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REINWARDTIA

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NEW AND CRITICAL MALAYSIAN PLANTS IV * **

A. J. G. H. KOSTERMANS ***

Summary

1. Sixteen new species are described in
Guttiferae : *Garcinia longipedicellata*, *G. segmentata*; *Kayea laevis*, *K. paludosa*.
Lauraceae : *Alseodaphne data*, *A. gigaphylla*, *A. obovata*; *Beilschmiedia argentea*, *B. dilmyana*, *B. gigantocarpa*, *B. kinabaluensis*, *B. myrmecophila*, *B. rufolanata*, *B. rufoperulata*, *B. wieringae*; *Dehaasia novoguineensis*.
2. Seven new combinations are coined in
Lauraceae : *Alseodaphne archboldiana* (Allen) (basonym : *Nothaphoebe archboldiana* Allen), *A. reticulata* (Gamble) (basonym : *Nothaphoebe reticulata* Gamble); *Beilschmiedia cuneata* (Meissn.) (basonym : *Persea cuneata* Meissn.); *Beilschmiedia palembanica* (Miq.) (basonym : *Cryptocarya palembanica* Miq.); *Dehaasia longipedicellata* (Ridley) (basonym : *Beilschmiedia longipedicellata* Ridley), *D. oblanceolata* (Merr.) (basonym : *Beilschmiedia oblanceolata* Merrill); *D. titanophytta* (Airy Shaw) (basonym : *Beilschmiedia titanophytta* Airy Shaw).
3. Two new names are coined in
Lauraceae : *Dehaasia membranacea* Kosterm. (based on *Dehaasia longipedicellata* (non Ridley) Merrill).
Sterculiaceae : *Sterculia perryae* Kosterm. (based on *Sterculia clemensiae* (non Ridley) Merr. & Perry).
4. Eight species are reduced to synonymy in
Lauraceae : *Beilschmiedia borneensis* Merrill = *B. maingayi* Hook. f., *B. foxiana* Gamble = *Alseodaphne reticulata* (Gamble) Kosterm., *Beilschmiedia longipes* Hook. f. — *B. palembanica* (Miq.) Kosterm., *B. lundelliana* Lasser = *B. cuneata* (Meissn.) Kosterm., *B. sumatrensis* Ridley = *B. palembanica* (Miq.) Kosterm., *B. triplinervis* Teschner = *Cryptocarya laevigata* Bl.; *Endiandra sphaerica* Allen = *Beilschmiedia novoguineensis* Teschner.
Rosaceae : *Polyalthia pulchrinervia* Boerlage (Annonaceae) = *Parinari corymbosa* Miq.

GUTTIFERAE

GARCINIA L.

1. *Garcinia longipedicellata* Kostermans, spec. nov. — Fig. 1

Arbor mediocris in omnibus partibus glabra; foliis chartaceis in statu sicco virescentibus, oblongis, costis lateralibus gracilibus prominulis, petiolo conspicuo; floribus glomeratis et axillaribus, perlonge pedicellatis.

Tree, 7 m tall, glabrous in all its parts, with stiff, very patent branches; young branches cylindrical, thick; internodes 2—3 cm long. Leaves chartaceous, dull, green when dried, oblong or elliptic, 4 x 1.0 — 7 x 2.0 cm; top

* The first and second part of this series appeared in : Reinwardtia 2 : 357—366. 1953 and 3 : 1—25. 1954 respectively; the third and fourth (this) part appeared separately, issued by the Planning Division of the Indonesian Forest Service in Febr. and Oct. 1955. This fourth part is exactly like the original publication of Oct. 1955.

** In this paper one plant from India : *Beilschmiedia argentea* Kosterm. and one from South America : *Beilschmiedia cuneata* (Meissn.) Kosterm. are treated.

*** Ph. D., Botanist, Division of Planning, Forest Service of Indonesia; printed with permission of the Director, Division of Planning.



Fig. 1. *Garcinia longipedicellata* Kostermans; flowering branch ($\times 0.6$); a, flower ($\times 3.5$); b, section of flower ($\times 4$); c, stigma ($\times 4$). — After Kjellberg 1853 (type).

acutish, base cuneate; midrib flat, broad on upper surface, prominent on lower one, lateral nerves (about 14—18 pairs, not included the intermediate ones) slender, strongly arcuate at 2—4 mm from margin, prominulous on both surfaces, rather irregular, secondary nerves lax, somewhat prominulous; petiole 1—2 cm long, rather stout. Flowers axillary, sessile, clustered, with minute bracts at base; pedicel fleshy, very long (up to 5 cm), gradually thickened towards apex. Flowers subglobose (sub-mature), 3—4 mm long, whitish yellow; outer sepals ovate, concave, acute, 4 mm long, bases grown together, inner sepals about as long. Stigma semi-globose, sessile, with numerous, quadrangular papillae.

Type. — *Kjellberg 1853* (BO).

Distribution. — Celebes, only known from type locality.

The species is outstanding by its enormous, fleshy pedicels; the flowers are too young for an adequate description.

Specimen examined. — CELEBES. Tadjambu, alt. 800 m., rainforest, July, fl., *Kjellberg 1853* (BO).

2. *Garcinia segmentata* Kostermans, spec. nov. — Fig. 2

Arbor humilis in omnibus partibus glabra, foliis coriaceis ellipticis vel lanceolato-ellipticis in sicco virescentibus. Inflorescentiae femineae brevissime bracteatae, floribus rubris in pedicellis longis impositis, sepalis concavis subrotundatis, interioribus majoribus, petalis sepalibus interioribus superantibus, concavis, ovario clavato, stigmate magno, depresso-globo, sessile. Fructus depresso-globosus, in statu sicco in segmentis subdivisis.

Tree, up to 10 m high, glabrous in all its parts; clear bole 2.5—8 m, 20 cm in diameter. Young branches subangular, greenish (dried); internodes 3—5 cm long. Leaves coriaceous, dull, pale green (dried), elliptic or lanceolate-elliptic, 4×9 — 6×16 cm; top rather obscurely acuminate; base decurrent into the 5—10 mm long petiole; upper surface smooth with hardly prominent midrib and lateral nerves, lower surface with strongly prominent midrib and prominulous, slender, towards margin arcuate and ascending (9—12 and more pairs) lateral nerves, secondary nerves very slender. On each side of the petiole a minute, round, flat gland and a large gland above the-axil on the internode.

Female inflorescences with very short (up to 2 mm long) peduncle, axillary, often on contracted internodes. Female flowers red; pedicel 5—10 mm long (usually 10), subtended by minute bracts; the bracts at the top of the main peduncle concave, ovate-acute, 1 mm long. Sepals 4, suborbicular, concave, the outer pair smaller than the inner one. Petals 4, membranaceous, slightly longer than the inner sepals. Ovary club- or fungus-shaped, 3 mm long, flanked at base by 4 emergences, representing the sterile stamens; stigma very large, peltate-hemispherical, 3 mm in diameter. Fruit depressed-globose, orange-yellow, up to 5 cm in diameter, with flat, sessile stigma and 12—13 seeds; outer layer of fruit apparently very juicy as it has shrunk completely in the dried fruit, causing the seed-bearing parts to look as so many segments.

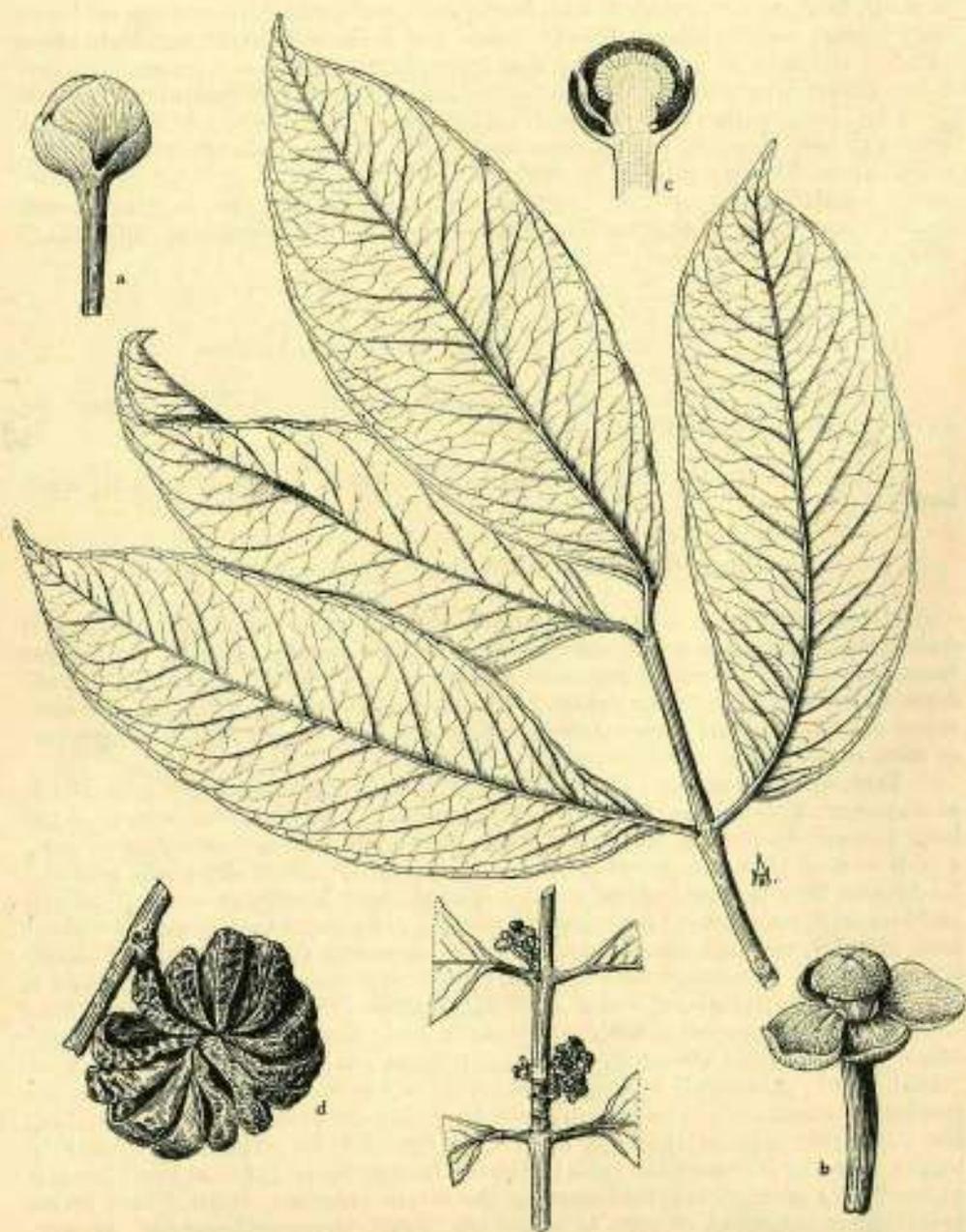


Fig. 2. *Garcinia segmentata* Kostermans; branch and inflorescences (x0,6); a, flower bud (X 3); b, female flower without petals (X 3); c, section of female flower (X 3); d, fruit (X 0,6). — a-c after Reppie 523 (type), d, after bb. 20272 (para-type).

Type. — *Reppie 523* = *CelV-296* (BO); para-type (fruiting): *van Zijll de Jong 33/F.Z.* = *bb. 20272* (BO).

Distribution. — Celebes. Northern and western part of Gulf of Bone.

The species is related to *Garcinia riparia* A. C. Smith.

Specimens examined. — CELEBES. Malili Distr., Toli-Toli. Jan., fl., *Reppie 523* = *CelV-296* (A, BO, L); Rantepao Distr., Makale, Paniki, alt. 900 m., Febr., fl., *van Zijll de Jong 33/V.Z.* = *bb. 20272* (BO).

KAYEA Wall.

1. *Kayea laevis* Kostermans, spec. nov. — Fig. 3

Arbor in omnibus partibus glabra, ramulis cinereis gracilibus, foliis rigide coriaceis perdense minuteque areolatis (areolis in pagina superiore vix conspicuis) oblongis, basi rotundatis, apice longe acuminatis, nervis lateralibus distantibus gracillimis in pagina superiore vix conspicuis prope marginem incurvatis apicem versus arcuatis evanescentibus; petiolo distincto late canaliculato. Paniculae axillares subterminalesque laxae floribus subglobois.

Tree, completely glabrous in all its parts; branchlets slender, angular, glossy, grey. Leaves rigid coriaceous, oblong, 5 x 15 — 7,5 x 22 cm; base rounded, top acuminate (acumen 1,5 cm long, rather slender); upper leaf-surface smooth or very obscurely pitted, midrib slender, prominent; lower surface more glossy, conspicuously, very densely, minutely areolate, midrib prominent, lateral nerves (about 15—17 pairs) slender, hardly prominent, arcuate and running out towards the incurved margin. Petioles 1,5 cm long, broadly channeled above, the channel proceeding (for 5 mm) and very narrowed on the midrib of the upper leaf surface. Panicles subterminal, axillary, up to 10 cm long; main peduncle 2—4 cm long, like the short, distant ramifications angular, sulcate. Pedicels 2—5 mm long. Flowers (old ones?) globose, 5 mm in diameter; outer sepals thick, wrinkled, glossy, orbicular, very concave, enveloping almost completely the inner, slightly longer sepals; petals ovate-orbicular, membranaceous, shorter than sepals, concave, included. Stamens numerous, free. Ovary ovoid-acute, glabrous, merging into style.

Type. — *Hallier 1418* (BO).

Distribution. — Borneo, only known from type locality.

This species may be recognized by its large, pitted leaves and distant lateral nerves. It is related to *K. beccariana* Baillon, which has smaller flowers and leaves. When more material is available, it is not unlikely, that it may prove to be but a variety of that species.

Specimen examined. — BORNEO. Kenapai R., fl., *Hallier 1418* (BO).

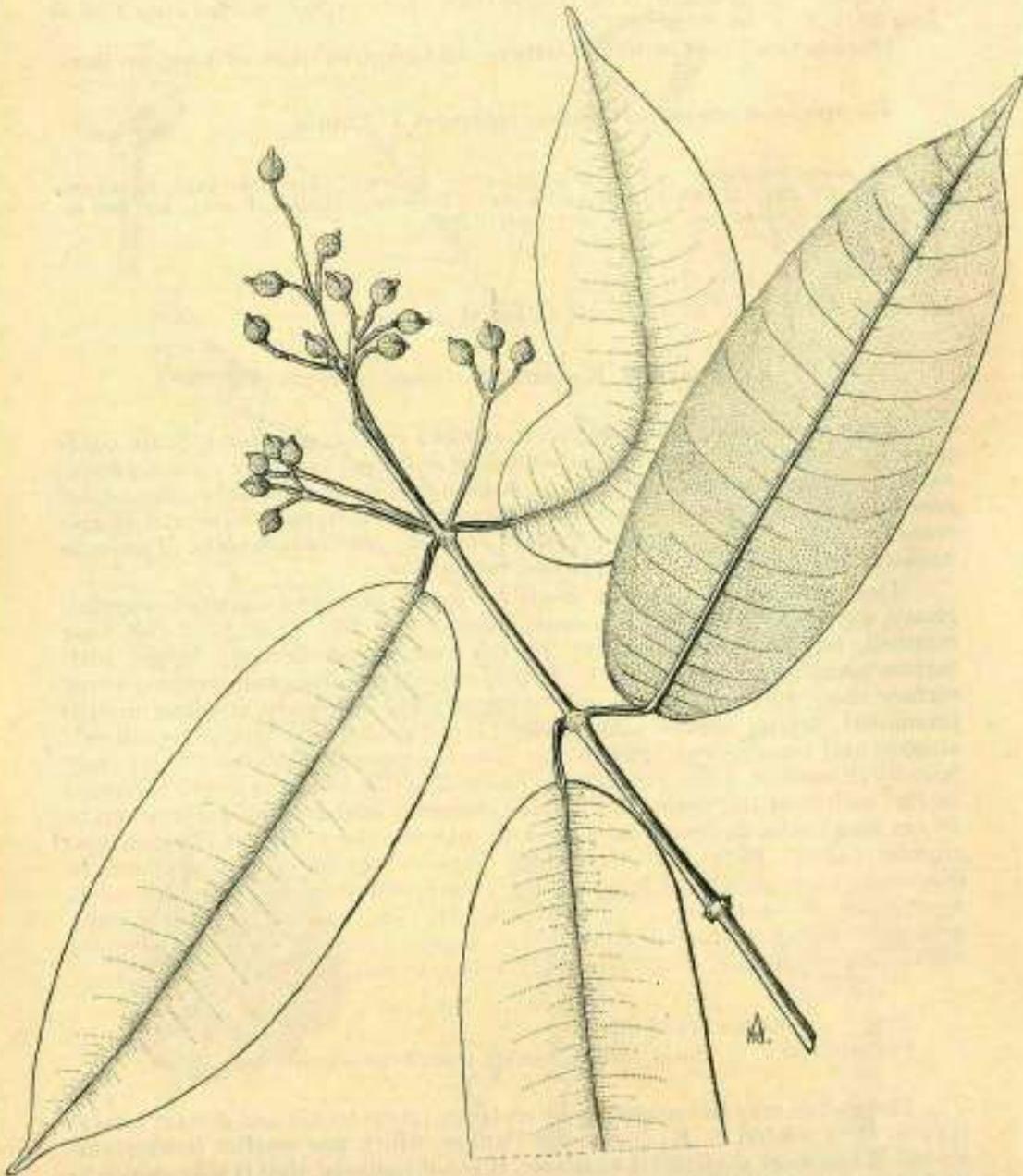


Fig. 3. *Kayea laevis* Kostermans; flowering branch (X 0,6). - After Hallier 1418 (type).

2. *Kayea paludosa* Kostermans, spec. nov. —• Fig. 4

Arbor mediocris in omnibus partibus glabra, ramulis gracilibus, foliis sub-coriaceis oblongis, basi rotundatis, apice acuminatis, nervis lateralibus numerosis prope marginem ad apicem arcuatis, fagina superiore subnitida, pagina inferiori nitida, in utraque pagina nervo mediano prominulo nervis lateralibus sub-conspicuis; petiolo breve, canaliculate. Infructescentiae axillares, fructus in pedicello longo, depresso-globosus, scaber, 5-costatus, sepalis persistentibus induratus vix amplificatis. Flores ignoti.

Tree 23 m tall, bole 10 m, rather straight, sub-angular, diam. 35 cm; buttresses and stiltroots 1,20 m high, extending 60 cm over the ground. Crown open, 10 m in diameter; branches stiff, erect-patent. Bark dark brown, rather smooth, peeling off a little; living bark 0,5mm thick, darkred, no latex. Branchlets slender. Leaves sub-coriaceous, smooth, with faint, very numerous lateral nerves on both surfaces, more glossy on lower surface (dried), oblong, 2 x 5 — 5 x 11 cm; base rounded, apex shortly, broadly acuminate; upper surface with prominulous midrib, lower surface obscurely pitted with prominent midrib, lateral nerves strongly arcuate near margin. Petiole very short, 2—3 mm long, deeply channeled (folded) above. Stipules spear-shaped, narrow, gradually acute, up to 5 mm long, deciduous. Infructescence very short (5—10 mm), pedicel 1,5—3 cm long, slightly thickened towards apex. Fruit woody, brown, roughish, depressed globose, 5-ribbed, up to 2,7 cm high and 3,5 cm in diameter, crowned by a woody, up to 3 mm long piece of style; sepals hardened, little or not enlarged, concave, depressed-orbicular, outer ones about 5 mm, inner about 7 mm long.

Type. — *Beguïn 563* (BO).

Distribution. — Sumatra, only known from type locality.

The species belongs in the group, where the fruit is not enveloped by the enlarged sepals. Its alliance is not sure.

Specimen examined: Isl. BENGKALIS (Eastcoast Sumatra), Missigit R., „Panglong 31", low, Jan., fr., *Beguïn 363* (BO, K, L). Panglong is a forest plot, where timber is cut by a special group of Chinese wood-cutters.

LAURACEAE

ALSEODAPHNE Nees

1. *Alseodaphne archboldiana* (Allen) Kostermans, comb. nov.

Basonym: *Nothaphoebe archboldiana* Allen in J. Arnold Arbor. 23: 115. 1942. Formerly (in Bull. Bot. Gdns. Buitenzorg, ser. 3, 18 (4): 441. 1950) I considered this to be a variety of the extremely variable *A. umbelliflora* Hook, f., but additional material compels me to reverse my former opinion and consequently I refer this as a proper species to its genus.

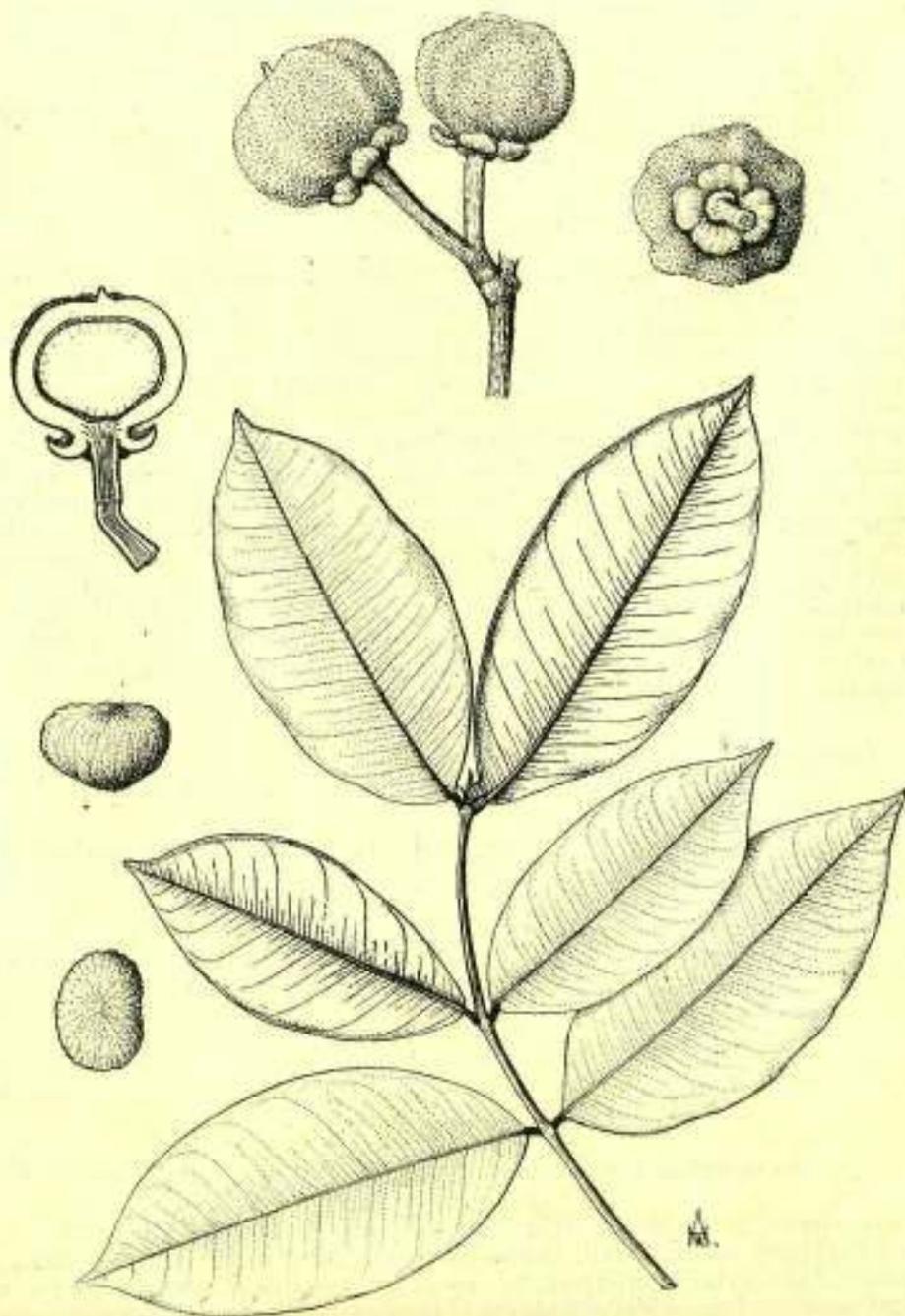


Fig. 4. *Kayea paludosa* Kostermans (x 0,75). — After Beguin 563 (type).

2. *Alseodaphne elata* Kostermans, spec. nov. — Fig. 5, 6

*Arbor elata ramulis sympodialis crassis dense minuteque ferrugineo-tomentellis, cicatricibus petiolorum magnis; foliis magnis apice ramulorum congestis, coriaceis obovato-spathulatis, basi cordatis, apice acuminatis, superne nitidis glabris, subtus glabrescentibus opacis; petiolo breve percrasso. Paniculae subterminales, dense minuteque ferrugineo-tomentellae, laxae; floribus in pedicellis longis pilosis rubris dense pilosis, tepalis staminibusque sicut in *A. gigaphylla* Kosterm., sed antheris exterioribus stipitatis.*

Tree up to 30 m tall, bole 14 m long, 40 cm in diameter. Branchlets very thick, towards apex densely, minutely rusty tomentellous with large, circular, protruding leaf scars. Leaves clustered near apex of branchlets (sympodial ramification), coriaceous, obovate-spathulate, 10 X 20 — 13 X 34 cm, top shortly acuminate, base cordate; upper surface smooth, glossy with broad, flat midrib and slightly sunken main nerves, reticulation absent or (in young leaves) obscure; lower surface dull, sparsely, minutely, rusty tomentellous, glabrescent, midrib strongly prominent, lateral nerves (about 13 pairs) prominent, arcuate towards margin, the upper ones anastomosing 5 mm from margin; secondary nerves scalariform, tertiary nerves laxly reticulate, prominulous. Petioles stout, 1—1,5 cm long. Panicles subapical, lax, poorly branched, densely, minutely rusty tomentellous, up to 8 cm long, the few ramifications subtended by minute, ovate, acute, pilose bracts. Pedicels 1 cm long, densely tomentellous. Flowers (after anthesis) red, densely tomentellous; outer tepals triangular, 0,75 mm high, 1,5 mm wide at base, fleshy; inner ones almost 2 mm long, ovate, acute. Stamens pilose; outer ones oblong, 1 mm long; cells small, introrse; filament short, broad, or inconspicuous; inner anthers thick, triangular, truncate, with extrorse-lateral cells, glands none. Staminodes large, pilose, sessile, triangular, acute, 1 mm. Ovary globose, glabrous, 1 mm high; style as long, distinct; stigma small, discoid.

Type. — *Kostermans 269 = bb. 33466* (BO).

Distribution. — Netherlands New Guinea.

Local name. — Sbij (Dutch ij) in Manikiong language.

The species resembles *A. panduriformis* Hook. f. and *A. gigaphylla* Kosterm.; from the former it may be distinguished by its larger flowers and long pedicels, from the latter by its coriaceous, pilose leaves and pilose flowers. The species is rather common locally and has a constant local name.

Specimens examined. — NETHERLANDS NEW GUINEA. Manokwari Distr. Momi, 80 km. S. of Manokwari, bottomland, moist forest, Aug., fl., *Kostermans 269 = bb. 33466* (A, BO, BRI, K, L, LAE, M, NY, P, SING); *ibid.*, Aug., in bud, *Kostermans 206* (A, BO, K, L, M, SING); *ibid.*, young tree, ster., *Kostermans 2841* (A, BO, L); Idoro, Bivouac West Rauna, Apr., ster., *bb. 22543* (A, BO, L).

3. *Alseodaphne gigaphylla* Kostermans, spec. nov. — Fig. 7, 8, 9, 10

Arbor mediocris ramificatione sympodiale; foliis apice ramulorum confertis, magnis glabris chartaceis obovato-spathulatis, supra basin attenuatis, ad basin latioribus cordatisque. Inflorescentiae subterminales glabrae, floribus longe pedicellatis, tepalis glabris.



Fig. 5. *Alseodaphne elata* Kostermans. — Type.

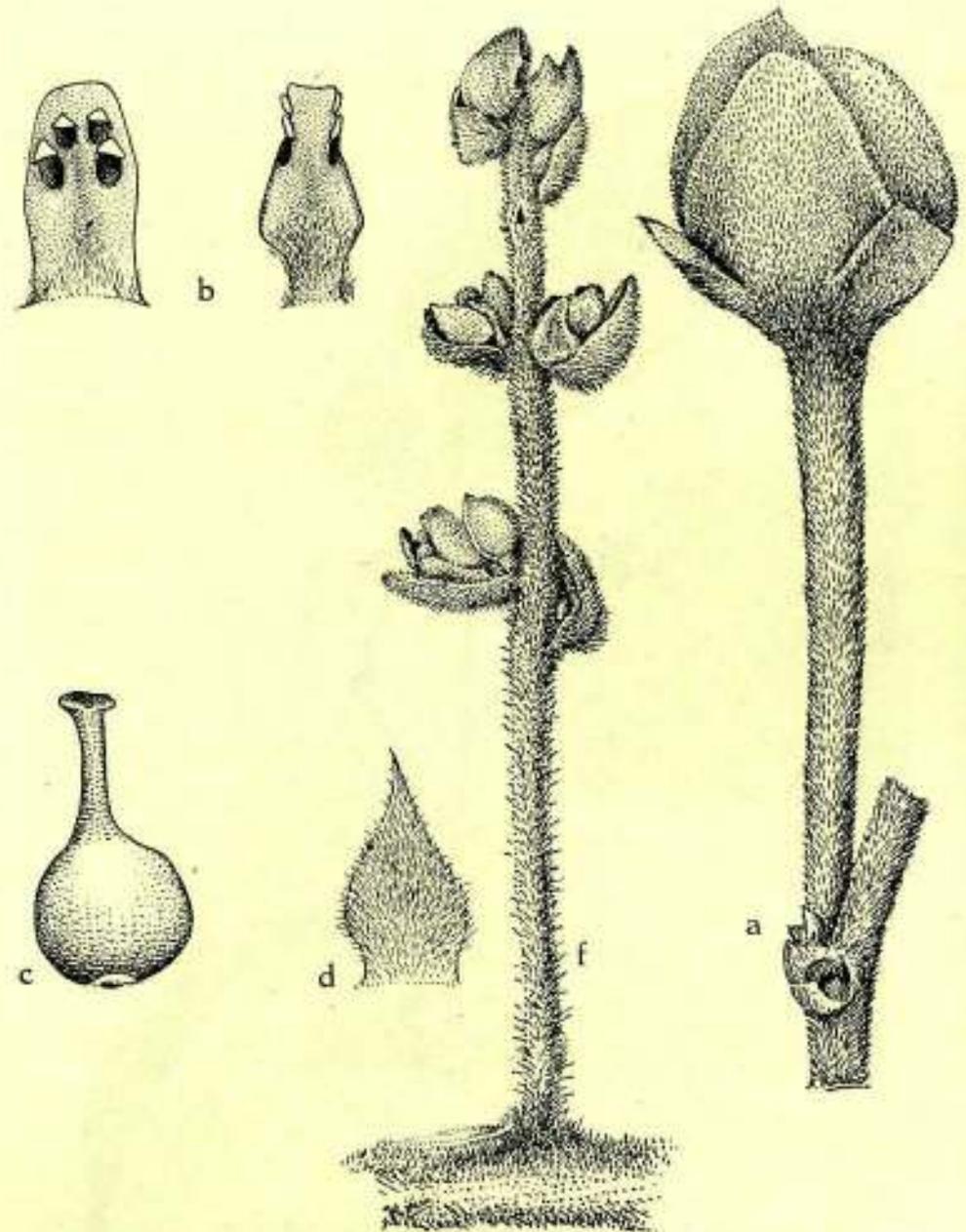


Fig. 6. *Alseodaphne elata* Kostermans; a, flower (X 7.5); b, outer and inner stamen (x30); c, ovary (X 20); d, staminode (x30). — After Kostermans 269 (type); f, *Beilschmiedia wieringae* Kostermans; young inflorescence (x2.5). — After Kostermans 4374 (type).

Fig. 7. *Alseodaphne gigaphylla* Kostermans; flowering branch (Bogor, July 1955).

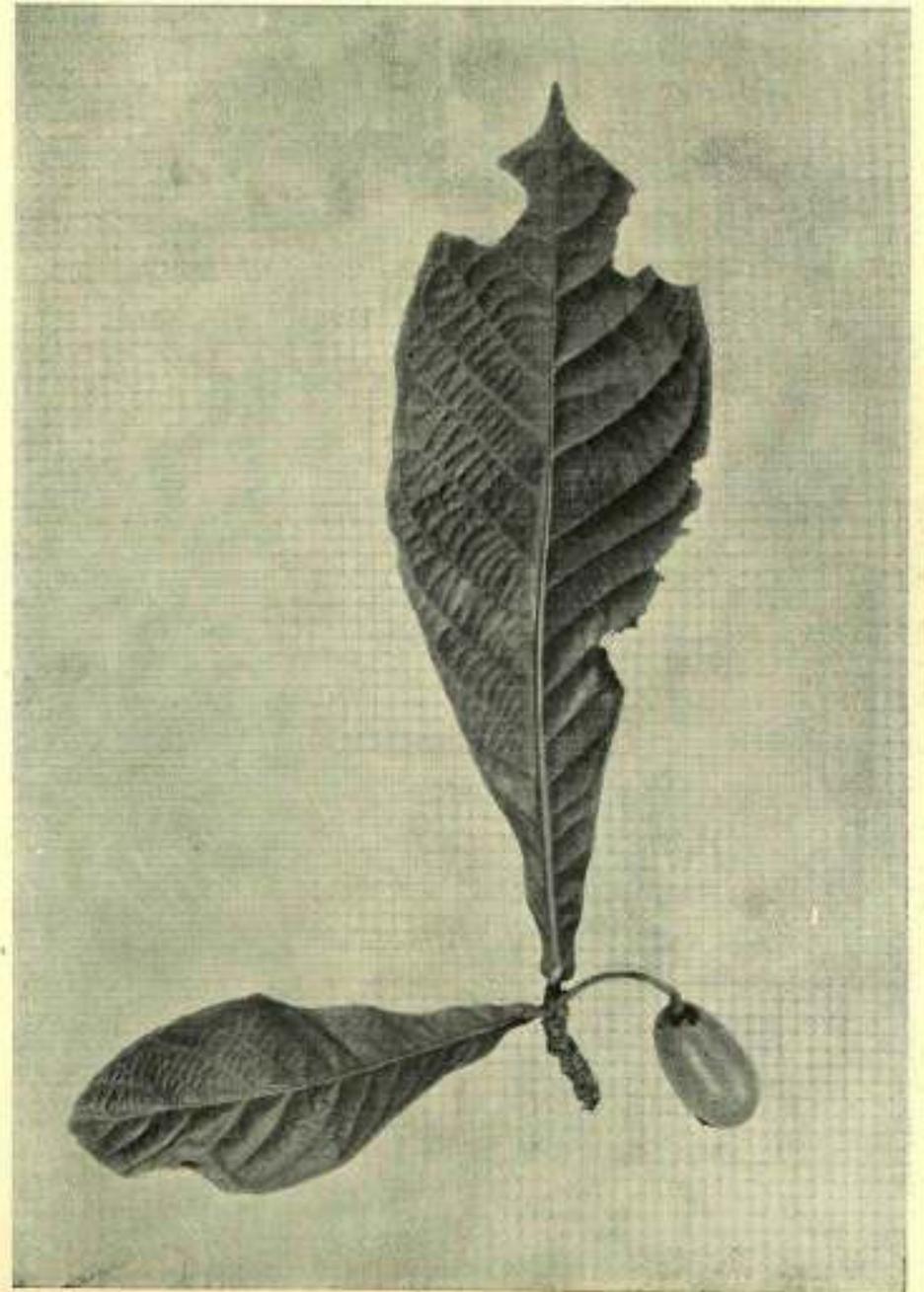


Fig. 8. *Alseodaphne gigaphylla* Kostermans; fruiting branch (Bogor, July 1955).

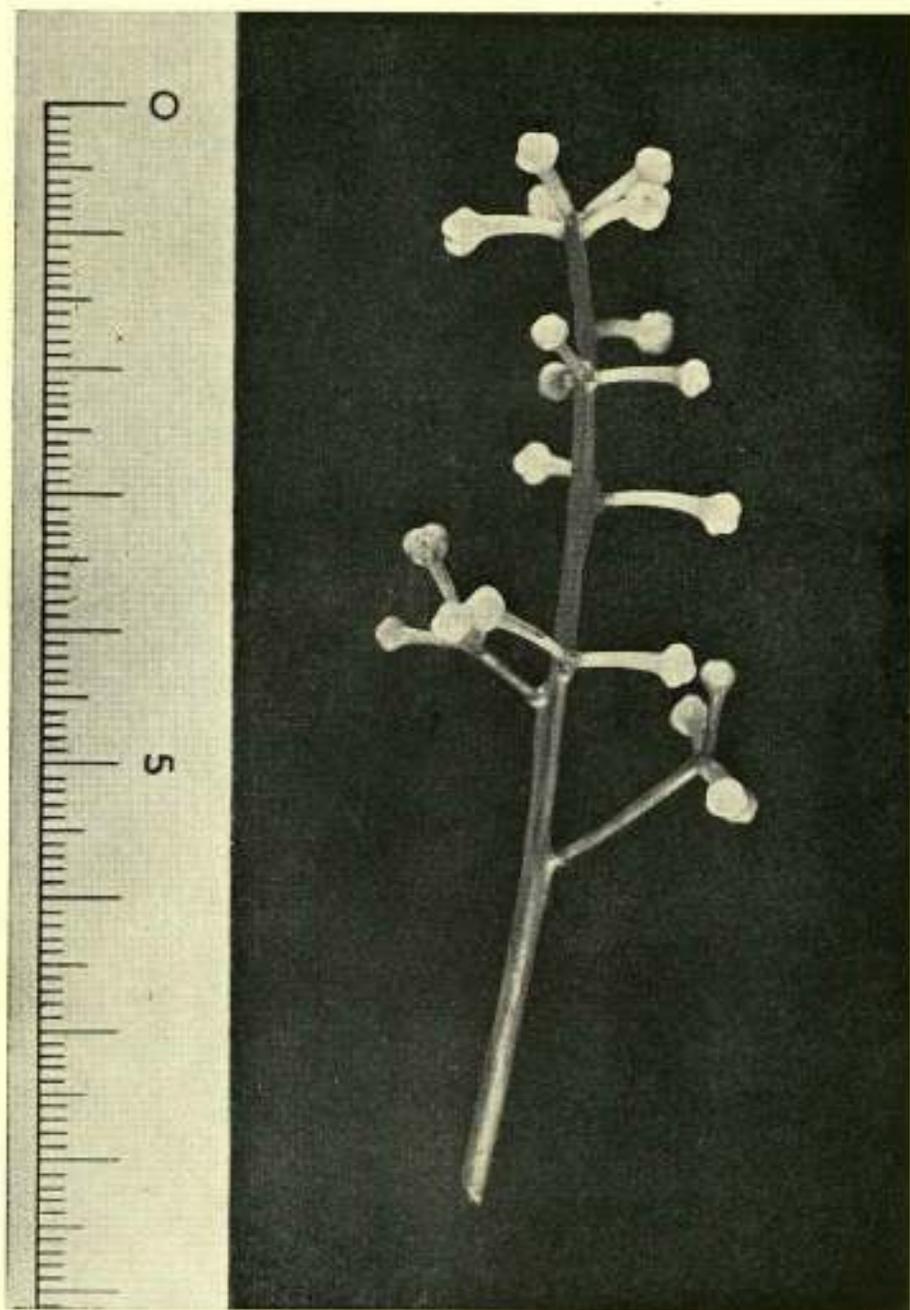


Fig. 9. *Alseodaphne gigaphylla* Kostermans; part of inflorescence (Bogor, July 1955). — Scale divisions in cm.

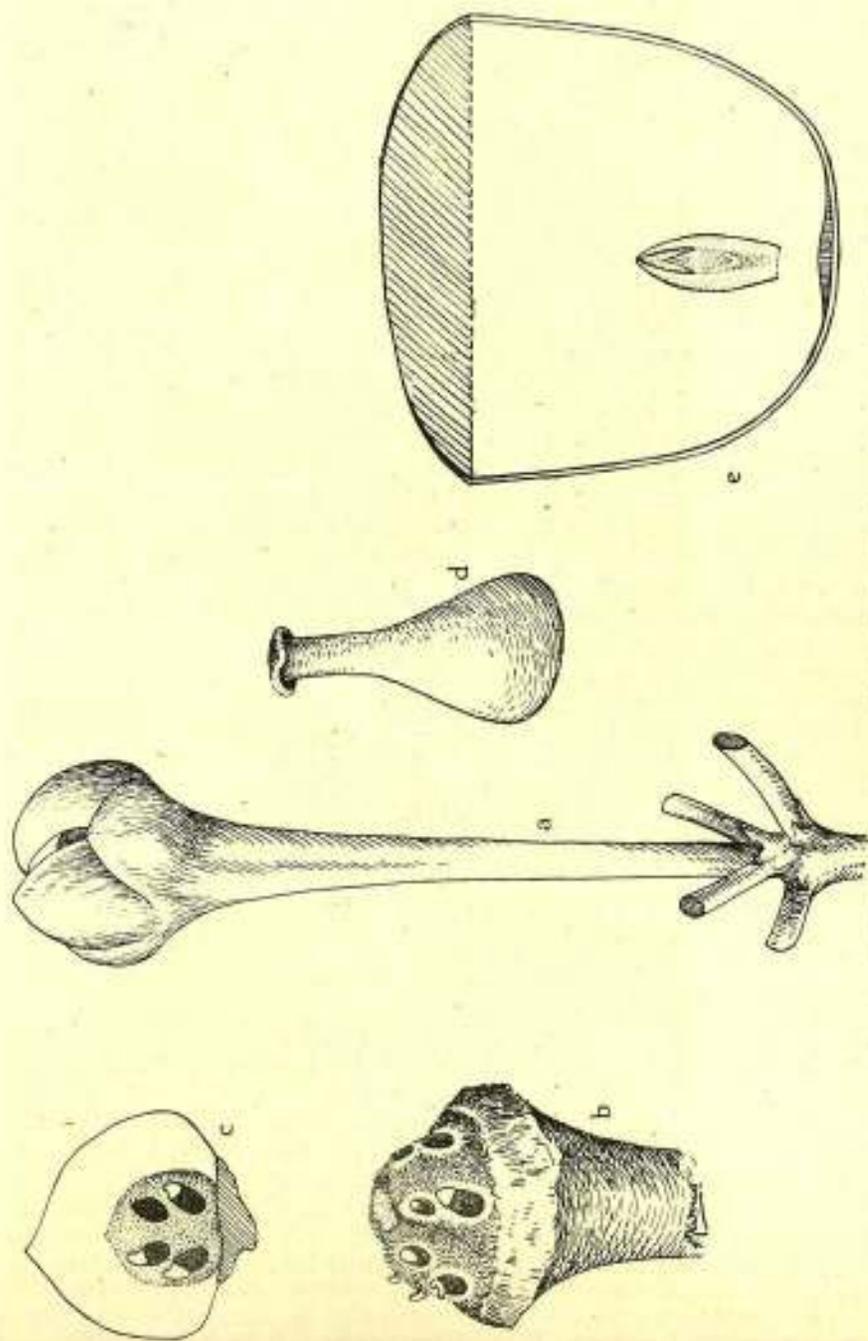


Fig. 10. *Alseodaphne gigaphylla* Kostermans; a, flower ($\times 7$); b, inner stamens ($\times 15$); c, outer stamen ($\times 15$); d, ovary ($\times 18$); e, basal part (from within) of a cotyledon ($\times 2$). — After living material.

Tree, about 15m high with spreading branches, pyramidal; bole 2 m, 20 cm in diameter. Bark smooth, white, like tissue-paper, 1—2 mm thick, peeling off a little in small pieces. Branchlets sympodial, rough, thick, with very large, round, protruding leafscars; branches thinner, smooth. Leaves glabrous, chartaceous, crowded near apex of branches, obovate-spathulate, gradually narrowed towards base, above the cordate base broadened again, 9 X 20 — 20 X 46 cm, top broadly, bluntly, shortly acuminate; upper surface glossy green, smooth (fresh), in dried condition both surfaces prominulously reticulate; midrib on upper surface smooth, flat; lateral nerves flat, slender; lower surface with strongly prominent midrib, lateral nerves (12—17 pairs) prominent, arcuate at margin, (apical ones) anastomosing in loops, secondary nerves scalariform, prominent. Petiole thick, 1—2 cm long, corky, grey; the grey part extending cuneately on the midrib of the lower surface.

Inflorescences crowded below the apical leafbud, axillary, sometimes on older wood, glabrous, conical, paniculate, laxly branched, up to 20 cm long; lower branches up to 7 cm long; branchlets and pedicels subtended by minute, ovate, acute, glabrous bracts. Flowers white, depressed globose, 2—3 mm high. Pedicels 1 cm long, gradually thickened towards apex. Outer tepals depressed ovate-triangular, acute, 1 mm long, 1.75 mm wide at base, erect; inner tepals concave, incurved, ovate, acute, 2—2.5 mm long. Outer stamens fleshy, ovate-orbicular, sessile, acute, 1 mm long, densely covered with microscopical pilose hairs, cells introrse, conspicuous. Inner stamens very thick, conglutinate, sessile, subquadrangular, 1—1.25 mm high, top obtuse, cells extrorse or the upper ones lateral, minute. Stamines (if present) 0.5 mm long, elongate-triangular, acute, pilose. Ovary white, glabrous, elongate-ovoid, 1 mm long; style 1 mm, rather stout; stigma conspicuous, discoid.

Fruit ellipsoid, often slightly oblique, about 3.5 X 6 cm., glossy, wine-red, at last black; outer fleshy layer 3 mm thick, dirty greenish white with avocado taste; seedcoat 0.75 mm, darkbrown, brittle; cotyledons white, flat-convex, pressed closely against each other; embryo sub-basal, erect, with distinct, pilose, primary leaves; fruit stalk woody, almost cylindrical, about 1—1.5 cm long, 5 mm in diam.

Type. — *Kostermans 9999* (BO).

Distribution. — Isl. Batjan in the Moluccas

The species is described from a living tree (V.A. 19) in the Bogor Botanical Garden, grown from seed, collected by Teijsmann in the island of Batjan. The tree bears flowers and fruit at the same time and several times a year. The mature flowers open hardly; from above only star-shaped slits show the cells of the anthers. The waxy flowers have a strong smell of nutmeg; they are very slimy, when damaged. The species is a second story tree of the forest.

It is closely related to *A. panduriformis* Hook, f., which has, however, smaller, densely rusty pilose flowers and shorter pedicels. From *A. elata* Kosterm. it differs by its glabrous flowers; glabrous, thinner leaves and the sessile outer stamens.

Specimen examined. — JAVA, Hort. Bogor., culta sub no. V.A. 19, July, fl., fr., *Kostermans 9999* (A, BM, BRI, CAL, K, L, NY, P, PNH).

4. *Alseodaphne obovata* Kostermans, spec. nov. — Fig. 11, 12

Arbor ramulis crassis glabris, foliis percoriaceis, glabris obovatis vel obovato-spathulatis, apice obtusis vel obscure late apiculatis, basi in petiolum longe decurrentibus, pagina superiore laeve. Inflorescentiae paniculatae glabrescentes ramulis gracilibus paucifloris; floribus sparse minuteque pulverulente pilosis, glabrescentibus, tepalis exterioribus quam interioribus multo brevioribus filamentis pilosis, antheris exterioribus introrsis, interioribus extrorsis biloeulatis; staminodiis ovatis acutis distinctis; ovario glabro stylo subaequilongio stigmate conspicuo.

Tree with spreading branches; bark fawn brown, pustulate with rather large lenticels (2—5 mm); inner bark pinkish brown. Wood yellowish. Branchlets thick, with large scars of fallen leaves, thicker than the smooth, older branches; leaf buds pointed, with large, sericeous scales. Leaves stiffly coriaceous, glabrous, obovate to obovate-spathulate, 3 x 6 — 8.5 X 20 cm, top obtuse or shortly, broadly, obscurely apiculate, base gradually tapering into petiole; upper leaf surface smooth with flat midrib and obscure, slender lateral nerves; lower surface glaucous or green, midrib prominent, lateral nerves (6—11 pairs) smooth, prominulous, curved only near margin, secondary nerves obscure. Petiole thick, 2—2.5 cm long (part of decurrent blade included).

Inflorescences axillary, appearing with the new flush, up to 10 cm long; with microscopical, sparse hairs, glabrescent; main peduncle about 5 cm long, branchlets few, slender, up to 2 cm long. Flowers 2 or 3 together, subtended by a microscopical bract. Pedicels slender, up to 5 mm long, sparsely, microscopically, pulverulently pilose, like outside of tepals. Outer tepals 1.5 mm long, broadly triangular-ovate, acute; inner ones 2.5—3 mm long, ovate, acutish, densely sericeous inside. Stamens about 1 mm long; outer ones with 0.5 mm long, narrowly ovate, obtuse, introrse anthers (upper cells much smaller than lower ones) and distinct, broad, pilose filaments; inner stamens with narrower, 0.5 mm long anthers (cells 2, extrorse) and pilose broad filaments; glands sub-basal, distinct, globose; protruding part of the connective large, obtuse, ablastic. Stamines 0.5—0.75 mm long, pilose outside with distinct stalk. Ovary ellipsoid, glabrous, 0.5 mm long; style rather thick, 0.5 mm long with conspicuous, peltate, thick stigma.

Type. — *Corner S.F.N. 29370* (SING).

Distribution. — Malay Peninsula, Borneo.

Specimens examined. — MALAY PENINSULA. Kemaman, Ulubendong, Kajan, Nov., fl., *Corner S.F.N. 30182* (SING); Johore, Mersing, ster., *For. Res. Init. Kepong 70092* (KEPONG); Sg. Kaju-ara, Mamai, Jemaluang Rd., May, fl., *Corner S.F.N. 29370* (SING). BORNEO. G. Damus, fl., *Hallier 558* (BO, K, L); Mt. Kinabalu, Tenompok, alt. 1500 m., Dec, young fr., *J. & M. S. Clemens 27535* (BO).

Superficially like *A. bancana* Miq., but leaves different. As only one flower was available for dissection, it is possible that the upper (ablastic) part of the inner stamens may be fertile in other flowers.

5. *Alseodapme reticulata* (Gamble) Kostermans, comb. nov.

Nothaphoebe reticulata Gamble (basionym) in Kew Bull. 1910: 234; in J. Asiat. Soc. Beng. 75: 100. 1912; Ridley, Fl. Mai. Pen. 3: 102. 1924; Burkill & Henderson in Gds. Bull. S.S. 3: 414. 1925; Calder in Rec. bot. Surv. Tnd. (11) 1: 18. 1926. — Ridley 2967 (SING).

Beilschmiedia foxiana Gamble in Kew Bull. 1910: 150; in J. Asiat. Soc. Bengal 75: 61. 1912; Ridley, l.e. 86; Burkill & Henderson, l.e. 413; Calder, l.e.; DeschinMal. Forest Rec. 15: 242. 1941. — Fox 10705 (SING).

From the specimens, cited by Gamble under *Nothaphoebe reticulata*, I selected Ridley 2967 (SING) as the type specimen, as it conforms with the description and the Singapore sheet bears sketches in pencil of flowers and stamens, by Gamble. *Beilschmiedia foxiana* was based on a fruiting specimen: Fox 10705 (SING). The two species are certainly conspecific. Among the specimens, identified by Ridley, there are some, which do not belong to *A. reticulata*; the description in Fl. Malay Pen. covers perhaps a mixture of different species.

The specimen Robinson s.n. (SING), identified by Ridley as *Machilus scortechini* Gamble, likewise belongs in *A. reticulata*.

BEILSCHMIEDIA Nees

1. *Beilschmiedia argentea* Kostermans, spec. nov. — Fig. 13, 14

Arbor mediocris; foliis alternantibus chartaceis, ellipticis, superne glabris subtus argenteo-sericeis. Inflorescentiae axillares perulatae; floribus flavis pro genere magnis, subsericeis.

Tree, 6—15 m high; apical branchlets sub-angular, densely, minutely grey-sericeous; leaf-buds ovoid, acute, densely, minutely, grey sericeous, covered with large scales; branches grey, roughish. Leaves alternate, chartaceous or thinly chartaceous, elliptical; top acute or acuminate, base cuneate; upper surface glabrous, rather dull, midrib flattened, primary nerves 8—11 pairs, slightly prominulous, very slender, arcuate and running out at some distance from margin, reticulation inconspicuous or (in the thinner leaves) faint, lax; lower surface densely silvery sericeous, midrib strongly prominent, primary nerves prominulous, slender, reticulation lax, rather inconspicuous. Petioles 8—12 mm long, sulcate above, glabrescent. Inflorescence at first enveloped in large, ovate-orbicular, acutish or (the upper ones) obtuse, concave (the basal ones narrowly ovate, more acute), outside densely sericeous, inside glabrous scales, deciduous at anthesis, leaving conspicuous, congested scars. Mature inflorescences up to 2 cm long, poorly and very shortly branched, densely grey sericeous. Flowers pale yellow, densely grey sericeous, about 4—5 mm long. Pedicels 2—3 mm long, densely grey sericeous. Flower tube small; tepals 3—4 mm long, lanceolate, acute, both faces sericeous. Stamens 3—3.5 mm long; filaments slender, pilose; anthers about 1 mm long, ovate, obtuse, with very large cells (of the outer stamens introrse of the inner ones extrorse-lateral); inner stamens with stipitate, globose, acutish glands. Staminodes ovate-



Fig. 13. *Beilschmiedia argentea* Kostermans. —• Type.

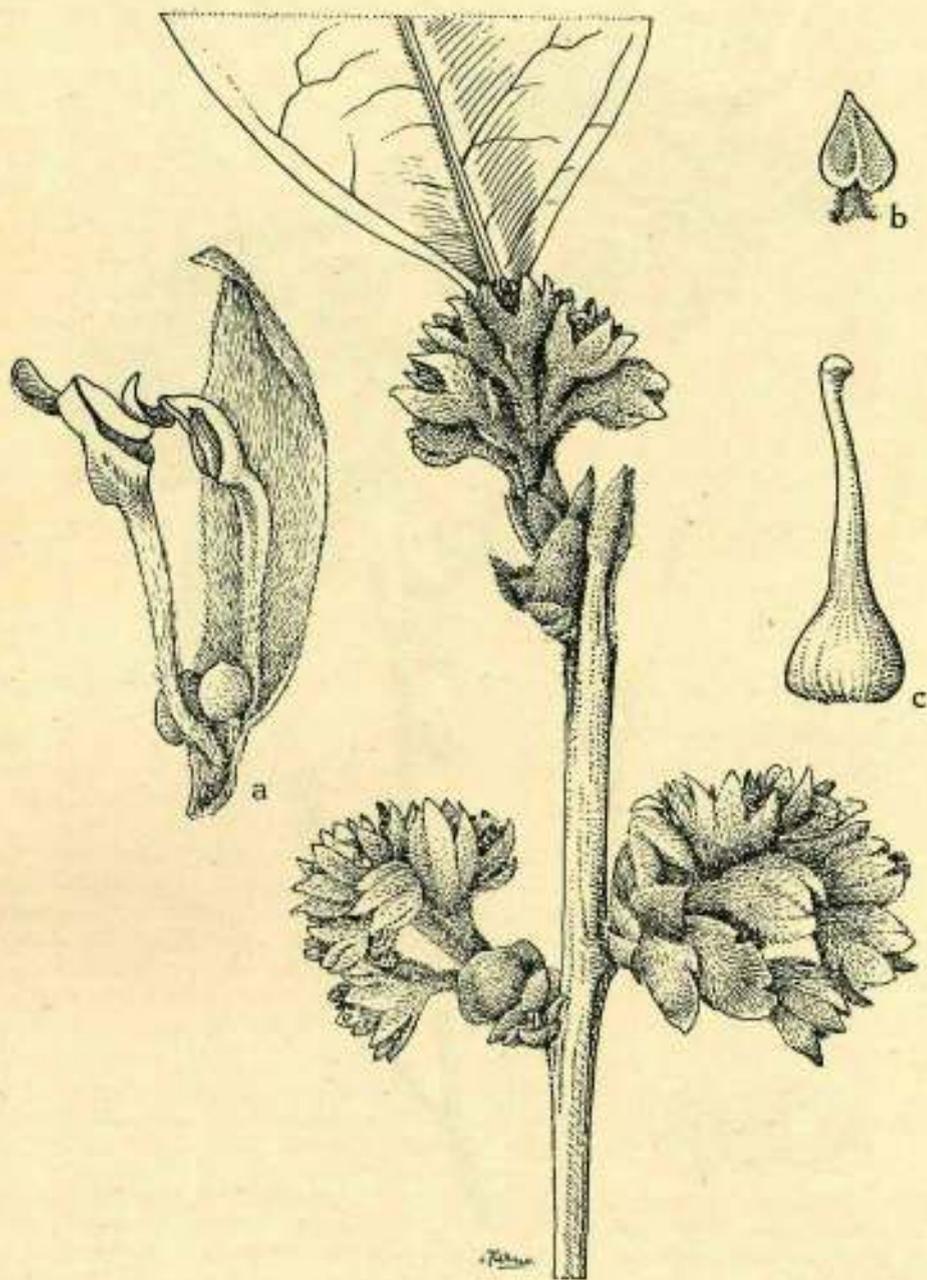


Fig. 14. *Beilschmiedia argentea* Kostermans; flowering branch (x 2,5); a, stamens (X 15); b, staminode (x 15); c, ovary (x 15). — After Pokhant 149 (type).

cordate, 1 mm long, shortly, pilosely stipitate. Ovary glabrous, ovoid, 1 mm high, merging into the rather stout, about 2 mm long style with inconspicuous stigma.

Type. — Pokhant 149 (DD).

Distribution. — Burma.

The species is closely related to *B. gemmiflora* (Bl.) Kosterm. by its perulate inflorescences and flowers and is mainly differentiated by its silvery sericeous leaves, which are different in shape. In the Copenhagen Herbarium two sheets are present, marked: „Ind. orient., misit Voigt" (one with flowers, one with fruit) and identified by Oliver as *Loranthus*. I think, that these specimens belong to *B. argentea*, although the leaves are nearly glabrous, but still show traces of scattered, appressed, silky hairs. It is likely that these specimens were enumerated by Voigt (Hort. suburb. Calc. 309. 1845) under *B. roxburghiana* Nees, which is certainly an error as is evident from the perulate inflorescences.

Specimens examined. — BURMA. Distr. Insein, Myanklaing, alt. 30 m, Mar., fl., Pokhant 196 et 149 (DD); Hlaing Yo Ma Res., Mar., fl., Bape 11601 (DD); East Swa Res., North Toungoo, Mar., fl., (Bape 9468 (DD); Jeni, alt. 90 m., Mar., fl., young fr., Forest School s.n. (DD).

The young fruit are ellipsoid and are similar to those of *B. gemmiflora* and *B. roxburghiana*.

2. *Beilschmiedia borneensis* Merrill.

Merrill described this plant (in Univ. California Publ. Bot. 15: 87. 1929) after the specimen Elmer 20171, of which duplicates are conserved in the Bogor, Copenhagen and Singapore Herbaria, which were available for examination. The plant is conspecific with *B. maingayi* Hook, f, a species widely distributed in Borneo.

3. *Beilschmiedia cuneata* (Meissn.) Kostermans, comb. nov.

Persea cuneata Meissner (basonym) in DC, Prodr. 15(1) : 46. 1864; Mez in Jahrb. bot. Gart. Berlin 5 : 138. 1889. — *Jervise* s.n. (K).

Beilschmiedia lundelliana Lasser in Bolet. Tecnico 3, Minist. de Agric. y Cria de Venezuela 7. 1942, t. 1 — P. *Christ* 68 (Herb. Nac. de Venezuela).

Mr Sandwith in Kew took the trouble to compare the type specimen of Meissner's *Persea cuneata* (Jervise s.n.) with the figure and description[^] of Lasser's *B. lundelliana*. Mr. Lasser kindly put at my disposal a specimen of his *B. lundelliana*. The two species are undoubtedly conspecific.

4. *Beilschmiedia dilmyana* Kostermans, spec. nov. — Fig. 12, 15

Arbor ramulis angulatis indumento-pulverulento obtectis; foliis alternantibus glabris chartaceis subovato-oblongis, superne nitidis reticulatis, subtus opacis, apice sensim acutis, basi in petiolum 1,5—2 cm longum subcuneatis vel contractis; gemmis foliorum ovoideis, longe acutis, dense ferrugineo-sericeis. Paniculae in axillis foliorum superiorum, minute sericeae (basin versus glabrescentiae);

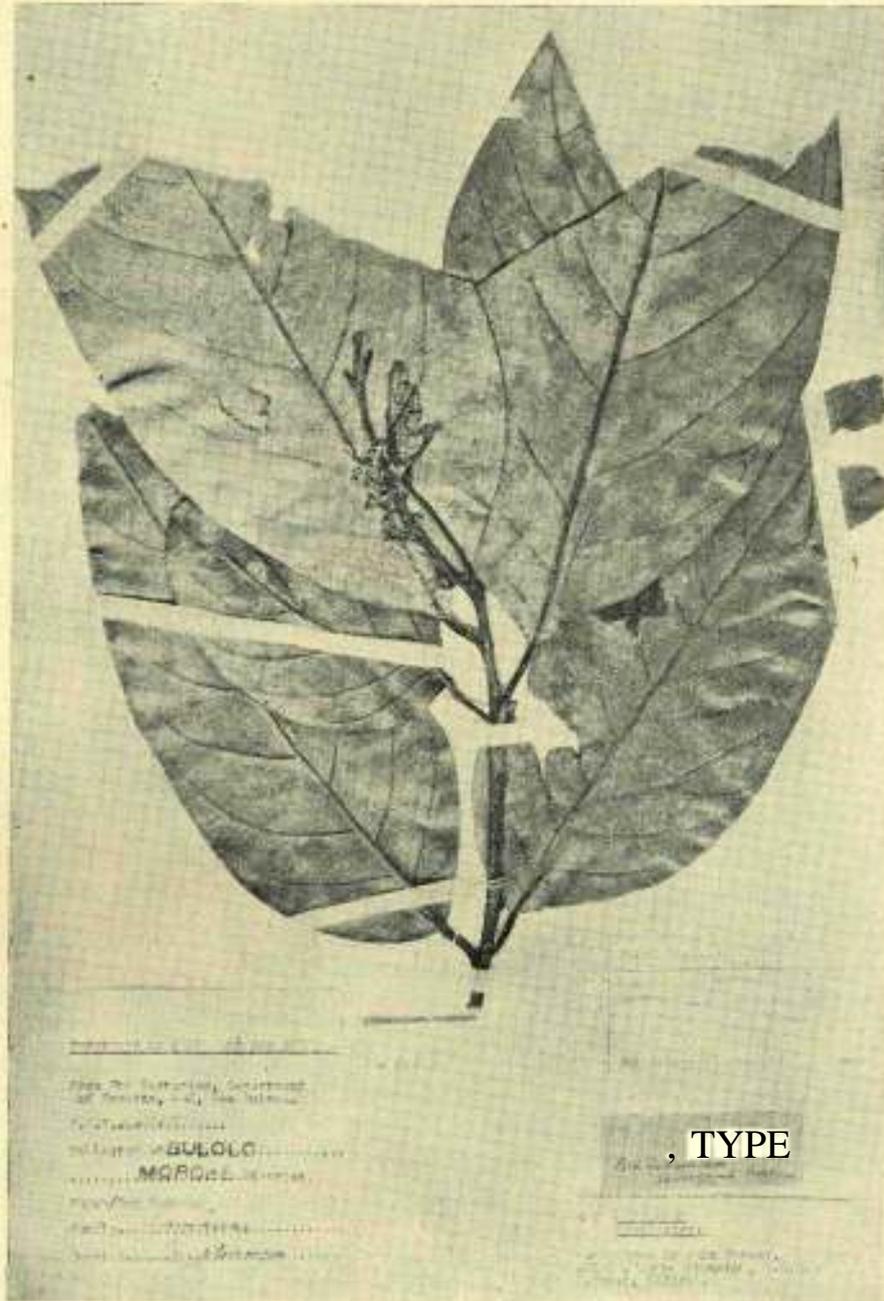


Fig. 15. *Beilschmiedia dilmyana* Kostermans. — Type.

floribus longe pedicellatis, minute sericeis, staminibus sericeis, exterioribus introrsis, interioribus sublateraliter dehiscentibus, glandulis distinctis stipitatis; staminodiis ovalo-cordatis stipitatis; ovario glabro stigmatate inconspicuo.

Tree, up to 27 m tall and 40 cm in diameter. Branchlets angular, towards apex with pulverulent indumentum. Leaf buds ovate, acuminate, densely sericeous. Leaves alternate, chartaceous (young ones densely sericeous, soon glabrous), subovate-oblong, 8 X 20 — 12 x 27 cm; apex gradually acute or sub-acuminate; base sub-cuneate or contracted into petiole; upper surface glossy, densely, prominently reticulate, midrib broad, flattened towards base, lateral nerves about 10 pairs, slightly curved and running out at some distance from the margin, prominulous; lower surface dull, rather smooth or with obscure, dense reticulation, midrib and lateral nerves prominulous, secondary nerves obscure. Petioles 1.5—2 cm long, canaliculate above, soon glabrous. Panicles in the axils of apical leaves (appearing with the new flush), minutely sericeous, especially towards apex, up to 5 cm long, with few branches, up to 1.5 cm long. Flowers about 3 mm high (tepals still erect), densely, minutely, brown-sericeous. Pedicel 6 mm, rather thick, densely sericeous. Tepals ovate-elliptical, acutish, about 3 mm long, patent at anthesis. Stamens about 1.5 mm long, densely sericeous; anthers of outer ones ovate-triangular with large, introrse cells and broad filaments, connective produced; of inner stamens with narrower anthers with sublateral cells and strongly protruding connectives, basal glands globose, acuminate, shortly stipitate. Staminodes almost 1 mm long, heartshaped, shortly, broadly stipitate. Ovary globose-ovoid, glabrous, 1 mm high; style rather stout, about as long, with inconspicuous stigma.

Type. — N.G.F. 4050 (BO)

Distribution. — Aru Islands and New Guinea.

The species, which is named in honour of Mr. Anwari Dilmy, Acting Keeper of the Bogor Herbarium, is related to *B. novoguineensis* Teschn., from which it may be distinguished immediately by its very large leaves. The material from the Aru Islands has somewhat smaller leaves and a more conspicuous reticulation on the lower leaf surface; there is only one old flower left (in the Singapore specimen), which conforms well with the type specimen.

Specimens examined. — TERRITORY OF NEW GUINEA. Morobe Distr., Bulolo, Febr., fl., N.G.F. 4050 (BO, LAE). ARU ISLANDS. Wokam Isl., Dosinamalau, alt. 15 m., ster., bb. 25281 (BO, SING).

5. *Beilschmiedia gigantocarpa* Kostermans, spec. nov. — Fig. 16

Arbor foliis alternantibus glabris oblongis utrinque rete laxa prominula, basi in petiolum longe decurrentibus. Inflorescentiae axillares laxae glabrae floribus glabris antheris connectivo producto cellulis magnis. Fructus maximus subgloboseus laevis.

Tree up to 30 m high with bole up to 10 m high and 70 cm in diam. Buttresses 1—2 m high, extending 1—1.50 m over the ground, 5—6 cm thick. Dead bark grey, 0.5 mm, smooth; living bark 7—13 mm, red to darkred, inside

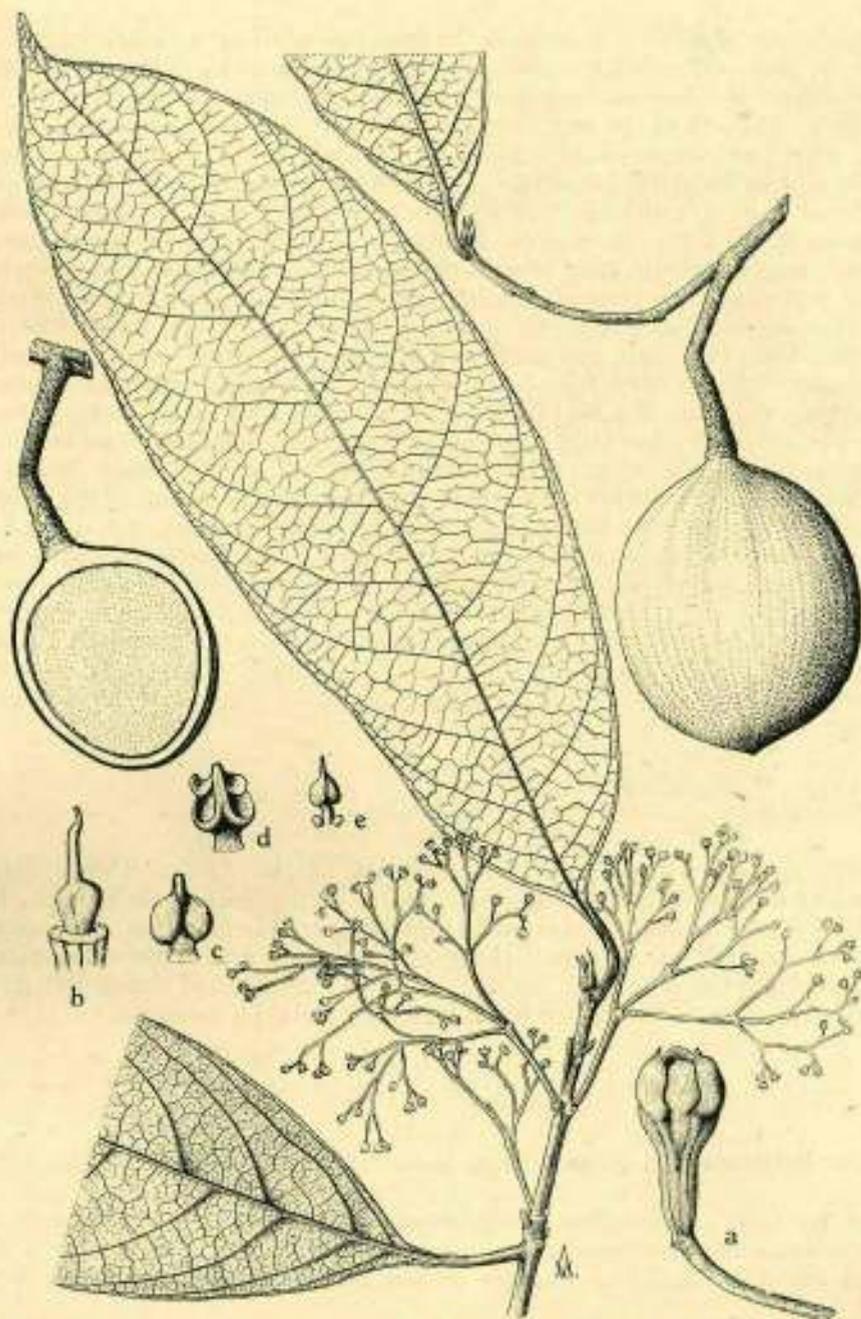


Fig. 16. *Beilschmiedia giganlocarpa* Kertermans; flowering branch and fruit (x 0,5); a, flower (X 5); b, ovary (x 15); c, d, outer stamens (x 15); e, inner stamen (x 15). — After Burki 47. fr. (type) and Reppie 93, fl. (para-type).

white. Wood white. Branchlets smooth, glabrous, darkbrown (dried); buds glabrous, ovoid, acuminate, scales ovate-acuminate, concave, fleshy, 5—10 mm long; branches grey-brown with minute lenticels. Leaves thinly coriaceous, glabrous, oblong, 5 X 15 — 15 x 30 cm, top bluntly, broadly, shortly acuminate, base abruptly narrowed, cuneate, more or less decurrent; upper surface glossy, midrib flattened, lateral nerves 8—10 pairs, slightly arcuate, prominent, secondary nerves laxly reticulate, prominent, veins prominulous, reticulate; lower surface less glossy, midrib prominent, other veins as on upper surface. Petioles stout, glabrous, 2—2,5 cm long, sulcate above. Inflorescences axillary, appearing with the new flush, glabrous, laxly paniculate, up to 10 cm long, broad; main peduncle stout, compressed. Flowers yellowish, glabrous, about 3 mm long, base merging into a stout, short pedicel. Outer tepals slightly longer than inner ones, fleshy, ovate, acute, about 2 mm long. Stamens glabrous; outer ones broadly ovate with extrorse large cells and conspicuously protruding connective, filaments very short; inner ones slightly smaller, narrower, cells extrorse, connective protruding, glands small or none. Ovary glabrous, sub-globose, 0,5 mm long; style distinct, as long; stigma inconspicuous. Fruit sub-globose, brown (fresh and dried) smooth, up to 8 cm long and 7 cm in diameter, on a thick, short pedicel, 5 mm in diameter. Pericarp 5 mm thick, rather woody; cotyledons large, flat-comvex.

Type. — *Burki 47 = bb 23921* (BO).

Local name. — Tambara (Padoë language); Palumbakuni (Koronsie language)

Distribution. — Central Celebes, Malili District.

The leaves somewhat resemble those of *B. glabra* Kosterm. (spec. ined.). The species is outstanding by its large fruit.

Specimens examined. — CELEBES. Malili Distr., near Koropapunto, alt. 250 m., village Toli-Toli, Jan., fr., *Burki 47 = bb 23921* (A, BO, BZF, K, L, SING); near Usu, May, young fr., *Waiumndang 44 = Cel/IV-110* (BO, L, P); *ibid.*, Aug., ster., *Reppie 82 = Cel/IV-110*; *ibid.*, Oct., fl., *Reppie 93 = Cel/IV-110* (A, BO, L); *ibid.*, Oct., in bud, *Reppie 96 = Cel/IV-98* (BO); *ibid.*, June, ster., *Reppie 210 = Cel/IV-185* (A, BO, L); *ibid.*, ster., *Reppie 211 = Cel/IV-186* (A, BO, L); *ibid.*, June, ster., *Reppie 212 = Cel/IV-187* (A, BO, L); *ibid.*, June, ster., *Reppie 213 = Cel/IV-188* (BO, L); *ibid.*, Apr., young fr., *Waturandang 21 = Cel/IV-98* (A, BO, L).

6. *Beilschmiedia Mnabaluensis* Kostermans spec. nov. — Fig. 17

Arbor magna, *B. glabrae* Kostermans (spec. ined.) et *B. lumutensis* Gamble valde affinis, differt pagina foliorum superiore laeve, pagina inferiore dense reticulata. A *B. glabra* differt gemmis foliorum minoribus; a *B. lumutense* differt gemmis majoribus. Inflorescentia ignota.

Tree, up to 30 m tall and 45 cm in diameter, glabrous in all its parts; branches rough, tortuous; branchlets slender, smooth, cylindrical. Leaves opposite, rigid. Petioles 8—15 mm long, slightly canaliculate above. Leafblade elliptical or oblong-lanceolate, 2,5 x 7 — 6 X 16 cm; base acute or subcuneate; top broadly and obtusely, usually rather inconspicuously acuminate; upper



Fig. 17. *Beilschmiedia kinabaluensis* Kostermans. — Iso-type.

surface smooth, lower one densely, prominulously reticulate, midrib prominent, lateral nerves 7—9 pairs, slightly arcuate, prominulous. Flowers unknown. Fruit subglobose, 5 cm in diameter, smooth, base often with a neck, seated on a very thick (10 mm in diameter), short peduncle.

Type. — J. & M.S. Clemens 29524 (BO)

Distribution. — Borneo, Mt. Kinabalu.

Specimens examined. — BORNEO. Mt. Kinabalu, Tenompok, alt. 1900 m., trail to Tomis, summit of junglo ridge, May, fr., l. 6- *M. S. Clemens* 29524 (A, BO, L, SING) ; Penibukan, alt. 1300 m., Febr., fr., j. & - *M. S. Clemens* 31582 (A, BO).

7. *Beilschmiedia myrmecophila* Kostermans, spec. nov. — Fig. 18

Beilschmiedia bullata Allen in J. Arnold Arbor. 23: 131. 1942, p.p., quoad cit. spec. *Brass* 13693.

Arbor myrmecophila, foliis suborbicularibus alternantibus glabrescentibus, costa mediana pagina superiore applanata basin versus perlata, petiolo crasso, breve, glabrescente; infrudescencia glabra pauce ramosa; fructus ovoideus glabrus ater.

Sparsely branched tree, about 20 m tall and 25 cm in diameter; branchlets stout, angular, hollow, myrmecophilous, at apex with pulverulent indumentum. Leaves alternate (near apex sub-opposite), at last glabrous, stiff, suborbicular or ovate-orbicular, 9 X 11 — 16 X 20 cm; apex obtuse, emarginate or very rarely sub-apiculate; base broadly cuneate, merging into petiole; upper surface rather glossy with obscure reticulation, main nerves with a pulverulent indumentum, glabrescent, midrib very broad, flattened towards base, lateral nerves 7—8 pairs, sunken, near margin strongly arcuate; lower surface paler, rather glossy, midrib and lateral nerves prominent, secondary nerves scalariformous, areolation distinct under microscope. Young leaves with a very dense, very short, aureous indumentum. Petiole thick, flattened above, about 10 mm long, in very young leaves with pulverulent indumentum, soon glabrotis.

Infructescence axillary, glabrous, poorly branched; main peduncle 4 cm long, one branch 3 cm long (in the iso-type in A., the infructescence is 17 cm long, according to Allen). Fruit black, glossy, ovoid, 3 x 2 cm, with a short neck at base.

Type. — *Brass* 13693 (BO).

Distribution. — New Guinea, only known from type locality.

The specimen at hand had been provisionally incorporated in *B. bullata* by Allen. It was collected at an altitude of 850 m and is, according to a field note by Brass, frequent in somewhat swampy rain-forest of the river plain. This is a second case of myrmecophily in Lauraceae in New Guinea, (cf. *Cryptocarya caloneura* (Scheff.) Kosterm.).

Specimen examined. — NETHERLANDS NEW GUINEA, 4 km. S.W. of Idenburg R., Bernard Camp., alt. 850 m., Mar., fr., *Brass* 13693 (A, BO).



Fig. 18. *Beilschmiedia myrmecophila* Kostermans. —• Type

8. *Beilschmiedia novoguineensis* Teschn.

Endiandra sphaerica Allen (in J. Arnold Arb. 23: 150. 1942), based on the specimen Brass 7512, of which an iso-type is represented in the Bogor herbarium is conspecific with *Beilschmiedia novoguineensis* Teschn.

9. *Beilschmiedia palembanica* (Miq.) Kostermans, comb. nov.

Cryptocarya palembanica (basonym) Miquel, Fl. Ned. Ind., Suppl. Sumatra. 144 & 359. 1862. — *Teijsmann s.n.*; Sumatra (U).

Beilschmiedia longipes Hook, f., Fl. Brit. Ind. 5: 123. 1886; Boerlage, Handl. Fl. Ned. Ind. 3: 136. 1900 (nomen); Gamble in J. Asiat. Soc. Bengal 75: 58. 1912; Ridley, Fl. Mai. Penins. 3: 85. 1924; Burkill & Henderson in Gds. Bull. S.S. 3: 413. 1925. — *Maingay 1248*, Malacca (K).

Beilschmiedia sumatrensis Ridley in J. As. Soc. Mai. 1: 89. 1923 (sphalm. *Beilschimiedia*) — *Ridley*, Berastagi (K).

Two sheets, marked Teijsmann H.B. 3776 and H.B. 4050, belonging to the type collection are preserved in the Bogor Herbarium. The first bears the local (fancy!) name: *medang taai andjing* (*medang* = Lauraceae; *taai* = faeces; *andjing* = dog), the latter the local name *medang koening* (*koening* = yellow), mentioned by Miquel. The type specimen of *Beilschmiedia longipes* was not available for examination, but abundant material, cited partly by Gamble, which has been put at my disposal by the Singapore Herbarium, leaves no doubt that it is conspecific with Miquel's species. Through the courtesy of the Director of the Kew Gardens I could examine photographs of the two sheets, on which Ridley based his *B. sumatrensis*. The species is outstanding in the genus by its grey upper leaf surface (in dried condition), a character, stressed by different authors.

Specimens examined. — SIAM. Patten, Butat, alt. 300 m, July, fl., *Kerr 7096* (Bangkok). MALAY PENINSULA. Pahang, Camerons Highlands, Renglet, alt. 1200 m., Apr., fl., *Henderson S.F.N. 23639* (SING); Boh Plantations, Apr., fr., *Nur S.F.N. 32681* (SING); Temerloh, Kemansul Reserve, Sept., fl., *Hamin F. D. 10612* (SING); Fraser Hill, near Selangor Border, alt. 1400 m., Sept., ster., *Burkill & Hottum 7808 & 8895* (SING); Perak, Larut, Jan., fl., *King's Coll. 5465* (SING); *ibid.*, Mar., young fr., *King's Coll. 7325* (DD, P); *ibid.*, Apr., fl., *King's Coll. 5903* (SING); *ibid.*, Febr., fl., *King's Coll. 7238* (BO); Gopong, Aug., fl., *King's Coll. 4765* (BO, DD, P, SING); Sg. Larut, plain, Aug., fl., *Wray 2291* (BO); Taiping Hill, fr., *Ridley s.n.* (SING); Selangor, Ulu Gombak, Febr., fl., *Strugnell F. D. 12672* (SING). Johore, 14 th mile Jemaluang Rd., Mawai, alt. 0 m., Febr., fl., *Corner S.F.N. 29033* (BO, SING); locality not indicated, fl., *Scortechini s.n.* (P). SUMATRA. Berastagi, Toba lake, *Ridley s.n.* (K); Djambi, Sg. Manan, alt. 160 m, Aug., fl., *Posthumus 691* (BO, L); Palembang, Ogan Ulu, fl., *Teijsmann H.B. 3776 & 4050* (BO).

10. *Beilschmiedia rufolanata* Kostermans, spec. nov. — Fig. 19

Arbor ramulis rufolanatis, foliis alternantibus rigide chartaceis obovato-oblongis, supra nitidis glabris costis exceptis, venatione prominulo, subtus sparse minuteque pilosis, petiolo longo dense rufo-lanato, inflorescentia gracile rufolanata haud perulata.

Tree, branchlets cylindrical, densely rusty-pilose; branches smooth, glossy, lenticellate; leaf buds ovoid, acute, densely rusty-pilose. Leaves alternate, rigid

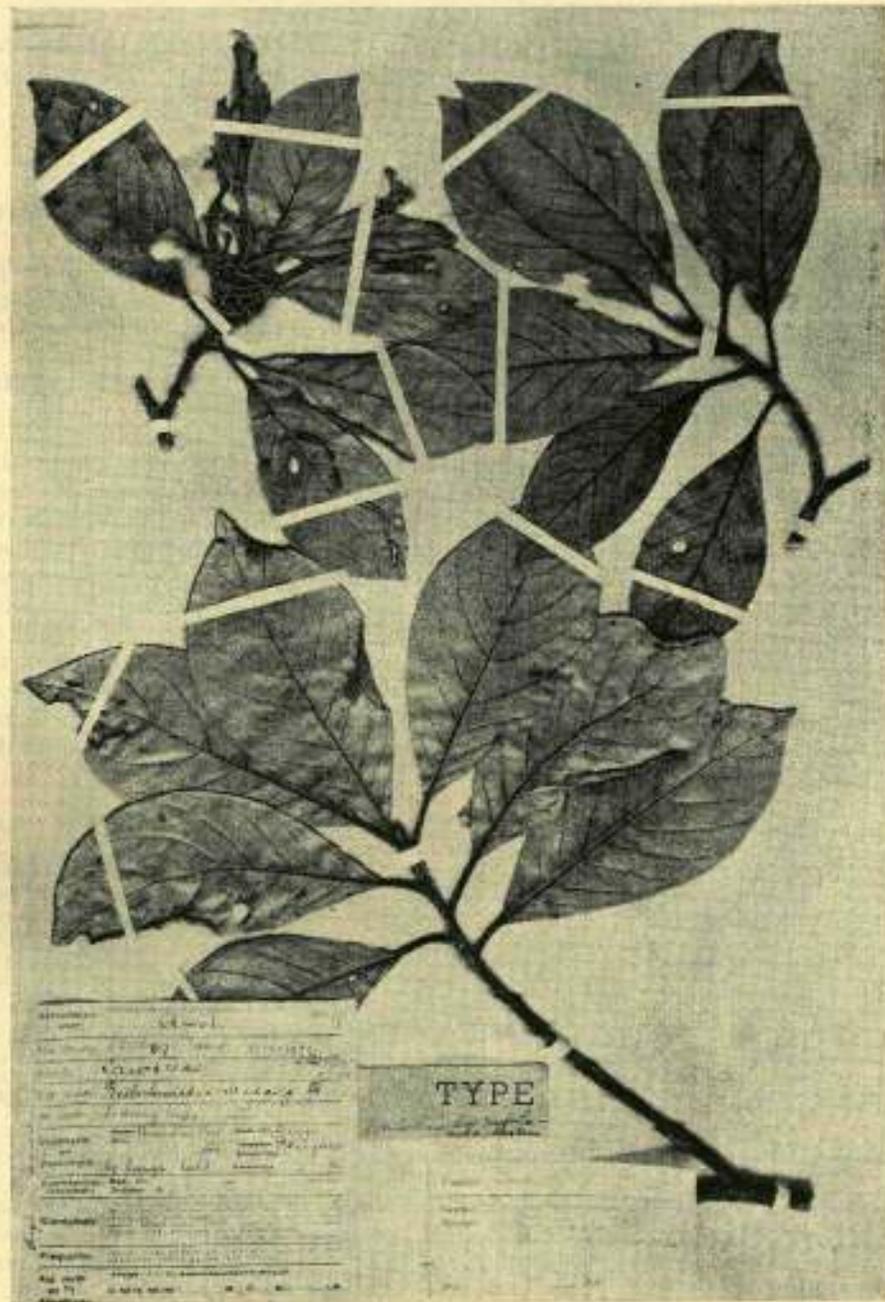


Fig. 19. *Beilschmiedia rufolanata* Kostermans. — Type,

chartaceous, obovate-oblong, 3,5 x 7 — 6 x 12 cm; apex shortly acuminate; base tapering into the petiole; above glabrous (but for main nerves), glossy, rather obscurely reticulate, midrib flattened, broadened towards petiole, lateral nerves about 9 pairs, slightly sunken, very slender, arcuate towards margin; lower surface rather laxly, shortly pilose, midrib and lateral nerves prominent; secondary nerves prominulous, scalariformous, reticulation rather dense, prominulous. Petiole densely rusty pilose, slender, 1,5—2 cm long.

Panicles in the axils of the upper leaves, appearing with the new flush, without traces of basal bracts, rusty-pilose, up to 7 cm long, lower branches up to 3 cm long; bracts sub-persistent, ovate-acute, 1 mm long. Pedicel 1—2 mm long, densely pilose, slender. Ovary subglobose, 1 mm long, glabrous; style very short!

Type. — *Amat 17 = bb 2689* (BO).

Distribution. — Riouw Archipelago, only known from type locality.

The species is perhaps related to *B. madang* Bl., but differs by its leaf shape and inflorescence. In the specimen at hand the stamens had disappeared already.

Specimen examined. — Riouw ARCHIPELAGO. Isl. Singkep, near Ser. Sulit, Tan, after anthesis, *Amat 17 = bb. 2689* (BO, L).

I 11. *Beilschmiedia rufoperulata* Kostermans, spec. nov. — Fig. 20

Arbor ramulis gemmisque dense ferrugineo-tomentellis, foliis alter nantibus chartaceis ellipticis vel subobovato-ellipticis glabris costa mediana inferiore excepta, petiolo dense ferrugineo-tomentello; inflorescentia ante cmthesin perulata, squamis magnis dense tomentellis.

Tree 30 m tall and 56 cm in diameter; branchlets subangular, densely ferrugineous-tomentellous; leaf buds ovate, acute, thick, densely tomentellous; bud scales ovate-lanceolate, acute, thick, 3—4 mm long. Leaves alternate, chartaceous, glabrous, but for the rufo-tomentellous midrib of the lower surface, oblong to elliptical to subobovate-elliptical, 3,5 X 6 — 5,5 x 10 cm; apex shortly acuminate or acute, base cuneate; upper surface glossy, midrib slender, prominulous, lateral nerves 8—10 pairs, very slender, slightly impressed, reticulation not visible; lower surface somewhat glossy, midrib prominent, densely rufo-tomentellous, lateral nerves slender, arcuate, prominulous, reticulation slightly prominulous, lax. Petioles 1—1,5 cm long, densely rusty tomentellous, somewhat flattened above or cylindrical. Inflorescences axillary, before anthesis completely covered by densely rusty tomentellous scales; basal scales thick, triangular, acute, 2 mm long; upper ones thinner, suborbicular or ovate-orbicular, acute, *i* mm long.

Type. — *bb. 2952* (BO).

Distribution. — Sumatra, only known from type locality.

The species resembles *B. rufolanata* Kosterm., but differs by its perulate inflorescences and the smooth upper leaf surface.

Specimens examined. — SUMATRA. Bengkulu, Lebong, Ulutandjong, on temporarily inundated soil, Mar., vn bud, *Renwarin 104 = bb. 2952* (A, BO, BZF, K, L).

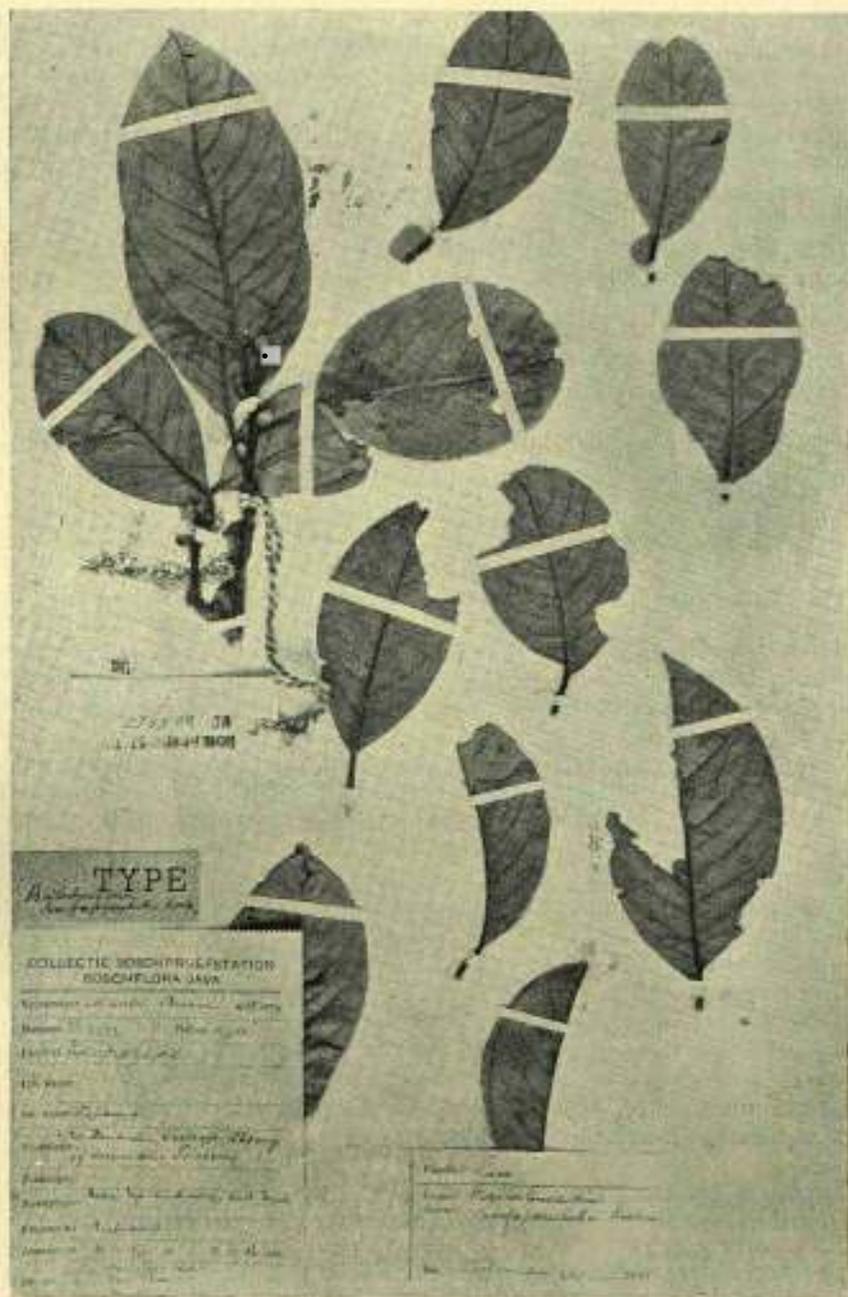


Fig. 20. *Beilschmiedia rufoperulata* Kostermans. — Type.

12. *Beilschmiedia triplinervis* Teschner

This species, based on the specimen Schlechter 17890 from New Guinea, of which I was able to study a duplicate preserved in the Paris Herbarium, and which was described by Teschner in Engler's Bot. Jahrb. 58: 400. 1923, does not belong to *Beilschmiedia*. It represents *Cryptocarya laevigata* Bl.

13. *Beilschmiedia wieringae* Kostermans", spec. nov. — Fig. 6f, 21

Arbor humilis ramulis dense flavo-brunneis, foliis alternantibus chartaceis obovato-oblongis, pagina superiore prominulo-reticulatis, costa exeppta glabris, pagina inferiore sparse tomentellis (in nervis majoribus dense tomentellis). Inflorescentiae axillares dense flavo brunneo lanuginosae laxae anguste paniculatae, ramulis bracteis magnis subtendis.

Tree, 6 m high; branchlets stout, subangular, densely rusty lanuginose; apical leaf bud ovoid, acute; scales lanceolate, acute, thick, densely rusty tomentellous, 10 mm long. Leaves alternate, chartaceous, obovate-oblong, 7 X 15 — 8 X 20 cm, apex apiculate; base cuneate; upper surface rather glossy with lax, slightly prominulous reticulation, midrib flattened, sunken towards base, densely rusty lanuginose, lateral nerves 9—10 pairs, slender, sunken, densely pilose; lower surface dull, yellowish (dried) with microscopical, sparse hairs, denser on main nerves, midrib strongly prominent, lateral nerves prominent, arcuate, upper ones arcuately anastomosing about 3 mm from margin, secondary nerves scalariformous, prominent, reticulation lax, prominulous. Petioles 3 cm long, flattened above (somewhat sulcate near leaf base), densely rusty lanuginose.

Inflorescences narrowly, laxly paniculate, axillary, densely rusty lanuginose, (in immature condition) up to 6 cm long, consisting of a main peduncle with distant, very short branchlets; each branchlet subtended by a large, concave, ovate, acute bract.

Type. — *Kostermans 4374* (BO).

Distribution. — Borneo, only known from type locality.

The alliance of the species may be ascertained only after mature flowers are known; it belongs certainly in *Beilschmiedia*. The species is named in honour of Mr. W. Wieringa, Curator of the Leiden Herbarium, temporarily attached to the Bogor Herbarium, who, during several years devoted himself to the routine work of distributing specimens (a.o. my own collections of 100.000 sheets) and who made many obscure, half forgotten collections, preserved in the Bogor Herbarium, available again for study.

Specimen examined. — EAST BORNEO. Balikpapan Distr., Muan region near Riko R., low hills, sandy loamsoil with coral limestone outcrops, Nov., in bud, *Kostermans 4374* (A, BO, K, L, PNH, SING).



Fig. 21. *Beilschmiedia wieringae* Kostermans. — Type.

DEHAASIA Bl.

1. *Dehaasia longipedicellata* (Ridley) Kostermans, comb. nov.

Beilschmiedia longipedicellata Ridley (basonym) in Kew Bull. 1926: 475, was described after the specimen: Hume 8432, of which the type is conserved in the Singapore herbarium.

A fruiting specimen: *Soh F.D. 8170* (SING) shows the fleshy, enlarged pedicels, which characterize *Dehaasia*.

Additional literature; Henderson in Gds. Bull. S.S. 4: 310. 1928 et 5: 97. 1930.

2. *Dehaasia membranacea* Kosterm., nom. nov. — Fig. 22

Beilschmiedia longipedicellata (non Ridley) Merrill in Univ. Calif. Publ. Bot. 15: 83. 1929; Airy Shaw in Kew Bull. 1940: 76, was based on the specimens I Elmer 20782 and 20875 from N. Borneo, of which duplicates in the Bogor and Leiden Herbarium could be examined. The species with its long-pedicelled flowers belongs to *Dehaasia* Bl.

3. *Dehaasia novoguineensis* Kostermans, spec. nov. — Fig. 23

Arbor humilis in omnibus partibus glabra, foliis alternantibus chartaceis, nitidis, utrinque conspicue gracillime prominulo-reticulatis, ellipticis, apice longe acuminatis, basi cuneatis. Fructus ellipsoideus pedicello incrassato imposito.

Tree, 8 m tall, glabrous in all its parts; branchlets smooth, slender. Leaves alternate, chartaceous, glossy, elliptical, 4 X 14—10 X 31 cm, apex with long and slender acumen; base cuneate; both surfaces distinctly, prominulously reticulate, with slender nerves; upper surface with flattened midrib, lateral nerves prominulous, very slender; lower surface with prominent midrib, lateral nerves (about 10 pairs) prominent, strongly arcuate. Petioles 1,5—2,5 cm long, rather slender. Infructescence very short (fruit often more or less sessile); fruit ellipsoid, smooth, up to 1,5 X 2,5 cm on a fleshy, thickened (in shrunken, dried condition at apex 7 mm in diameter), obconical, about 3 cm long pedicel.

Type. — *Can 15627* (BO).

Distribution. — Papua, only known from type locality.

Specimen examined: NEW GUINEA. Papua, Isuarava, alt. 1200 m., secondary forest, Febr., fr., *Carr 15627* (BO, SING).

4. *Dehaasia oblanceolata* (Merr.) Kostermans comb. nov.

Beilschmiedia oblanceolata Merrill (basonym) in Univ. Calif. Publ. Bot. 15: 84. 1929, was described after the specimen: *Elmer 20931* from N. Borneo. Iso-types are conserved in the Leiden, New York, Paris and Singapore Herbaria. Because of its flower and leaf-characters the species belongs to *Dehaasia* Bl.

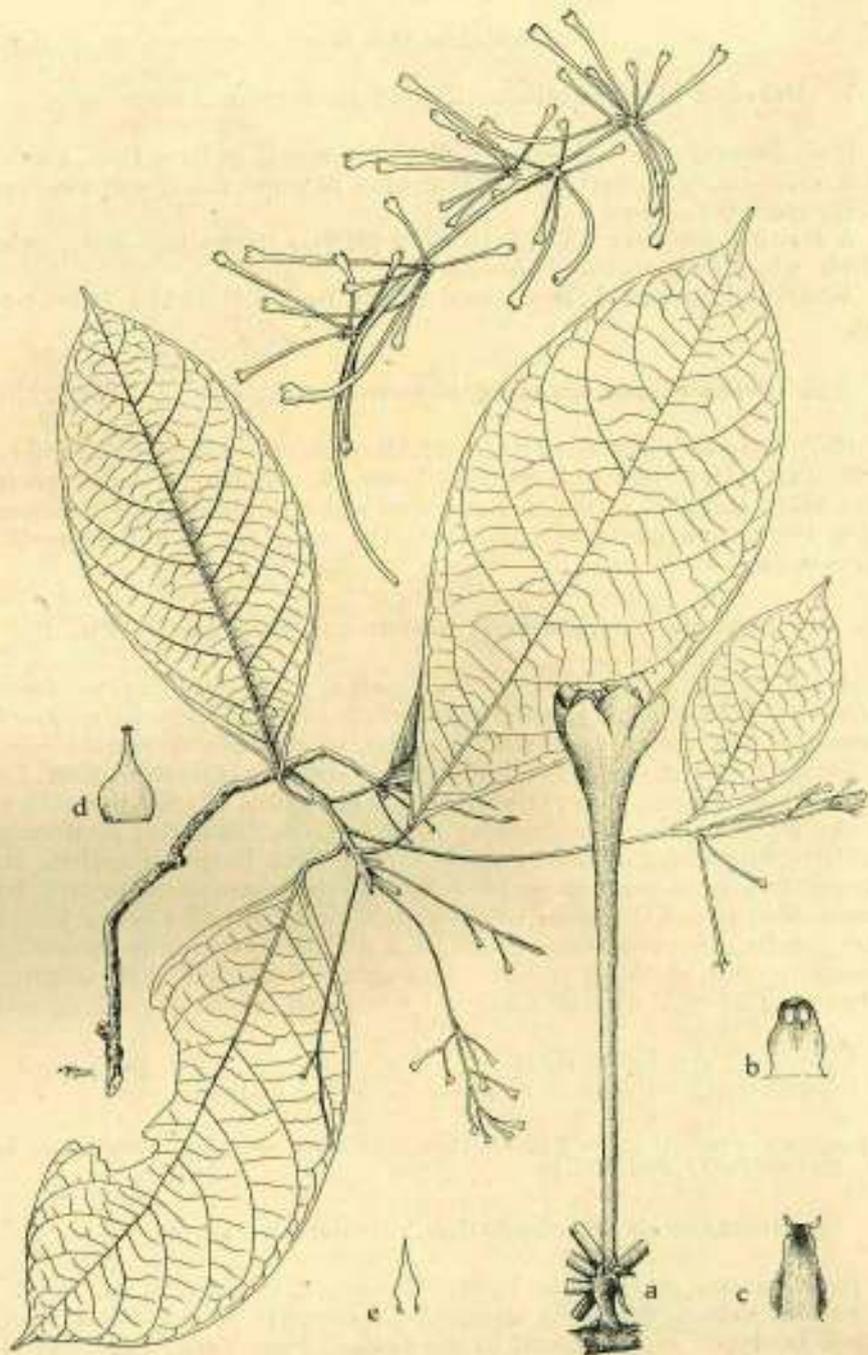


Fig. 22. *Dehaasia menthyanacea* Kostermans; flowering branch (X 0,5); inflorescence (x 3); a, flower (X 10); b, outer stamen (X 15); c, inner stamen (X 15); d, ovary (X 15); e, staminode (X 20). — After Elmer 20875 (*para-type*).



Fig. 23. *Dehaasia novoguineensis* Kostermans. — *Type*.

5. *Dehaasia titanophylla* (Airy Shaw) Kostermans, comb. nov.

Beilschmiedia titanophylla Airy Shaw (basonym) in Kew Bull. 1939: 534, was described after the specimen: *Native coll.* 2438 from Borneo. A fragment of this, conserved in the Singapore herbarium, could be examined. Although the fruit are still unknown, the close relationship to *D. longipedicellata* (Ridley) Kosterm. makes it advisable to relegate this species to *Dehaasia*.

ROSACEAE

PARINARI Aubl.

Polyalthia? pulchrinervia Boerlage

This species was described by Boerlage (Catal. Hort. Bogor., fasc. 1: 20. 1899 and in Icones Bogor., fasc. 2: 106. 1899) after a sterile specimen, collected from a tree, numbered IV G. 42 in the Bogor Botanical Gardens.

In the Bogor Herbarium there is one sheet labelled: *Polyalthia? pulchrinervia* Boerlage (not in Boerlage's handwriting); no date of collecting is indicated; the specimen was from the tree IV G. 42.

I consider this the type specimen, as it fits with Boerlage's description. Duplicates of this have been sent to the Arnold Arboretum, the Kew, the Leiden and the Singapore herbaria.

In 1915 additional flowering and fruiting material was collected from the same numbered tree, which makes it clear that it represents *Parinari corymbosa* Miq. Of the 1915 collections duplicates have been forwarded to the Arnold Arboretum, the Kew and the Leiden herbaria.

STERCULIACEAE

STERCULIA

Sterculia perryae Kostermans, nom. nov.

Sterculia clemensiae Merrill & Perry in J. Arnold Arb. 30: 40. 1949 is, because of its earlier homonym *Sterculia clemensiae* Ridley (in Kew Bull. 1933: 488), renamed here: *Sterculia perryae* Kostermans.

NOTES ON MALAYSIAN MALVACEAE—I *

J. VAN BORSSUM WAALKES **

SUMMARY

Twelve new species of *Hibiscus* sect. *Azanza* DC. from the Malaysian region are described and illustrated. The genus *Wilhelminia* Hochr. is reduced to a synonym of this section, which requires the new combination *Hibiscus sciadiolepidns* (Hochr.) Borss. for *W. sciadiolepida* Hochr., the only species of the genus.

For some years past I have been engaged in studying the Malvaceae of the Malaysian area. It is intended to publish the new facts and conclusions in a series of papers under the title indicated above, and eventually a concise treatment of the family will be included in the "Flora Malesiana." The Malvaceae will be treated in a strict sense, i.e. the Bombacaceae, which is considered a separate family, will be excluded. The Bombacaceae are, it is true, very closely allied to the Malvaceae, but nevertheless it had better be kept apart, both from a theoretical and from a practical point of view. I hope to discuss the delimitation of the two families in a later publication.

A critical revision of the family in the Malaysian area has not so far been carried out, although numerous facts and conclusions have been recorded by various botanists, of whom the following may be mentioned here: Masters, who gave a concise but accurate elaboration of the Indian species in Hooker's "Flora of British India," Gagnepain on Malvaceae in French Indo-China, Merrill especially on Philippine Malvaceae, F. von Müller, Schumann, Lauterbach, and Ulbrich on New Guinea species, E. G. Baker, Garcke, Gierke, and last but not least Hochreutiner, who has an all-round knowledge of the Malvaceae.

For the present paper I have studied specimens from Herbarium Bogoriense (BO),¹ and the Forestry Research Institute at Bogor (BZF), as well as from the herbaria of Singapore (SING), Florence (FI), Lae (LAE), Brisbane (BRI), Arnold Arboretum (A) and the Gray Herbarium

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¹ The abbreviations are according to Lanjouw [*in* Regn. veg. 2 (Ed. 2): 131-144. 1954].