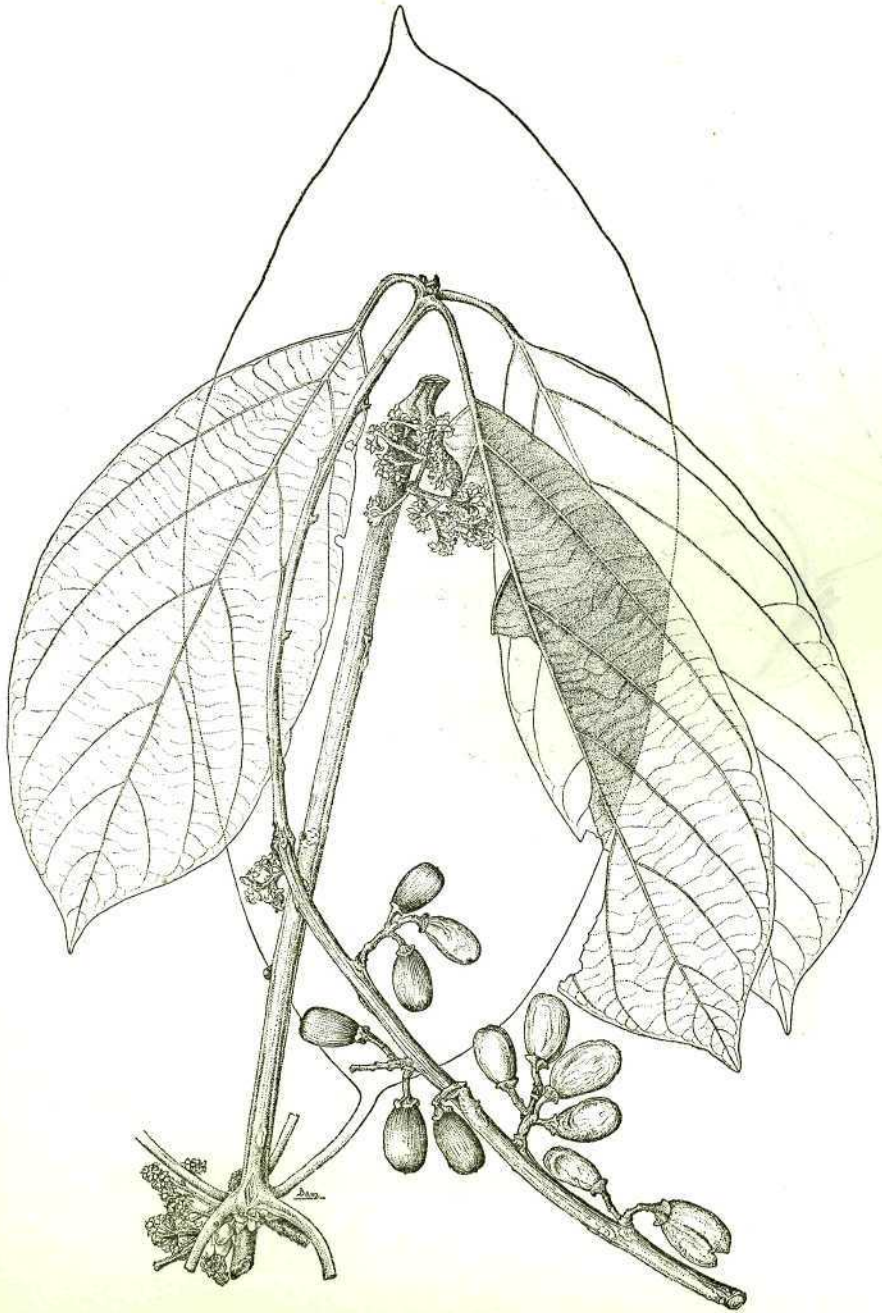


Fig. 6 — *Actinodaphne ellipticibacca*, Kosterm. — *Holo-typus*

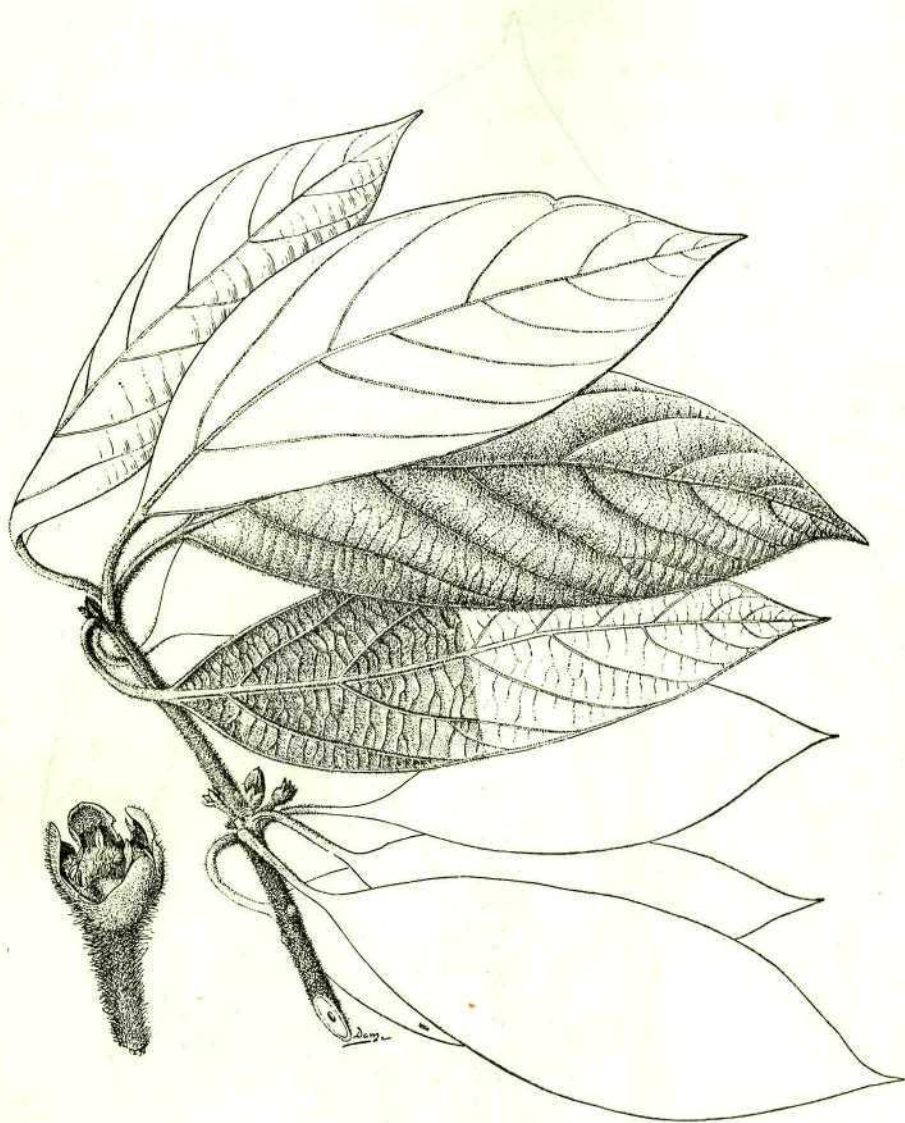


Fig. 7 — *Actinodaphne kinabalnensis* Kosterm. — *Holo-typus*

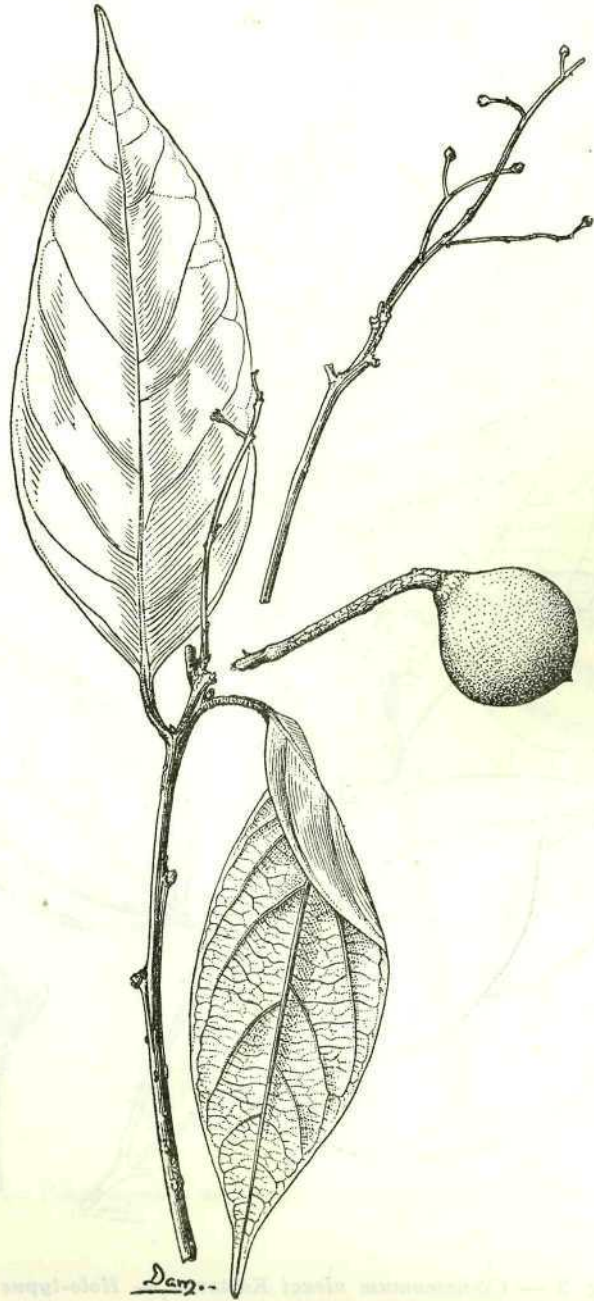


Fig. 8 — *Beilschmiedia kwangsiensis* Kosterm. — *Holo-typus*



Fig. 9 — *Cinnamomum alexei* Kosterm. — *Holo-typus*

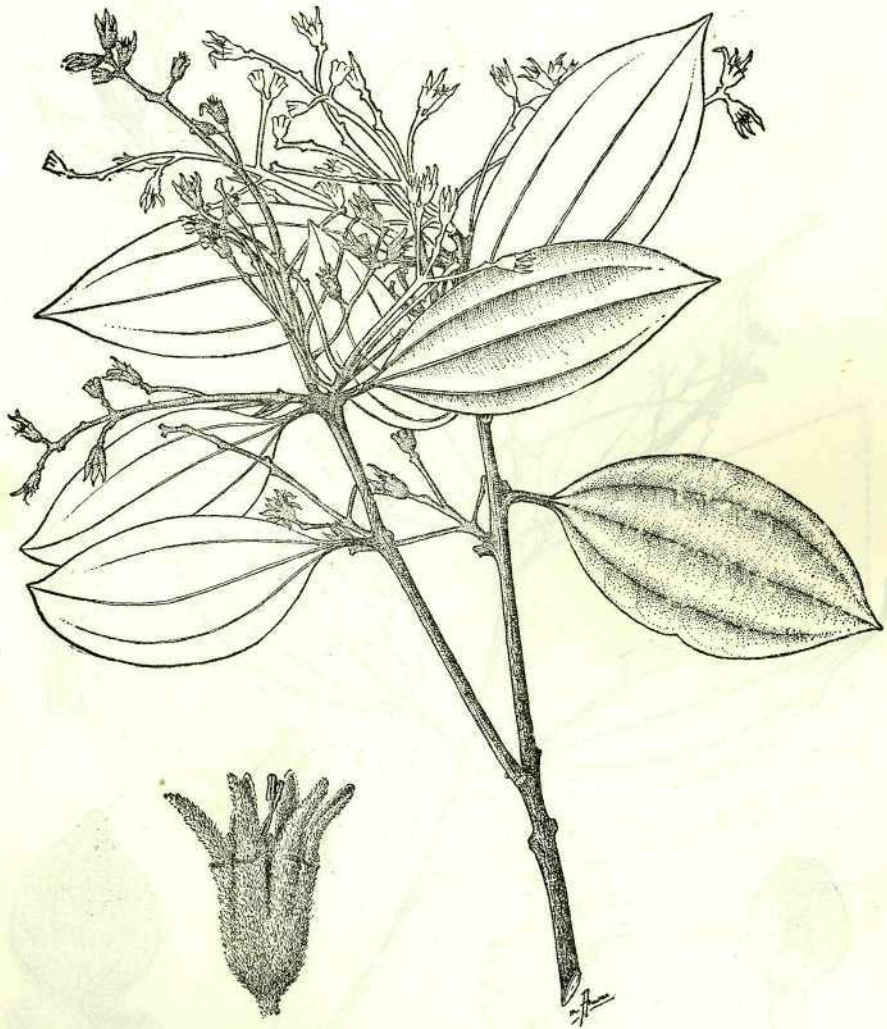


Fig. 10 — *Cinnamomum angustitepalum* Kosterm. — after S. 16253 (BO)

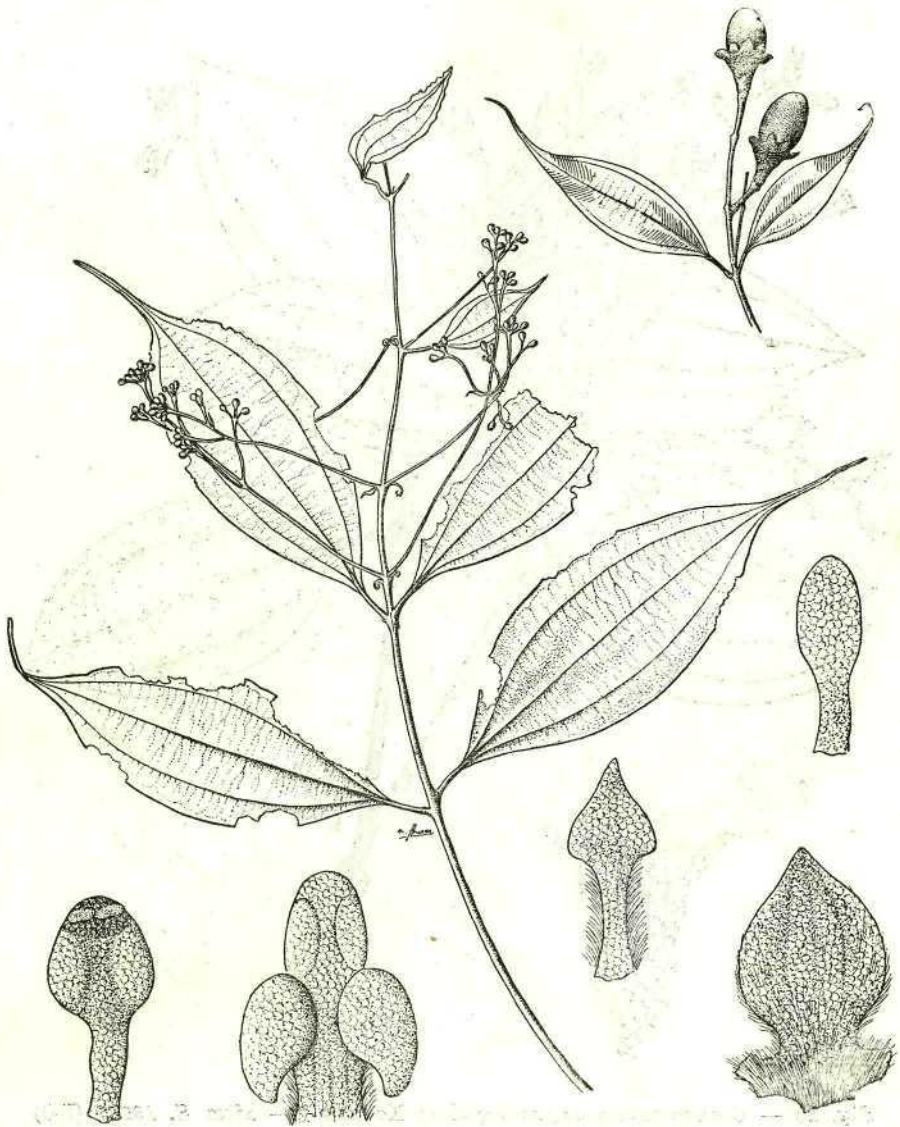


Fig. 11 — *Cinnamomum caudifolium* Kosterm. — *Holo-typus*

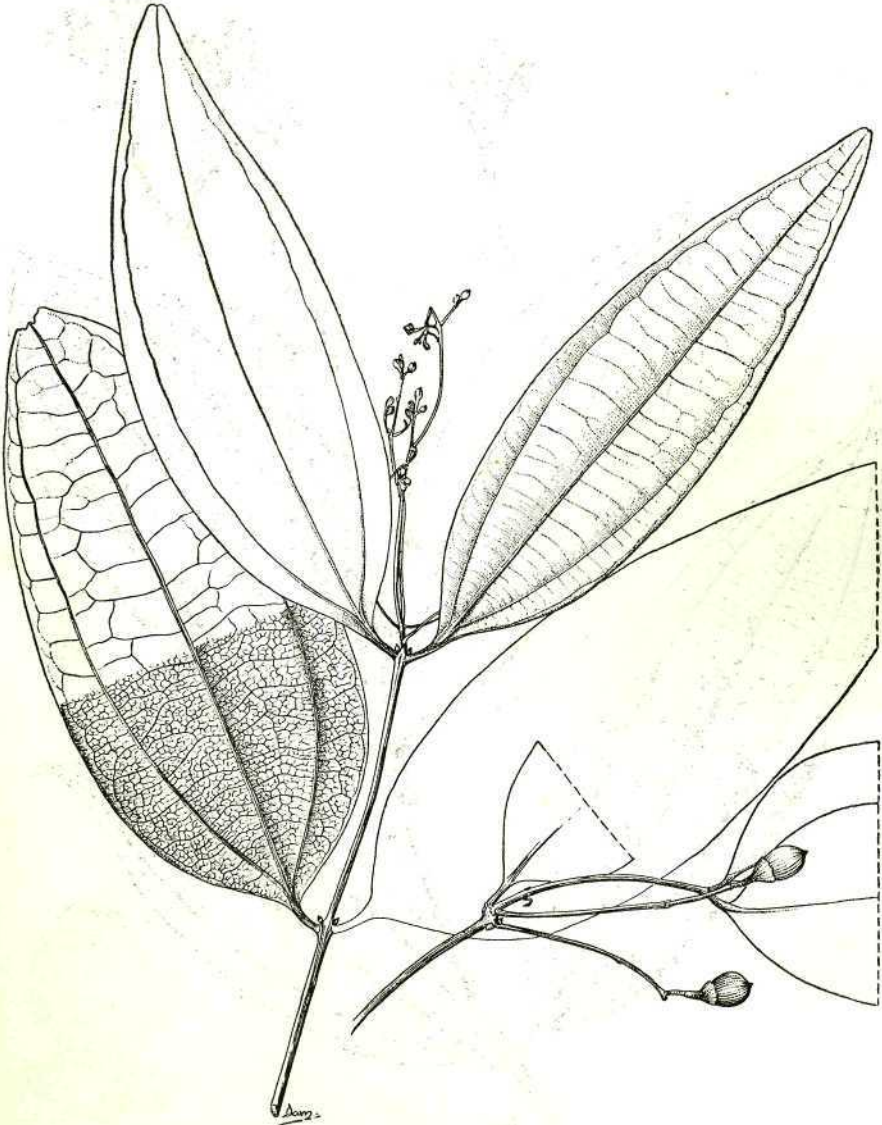


Fig. 12: — *Cinnamomum dictyoneurum* Kosterm. — fruit, *holo-typus*; flowering branch after Endert 3687 (BO)



Fig. 13 — *Cinnamomum eridlicheriaecarpum* Kosterm., — after Brun. 3285 (BO)

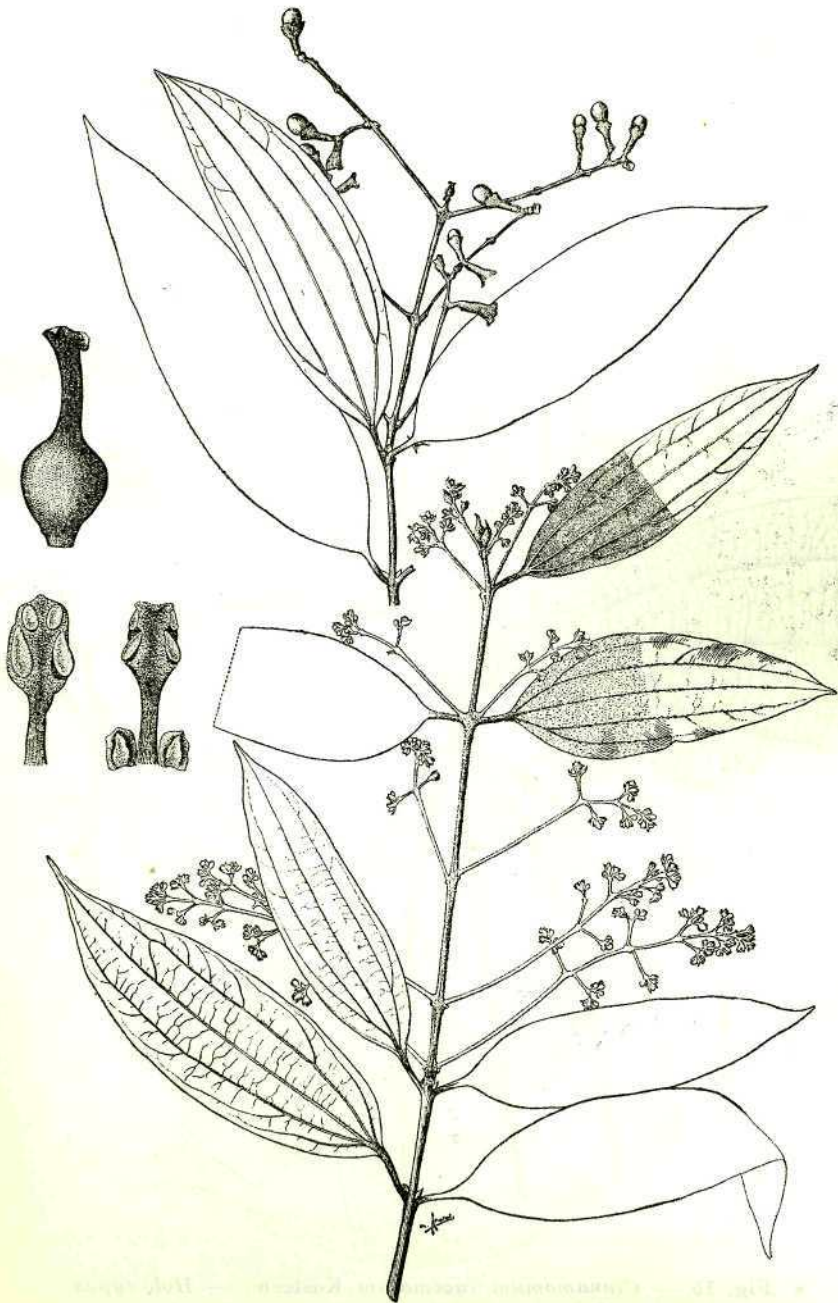


Fig. 14 — *Cinnamomum podagricum* Kosterm. — fruit, *holo-typus*;
flowering branch after Brass 32428 (BO)

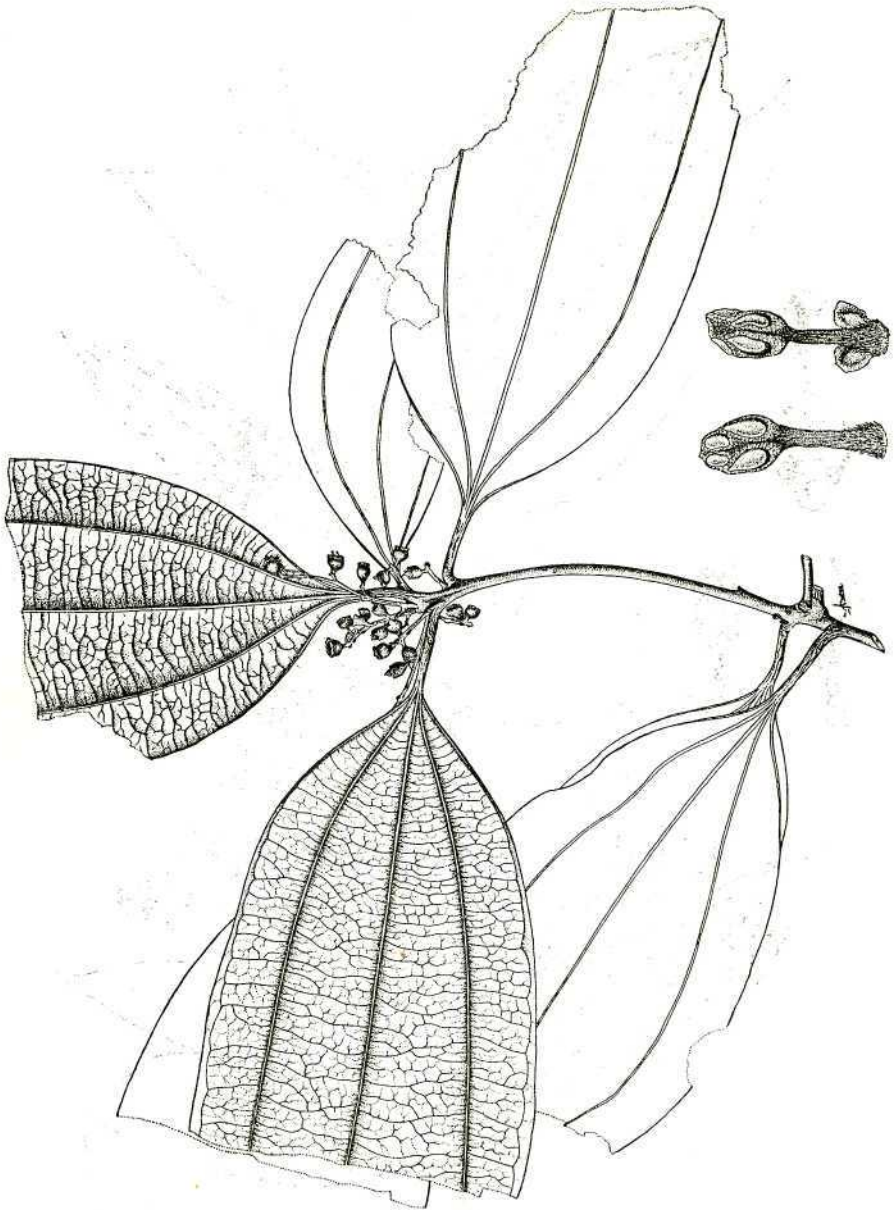


Fig. 15 — *Cinnamomum raeemosum* Kosterm. — *Holo-typus*



Fig. 16 — *Cinnamomum xylophyllum* Kosterm. — Holo-typus;
fruit after Ashton S. 18388 (BO)

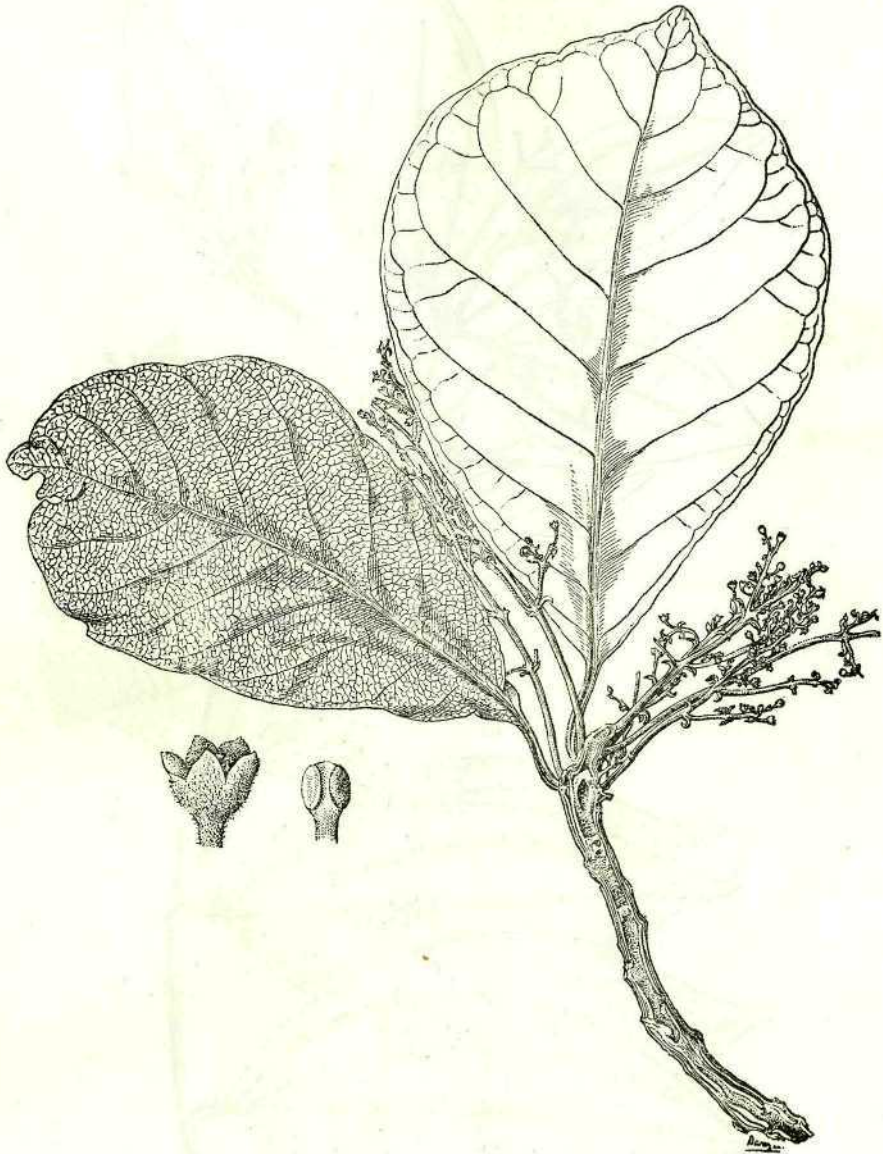


Fig. 17 — *Endiandra aggregata* Kosterm. — *Holo-typus*



Fig. 18 — *Endiandra arfakensis* Kosterm. — *Holo-typus*



Fig. 19 — *Endiandra carrii* Kosterm. — *Holo-typus*

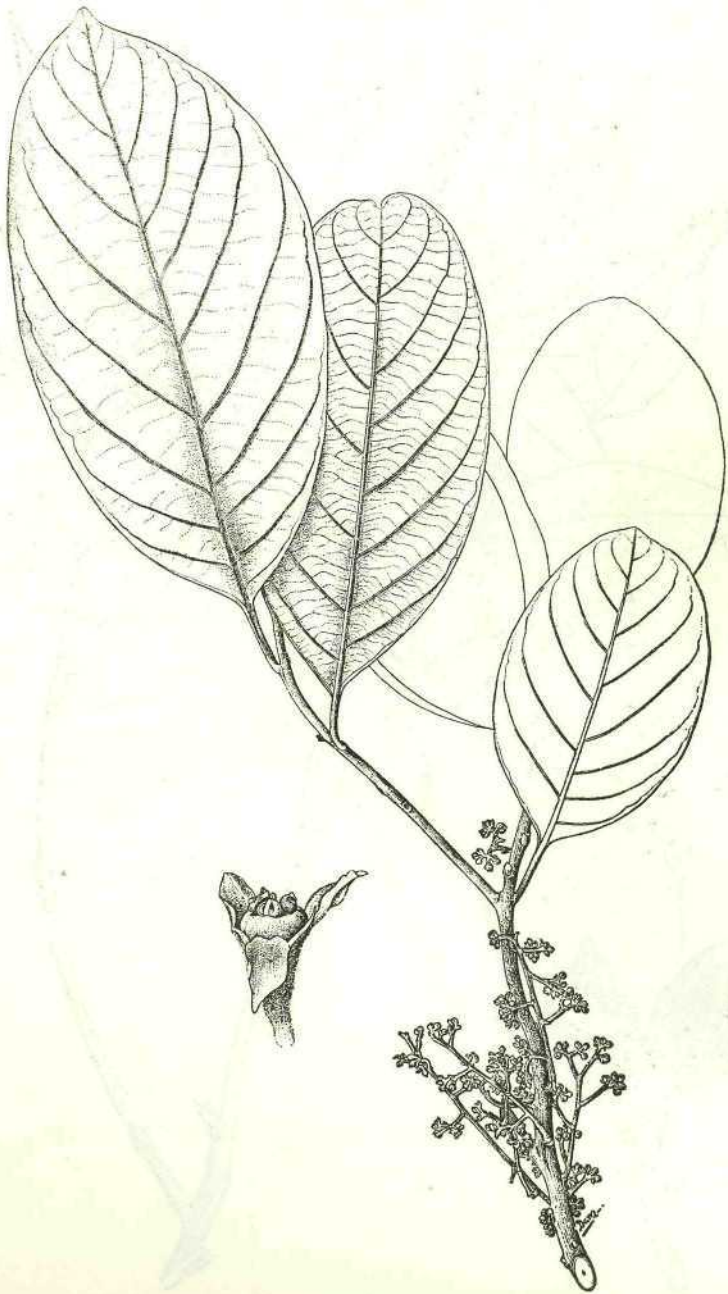


Fig. 20 — *Endiandra euadenia* Kosterm. — *Holo-typus*



F'g. 21 — *Endiandra faceta* Kosterm. — *Holo-typus*



Fig. 22 — *Endiandra havelii* Kosterm., — *Holo-typus*



Fig. 23 — *Endiandra inaequitepala* Kosterm.; after Carr 16082 (BO), fruit after Carr 15370 (BO)



Fig. 24 — *Endiandra sericea* Kosterm. — *Holo-typus* (except the fruit)



Fig. 25 — *Endiandra sleumerii* Kosterm. — after Pullen 5782 (CANB)

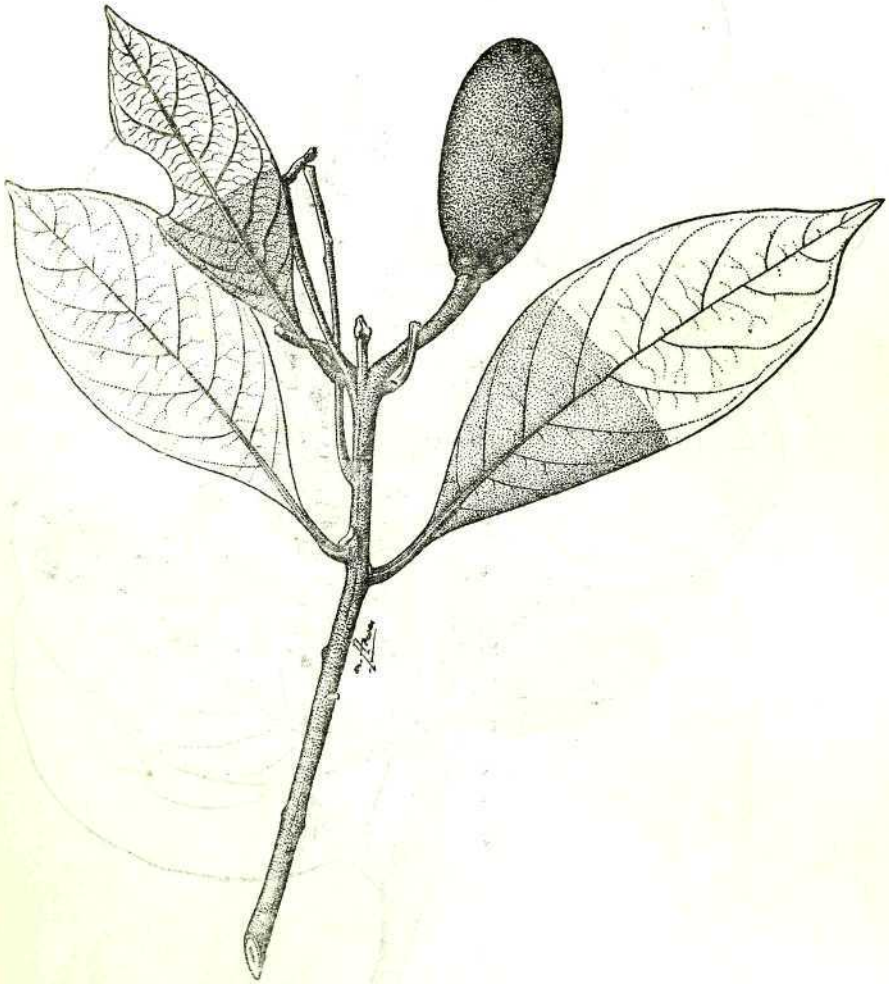


Fig. 26 — *Endiandra versteeghii* Kosterm. — after Brass & Versteegh 13198 (BO)



Fig. 27 — *Endiandra xylophylla* Kosterm. — after Brass 32393 (BO)



Fig. 28 — *Lindera turfosa* Kosterm. — *Holo-typus*



Fig. 29 — *Litsea ficoidea* Kosterm. — after S. 15837 (BO)

Leop. in App. 5 vol. 1; the other one: Nica-curundu. *Laurus camphora* N.B. *Arbor camphorifera japonica dicta, etc. ab hac, quia in nomine zeylanicia ad Cinnamomum pertinent. Laurus camphora descr.* Thunberg.

Laurus foliis ovatis, etc.

Laurus foliis ovatis venosis coriaceis transverse venosis perennantibus Burman is represented by one sheet which is *Ocotea bullata* Meyer of S. Africa.

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