

REVISION OF THE LAURACEAE II
THE GENERA ENDLICHERIA, CRYPTOCARYA (AMERICAN SPECIES)
AND LICARIA

by

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LIST OF ABBREVIATIONS:

Herbaria

A. = Ann Arbor, Michigan.
 B. = Brussels
 Bl. = Breslau
 Br. = Brit. Museum
 Bs. = Herb. Boissier (Genève)
 C. = Herb. Cosson (Paris)
 Ca. = Herb. Univ. of California
 D. = Berlin-Dahlem
 Dr. = Herb. Drake (Paris)
 DC. = Herb. De Candolle (Genève)
 Dl. = Herb. Delessert (Genève)
 F. = Field Museum (Chicago)
 G. = Göttingen
 Gr. = Gray Herb.
 H. = Arnold Arboretum
 H.M.G. = Herb. Museu Goeldi
 H.R.J. = Herb. Rio de Janeiro
 K. = Kjöbenhavn
 Ki. = Kiel (Germany)
 Kw. = Kew
 L. = Leiden
 Lg. = Leningrad
 Lam. = Herb. Lamarck (Paris)

Lp. = Leipzig
 M. = München
 Mi. = Missouri Bot. Garden
 Ms. = Meissner Herb. (New York)
 NY. = New York
 O. = Fielding Herb. Oxford
 P. = Paris
 R. = Rio de Janeiro
 St. = Stockholm
 U. = Utrecht
 W. = Wien
 Ws. = Smithsonian Inst.

Other abbreviations

Ar. = Arowaccan language
 (Dutch Guiana)
 B.W. = Boschwezen
 (Forestry Bureau)
 Car. = Carabic language
 N.E. = Negro English
 (Dutch Guiana)
 Sar. = Saramaccan language
 (Dutch Guiana)
 S.D. = Surinam Dutch

The literature and synonyms, cited in this monograph, are verified by myself. All specimens mentioned are identified or verified by myself.

I wish to tender my best thanks to the Directors and Curators of the above mentioned herbaria for their kind assistance.

1. The genus Endlicheria.

Endlicheria Nees (non Presl) *) in *Linnaea* 8 (1833), p. 37; id., *Progr.* (1833), p. 16; id., *Syst.* (1836), p. 365; Endl., *Gen.* (1837),

*) For the discussion of this name see: Kostermans in *Meded. Bot. Mus. Utrecht* 25 (1936), p. 41.

p. 321; id., Ench. (1841), p. 197; Dietrich, Synops. Pl. 2 (1840), p. 1332, 1350; Spach, Hist. nat. Végét. X (1841), p. 473; Steudel, Nomencl. ed. 2 (1841), p. 554; Meissn., Gen. I (1836—43), p. 326, II, p. 238; Orbigny, Dict. univ. (1846), p. 259; Lindl., Veg. kgd. (1846), p. 537; Meissn. in D.C., Prodr. XV, 1 (1864), p. 172; id. in Fl. Bras. V, 2 (1866), p. 281; Baillon, Hist. II (1870), p. 480 in adnot.; Pfeiffer, Nomencl. (1873), p. 1201; Benth. in Benth. & Hook., Gen. III (1880), p. 153; Durand, Index Gen. (1888), p. 348 sub *Aydendron*; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 111; Pax in Engl.-Prantl, Pfl. Fam. III, 2 (1889), p. 122; dalla Torre & Harms, Gen. (1900—07), p. 178 sub *Aniba*; Post & Kuntze, Lexicon (1904), p. 197; Lemée, Dict. 2 (1929), p. 857; Benoist in Arch. Bot. V (1931), p. 63; Kostermans in Meded. Bot. Mus. Utrecht 25 (1936), p. 41; id. in Pulle, Fl. Surin. 2 (1936), p. 327. — *Goepertia* Nees, Syst., l.c., p. 354, 365 (non alibi nec aliis); Endl., Gen., l.c., p. 321, n. 2051; id., Ench., l.c., p. 197; Dietrich, l.c., p. 1332, 1350; Spach., l.c., p. 473; Steudel, l.c., p. 697; Reichb., Nomencl. (1861), p. 70, n. 2659; Meissn., Gen. I, p. 326, II, p. 238; Orbigny, l.c., p. 259; Lindl., l.c., p. 537; Meissn. in D.C., l.c., p. 172; id. in Fl. Bras., l.c., p. 281; Baillon, l.c., p. 480; Pfeiffer, l.c., p. 1473; Benth., l.c., p. 153; Durand, l.c., p. 348 sub *Aydendron*; Mez, l.c.; Pax, l.c., p. 122; dalla Torre & Harms, l.c., p. 178 sub *Aniba*; Post & Kuntze, l.c., p. 253; Kosterm. in Meded., l.c. — *Schauera* Nees in Lindley, Nat. Syst. ed. 2 (1836), p. 202 in adnot. (non aliis nec alibi); Endl., l.c., p. 321; id., Ench., p. 197; Meissn., Gen. II, l.c., p. 238; Orbigny, l.c., p. 259; Lindl., Veg. kgd., l.c., p. 537; Benth., l.c., p. 153; Durand, l.c., p. 348 sub *Aydendron*; Mez, l.c.; Pfeiffer, l.c., p. 1071; dalla Torre & Harms, l.c., p. 178 sub *Aniba*; Post & Kuntze, l.c., p. 503; Lemée, l.c., p. 1006. — *Schaueria* Nees ex Meissn. in D.C., l.c., p. 172; id. in Fl. Bras., l.c., p. 281 (non aliis); Baillon, l.c., p. 480; Pax, l.c., p. 122. — *Ampelodaphne* Meissn. in D.C., l.c., p. 81; id. in Fl. Bras. l.c., p. 167; Baillon, l.c., p. 473; Pfeiffer, l.c., p. 1071; Benth., l.c., p. 153; Durand, l.c., p. 348 sub *Aydendron*; Pax, l.c., p. 122; dalla Torre & Harms, l.c., p. 178 n. 2812; Post & Kuntze, l.c., p. 24; Lemée, Dict., l.c., p. 210; Kosterm. in Meded., l.c. — *Aydendron* Griseb. (non Nees), p.p. in Fl. Brit. W. Ind. isl. (1860), p. 284; Benth., l.c., p. 153; Mez, l.c. — *Huberodaphne* Ducke in Arch. Jard. Rio de Janeiro 4 (1925), p. 191; Lemée, Dict., l.c., 3 (1931), p. 661.

Type species: *Endlicheria hirsuta* Nees.

Trees and shrubs in tropical south and central America, one

species on the West Indian islands. Leaves alternate or (and) sub-verticillate, thinly chartaceous to rigid-coriaceous, penninerved, rarely sub-tripli or sub-quintuplinerved; lower surface often densely, microscopically punctulate. Panicles axillary or sub-terminal, few- to many-flowered; flowers sometimes in clusters. Bracts and bracteoles persistent or deciduous. Flowers dioecious. Involucre wanting. Flower tube distinct, shallow to sub-globose. Tepals 6, as a rule equal, usually patent and after anthesis reflexed. Male flowers with 9 fertile stamens in 3 rows, the inner one distant from the outer rows. Outer stamens with 2-celled, anthers with introrse or introrse-lateral cells; filaments none or up to twice as long as anthers, usually glandless (only in *E. Sprucei* biglandular). Inner stamens erect, with usually 2-celled (only in *E. anomala* 4-celled) extrorse or extrorse-lateral anthers; filaments with basal, rarely sub-basal glands without (no glands in *E. mishuyacensis* and in *E. longicaudata*). Fourth row of stamens usually wanting, rarely staminodial, minute. Ovary sterile, stipitiform. Female flowers usually somewhat smaller in usually shorter, narrower panicles; pedicels often much shorter. Tube broader as in male flower. Stamens same shape, smaller, sterile. Ovary immersed in the tube, large, usually glabrous. Style usually short, thick; stigma discoid or peltate, distinct, small or relatively large, often sub-trigonous, sometimes sub-3-cornute, rarely 3-lobed. Berry usually ellipsoid, smooth, soon protruding beyond the usually rather shallow, sub-hemispherical, fleshy, simple-margined cupule on a usually strongly enlarged, fleshy, thick pedicel. Cotyledons elliptical, flat-convex, including the small embryo.

This genus, characterised by 9 fertile stamens with 2-celled anthers is closely connected with *Aniba*, the principal difference being the dioecism of the flowers. But also the shape of the anthers, the usually shallow, fleshy cupule with the thickened, enlarged, fleshy pedicel makes it easily separable from *Aniba*. *Endlicheria anomala* forms a link with the genus *Ocotea*, the inner stamens having 4-celled anthers. I found several flowers, with an abnormal number of cells in the outer stamens: between the two normal cells and inserted slightly higher than these cells, a smaller, but distinct cell was present. Also the normal anthers are usually thickened at their apex. The opinion of Mez (*Verh. Bot. Ver. Brandenburg* 30, 1889, p. 15 and in *Jahrb.*, l.c. p. 512) that the lower cells have been suppressed does not hold true. It is more likely, that, as in all other genera, the upper cells are abortive. The sterile anthers in the female flowers usually have the same shape as the fertile ones in the male flower, though the cells are smaller and the filaments usually very shortened. It often occurs however, that the cells are relatively large and well-developed, though I could never find pollen within them. The dehiscence of the cells is uniform throughout the genus; the valves remaining attached to the top

of the cells; the two outer rows of anthers with introrsely, the inner one with extrorsely dehiscent cells. In specimens as *E. formosa*, *dysodantha*, *pyriformis*, etc., the valves are so large, that after dehiscence there remains only a small columna of the back of the anther, bearing below its top the large, often upcurved valves.

Key to the species:

- 1a. Anthers of inner stamens 4-celled (subgenus: *Ocoteopsis* Mez) 1. *E. anomala*
- b. Anthers of inner stamens 2-celled (subgenus: *Euendlicheria* Mez) 2
- 2a. Anthers of outer stamens in male flowers thick and fleshy; cells small, filling only the smaller part of the anthers .. 3
- b. Anthers of outer stamens glandless. Stigma in female branous; cells large, filling the whole anther 7
- 3a. Stamens without basal glands (see also spec. no. 25) 6. *E. longicauda*
- b. Stamens with basal glands 4
- 4a. Anthers of outer staminal rows sessile (filaments adnate to tepals), sub-quadratical, provided with small, basal glands within. Stigma in female flower very large, peltate-subinfundibuliform, 1 mm in diam., three-lobed, the lobes crenulate 5. *E. Sprucei*
- b. Anthers of outer stamens in male flowers thin or membrane small, peltate or discoid, trigonous or three-horned, rarely up to $\frac{1}{2}$ mm in diam.; the lobes (when present) entire 5
- 5a. Outer anthers acutish or apiculate; connectives strongly protruding beyond the cells; filaments distinct (see also *E. Krukovii*) 4. *E. endlicheriopsis*
- b. Outer anthers obtuse or slightly emarginate, broader than long, nearly sessile 6
- 6a. Leaves linear-lanceolate, rugose-bullate, hispid-hirsute beneath, prim. nerves 20—40 per side. Panicles and flowers (8—10 mm in diam.) densely rusty-hirsute. 2. *E. bullata*
- b. Leaves elliptical, flat, glabrous, prim. nerves 6—7 per side. Panicles and flowers (5—6 mm in diam.) glabrous; in female flowers tepals densely papillose within; cupule reflexed 3. *E. rubriflora*
- 7a. Anthers of outer stamens with emarginate apex; connectives (between the cells) not protruding beyond the cells. 8
- b. Anthers of outer stamens with obtuse or truncate apex; connectives between the cells, as high as the cells or hardly protruding beyond them 23
- c. Anthers of outer stamens apiculate or acute; connectives

- conspicuously protruding beyond the cells 31
- 8a. Anthers of outer stamens fleshy with minute cells 9
- b. Anthers of outer stamens thin or membranous with very large cells 10
- 9a. All stamens glandless 6. *E. longicaudata*
- b. Outer stamens and inner ones provided with glands
5. *E. Sprucei*
- c. Only inner stamens provided with glands. 3. *E. rubriflora*
- 10a. Panicles (base of peduncle excepted) and flowers glabrous. Tepals patent, fleshy 11
- b. Panicles and flowers minutely pilose to densely hirsute. Tepals membranous or fleshy, patent or erect-patent .. 12
- 11a. Leaves rigid-coriaceous, glabrous, usually pruinose beneath, smooth above. Pedicels rather slender, up to 1 mm l. Flowers $2\frac{1}{2}$ mm in diam. 7. *E. arunciflora*
- b. Leaves thinly chartaceous or chartaceous, dull-green, sparsely hirsute-villose beneath (denser on nerves), conspicuously, prominulously reticulate above. Pedicels thick, hardly $\frac{1}{2}$ mm l. Flowers 3 mm in diam. 8. *E. verticillata*
- 12a. Outer anthers with minute, hornlet-like appendages on the top of the cells 36. *E. boliviensis*
- b. Outer anthers not or hardly thickened at the top of the cells 13
- 13a. Tepals patent, membranous, glabrous (except in *E. boliviensis*) inside; tube urceolate, hirsute without 14
- b. Tepals patent or erect, fleshy, glabrous or pilose; tube sub-globose or broadly obconical 20
- 14a. Leaves hirsute-villose beneath 15
- b. Leaves minutely, sparsely tomentellous beneath 19
- 15a. Leaves thinly chartaceous, rather laxly hirsute-villose beneath (hairs erect, $1-2\frac{1}{2}$ mm l.) 16
- b. Leaves coriaceous and rigid-coriaceous, densely, shortly hirsute beneath (hairs hardly $\frac{1}{2}$ mm l.) 17
- 16a. Branchlets densely, yellowish hirsute-villose (hairs up to 1 mm l.). Leaves alternate, slightly bullate-rugose, laxly villose-hirsute beneath (hairs 1 mm l.). Petioles stout, 15—25 mm l. Male and female flowers sessile. Basal glands minute 15. *E. glomerata*
- b. Branchlets laxly villose-hirsute (hairs patent, up to $2\frac{1}{2}$ mm l.). Leaves sub-verticillate, flat, laxly hirsute beneath (hairs up to 2 mm l.). Petioles 2—7 mm l. Pedicels slender, $\frac{1}{2}$ —1 mm l. Basal glands rather large 9. *E. bracteata*
- 17a. Panicles lax, many-flowered. Flower tube shallow, broadly

- obconical 36. *E. boliviensis*
- b. Panicles densely, ∞ -flowered. Flower tube conspicuous, urceolate 18
- 18a. Leaves obovate-elliptical or oblanceolate. Petioles short, 1 cm l., rarely up to 2 cm l. Basal glands minute, distinctly stipitate 13. *E. multiflora*
- b. Leaves ovate or ovate-elliptical. Petioles up to 5 cm l. Basal glands sessile, rather small 12. *E. macrophylla*
- 19a. Leaves alternate. Petioles 4—5 cm l. .. 10. *E. Tessmannii*
- b. Leaves sub-verticillate. Petioles 1 cm l. .. 11. *E. Cocuirey*
- 20a. Leaves densely, yellowish or rusty lanate-tomentellous beneath. Filaments at least twice as long as anthers .. 17. *E. Williamsii*
- b. Leaves minutely, silvery sericeous or sparingly, minutely tomentellous or shortly hirsute beneath. Filaments as long as or shorter than anthers 21
- 21a. Panicles silvery-sericeous. Flowers densely silvery-sericeous. Glands in female flower minute, nearly inconspicuous .. 29. *E. metallica*
- b. Panicles tomentellous. Flowers sparsely appressed-tomentellous, sericeous-hirsute or hirsute. Glands in female flowers conspicuous 22
- 22a. Leaves densely hirsute-tomentellous beneath; densely, conspicuously areolate-reticulate above. Branchlets densely rusty-tomentose. Flowers glabrous inside, laxly grey-hirsute outside 14. *E. reflectens*
- b. Leaves sparsely hirsute beneath; above inconspicuously reticulate or smooth (midrib and prim. nerves impressed), subtriply-nerved; beneath reticulate. Branchlets minutely tomentellous. Flowers glabrous inside, minutely, sparingly appressed-pilose without 15. *E. acuminata*
- c. Leaves with scattered, stiff, minute, microscopical hairs beneath; above prominulously reticulate. Branchlets minutely, sparsely pilose. Flowers minutely, sparsely pilose without; tepals densely microscopically papillose within. 28. *E. juruensis*
- d. Leaves penninerved with minute, scattered hairs beneath, smooth on both sides. Branchlets tomentellous. Flowers appressed-pilose on both sides 16. *E. gracilis*
- 23a. Flowers sub-globose with sub-globose tube (slightly narrowed towards apex). Tepals minute, scaly, incurved, depressed-triangular (broader than long), up to $\frac{1}{2}$ mm high. Tube nearly glabrous without, 2 mm in diam. Petioles

- stout, 2—3 cm l. (see also *E. paradoxa* and *formosa*)
21. *E. tomentella*
- b. Flowers rotate or campanulate, tube urceolate or obconical, shorter than the patent or erect-patent, more than 1 mm l. tepals (longer than broad) 24
- 24a. Leaves bullate-rugose, linear-lanceolate. Flowers 8—10 mm in diam. Outer anthers broadly, depressed-ovate, obtuse, fleshy, nearly sessile, 2 mm w., 1½ mm long; cells minute.
2. *E. bullata*
- b. Leaves flat, lanceolate-elliptical to elliptical. Flowers up to 6 mm in diam. Outer anthers thin, ovate, up to 1 mm l., ½ mm w.; cells large, filling the whole anther. Filaments conspicuous 25
- 25a. Leaves densely golden-sericeous beneath 26
- b. Leaves minutely tomentellous to laxly hirsute beneath 27
- 26a. Leaves sub-tripli- or quintuplinerved, broadly ovate, coarsely, laxly reticulate above; prim. nerves 4 per side. Petioles stout. Flowers 6 mm in diam. Fruiting pedicel stout, up to 15 mm l., 5 mm in diam. 31. *E. sericea*
- b. Leaves penninerved, elliptical or lanceolate-elliptical, prominently reticulate above; prim. nerves 6—8 per side. Petioles rather slender. Flowers 4 mm in diam. Fruiting pedicel rather slender, 3—4 mm l., 3 mm in diam. at apex.
30. *E. Lhotzkyi*
- 27a. Leaves densely rusty-tomentose beneath. Flowers densely rusty-villose. Tepals fleshy, glabrous inside 32. *E. Szyszyłowiczii*
- b. Leaves with minute, scattered hairs beneath, glabrescent. Flowers minutely tomentellous. Tepals fleshy, densely, microscopically papillose within 28
- c. Leaves hirsute to minutely tomentellous or glabrescent beneath. Flowers laxly, apressed sericeous-hirsute. Tepals thin, glabrous or apressed-hirsute within 29
- 28a. Inner anthers in female flowers thick, subtruncate. Tube shallow, glands minute 26. *E. colombiana*
- b. Inner anthers in female flower obtuse, flattish. Tube obconical, 1½—2 mm high. Glands wanting 25. *E. mishuyacensis*
- 29a. Leaves slightly bullate-rugose, rather thin. Petioles stout, 1½—2½ cm l. Male and female flowers sessile with urceolate, rather thin tube. Tepals thin, glabrous within. Flowers in dense clusters 15. *E. glomerata*
- b. Leaves flat, coriaceous. Petioles ½—1½ cm l. Flowers

- with broadly obconical, shallow tube. Pedicels slender, distinct. Tepals apressed-pilose within. Panicles lax .. 30
- 30a. Branchlets rusty-hirsute (hairs $\frac{3}{4}$ mm l., patent). Leaves obovate-elliptical, base abruptly contracted into the petiole; above smooth; beneath laxly hirsute (hairs rather long, erect); prim. nerves erect-patent. Petioles hirsute-villose (hairs stiff, up to $\frac{3}{4}$ mm l.), 3—5 mm l. Prim. nerves 5—7 per side. Glands basal 37. *E. Poeppigii*
- b. Branchlets densely tomentose to laxly tomentellous. Leaves lanceolate to ovate, base acute; prim. nerves 4—5 per side, erect-patent (rarely the lower ascendant); above laxly, prominulously reticulate; beneath rather densely, shortly hirsute or glabrescent. Petioles densely tomentellous or tomentose (hairs $\frac{1}{2}$ mm l.), glabrescent, 5—15 mm l. Glands basal 33. *E. hirsuta*
- 31a. Outer anthers on conspicuous, as long or longer filaments. 32
- b. Outer anthers sessile or nearly so 34
- 32a. Outer filaments S-curved, attached to the tepals; inner ones attached to the tube, much lower, 3 × as long as anthers. Flowers sericeous 18. *E. Klugii*
- b. Outer filaments straight, attached at the same height as the inner ones; the latter as long or slightly longer than their anthers 33
- 33a. Branchlets and petioles densely rusty-tomentellous or tomentose. Leaves penninerved, conspicuously, laxly, shortly hirsute beneath 4. *E. endlicheriopsis*
- b. Branchlets and petioles glabrous, smooth. Leaves sub-triplinerved, glabrous or nearly so beneath. Flowers sericeous 19. *E. Krukovii*
- 34a. Flowers sub-globose with nearly globose tube ($1\frac{1}{2}$ —3 mm in diam.) Tepals minute, scaly, depressed-ovate (broader than long) $\frac{1}{2}$ mm l., incurved 35
- b. Flowers pateriform or campanulate with funnel-shaped or obconical tube and erect-patent or patent, conspicuous tepals (longer than broad) more than 1 mm l., longer than the tube 36
- 35a. Flowers 2 mm in diam., tube $1\frac{1}{2}$ mm l. Outer anthers $\frac{1}{2}$ mm l., ovate-triangular 23. *E. formosa*
- b. Flowers 3—4 mm l., up to 5 mm in diam. Outer anthers $1\frac{1}{2}$ —2 mm l., with as long, elongate-ovate cells 22. *E. paradoxa*
- 36a. Ovary densely pilose 20. *E. Browniana*
- b. Ovary glabrous 37

- 37a. Leaves beneath conspicuously barbellate in the axils of prim. nerves and midrib 24. *E. dysodantha*
 b. Leaves glabrous beneath 38
- 38a. Branchlets glabrous, smooth, green, shining. Bracts and bracteoles persistent. Flowers glabrous. Basal glands small, stipitate 27. *E. pyriformis*
 b. Branchlets minutely pilose, dull. Bracts deciduous. Flowers minutely tomentellous. Basal glands minute or none .. 39
- 39a. Inner anthers in female flower thick, sub-truncate, filaments as broad as anthers. Leaves broadly elliptical, base contracted into the petiole, shortly acute. Flower tube hardly 1 mm l., shallow. Basal glands minute. 26. *E. colombiana*
 b. Inner anthers in female flowers flattish, obtuse, filaments enlarged towards base. Leaves narrowly elliptical to oblanceolate-elliptical, base cuneately decurrent. Flower tube conspicuous, obconical, 1½—2 mm high. Basal glands wanting 25. *E. mishuyacensis*

Subgenus *Ocotropsis* Mez

Anthers of inner row of stamens 4-celled.

1. *Endlicheria anomala* Nees ex Meissn. in D.C., Prodr. XV, 1 (1864), p. 173; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 133, t. 3, f. 42; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591; Schmidt in Notizblatt Berl.-Dahlem 10 (1928), p. 227; id. in Fedde, Repert. 31 (1933), p. 178 (specim. Bolivian. exceptis); Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 103; Williams in Field Mus. Nat. Hist. XV, Publ. 377 (1936), p. 150. — *Goepertia anomala* Nees, Syst. (1836), p. 370; id. in Linnaea 21 (1848), p. 514; Meissn. in D.C., l.c., p. 173; id. in Fl. Bras. V, 2 (1866), p. 283; Mez, l.c. — *Goepertia polyantha* Meissn. in D.C., l.c. p. 175; id. in Fl. Bras., l.c. p. 285, t. 104 (cum var. *elongata*); Mez, l.c. — *Goepertia hirsuta* Meissn. in Fl. Bras., l.c. p. 282, quoad cit. spec. Schomburgk 784; Mez, l.c. (errore cit. pro var. *latifolia* Meissn.).

Typus: Poeppig 2552 (♂); Peru near Ega [W.].

„Canela; Canela-moena; Moena del agua” (Peru: Killip and Smith; Klug; Williams).

Rather small and slender tree, up to 10, at times 15 m high; crown spreading; trunk straight or inclined, round or moderately so, 15—25 cm in diam., either branching from the base or clear of limbs for approximately 1½ m; bark pale to dark chocolate brown, with numerous shallow ridges and small lenticels; yields a small quantity of sweet, brown resin

when incised (Williams). Branchlets sub-angular, sulcate, usually minutely sericeous-tomentellous, sometimes rusty-tomentose; branches cylindrical, smooth, glabrous, grey or dark, striate; buds sericeous. Petioles slender, glabrescent, hardly canaliculate, 8—14 mm l. Leaves alternate, chartaceous or membranous, broadly ovate-elliptical to lanceolate-elliptical, base acute or shortly cuneate, top broadly, obtusely acuminate (acumen up to $1\frac{1}{2}$ cm l.); above glabrous (a few hairs on midrib excepted), dull, midrib impressed, prim. and second. nerves prominulous, the latter laxly reticulate; beneath densely sericeous; sometimes tomentose, usually at last glabrescent; midrib prominent, prim. nerves (5—7 per side) prominent, arcuately ascendant, veins prominulous, reticulate. Panicles axillary, pyramidal, many-flowered, densely rusty-sericeous or rusty-tomentose in youth, glabrescent, up to 10 cm l.; peduncles cylindrical, slender, sparingly pilose, up to 3 cm l.; branchlets patent, rather short. Pedicels slender, sparingly pilose, 4 mm l. Bracts and bracteoles ovate-lanceolate, sericeous, deciduous. Flowers whitish (Glaziou), rotate, sparingly sericeous, up to 5 mm in diam.; tube pateriform, 1 mm high, densely sericeous inside, glabrescent (especially in female flowers). Tepals fleshy, patent, ovate or ovate-orbicular, acutish or obtuse, equal, nearly glabrous inside, $2-2\frac{1}{2}$ mm l., outer ones pink, inner ones yellow (Tessmann, Poeppig). Male flower: outer stamens patent, glabrous, 1 mm l.; anthers narrowly obovate, truncate, cells large; filaments as long, slender; inner stamens $1\frac{1}{2}$ mm l., glabrous, erect, conglutinate below the extrorsely curved, narrowly obovate, truncate anthers, lower cells large, extrorse, upper cells smaller, lateral-introrse or apically, filaments as long as anthers, slender, basal glands rather small, globose, shortly stipitate. Ovary none or minute, stipitiform. Female flower: Stamens same shape, sterile, smaller than those in male flower. Ovary ovoid, glabrous, about 1 mm l.; style stout, glabrous, hardly $\frac{1}{4}$ mm l.; stigma large, peltate, three-horned. Berry ellipsoid-ovoid, up to 13 mm l., 7 mm in diam. Cupule shallow, nearly flat, 4 mm in diam.; pedicel obconical, 5 mm l., 3 mm in diam. at the top.

Distribution: From Guiana to Rio de Janeiro.

Brazil: Rio Negro near Barra (Spruce 1648 (♂), fl. July [Bs.D.Dr.Dl. O.Br.DC.K.Kw.Lg.NY.P.W.], type of *Goeppertia polyantha*; 1433 (= Nectandra 6) (♂) [Bs.DC.O.Br.Dl.Dr.Kw.Lg.M.Ms.Gr.P.NY.]); Lago do Alseo (Spruce 1757 (♂), fl. Aug. [Dr.W.Kw.]; type of *Goeppertia polyantha*, var. *elongata* Meissn.); mouth of Rio Negro, Puraquequara (Ducke, H.R.J. 19964 (♂), fl. June [D.]); Manaus (Kuhlmann H.R.J. 20034 (♀), fl. Aug.

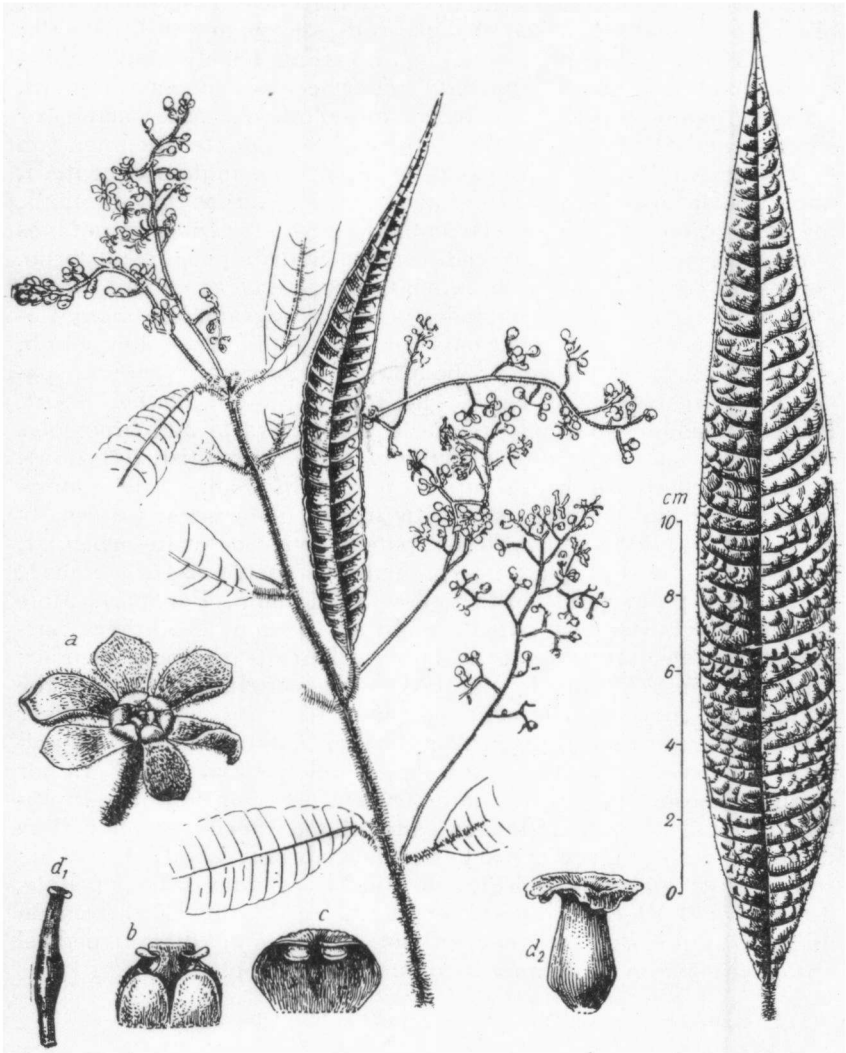


Fig. 1. *Endlicheria bullata*: a. male flower; b. stamen of the inner row; c. stamen of the outer row; d1. ovary rudiment in male flower; d2. ovary in female flower.

[U.Kw.St.Ws.]; Schwacke 3540 (♀), fl. July [D.]; Madeira R., near Borba (Riedel 1376, 1451 (♂), fl. Aug. [D.Bs.O.Kw.Ms.L.Lg.NY.]); Amazonas (Traill 706 [Kw.]). British Guiana: locality unknown (Schomburgk 784 (♀) [Bs.D.F.Kw.P.Ws.Br.U.W.O.]). Rio de Janeiro: Quinta da Boa Vista at San Christovão (Glaziou 14210 (♀), fl. July [D.K.P.Kw.] et ex herb. Schwacke [D.]). Peru: Dept. Loreto: alto Rio Itaya, Paraiso, alt. 145 m. (Williams 3307 (♀), fr. Sept. [D.F.]; Tessmann 5126 (♂), fl. May [D.St.]); Iquitos and vicinity (Williams 1494 (♂), fl. July [D.F.Br.NY.]; 1495 (♀), fl. July [D.]; 3670, fr. Oct. [D.F.]); Mishuyacu (Killip & Smith 27192 (♂), fl. Aug. [F.Ws.NY.]; 29959 [D.F.Ws.NY.]; Klug 728 (♂), fl. Dec. [F.NY.Ws.]); Amazon R., Pebas (Williams 1877 (♂), fl. July [D.F.NY.Ws.]), Ega (Poeppig 2552 (♂), fl. Sept. [D.DC.Dl.Br.Lg.Lp.Ki.Ms.P.W.O.]); lower Rio Nanay (Williams 609 [D.F.NY.]); Rio Mazan near Iquitos (Williams 8144, fr. Apr. [F.]); Rio Masana, Itaya (Williams 15, fr. May [F.]; 176 [F.]; 1500 [F.Ws.]); Ucayali R., Yarina Cocha (Tessmann 3439 (♂), fl. Dec. [D.DLF.St.]).

Subgenus EUENDLICHERIA Mez

Anthers of inner stamens 2-celled.

Sectio Microlocellata Kosterm. (species 2—6)

Antherae exteriores carnosae, locellis parvam partem tantum obtinentibus.

2. *Endlicheria bullata* Ducke in Arch. Jard. Rio de Janeiro IV (1925), p. 190. — *Ampelodaphne bullata* Huber ex Ducke, l.c. p. 191.

Typus: Huber H.R.J. 18359 (♂); Amazonas ad Rio Purus [R.].

Shrub, 6 m high (Krukoff). Branchlets thick, cylindrical, densely rusty-hispid-villose; branches hispid-villose; buds densely rusty-villose. Petioles rather slender, cylindrical, rusty-villose, up to 1 cm l. Leaves alternate, rigid-coriaceous, bullate-rugose, green, somewhat shining (especially above), linear-lanceolate, 10—28 × 2—4½ cm, base shortly acute or somewhat obtuse, margin strongly recurved, top acute or gradually acuminate (acumen slender, long, acute); above sparingly hispid, midrib and prim. nerves sulcate-impressed, beneath hispid (especially along margin, on midrib and prim. nerves), midrib strongly prominent, prim. nerves (20—40 per side) prominent, patent, straight, arcuately united at some distance from the margin, veins prominulous, laxly reticulate. Panicles axillary, narrowly pyramidal, densely rusty-villose, 5—15 cm l., rather many-flowered, lax; peduncles rather slender, cylindrical, up to 4 cm l., branchlets patent, short. Pedicels rather thick, densely red-villose, 2—3 mm l. Flowers white and red (Krukoff), pateriform, densely red- or rusty-villose outside, 8—10 mm in diam.; tube shallow, slightly hirsute inside, 1 mm deep. Tepals fleshy, patent, glabrous inside,

obovate or sub-spathulate, slightly obtuse, equal, 4 mm l. Male flower: Stamens glabrous; outer ones incurved, transversally elliptical or depressed ovate (second row narrower), thick, 2 mm w., $1\frac{1}{2}$ mm high, obtuse; cells rather small; filaments inconspicuous; inner stamens erect, broadly ovate, $1\frac{1}{2}$ mm l., anthers truncate with small cells; filaments broader, enlarged, $1\frac{1}{2} \times$ as long, basal glands sessile, globose, very large. Ovary sterile, stipitiform, glabrous, $\frac{1}{2}$ mm l. Female flower: Stamens as in the male ones, sterile, $1\frac{1}{2}$ mm l. Ovary (style included) $1\frac{1}{2}$ mm l., glabrous, ovoid, style thick, not distinct from ovary; stigma large, thick, peltate, orbicular, $\frac{1}{2}$ mm in diam. Fruit unknown. (Fig. 1).

Distribution: Amazon Basin, on Rio Purus.

State of Amazonas, R. Purus, Bom Logar (Huber H.R.J. 18359 (δ), fl. July [U.D.]; near mouth of R. Macauhan, lat. $9^{\circ} 20'$ S, long. 69° W on terra firma (Krukoff 5780 (φ), fl. Sept. [U.D.Ws.Kw.Dl.St.NY.H.].

3. *Endlicheria rubriflora* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 494; Schmidt in Fedde, Repert. 31 (1933), p. 175. — *Endlicheria Trianae* O. C. Schmidt in Fedde, l.c. p. 175. — *Aniba reticulata* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 99.

Typus: Triana 1032 (δ); Colombia [P.].

Tree or shrub. Branchlets sub-cylindrical, smooth, glabrous or slightly pilose, shining, dark; buds densely yellow-sericeous; branches rather thick, grey, cylindrical. Leaves alternate, chartaceous, green, glabrous (on midrib above often minute hairs), shining (beneath less), distinctly prominulously reticulate on both sides, elliptical, $10-28 \times 4-9$ cm; base shortly cuneate-acuminate, slightly decurrent, margin lightly recurved, top abruptly acuminate, acumen up to $2\frac{1}{2}$ cm l.; above midrib prominulous, flattened towards base, prim. nerves prominulous; beneath midrib strongly prominent, prim. nerves (6-7 per side) prominent, slightly arcuate. Petioles rather slender, soon glabrous, flattish above, $1-1\frac{1}{2}$ cm l. Panicles axillary, rather many-flowered, lax, pyramidal, in bud minutely pilose, soon glabrous, 9-12 cm l.; peduncles thick, cylindrical, smooth, up to 4 cm l.; branchlets patent, distant, slender, up to 2 cm l. Bracts and bracteoles deciduous. Pedicels slender, glabrous, 2-3 mm l. Male flowers soon glabrous, 5-6 mm in diam., $1\frac{1}{2}$ mm high; tube broadly obconical, shallow, hardly 1 mm high, glabrous inside. Tepals equal, glabrous, patent (after anthesis strongly reflexed), fleshy, broadly ovate, obtuse or acutish, 2 mm l. Stamens slightly

exserted, glabrous; outer ones with nearly sessile, transversally elliptical, obtuse, flattish, fleshy, $\frac{1}{2}$ mm l., 1 mm w. anthers with minute cells. Inner stamens hardly longer, with narrower, truncate anthers on broad, hardly distinct, much shorter filaments; basal glands very large, globose, sessile, conglutinate. Ovary minute, stipitiform, sterile. Female flower on up to 5 mm l. pedicels, 5 mm in diam., same shape as male one; tube 1 mm high. Tepals with sub-lanate, papillose, deciduous hairs within. Stamens sterile, $\frac{1}{2}$ mm l. Ovary globose, 1 mm in diam., glabrous, gradually merging into the very thick, $\frac{1}{2}$ mm l. style with rather large, peltate stigma. Berry ellipsoid, smooth, up to $2\frac{1}{2}$ cm l., $1\frac{1}{2}$ cm in diam. Cupule large, reflexed, fleshy, $2\frac{1}{2}$ cm in diam. pedical fleshy obconical, about 1 cm l.

Distribution: Colombia, Peru.

Colombia: Mariquita near Honda on Magdalena R. (Karsten s.n. fr. [Lg.]). Andes de Antioquia, La Ceja (Triana 1032 (δ) [P.]); 2040, 1 (δ), fl. Apr. [Kw.], type of *E. Trianae*. **Peru:** Dept. Loreto, Yurimaguas on lower Huallaga R. (Killip & Smith 28050 (φ), fl. Sept. [F.NY.Ws.], type of *Aniba reticulata*). **Colombia:** Andes de Bogota, Villavicencio, alt. 450 m. (Triana 1059 et 2060, fr. Jan. [Kw.P.]).

The female flowers are identical with the male ones with the exception of the papillose, glandular, dense, deciduous tomentum on the inside of the tepals.

4. *Endlicheria endlicheriopsis* (Mez) Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 43; id. in Pulle, Fl. Surin. 2 (1936), p. 333. — *Ocotea endlicheriopsis* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 300; Benoist in Bull. Soc. Bot. France 75 (1928), p. 978; id. in Arch. Bot. V (1931), p. 73.

Typus: Mélinon 605 (φ); French Guiana [P.].

„Pisie” (N.E.); „Apisie-ie” (Saram.); „Siruaballi” (Car. & Arow.) (Dutch Guia.)

Tree. Branchlets thick, angular, densely rusty velutinoustomentellous; branches cylindrical, rusty-tomentellous, glabrescent, dark-brown; buds densely rusty-tomentose. Leaves alternate, chartaceous or rigid-chartaceous, elliptical, 14—25 \times 5—9 cm; base shortly acute, often oblique, margin recurved, top shortly acuminate. Young leaves rusty-tomentose, above soon glabrous (nerves excepted); adult leaves above glabrous, dull, brownish (dried), midrib and prim. nerves impressed, second. ones lightly impressed, veins inconspicuous; beneath rather laxly, rusty shortly hirsute-tomentose (denser on nerves), midrib

strongly prominent, prim. nerves (5—6 per side) prominent, arcuate, second. nerves prominent, sub-parallel, veins prominulous, reticulate. Petioles thick, sulcate, hardly canaliculate, densely rusty-tomentose, up to $2\frac{1}{2}$ cm l. Panicles axillary, pyramidal, densely rusty-tomentose, male ones up to 15 cm l., ∞ -flowered, female ones shorter with less flowers; peduncles thick, sulcate, up to 3 cm l., branchlets rather patent, thick, up to 4 cm l. Bracts and bracteoles lanceolate or linear, acute, densely tomentose, $1\frac{1}{2}$ mm l., deciduous. Pedicels rusty-tomentose, slender, 2—3 mm l. Male flower pateriform, 5 mm in diam.; tube shallow, broadly obconical, hardly 1 mm high. Tepals equal, patent, ovate-elliptical or elliptical, acutish, fleshy, up to 2 mm l., grey-puberulous inside, tomentellous outside. Stamens slightly exserted; outer ones $\frac{3}{4}$ mm l., anthers transversally elliptical or depressed sub-orbicular, glabrous, top apiculate or acutish (connective distinctly protruding beyond the small cells); filaments slightly shorter, pilose, broad. Inner stamens 1 mm l., thick, pressed against each other; anthers sub-rectangular, truncate, glabrous; filaments thick, not distinct from anthers, base pilose within; basal glands sessile, flat, small, ovate, acuminate. Ovary sterile, ellipsoid, glabrous, stipitiform, 1 mm l. Female flower densely tomentellous, 3 mm in diam.; tube short, broadly obconical, glabrous inside. Tepals $1\frac{1}{4}$ mm l. Stamens sterile, $\frac{1}{2}$ mm l.; basal glands rather large, $\frac{1}{2}$ mm in diam. Ovary sub-globose, glabrous, 1 mm l.; style very thick and short, stigma discoid. Pedicels rather thick, $1\frac{1}{2}$ mm l. Fruit unknown.

Distribution: French and Dutch Guiana.

French Guiana: locality unknown (Mélion 605 (♀) [P.]). Dutch Guiana: Brownsberg (B.W. 2453; 2936 (♂), fl. June; 3197 (♂), fl. Sept.; 5884 (♂), fl. June; 6884 (♂), fl. June [all in U.]).

5 *Endlicheria Sprucei* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 125; Schmidt in Fedde, Repert. 31 (1933), p. 175. — *Goepertia Sprucei* Meissn. in D.C., Prodr. XV, 1 (1864), p. 172; id. in Fl. Bras. V, 2 (1866), p. 283; Mez, l.c.

Typus: Spruce 2769 (♂); Panuré ad Rio Uaupes [Kw.].

Tree or shrub, 4—6 m high (Klug). Branchlets thin, cylindrical, densely rusty-velutinous-tomentellous; branches slender, glabrous, smooth, grey or dark-brown; buds densely rusty-tomentose. Leaves alternate, chartaceous, rather thin, elliptical, $10\text{--}18 \times 3\frac{1}{2}\text{--}7\frac{1}{2}$ cm; base contracted into the petiole, obtuse, margin flat, top distinctly caudate-acuminate (acumen slender, up to 2 cm l.); above glabrous, smooth, dull-green, midrib pro-

minulous or impressed, rusty-tomentellous or tomentose, prim. nerves impressed, veins inconspicuous; beneath sparsely, shortly hirsute, midrib strongly prominent, densely rusty-tomentose, prim. nerves (5—6 per side) prominent, more or less tomentose, arcuate, more or less arcuately united, veins prominulous, laxly reticulate. Petioles rather slender, densely rusty-velutinous-tomentose, short, cylindrical, about 5 mm l. Panicles axillary, pyramidal, rather few-flowered, densely rusty-velutinous-tomentellous, 4—7 cm l.; peduncles slender, cylindrical, up to 2 cm l.; branchlets thin, patent, up to 3 cm l. Bracts and bracteoles linear, densely hirsute-tomentose, more or less persistent. Pedicels rather slender, densely rusty-hirsute, 1—2 mm l. Male flowers dark-red (Klug), densely tomentose-hirsute, 1—1½ mm high, 5 mm in diam.; tube shallow, broadly obconical, ½ mm high, hirsute inside. Tepals equal, patent, fleshy, densely strigose-hirsute inside, narrowly ovate-elliptical, obtuse, 2 mm l. Stamens slightly exerted, glabrous; outer ones with nearly sessile, ovate-subquadratical, truncate or emarginate, ¾ mm l., fleshy anthers (connective not protruding beyond the rather small, introrse-lateral cells); filaments very short, united with tepals, provided with 2 small, globose, sessile, basal glands within. Inner stamens erect, 1¼ mm l.; anthers narrower, truncate or emarginate, merging into a slightly shorter, nearly as broad filament; basal glands large, globose, sessile. Ovary none. Female flowers red-brown (Klug), densely hirsute-strigose, 1½—2 mm high, 4 mm in diam.; tube rather shallow, 1 mm high. Stamens sterile, ½—¾ mm l., same shape as in male flower. Ovary glabrous, ovoid-globose, 1 mm l.; style thick, ¼—¾ mm l.; stigma very large, peltate-subinfundibuliform, nearly 1 mm in diam., divided into 3 crenulate lobes. Fruit unknown. (Fig. 3 I).

Distribution: Amazon Basin.

Peru: Dept. Loreto, Mishuyacu near Iquitos, alt. 100 m., forest (Klug 272 (♀), fl. Oct.-Nov. [D.F.NY.Ws.]; 273 (♂), fl. Oct.-Nov. [D.F.NY.Ws.]).
Brazil: Rio Uaupes, Panuré (Spruce 2769 (♂), fl. Nov. [D.Dr.Bs.Br.O. Kw.NY.]).

6. *Endlicheria longicaudata* (Ducke) Kosterm. nov. comb.
— *Huberodaphne longicaudata* Ducke in Arch. Jard. Bot. Rio de Janeiro 4 (1925), p. 191; id. 5 (1930), p. 112, t. V, f. 7.

Typus: Huber 1908 (♂) (= H.R.J. 18361 = H.M.G. 9431); Pará [R.].

Small tree or shrub, up to 3 m high (Ducke). Branchlets slender, sub-cylindrical, minutely tomentellous, slightly striate; branches glabrous, slender, smooth, striate, greenish; buds to-

mentellous. Leaves alternate, thinly chartaceous to chartaceous, elliptical or lanceolate-elliptical, 12—24 × 2½—6 (—8) cm.; base acute and cuneately decurrent, margin recurved, top conspicuously, long, caudate-acuminate (acumen slender, 2—5 cm l., at base 4 mm w., apex obtuse, 1 mm w.); above glabrous, green, shining, midrib prominent, prim. nerves prominulous, second. nerves laxly reticulate, prominulous; beneath minutely, sparsely pilose (hairs erect), microscopically punctulate, midrib strongly prominent, prim. nerves (8—10 per side) erect-patent (lower ones more ascendant, basal ones usually marginal), arcuately united along margin, prominent, veins prominulous, laxly reticulate. Petioles rather slender, glabrescent, about 1 cm l., flat above, merging into the leaf blade. Panicles axillary, rather few-flowered, lax, minutely, sparsely tomentellous, narrowly pyramidal, hardly or not branched, 4—7 cm l.; peduncles slender, very short; branchlets few, up to 2 cm l. Bracts and bracteoles minute, ovate, acute, pilose, sub-persistent. Pedicels slender, slightly pilose, 2—4 mm l. Flowers yellow (Ducke), hardly pilose, 4—7½ mm in diam.; tube shallow, slightly pilose. Tepals equal, patent, ovate or ovate-elliptical, obtuse or slightly acutish, glabrous (base within excepted), rather fleshy, about 3 mm l. Stamens 2½ mm l., outer ones erect-patent, flattish, broadly ovate or ovate-elliptical, glabrous, cells small, introrse, immediately below the truncate apex. Inner stamens erect, triquetrous, thick, 2½ mm l., glabrous; cells small, immediately below the truncate apex. Ovary rudiment wanting. Female flower same shape and size as male one. Stamens smaller, same shape, cells conspicuous, minute, sterile. Ovary glabrous, ovoid, 1 mm l., merging into the rather thick, 1 mm l., glabrous style with three-horned stigma (lobes ½ mm l.). Berry smooth, black, ellipsoid, 1½—2½ cm l. Cupule shallow, smooth, fleshy, red (Snethlage), about 1½ cm l. gradually merging into the obconical, up to 1½ cm l., fleshy pedicel.

Distribution: Lower Amazon Basin.

Brazil: Railroad between Belem and Bragança, near Peixeboi (Snethlage H.R.J. 18362, fr. May [U.]); near Santa Isabel (Huber 1908 (♂) H.R.J. 18361, fl. June [U.]; Ducke H.R.J. 19962 (♀), fl. Jan. [U.Ws.]); Belem do Para (Huber H.R.J. 19963 (♂), fl. Oct. [U.]); Lake Salgado, lower Trombitas (Ducke H.R.J. 19961 (♂), fl. Aug. [U.Ws.]).

This species is a true *Endlicheria* and closely related to *E. Sprucei*; the shape of the leaves is alike those of *E. Sprucei*, the nervation and texture that of *E. pyriformis*. The shape of the stamens corresponds with those of *E. Sprucei*, where the

female flower possesses also a very large stigma. The sub-persistent tepals are found in several species of *Endlicheria*, they drop in old age. The fleshy cupule and pedicel are those of an *Endlicheria*. The microscopical punctulation of the lower leaf surface is also a character of this genus. The character of the lack of glands has no much value; the same may be found in *E. mishuyacensis*, whereas *E. Sprucei* has also glands at the base of the outer stamens.

Sectio: *Macrolocellata* Kosterm. (spec. 7—37)

Antherae exteriores tenues vel membranaceae cellulis magnis totas antheras obtinentibus.

7. *Endlicheria arunciflora* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 131; Knuth in Fedde, Repert., Beiheft 43 (1927), p. 341; Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 103; Schmidt in Fedde, Repert. 31 (1933), p. 176. — *Ampelodaphne arunciflora* Meissn. in D.C., Prodr. XV, 1 (1864), p. 81; id. in Fl. Bras. V, 2 (1866), p. 167, t. 57, f. 1; Mez, l.c.

Typus: Spruce 3061 (♂); Venezuela, Rio Negro [Kw.].

Tree, 8—20 m high (Klug, Spruce). Branchlets stout, smooth, cylindrical, rusty-velutinous; branches glabrous, smooth, dark-brown; buds rusty-villose. Leaves alternate, usually sub-verticillate, rigid-coriaceous, lanceolate-elliptical or elliptical, 18—25 × 4—9 cm; base contracted into the petiole, obtuse, margin recurved, top acuminate. Young leaves sparingly sub-lanate-villose, especially beneath; adult ones glabrous (on midrib, especially above tomentum more or less persistent); above smooth, green, midrib prominulous, prim. nerves and veins more or less impressed; beneath usually pruinose, midrib strongly prominent, prim. nerves (10—15 per side) erect-patent, prominent, usually arcuately united, veins (especially secondary ones) prominent, laxly reticulate. Petioles thick, rusty-villose, glabrescent, flattish above, 1—2 cm l. Male panicles axillary, usually clustered near the top of the branchlets, subtended by lanceolate, persistent, villose, 5—10 mm l. bracts, ∞-flowered, broadly pyramidal, up to 25 cm l., glabrous, except the base of the slender, sparingly pilose, compressed, 5—10 cm l. peduncles; branchlets rather patent, slender, up to 10 cm l. Bracts and bracteoles lanceolate, glabrous, persistent. Pedicels slender, glabrous, ½—1 mm l., subtended by glabrous, linear-lanceolate, acute, 1½ mm l. bracts. Male flowers glabrous, yellow-red or brownish (Klug, Spruce), 1 mm l., 2½ mm in diam.; tube cup-shaped, rather narrowly

obconical, $\frac{1}{2}$ mm high, sparingly pilose inside. Tepals equal, patent or reflexed, fleshy, ovate, obtuse, 1 mm l. Stamens lightly exerted, glabrous, $\frac{1}{2}$ mm l.; outer ones with sub-orbicular, glabrous anthers (usually broader than long), cells large, connective not protruding beyond the slightly emarginate or sub-truncate top; filaments short, distinct. Inner anthers same shape, slightly smaller; basal glands small, sessile or sub-stipitate, globose or compressed. Ovary sterile, stipitiform, glabrous, $\frac{1}{2}$ —1 mm l. Female flower and fruit unknown.

Distribution: Amazon Basin.

Venezuela: San Carlos on Rio Negro (Spruce 3061 (δ) [D.Dr.Br. Kw.NY.]). Peru: Dept. Loreto, Mishuyacu near Iquitos, alt. 100 m., forest (Klug 1264 (δ), fl. Apr. [F.NY.Ws.]; 1403 (δ), fl. May-June [F.NY.Ws.]).

8. *Endlicheria verticillata* Mez in Bull. Herb. Boissier, 2e sér. V (1905), p. 235; Schmidt in Notizbltt. Berl.-Dahlem 10 (1928), p. 226; id. in Fedde, Repert. 31 (1933), p. 176.

Typus: Ule 5584 (δ); Amazonas ad Jurua Miry [D.].

Tree, 5—20 m high (Krukoff, Tessmann, Ule). Branchlets stout, cylindrical, densely rusty or yellowish hirsute (hairs stiff, patent, up to $1\frac{1}{2}$ mm l.); branches glabrous; buds densely yellowish-villose. Leaves alternate, usually sub-verticillate (internodes 15 cm l.), thinly chartaceous, dull-green or slightly shining, elliptical or oblanceolate-elliptical, 20—30 \times 5 $\frac{1}{2}$ —11 cm; base contracted into the petiole, sub-obtuse, margin flat; top distinctly acuminate. Adult leaves on both sides with scattered, stiff, patent hairs, denser on midrib (especially beneath), at last glabrous above; above nerves slightly impressed, veins prominulous, reticulate; beneath midrib strongly prominent, prim. nerves (10—14 per side) prominent, erect-patent, more or less arcuately united, veins prominulous, reticulate. Petioles thick, short, densely villose-hirsute, nearly cylindrical, up to 1 cm l. Male panicles axillary, clustered near the top of the branchlets, many-flowered, pyramidal, up to 25 cm l., lax, glabrous, except the slender, hirsute-villose, up to 9 cm l. peduncles; branchlets patent, slender, distant, up to 5 cm l. Bracts and bracteoles linear-lanceolate, acute, glabrous (except lower ones), persistent. Pedicels glabrous, thick, hardly $\frac{1}{2}$ mm l., merging into the flower tube. Male flowers glabrous, yellowish-green (Tessmann, Ule), $1\frac{1}{4}$ mm high, 3 mm in diam.; tube cup-shaped or obconical, rather deep, 1 mm high, inside sericeous-hirsute below the stamens. Tepals equal, fleshy, patent, broadly ovate, obtuse,

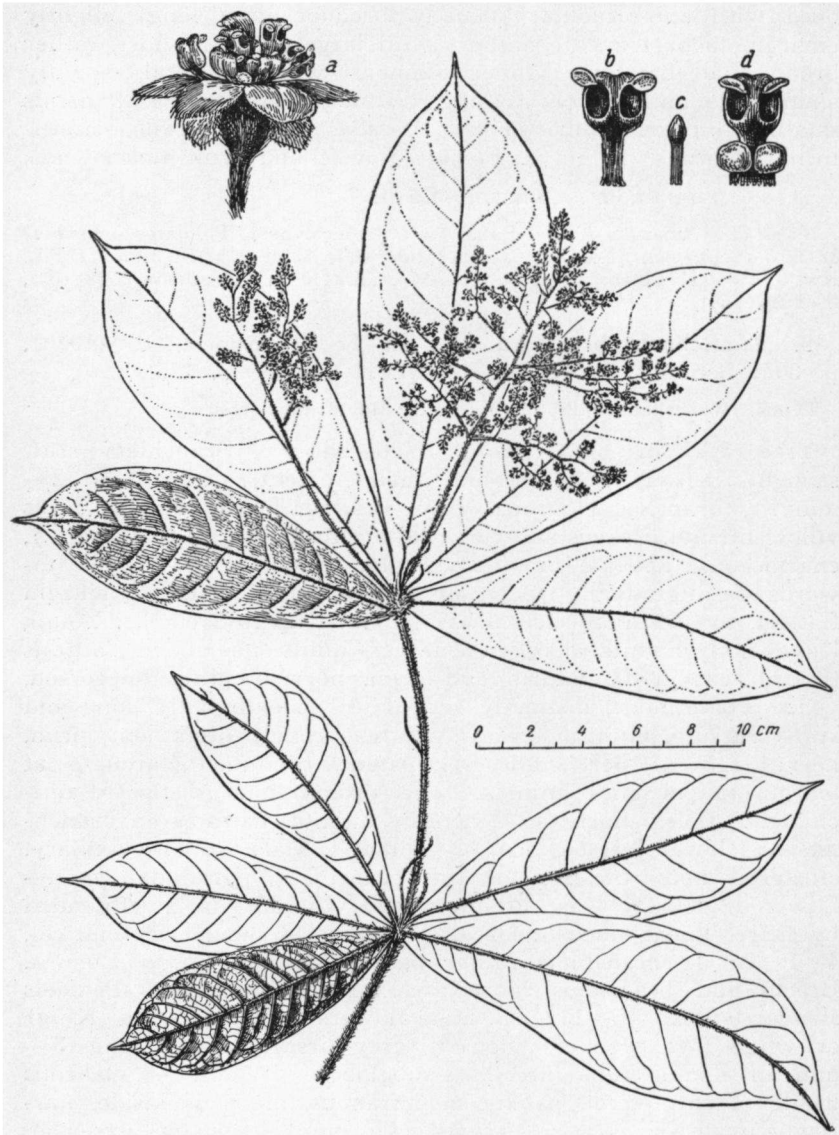


Fig. 2. *Endlicheria bracteata*: a. male flower; b. stamen of the outer row; c. staminode of fourth row; d. stamen of the inner row.

1 mm l. Stamens slightly exserted, glabrous, $\frac{3}{4}$ mm l.; outer ones with sub-orbicular (usually broader than long) slightly emarginate or truncate anthers with large cells on short, rather broad, flat filaments; inner stamens with elliptical, slightly emarginate anthers, on as long, distinct filaments; basal glands small, compressed-suborbicular, sessile. Ovary sterile, stipitiform, glabrous, 1 mm l. Female flower and fruit unknown.

Distribution: Amazon Basin.

Brazil: Amazonas: São Paulo de Olivença near Palmares (Krukoff 8293, fl. Sept.-Oct. [NY.U.]); Jurua Miry (Ule 5584 (♂), fl. June [D.F.L. Kw.]). Peru: Lower Itaya R., Soledad, alt. 110 m (Tessmann 5288 (♂), fl. July [D.]).

9. *Endlicheria bracteata* Mez in Fedde, Repert. 16 (1920), p. 306; Schmidt in Fedde, Repert. 31 (1933), p. 175.

Typus: Weberbauer 4680 (♂); Peru, Moyobamba [D.].

Tree, 5—7 m high (Klug, Weberbauer). Branchlets stiff, straight, densely hispid-hirsute (hairs patent, stiff, up to $2\frac{1}{2}$ mm l.); branches glabrous, grey, shining, lightly ribbed; buds villose-hirsute. Leaves sub-verticillate (internodes up to 15 cm l.), chartaceous, obovate or oblanceolate, 13—30 × 4—11 cm, towards base gradually acute, at base abruptly rounded, margin flattish, top distinctly acuminate (acumen up to 2 cm l.). Young leaves laxly hirsute (denser on nerves) adult ones above glabrous (midrib excepted), midrib and prim. nerves lightly impressed, veins prominulous, distinctly reticulate; beneath laxly, long and stiffly hirsute, midrib densely hirsute, strongly prominent, prim. nerves (15—17 per side) erect-patent, prominent, arcuate at margin (upper ones united), veins prominulous, distinctly reticulate. Petioles short, thick, densely hirsute (hairs as on branchlets and lower leaf surface), 2—7 mm l. Male panicles axillary, clustered near the top of the branchlets, pyramidal, many-flowered, densely grey hirsute-villose, 10—25 cm l., subtended by large, linear-lanceolate scales; peduncles slender, cylindrical, 4—10 cm l.; branchlets rather patent, slender, up to 7 cm l. Bracts and bracteoles lanceolate, hirsute, persistent. Pedicels slender, villose, $\frac{1}{2}$ —1 mm l. Male flowers cream-coloured (Klug) or white (Weberbauer), densely grey-hirsute, 2 mm long, $3\frac{1}{2}$ mm in diam.; tube urceolate-subglobose, 1 mm l., glabrous inside. Tepals equal, patent, membranous, glabrous inside, narrowly ovate or elliptical, acutish, $1\frac{1}{2}$ mm l. Stamens exserted, glabrous; outer ones 1 mm l., anthers broadly ovate, emarginate or sub-truncate (connective not protruding beyond the large

cells), filaments as long, distinct, rather broad. Inner stamens same shape, slightly longer, erect, anthers narrower, basal glands globose, rather large, shortly stipitate. Staminodes of fourth row minute, stipitiform, sub-clavate or none. Ovary sterile, glabrous, stipitiform, 1 mm l. Female flower and fruit unknown. (Fig. 2).

Distribution: Peru, near Moyobamba.

Peru: Dept. Loreto south of Moyobamba, alt. 1000 m. (Weberbauer 4680 (♂), fl. [D.F.]; Pumayacu between Balsapuerto and Moyabamba, alt. 600—1200 m, forest (Klug 3187 (♂), fl. Aug. [D.F.Kw.D.Mi.NY.Ws.H.]); Dept. San Martin, Zepelacio near Moyabamba, alt. 1100 m, forest (Klug 3745 (♂), fl. July [F.Ws.NY.U.Br.H.]).

The type specimen bears male flowers in bud, and not female ones, as stated by Mez.

10. *Endlicheria Tessmannii* O. C. Schmidt in Notizbltt. Berl.-Dahlem 10 (1928), p. 227; id. in Fedde, Repert. 31 (1933), p. 176.

Typus: Tessmann 5146 (♂); Peru, Iquitos [D.].

Tree, 8 m high, 15 cm in diam. (Tessmann). Branchlets stout, sub-angular, rusty velutinous-tomentellous; branches cylindrical, glabrous, lightly striate, dark-brown or grey; buds tomentose. Leaves alternate, chartaceous, broadly elliptical or obovate-elliptical, 20—34 × 9—15 cm; base shortly acute, margin flat, top distinctly acuminate (acumen up to 2½ cm l.); above glabrous, hardly nitid, midrib prominent, prim. nerves and the distinctly reticulate veins prominulous; beneath sparingly, minutely pilose, soon glabrous, midrib strongly prominent, prim. nerves (12—15 per side) rather patent, arcuate, the upper ones united, veins prominulous, distinctly reticulate. Petioles stout, densely, minutely tomentellous, glabrescent, cylindrical, flattish above, 4—5 cm l. Male panicles axillary, near the top of the branchlets, pyramidal, many-flowered, densely greyish velutinous-tomentellous; peduncles stout, cylindrical, up to 5 cm l.; branchlets rather slender, up to 10 cm l. Bracts and bracteoles tomentellous, more or less persistent. Pedicels short, rather thick, densely tomentellous, 1—2 mm l. Flowers white (Klug), densely appressed-tomentellous, 2 mm l., 3 mm in diam.; tube obconical, 1 mm high, glabrous inside. Tepals equal, patent, membranous, glabrous inside, ovate, acutish, 1—1¼ mm l. Stamens exserted, glabrous, outer one serect-patent with broadly ovate, emarginate or sub-truncate, ½ mm l. anthers (connective not protruding beyond the large cells), filaments distinct, nearly as long, slender, pilose. Inner stamens erect, same shape; anthers narrower, filaments broad, ½ mm l.; basal glands globose, sessile, rather

large. Ovary sterile, stipitiform, glabrous, 2 mm l. Female flower and fruit unknown.

Distribution: Eastern tropical Peru.

Peru: Upper Amazon R., Iquitos, alt. 100 m., forest (Tessmann 5146 (♂), fl. May [D.]); Dept. Loreto, Mishuyacu near Iquitos, alt. 100 m., forest (Klug 161 (♂), fl. Oct.-Nov. [F.Ws.]; 26, in bud Oct.-Nov. [F.Ws.]).

11. Endlicheria Cocuirey Kosterm. nov. spec.

Typus: Klug 2253 (♂); Peru, Florida [F.].

„Hioma cocuir-ey” (Peru: Huitoto Indian name ex Klug).

Arbor 4 m alta (Klug) ramulis validis dense minuteque ferrugineo-tomentellis ramis glabris cinereis gemmis ferrugineo-tomentosis. Folia sub-verticillata tenuiter chartacea opaca viridia obovato-elliptica, 18—32 × 6½—11 cm, basi obtusa in petiolum contracta margine plana apice acuminata; supra glabra nervo mediano costisque prominulis vel paullo impressis breviter dense tomentosis exceptis, venis prominulis dense reticulatis; subtus pilis minutis sparsis in nervis principalibus crebrioribus nervo mediano valde prominente, costis utrinque 12—17 prominentibus patentioribus sub-arcuatis superioribus arcuato-connectis venis precipue secundariis prominulis dense reticulatis. Petioli breves crassi tomentelli glabrescentes sub-cylindrici usque ad 10 mm longi. Paniculae masculinae axillares in apice ramulorum fasciculatae permultiflorae pyramidales dense minuteque lanuginoso-tomentellae usque ad 16 cm longae pedunculis crassiusculis usque ad 9 cm longis. Bractee bracteolaeque persistentes albo lanuginoso-tomentoso. Pedicelli graciles hirsuti 1 mm longi. Flores masculini albi (Klug), hirsuti, 3 mm diametro 1½ mm alti tubo cupulato 1 mm longo extus hirsuto intus glabro tepalibus patentibus vel reflexis aequalibus tenuibus glabris ovatis obtusis vel acutis usque ad 1½ mm longis staminibus glabris exsertis exterioribus ½ mm longis antheris ovato-orbicularibus emarginatis vel truncatis connectivo cellulas magnas non superante filamentis gracilibus distinctis antheris sub-aequantibus; staminis interioribus sublongioribus antheris minoribus apice emarginatis filamentis gracilibus fere ½ mm longis glandulis basalibus parvis globosis sessilibus. Ovarium sterile stipitiforme usque ad 1 mm longo. Flores feminei fructusque ignota.

Distribution: Peruvia.

Dept. Loreto, Florida, flum. Putumayo ad ostium flum. Zubineta, alt. 180 m., in silva (Klug 2253 (♂), sub anthesin Maio-Jun. [D.Ws.Dl.F.Kw.H. Mi.Gr.NY.].

E. bracteatae peraffinis sed foliis majoribus et indumento diversa; indumentum idem est ac in *E. Tessmanni*, quae foliorum forma petiolis longissimis filamentis brevibus latis differt.

12. *Endlicheria macrophylla* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 128, t. 2, f. 8; t. 3, f. 41; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591; — *Ampelodaphne macrophylla* Meissn in D.C., Prodr. XV, 1 (1864), p. 81; id. in Fl. Bras. V, 2 (1866), p. 167, t. 57, f. 2; Mez, l.c.

Typus: Spruce 1453 (♂); Rio Negro [Kw.].

„Louro” (Brazil: Krukoff); „Canella cultivé” (Rio de Janeiro: Glaziou).

Tree, up to 15 m high (Luetzelburg, Schwacke, Spruce) or shrub (Riedel). Branchlets stout, cylindrical, densely rusty-velutinous; branches glabrous, grey; buds densely rusty-tomentose. Leaves alternate and sub-verticillate, rigid-coriaceous, ovate or ovate-elliptical, 14—30 × 4—15 cm; base contracted into the petiole, obtuse or rounded (in the upper leaves shortly acute), top shortly acuminate. Young leaves white appressed villose above, hirsute-villose beneath; adult ones above at last glabrous (tomentum on midrib more or less persistent), smooth, dull-green, midrib prominulous, flattened towards base; beneath densely grey villose-hirsute, pruinose-punctulate, midrib strongly prominent, rusty-tomentose, prim. nerves (9—12 per side) prominent, erect-patent, rusty-tomentose, upper ones united arcuately, veins prominulous, laxly reticulate. Petioles stout, nearly cylindrical, densely rusty velutinous, up to 5 cm l. Male panicles axillary, clustered near the top of the branchlets, broadly pyramidal, ∞-flowered, grey-hirsute, (peduncles and branchlets rusty-velutinous) up to 30 cm l.; peduncles stout, cylindrical, up to 10 cm l.; branchlets patent, up to 10 cm l. Bracts and bracteoles white-villose, persistent. Female panicles narrowly pyramidal, rusty-velutinous, up to 5 cm l., few-flowered, flowers nearly sessile, clustered on very short branchlets. Male flowers on slender, strigose, 1—3 mm l. pedicels, dark-red (Spruce), pink (Schwacke) or whitish (Glaziou), densely white-hirsute-villose, membranous, 1½ mm high, 2½ mm in diam; tube cup-shaped or sub-urceolate, 1 mm l., glabrous inside. Tepals patent or reflexed, equal, glabrous inside, ovate, acutish, 1½ mm l. Stamens exserted, glabrous, ½ mm l.; outer ones with sub-orbicular (broader than long), slightly emarginate or truncate anthers (connective not protruding beyond the large cells), filaments distinct, short, slender; inner stamens with narrower, emar-

ginate anthers, filaments as long; basal glands sub-globose, sessile; rather small. Ovary sterile, glabrous, stipitiform, 1 mm l. or none. Female flower same shape, 2 mm in diam.; tube slightly broader; stamens sterile, minute. Ovary glabrous, ovoid, 1 mm l., merging into the short, thick style with small sub-trigonus stigma. Berry ellipsoid, smooth, up to 28 mm l., 14 mm in diam. Cupule hemispherical, thin, nearly sessile, smooth, up to 10 mm high, 15 mm in diam.

Distribution: Lower Amazon Basin and vicinity of Rio de Janeiro.

Brazil: Rio Negro near Barra (Spruce 1453 (♂) et bis (fr.), Apr. [D.Dr.Br.DC.Bs.K.Kw.Lg.Gr.P.NY.W.]); Rio Negro (Ferreira 236 (♂) [Kw. P.]); Rio Xiborem, forest (Luetzelburg 22049 (♂), fl. Aug. [M.W.]); Manáos, Ugarapé da Cachueira grande (Schwacke 3534 (♂), fl. May [D.]); Amazonas, Humayta between Monte Christo and S. Victoria on Rio Ipixuna (Krukoff 7265, fr. Nov. [NY.U.Ws.]); Rio Negro, Barra (Riedel 1411 (♂ & fr.) Sept. [Bs.D.Lg.L.O.Kw.Ms.]). Rio de Janeiro: Quinta de S. Christovão (Glaziou 14212 (♂), fl. Sept. [D.K.P.Kw.]).

The specimen: Luetzelburg 22049 has slightly aberrant flowers; in the male flowers of all other specimens the tube is narrowly urceolate, lacking the ovary-rudiment, in this one the tube is broader with a distinct ovary-rudiment. The leaves of this specimen, as well as that of Krukoff 7265 are exactly identical with those of Riedel 1411, whereas the type specimen (Spruce 1453) has somewhat narrower leaves. Also note the discussion of *E. multiflora*.

13. *Endlicheria multiflora* (Miq.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 130; Pulle, Enum. Pl. Surin. (1906), p. 186; Kribs in Tropic. Woods 13 (1928), p. 22; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 42; id. in Pulle, Fl. Surin. 2 (1936), p. 331. — *Goeppertia multiflora* Miq., Stirp. Surin. (1851), p. 203; Walp. Ann. 3 (1852-53), p. 312; Mez, l.c.; Kosterm., l.c. — *Ampelodaphne dasyantha* Meissn. in D.C., Prodr. XV, 1 (1864), p. 81; id. in Fl. Bras. V, 2 (1866), p. 168; Mez, l.c.; Kosterm., l.c. — *Endlicheria villosa* Mez in Jahrb., l.c. p. 129; Urban, Symb. Antil. 6 (1908), p. 108; Kosterm., l.c. — *Endlicheria Melinonii* Benoist in Bull. Soc. Bot. France 75 (1928), p. 977 (nomen); id. in Arch. Botan. V (1931), p. 63.

Typus: Hostman 1163 (♂); Dutch Guiana [U.].

„Burhuda or Bastard Silverballi“, „Serowa or water sero-balli“ (Brit. Guiana: Persaud, Jenman); „Sopo hudu“ (Dutch Guiana: Cramer).

Tree. Branchlets thick, sub-angular or cylindrical, densely rusty-velutinous-tomentose; branches glabrous, grey or dark-brown; buds rusty-tomentose. Leaves alternate and often congested near the top of the branchlets, rigid-coriaceous, usually obovate-elliptical, sometimes elliptical or ovate-elliptical, 10—15 (—28) \times 4—7 (—11) cm; base contracted into the petiole, obtuse, margin recurved, top shortly acuminate. Young leaves grey-tomentose above, hirsute beneath; adult ones somewhat bullate, above at last glabrous (rusty tomentum on midrib more or less persistent), dull-green, smooth, midrib and prim. nerves flattish or usually impressed; beneath greyish hirsute-villose, microscopically punctulate, midrib strongly prominent, prim. nerves (8—15 per side) prominent, rather patent, the upper ones arcuately united, second. nerves prominent, laxly reticulate, veins slightly prominulous, densely reticulate. Petioles rather thick, nearly cylindrical, densely rusty-tomentose, usually 1 cm l., rarely up to 2 cm l. Male panicles axillary, clustered near the top of the branchlets, ∞ -flowered, broadly pyramidal, white hirsute-villose, up to 25 cm l.; peduncles cylindrical, rather stout, densely rusty-tomentose, up to 8 cm l., branchlets rusty-tomentose, up to 10 cm l. Bracts and bracteoles ovate-lanceolate and lanceolate, persistent. Female panicles narrowly pyramidal, fewer-flowered, up to 7 cm l. Pedicels slender, hirsute, 1—2 mm l. (of female flowers usually wanting). Male flowers white-hirsute, membranous, $1\frac{1}{4}$ mm high, 3 mm in diam.; tube sub-urceolate, rather narrow, 1 mm l., glabrous inside. Tepals patent or reflexed, narrowly ovate, acutish, 1 mm l. Stamens slightly exserted, glabrous; outer ones $\frac{1}{2}$ mm l., filaments slender, as long as the sub-orbicular (broader than long), emarginate or truncate anthers (connectives not protruding beyond the large cells). Inner stamens $\frac{3}{4}$ mm l., same shape; basal glands minute, distinctly stipitate, globose. Ovary sterile, stipitiform, glabrous, 1 mm l. Female flower sessile or nearly so, 2 mm in diam.; tube broadly sub-urceolate, $1\frac{1}{4}$ mm l.; tepals patent, or sub-erect, nearly 1 mm l. Stamens sterile, $\frac{1}{2}$ mm l. Ovary glabrous, ellipsoid, 1 mm l., merging into the thick, $\frac{1}{2}$ mm l. style; stigma distinct, peltate, emarginate at one side. Berry ovoid-ellipsoid, smooth, up to 20 mm l., 12 mm in diam., mucronulate. Cupule red, thin, usually nearly hemispherical, sessile, up to 15 mm in diam., 8 mm high.

Distribution: Guiana.

French Guiana: Cayenne (Patris s.n. (δ) [Dl.]; Mélinon s.n. (η) [P.U.], type of *E. Melinonii*). Dutch Guiana: Paramaribo (Cramer 81

(♂) [U.]; Maratakka R. (B.W. 3494, fr. Nov. [U.]); local unknown (Hostmann 1163 (♂) [D.G.K.P.Kw.Lp.O.St.U.W.Br.]; Focke 101 (♂) [L.]). British Guiana: Demerara R. (For. Bur 837, fr. Juni [Kw.]); Hancock 219 [Kw.]; Mazaruni R. (Jenman 4127, fl. Sept. 1159, fl. Sept. [Kw.]; 5823, fl. Aug. [Kw.]; 5321 (♂), fl. June [Kw.NY.Ws.]); Cujuni R. (Appun 377 (♂) [Kw.]); Hianari (Persaud 49, fr. July [D.Kw.F.NY.]); local unknown (Schomburgk 171 (= 240) (♂) [DC.F.Ms.Br.Ws.O.Kw.Lp.P.W.Bl.]); local. & coll. unknown ([D.], type of *E. villosa*). Brazil: Amazonas, S. Paulo de Olivença, near Palmares (Krukoff 8096, fr. Sept.-Oct. [U.NY.]).

A specimen from Manaus (Ule 8848 (♀ & ♂), fl. July [D.Dl.Kw.L.]) is intermediate between *E. macrophylla* and *E. multiflora*. It has the long petioles of *macrophylla*, but the leaves are smaller and more elliptical. The flowers correspond most with those of *E. multiflora*. On this minor characters it is impossible to create a new species. The two species: *E. multiflora* and *macrophylla* are already so closely connected, that it is often difficult to separate them.

14. *Endlicheria reflectens* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 126; Knuth in Fedde, Repert., Beiheft 43 (1928), p. 341. — *Goepfertia reflectens* Nees in Linnaea 21 (1848), p. 514; Walp. Ann. 3 (1852-53), p. 311; Meissn. in D.C., Prodr. XV, 1 (1864), p. 173; id. in Fl. Bras. V, 2 (1866), p. 284 (excl. cit. spec. Graham); Mez, l.c.

Typus: Schomburgk 801 (♂); Brit. Guiana [D.].

Shrub, 3—12 m high (Ule). Branchlets rather slender, sub-cylindrical, densely yellowish or rusty lanate-tomentellous; branches glabrous, slightly striate, dark-brown or grey; buds densely tomentose. Leaves alternate, coriaceous, lanceolate or elliptical, 10—20 × 3½—6 cm; base gradually acute, margin lightly recurved, top somewhat acuminate; above at first sparingly hirsute (denser on midrib), soon glabrous, shining, midrib and prim. nerves thin, lightly prominulous or impressed, veins distinctly prominulous, densely reticulate; beneath dull, laxly hirsute, glabrescent, midrib strongly prominent, prim. nerves (7—10 per side) patent or erect-patent, slightly arcuate, prominent, veins prominulous, densely reticulate. Petioles slender, densely tomentellous, glabrescent, hardly canaliculate, 1 cm l. Panicles axillary, slender, pyramidal, laxly hirsute; male ones many-flowered, up to 8 cm l.; peduncles thin, up to 3½ cm l.; branchlets patent, up to 1½ cm l.; female ones shorter, few-flowered. Bracts and bracteoles lanceolate, hirsute, more or less persistent. Pedicels thin, hirsute, 1½—2 mm l. Male flowers white (For. Bureau), sparsely hirsute without, 3—3½ mm in diam., 1½ mm high;

tube obconical, $\frac{1}{2}$ —1 mm deep, glabrous inside. Tepals patent, or reflexed, equal, fleshy, glabrous within, ovate, acutish or obtuse, $1\frac{1}{2}$ mm l. Stamens exerted, glabrous, $\frac{3}{4}$ —1 mm l.; outer ones patent with ovate-orbicular, slightly emarginate anthers, filaments distinct, slender, $\frac{1}{4}$ mm l. Inner stamens erect, pressed against each other; anthers sub-globose, obtuse; filaments distinct, $\frac{1}{2}$ mm l., rather broad; basal glands large, globose, sessile, touching each other. Ovary sterile, glabrous, stipitiform, minute. Female flower smaller, up to $2\frac{1}{2}$ mm in diam., tube broadly obconical, $\frac{3}{4}$ mm high. Stamens as in male flower, minute, sterile. Ovary ellipsoid, $1\frac{1}{4}$ mm l. (the thick, short style included); stigma peltate, rather large, three-horned. Berry ellipsoid, smooth, up to 16 mm l., 9 mm in diam. Cupule sub-hemispherical, rather thin, up to 12 mm in diam., 7 mm high; pedicel obconical, 4 mm l.

Distribution: Vicinity of Roraima Mts.; upper Rio Branco.

Brit. Guiana: Roraima (Schomburgk 475 (δ) [W.Br.DC.Bs.L.Lp.Ms.Bl.]; (φ) [Ws.]); Rio Cotinga (Schomburgk 801 (δ) [D.Kw.Lg.Lp.Ws.Bl.]); Rupununi savannah Marakanata near Quatata (For. Bur. 2183 (δ); fl. Sept. [Kw.]); Jacutu R. (Appun 2006 [Kw.]); local. unknown (Pollard 79, fr. [Kw.]). **Brazil:** Serra do Mel, Rio Branco, Surumi (Ule 8124 (δ), fl. Sept. [D.]; 8125 (δ), fl. July [D.Dl.Kw.]).

15. **Endlicheria glomerata** Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 127; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 113; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590.

Typus: Glaziou 7781 (φ); Rio de Janeiro, Maná [P.].

„Canella jacua” (Rio de Janeiro: Glaziou).

Small tree or shrub, 2—8 m high (Mexia, Schwacke, Glaziou). Branchlets stout, slightly angular, densely yellowish or rusty villose; branches glabrescent; buds densely villose. Leaves alternate, chartaceous, relatively thin, lanceolate-elliptical or broadly elliptical, $16\text{--}36 \times 7\text{--}14$ cm, slightly bullate-rugose, green; base shortly acute or obtuse, top shortly, broadly acuminate; above sparingly pilose, glabrescent (tomentum on midrib sub-persistent), midrib flattened, prim. and often second. nerves impressed; beneath yellowish villose-hirsute (especially on nerves), midrib strongly prominent, prim. nerves (13—16 per side) slightly arcuate, prominent, veins prominulous, laxly reticulate. Petioles stout, sulcate, densely villose-hirsute, hardly canaliculate, $1\frac{1}{2}$ — $2\frac{1}{2}$ cm l. Panicles axillary, narrowly pyramidal, densely whitish-villose, male ones up to 18, female ones up to 13 cm l., peduncles stout, cylindrical, rather short, densely rusty-villose; branchlets

stout, patent, distant, up to 4 cm l., bearing the clusters of flowers. Flowers white (Mexia, Schwacke, Glaziou), sessile or nearly so, densely white-villose-hirsute. Male flower $1\frac{1}{2}$ mm high, $2\frac{1}{2}$ mm in diam.; tube broad, urceolate, nearly as long as wide, nearly glabrous inside. Tepals patent, membranous, equal, glabrous inside, ovate, obtuse, $1\frac{1}{4}$ mm l. Stamens exerted $\frac{3}{4}$ mm l., glabrous; outer ones with ovate-orbicular, slightly emarginate or sub-truncate anthers with large cells (connectives not protruding), filaments distinct, rather slender, half as long. Inner stamens with ovate, obtuse anthers, filaments broad, short; basal glands minute, depressed, sessile, often divided into several lobes. Ovary sterile, ovoid-subglobose, mucronulate, $\frac{3}{4}$ mm l. Female flower same shape as male one, smaller; tepals hardly 1 mm l. Stamens sterile, minute. Ovary (style included) 1 mm l., ovoid-ellipsoid, glabrous; style thick, short; stigma large, peltate, three-horned. Berry green or black (Mexia, Glaziou), ellipsoid-ovoid, smooth, up to 25—30 mm l., 14—17 mm in diam. Cupule sub-hemispherical, rather shallow, fleshy, scarlet or pink (Mexia, Glaziou), up to 8—10 mm high, 10—15 mm in diam., sessile.

Distribution: Minas Gerães, Rio de Janeiro.

Minas Gerães: Viçosa, road to São Miguel (Mexia 5091, fr. Sept. [Dl.Gr.H. M.F.Ws.St.]); 5138 (♂), fl. Oct. [D.Dl.Gr.Br.H.Mi.NY.St.Ws.]; Distr. Ilheu, Fazenda da Tabunha, Capichava, alt. 220 m (Mexia 5025, fr. Aug. [Dl.Gr. NY.Ws.]). Rio de Janeiro: Capelinha de S. Antonio near hot water spring (Glaziou s.n. [P.NY.]); road of Buração (Glaziou s.n. [P.Br.]); Morro de Viração at Praia Grande (Glaziou 18451, fr. Apr. [K.Kw.Lg.P.] ex herb. Schwacke 7342 [D.]); Mauá (Glaziou 7781 (♀), fl. Nov. [D.K.Kw.P.]; 8093 (♂) [K.P.Kw.Ca.]; id. fr. May [D.P.Ca.] et ex herb. Schwacke 7071 (♂), fl. Nov. [D.]); Est. de Rio G. Portella, Monte Sinai (Nunes, H.R.J. 28016 (♀) [U.R.]).

16. *Endlicheria gracilis* Kosterm. nov. spec.

Typus: Haught 1414 (♀); Colombia [U.].

Arbor parva (Haught). Ramuli graciles cylindrici dense flavescenti-ferrugineo-tomentelli gemmis dense ferrugineo-tomentosis. Folia alterna rigide chartacea elliptica vel ovato-elliptica, $6\frac{1}{2}$ —10 × $2\frac{1}{2}$ —4 cm, basi acutiuscula vel obtusa in petiolum contracta margine recurva apice acuminata acumine lato obtuso usque ad $1\frac{1}{2}$ cm longo; supra opaca viridia laevia glabra nervo mediano tomento subpersistente vestito prominulo costis paullo impressis; subtus opaca laevia parce minute tomentella nervo mediano costisque arcuato connectis utrinque 3—4 prominulis densius tomentellis venis vix prominulis. Petioli graciles dense ferrugineo-tomentosi supra vix canaliculati, 1 cm longi. Paniculae

axillares femineae pauciflorae graciles 2 cm longae pedunculis tenuibus 1 cm longis griseo-tomentellis. Bracteolae deciduae. Pedicelli graciles 2 mm longi tomentelli. Flores feminei 4 mm diametro $1\frac{1}{2}$ mm alti sparse tomentelli, tubo plano late obconico vix $\frac{1}{2}$ mm alto intus glabro tepalibus patentibus carnosiusculis late ovato-ellipticis $1\frac{1}{2}$ mm longis obtusis intus sparse tomentellis. Stamina paullo exserta fere $\frac{3}{4}$ mm longa sterilia exteriora antheris transverse ellipticis magnis truncatis glabris cellulis magnis filamentis vix pilosis distinctis brevissimis; interiora paullo longiora antheris sub-orbicularibus truncatis minoribus filamentis aequilongis gracilibus glandulis magnis basalibus globosis sessilibus praeditis. Ovarium sub-globosum 1 mm diametro stylo crasso minuto stigmatate parvo subtrigono. Flores masculini fructusque ignota.

Distributio: Colombia.

Colombia: in valle flum. Magdalenae prope Barranca Bermeja inter flum. Sogamoso et Colorado, altit. 100–500 m. (Haught 1414 (♀), fl. Nov. [U.]).

The female flowers possess strongly developed anthers with large cells and distinct valves. In the scanty material available no pollen could be traced in the cells. The shape of the anthers points to some affinity with *E. reflectens*.

17. *Endlicheria Williamsii* O. C. Schmidt in Fedde, Repert. 31 (1933), p. 177; Williams in Field Mus. Nat. Hist. XV, Publ. 377 (1936), p. 150.

Typus: Williams 1193 (♂); Peru [F.].

„Isma-moena; Moena blanca; Pampa-moena” (Peru: Williams).

Tree or shrub, 8–23 m. tall; crown wide-spreading; trunk cylindrical, usually slightly inclined, up to 65 cm in diam., free of branches up to half the entire height, and with small to medium-sized buttresses; bark up to $2\frac{1}{2}$ cm thick, dark-brown, fairly smooth, that of young trees and branches with long, shallow ridges, secretes a small quantity of sweet, translucent sap when cut. (Williams). Branchlets stiff, thick, sub-cylindrical, densely rusty-velutinous-tomentellous; branches glabrescent, dark-brown; buds densely rusty-tomentose. Leaves alternate, chartaceous, elliptical or narrow-elliptical, $17\text{--}25 \times 6\text{--}9$ cm; base shortly acute, top acuminate; above glabrous, dull, glaucous, midrib prominulous, thin, flattened towards base, often pilose (especially towards base), prim. nerves usually impressed, veins

prominulous, laxly reticulate; beneath densely, appressed, yellowish or reddish-brown lanate-tomentellous, midrib strongly prominent, prim. nerves (7—10 per side) prominent, arcuate, upper ones united, veins prominulous, densely reticulate (second. nerves more distinct). Petioles rather slender, hardly canaliculate, sulcate, densely rusty velutinous-tomentellous, more or less glabrescent, $1\frac{1}{2}$ —2 cm l. Male panicles axillary, pyramidal, lax, rather many-flowered, densely rusty-tomentellous, 6—14 cm l.; peduncles rather slender, up to 6 cm l. Bracts and bracteoles deciduous. Pedicels thin, sparsely tomentellous, $1\frac{1}{2}$ — $2\frac{1}{2}$ mm l. Female panicles few-flowered, sub-thyrsoid, 3 cm l. Male flowers yellowish (Williams), sparsely appressed-pilose, 5 mm in diam., $3\frac{1}{2}$ mm l.; tube obconical, cup-shaped, 1 mm high, densely sericeous-hirsute inside. Tepals equal, patent, fleshy, glabrous inside, ovate or elliptical, obtuse or acutish, 2 mm l. Stamens exerted, glabrous; outer ones patent, $1\frac{1}{4}$ mm l. with depressed-orbicular, slightly emarginate or sub-truncate anthers (connective not protruding beyond the large cells; filaments $\frac{3}{4}$ mm l., slender. Inner stamens erect, pressed against each other, $1\frac{1}{2}$ mm l., anthers narrower, sub-truncate, filaments slightly enlarged towards base; basal glands large, sessile, globose. Ovary sterile, stipitiform, glabrous, hardly $\frac{1}{4}$ mm l. or none. Female flowers less slender, tepals $1\frac{1}{2}$ mm l. Stamens sterile, about 1 mm l. Ovary narrowly ovoid, nearly 1 mm l., glabrous; style thick, $\frac{1}{2}$ mm l.; stigma distinct, 3-horned. „Fruit ovoid, with adhering red calyx” (Williams).

Distribution: Peru, Amazon district.

Peru: Dept. Loreto, upper Rio Nanay near Maquisapa (Williams 1193 (♂) [F.NY.D.] & 1203 (♂), fl. July [D.F.]); near Timbuchi (Williams 1002 (♂), fl. June [F.]; 1003 (♂), fl. June-July [F.]; 1004 (♀), fl. July [D.F.]).

18. *Endlicheria Klugii* O. C. Schmidt in Fedde, Repert. 31 (1933), p. 173.

Typus: Klug 1904 (♂); Colombia [NY.].

Tree, 6—8 m high (Klug). Branchlets stout, sulcate, angular, densely minutely, yellowish appressed-tomentellous; branches glabrescent, cylindrical, slightly striate; buds sericeous-tomentellous. Leaves alternate, chartaceous, elliptical, dull-green, 23—38 × 13—16 cm, base contracted into the petiole, shortly cuneate, margin flattish, top distinctly acuminate (acumen slender, up to 3 cm l.); above glabrous (tomentum on midrib somewhat persistent), midrib and prim. nerves slightly prominent or impressed,

veins prominulous, laxly reticulate; beneath minutely tomentellous, midrib strongly prominent, prim. nerves (4—5 per side) prominent) arcuate, veins prominulous, laxly reticulate. Petioles relatively thin, cylindrical, densely appressed-tomentellous, glabrescent, 5—6½ cm l. Male panicles axillary, pyramidal, densely, minutely, yellowish appressed-tomentellous, many-flowered, 14—35 cm l.; peduncles slender, lightly striate, up to 6 cm l., branchlets erect-patent, up to 15 cm l. Bracts and bracteoles deciduous. Pedicels slender, densely tomentellous, 3—4 mm l. Male flowers yellow (Klug), densely sericeous-tomentellous, slender, 3 mm l., 2 mm in diam.; tube narrowly infundibuliform, 2 mm l., 1¼ mm in diam., pilose inside. Tepals equal, erect-patent, fleshy, narrowly elliptical or ovate, obtuse or acutish, glabrous inside, 1½ mm l. Outer stamens attached to the tepals, erect, anthers glabrous, ovate, ½ mm l. (connective obtuse or subtruncate, distinctly protruding beyond the large cells), filaments pilose, distinct, ¼ mm l., S-curved. Inner stamens erect, pressed against each other, attached to the tube, 1½ mm l.; anthers glabrous, small, ovate-orbicular, top obliquely truncate, filaments nearly as broad, pilose in the lower part, flat, 1—1¼ mm l.; basal glands globose, sessile, minute. Ovary sterile, stipitiform, glabrous, ½ mm l. Female flower and fruit unknown. (Fig. 3. III).

Distribution: Colombia.

Colombia: Comissario del Putumayo, Umbria, 0° 54' N., 76° 10' W., alt. 325 m., dense forest (Klug 1884 (♂), fl. Dec. [D.Dl.Gr.H.Ws.Kw.Mi.NY.A.]; 1904 (♂), fl. Dec. [D.F.Gr.Ws.Kw.Mi.NY.H.]).

A species characterised by the S-curved filaments of the outer stamens.

19. *Endlicheria Krukovii* (Smith) Kosterm. nov. comb.

— *Aniba Krukovii* A. C. Smith in *Phytologia* I, 3 (1935), p. 117.

Typus: Krukoff 5032 (♀); Amazonas [NY.].

Shrub, 5 m high (Krukoff). Branchlets sub-cylindrical, appressed-strigose; branches glabrous, smooth, striate, dark-brown; buds densely tomentose strigose. Leaves alternate, chartaceous, elliptical, 13—20 × 5—7 cm; base contracted into the petiole, shortly acute, margin lightly recurved, top caudate-acuminate (acumen slender, up to 3 cm l.); above glabrous, shining, midrib and prim. nerves impressed, veins lightly prominulous, reticulate; beneath dull, sparsely, minutely appressed-strigose, midrib strongly prominent, prim. nerves (3—4 per side) arcuately ascendant (especially lower ones), veins hardly prominulous, reticulate. Petioles rather slender, hardly canaliculate, appressed-

hirsute, glabrescent, 10—16 mm l. Female panicles axillary, densely tomentose, few-flowered, hardly branched, up to 3 cm l.; peduncles thick. Female flowers nearly sessile, sericeous-tomentose, $2\frac{1}{2}$ —3 mm high, 4—5 mm in diam. Bracteoles deciduous. Tube broadly obconical, shallow, 1 mm l., glabrous inside (throat excepted). Tepals equal, erect-patent, ovate, obtuse, nearly glabrous inside, $1\frac{1}{2}$ mm l. Stamens sterile, outer ones 1 mm l.; anthers ovate-orbicular (connective truncate, protruding beyond the rather large cells), merging into the rather broad, hirsute, $\frac{1}{2}$ mm l. filament; inner ones $1\frac{1}{4}$ mm l., anthers ovate, obtuse or acutish, glabrous, filaments broad, pyramidal, flat, not distinct from anthers, hirsute; glands minute, sessile, sub-basal. Ovary ellipsoid, glabrous, 1 mm l.; style thick, $\frac{1}{4}$ mm l.; stigma nearly $\frac{3}{4}$ mm in diam., peltate, subtrigonus. Male flower and fruit unknown. Cupule fleshy, obconical, 15 mm in diam., 15 mm l., gradually merging into the fleshy, 1 cm l. pedicel, 5 mm in diam. at apex.

Distribution: Basin of Rio Embira.

Brazil: Amazonas, mouth of Rio Embira, lat. $7^{\circ} 30'$ S, long. $70^{\circ} 15'$ W. (Krukoff 5023 (♀), fl. June [H.NY.Dl.Kw.]); Tapajoz R., Boa Vista (Capucho 565, fr. [F.]).

20. *Endlicheria Browniana* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 115. — *Aydendron macrophyllum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 92; Mez, l.c. — *Oreodaphne glomerata* Seemann (non Nees), Flor. Panam. in The Botany of the Voyage of H. M. S. Herald (1852-57), p. 193, Mez, l.c.

Typus: Seemann 1094 bis (♀); Panama [Kw.].

Tree, up to 20 m high (Seemann). Branchlets thick, sub-angular, minutely, yellowish appressed tomentellous; buds densely sericeous-tomentose. Leaves alternate, coriaceous, broadly elliptical, $22\text{--}40 \times 10\text{--}15$ cm; base contracted into the petiole, acutish or somewhat obtuse, top shortly acuminate. Young leaves densely silvery-sericeous beneath; adult ones above glabrous, shining, green, midrib and veins prominent, coarsely, prominently, rather laxly reticulate, beneath slightly sericeous, midrib strongly prominent, prim. nerves (8—9 per side) prominent, slightly arcuate, veins prominent, coarsely reticulate. Petioles stout, hardly canaliculate, sulcate, densely sericeous-tomentellous, 1—2 cm l. Panicles (after anthesis) axillary, sericeous-tomentellous, rather few-flowered, up to 15 cm l.; peduncles rather thick, short. Pedicels 2 mm l. Female flowers (after anthesis)

pink (Seemann), pilose, $2\frac{1}{2}$ —3 mm l.; tube urceolate, $1\frac{1}{2}$ mm l., sericeous-tomentellous inside. Tepals equal, erect-patent, fleshy, flattish, narrowly ovate, acutish, $1\frac{1}{2}$ mm l., tomentellous inside. Stamens sterile, $\frac{3}{4}$ mm l.; anthers ovate, acutish or truncate, connective distinctly protruding beyond the small cells; filaments very short, broader, densely pilose; basal glands minute. Ovary ellipsoid-ovoid, $1\frac{1}{2}$ mm l., densely sericeous-tomentellous, merging into the thick, short style with distinct, discoid stigma. Berry unknown. Cupule sub-hemispherical, rather smooth, up to 11 mm in diam., 8 mm high, merging into the obconical, 1 cm l. pedicel.

Distribution: Panama.

Panama: Province of Darien, Cape Corrientes on sea coast (Seemann 1094 et bis, fr. fl. [Dl.Kw.Br.]).

21. *Endlicheria tomentella* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 115; Schmidt in Fedde, Repert. 31 (1933), p. 173.

Typus: Pearce s.n. (♀); Peru, near Moro [Kw.].

Large tree, 20—25 m high. (Pearce). Branchlets stout, angular, sulcate, very densely rusty- or whitish pulverulent-tomentellous; branches angular, glabrescent, dark-brown; buds densely rusty-tomentose. Leaves alternate, rigid-coriaceous, elliptical, 10—18 × 5—8 cm; base contracted into the petiole, obtuse or shortly acute, margin flat, top shortly acuminate; above glabrous, rather dull, smooth, midrib and prim. nerves impressed, second. nerves hardly conspicuous, more or less parallel; beneath densely rusty (sometimes greyish) lanuginose-tomentellous, midrib prominent, prim. nerves (5—6 per side) prominent, arcuate, more or less united, veins hardly prominulous, reticulate. Petioles stout, canaliculate, verruculous, densely rusty-tomentellous, glabrescent, 2—3 cm l. Panicles axillary, narrowly pyramidal, densely greyish lanate-tomentellous, up to 10 cm l., few-flowered; peduncles thick, angular, up to 5 cm l.; branchlets few, patent, hardly 1 cm l. Female flower nearly sessile, white (Pearce), sub-globose, 2— $2\frac{1}{2}$ mm in diam.; tube globose, nearly glabrous outside, densely white sericeous-hirsute inside, up to 2 mm l. Tepals incurved or erect, rather thin, nearly equal, glabrous, depressed-ovate, broader than long, $\frac{1}{2}$ mm high. Stamens minute, sterile; anthers ovate-orbicular, obtuse, connective protruding slightly beyond the minute cells, glabrous; filaments of outer stamens shorter than anthers, glabrous, rather slender, those of inner stamens longer than anthers, densely sericeous inside;

basal glands minute, sessile. Ovary ovoid, glabrous, 1 mm l.; style conical, thick, $\frac{3}{4}$ mm l., stigma minute. Male flower unknown (see *Aniba granatensis*). Berry ovoid, smooth, 2 cm l., $1\frac{1}{2}$ cm in diam. Cupule hemispherical, shallow, fleshy, verrucous, 1 cm high, $1\frac{1}{2}$ cm in diam.; pedicel obconical, 3 mm l.

Distribution: Northern Peru, Bolivia.

Peru: Province of Ancach in forest near Moro (Pearce s.n. (♀), fl. Jan. [Kw.]). Bolivia: Jumapara, alt. 500 m. (White 1991, fr. Dec. [D.Gr.A.Kw.Ws.]).

22. *Endlicheria paradoxa* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 114; Schmidt in Fedde, Repert. 31 (1933), p. 172. — *Aniba Jenmani* Auct. (non Mez), Kosterm. in Pulle, Fl. Surin. 2 (1936), p. 308.

Typus: Pearce s.n. (♂); Peru [Kw.].

Tree, up to 15 m high (Pearce). Branchlets rather slender or stout, densely, minutely yellowish tomentellous, soon glabrous, angular; buds yellowish-sericeous; branches glabrous, cylindrical, smooth, dark-brown. Leaves alternate, coriaceous, glabrous, shining and distinctly, prominently reticulate on both sides, broadly elliptical, $17-37 \times 7-16$ cm, base shortly acute, margin recurved, top shortly acuminate; above green, midrib and prim. nerves flattish, beneath brownish-red, midrib strongly prominent, prim. nerves (5—8 per side) arcuate, prominent. Petioles thick, glabrous, dark when dried, $1-3\frac{1}{2}$ cm l., canaliculate above. Panicles axillary, male ones narrowly pyramidal, rather few-flowered, sparingly tomentellous (sericeous in bud), up to 15 cm l.; peduncles stout, cylindrical, glabrous, up to 10 cm l., branchlets few, patent, short. Bracts and bracteoles deciduous. Female ones few-flowered, hardly branched, up to 5 cm l. Pedicels rather slender, 1—4 mm l. Male flowers sub-globose, slightly pilose, 3—4 mm l., up to 5 mm in diam.; tube very large, glabrous, sub-globose, 3 mm high. Tepals minute, scaly, slightly tomentellous, incurved, depressed-ovate, acutish, fleshy, broader than long, $\frac{1}{2}$ mm high; inner ones smaller. Stamens included, glabrous, $1\frac{1}{2}-2$ mm l. Anthers nearly sessile, shape as those of *Cryptocary* species; outer ones elongate-ovate-triangular, acute, connective distinctly protruding (up to $\frac{1}{2}$ mm) beyond the large, up to $1\frac{1}{2}$ mm l. elongate-ovate cells; inner anthers narrowly conical, same shape; basal glands small, conglutinate. Ovary sterile, glabrous, sub-globose, $\frac{1}{2}$ mm in diam., style and stigma minute. Female flower (after anthesis) same shape as male one; anthers large, $1\frac{1}{2}$ mm l.,

narrowly conical, sterile. Glands minute. Ovary globose, glabrous, style short. Mature fruit unknown.

Distribution: Peru, Dutch Guiana.

Peru: woods near Santa Cruz (Pearce s.n. (♂) [Kw.]). Dutch Guiana: Brownsberg (B.W. 3328, fr. Sept. [U.]).

A rather insufficiently known species. The type specimen gives the impression of being abnormally developed. The specimen of Dutch Guiana is also in a poor state, having only a few sub-mature cupules. The leaves are identical with those of the type specimen, though smaller and with less conspicuous reticulation on their upper surface. The leaves resemble strongly those of *Aniba Jenmani*, another dubious species of British Guiana. Mez misinterpreted the inner row of stamens: they are fertile and possess distinct valves.

23. *Endlicheria formosa* A. C. Smith in *Phytologia* I, 3 (1935), p. 118.

Typus: Krukoff 5156 (♂); Amazonas [NY.].

Tree, up to 10–25 m high, stem 8 cm in diam. (Krukoff). Branchlets angular, smooth, shining, glabrous or nearly so; buds minutely appressed-pilose; branches cylindrical, rimose, grey or dark-brown with scattered lenticels. Leaves alternate, chartaceous, glabrous (very young ones microscopically, sparsely pilose), on both sides distinctly, prominently reticulate, elliptical or obovate-elliptical, 13–27 × 5–10 cm; base acute, margin slightly recurved, top shortly, bluntly acuminate; above shining, midrib prominulous, flattened towards base, prim. nerves prominulous; beneath dull, midrib strongly, acutely prominent, prim. nerves (8–11 per side) prominent, rather patent, arcuate. Petioles slender, glabrous, hardly canaliculate, 1–2½ cm l. Panicles axillary, pyramidal, rather few-flowered, 7–10 cm l., microscopically pilose in bud, soon glabrous; peduncles thick, sub-angular, up to 4 cm l., branchlets patent, few, distant, short. Pedicels rather thick, 2 mm l. Bracts and bracteoles deciduous. Male flowers white, soon glabrous, sub-globose, slightly narrowed towards top, 2 mm diam.; tube sub-globose, 1½ mm high, glabrous inside. Tepals incurved, minute, rather thin, glabrous, broadly deltoid, ½ mm l., 1 mm w. (inner ones slightly smaller), acutish. Stamens included, outer ones glabrous, ½ mm l. with ovate-triangular, acute anthers (connective distinctly protruding beyond the large cells), filaments minute, slightly narrower. Inner stamens ¾ mm l., anthers same shape, filaments broad, conical, hirsute in-

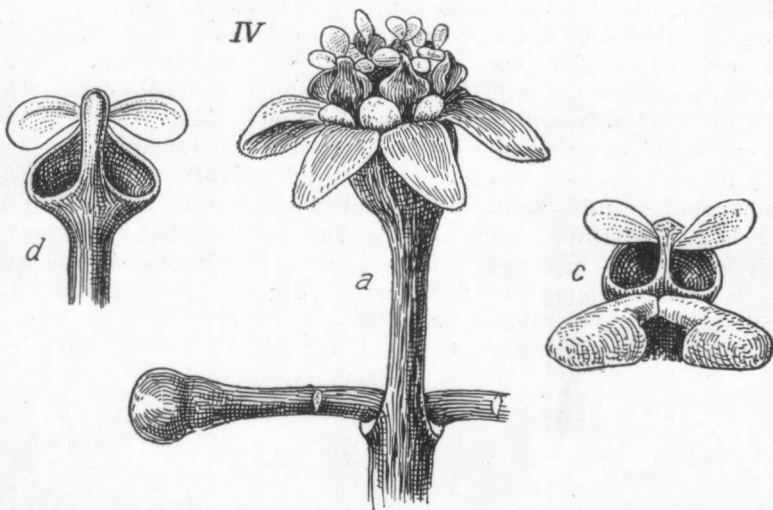
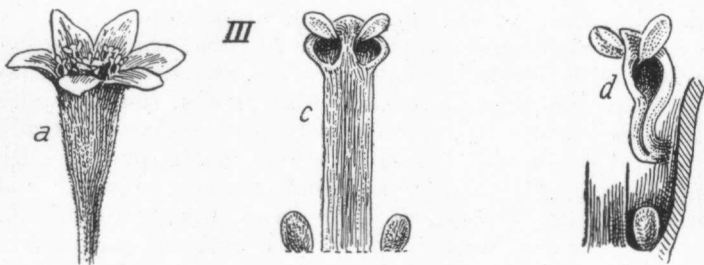
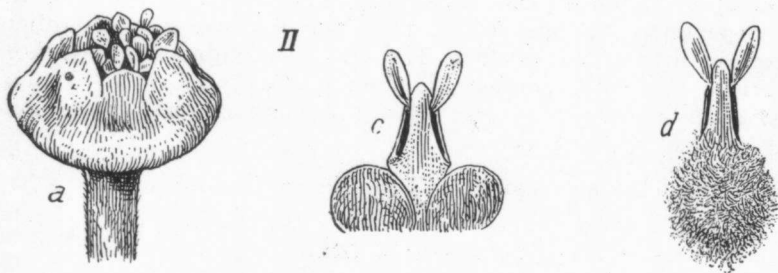
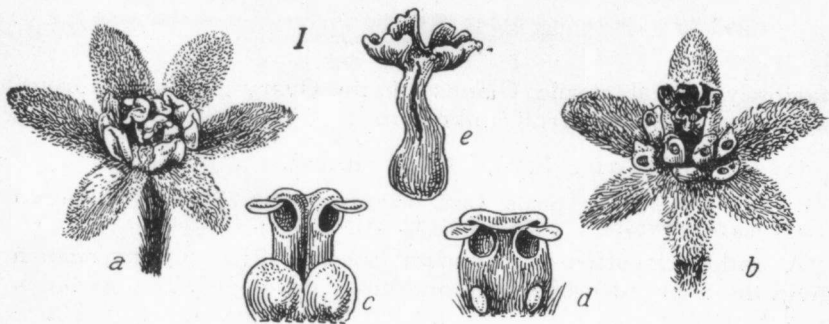


Fig. 3. I. *Endlicheria Sprucei*; II. *E. formosa*; III. *E. Klugii*; IV. *E. dysodantha*.
 a. male flower; b. female flower; c. stamen of the inner row; d. stamen of the outer row; e. ovary of female flower (all stamens of the inner row are drawn as seen from without, that of *E. Klugii* from lateral; those of the outer row as seen from within, that of *E. formosa* from without).

side; basal glands globose, sessile, large, conglutinate. Ovary minute, sterile, stipitiform, glabrous. Female flower with minute, sterile stamens (same shape as in male ones); ovary ovoid, glabrous, 1 mm l.; style minute, thick; stigma discoid. Berry ellipsoid, smooth, up to $3\frac{1}{2}$ cm l., 2 cm in diam. Cupule rather thin, hemispherical, smooth, up to $2\frac{1}{2}$ cm in diam., 1 cm high, 3 mm deep; pedicel obconical, $1-1\frac{1}{2}$ cm l. (Fig. 3. II).

Distribution: Amazon Basin.

Brazil: Amazonas, mouth of Rio Embira (tributary of R. Tarauaca) (Krukoff 5156 (δ), fl. July [D.Dl.F.Kw.NY.St.U.Ws.H.]; 4714 (♀), in bud June [D.Dl.Mi.H.F.Kw.NY.St.U.Ws.]); Basin of Rio Purus, near mouth of Rio Macauhan (trib. of Rio Yaco), lat. $9^{\circ} 20'$ S., long. 69° W. on terra firma (Krukoff 5281, fr. Aug. [Kw.U.H.]); Matto Grosso: source of Jutuarana R., Machado R. region (Krukoff 1565, fl. Dec. [Br.Kw.U.H.]).

24. *Endlicheria dysodantha* (R. & P.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 118, t. 3, f. 40; Rusby in Mem. Torrey Bot. Cl. 6 (1896), p. 114; id. in Bull. Torrey Bot. Cl. 27 (1900), p. 133; Schmidt in Fedde, Repert. 31 (1933), p. 174. — *Laurus dysodantha* Ruiz et Pavon, Fl. Peruv. IV (1802), t. 355 et Laurogr. t. 14. — *Goeppertia dysodantha* Nees in Linnaea 21 (1848), p. 514; Walp. Ann. 3 (1852—53), p. 312; Meissn. in D.C., Prodr. XV, 1 (1864), p. 173.

Typus: Ruiz & Pavon s.n., fr.; Peru, Macora [Madrid].

Small, slender shrub or tree, 8—12 m high (Krukoff, Tessmann, Ule). Branchlets slender, slightly angular, smooth, glabrous; branches cylindrical, dark; buds yellowish tomentellous. Leaves alternate, membranous or thinly chartaceous, lanceolate-elliptical or narrowly ovate-elliptical, $10-22 \times 3-7$ cm; base contracted into the petiole, obtuse, margin flat, top caudate-acuminate (acumen slender, obtuse, up to $2\frac{1}{2}$ cm l.). Extremely young leaves tomentellous, adult ones glabrous (the axils of the prim. nerves and midrib barbellate beneath), shining (especially beneath), midrib and the arcuate prim. nerves (4—5, rarely up to 7 per

side; the upper ones arcuately united) prominent on both sides, veins prominulous, laxly reticulate on both sides. Petioles thin, glabrous, canaliculate, 10—18 mm l. Panicles axillary, nearly glabrous (except in bud), few-flowered, up to 4 cm l.; peduncles short, slender, branchlets few, patent, thin, short. Pedicels slender, glabrous, 2 mm l. Flowers white (Krukoff, Tessmann), glabrous, (in bud pilose), 2 mm high, 3—4 mm in diam.; tube broadly infundibuliform, 1 mm high, glabrous. Tepals patent or reflexed, fleshy, punctate, glabrous, equal, narrowly ovate, obtuse or acutish, $1\frac{1}{2}$ mm l. Male flower: Stamens glabrous; outer ones with transversally elliptical, nearly sessile, $\frac{1}{2}$ mm l. anthers; connective acutish, distinctly protruding beyond the large cells. Inner stamens erect, $\frac{3}{4}$ mm l. with ovate-elliptical, obtuse anthers, merging into the broader, flat filaments; basal glands large, globose, sessile, conglutinate. Ovary sterile, glabrous, stipitiform, $\frac{1}{2}$ mm l. Female flower: Stamens sterile, same shape as in male flower, rather large, with distinct cells. Ovary ellipsoid-ovoid, glabrous, 1 mm l.; style thick, $\frac{1}{2}$ mm l.; stigma rather large, distinctly three-horned. Berry ellipsoid-ovoid, up to 25 mm l., 17 mm in diam. Cupule shallow, thin, small, smooth, up to 10 mm in diam., 3 mm deep; pedicel slender, obconical, 13 mm l. (Fig. 3. IV).

Distribution: Upper Amazon Basin.

Bolivia: Mapiro region, San Carlos near Sarampiuni, alt. 500 m. (Buchtien 1660 (♂), fl. Dec. [D.Ws.]); Charopampa (Buchtien 1929 (♂), fl. Nov. [Bl.Ws.]); San Antonio (Buchtien 1986 (♂), fl. Dec. [Bl.Ws.]); Mapiro, 800 m. (Rusby 2671, fr. May [Ws.NY.]); Tipuani-Guanai (Bang 1676 (♂), fl. Dec. [Bs.H.A.Kw.D.F.Ws.Mi.Gr.M.Bl.]); Bopi R. valley alt. 1000 m. (Rusby 572 (♂), fl. Nov. [Kw.Ws.NY.A.]). Peru: Ucayali R. region, Rio Blanco, alt. 124 m. (Tessmann 3058 a (♂), fl. July [D.Dl.St.]); upper Marañon, mouth of Santiago R., alt. 160 m. (Tessmann 3953 (♂), fl. Sept. [D.F.]); 3999 (♂), fl. Sept. [D.F.]; 4248 (♂), fl. Oct. [D.St.]); Macora (Ruiz s.n., fr. [D.Br.]); St. Gavan (Lechler 2317 (♂), fl. July [Kw.]). Brazil: Amazonas, Jurua Miry (Ule 5710 (♂), fl. July [D.Dl.L.]); mouth of Rio Embira, lat. 7° 30' S, long. 70° 15' W. (Krukoff 4717 (♂), fl. June [D.Dl.F.NY.St.Ws.H.U.Mi.]); 4767 (♂), fl. June [D.Dl.F.NY.St.U.H.]; 4855 (♀), fl. June [D.Dl.F.Kw.NY.St.U.Ws.]; 5204 (♂), fl. July [D.Dl.Ws.F.NY.St.U.H.]).

This species may be recognised immediately at the barbellate axils of prim. nerves and midrib on the lower leaf surface.

25. *Endlicheria mishuyacensis* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 102; Schmidt in Fedde, Repert. 31 (1933), p. 174.

Typus: Klug 204 (♂); Peru, Mishuyacu [NY.].

Tree or shrub, 6—10 m high. (Klug, Krukoff). Branchlets slender, sub-angular, minutely appressed-pilose; buds slightly white-sericeous; branches glabrous, slender, grey, striate, shining, smooth. Leaves alternate, rigid-chartaceous, distinctly shining and glabrous (the usually minutely pilose midrib above excepted) on both sides, elliptical, lanceolate-elliptical or oblanceolate-elliptical, 7—19 × 2—6 cm; base cuneate, decurrent, margin flat, top acuminate or caudate-acuminate (acumen slender, obtuse, up to $1\frac{1}{2}$ mm l.). Extremely young leaves sparingly appressed-pilose, adult ones glabrous, midrib (above flattened towards base) and the rather patent, towards margin arcuately ascendant prim. nerves (6—9 per side) prominent on both sides, veins densely reticulate, prominulous on both sides. Petioles slender, soon glabrous, flat or lightly canaliculate above, 5—15 mm l. Panicles axillary, minutely pilose, glabrescent, slender, few-flowered, 3—6 cm l.; peduncles slender, compressed, $\frac{1}{2}$ —2 cm l.; branchlets few, patent, up to 1 cm l. Flowers white (Krukoff) or cream-coloured (Klug), sparingly, minutely appressed-pilose, 3—5 mm in diam., $1\frac{1}{2}$ —3 mm l. Pedicels rather thick, appressed-pilose, 1—2 mm l., merging into the flower-tube. Male flower: tube obconical, $1\frac{1}{2}$ —2 mm l., sericeous inside. Tepals patent or reflexed, equal, fleshy, glabrous inside, ovate, obtuse, 1—2 mm l. Stamens exserted, glabrous; outer ones with nearly sessile, ovate-triangular anthers, $\frac{1}{2}$ mm l., connective slightly protruding beyond the large cells. Inner ones with nearly as large, obtuse or sub-truncate anthers, filaments as broad, $\frac{1}{4}$ mm l.; basal glands wanting. Ovary sterile, hardly conspicuous. Female flower: same shape, tube slightly broader. Stamens sterile, outer ones $\frac{1}{4}$ mm l., inner ones $\frac{1}{2}$ mm l. Ovary glabrous, ovoid-ellipsoid, 1— $1\frac{1}{4}$ mm l., merging into the thick, $\frac{1}{4}$ — $\frac{1}{2}$ mm l. style; stigma peltate, small, sub-trigonus. Berry ovoid or obovoid, smooth, up to 30 mm l., 20 mm in diam. Cupule thick, red, hemispherical, margin thin, up to 1 cm high, 2 cm in diam.; pedicel thick, same colour, obconical, up to 10 mm l., 4 mm in diam. at apex.

Distribution: Amazon Basin.

Peru: Dept. Loreto, Mishuyacu near Iquitos, alt. 100 m., forest (Klug 204 (♂), fl. Oct.-Nov. [F.NY.Ws.]; 411 (♂), fl. Oct.-Nov. [F.NY.Ws.]; 621 (♀), fl. Oct.-Nov. [F.NY.Ws.]; 703 (♀), fl. Dec. [F.NY.Ws.]; Killip & Smith 29870, fr. Sept. [D.NY.Ws.]); upper Rio Nanay (Williams 1124, fr. June-July [F.]). Brazil: Amazonas, mouth of Rio Embira, lat. 7° 30' S., long. 70° 15' W. (Krukoff 4959 (♂), fl. June [D.Dl.F.Kw.NY.St.U.Ws.H.]).

26. *Endlicheria colombiana* (Meissn.) Mez in Jahrb. Bot.

Gart. Berl. V (1889), p. 117; Schmidt in Fedde, Repert. 31 (1933), p. 174. — *Oreodaphne Colombiana* Meissn. in D.C., Prodr. XV, 1 (1864), p. 137.

Typus: Jervise s.n. (♀); Colombia [Kw.].

Tree or shrub. Branchlets rather slender, angular, sulcate, minutely appressed-tomentellous; branches cylindrical, glabrous, smooth, dark-brown or grey; buds tomentellous. Leaves alternate, chartaceous-coriaceous, on both sides conspicuously, rather laxly, prominulously reticulate; broadly elliptical, 9—20 × 5—10 cm; base contracted into the petiole, shortly acute, margin slightly recurved, top very shortly acuminate; above shining, glabrous, midrib and prim. nerves prominulous; beneath sparingly appressed pilose, glabrescent, slightly shining, midrib strongly prominent, prim. nerves (6—9 per side) rather patent, arcuate, prominent. Petioles glabrous, flattish above, 1—1½ cm l. Female panicles axillary, few-flowered, racemelike, minutely tomentellous, up to 4 cm l., peduncles compressed, thick, branchlets none or up to 2 mm l. Bracts and bracteoles deciduous. Pedicels rather thick, pilose, 1—2 mm l. Female flowers slightly appressed-pilose, 2—2½ mm l., 3—3½ mm in diam. at apex; tube shallow, broadly obconical, hardly 1 mm l., sericeous inside. Tepals equal, fleshy, patent, papillose inside, ovate, acutish, 1½ mm l. Stamens sterile; outer ones with ovate, truncate, sessile anthers (connectives conspicuously protruding beyond the distinct cells); inner ones with glabrous, thick, sub-truncate anthers (cells extrorse-lateral, distinct); filaments as long, broadened towards base, pilose; basal glands minute. Ovary glabrous, 1—1¼ mm l. (the hardly narrower, short, compressed style included), stigma trigonous, slightly broader than the style. Male flower and fruit unknown.

Distribution: Andes of Colombia.

Colombia: Andes of Antioquia, near Medellin, alt. 1500 m. (Triana 2040-2 (♀), fl. May [Kw.]; Linden 429 (♀) [Kw.]; Jervise s.n. (♀) [Kw.]; Bogota, la Meza (Triana 3524 bis [Kw.]; 1035, fl. (♀) [Br.]).

I am not absolute sure, that the specimen Triana 3524 bis belongs to this species; the leaves agree somewhat with those of *E. rubriflora*.

27. *Endlicheria pyriformis* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 116 (excl. cit. spec. Triana 1059 et Karsten, in adnot.); Benoist in Bull. Soc. Bot. France 75 (1928), p. 976; id. in Arch. Bot. V (1931), p. 63; O. C. Schmidt in Fedde, Repert.

31 (1931), p. 173; Kosterm. in Meded. Bot. Museum Utrecht 25 (1936), p. 42; id. in Pulle, Fl. Surin. 2 (1936), p. 328. — *Cryptocarya pyriformis* Nees, Syst. (1836), p. 220; Mez, l.c.; Kosterm., l.c. — *Mespilodaphne pyriformis* Nees ex Meissn. in D.C., Prodr. XV, 1 (1864), p. 108; id. in Fl. Bras. V, 2 (1866), p. 201; Mez, l.c.; Kosterm., l.c. — *Nectandra sanguinea* Nees (non Rottb.) ex Meissn. in Fl. Bras., l.c.; Mez, l.c.; Kosterm., l.c. — *Endlicheria glaberrima* Mez in Bull. Herb. Boissier, 2e série V (1905), p. 236; Schmidt in Fedde, l.c., p. 172. — *Aniba flexuosa* A. C. Smith in Phytologia I (1935), p. 117. — *Laurus Borbonia* Rich. (non Linn.) in Act. Soc. Hist. nat. Paris I (1792), p. 108. — *Ocotea Bangii* Mez et Rusby in Mem. Torrey Bot. Cl. 6 (1896—99), p. 115.

Typus: Poiteau 58, fr.; French Guiana [D.].

„Pisie (N.E.); Woko mapiri” (Car.) (Dutch Guiana).

Shrub, small or large tree, up to 30 m high. Branchlets slender, with long internodes, smooth, shining, glabrous, pale-green, slightly angular near apex; branches cylindrical, flexible, smooth, 5 mm in diam.; buds nearly glabrous. Leaves alternate, thinly chartaceous or chartaceous, glabrous, shining, green, elliptical or ovate-elliptical, (5—) 10—20 (—33) × (2—) 3—8 (—14½) cm, base contracted into the petiole, shortly cuneate, slightly decurrent, top abruptly, obtusely acuminate, midrib and the patent, arcuate prim. nerves (6—10 per side) prominent on both sides, veins prominent on both sides, laxly reticulate; the lower prim. nerves often sub-marginal. Petioles rather slender, glabrous, smooth, hardly canaliculate, 5—20 mm l. Panicles axillary, glabrous, lax, few-flowered, slender, 10—15 cm l.; peduncles thin, slightly angular, up to 4 cm l., branchlets few, patent, thin, reddish (Tessmann), up to 4 cm l., the second. branchlets strongly divaricate. Bracts and bracteoles glabrous or minutely pilose, membranous, ovate-lanceolate, minute, more or less persistent. Pedicels glabrous, slender, 1—4 mm l., gradually merging into the flower tube, bracteolate at base. Male flower glabrous, 3—4 mm l., 3 mm in diam., white inside, green or reddish outside (Pulle, Tessmann); tube infundibuliform, 2 mm l., pilose inside. Tepals equal, patent or reflexed, fleshy, ovate, obtuse, up to 1 mm l., glabrous outside, densely, minutely papillose inside. Stamens slightly exserted; outer ones hardly 1 mm l., with ovate, obtuse or subtruncate anthers (connective slightly protruding beyond the large cells, filaments very short, flat, pilose. Inner stamens erect, 1½—2 mm l. with ovate, obtuse 1 mm l. anthers,

filaments broad, flat; glands minute, globose, on hirsute stalks, attached at $\frac{1}{2}$ — $\frac{1}{3}$ from the base of filament. Ovary sterile, glabrous, stipitiform, $\frac{1}{2}$ mm l. or none. Female flower glabrous, 3 mm l., 3— $3\frac{1}{2}$ mm in diam., tube conical, 2—3 mm l., slender; tepals as in male flower; stamens sterile, $\frac{1}{2}$ mm l. Ovary globose-ellipsoid, glabrous, 1— $1\frac{1}{2}$ mm l., merging into the thick, $\frac{1}{2}$ mm l. style with rather small, discoid, sub-trigonus stigma. Berry ellipsoid-ovoid, mucronulate, smooth, up to 20 mm l., 12 mm in diam. Cupule rather shallow, red, sub-hemispherical, fleshy, 5—10 mm high, 7—15 mm in diam.; tepals at first persistent; pedicel fleshy, red, obconical, 7—14 mm l., merging into the cupule.

Distribution: Amazon Basin, Guiana.

Bolivia: Tipuani Guanai (Bang 1674, fr. Dec. [Bs.Ws.Br.A.], type of *Ocotea Bangii*). Peru: Dept. Loreto, Yurimaguas (Ule 6296 (♀), fl. Aug. [D.], type of *E. glaberrima*); between Yurimaguas and Balsapuerto, lower Huallaga Basin, alt. 150 m., dense forest (Killip and Smith 28291, fr. Aug. [Ws.]); upper Marañon, Pongo de Manseriche (Tessmann 4736 (♂), fl. Dec. [D.Dl.]). Brazil: State of Amazonas near mouth of Rio Embira, lat. 7° 30' S., long. 70° 15' W. (Krukoff 5030 (♀), fl. June [NY.], type of *Aniba flexuosa*). French Guiana: Cayenne (Richard s.n. fr. [P.], type of *Laurus Borbonia* Rich.); local unknown (Poiteau 58, fr. [D.DC. Ms.Lg.], type specimen and type of *Nectandra sanguinea* Nees, *Cryptocarya pyriformis* Nees); Poiteau 90, (♀) [Br.Lg.]. Dutch Guiana: Coppename R., foot of Voltz Mt. (Pulle 233 (♂), fl. Aug. [U.]); upper Surinam R., Goddo (Stahel 43, fr. Jan. [U.]); Emma Mts. (B.W. 5607, fr. March [U.]).

28. *Endlicheria juruensis* (Smith) Kosterm. nov. comb.
— *Aniba juruensis* A. C. Smith in *Phytologia* I, 3 (1935), p. 116 (quoad cit. spec. Krukoff 4775, cet. exclus.).

Typus: Krukoff 4775 (♀); Amazonas, Rio Embira [NY.].

Tree, 25 m high, stem 18 cm in diam. (Krukoff). Branchlets nearly cylindrical, rusty-tomentellous; branches glabrous, dark, striate; buds densely, minutely sericeous. Leaves alternate, chartaceous, elliptical, 14—20 × 4—7 cm; base shortly acute, margin slightly recurved, top distinctly acuminate (acumen $1\frac{1}{2}$ —2 cm l.). Young leaves slightly sericeous beneath; adult ones above glabrous, shining, midrib and prim. nerves usually impressed, veins slightly prominulous, densely reticulate; beneath rather dull, sparsely, shortly pilose, midrib strongly prominent, prim. nerves (4—5 per side) arcuately ascendent, prominent, veins prominulous, densely reticulate. Petioles slender, nearly cylindrical, densely tomentellous, glabrescent, 8—12 mm l. Female panicles axillary, clustered near the upper part of branchlets,

sparsely pilose (denser in bud), rather few-flowered, 5 cm l. Pedicels slender, sparingly pilose, 2 mm l. Bracteoles sericeous, 2 mm l., deciduous. Female flowers sparingly pilose, glabrescent, 2½ mm high, 3 mm in diam.; tube sub-urceolate, nearly glabrous outside, glabrous inside, 1—1½ mm l. Tepals equal, patent, fleshy, densely papillose-tomentellous inside, ovate, obtuse or acutish, 1¼ mm l. Stamens sterile, ¼ mm l., glabrous; anthers sub-ovate, top emarginate or sub-truncate, filaments short, broad; basal glands sessile, globose, relatively large. Ovary glabrous, ellipsoid, 1—1½ mm l.; style thick, nearly inconspicuous, stigma peltate, ½ mm in diam., strongly emarginate at one side. Fruit and male flower unknown.

Distribution: Amazon Basin.

Brazil: Amazonas, mouth of Rio Embira, lat. 7° 30' S, long. 70° 15' W. (Krukoff 4775 (♀), fl. June [D.F.NY.St.Ws.Kw.U.D.I.H.]).

As only female specimens are known the affinity of this species is obscure. The general features give it some resemblance with *E. dysodantha* and with *E. colombiana*.

29. *Endlicheria metallica* Kostermans nov. spec. — *Aniba juruensis* A. C. Smith in *Phytologia* I, 3 (1935), p. 116 (quoad cit. spec. Krukoff 4932, cet. exclus.).

Typus: Krukoff 4932 (♀); Amazonas, flum. Embira [NY.].

Frutex 5 m altus (Krukoff). Ramuli striati subangulares dense argenteo-sericei; rami cylindrici glabrescentes vix striati atrofusci; gemmae dense sericeo-tomentosae. Folia alterna coriacea elliptica 17—22 × 5—9 cm; basi in petiolum contracta breviter acuta margine recurvulo apice distincte acuminata acumine plerumque gracile usque ad 2 cm longo; juniora subtus dense argenteo-sericea supra mox glabra; adulta supra glabra nitida nervo mediano costisque tenuibus prominulis venis dense reticulatis prominulis, subtus argenteo-sericea vel interdum glabrescentia nervo mediano valde prominente costis utrinque 5—7 prominentibus arcuatis marginem versus evanescentibus, venis prominulis dense reticulatis. Petioli ruguloso-sulcati dense sericei glabrescentes sub-canaliculati usque ad 2½ cm longi, 1½ mm diametro. Paniculae in ramulis hornotinis axillaris pauciflorae dense argenteo-sericeae usque ad 4 cm longae pedunculo graciliore compresso sulcato 2 cm longo ramulis paucis erecto-patentibus vix 1 cm longis. Pedicelli dense sericei sulcati usque ad 2 mm longi. Flores feminei dense argenteo-sericei, 2½ mm longi 2 mm diametro tubo cupulare sub-globoso 1½ mm alto sulcato

intus tomentello fauce hirsuta tepalibus erectis sub-aequalibus carnosis planiusculis depresso-ovatis 1 mm longis $1\frac{1}{2}$ mm latis acutis staminibus glabris sterilibus antheris sub-sessilibus $\frac{1}{2}$ mm longis ovatis emarginatis vel sub-truncatis interioribus glandulis basalibus vix conspicuis auctis. Ovarium glabrum ovoideo-ellipsoideum stylo crasso incluso $1\frac{1}{2}$ mm longum stigmatem majusculo peltato. Flores masculini fructusque ignota.

Distributio: Amazonas, regio fl. Jurua.

Civit. Amazonas, os flum. Embira (affluent. flum. Tarauaca), lat. $7^{\circ} 30'$, long. $70^{\circ} 15' W.$ (Krukoff 4932 (♀), fl. m. Jun. [D.Dl.F.NY.St.U.Kw.H.]).

As only female flowers are known, it is difficult to say with which species *E. metallica* shows affinity; the hardly conspicuous glands point to *E. mishuyacensis*, the tomentum of the flowers to *E. Krukovii* and *E. Browniana*.

30. *Endlicheria Lhotzkyi* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 122; id. in Engl. Jahrb. 30 (1901), Beiblatt 67, p. 14; Sampaio in Comm. Linh. Telegr. Matto Grosso-Amaz., Publ. 56, Anexo 5, Botan. X (1917), p. 11. — *Ocotea Lhotzkyi* Nees, Syst. (1836), p. 475; Mez, l.c. — *Strychnodaphne Lhotzkyi* Meissn. in D.C., Prodr. XV, 1 (1864), p. 143; id. in Fl. Bras. V, 2 (1866), p. 245; Mez, l.c.; Sampaio, l.c. — *Goeppertia chrysophylla* Meissn. in D.C., l.c., p. 174; id. in Fl. Bras., l.c., p. 285; Mez, l.c.; Sampaio, l.c. — *Endlicheria sericea* Auct. (non Nees), Buchtien, Contr. Fl. Boliv. 1 (1910), p. 115. — *Endlicheria sericea* Auct. (non Nees), Schmidt in Fedde, Repert. 31 (1933), p. 175. — *Lauracaear. spec. n. 1* ex Spencer Moore in Transact. Linn. Soc. IV, 3 (1893), p. 449.

Typus: Manso et Lhotzky 84 (♀); Matto Grosso [D.].

„Laurel blanco” (Bolivia: Buchtien); „Louro” (Brazil: Krukoff).

Tree, 8—20 m high (Lhotzky, Krukoff). Branchlets stout, angular, densely rusty-sericeous or sericeous-tomentose; buds densely golden-sericeous. Leaves alternate, rigid-coriaceous, broadly elliptical or (upper ones) lanceolate, $12-28 \times 4-10$ cm., base contracted into the petiole or shortly acute or (upper leaves) acute, margin slightly recurved, top more or less acuminate or acute. Young leaves above silvery-, beneath golden-sericeous; adult ones above glabrous, glaucous, midrib and prim. nerves prominulous, veins prominulous, distinctly reticulate; beneath densely golden-sericeous, midrib strongly prominent, prim. nerves (6—8 per side) prominent, slightly arcuate, erect-

patent, veins prominulous, distinctly reticulate. Petioles rather slender, sulcate, densely golden-sericeous, $1\frac{1}{2}$ —2 cm l. Panicles axillary, rather narrowly pyramidal, densely golden-sericeous; male ones many-flowered, 10—15 cm l., peduncles rather thick, angular, up to 5 cm l.; branchlets patent, stiff, up to 4 cm l.; female ones up to 6 cm l., fewer-flowered, narrower. Bracts and bracteoles deciduous. Pedicels slender, sericeous, 1 — $2\frac{1}{2}$ mm l. Flowers densely sericeous, male ones 1 — $1\frac{1}{2}$ mm high, 4 mm in diam.; tube shallow, cup-shaped, broad, $\frac{3}{4}$ mm high, sericeous inside, merging into the pedicel. Tepals equal, fleshy, erect-patent or patent, elliptical, obtuse, slightly thickened at the apex, 2 mm l. Stamens hardly exerted, $\frac{3}{4}$ —1 mm l.; outer ones with ovate-suborbicular, obtuse or sub-truncate, depressed anthers (connective slightly protruding beyond the large cells), filaments hirsute, rather slender; inner stamens same shape, anthers nearly as broad as filaments; basal glands large, globose, sessile. Ovary sterile, glabrous, stipitiform, 1 mm l. Female flower same shape, tube slightly broader; stamens sterile, $\frac{1}{2}$ mm l.; glands large. Ovary ovoid, glabrous, 1 mm l.; style thick, $\frac{1}{2}$ mm l.; stigma discoid, small. Berry ovoid, smooth, up to 15 mm l., 11 mm in diam. Cupule thick, smooth, sub-hemispherical, shallow, up to 7 mm high, 15 mm in diam.; pedicel short, 3—4 mm l., 3 mm in diam. at apex.

Distribution: Brazil, Bolivia, Peru.

Matto Grosso: S. Cruz da Barra do Rio dos Bugres (Lindman in herb. Regnell. A 3153 (♂), fl. March [D.]); Cujaba (Manso & Lhotzky 84 (♀), fl. Nov. [D.DC.Ms.], type species and type of *G. chrysophylla*); Santa Cruz (Moore 518, fr. Nov. [D.Br.]). **Bolivia:** Mapiro region, San Carlos alt. 850 m. (Buchtien 745 (♂), fl. Dec. [D.NY.Ws.], 746 (♂), fl. Jan. [D.], 747 (♀), fl. Dec. [D.], 748 (♂), fl. Jan. [D.F.NY.Ws.], 1380 [D.Bl.Ws.]). **Peru:** Dept. Ancach, Moro (Pearce s.n. (♂) [Kw.Br.]). **Brazil:** Amazonas, Humayta near Tres Casas (Krukoff 6116, fr. Sept. [NY.U.]); mouth of Rio Macauhan $9^{\circ} 20'$ S., long. 69° W. (Krukoff 5279, fr. Aug. [Dl.NY. Kw.U.]; Krukoff 6406, fr. [NY.U.H.]).

The specimens from Bolivia possess slightly thicker filaments and denser tomentum within the tube, than the type specimen.

31. *Endlicheria sericea* Nees in Linnaea 8 (1833), p. 38; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 122 (excl. spec. Pearce Mez, l.c., p. 124 in adnot.); id. in Arb. Bot. Gart. Breslau 1 (1892), p. 113; Flora of St. Vincent in Kew Bull. 1893, p. 273; Duss in Ann. Inst. Colon. Marseille 3 (1896), p. 303; Knuth in Fedde, Repert., Beiheft 43 (1927), p. 341; Benoist in Bull. Soc. Bot. France 75 (1928), p. 977; id. in Arch. Bot. V (1931), p. 63;

Brooks in Kew Bull. 1933, p. 227; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 41, 52; id. in Pulle, Fl. Surin. 2 (1936), p. 330. — *Goepertia sericea* Nees, Syst. (1836), p. 369; Meissn. in D.C., Prodr. XV, 1 (1864), p. 174 (cum var.); id. in Fl. Bras. V, 2 (1866), p. 284 (cum var.); Mez, l.c.; Kosterm., l.c. — *Laurus sericea* Sieber, Fl. Trinit. exsicc. n. 175 et ex Nees, Syst., l.c., p. 369; Mez, l.c.; Kosterm., l.c. — *Laurus sericea* Forsyth ex Meissn. in Fl. Bras., l.c.; Mez, l.c.; Kosterm., l.c. — *Laurus sericea* Hook. in herb. Arnott ex Nees, Syst., l.c.; Meissn., l.c.; Mez, l.c.; Kosterm., l.c. (non Blume, Bijdr. 2, 1825, p. 554 nec Willd. ex Nees, Syst., p. 162, nec Wall. Catal. n. 2606). — *Aydendron sericeum* Griseb., Fl. Brit. W. Ind. isl. (1860), p. 284; Meissn., l.c.; Mez, l.c.; Kosterm., l.c. — *Laurus splendens* Forsyth ex Meissn., l.c.; Mez, l.c.; Kosterm., l.c. — *Endlicheria Guadaloupensis* Mez in Jahrb., l.c., p. 124. — *Aniba sericea* (Nees) Brooks in For. Dept., Trinidad and Tobago, Leaflet n. 4 (1931), p. 3, 19, 42.

Typus: Sieber 175 (♂); Trinidad [D.] *).

„Bois montagne; Laurier caillé; Bois-doux blanc; Cayali, Cayari; Bois-doux grand-feuille” (Martinique: Duss); „Laurier Canelle” (Dominica: Nichols); „Laurier vache” (St. Lucia: Ramage).

Small tree, 10–20 m high, the lower branches patent, their extremity pending (Duss). Branchlets stout, sub-cylindrical, striate, densely, minutely, yellowish subsericeous-tomentellous; branches glabrous, grey; buds densely yellowish sericeous. Leaves alternate, usually rigid-coriaceous, usually broadly ovate or ovate-elliptical, rarely elliptical, 9–17 (–24) × 4–8 (–13) cm; base contracted into the petiole, shortly acute, margin slightly recurved, top acute or acuminate with sharp end. Young leaves densely golden-sericeous (above less); adult ones above glabrous, usually yellowish-green, midrib and prim. nerves hardly prominent, veins conspicuously, laxly, coarsely prominently reticulate; beneath densely yellowish or golden-sericeous, midrib strongly prominent, prim. nerves (3–4 per side) nearly as prominent, especially the lower ones arcuately ascendant, giving the impression of tripli- or quintuplinerved leaves, the upper prim. nerves much shorter; veins conspicuously, prominently, laxly reticulate. Petioles stout, rugulose, striate, densely minutely, yellowish subsericeous-tomentellous, cylindrical, flattish

*) Conf. note of Brooks in Kew Bull. 1933, p. 227.

above, 1—2 cm l. Panicles axillary, densely, minutely, yellowish subsericeous-tomentellous; male ones many-flowered, broadly pyramidal, 7—15 cm l.; peduncles thick, cylindrical, striate, up to 5 cm l., branchlets stiff, rather patent, thick, compressed, striate; female ones few-flowered, usually shorter, up to 5 cm l. Bracts and bracteoles deciduous. Pedicels stout, striate, densely sericeous, 3—6 mm l. Flowers densely sericeous. Male ones $2\frac{1}{2}$ —3 mm high, 5—6 mm in diam.; tube shallow, broadly obconical, hardly 1 mm deep, densely sericeous-hirsute inside. Tepals equal, fleshy, broadly elliptical, obtuse or slightly acutish, patent or erect-patent, $2\frac{1}{2}$ mm l. Stamens slightly exerted or included, $1\frac{1}{4}$ mm l.; outer ones with broadly elliptical, subglobose (longer than broad) truncate anthers (connective slightly protruding beyond the large cells), filaments slightly narrower, as long, hirsute. Inner stamens with truncate, sub-orbicular (broader than long) anthers, gradually merging into the broadly conical, flattened, hirsute, slightly longer filaments; basal glands large, globose, sessile. Ovary sterile, stipitiform, glabrous, 1 mm l. Female flowers slightly larger, tube nearly glabrous inside; stamens sterile, 1 mm l. Glands very large. Ovary globose-ovoid, glabrous $1\frac{1}{4}$ mm l.; style thick, $\frac{3}{4}$ mm l.; stigma small, discoid, sub-trigonal. Berry ellipsoid, smooth, up to 25 mm l., 13 mm in diam. Cupule fleshy, rather shallow, sub-hemispherical, smooth, up to 1 cm high, $1\frac{1}{2}$ cm in diam. (tepals often more or less persistent); pedicel very thick, up to 1 cm l.

Distribution: West Indian islands; Guiana and vicinity.

Dominica: near Laudet, forest (Eggers 740 (♂), fl. July [Kw.Ws.]; 403 (♂ & ♀), fl. July [Bs.D.Dl.Dr.Ki.M.P.Bl.Ca.W.L.]); Laim Park (Nicholls s.n. (♂), fl. July [Kw.]); local. unknown (Ramage s.n., fr. Apr. [D.Kw.Br.]; Imray 334 (= 185) (♂) [D.Gr.Lg.], 451 [Kw.], type of var. *opaca* Meissn.; Forsyth s.n. [DC.], type of *Laurus splendens* Forsyth). **Martinique:** Forêt de la Trinité (Hahn 983 (♀) [Bs.Dl.Kw.P.W.Br.]; 1068 (♀), fl., fr. July [Bs.D.Dl.Kw.P.W.Br.]); Hauteur de la Case Pilote (Hahn 168 (♀), fl., fr. Aug. [Gr.P.Ws.Kw.]); Hauteur de la Case Brulée (Hahn 1384, fr. March [D.P.]); Morne Vert, alt. 490 m. (Duss 4093 (♂), fl. Aug. [D.]; 226 (♀) [D.F.Mi.]); Bois de la Calebasse (Bélanger 979 [Dl.]); local. unknown (Isert s.n. [K.Lg.]; Bélanger 161 (♀) [Bs.], 240 [P.], 501 [P.]; Richard s.n. (♂) [P.], *Laurus rufula* Rich. msc.). **St. Lucia:** Forest near Dannery (Ramage s.n., fl. Oct.-Nov. [D.Kw.Br.]). **St. Vincent:** local. unknown (Smith 323, 353 (♂), fl. May [Kw.Br.], 240, fr. June [Gr.Kw.], 1840 [Gr.Br.]; Hooker s.n. [W.Bl.O.]; Anderson s.n. [Kw.]; Guilding s.n. [Kw.]). **St. Jean:** local. unknown (Rich. Command s.n. (♀) [Dl.]). **Guadeloupe:** Bois des Trois Rivières et de Gourbeyre, alt. 500—800 m. (Duss 575 (♂), fl., fr. Nov.-Dec. [P.]; 2217 et 3624, fr. fl. [D.F.Ws.Mi.Gr.H.]); local. unknown (Duchassaing s.n., fr. [D.W.], type of *E. Guadaloupensis*). **Trinidad:** locality unknown (Sieber 175 (♂) [D.DC.

DI.Mi.Lp.BI.O.Lg.W.L.]. Dutch Guiana: Marowijne Creek, Wane creek (B.W. 3692, fr. Febr. [U.]). French Guiana: Cayenne (Leblond s.n. Lam.). Venezuela: Rio Negro, San Carlos (Spruce 3092 [D.Dr.Dl.DC.Bs. Gr.O.Kw.Lg.NY.P.W.Br.], type of var. *bracteolata* Meissn.).

32. *Endlicheria Szyszyłowiczii* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 121; Rusby in Bull. Torrey Bot. Cl. 6 (1896), p. 114; Schmidt in Fedde, Repert. 31 (1933), p. 174.

Typus: Jelski 165 (♂); Peru [D.].

„Ishpingo rufo; Ishpingo foetido” (Peru: Jelski).

Tree or shrub. Branchlets stout, sulcate, densely rusty-velutinous; branches glabrescent, cylindrical, dark-brown; buds densely rusty-velutinous. Leaves alternate, coriaceous or rigid-coriaceous, ovate, sometimes elliptical, 10—23 × 3½—10 cm; base obtuse or shortly acute, margin slightly recurved, top acuminate or acute. Young leaves hirsute on both sides; adult ones above glabrescent (midrib excepted), dull-green, smooth, midrib and prim. nerves slightly prominulous; beneath rusty-yellowish hirsute, or tomentose midrib strongly prominent, prim. nerves (5—7 per side) arcuate, prominent, veins prominulous, reticulate. Petioles stout, densely rusty-velutinous, nearly cylindrical, 1½—2 cm l. Male panicles axillary, clustered near the top of the branchlets, stiff, densely rusty-velutinous, narrowly pyramidal, many-flowered (flowers more or less clustered), up to 8 cm l.; peduncles and branchlets thick, short. Bracts and bracteoles deciduous. Pedicels thick, densely rusty-velutinous, up to 3 mm l. Male flowers densely rusty-villose, 2½—3 mm l., 2—3 mm in diam.; tube broadly obconical or cup-shaped, 1 mm l., densely sericeous-hirsute inside. Tepals (before anthesis) erect-patent, equal, (inner ones broader), fleshy, broadly ovate, acutish, 1½—2 mm l. Stamens 1¼ mm l.; outer ones with depressed-ovate, glabrous anthers (connective obtuse or truncate, slightly protruding beyond the large cells), merging into the densely hirsute, broader, slightly longer filaments. Inner stamens with sub-truncate, ovate-orbicular anthers, merging into the broad, pyramidal, densely hirsute, slightly longer filaments; basal glands depressed-globose, sessile, distinct. Ovary sterile, glabrous, stipitiform or ellipsoid, up to 1¼ mm l. Female flower and fruit unknown.

Distribution: Peru, Bolivia.

Bolivia: Tipuani-Guanai (Bang 1691 (♂), fl. Dec. [Bs.D.Ws.A.Br.Dl.F.H. Gr.Kw.Lg.M.NY.BI.Mi.W.]); Mapiri region, San Carlos, alt. 850 m. (Buchtien 736 [D.NY.]). Peru: Dept. Cajamarca, Prov. Cutervo, Tambillo (Jelski

165 (♂) [D.Ws.], 196 (♂), fl. Sept.; ex herb. Raimondi 3265, 3367, 3488, 3500, 4054, 4098 [F.], 4134, 5726, 6339 [all in D.].

33. *Endlicheria hirsuta* (Schott) Nees in *Linnaea* 8 (1833), p. 38; Mez in *Jahrb. Bot. Gart. Berl.* V (1889), p. 119, t. 2, f. 7; id. in *Arb. Bot. Gart. Breslau* 1 (1892), p. 113; Wettstein & Schiffner, *Ergebn. Exped. Acad. Wiss. Wien von 1901* (1908), p. 305; Glaziou in *Bull. Soc. Bot. France* 59 (1912), *Mém.* 3 (1913), p. 590; Correa, *Dicc.* 1 (1926), p. 439; Hassler, *Laur. Parag. Consp.*, p. 77. — *Cryptocarya hirsuta* Schott in Spreng., *Curae poster. ad Syst. Veget.* (1827), p. 405, n. 28; Nees, l.c.; Mez, l.c. — *Goepertia hirsuta* Nees, *Syst.* (1836), p. 366 (excl. cit. spec. Poeppig app. 90); id. in *Linnaea* 21 (1848), p. 513; Meissn. in D.C., *Prodr.* XV, 1 (1864), p. 172 (excl. var. *hirsutior*); id. in *Fl. Bras.* V, 2 (1866), p. 282; id. in *Videnskab. Med. Kjöbnh.* 1870, p. 145. — *Goepertia Cantagallana* Meissn. in D.C., l.c., p. 173; id. in *Fl. Bras.*, l.c., p. 282 (hic. var.). — *Nectandra* (?) *lucida* Nees in *Linnaea* 8, l.c., p. 47, n. 5; id., *Syst.*, l.c., p. 295 (non ibid p. 334); Meissn. in D.C., l.c., p. 168; id. in *Fl. Bras.*, l.c., p. 278 (excl. syn. *Ocotea lucida* Mart.); Mez, l.c. — *Citrosma* (*Citriosma*) *paniculata* Spreng., *Syst.* 2 (1825), p. 545; Tulasne, *Monogr. Monimiac.* (1855), p. 372; id. in *Fl. Bras.* IV, 1 (1857), p. 311. — *Citriosma dimidiata* Sello ex A. DC., *Prodr.* XVI, 2 (1868), p. 656; Perkins, *Monimiac.*, *Nachtr.* in *Engl. Pfl. reich* (1911), p. 57. — *Siparuna paniculata* (Spreng.) DC., *Prodr.* XVI, 2 (1868), p. 656; Perkins & Gilg in *Engl. Pfl. reich* IV (1901), p. 115. — *Endlicheria pannicularis* (Nees) Mez in *Jahrb.*, l.c., p. 128 (cum synonym.). — *Goepertia pannicularis* Nees, *Syst.*, l.c., p. 368; Meissn. in D.C. XV, 1 (1864), p. 513; id. in *Fl. Bras.* V, 2 (1866), p. 282 (quoad synonymum sub *Endlicheria hirsuta*, var. *hirsutior*). — *Aniba hirsuta* (Nees) Pax ex Sampaio, *Comm. Linh. Telegr. Matto Grosso-Amazonas, Anexo 5, Botan.* X (1917), p. 9, t. 8. — *Endlicheria longifolia* (Nees) Mez in *Jahrb. Bot. Gart. Berl.* V (1889), p. 119; Schmidt in *Fedde, Repert.* 31 (1933), p. 174. — *Goepertia longifolia* Nees, *Syst.* (1836), p. 368; id. in *Linnaea* 21 (1848), p. 514; Meissn. in D.C., *Prodr.* XV, 1 (1864), p. 173; id. in *Fl. Bras.* V, 2 (1866), p. 284; Mez, l.c. — *Ocotea Turbacensis* Poeppig (non H.B.K.) ex Nees, *Syst.*, l.c., p. 368; Mez, l.c.

Typus: Pohl 5611 (♂); Rio de Janeiro [W.].

„Canella cheirosa; canella de folha miuda; madeira de Rey; canella preta; canella de papagaio; canella branca, canella ceroba; louro; cafeira do matto” (Brazil: Glaziou, Krukoff, Peckolt, Schenck, Schott, Warming); „Canella paluda; canella cernuta;

canella guajaba" (Paraná: Dusén).

Tree or shrub, 5—10 m high. Branchlets thick, cylindrical, densely rusty- or greyish-tomentose or tomentellous, rarely glabrescent; branches smooth, cylindrical, dark-brown, glabrescent; buds tomentose. Leaves alternate, thinly chartaceous to rigid-coriaceous, narrowly lanceolate to broadly ovate, (8—) 13—15 (—27) \times (2½) 3½—5 (—11) cm; base acute or (in the broader leaves) contracted into the petiole; top acute or obtusely acuminate. Young leaves tomentose or sericeous-tomentose; adult ones above at last glabrous (hairs on midrib often sub-persistent), shining, midrib and prim. nerves usually impressed, veins prominulous, usually laxly reticulate; beneath densely, shortly hirsute, sometimes glabrescent, midrib prominent, prim. nerves (4—5 per side) arcuately ascendant, prominent (leaves often sub-triplinerved), veins prominulous, distinctly reticulate. Petioles usually thick, cylindrical, hardly canaliculate, tomentose, glabrescent, 5—15 mm l. Panicles axillary, young ones densely grey sericeous-tomentose, adult ones about 6 cm l. (often up to 20 cm l.), lax, rather many-flowered, peduncles densely appressed pilose, branchlets patent, tomentose. Pedicels slender, 3—4 mm l., tomentose. Bracts and bracteoles lanceolate, densely sericeous-hirsute, 3 mm l., deciduous. Flowers rotate, 3—5 mm in diam., sparsely sericeous-hirsute, glabrescent, stinking (Mexico, Jorgensen), outside pink, inside whitish or yellowish-green (Schenck, Balansa, Hoehne, Schwacke) or white; tube broadly obconical, 1 mm high, densely sericeous inside. Tepals patent or erect-patent, equal, rather thin, narrowly ovate, obtuse, glabrous inside, but for a lanceolate spot of hairs in the middle, about 2 mm l. Male flower: Outer stamens patent, 1—1½ mm l., anthers ovate, obtuse (connective slightly protruding beyond the large cells), filaments rather slender, ½ mm l., glabrous or pilose. Inner stamens erect, 1½ mm l., glabrous, anthers obtuse or sub-truncate, filaments as broad or broader than anthers; basal glands large, globose, sessile. Ovary sterile, glabrous, stipitiform, ½—1 mm l. Female flower: Stamens sterile, same shape as in male flower, ½ mm l.; outer ones with broad, distinct filaments; glands large. Ovary ovoid, glabrous, about 1 mm l.; style thick, hardly ½ mm l.; stigma peltate, up to ½ mm in diam., sub-triangular. Berry ellipsoid dark-blue (Brade), up to 25 mm l., 14 mm in diam., mucronulate. Cupule shallow, red, rather thin, 4—7 mm high, 10—15 mm in diam.; pedicel obconical, rather slender, 5—12 mm l.

Distribution: Widely distributed throughout tropical south America, eastwards of the Andes.

Rio de Janeiro: Carmo (Armand 26, fr. Febr. [D.]); Caminha do Macão at Vista Chinezza (Glaziou 16315 (♂), fl. Nov. [Br.Ca.D.Dl.K.Kw. Lg.P.St.]); Theresopolis (Claussen in herb. Moura 1000 (♂), fl. Nov. [D.]); Petropolis (Glaziou 8105 (♂), fl. Jan. [Ca.D.Dl.K.NY.P.St.Lg.]; 12120 (♂), fl. Febr. [D.Dl.K.Kw.P.Lg.]); Serra de Babylonia near Juiz da Fora (Glaziou 7811 (♂), fl. Jan. [D.Dl.K.Kw.NY.P.W.]); San Christovão (Pohl 5611 (♂) [B.Bl.D.M.U.W.]); Serra dos Orgãos (Wilkes (♀) [Gr.Ws.]); Araras, 1000 m. (Gardner 349 (♂), fl. July [Br.Bs.Dr.Gr.Kw.Ms.O.P.W.Ws.]); Vargem (Miers 4270, fl. Jan. (♂ & ♀) [Br.Kw.]); Serra dos Orgãos, Fazenda Grande (Warming 353 (= Lund 489), fr. March. [K.]; Schwacke 4359 (♂), fl. Jan. [D.]); Tijuca (Glaziou 3092 (♀), fl. Dec. [K.Kw.P.]; Schenck 2210 (♂), fl. Jan. [D.K.]; Gardner 5595, fl. Dec. [Br.Kw.O.]); Corcovado (Luschnath s.n., fr. Nov. [Ki.]; Schwacke 8994 (♂), fl. Dec. [D.]; Riedel 1142, fr. & (♂) Oct. [Bs.D.K.Kw.Ms.P.Ws.Lg.]; Occhioni H.R.J. 20080 (♀), fl. Jan. [R.]); Mandioca (Riedel s.n. (♂) [Lg.]); Serra da Estrella (Weddell 798 [Dl.P.]); Serra de Araipe (Lützelburg 12477 (♂) [D.]); Rezende (Holmes 26650, fr. June [D.]); Itatiaya, monte Serrato et Tres Picos (Porto H.R.J. 25891 (♂), fl. Dec. [D.]; 11064 (♀), fl. Nov. [Bs.R.]); Rio Grande Portella, Monte Sinai (Nunes H.R.J. 28009 (♀) and fr. [U.]); Trapicheiro (Peckolt 42 (♂), fl. Jan. [D.]); city of Rio de Janeiro (Ule 4936 (♂), fl. Nov. [D.]; Riedel 23 (♂), fl. Nov. [Bs.Ms.Lg.St.]; Gaudichaud 74 (♂) [Dl.P.]; Vauthier 546 (♂), fl. Jan. [DC.Dr.Dl.P.]; Weddell 349 [DC.P.]; Lund 685 (♀) [K.]; Lhotzky 43 (♂), fl. Oct.-Dec. [D.], type of *E. pannicularis*); Cantagallo (Peckolt 115 (♂) [B.U.], type of *Goepertia Cantagallana*; Mendonça 1035 (♀) [D.]). Paraná: Serra do Mar, Volta Grande (Dusen 15434, fr. Aug. [St.]); Desiro Yparanga, Serra do Mar (Dusén 12129, fr. Sept. [St.]); Alexandra (Dusén 77/87 [St.], 8090 (♂), fl. May [St.]); Puerto de Cima (Dusén s.n. [St.]). Espírito Santo: Serra do Matto (Lützelburg 12331 (♂), fl. Jan. [M.]). São Paulo: Serra de Caracol (Mosén 1593 (♂), fl. March [P.St.]; 1594 (♂), fl. Apr. [P.St.]; Regnell II, 241½ (♂) [D.P.St.Lg.]); Santos (Mosén 2925, fr. Dec. [St.]); Rio Mambu, Conceição de Itahaen (Wettstein & Schiffner 368, fr. July [D.W.]); Rio Tieté near S. Paulo (Wettstein & Schiffner s.n., fr. Aug. [D.]; Bowie & Cunningham s.n. [Br.St.]); Butantan (Hoehne 2140 (♀), fl., fr. May [D.]; 559, fr. Sept. [D.]; 2642 (♂), fl. Dec. [D.H.NY.Ws.]); Morro das Pedras, Ignape (Brade 8195 (♂), fl. Dec. [D.], 9062 [D.], 7914 (♂) [D.]); Serra de Cantareira (Brade 7249 (♂), fl. Jan. [D.]); Campinas (Hoehne 2002 (♂), fl. May [D.]; Mosén 3921, fr. June [P.St.]; Novaes 1138 (♂) [D.Ws.]; Noack 1138 (♂) [D.]; Registo, Ribeira (Hoehne 24239, fr. Sept. [D.]); Ubatuba, Estoi de Faro (Edward 1808 [K.]); Capocirão Franca (Löffgren & Edward 2166 [K.]); Piruibe (Löffgren & Edward 1641, fr. Oct. [K.]); Itapira (Hoehne 25205 (♀), fl. June [D.]); S. Rita do Passo Quatro (Hemmendorff 239 [St.]); Jard. Bot. de S. Paulo (Hoehne 28384, fr. [D.]); locality unknown (Gaudichaud 202 [P.]). Rio Grande do Sul: Porto Alegre near Gloria (Malme in herb. Regnell II, 755 (♂), fl. Dec. [D.St.]). Ceara: Serra do Araripe (Lützelburg 12477, fl. Aug. [M.]). Piauhay: locality unknown (Glaziou 3519, fr. July [Bs.]). Goyaz: Paranana near cascades (Glaziou 22056 (♂), fl. Febr. [D.Dl.K. Kw.P.St.Lg.]). Santa Catharina: Blumenau (Schenck 836 (♀), fl. Oct. [D.]; Ule 719 (♀), fl. Febr. [Bl.D.Ws.]; Müller s.n. (♀) [D.]). Matto Grosso: Santa Anna da Chapada (Malme in herb. Regnell. II, 1946, fr.

Aug. [St.]; Malme s.n. (♂), fl. May [St.]; Robert 485 b, fr. Aug. [Kw.Br.]; Villa Rica (Rojas 4840 (♂), fl. Dec. [D.]). Minas Geraës: Sitio (Schenck 3234 (♂), fl. March [D.K.]); Rio Novo (Araujo s.n. (♂) [P.]); upper Chacha valley, Viçosa (Mexia 4778 a, fr. June [Gr.]); São Juliao (Schwacke 7923 (♂), fl. May [D.]); Serra de Ouro Preto (ex herb. Schwacke 10232 (♀ & ♂), fl. Jan. [D.]); Biribiry (Glaziou 19795, fr. March [D.K.Kw.P.Lg.]); Caldas (Regnell II, 241½, fr. Oct. [K.P.St.Ws.]); Mosén 707, fr. Oct. [St.P.]; Milho verde (St. Hilaire 355 (♂), 378 (♂), 379 (♂), 387 (♂), 388 (♀), 483 (♀) [P.]); Lagoa Santa (Warming 711/1 (♂), fl. March [K.Ms.NY.St.]; 711/2 (♂), fl. Febr. [K.]; 711/3, fr. Sept. [K.P.]); locality unknown (Glaziou 20459 (♂) [D.Kw.]; Claussen 9 (♂) [Br.P.], 208 (♂) [Kw.P.Lp.], 1454 (♂) [Br.Bs.D.Dl.W.Kw.], type of var. *coriacea* Meissn.). Brazil: locality unknown (Rio Grande, Tweedie s.n. (♂) [Kw.]; between Campos & Victoria: Sellow 776, 1415, 276, 362, 383, 1166, B. 1383, 5995, 2244, 2202 and s.n. [D.Kw.Bl.Bs.Ca.W.Ws.P.], 433 [D.Kw.], type of var. *latifolia* Meissn.; Burchell 4590 (♀) [Kw.P.]; Claussen 185 (♂) [Bs.], 2093 (♂) [Bs.K.Ki.St.U.W.]; Raddi s.n. [Dl.]; Riedel s.n. [D.Gr.Ms.W.Ws.]; Sellow s.n., fr. [D.], type of *Nectandra lucida* Nees, Syst., p. 295; Sellow s.n. (♀), type of *Citrosma panniculata* Spr. [D.]). Bahia: Ilheos (Blanchet s.n. (♂) [Br.Dl.F.]). Paraguay: Capitan Bado (Nuvera) Amanbay (Rojas 4217, fl. Jan. [Ws.]; Igatimi (Hassler 5669 (♂), fl. Dec. [Bs.Br.Dl.Kw.P.]; 8935, fl. Febr. [Br.Bs.D.Dl.Kw.W.]); San Estanislão (Hassler 4143 [Dl.]); Caaguaza, Estancia Primeira (Jorgensen 4462 (♂), fl. Febr. [K.Mi.NY.St.Ws.F.H.]); Caaguaza (Balansa 2026 (♂), fl. Nov. [Bs.P.St.]). Ecuador: Prov. Oriente, Hacienda dos Rios, 650 m. alt. (Heinrichs 304, fr. Apr. [D.]). Peru: above Pongo de Manseriche, Rio Santiago, jungle along sandy beach, alt. 200 m. (Mexia 6329 (♂), fl. Dec. [Kw.Br.]); Cuchero (Poeppig 1520 (♂), fl. [Br.Bs.Bl.D.DC.Ki.Ms.O.P.Lg.Lp.W.], type of *E. longifolia*).

E. hirsuta is one of the most polymorphous species of this genus, as to the size and thickness of leaves and the tomentum of branches and leaves. The largest leaves are found in the specimen of Mexia from Peru, (11 × 27 cm!), usually the leaves are much smaller. Their shape varies from narrowly lanceolate to broadly elliptical. The adult leaves are as a rule rigid-coriaceous. The lower leaf surface may be densely tomentose-hirsute to minutely, appressed pilose and even glabrous leaves are not rare. The flowers and the nervation of the leaves of all these different forms are exactly identical. Especially in the larger forms abnormal flowers, possessing a fourth row of completely developed, fertile stamens, could be stated. A specimen from Venezuela (Hacienda de Cura near S. Joaquin; Pittier 8017, fl. Aug. [Dl.Ws.]) represents a rather different form. The leaves are narrowly lanceolate, 3½ × 18 cm, base and apex gradually acute. It may be a different and new species of *Endlicheria*, though the nervation of the leaves and the flower characters are as those of *E. hirsuta*. The type specimen of *Endlicheria longifolia* possesses the same leaves and flowers as the specimen

of Mexia from Peru. It represents in my opinion only a strongly developed specimen of *E. hirsuta*. The glands are attached at $\frac{1}{3}$ from the filament-base, but also in the specimen Mexia 6329, the glands are attached slightly above the filament-base. Some flowers of the type specimen of *E. longifolia* possess small glands at the base of the outer stamens.

35. *Endlicheria acuminata* Kosterm. nov. spec.

Typus: Ule 5581 (♂); Amazonas [L.].

Arbuscula 2—5 m alta (Ule) ramulis gracilibus cylindricis leviter striatis minute ferrugineo-tomentellis ramis glabris striatis fuscis. Folia alterna coriacea elliptica 11—18 × 3—6 cm; subtriplinervia, basi acuta apice caudato-acuminata acumine gracile usque ad $2\frac{1}{2}$ cm longo supra glabra opaca nervo mediano costisque impressis venis prominulis reticulatis subtus laxe hirsuta nervo mediano valde prominente costis utrinque 3—4 adscendentibus prominentibus venis prominulis reticulatis. Petioli graciles cylindrici tomentosi glabrescentes 6—8 mm longi. Paniculae axillares; masculinae sub-multiflorae anguste pyramidatae laxae usque ad 10 cm longae pedunculis tenuibus minute strigosis ramulis paucis usque ad 1 cm longis. Bractee bracteolaeque deciduae. Pedicelli graciles minute tomentelli usque ad 2 mm longi. Flores masculini subglabri 3— $3\frac{1}{2}$ mm diametro tubo late obconico subplano usque ad 1 mm alto intus piloso; tepala aequalia carnosa patentia vel reflexa glabra obtusa $1\frac{1}{2}$ mm longa. Stamina sub-exserta $\frac{3}{4}$ mm longa glabra exteriora patentia antheris transverse ellipticis emarginatis vel truncatis connectivo cellulas magnas non superante basi in filamenta distincta paullo longiora sensim transeuntibus. Stamina interiora erecta conglutinata antheris transverse ellipticis truncatis filamentis aequalibus sublongioribus glandulis basalibus sessilibus globosis magnis. Ovarium sterile stipitifforme glabrum usque ad $\frac{1}{2}$ mm altum.

Distributio: Ad flum. Amazonum.

Brasilia: Lago Jurua Miry, Amazonas (Ule 5581 (♂), fl. Junio [D.L.Kw. D.L.]); Amazonas, Humayta prope Tres Casas, ad restinga alta (Krukoff 6300, fr. Sept. [U.]).

E. hirsutae affinis sed foliis caudato-acuminatis floribus subglabris antherarum forma differt.

36. *Endlicheria boliviensis* Kosterm. nov. spec.; — *Endlicheria hirsuta* Rusby (non Nees) in Bull. Torrey Bot. Cl. 27 (1900), p. 133.

Typus: Steinbach 6985 (♂); Bolivia, Dept. Santa Cruz [D.].

Arbor 3—5 m alta ramulis crassis cylindricis dense ferrugineo-velutino-tomentosis ramis glabrescentibus cinereis gemmis dense tomentosis. Folia alterna chartacea vel coriacea viridia obovata vel obovato-elliptica 7—13 × 3½—6 cm basin versus sensim angustatis apice obscure acuminata; supra glabra nitida nervo mediano plano dense tomentello venis prominulis dense intricato-reticulatis; subtus dense ferrugineo-hirsuta nervo mediano costisque erecto-patentibus utrinque 5—6 prominentibus venis prominulis reticulatis. Petioli crassi subcylindrici dense tomentosi demum glabrescentes 5—10 mm longi. Paniculae axillares multiflorae, laxae late pyramidales dense ferrugineo-tomentellae, masculinae usque ad 10 cm longae feminae submultiflorae usque ad 5 cm longae pedunculis gracilibus cylindricis brevibus. Bractea bracteolaeque deciduae. Pedicelli graciles 2—3½ mm longi tomentosi. Flores flavescenti-virides, intus albi, sericeo-hirsuti 4 mm diametro tubo obconico 1 mm longo intus dense hirsuto. Tepala patentia membranacea aequalia elliptica obtusiuscula intus subsericea usque ad 2 mm longa. Stamina subexserta glabra ¾ mm longa exteriora erecto-patentia antheris ovatis apice emarginatis connectivo cellulas magnas cornutas non superante filamentis tenuibus minimis; interiora erecta antheris obtusis vel subemarginatis filamentis aequalibus vix conspicuis glandulis basalibus parvis substipitatis globosis. Ovarium stipiti-forme sterile glabrum usque ad ½ mm longum. Flores feminei 3½ mm diametro staminibus sterilibus ½ mm longi illis flores masculini similibus; interioribus filamentis late pyramidalibus glandulis magnis praeditis. Ovarium glabrum ellipsoideum 1 mm longum stylo crasso ½ mm longo stigmate peltato sub-tricornuto usque ad ¾ mm diametro. Bacca ovoideo-ellipsoidea usque ad 14 mm longa 8 mm diametro cupula pateriformis laevis usque ad 4 mm alta 7 mm diametro pedicello obconico usque ad 5 mm longo apice 2 mm diametro.

Distributio: Bolivia, Dept. Santa Cruz.

Bolivia: Prov. Sara, Dept. Santa Cruz, Bosques de Buena Vista (Steinbach 5291 (♂), fl. Febr. [D.Dl.]; 5369 (♀), fl. Febr. [D.Dl.F.St.]; 6985 (♂), fl. March [D.Dl.Br.Gr.Kw.Mi.St.U.Dl.NY.]; 3724 (♂), fl. Febr. [D.Kw.]; 1827 (♂), fl. March [D.]); Rio Suruti, alt. 400 m. (Steinbach 7264, fr. Oct. [D.Dl.Gr.Kw.Mi.St.U.NY.Dl.]). Yungas, alt. 2000 m. (Rusby 2506 (♀), fl. [NY.Ws.]).

The specimen of Rusby (2506) possesses elliptical leaves, up to 17 cm l., 5½ cm w. and up to 1½ cm l. pedicels; the leaves are more conspicuously acuminate as in the type specimens.

E. hirsutae affinis, foliorum forma floribus minoribus antheris emarginatis, cellulas cornutas diversa.

37. *Endlicheria Poeppigii* Kosterm. nov. spec. — *Goepertia hirsuta* Nees, var. *hirsutior* Meissn. in D.C., Prodr. XV, 1 (1864), p. 172; id. in Fl. Bras. V, 2 (1866), p. 282 (synon. exclus.). — *Endlicheria hirsuta* Auct. (non Nees), Schmidt in Fedde, Repert. 31 (1933), p. 174.

Typus: Poeppig 2298 (= addenda 90) (♂); Peru [W.].

Arbor. Ramuli crassi dense ferrugineo-hirsuti pilis $\frac{3}{4}$ mm longis striati cylindrici gemmis dense ferrugineo-hirsutis. Rami glabri atrofusci laeves. Folia alterna rigide chartacea obovato-elliptica, $5-7\frac{1}{2} \times 12-19$ cm, basi in petiolum abrupte contracta sub-acuminata margine recurva apice obtuse acuminata juniora hirsuta adulta supra glabra nitida laevia nervo mediano costisque impressis venis inconspicuis vel paullo impressis subtus sparse hirsuta nervo mediano valde prominente cum costis utrinque 5—7 erecto-patentibus prominentibus superioribus arcuato-connectis densius hirsuto venis prominulis reticulatis. Petioli breves dense ferrugineo-hirsuti glabrescentes 3—5 mm longi. Paniculae late pyramidales laxae multiflorae ferrugineo-hirsutae usque ad 15 cm longae pedunculis gracilioribus cylindricis usque ad 2 cm longis ramulis patentibus tenuibus distantibus usque ad 4 cm longis. Bracteolae demum deciduae. Pedicelli tenues hirsuti 1 mm longi. Flores masculini luteo-albi (Klug) griseo-hirsuti vel tomentosi 4 mm diametro. Ceterum *E. hirsuta*. Flores feminei ignoti.

Distributio: Peru, Yurimaguas.

Peru: Dept. Loreto, Yurimaguas (Poeppig 2298 (= addenda 90) (♂), fl. Jun. [D.W.Lg.Lp.Ki.Bs.D.O.DC.BL]; Klug 2833 (♂), fl. Jan. [D.NY.F.Ws.H.Kw.Br.Mi.Dl.P.]).

E. hirsutae peraffinis foliorum forma et venatione petiolis brevibus indumento hirsuto nec tomentello diversa.

Species incertae sedis:

38. *Endlicheria debilis* Kosterm. nov. spec.

Typus: Killip & Smith 28400, fr.; Peru [NY].

Arbor, 7—8 m alta, ramulis gracilibus cylindricis laxe hirsutis (pilis patentibus usque ad 1 mm longis), ramis gracilibus glabris cinereis vel atro-brunneis; gemmis strigoso-hirsutis. Folia alterna tenuiter chartacea lanceolata vel lanceolato-elliptica, $12-17 \times$

3½—5 cm, basi in petiolum contracta obtusiuscula margine sub-plana apice distincte acuminata vel caudato-acuminata acumine graciliore usque ad 2 cm longo; supra glabra subnitida nervo mediano costisque prominulis venis prominulis distincte reticulatis, subtus viridia subnitida sparse minuteque strigosa glabrescentia nervo mediano prominente (indumentum subpersistentia) costis utrinque 6—8 erecto-patentibus arcuatis prominentibus venis prominulis dense reticulatis. Petioli graciles cylindrici vix canaliculati laxe hirsuti glabrescentes. Flores ignoti. Paniculae fructiferae axillares subterminales; pedunculi graciles usque ad 3 cm longi laxe hirsuti pilis patentibus usque ad 1 mm longis. Bacca viridis ovoideo-ellipsoidea laevis usque ad 25 mm longa 15 mm diametro. Cupula rubra subhemisphaerica planiuscula carnosae tenuisculae laevis usque ad 12 mm alta 18 mm diametro in pedicellum obconicum carnosum rubrum usque ad 3 cm longum apice 5 mm diametro sensim transeuns.

Distributio: Peruvia.

Peruvia: Dept. Loreto, Balsapuerto ad flum. Huallagam infer.; alt. 150—350 m in silva primaeva (Killip & Smith 28400, fr. Aug. [D.F.NY.Ws.]).

Similitudinem quandam cum *E. mishuyacense* praebet, sed foliorum forma consistentia indumentoque et ramulorum indumento, quod *E. bracteatum* in mentem revocat, differt.

39. **Endlicheria robusta** (Smith) Kosterm. nov. comb. — *Cryptocarya robusta* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 97.

Typus: Killip & Smith 26077; Peru [NY.].

Tree, 6—9 m high; branchlets sub-angular, minutely, densely sericeous; branches cylindrical, striate, glabrous, greyish; buds minutely sericeous. Leaves alternate, chartaceous, elliptical, 17—24 × 6—9 cm; base shortly acute, margin slightly recurved, top obtusely acuminate; above dull, glabrous, green, midrib and prim. nerves prominulous, veins prominulous, conspicuously reticulate, beneath minutely sericeous, glabrescent, dull, midrib strongly prominent, prim. nerves (5—6 per side) prominent, slightly arcuate, erect-patent, somewhat ascending, second. nerves more or less parallel, veins rather laxly reticulate, prominulous. Petioles rather thick, glabrous, hardly canaliculate above, about 1½ cm l. Panicles clustered near the top of the branchlets, few-flowered, minutely sericeous, hardly branched, up to 7 cm l.; peduncles rather slender, short; branchlets (if present) up to 1 cm l.; bracteoles deciduous. Complete flowers unknown. Young

fruits minutely sericeous on 3—7 mm l. pedicels, surmounted by remnants of tepals and stamens, inside sericeous. Tepals thin, depressed ovate-triangular, acutish, $\frac{1}{2}$ — $\frac{3}{4}$ mm l. Stamens sterile, $\frac{1}{2}$ mm l.; outer ones with ovate-triangular, glabrous anthers, connectives obtuse, slightly protruding beyond the introrse, distinct cells, filaments broadly triangular, densely pilose, short, not distinct from anthers. Inner stamens broadly triangular; anthers glabrous, ovate-triangular, connectives obtuse, slightly protruding beyond the small, but distinct, extrorse cells; filaments as long, but much broader, densely pilose (especially at margin and within); basal glands rather small, depressed, sessile, $\frac{1}{4}$ mm w. Ovary sub-globose, glabrous.

Distribution: Tropical Peru.

Peru: Dept. Junin, San Nicholas, dense forest, Pichis Trail, alt. 1100 m. (Killip & Smith 26077, fr. July [NY.Ws.]).

The shape and reticulation of this species point to a relationship with *E. debilis* and *E. hirsuta*; the shape of the anthers to the group of *E. dysodantha*. As only fruits are known it seems better to me to put it under the species *incertae sedis*.

Species excludendae:

<i>Endlicheria grandis</i> Mez	= Nectandra.
<i>Endlicheria impressa</i> (Meissn.) Mez	= Aiouea.
<i>Endlicheria javitensis</i> (H.B.K.) Mez	= Ocotea.
<i>Endlicheria loretensis</i> O.C. Schmidt	= Ocotea.
<i>Endlicheria umbellata</i> K. Schumacher ex Index Fl. Bras. VI, 6 et Index Londinensis III (1930) (sphalm.)	= <i>Emeorrhiza brasiliensis</i> (Presl) Walp. (Rubiaceae).
<i>Goeppertia argentea</i> Meissn.	= <i>Aniba bracteata</i> .
<i>Goeppertia caudata</i> Meissn.	= Ocotea.
<i>Goeppertia geminiflora</i> Meissn.	{ <i>Phyllostemonodaphne geminiflora</i> .
	{ <i>Systemonodaphne Mezii</i> .
<i>Goeppertia macrocalyx</i> Meissn.	= Ocotea.

2. The American Species of *Cryptocarya*.

Cryptocarya *) Rob. Brown, Prodr. Fl. Novae Hollandiae I (1810), p. 402; ed. 2 (1827), p. 258; Sprengel, Anleitung z. Kennt-

*) A motion to conserve this name against *Peumus* Mol. has been put forward by Looser (see Prel. Opin. Nomencl. Propos., 1936, p. 25), but I doubt whether this is necessary, as the generic description of *Peumus* Mol. includes characters of Lauraceae and Monimiaceae and the name *Peumus* has been taken up for the Monimiaceus genus.

niss d. Gewächse II, 1 (1817), p. 340; id., Systema II (1825), p. 270; id., Genera I (1830), p. 327 n. 1665; Kunth in H.B.K., Nov. Gen. II (1817), p. 167 (p. 133, colour. ed.); id., Synops. I (1822), p. 459 (sed spec. exclus.); Poirer, Encycl. méth., Suppl. 2 (1821), p. 413; Jussieu, Dict. 25 (1822), p. 349 (*Cryptocarpa* sphalm.); Agardh, Aphor. (1825), p. 227; Blume, Bijdrage n. 11 (1825), p. 556; J. Presl, Rostlinar (1825), p. 30 et 64; Reichenbach, Conspectus (1828), p. 87 n. 1911; Bartling, Ordines nat. Pl. (1830), p. 112; Nees in Wallich, Pl. Asiat. rar. II (1831), p. 61 et 69; id., Pl. Laurin. Exposito (Vratislav. 1833), p. 12 n. 13; id., Systema Laurinarum (1836), p. 192 et 205; Endlicher, Gen. (1837), p. 318 n. 2036; id., Enchirid. (1841), p. 197 (excl. syn.: *Gomortega* R. & P.; *Adenostemum* Pers. et *Keulia* Mol.); Dietrich, Synops. Pl. 2 (1840), p. 1331 et 1342; Steudel, Nomencl. ed. 2 (1841), p. 449; Spach, Végét. phan. X (1841), p. 470; Meissner, Gen. I (1841), p. 325, II, p. 238 (excl. syn.: *Gomortega* R. & P., *Lucuma Keule* Mol., *Keulia* Mol., *Adenostemum* Pers.); Lindley, Veg. Kingd. (1846), p. 537; Lemr. in Orbigny, Dict. univ. 4 (1849), p. 415; Blume, Mus. Lugduno-Batav. I (1851), p. 334; Miquel, Fl. India Batav. I, 1 (1855), p. 920; Reichenb., Nomencl. (1861), p. 71 n. 2674; Meissner in D.C., Prodr. XV, 1 (1864), p. 68; id. in Martius, Fl. Bras. V, 2 (1866), p. 114; Baillon, Hist. Pl. II (1870), p. 472; Bentham in Fl. Austral. V (1870), p. 294; Kurz, Forest Flora 2 (1870), p. 294; Pfeiffer, Nomencl. 2 (1873), p. 930; Bentham in Benth. et Hook., Gen. III (1880), p. 150 (excl. syn. *Bellota* Gay et *Boldu* Nees); Bailey, Synops. Queensland Fl. (1883), p. 422; id., Queensland Fl. (1901), p. 1297; Durand, Index Gen. (1888), p. 348 (excl. syn. *Bellota* Gay et *Boldu* Nees); Hillebrand, Fl. Hawaiian isl. (1888), p. 382; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 7; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 122 (excl. syn.: *Bellota* Gay et *Boldu* Nees); Hooker, Fl. Brit. India V (1890), p. 117; Trimen, Handb. Fl. Ceylon III (1895), p. 438; Boerlage, Fl. Nederl. Indië 3 (1900), p. 120; Harms et dalla Torre, Gen. (1900—07), p. 178 n. 2813 (excl. *Bellota* Gay et *Boldu* Nees); Post et Kuntze, Lexicon (1904), p. 151; Koorders in Meded. 's Lands Plantentuin Buitenzorg 68 (1904), p. 208; Cooke, Fl. Bombay 2 (1908), p. 553; Stapf in Fl. Capens. V, 1 (1912), p. 494; id. in Fl. Tropic. Africa VI, 1 (1913), p. 172; Gamble, Fl. Madras 2 (1921), p. 1217; Ridley, Fl. Malay Penins. 3 (1924), p. 76; Lecomte, Fl. Indo-Chine 5 (1930—31), p. 144; Lemée, Dict. 2 (1930), p. 394; id., Suppl. V (1934), p. 1104; Benoist in Arch. Bot. V (1931), p. 62. — *Cryptocaria* Cl. Gay, Fl. Chilena 5 (1849), p. 299; Harms et dalla Torre, l.c., p. 178;

Post et Kuntze, l.c., p. 150. — *Endocarpa* Rafinesque, Sylva Tellur. (1838), p. 135; Harms et dalla Torre, l.c., p. 178; Post et Kuntze, l.c., p. 197. — *Caryodaphne* Blume ex Nees, Syst. (1836), p. 225; Endlicher, Gen. (1837), p. 318 n. 2037; id., Enchir. (1841), p. 197; Steudel, Nomencl. ed. 2 (1841), p. 302; Reichenb., Nomencl. (1841), p. 71 n. 2673; Dietrich, Synops. (1840), p. 1331 et 1343; Spach, Vég. phan. X (1841), p. 470; Meissn., Gen. I (1841), p. 325, II, p. 238; Lindl., Veg. Kgdm. (1846), p. 537; Lemr. in Orbigny, Dict. 3 (1849), p. 199; Miquel, Fl. Ind. Batav. I, 1 (1857), p. 926; Meissn. in D.C., Prodr. XV, 1 (1864), p. 77; Bailon, Hist. Pl. II (1870), p. 472; Pfeiffer, Nomencl. I (1873), p. 611; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 122; Benth. in Benth. & Hook. Gen. III (1880), p. 150; Durand, Index Gen. (1888), p. 348; Harms et dalla Torre, Gen. (1900—07), p. 178; Post et Kuntze, Lexicon (1904), p. 103. — *Salgada* Blanco, Fl. Filipinas ed. 2 (1845), p. 221; Merrill, Enum. Philip. Flow. Pl. 2 (1923), p. 201; Post et Kuntze, Lexicon (1904), p. 496; Lemée, Dict. V (1934), p. 928. — *Pseudocryptocarya* Teschn. in Engler's Bot. Jahrb. 58 (1923), p. 411; Lemée, Dict. V (1934), p. 598. — *Icosandra* Phil. in An. Univ. Chil. 91 (1895), p. 503; Mez, l.c. p. 494.

Trees and shrubs in the tropics of both hemispheres. Leaves alternate or sub-opposite, chartaceous to coriaceous, glabrous or pilose. Flowers hermaphrodite, in panicles; involucre wanting. Flower tube conspicuous, usually slender, urceolate, constricted below the tepals, abruptly enlarging into the perianth. Tepals 6, usually equal. Fertile stamens 9 in three rows; anthers large, 2-celled; those of the outer two rows with introrse, large cells; those of the third row with extrorse, lateral or introrse, large cells; connectives often strongly protruding beyond the cells. Filaments usually conspicuous, those of the outer stamens usually more or less adnate to tepals; those of the third row of stamens provided at base (or often somewhat distant from base) with often stalked glands without. Fourth row of stamens sterile, large, usually cordate-ovate, acuminate, foliaceous, often shortly stalked. Ovary glabrous (in american species), immersed in the tube, usually ellipsoid, gradually merging into the usually rather thick and conical, usually longer style with rather small, truncate, discoid, but conspicuous stigma. Fruit ellipsoid or globose, completely covered by the enlarged and thickened flower tube, leaving only a minute pore at apex, the latter usually crowned by the remnants of the tepals. Pericarp usually thin. Cotyledons

large, flat-convex; plumule and radicle minute.

A widely distributed genus, having its centre in the Indo-Malayan Archipelago. Characteristic is the fruit, hidden in the usually woody flower tube, leaving only a small pore at apex and this pore, together with the remnants of tepals or their traces make this genus, at least in fruiting stage easily separable from *Beilschmiedia* or *Dehaasia*. The flowers are very typical in shape with their usually slender, urceolate, at apex narrowed tube and immersed ovary, the only character to separate it from *Beilschmiedia*. The shape of the anthers and staminodes of both genera is very alike. Moreover the flowers of the american species are usually very similar, hence the key has been based mainly on differences of the vegetative parts.

The genus *Pseudocryptocarya* can not be separated from *Cryptocarya* on the strength of its introrse inner anthers.

Key to the species :

- 1a. Leaves (also young ones) glabrous beneath 2
- b. Leaves pilose beneath 6
- 2a. Leaves opposite or sub-opposite, minutely, densely areolate-punctulate on both sides 1. **Cr. rubra**
- b. Leaves alternate, reticulate on both sides 3
- 3a. Panicles and flowers glabrous or nearly so. Pedicels filiform, glabrous, 1—4 mm l. 2. **Cr. saligna**
- b. Panicles densely tomentellous; flowers densely tomentellous or glabrescent at apex. Pedicels 0—1 mm l., densely pilose, rather slender 4
- 4a. Leaves laxly, conspicuously, prominently reticulate above. Connectives of anthers slightly protruding beyond the cells 3. **Cr. micrantha**
- b. Leaves densely, prominulously reticulate above or veins more or less obliterate. Connectives of anthers strongly protruding beyond the cells 5
- 5a. Leaves ovate or ovate-elliptical, rarely lanceolate-elliptical, with long and rather slender acumen. Petioles 5 mm l. Flowers densely, subsericeous-tomentose up to the apex .. 4. **Cr. guianensis**
- b. Leaves elliptical to lanceolate, shortly, broadly acuminate. Petioles 8—15 mm l. Flowers glabrescent towards apex or at last more or less entirely glabrous 5. **Cr. moschata**
- 6a. Leaves pruinose and laxly, lanuginose-tomentose beneath. Flowers 2 mm l. Stamens conspicuously exerted; connectives slightly protruding beyond the cells. Staminodes slen-

- der, stipitiform, $\frac{1}{2}$ mm l. Glands sessile .. 7. *Cr. minima*
 b. Leaves green and sparsely, minutely, appressed-pilose beneath. Flowers 2—3 mm l. Stamens included; connectives thick, strongly protruding beyond the cells. Staminodes large, ovate-triangular, acuminate, foliaceous, 1— $1\frac{1}{2}$ mm l. Glands conspicuously stalked 6. *Cr. mandioccana*

1. *Cryptocarya rubra* (Mol.) Skeels in U.S. Department of Agriculture, Bureau of Plant Industry, Bulletin n. 153 (1909), p. 15. — *Peumus rubra, alba y mammosa* Molina, Saggio sulla storia naturale del Chili, ed. 1 (1782), p. 185; ed. german. p. 160 et 311, t. 1, f.a (ex Nees). — *Peumus rubra* Molina, Gay, Fl. Chil. V (1849), p. 300; Nees, Syst. Laur. (1836), p. 222; id. in Linnaea 21 (1848), p. 494; Meissn. in D.C., Prodr. XV, 1 (1864), p. 75; Philippi in Mohl & Schlechtend., Botan. Zeitung 22 (1864), Beiblatt 1, p. 12 et 19; id. in Anal. Univ. Chili 22 (1863), p. 718 et 730; id., Catal. Plant. Vascul. Chilens. (1881), p. 257 et 258; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 15. — *Laurus Peumus* Molina, Saggio, ed. 2 (1810), p. 157 (ed. german.), p. 287 (ed. ital.); Miers in Hooker & Arnott, Botany of Capt. Beechey's Voyage (1841), p. 45 et 58; Gay, Fl. Chil., l.c., p. 300; Meissn. in D.C., l.c., p. 75; Poeppig, Pl. Chil. exsicc. III, n. 117 et Diar. p. 801 a; Nees, Syst., l.c., p. 222; Philippi, Catal., l.c., p. 257. — *Cryptocarya Peumus* Nees, Syst., l.c., p. 222 et 675 (excl. cit. syn. *Adenostemum nitidum* Bertero); id. in Linnaea 21, l.c., p. 494; Gay, Fl. Chil., l.c., p. 300 (*Cryptocaria*); Meissn. in D.C., l.c., p. 75 (excl. cit. syn. *Cryptocarya Berteroana* Gay, Flora Chil., l.c. et *Adenostemum nitidum* Bertero) et p. 508; Philippi, Catal., l.c., p. 257; id. in Bot. Zeitung, l.c., p. 12 et 19; Murillo, Plantas medicinales de Chili, Exposition universelle Paris 1889, p. 191; Mez in Jahrb., l.c., p. 15 (cum forma *genuina* Mez, l.c., p. 8 in clave, excl. cit. syn. *Cryptocarya Berteroana*); Meigen in Engl., Bot. Jahrb. 17 (1893), p. 237; Dragen-dorff, die Heilpflanzen (1898), p. 237. — *Laurus Peumo* Ruiz et Pavon, Fl. Peruv. IV (1802), t. 358 a et Laurogr. t. 1, f.a; Dombey ex Lamarck, Encycl. 3 (1789), p. 455; Nees, Syst., l.c., p. 222; id. in Linnaea 21, l.c., p. 494; Endlicher, Genera (1841), p. 318; Gay, Fl. Chil., l.c., p. 300; Bertero, Mercur. Chil. (1829), p. 686 (ex Gay); Meissn. in D.C., l.c., p. 75; Philippi, Catal., l.c., p. 257. — *Cryptocarya Peumus*, var. *laxiflora* (Philippi) Mez in Arb. Bot. Gart. Breslau 1 (1892), p. 107. — *Cryptocarya laxiflora* Philippi, Plantas nuevas chilenas in Ann. Univers. Chil. 91 (1895), p. 503. — *Cryptocarya Peumus*, var. *stenantha* (Phil.)

Mez in Jahrb., l.c., p. 16. — *Cryptocarya stenantha* Philippi in Linnaea 33 (1864—65), p. 228; id., Catal., l.c., p. 257; Meissn. in D.C., l.c., p. 508. — *Cryptocarya Boldus* (Mol.) Pax (non aliis) in Engl. Prantl, Pfl. fam. III, 2 (1889), p. 107 (sub fig. 70). — *Icosandra rufescens* Philippi, Plant. nuevas Chil., l.c., p. 503; id., Catal., l.c., p. 257; Benth. et Hook., Gen. 3 (1880), p. 151; Philippi in Linnaea 29 (1857—58), p. 40; Meissn. in D.C., l.c., p. 506; Mez in Jahrb., l.c., p. 494. — „*El Peumo*”, Looser in Rev. Chil. Hist. nat. 39 (1935), pp. 203—211.

Lecto-typus: Dombey 206; Chile [P.].

„Peumo” (Chile: Bertero, Buchtien, Hollermayer, etc.).

Tree, up to 15 m. high (Buchtien). Branchlets stiff, smooth, lightly or densely, minutely rusty-tomentellous towards apex, densely leaved; branches glabrous, smooth, dark-brown, at last grey, verruculous; buds tomentellous. Leaves alternate and sub-opposite or opposite (especially those near the top of the branchlets), very rigid-coriaceous, glabrous, on both sides densely, minutely, prominulously areolate-punctulate (above less), broadly ovate or ovate-suborbicular, $3-8 \times 1\frac{1}{2}-4\frac{1}{2}$ cm; base contracted into the petiole, shortly acutish or obtuse, rarely truncate or sub-cordate, margin recurved and often strongly crisp, top obtuse or slightly emarginate, rarely acutish; above shining, green, midrib and prim. nerves hardly prominulous or midrib impressed and prim. nerves not visible, beneath glaucous, white-reddish pruinose (when dried), midrib prominent, prim. nerves (5—6 per side, often alternate with parallel nerves, that do not reach the margin) slightly prominulous, rather patent, straight. Petioles short, glabrous, smooth, rather thick, 3—5 mm l., flattish above. Panicles axillary, rather many-flowered, narrowly pyramidal, young ones densely, minutely tomentellous, adult ones tomentellous at base, towards apex laxly tomentellous or glabrous; peduncles rather thick, short, branchlets distant, up to 1 cm l.; flowers more or less clustered. Lower bracts depressed-ovate, broader than long, densely tomentellous, deciduous; upper ones ovate-lanceolate, densely tomentellous, deciduous; bracteoles minute, often more or less persistent, tomentellous. Pedicels glabrous or sparsely tomentellous, hardly more than 1 mm l. (rarely $1\frac{1}{2}$ mm l.). Flowers yellowish, sparsely, minutely tomentellous or glabrous, 3—4 mm l., 3—4 mm in diam. at apex; tube cylindrical, sub-urceolate, slender, or obconical-suburceolate, $1\frac{1}{2}-2$ mm l., glabrous inside, abruptly enlarged into the perianth. Tepals sub-equal, erect or erect-patent, fleshy, slightly

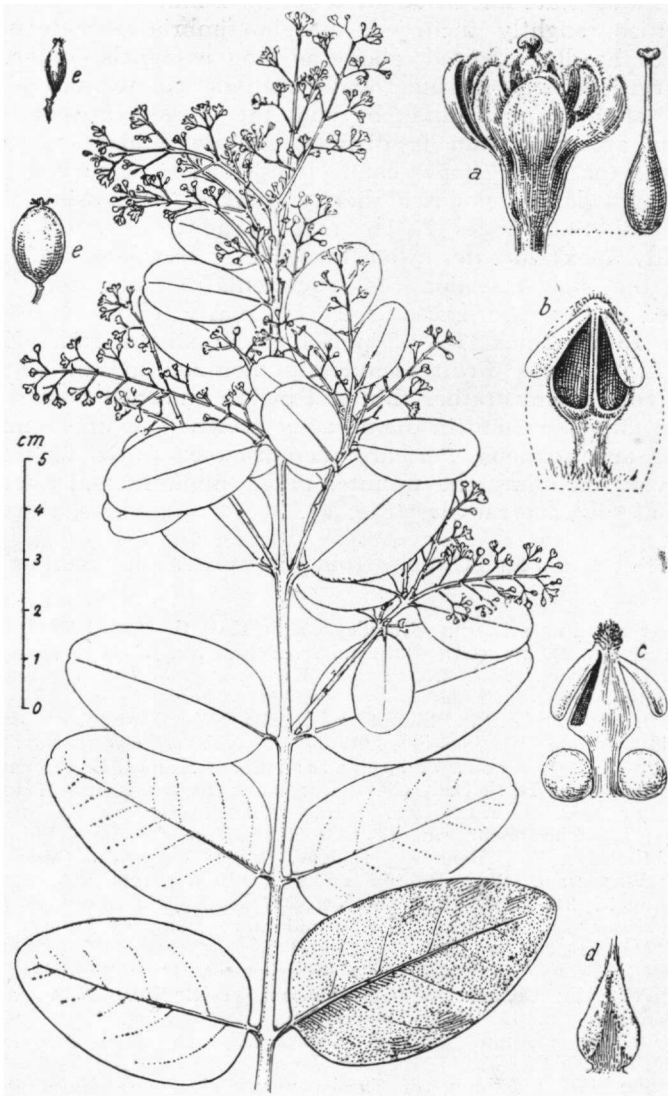


Fig. 4. *Cryptocarya rubra* Skeels. Flowering branch; a. flower with ovary; b. stamen of first row, seen from within; c. stamen of third row, seen from without; d. staminode, seen from within; e. young and mature fruit. (Size of branch and fruit according to scale; flower strongly enlarged).

concave, lanceolate-linear, about 2 mm l., 1 mm w., pilose inside, top acutish, slightly incurved, margin fimbriate. Stamens included or hardly exerted, about as long as tepals; outer ones with large, densely hirsute, ovate anthers, connectives obtuse, hirsute, slightly protruding beyond the large, introrse cells; filaments about $\frac{1}{2}$ mm l., distinct, hirsute, adnate to tepals; inner stamens same shape, connectives thicker, incurved, more protruding; glands globose, shortly stalked or sessile, rather large, basal. Staminodes $1-1\frac{1}{2}$ mm l., sagittate, acute, outside (especially apex) hirsute, inside flattened, subcordate, protruding beyond the stalk-insertion; cell-rudiments not distinct. Ovary immersed in the tube, glabrous, $1-1\frac{1}{2}$ mm l., ellipsoid, merging into the rather thick, $1\frac{1}{2}-2$ mm l. style; stigma rather large, trigonous, truncate. Fruit completely included in the ellipsoid, smooth, red or pink, rather thin and brittle enlarged flower tube, up to 18 mm l., 10 mm in diam., apex crowned by the remnants of tepals and stamens. Pericarp membranous. Cotyledons large, flat-convex, including the minute, pilose plumule and narrowly pyramidal, distinct radicle. (Fig. 4).

Distribution: Chile, from the prov. of Santiago to Valdivia.

Prov. Santiago: Costa (Claude-Joseph 1241, fl. Nov. [Ws.]); monte Manquehue, alt. 900 m. (Grandjot s.n., fr. Febr. [Mi.]); Cerro Manguedul (Montero 75, fl. Nov. [Gr.]; 273, fl. Dec. [Kw.]); las Mercedes (Philippi s.n., fl. Nov. [Br.], type of *Cr. laxiflora*); Santiago (Claude-Joseph 2874 [Ws.]; Gay s.n., fl. [Bs.D.Dl.Gr.P.]; Philippi s.n., fl. [Bs.D.W.]; Philippi s.n., fr. [Ki. Ws.]); Rio Colorado (Hastings 511, fr. Febr. [Ca.NY.Ws.], 603, fl. Nov. [Ws.], 370, fl. Nov. [NY.]); **Prov. Valparaiso:** Cerro Huinca, S. Francisco de Limache (Looser 33 H, fl. Oct. [Gr.]); Chaparral, las Zonas near Valparaiso (Harshberger 1062, fl. Aug. [Ws.]); Casa Blanca (Harvey s.n., fr. May [Gr. St.]); Limache (Behn s.n., fl. Oct. [F.]); Vina del Mar (Philippi & Borchers, fl. Nov. [Br.]; Behn s.n., fl. Nov. [Mi.]); Valparaiso (Macrae s.n. [Dl.Kw.]; Wilkes s.n. [Ws.]; Philippi s.n., fl. [D.Br.W.], type of *Cr. stenantha*; Cuming 92, 246 [Kw.], 1521 [D.] 346, 347 [Br.Lp.B.]; Anderson s.n., fl. [Br.]; Robinson s.n., fl. Sept. [Kw.]); mountain forest of Rancagua and Quillota (Bertero 362 et 1079, fl. May et Sept. [Bs.Br.C.Dr.Gr.M.Ms.O.P. Mi.W.Basel]); **Prov. Concepcion:** Lota (Sargent s.n. [H.]; Skottsberg 1368, fl. July [NY.St.]); Concepcion (Germain s.n. [Bs.Br.Kw.]; Neger s.n., fl. [M.]; Chamisso s.n. [Ms.Br.]; Macrae s.n., in bud Oct. [Dl.]; Mertens s.n. [Bs.Gr.W.]; Philippi s.n., fl. Oct. [D.]; Dombey 206, fl., fr. [D.Br.Dl.F.Gr.H.NY.P.U.Ws.], type of *Laurus Peumo* Dombey); Angol (Ramirez s.n. [B.]); Isthmus of Tumba near Talcahuano (Berninger 26, fr. Febr. [D.]); Concepcion, Fundo las Cruces (Junge 938, fl. Sept. [Mi.]); Cordilleras of Chillan (Berninger 151, fr. Apr. [D.]); Quilqué (Dessauer s.n. [M.Ws.]); Segunda Torres (Jelinek 44, fr. [W.]); Linares, Quinamavida (Günther & Buchtien s.n., fl. Dec. [St.]). **Prov. Valdivia:** Long-Long near Freire, Panguipulli station, banks of Allipen R., alt. 120 m. (Hollermayer

606 = Werdermann 1908, fr. Jan. [D.M.St.Ws.]; Pucon in forest of Villarica, alt. 250 m. (Günther & Buchtien s.n., fr. Jan. [K.]); Lago Villarica (Comber 975, fr. Jan. [Kw.]); Antuco, forest (Poeppig 801 = Pl. Chil. n. 117, fl. Dec. [Bs.Br.D.Lp.Ki.M.O.W.]); Valdivia (Philippi s.n. [Di.]). Prov. Colchagua: Hacienda de Cauquenes (Dusén s.n., fl. Aug. [St.]); Banos de Cauquenes (Stübel 4 [D.]; Sargent s.n., fr. Febr. [H.]; Ball s.n., fr. May [NY.H.]); locality unknown (Commerson s.n., fl. [P.]; Ruiz s.n., fl. [Br.Di.Ms. O.]), type of *Laurus Peumo* Ruiz; Pavon 36, fr. [D.], type of *Laurus Peumo* Ruiz; Bener s.n., fl. [D.]; Gay s.n., fl. [D.P.]; ex herb. Hooker s.n., fr. [W.]; Miers 1030, fr. [Br.]).

In: „Saggio sulla storia naturale del Chile, ed. 1, Bologna 1782, page 185, MOLINA described four species of the genus *Peumus*. The last one, *Peumus Boldus* is considered to be the type species of the Monimiaceous genus: *Peumus*; the three former ones, belonging to the Lauraceae, are, apart from their fruit character, characterised as follows: „*Peumus rubra*, foliis alternis petiolatis ovalibus integerrimis; *Peumus alba*, foliis alternis petiolatis dentatis; *Peumus mammosa*, foliis alternis sessilibus cordatis integerrimis.

In 1789 a short note on this species is given by LAMARCK in his Encyclopédie méthodique III, page 455 under the name of *Laurus Peumo* DOMBEY. As he saw only its fruit, the material of Dombey not being available to him, he has not been able to give a description of the plant; in synonymy figures the name: *Peumus rubra* Molina.

Under the same name: *Laurus Peumo*, RUIZ and PAVON give a drawing of this species in their „Flora Peruviana” IV, tab. 358a (1802) and in their „Laurografia”, tab. 1, fig. a.

In the second edition of Molina’s „Saggio”, appearing in 1810, Molina, who might have consulted the work of Ruiz and Pavon, put together the 3 species: *Peumus rubra*, *alba* y *mammosa* under the specific name of *Laurus Peumus* and the formerly described species were apparently considered as mere varieties of the same species, as may indicate the additional note of *Laurus Peumus*: „variat fol., flor. et fruct.”

The first monographer of the Lauraceae: NEES, considered the latter name as the valid one, an example followed by MEISSNER and MEZ.

Apart from the fact, that *Laurus Peumo* Dombey ex Lamarck or *Laurus Peumo* Ruiz has the priority and not *Laurus Peumus* Molina (the combination should therefore be *Cryptocarya Peumo* and not *C. Peumus*), there are motives enough to take up again the oldest specific name: *rubra* of Molina, as has been done by SKEELS in U.S. Dept. of Agriculture, Bureau of Plant Industry, Bull. 153 (1909), p. 15, however without any discussion.

Let us, first of all, consider the descriptions, given by Molina. All three species: *Peumus rubra*, *alba* and *mammosa* possess alternate leaves. In our species the leaves are usually opposite, though alternate leaves are not uncommon. The description of the leaves of *Peumus rubra* agrees very well with our plant, but in the diagnosis of the two other species figure some puzzles: *Peumus alba* has toothed leaves and for this reason NEES rejected this species as being not lauraceous at all, but, keeping in mind, that MOLINA put down his descriptions without having the specimens before him, it might be quite possible, that the character of toothed leaves points to the variety with crisp leaf margins; these leaves often give the impression of being toothed (see also NEES, *Systema Laurinarum*, page 675), but apart from this there remains the character of the white fruit, that cannot be put in accordance with *Cryptocarya rubra*.

Peumus mammosa with its sessile, cordate leaves, might equally be a form of *Cryptocarya rubra*; the petioles of our species are often so short, that the leaves seem to be sessile, and sub-cordate leaves are also not uncommon; the description of the fruit agrees well with the sub-mature fruit of the species.

All these considerations, together with the fact, that Molina himself put together the 3 species, strengthen the idea, that they are varieties of the same species. Of the descriptions, that of *Peumus rubra*, corresponds mostly with our plant and it is therefore that I entirely agree with SKEELS to give it the name *Cryptocarya rubra*. LOOSER in *Rev. Chil. Hist. nat.* 39 (1935), pp. 203—211 comes to the same conclusion.

The type specimen of *Cryptocarya stenantha*, a species reduced to a variety by Mez, possesses flowers, already transferring into the fruiting stage, hence the much larger and cylindrical tube; there is no difference at all with the typical form.

Cryptocarya Berteroana Gay is a *Beilschmiedia* species. The specimen Poeppig 117 in the Berlin-Dahlem herbarium bears on its label in Meissner's (not in Gay's!) handwriting the name *Cryptocarya Berteroana*. This specimen evidently was meant by Mez in citing: „*Cryptocarya Berteroana* Gay mscr. in herb. Berolin.”

All the specimens, I could study, bearing the name: *Adenostemum nitidum* Bertero, belonged to the species: *Peumus Boldus* (Monimiaceae). (= *Boldea Boldus* (Mol.) Looser).

2. *Cryptocarya saligna* Mez in *Jahrb. Bot. Gart. Berl.* V

(1889), p. 13; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590. — *Cryptocarya longistyla* Mez in Engler's Bot. Jahrb. 17 (1893), p. 518; Glaziou in Bull. Soc. Bot. France, 59, l.c., p. 589.

Typus: Glaziou 14205; Rio de Janeiro [D.].

„Anhuvinha branca”; „Canella sebosa” (Hoehne).

Large tree (Glaziou). Branchlets slender, glabrous, smooth, slightly shining, sub-cylindrical or obscurely angular at apex; branches grey or dark-brown, densely covered by longitudinal lenticels; buds slightly pilose. Leaves alternate, chartaceous or stiffly chartaceous, glabrous, lanceolate or narrowly lanceolate, 4–12 × 1½–3 cm; base acute, margin slightly recurved, top obtusely acuminate to caudate-acuminate (acumen rather slender, up to 1½ cm l.); above green, slightly shining, midrib slightly impressed or flattish, prim. nerves hardly prominulous, veins obscurely reticulate, beneath green or reddish-pruinose, midrib prominent, prim. nerves (8–14 per side) patent, arcuate, slightly prominulous, veins slightly prominulous, densely reticulate. Petioles thin, glabrous, slightly canaliculate, 5–10 mm l. Panicles axillary, pyramidal, nearly glabrous, many-flowered, rather lax, slender, 3–8 cm l.; peduncles slender, ½–2 cm l., often slightly compressed; branchlets very thin. Bracteoles minute, ovate, acute, yellowish pilose, those at base of pedicels often sub-persistent. Pedicels filiform, glabrous, 1–4 mm l. Flowers with few hairs, soon glabrous, pruinose, 2–3 mm l., 2–2½ mm in diam. at apex; tube cylindrical- or obconical-suburceolate, 1½ mm l., glabrous inside, abruptly enlarging into the perianth. Tepals sub-equal, fleshy, erect-patent, incurved, ovate, acutish, glabrescent outside, margin and within hirsute, 1–1½ mm l. Stamens included, 1–1½ mm l., shorter than tepals; outer ones slightly incurved with glabrous, broadly ovate anthers (connectives acutish, protruding beyond the large, introrse cells); filaments conspicuous, as long as or shorter than anthers, densely hirsute. Inner stamens erect with glabrous, narrowly ovate anthers (connectives thick, obtuse, strongly protruding beyond the lateral, large cells); filaments as long, nearly as broad, densely hirsute; glands rather small, globose, nearly sessile or very shortly stalked. Staminodes narrowly sagittate, glabrous, ¾ mm l.; stalks very short, pilose. Ovary immersed in the tube, glabrous, ellipsoid, 1 mm l., not distinct from the conical, gradually narrowed, towards top very slender, 1½ mm l. style with minute, truncate stigma. Fruit large, pear-

shaped, up to 5 cm l., $2\frac{1}{2}$ cm in diam., smooth and slightly mottled; base with a short, thick neck, top acuminate, obtuse or excavated; outer layer woody, 2—3 mm thick; pericarp thin. Cotyledons large, plumule minute, glabrous.

Distribution: Vicinity of Rio de Janeiro.

Brazil: Rio de Janeiro, Estrada da Tijuca, Bom Retiro (Bandeira H.R.J. 8573, fl. Dec. [R.]); Alto Macahé de Nova Friburgo (Glaziou 14205, fl. Dec. [Bs.D.K.Kw.P.St.Ws.], 19801, fl. Jan. [Bs.D.K.Kw.P.N.Y.], type of *Cr. longistyla*); Estado do Rio G. Portella, Monte Sinai (Nunes H.R.J. 28006, fl., fr. [R.U.]); Rio de Janeiro (Glaziou 819, ster. [B.]); locality unknown (Sao Paulo? Hoehne 23796, fr. [D.]); Serra Orgãos, Rojo (Miers 4274, fr. [Kw.]).

The fruit shows a remarkable likeness with that of *Cryptocarya minutiflora*.

3. *Cryptocarya micrantha* Meissn. in D.C., Prodr. XV, 1 (1864), p. 75; id. in Fl. Brasil. V, 2 (1866), p. 165; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 11. — *Cryptocarya Schwackeana* Mez in Arb. Bot. Gart. Breslau 1 (1892), p. 107.

Typus: Riedel s.n.; Rio de Janeiro [Lg.].

„Canella batalha” (Araujo).

Tree, 4—8 and more m. high (Riedel). Branchlets slender, smooth, glabrous, slightly shining, dark-brown (dried); branches grey, slightly verruculous, slender; buds minutely yellowish-tomentellous, glabrescent. Leaves alternate, chartaceous or rather stiffly chartaceous, glabrous, elliptical, $5-12 \times 1\frac{1}{2}-4\frac{1}{2}$ cm; base acute or sub-acuminate, margin hardly recurved, top obtusely, usually broadly acuminate; above green, somewhat shining, midrib and prim. nerves prominulous, veins prominulous, conspicuously, rather laxly reticulate; beneath dull, paler, glaucescent (Riedel), midrib prominent, prim. nerves (9—12 per side) prominulous, rather patent, towards margin arcuate and more or less arcuately united, veins slightly prominulous, densely reticulate. Petioles thin, glabrous, smooth, dark (dried), slightly canaliculate or flattish above, 5—10 mm l. Panicles axillary and sub-terminal, many-flowered, lax, broadly pyramidal, laxly, yellowish tomentellous, glabrescent towards base, slender, 4—10 cm l.; peduncles short, slender, smooth, lightly shining; branchlets slender, erect-patent. Bracts and bracteoles minute, ovate, acute, densely yellowish-tomentellous, sub-persistent. Pedicels none or up to $\frac{1}{2}$ mm l., densely tomentellous. Flowers greenish-yellow (Riedel), densely yellowish-tomentellous (especially tube), 3 mm l., 2 mm in diam. at apex; tube cylindrical-suburceolate,

1¼ mm l., glabrous inside. Tepals equal, fleshy, ovate or narrowly ovate, acutish, top incurved, 1½—2 mm l., pilose within. Stamens included; outer ones slightly shorter than tepals with ovate, glabrous anthers (connectives obtuse or acutish, protruding beyond the large, introrse cells), filaments rather slender, somewhat shorter, densely hirsute, slightly adnate to tepals. Inner stamens erect, shorter, with rather broad, truncate, glabrous anthers (connectives thick, protruding beyond the extrorse-sublateral cells), filaments short, rather broad, hirsute. Glands large, globose, on pilose stalks. Staminodes thick, pilose, ½ mm l., triquetrous, acute, nearly sessile. Ovary glabrous, ellipsoid, about 1 mm l., merging into the slender, cylindrical-conical, 1½ mm l. style, slightly thickened immediately above the tube. Fruit (description of Schwacke) „pear-shaped, with a neck at base, woody, verruculous, with many ribs, 4 cm l., 3 cm in diam.”

Distribution: Vicinity of Rio de Janeiro.

Rio de Janeiro: Est. do Rio G. Portella (Nunes H.R.J. 27997, fl. [U.]); Mandioca (Riedel s.n., fl. Oct. [D.Kw.L.Ms.]); Minas Gerães, Rio Novo (Araujo in herb. Schwacke 6680 [D.] and 10924 [P.], fl. Sept., type of *Cr. Schwackeana*).

The ring around the style, described by Mez in *Cr. Schwackeana* does not occur in all specimens; in all flowers, however, the style is compressed in the narrow throat of the flower tube, higher up it attains its normal diameter, thus giving the impression of having a thickened ring.

4. *Cryptocarya guianensis* Meissn. in D.C., Prodr. XV, 1 (1864), p. 75; id. in Fl. Bras. V, 2 (1866), p. 165; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 12; Dragendorff, Heilpfl. (1898), p. 237; Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 61. — *Cryptocarya maroniensis* Benoist in Bull. Mus. Hist. nat. Paris 30 (1924), p. 510; id. in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 61. — *Cryptocarya moschata* Benoist (non Nees & Mart.) in Bull. Soc. Bot. France 75, l.c.; id. in Arch. Bot. V, l.c., p. 61 (in clave).

Typus: Mélinon 106; French Guiana [DC.].

„Cèdre cannelle” (Wachenheim); „Cèdre jaune de marécage” (Benoist).

Tree or shrub. Branchlets rather slender, smooth, somewhat shining, glabrous, sub-angular at apex; buds sparsely yellowish tomentellous. Leaves alternate, coriaceous or rigid-coriaceous, glabrous, ovate or ovate-elliptical, sometimes lanceolate-elliptical, 7—13 × 2½—4 cm; base contracted into the petiole, shortly

acute, margin slightly recurved, top with rather long and slender acumen; above shining, rather obscurely densely reticulate, midrib slender, prominulous, prim. nerves filiform-prominulous; beneath paler, rather dull, midrib prominent, prim. nerves (6—10 per side) rather patent, thin, arcuate, prominulous, veins densely, prominulously reticulate. Petioles slender, glabrous, slightly canaliculate, about 5 mm l. Panicles axillary, few-flowered, hardly or not branched, densely subsericeous-tomentellous, 2—4 mm l., peduncles glabrescent, short, rather slender, branchlets (if present) very short. Bracteoles ovate-elliptical, acutish, densely sericeous-hirsute, subsistent. Pedicels sericeous, 0—1 mm l. Flowers densely greyish or rusty subsericeous-tomentellous, 3 mm l., 3 mm in diam. at apex; tube urceolate, 1 mm l. Flower characters as in *Cr. moschata*. Fruit smooth, ellipsoid-ovoid, many-ribbed, apex umbonate; base with a short neck, up to 3½ cm l., 22 mm in diam.

Distribution: French Guiana.

French Guiana: Maroni (Wachenheim 68, fl. [P.]); locality unknown (Mélinon 109, in bud [D.P.]; Moricand 113, fl. [Dl.]; Martin s.n., fr. [Br.Kw.]).

This species can be distinguished from *Cr. moschata* merely on the shape and nervation of its leaves, the short petioles, the few-flowered panicles and the dense tomentum of the flowers. The floral differences, as given by Mez do not hold true: the filaments are partly adnate to the tepals, the latter are pilose within and the glands are distinctly stalked and have the same position as those of *Cr. moschata*.

5. *Cryptocarya moschata* Nees et Mart. ex Nees in *Linnaea* 8 (1833), p. 37; id., *Syst.* (1836), p. 213; Meissn. in *D.C., Prodr.* XV, 1 (1864), p. 74; id. in *Fl. Bras.* V, 2 (1866), p. 164, t. 56; id. in *Vidensk. Meddel. Naturh. Foren. Kjöbenhavn* 1870, p. 131 (Warming, *Symbol.*, p. 303); Martius, *Reise* 2, p. 553; id., *Materiae medicae veget. Brasil.* (1843), p. 110; Mez in *Jahrb. Bot. Gart. Berl.* V (1889), p. 8 (cum forma *angustifolia*, l.c., p. 9; excl. cit. spec. Martin, Pohl. et Miers 4275); Warburg, *die Muskatnuss* (1897), p. 508, t. 6; Dragendorff, *Heilpfl.* (1898), p. 237; Glaziou in *Bull. Soc. Bot. France* 59 (1912), *Mém.* 3 (1913), p. 589. — *Cryptocarya Aschersoniana* Mez in *Jahrb.*, l.c., p. 11. — *Cryptocarya minutiflora* Mez in *Engler's Bot. Jahrb.* 30 (1902), *Beiblatt* 67, p. 11. — *Cryptocarya subcorymbosa* Mez in *Arb. Bot. Gart. Breslau* 1 (1892), p. 106; Glaziou in *Bull. Soc. Bot. France* 59 (1912), *Mém.* 3 (1913), p. 590.

Typus: Martius s.n.; Minas Gerães [M.].

„Nox moscado do Brasil” (Martius); „Nosca moscada do Brasil” (Riedel); „Canella cega; Canella de papagaio” (Warming); „Canella batalha” (Hoehne, Mosén, Regnell); „Canella branca” (Glaziou, Sellow).

Shrub or large tree (10—15 m. high according to Riedel); trunk 50—75 cm in diam., bark fuscous, rimulous, aromatic (Warming). Branchlets rather slender, stiff, smooth, glabrous, somewhat shining, dark when dried, sub-angular at apex; branches thick, cylindrical, dark-brown, densely covered by large, longitudinal lenticels; buds sparsely yellow-rusty hirsute, glabrescent. Leaves alternate, chartaceous-coriaceous or coriaceous, glabrous (also in youth); elliptical or lanceolate, $3\frac{1}{2}$ —16 \times $1\frac{1}{2}$ — $6\frac{1}{2}$ cm; base acute or subacuminate, tapering, margin hardly recurved, top broadly, obtusely, shortly acuminate; on both sides shining and densely, prominulously reticulate (above less); above midrib flattish or prominulous, prim. nerves slightly prominulous; beneath midrib prominent, prim. nerves (7—12 per side) slender, slightly prominulous, erect-patent, arcuate towards margin. Petioles glabrous, slender, slightly canaliculate or flat-tish above, 8—15 mm l. Panicles axillary and sub-terminal, densely, many-flowered, rarely lax, pyramidal, 2—6 (—12) cm l., densely (rarely laxly) yellow-rusty, appressed-tomentose, towards apex usually glabrescent; peduncles rather thick, usually short, bracts and bracteoles minute, ovate, acute, densely appressed-tomentellous, at last deciduous. Pedicels tomentellous, 0—1 mm l. Flowers yellow (Warming), rusty sericeous-tomentellous at base, glabrescent towards apex, 3—5 mm l., 3—4 mm in diam. at apex; tube slender, cylindrical-urceolate, $1\frac{1}{2}$ —2 mm l., glabrous inside (throat excepted), abruptly enlarged into the perianth. Tepals subequal, rather fleshy, slightly concave, erect or erect-patent and slightly incurved at apex, ovate-elliptical, acutish or obtuse, pilose within, $1\frac{1}{2}$ — $2\frac{1}{2}$ mm l. Stamens included; outer ones slightly shorter than tepals, slightly incurved, with large, glabrous, ovate, 1 mm l. anthers (connectives obtuse or slightly acutish, strongly protruding beyond the large, introrse cells), filaments rather slender, densely pilose, about as long as or slightly shorter than anthers, somewhat adnate to tepals. Inner stamens erect with narrowly ovate, glabrous, 1— $1\frac{1}{2}$ mm l. anthers (connectives thick, sub-clavate, obtuse, strongly protruding beyond the lateral or extrorse-lateral cells), filaments rather slender, as long or longer, densely pilose, glands sub-globose, compressed, on as long or longer, conspicuous, pilose stalks, rather distant from the filaments. Staminodes triangular-

ovate, acute or acuminate, 1—1½ mm l., apex and outside pilose, inside flattened, glabrous, sub-cordate with usually conspicuous cell rudiments, stalks conspicuous, broad, pilose. Ovary immersed in the tube, glabrous, ellipsoid, 1 mm l., gradually merging into the cylindrical-conical, glabrous, up to 2 mm l. style with small, truncate, discoid stigma. Fruit sub-globose or ellipsoid, up to 3 cm l., 2 cm in diam., smooth, many-ribbed, top umbonate, base with a short neck; outer layer of a thin, fleshy part and a woody, rather thin, ribbed inner part. Pericarp thin, plumule glabrous, radicle minute.

Distribution: Southern Brazil from Minas Gerães to S. Catharina.

Rio de Janeiro: Tijuca (Luschnath s.n., fr. [Ki.]); Corcovado (Glaziou 1516, fl. Sept. [B.K.Ms.P.]; 120, fl. Aug. [B.P.]); Ypanema (Sellow 1375, fl. [D.Ki.L.Ws.Kw.]); Alto Macahé de Nova Friburgo (Glaziou 18436, fl. Aug. [B.Bs.D.Dl.K.P.], type of *Cr. subcorymbosa*; 18437, in bud June [B.Bs.D.Dl.P.], type of *Cr. minutiflora*); Rio (Riedel 485, fr. July [Bs.Kw.Ms.]); Montevideo (Anderson s.n., fl. [Dl.]); locality unknown (Sellow s.n., fl. [D.], type of *Cr. Aschersoniana*). Minas Gerães: Caldas (Regnell II 240, fl. [B.NY.P.St. Ws.]); Rio de Peixe (Regnell III 1722, fr. Apr. [P.St.]); locality unknown (Widgren 394, fl. [B.K.Kw.St.]; 395, fl. [B.St.]). São Paulo: S. João de Boa Vista (Mosén 4358, fr. Oct. [P.St.]); Serra de Caracol (Mosén 4357, fr. Dec. [St.]); Mogy Mirim (Hoehne 28200, fl. Aug. [D.NY.]). Paraná: Itaperussá (Dusén 13862, fr. Febr. [St.]); Lagoa Santa (Warming 684, fl. July-Aug. fr. Nov. [K.NY.P.]). Santa Catharina: Blumenau (Müller s.n., fl. [D.]).

Mez describes the leaves as sometimes being pilose on the lower surface; this is never the case with *Cr. moschata*. The leaves of *Cr. Aschersoniana*, *subcorymbosa* and *minutiflora* are somewhat smaller than usual and possess a less conspicuous reticulation; the same could, however, also be observed with several leaves of specimens of the normal type. The type specimen of *Cr. minutiflora* has flowers still in bud, hence the differences in the description.

6. *Cryptocarya mandioccana* Meissn. in D.C., Prodr. XV, 1 (1864), p. 75; id. in Fl. Bras. V, 2 (1866), p. 165; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 10. — *Cryptocarya moschata* Mez (non Nees & Mart.) in Jahrb., l.c. p. 8, p.p. (quoad cit. spec. Pohl. et Miers. 4275).

Typus: Riedel s.n.; Rio de Janeiro [Lg.].

Tree, 7—10 m high (Riedel). Branchlets rather slender, sub-angular, densely or laxly, minutely, appressed-pilose; branches cylindrical, glabrous, dark-brown; buds densely rusty-tomentose. Leaves alternate, chartaceous, broadly elliptical or lanceo-

late, 8—16 × 2—5½ cm; base acute (gradually acute in the lanceolate leaves), margin hardly recurved, top shortly, broadly acuminate; young leaves laxly, minutely appressed-pilose on both sides; adult ones above glabrous, somewhat shining, densely, prominulously reticulate, midrib flattish, prim. nerves thin, prominulous; beneath laxly, minutely appressed-pilose, midrib prominent, prim. nerves (7—9 per side) thin, prominulous, erect-patent, arcuate, veins prominulous, densely reticulate. Petioles slender, pilose, glabrescent, 1—1½ cm l., hardly canaliculate. Panicles axillary, rather many-flowered, densely, minutely, rusty-tomentellous, 2—5 cm l.; peduncles rather slender, short, branchlets rather slender, hardly more than 5 mm l., few, distant. Bracteoles deciduous. Pedicels usually wanting or hardly 1 mm l., pilose. Flowers 2—3 mm l., densely, minutely tomentellous. Other characters as in *Cr. moschata*. Berry ellipsoid-globose, smooth with many ribs, up to 2½ cm l., 2 cm in diam.; top umbonate, base with a short neck; outer layer thin and brittle, woody, pericarp very thin.

Distribution: Rio de Janeiro, São Paulo, Minas Gerães.

Rio de Janeiro: Est. do Rio Gr. Portella, Monte Sinai (Nunes H.R.J. 28014, fl., fr. [R.U.]); Mandioca (Riedel s.n., fl. Oct. [D.L.Ms.O.Ws.]); Rio (Glaziou 20443, fl. [D.Kw.]). São Paulo: Agua Fria, Cubatão (Hoehne 23802, ster. [D.]). Minas Gerães: Ouro Preto (Schwacke s.n., fl. Dec.-Jan. [D.]); locality unknown (Pohl s.n., ster. [B.]); Serra Orgãos, Rojo (Miers 4275, fr. [Kw.Br.]).

This species may be distinguished from *Cr. moschata* only on the very constant pilosity of branchlets, leaves and flowers. The flowers of both species are identical; the glands are stalked in *Cr. mandioccana*; the fruit are also exactly alike.

7. *Cryptocarya minima* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 14. — *Aydendron floribundum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 88; id. in Fl. Bras. V, 2 (1866), p. 177, t. 62 et 105, f. 2; Bentham in Benth. & Hook., Gen. 3 (1880), p. 153 (sub *Aydendron*): Dragendorff, Heilpfl. (1898), p. 238; Mez in Jahrb., l.c.; Correa, Dicc. 1 (19), p. 446. — *Cryptocarya hypoleuca* Mez in An. Naturh. Hofmuseum Wien 22 (1907), p. 139.

Typus: Riedel s.n.; Rio de Janeiro [Lg.].

„Canella do Brejo” (Brazil: Correa).

Tree, 10—16 m. high (Riedel). Branchlets rather slender, stiff, subangular, densely rusty lanuginose-tomentellous; branches cylindrical, glabrous, dark-brown; buds rusty lanuginose-tomentellous. Leaves alternate, chartaceous, elliptical to lanceolate,

6½—13 × 2—5 cm; base acute, margin hardly recurved, top obtusely, broadly, shortly acuminate; above glabrous, slightly shining, green, densely, rather obscurely reticulate, midrib impressed or flattish, prim. nerves slightly prominulous; beneath dull, pruinose, laxly rusty lanuginose-tomentose, midrib prominent, prim. nerves (6—9 per side) prominent, erect-patent, slightly arcuate, veins densely reticulate, slightly prominulous. Petioles slender, rusty-tomentellous, hardly canaliculate, about 1 cm l. Panicles axillary, rather many-flowered, dense, narrowly pyramidal, densely rusty lanuginose-tomentose, 3—5 cm l.; peduncles short and thick, branchlets short, hardly more than ½ cm l., slender. Bracteoles minute, densely tomentose, at last deciduous. Pedicels ½—1 mm l., densely tomentellous. Flowers yellowish (Riedel), densely rusty-tomentellous, 2 mm l.; tube slender, subcylindrical-urceolate, after anthesis soon urceolate, 1½—2 mm l., abruptly enlarging into the perianth, glabrous inside (throat excepted). Tepals equal, scale-shaped, rather patent, incurved, ovate, acute, ¾—1 mm l. Stamens exerted; outer ones about 1 mm l., with thin, broadly ovate anthers (connectives obtuse, slightly protruding beyond the introrse, large cells), filaments slender, densely villose-hirsute, slightly shorter. Inner stamens hardly longer, with narrow-ovate anthers (connectives obtuse or truncate, slightly protruding beyond the lateral cells), filaments slightly narrower, about as long, densely hirsute; glands rather large, globose, depressed, sessile, protruding between the outer filaments. Staminodes slender, minute, stipitiform, acute, ½ mm l., pilose towards base. Ovary slender, ellipsoid, glabrous, ½—¾ mm l., gradually merging into the about 1½ mm l., slender style with small, discoid stigma. Berry ellipsoid, pear-shaped, smooth, with many broad, obtuse, longitudinal ribs, up to 4½ cm l., 2½ cm in diam., top slightly excavated. Outer layer thick, 5 mm in diam.; pericarp woody, ½—1 mm thick.

. Distribution: Vicinity of Rio de Janeiro.

. Rio de Janeiro: Mandioca (Riedel s.n., fl. [Bs.D.Kw.L.Ms.O.]); Cantagallo (Peckolt 36, fr. [B.], 166, fl. [W.], type of *Cr. hypoleuca*); locality unknown (Blanchet s.n., in bud [Bs.]; Mendonça 184, fl. [D.]).

Species excludendae:

- | | |
|-------------------------------------|---------------------------------------|
| <i>Cryptocarya Ai-iiva</i> Mart. | = <i>Aniba permollis</i> |
| <i>Cryptocarya Berteroana</i> Gay | = <i>Beilschmiedia</i> |
| <i>Cryptocarya Canelilla</i> H.B.K. | = <i>Aniba Canelilla</i> (H.B.K.) Mez |
| <i>Cryptocarya dubia</i> H.B.K. | = <i>Aiouea</i> |

<i>Cryptocarya dubia</i> Spreng.	=	Ocotea
<i>Cryptocarya emarginata</i> Meissn.	=	Beilschmiedia
<i>Cryptocarya hirsuta</i> Schott	=	Endlicheria hirsuta (Schott) Nees
<i>Cryptocarya laevis</i> Mart.	=	Aiouea
<i>Cryptocarya monticola</i> Mart.	=	Ocotea
<i>Cryptocarya mucronata</i> Spreng.	=	Ocotea
<i>Cryptocarya nitida</i> Philippi	=	Beilschmiedia
<i>Cryptocarya pachycarpa</i> Gleason	=	Aniba trinitatis (Meissn.) Mez
<i>Cryptocarya pretiosa</i> Mart.	=	Aniba Canelilla (H.B.K.) Mez
<i>Cryptocarya pyriformis</i> Nees	=	Endlicheria pyriformis (Nees) Mez
<i>Cryptocarya Riedelii</i> Meissn.	=	Ocotea
<i>Cryptocarya robusta</i> A. C. Smith	=	Endlicheria robusta (Smith) Kosterm.

3. The genus *Licaria* with notes on *Phyllostemonodaphne* and *Dryadodaphne*.

Licaria Aubl., *Guia*. I (1775), p. 313, III, t. 121; Lam., *Enc.* 3 (1789), p. 470; Nees, *Syst. Laur.* (1836), p. 344; Endl., *Gen.* (1837), p. 320; id., *Ench.* (1841), p. 197; Spach, *Hist. Végét., Phaner.* X (1841), p. 471; Steudel, *Nomencl. ed. 2, II* (1841), p. 41; Meissn., *Gen. II* (1836—43), p. 238; Lindley, *Veg. Kgd. m.* (1846), p. 537; Meissn. in *D.C., Prodr.* XV, 1 (1864), p. 259; Baillon, *Hist. II* (1870), p. 452; Benth. in *Benth. & Hook., Gen. III* (1880), p. 150; Pfeiffer, *Nomencl.* (1873), p. 107; Durand, *Index Gen.* (1888), p. 489; Mez in *Jahrb. Bot. Gart. Berl.* V (1889), p. 220; Dalla Torre & Harms, *Gen.* (1900—07), p. 177 (sub *Ocotea*) et 585; Post & Kuntze, *Lexicon* (1904), p. 330; Lemée, *Dict.* 4 (1929), p. 85; Benoist in *Arch. Bot.* V (1931), p. 274; Kosterm. in *Meded. Bot. Mus. Utrecht* 25 (1936), p. 34; id. in *Pulle, Fl. Surin.* II, 1 (1936), p. 323; id. in *Rec. Trav. Bot. Néerl.* XXXIII (1936), p. 720. — *Acrodiclidium* Nees, *Laur. Expos.* (1833), p. 13; id., *Syst., l.c.*, p. 22, 244, 266; Endl., *Gen., l.c.*, p. 319, n. 2042; id., *Ench., l.c.*, p. 197; Dietrich, *Synops.* 2 (1840), p. 1332; Spach, *l.c.*, p. 471; Steudel, *l.c.*, I, p. 21; Meissn., *Gen., l.c.*, I, p. 326, II, p. 238; Juss. in *Orbigny, Dict.* 7 (1846), p. 259; Lindley, *l.c.*, p. 537; Griseb., *Fl. Br. W. I. isl.* (1860), p. 280; Reichenb., *Nomencl.* (1861), p. 71, n. 2668; Meissn. in *D.C., l.c.*, p. 84; id. in *Fl. Bras.* V, 2 (1866), p. 172; Baillon, *l.c.*, p. 474; Pfeiffer, *l.c.*, I, p. 35; Benth., *l.c.*, p. 154; Durand, *l.c.*, p. 349, n. 6190; Mez, *l.c.*, p. 81; Pax in *Engl. Prantl., Pflfam.* III, 2 (1889), p. 123; Dalla Torre, *l.c.*, p. 178, n. 2819; Post, *l.c.*, p. 7; Britton & Wilson, *Fl. Porto Rico & Virg. isl.* (1924), p. 316;

Lemée, l.c., I, p. 50; Benoist, l.c., p. 65; Kosterm. in Pulle, l.c., p. 315; id. in Rec., l.c. — *Evonymodaphne* Nees, Syst., l.c., p. 22, 244, 263; Lindley, Syst. ed. 2 (1836), p. 442; Endl., Gen. l.c., p. 319, n. 2041; id., Ench., l.c., p. 197; Dietrich, l.c., p. 1332; Spach, l.c.; Steudel, l.c., I, p. 621; Meissn., Gen. I, p. 326, II, p. 238; Lindley, Veg. Kgd., l.c., p. 537; Reichenb., l.c., p. 71; Meissn. in D.C., l.c., p. 111; id. in Fl. Bras., l.c., p. 203; Baillon, l.c., p. 437; Pfeiffer, l.c., I, p. 1322; Benth., l.c., p. 158; Durand, l.c., p. 349; Mez, l.c., p. 82; dalla Torre, l.c., p. 177 (sub *Ocotea*); Post, l.c., p. 222. — *Triplomeja* (*Triplomeia*) Rafin., Fl. Tellur. (1838), p. 134; Mez, l.c.; dalla Torre, l.c., p. 178; Post, l.c., p. 574. — *Misanteca* Cham. et Schldl. in Linnaea 6 (1831), p. 367; Nees, Expos., p. 13, n. 18; id., Syst., l.c., p. 22, 244, 272; Endl., Gen., l.c., p. 319, n. 2043; id., Ench., l.c., p. 197; Dietrich, l.c., p. 1332, 1345 (*Misantheca*); Spach, l.c., p. 471; Steudel, l.c., II, p. 151 (*Misantheca*); Meissn., Gen. I, p. 326, II, p. 238; Orbigny, l.c., 7, p. 259 (*Misantheca*); Lindl., Veg. Kgd., l.c., p. 537; Reichenb., l.c., p. 71, n. 2667; Meissn. in D.C., l.c., p. 95; Baillon, l.c., p. 475; Benth., l.c., p. 155; Pfeiffer, l.c., II, p. 324 (*Miscanthea*); Durand, l.c., p. 349, n. 6191; Mez, l.c., p. 100; Pax, l.c., p. 123; dalla Torre, l.c., p. 178, n. 2820; Post, l.c., p. 368; Britton, l.c., p. 317; Lemée, l.c. 4 (1932), p. 494; Fawcett & Rendle, Fl. Jamaica 3 (1914), p. 205; Small, Florida trees (1913), p. 76; id., Fl. Southeastern United St., ed. 2 (1913), p. 823; id., Fl. Miami (1913), p. 127; id., Man. Southeast. Fl. (1933), p. 923; Sargent, Trees & shrubs (1913), p. 133; Standley in Contr. U.S. Nat. Herb. 23, 2 (1922), p. 292. — *Symphysodaphne* A. Rich. in R. de la Sagra, Fl. Cub. XI (1850), p. 190; Meissn. in D.C., l.c., p. 175; Mez, l.c., p. 100; Durand, l.c.; dalla Torre, l.c.; Post, l.c., p. 545. — *Nobeliodendron* O. C. Schmidt in Fedde, Repert. 27 (1929—30), p. 151. — *Chanekia* Lundell in Phytologia I, 5 (1937), p. 177.

Type species: *Licaria guianensis* Aublet.

Trees or shrubs in tropical south and central America, including the West Indies. Leaves alternate or opposite, thinly chartaceous to rigid-coriaceous, penninerved. Flowers hermaphrodite, in axillary and sub-terminal panicles, rarely solitary, sub-umbellate or capitate. Involucre wanting. Flower tube usually distinct, rarely shallow. Tepals six in two rows, equal or unequal, patent or incurved. The stamens of the two outer rows transferred into small staminodes or abortive; those of the third row fertile, entirely free, partly connate or united into a staminal

tube; filaments distinct or wanting. Anthers 2-celled; cells introrse, extrorse or extrorse-apical; valves dehiscent from base to top. Fourth row of stamens usually abortive, rarely staminal, minute, stipitiform. Ovary included in the tube, free, ellipsoid to globose-ovoid, glabrous or pilose; style usually slender with truncate or obtuse, hardly conspicuous stigma. Berry ellipsoid, smooth, mucronulate; base partly covered by a hemispherical, rarely rather shallow, double-, rarely triple-margined cupule; the inner margin entire, erect, thin; the outer one patent, irregular, thick. Cotyledons flat-convex, large, including the minute, 2—4 - leaved, glabrous, rarely pilose plumule and minute, conical radicle.

According to the original description of NEES, the genus *Acrodictidium* has been established mainly on the following flower characters: stamens of the two outer rows transferred into staminodes; stamens of the third row fertile, free, provided with basal glands. Though this genus was fairly well characterised by these characters, NEES included in it the following species: *A. brasiliense*, *guianense*, *Kunthianum* and *Jamaicense*; only the former two belong, strictly speaking, to *Acrodictidium*; *A. Kunthianum* (Nees himself was not sure about its place in the system!) belongs to *Ocotea*; *A. Jamaicense* to *Misanteca*.

The genus *Misanteca*, established by CHAMISSO and SCHLECHTENDAHL on one species only: *M. capitata*, has been characterised by only three fertile, but entirely united stamens. They, as well as Nees, mistook the glands for staminodes, hence the difference with *Acrodictidium* was based principally on the connate stamens and on the capitate inflorescence of the only species.

MEISSNER rejected already the generic character of presence of staminodes in *Acrodictidium*, where he cites: outer stamens sterile or wanting. As his predecessors he mistook the glands of *M. capitata* for staminodes.

MEZ tried to circumscribe the limits of these two genera more definitely, basing the difference on the presence or absence of staminodes, as well as on the free or united stamens, but unfortunately he has not been able to carry this system through: under *Acrodictidium* a species without staminodes is cited and another with entirely connate stamens. Of *Misanteca* three species were known up to that time; the inflorescence character, as a difference had to be abandoned. Both genera were kept separate from the genus *Mezilaurus* on the strength of the presence of glands in the two former, the lack of them in the latter genus and on the shape of the fruit cupules. Two species of

Acrodiclidium, enumerated by Mez, miss however the glands (this is not so important, the same may be found in the genus *Endiandra*).

I myself tried to keep Acrodiclidium and Misanteca separate, though it became more and more obvious, that the presence or absence of staminodes was of little generic value, as several Acrodiclidium species (*misanthae*, *oppositifolium*, *salicifolium*, etc.) either lacked them or possessed only an incomplete number. Another character was then taken into consideration: the shape of the cupule: in the species with connate stamens it usually possesses a much higher inner margin (hence both margins do not lie in the same level, as in the species with free stamens); the inner margin is partly formed by the base of the stamens. On the strength of this character *Acrodiclidium salicifolium* should be transferred to *Misanteca*. This character, however, has only little importance, if it cannot be combined with another; I hoped to find this in the texture of the leaves, which in the originally described species of *Misanteca* shows a dense, areolate reticulation on both sides of the leaf, but unfortunately this character has proved to be of no value at all, as several *Misanteca* species (in the sense of Mez) possess exactly the same leaves and leaf texture as some Acrodiclidium species.

The uncertain limits of *Misanteca* and Acrodiclidium forced LUNDELL (*Phytologia* I, p. 177) to create a new genus *Chanekia* on minor differences, as: shape of the staminal tube, the gradation of union of the stamens and the exertion of the anthers.

But all these characters vary strongly in the different species; all gradations from strongly exerted stamens to completely included ones, combined with entirely free to entirely connate stamens may be found in the species of *Licaria*, even in the flowers of the same plant (*L. Martiniana*, *multiflora*, *caudata*, *Pucheri*, etc.).

The best thing to do, was to put these three genera together, especially because their general facies, the shape of the cupule, of the anthers, ovary and stigma point to the same relationship, but separate them easily from their nearest allies: *Mezilaurus* and *Endiandra*. The latter has no cupule at all, the former only a narrow, thin margin at the top of the fruiting pedicel, whereas *Licaria* has always a well-developed, double-margined cupule (though in the thinner cupules this double margin is rather difficult to see).

As the renaming of the Acrodiclidium species becomes inevitable, I prefer to revive the oldest generic name: *Licaria* of AUBLET,

though its description had been based on sterile material. The type specimen in the Jussieu herbarium in Paris is well preserved, and as has been already pointed out by me in *Meded. Bot. Mus. Utrecht* 25 (1936), p. 34, I am absolutely sure of its identity.

Key to the species:

- 1a. Staminodes of the two outer rows present 2
- b. Staminodes of the two outer rows wanting 27
- 2a. Fourth row of staminodes distinct 3
- b. Fourth row of staminodes wanting 4
- 3a. Leaves cordate. Flower tube glabrous inside. Outer staminodes with sub-orbicular, fimbriate tops. Fertile stamens glabrous with rather large cells. Staminodes of the fourth row short, glabrous 1. *L. endlicheriaefolia*
- b. Leaves with rounded-acute base. Tube sericeous inside. Outer staminodes large, auricled. Fertile stamens sericeous at base, with auricled anthers, cells minute. Staminodes of the fourth row large, densely sericeous 2. *L. macrophylla*
- 4a. Cells of fertile stamens introrse. Ovary and leaves glabrous 5
- b. Cells of fertile stamens extrorse. Ovary and leaves glabrous or sericeous 10
- 5a. Leaves conspicuously, densely, prominently reticulate on both sides. Flowers 4—7 mm l. in sub-racemes 5. *L. Puchury-major*
- b. Flowers $1\frac{1}{2}$ —3 mm l. in panicles 6
- 6a. Leaves opposite 8. *L. rigida*
- b. Leaves alternate 7
- 7a. Tepals patent, as long as the tube. Anther cells distinct. 8
- b. Tepals incurved, shorter than the tube. Anther cells minute 9
- c. Tepals at last reflexed, tube wanting. Anther cells large .. 9. *L. armeniaca*
- 8a. Outer staminodes rectangular. Basal glands as long as the sessile stamens. Anther cells large 3. *L. amara*
- b. Outer staminodes clavate or spatulate. Anther cells small. Basal glands half as long as stamens; filaments conspicuous, as broad as anthers 4. *L. Camara*
- 9a. Leaves coriaceous, elliptical, 8—12 cm l., reticulate on both sides. Panicles 3—12 cm l. Basal glands distinct. Cupule verrucous, triple-margined, outer margin of 6 large lobes. 6. *L. Canella*

- b. Leaves rigid-coriaceous, elliptical, 10—14 cm l., veins inconspicuous. Panicles 3 cm l. Basal glands wanting. Cupule smooth with shortly lobed outer margin. 7. *L. cayennensis*
- 10a. Ovary glabrous 11
- b. Ovary sericeous 23
- 11a. Leaves opposite 12
- b. Leaves alternate, rarely sub-opposite 15
- 12a. Leaves densely aureo-sericeous beneath 13
- b. Leaves sparsely, minutely sericeous or glabrescent beneath 14
- 13a. Leaves sericeous beneath. Flowers sub-globose. Stamens included. Outer staminodes conspicuous. Basal glands as long as filaments. Anther cells minute 23. *L. aurea*
- b. Leaves sericeous-tomentellous beneath. Flowers cylindrical. Stamens exserted. Outer staminodes as a rule abortive. Basal glands minute or wanting. Anther cells large 24. *L. oppositifolia*
- 14a. Leaves rigid-coriaceous, 6—8 × 1½—2 cm. Flowers unknown. Cupule thick, 28 mm high, 35 mm in diam., warty; margin triple: inner one 1—2 mm high, outer one 8 mm thick, patent, with large, irregular lobes in a double row. 8. *L. rigida*
- b. Leaves chartaceous, 10—13 × 2—3 cm. Flowers narrowly urceolate. Outer staminodes slender, spatulate, 1 mm l. Stamens exserted. Cupule thin, smooth, 7 mm high, 15 mm in diam.; margin nearly simple 22. *L. Meissneri*
- c. Leaves thinly chartaceous, 10—12 × 3—4½ cm. Flowers broadly funnel-shaped. Outer staminodes ovate or broadly elliptical, ¾ mm l. Stamens included. Cupule thin, 7 mm high, 15 mm in diam.; margin nearly simple. 20. *L. debilis*
- 15a. Flowers 3 mm in diam.; tube nearly wanting; tepals reflexed after anthesis. Outer staminodes 1½ mm l. Basal glands tepaloid, nearly as long as stamens. 9. *L. armeniaca*
- b. Flowers up to 2 mm in diam.; tube distinct. Tepals erect or erect-patent. Outer staminodes up to 1 mm l. Basal glands shorter than stamens 16
- 16a. Flowers cylindrical-urceolate, 3½ mm l. 10. *L. polyphylla*
- b. Flowers sub-globose or broadly infundibuliform, up to 2½ mm l., rarely sub-urceolate, but then only 1½ mm l. 17
- 17a. Leaves distinctly prominulously reticulate above 18
- b. Leaves smooth above 19
- 18a. Leaves lanceolate, 6—9 × 1½—2 cm. Flowers sub-globose; tepals incurved. Outer staminodes ½ mm l.; filaments of

- fertile stamens not distinct. West Indian species
 25. *L. salicifolia*
- b. Leaves elliptical, 12—16 × 3—6 cm. Flowers infundibuli-
 form; tepals erect-patent; outer staminodes $\frac{3}{4}$ mm l.; fila-
 ments of fertile stamens slender, distinct .. 13. *L. Pucheri*
- 19a. Leaves elliptical, 7—10 × 2½—3½ cm; minutely areolate
 above. Flowers sub-urceolate, rather slender
 11. *L. multiflora*
- b. Leaves lanceolate, 6—9 × 1½—3 cm, or elliptical, 12—19
 × 4—9 cm; smooth above. Flowers globose 20
- 20a. Leaves lanceolate, 6—9 × 1½—3 cm; soon glabrous be-
 neath. West Indian species 26. *L. sericea*
- b. Leaves elliptical, 12—19 × 4—9 cm, tomentellous beneath. 21
- 21a. Flowers 2—2½ mm in diam. 30. *L. Mutisii*
- b. Flowers 1—1½ mm in diam 22
- 22a. Leaves elliptical, 12—16 × 4—5½ cm, acuminate. Panicles
 dense, 4—6 cm l. Basal glands distinct. 31. *L. brasiliensis*
- b. Leaves broadly elliptical, 13—19 × 6—9 cm, abruptly
 acuminate. Panicles lax, 6—9 cm l. Basal glands minute ..
 32. *L. latifolia*
- 23a. Leaves densely aureo-sericeous beneath. Flowers 3—4
 mm l. 24
- b. Leaves minutely sericeous or glabrescent beneath. Flowers
 1½—2 mm l. 25
- 24a. Leaves sub-opposite, 9—17 × 3½—7½ cm. Flowers 4
 mm l. 35. *L. chrysophylla*
- b. Leaves alternate, 6—7 × 2—2½ cm. Flowers 3 mm l. ..
 36. *L. Appellii*
- 25a. Leaves 12—19 × 4—9 cm; veins prominulous above,
 densely minutely sericeous beneath, nerves not united;
 top acuminate 26
- b. Leaves 7—13 × 2½—4 cm, nerves impressed above; be-
 neath sericeous, glabrescent, veins arcuately united; top
 caudate-acuminate, acumen slender, 15 mm l.
 34. *L. guianensis*
- 26a. Leaves coriaceous, usually oblanceolate or obovate, tape-
 ring. Stamens united. Stigma slightly thickened below
 apex 33. *L. Martiniana*
- b. Leaves chartaceous, elliptical, base shortly acute. Stamens
 conglutinate, not united. Stigma not thickened
 31. *L. brasiliensis*
- 27a. Leaves opposite 24. *L. oppositifolia*
- b. Leaves alternate 28

- 28a. Adult leaves laxly hirsute or tomentose beneath 29
 b. Adult leaves glabrous or microscopically, sparsely pilose beneath 31
- 29a. Leaves areolate-reticulate on both sides. 25. *L. salicifolia*
 b. Leaves smooth above, laxly reticulate beneath 30
- 30a. Panicles few-flowered, hardly branched, raceme-like. Flowers $1\frac{1}{2}$ –2 mm in diam. with unequal tepals; stamens included; basal glands pairwise united 27. *L. Peckii*
 b. Panicles rather many-flowered, branched. Flowers 1 mm in diam. Tepals nearly equal. Stamens exserted; basal glands free 28. *L. mexicana*
- 31a. Flowers capitate at the apex of long peduncles
 18. *L. capitata*
 b. Flowers in lax, few- to many-flowered panicles, or solitary 32
- 32a. Flowers densely sericeous 12. *L. Quirirafuina*
 b. Flowers glabrous or nearly so 33
- 33a. Adult leaves laxly hirsute beneath, on both sides conspicuously, prominulously areolate-reticulate. 25. *L. salicifolia*
 b. Adult leaves glabrous or minutely, sparsely tomentellous beneath, on both sides smooth or rather inconspicuously, laxly reticulate 34
- 34a. Flowers solitary or in 1–3-flowered panicles. Basal glands wanting 35
 b. Panicles many-flowered. Basal glands present 36
- 35a. Branchlets densely, minutely tomentellous. Leaves coriaceous to rigid-coriaceous, 4 – $8 \times 1\frac{1}{2}$ – 3 cm. Flowers solitary on, up to $\frac{1}{2}$ cm l., minutely pilose peduncles ..
 37. *L. cubensis*
 b. Branchlets glabrous. Leaves chartaceous-coriaceous, $4\frac{1}{2}$ – 12×2 – $4\frac{1}{2}$ cm. Panicles glabrous, 1–3-flowered, $1\frac{1}{2}$ – $3\frac{1}{2}$ cm l.; peduncles 1 – $2\frac{1}{2}$ cm l. 38. *L. misantlae*
 c. Branchlets densely tomentose. Leaves membranaceous-chartaceous, 11 – 15×3 – 4 cm. Panicles densely tomentose, few-flowered, up to 3 cm l. 39. *L. tenuifolia*
- 36a. Stamens entirely connate 37
 b. Stamens free or slightly connate 40
- 37a. Basal glands free 15. *L. Cervantesii*
 b. Basal glands pairwise united 38
- 38a. Cupule obscurely double-margined 19. *L. excelsa*
 b. Cupule conspicuously double-margined 39
- 39a. Leaves coriaceous, ovate-elliptical, acuminate, 8 – $12 \times 3\frac{1}{2}$ – $5\frac{1}{2}$ cm. Staminal tube exserted, $1\frac{3}{4}$ mm l. Glands

- basal 16. *L. triandra*
- b. Leaves coriaceous, acuminate, ovate-elliptical, usually elliptical, 11—19 × 3—7 cm. Staminal tube slightly exerted, 1½—2 mm l. Glands attached somewhat above the base of the staminal tube 14. *L. limbosa*
- c. Leaves elliptical, caudate-acuminate, thinly chartaceous, 8—12 × 3—4 cm. Staminal tube included, ½ mm l. Glands basal 17. *L. Cufodontisii*
- 40a. Leaves chartaceous, laxly, prominulously reticulate (above less) 21. *L. caudata*
- b. Leaves coriaceous, smooth on both sides 29. *L. campechiana*

The necessary new combinations are given below, together with additional data on literature, description and new localities. The species are enumerated according to their systematical relationship.

1. *Licaria endlicheriaefolia* Kosterm. nov. comb. = *Acrodiclidium endlicheriaefolium* Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 724.

2. *Licaria macrophylla* (Smith) Kosterm. nov. comb. = *Acrodiclidium macrophyllum* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 101.

The name *Misanteca*, Kosterm. in Rec. Trav. Bot. Néerl., l.c., p. 725 in adnot. should be altered into *Ocotea*.

3. *Licaria amara* (Mez) Kosterm. nov. comb. = *Acrodiclidium amarum* Mez in Fedde, Repert. 16 (1920), p. 305.

4. *Licaria Camara* (Rob. Schomb.) Kosterm. nov. comb. = *Acrodiclidium Camara* Rob. Schomb. in Lond. Journ. Bot. 3 (1844), p. 629.

Additional literature: Heckel, Pl. médic. Guia. franç. (1897), p. 34; Dragendorff, Heilpflanz. (1898), p. 238.

5. *Licaria Puchury-major* (Mart.) Kosterm. nov. comb. = *Acrodiclidium Puchury-major* (Mart.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 87.

Addit. liter.: C. Porto in Rodriguesia II, 5 (1936), p. 8; Bailon, Botan. médic. 1 (1883), p. 691; Nees & Dierbach, Pharm. Bot., ed. 2, I (1839), p. 341; Luerssen, Med.-pharm. Bot. 2 (1882), p. 567; Herlant, Etude médicam. nat., etc. (1892), p. 585.

6. *Licaria Canella* (Meissn.) Kosterm. nov. comb. = *Acrodiclidium Canella* (Meissn.) Mez in Jahrb., l.c., p. 90.

7. *Licaria cayennensis* (Meissn.) Kosterm. nov. comb. =

Acrodiclidium cayennense (Meissn.) Mez in Jahrb., l.c., p. 91.

Addit. liter.: *Acrodiclidium copennamense* Pulle in Fedde, Repert. 10 (1911—12), p. 286.

8. *Licaria rigida* Kosterm. nov. comb. = *Acrodiclidium rigidum* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 38.

9. *Licaria armeniaca* (Nees) Kosterm. nov. comb. = *Acrodiclidium armeniacum* (Nees) Mez in Jahrb., l.c., p. 85.

Addit. liter.: Williams in Field Mus. Public. XV (1936), p. 147. Nomen vernac.: „Moena; moena colorada” (Peru: Williams!). Description of the tree (Williams!): „Tree, up to 15 m high; crown spreading; trunk slender and unbranched for 3—4 m; bark greyish brown or almost black with coarse lenticels. Fruit edible.” New locality: Mouth of Rio Embira, lat. 7° 30' S, long. 70° 15' W (Krukoff 5185, fr. July [NY.Ws.]).

10. *Licaria polyphylla* (Nees) Kosterm. nov. comb. = *Nectandra polyphylla* Nees, Syst. (1836), p. 322 = *Acrodiclidium guianense* Nees, Syst., l.c., p. 268.

Addit. liter.: Correa, Dicc. 2 (1931), p. 175, cum tab. Nom. vernac.: „Cedro amarelo” (Correa).

11. *Licaria multiflora* Kosterm. nov. comb. = *Acrodiclidium multiflorum* Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 735.

The specimen: Krukoff 6900, cited by Kostermans, l.c., p. 736, belongs to *Licaria Appellii*.

12. *Licaria Quirirafuina* Kosterm. nov. sp.

Typus: Klug 2131; Peruvia [F.].

„Efuina Quirirafuina” (Peruvia: nom. vern. ab indig. Huitotutunt. ex Klug).

Arbor 8 m alta (Klug), ramulis gracilibus subangulatis sulcatis dense ferrugineo-tomentellis ramis glabris brunneo-griseis striatis laevibus gemmis dense ferrugineo-tomentosis. Folia alterna chartacea opaca elliptica vel ovato-elliptica 9—12 × 3—4 cm, basi breviter acutata margine plana apice acuminata acumine graciliore obtuso usque ad 15 mm longo; supra viridia juniora sparse albo-sericea adulta glabra laevia nervo mediano filiforme prominulo costis vix conspicuis; subtus sub-laevia brunnea glabra nervo mediano costisque utrinque 5, superioribus arcuato connectis, erecto-patentibus prominentibus venis vix conspicuis. Petioli graciles canaliculati dense minuteque ferrugineo-tomentelli glabrescentes 10—14 mm longi. Paniculae axillares dense

multiflorae dense ferrugineo-sericeo-tomentellae usque ad 6 cm longae, pedunculis gracilibus striatis usque ad 2 cm longis ramulis brevibus patentibus vel erecto-patentibus gracilibus. Bracteae bracteolaeque deciduae. Pedicelli crassi cylindrici dense sericeo-tomentelli $1\frac{1}{2}$ mm longi. Flores flavescentes dense sericeo-tomentelli, $1\frac{1}{2}$ mm longi graciles, tubo urceolato $\frac{1}{2}$ — $\frac{3}{4}$ mm longo $\frac{1}{2}$ mm diametro intus glabro; tepalibus aequalibus carnosus erectis ovato-triangularibus acutis $\frac{3}{4}$ mm longis. Stamina valde exserta subconglutinata vel libera $\frac{1}{2}$ mm longa antheris ovato-triangularibus depressis glabris minimis cellulis extrorsis filamentis distinctis duplo longioribus pilosis, glandulis magnis liguliformibus staminibus suaequilongis (antheris tantum conspicuis) per paria connatis carnosus. Ovarium glabrum ellipsoideum $\frac{1}{2}$ mm longum in stylum gracile glabrum $\frac{3}{4}$ mm longum transeuns stigmatibus obtuso obscuro staminum tubum distincte superante. Fructus ignotus.

Distributio: Peruvia.

Peruvia: Dept. Loreto, Florida, Rio Putumayo ad ostium fl. Rio Zubineta (Klug 2131, fl. Maio-Jul. [Dl. F. Ws.]).

L. multiflorae affinis sed staminodiis exterioribus deficientibus glandulis magnis stylo exserto diversa.

13. *Licaria Pucheri* (R. & P.) Kosterm. nov. comb. = *Acrodiclidium Pucheri* (R. & P.) Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 736.

14. *Licaria limbosa* (R. & P.) Kosterm. nov. comb. — *Laurus limbosa* Ruiz et Pavon, Fl. Peruv. IV (1802), t. 360 et Laurogr. t. 23. — *Nectandra limbata* Nees in Linnaea 21 (1848), p. 509 (excl. syn. *Laurus Puchery* Ruiz); Walp. Ann. 3 (1852-53), p. 311; Meissn. in D.C., Prodr. XV, 1 (1864), p. 156; id. in Fl. Bras. V, 2 (1866), p. 265 (excl. syn. *Laurus Puchery* Ruiz et cit. spec. Ruiz, et Jürgensen 176); Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 89 — *Nectandra limbosa* Nees ex Meissn., 11. cc.; Mez, l.c. — *Acrodiclidium limbosum* Mez in Jahrb., l.c. (descr. florib. exclus.). — *Acrodiclidium limbatum* (Nees) Macbride in Publ. Field Mus. XI (1931), p. 18. — *Acrodiclidium benense* Rusby in Bull. Torrey Bot. Cl. 49 (1922), p. 262 — *Misanteca Pittieri* Mez in Bull. Herb. Boissier ser. 2 III (1903), p. 230 — *Misanteca costaricensis* Johnston in Contr. Gray Herb. 70 (1924), p. 70.

Typus: Ruiz s.n.; Peru [Madrid].

Tree, 8-10 m high (Tonduz). Flowering branchlets densely, minutely rusty-tomentellous, soon glabrous, subcylindrical, branches glabrous, smooth, shining, violet- or reddish-brown, or grey with small, protruding lenticels, buds pilose or glabrous. Leaves alternate, coriaceous, glabrous, slightly shining, densely, prominulously areolate-reticulate on both sides (above evanescent), ovate-elliptical to elliptical, 11-19 × 3-7 cm, base acute and cuneate, margin hardly recurved, top acuminate; above midrib (flattened towards base) and prim. nerves filiform-prominulous; beneath midrib prominent, rather flat, prim. nerves (7-10 per side) erect-patent, slightly arcuate, prominulous. Petioles slender, glabrous, sulcate, slightly canaliculate, 1-2 cm l. Panicles axillary and more or less clustered on the young branchlets, densely, minutely rusty-tomentellous, many-flowered, pyramidal, 4-7 cm l.; peduncles stout, 2-3 cm l., branchlets few, patent, 1-2 cm l., bearing the flowers in clusters. Bracts and bracteoles deciduous. Pedicels rather thick, about 1 mm l., glabrous. Flowers glabrous, 2-2½ mm l., tube obconical, 1 mm l., glabrous inside. Tepals erect, fleshy, ovate-suborbicular, acute, 1¼ mm l., glabrous outside, inside (especially at base) villose-hirsute, margins fimbriate; inner tepals narrower. Staminal tube slightly exserted, cylindrical, 1½-2 mm l., 1¼ mm in diam., acutish; anthers ovate, acutish, ¾ mm l.; filaments densely, laxly villose-hirsute, as long as anthers; basal glands pairwise united, transversally elliptic (base truncate), pressed against the tube, ¾ mm w., hardly ½ mm high on short, broad stalks, the latter adnate to the staminal tube, giving the impression of sub-basal glands. Ovary ovoid-ellipsoid, glabrous, 1 mm l., style rather thick, cylindrical, 1½ mm l., stigma truncate, small, slightly exserted. Berry ellipsoid, smooth, mucronulate, up to 2½ cm l., 1½ cm in diam. Cupule hemispherical, thick, red, verruculous with small rusty dots, up to 1½ cm high, 2½ cm in diam., 1 cm deep; outer margin thick, irregular, patent, up to 4 mm w., inner one erect, thinner, entire, up to 2½ mm high; pedical 5-6 mm l., obconical.

Distribution: Costa Rica, Ecuador, Bolivia, Peru, Venezuela.

Costa Rica: Hacienda Belmira near Santa Maria, alt. 1450 m. (Tonduz 11612, fr. Jan. [B. Bs. D. Gr. Kw. NY. P. Ws. Br.], type of *Misanteca Pittieri*); hills of Santiago near San Ramon, alt. 1100 m. (Brenes 14403, fl. June [D. Gr. Ws.], type of *Misanteca costaricensis*; 17689, fr. Apr. [P. Ws. Kw. Br.]); prov. San José, Zapote, alt. 1200 m. (Standley 40238,

fr. Apr. [Ws.]. Ecuador: Prov. Oro, Portovelo, alt 1000 m. (Rose 23442, fl., fr. Oct. [Gr.Ws.], type of *Acrodiclidium acuminatum* Rose mscr.; Hitchcock 21216, fl. Sept. [Gr.NY.Ws.]). Bolivia: second portage of Bopi R., alt. 700 m. (White 649, fr. Aug. [Kw.NY.Ws.], type of *Acrodiclidium benense*); Above San Juan (Williams 256, fr. April [Kw.Br.]); prov. Velasco, Quisere (Herzog 437, fr. July [L.]). Colombia: locality unknown (Triana 1027 [P.]); Mariquita (Dawe 935 [Kw.]). Peru: Dept. San Martin, San Roque, alt 1500 m. (Williams 6978, fr. June [F.]); Vitoc, prov. Tacna, Tafalla (Ruiz s.n., fr. [Br.Bs.D.]). Venezuela: State of Zulia near Perija (Tejera 65, fr. [Gr.Ws.]).

Mez gives under *Acrodiclidium limbosum* also a description of flowers, but he cites only the specimen of Ruiz, which is a fruiting specimen; there must have been an error.

The specimen from Venezuela differs in having thinner leaves with less conspicuous reticulation; the cupules, though slightly deeper correspond fairly well with those of the type specimen.

15. *Licaria Cervantesii* (H.B.K.) Kosterm. nov. comb. — *Laurus Cervantesii* H.B.K., Nov. Gen. 2 (1817), p. 134 (col. edit.); Kunth, Synops. 1 (1822), p. 461; Nees, Syst. (1836), p. 656; Meissn. in D.C., Prodr. XV, 1 (1864), p. 258; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 492. — *Misanteca Jürgensenii* Mez in Jahrb., l.c., p. 102; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 111; Donn. Smith, Enum. Pl. Guatemal. 2 (1891), p. 67 (non id., l.c. 7 (1905), p. 30: est *Mis. capitata*); Sargent, Trees and shrubs 2 (1913), p. 133 in adn.; Standley in Contr. U.S. Nat. Herb. 23, 2 (1922), p. 292. — *Nectandra limbata* Meissn. (nec Nees) p.p. in D.C., l.c., p. 156 (quoad cit. spec. Jürgensen 176); Mez, l.c.

Typus: Humboldt s.n.; Mexico, Masantlan [P.].

Tree (Galeotti); branchlets slender, sub-angular, smooth, glabrous, slightly shining, violet-brown; buds nearly glabrous; branches slender, cylindrical, glabrous, greyish-brown, smooth, with scattered, conspicuous lenticels. Leaves alternate, chartaceous, glabrous, slightly shining, densely, prominulously areolate on both sides (above often evanescent), elliptical, rarely broadly elliptical, 11-20 × 3-6 (-8) cm; base angustate, top acuminate, acumen usually rather inconspicuous; midrib and prim. nerves above prominulous; beneath midrib strongly prominent, prim. nerves (8-12 per side) prominent, erect-patent, lightly arcuate. Petioles slender, glabrous, striate, canaliculate, 10-12 mm l., merging into the leaf blades. Panicles axillary rather few-flowered, 3-8 cm l.; peduncles rather slender, 2-5 cm l., glabrous; branch-

lets few, patent and erect-patent, sparsely, minutely tomentellous, $\frac{1}{2}$ -2 cm l. Bracts and bracteoles deciduous. Pedicels minutely pulverulent-tomentellous, thick, $\frac{1}{2}$ -1 mm l., gradually merging into the flower tube. Flowers white (Galeotti), more or less clustered at the end of the branchlets, $1\frac{1}{2}$ -2 mm l., $1\frac{1}{4}$ mm in diam. at apex; tube minutely pulverulent-tomentellous, infundibuliform, $\frac{3}{4}$ mm l., glabrous inside. Tepals fleshy, glabrous, erect, ovate-suborbicular, acute, $\frac{3}{4}$ -1 mm l., inner ones narrower. Staminal tube 1 mm l., acutish; anthers glabrous, triangular, acutish, $\frac{1}{2}$ mm high; filaments as broad, $\frac{1}{2}$ mm l., pilose. Basal glands free, liguliform (slightly broadened at apex), as long as filaments, basal part pilose, pressed against and in the staminal tube. Ovary glabrous, ellipsoid, $\frac{1}{2}$ mm l., style slender, cylindrical, slightly longer, stigma truncate, inconspicuous, inclined. Berry ellipsoid, smooth, up to 22 mm l., 15 mm in diam., mucronulate. Cupule subhemispherical, rather shallow, verruculous, up to 10 mm high, 20 mm in diam., 6 mm deep; outer margin patent, thick, irregular, up to 5 mm w., inner one thin, entire, erect, conspicuous, up to 5 mm high; pedicel about 3 mm l.

Distribution: Southern Mexico, Guatemala.

Mexico: Oaxaca: Pinatopa Nacional, Chinantla (Jürgensen 176, type of *Mis. Jürgensenii*; 177, fl. fr. Apr. [Dl.Kw.]; Galeotti 260, fl. fr. May [D.Dl.Bs.Ws.]); Tepic, San Blas (Lamb 611, fr. Febr. [Bs.D.Kw.]); Masantlan, alt. 1000 m (Humboldt s.n. [P.]); Rio Mapache (Conzatti 4366, fr. Dec. [Gr.Kw.Ws.]). **Guatemala:** Alta Verapaz, Matacuí (Donn. Smith 1650, fl., fr. Apr. [D.Ws.Kw.]).

It is difficult to separate this species from *L. limbosa*, the difference being only the free glands in the flower. The cupules are slightly smaller and shallower than those of *L. limbosa*. It seems to have its distribution in central America, whereas *L. limbosa* prefers the higher regions of Ecuador, Bolivia, Colombia, Venezuela and Peru.

16. *Licaria triandra* (Sw.) Kosterm. nov. comb. — *Laurus triandra* Swartz, Prodr. (1788), p. 65; id., Fl. Ind. Occ. II (1800), p. 706; Willd., Spec. Pl. II (1799), p. 482; Persoon, Synops. I (1805), p. 449; Poiret, Enc., Suppl. 3 (1813), p. 324; Lunan, Hort. Jamaic. 1 (1814), p. 79; Mez. in Jahrb. Bot. Gart. Berl. V (1889), p. 103. — *Misanteca triandra* (Sw.) Mez. in Jahrb., l.c., p. 103; id. in Arb. Bot. Gart. Breslau I (1892), p. 111; Duss in Ann. Inst. Colon. Marseille 3 (1897), p. 304; Urban, Symb. 4 (1905), p. 244; id. 8 (1920), p. 231; Sargent, Trees and shrubs II

(1913), p. 133, t. 155; Small, Florida trees (1913), p. 76; id., Fl. Southeast. United St. ed. 2 (1913), p. 823; id. Flora Miami (1913), p. 127; id., Man. Southeast. Fl. (1933), p. 923 cum tab.; Fawcett et Rendle, Fl. Jam. 3 (1914), p. 205, f. 84; Britton & Wilson, Fl. Porto Rico and Virg. isl. 5 (1924), p. 317; Barker et Dardeau, Fl. d'Haiti (1930), p. 120; Sudworth, Checklist forest trees U.S.A. (1927), p. 126; Schmidt in Fedde. Repert. 27 (1930), p. 151. — *Endiandra Jamaicensis* Spreng., Syst. I (1825), p. 176; Roem. & Schult., Mantissa III (1827), p. 400. — *Endiandra viridis* J. Presl, Rostlinar (1825), p. 29. — *Acrodiclidium Jamaicense* (Spr.) Nees, Syst. (1836), p. 270; Meissn. in D.C., Prodr. XV, 1 (1864), p. 85; Griseb., Fl. Br. W. I. isl. (1860), p. 280; id., Pl. Wright. in Mem. Acad. Amer. Sc. Art. N. ser. VIII (1860), p. 187; id., Pl. Cub. (1866), p. 111; Sauvalle, Fl. Cubana (1873), p. 143 n. 2218; Benth. in Benth. & Hook., Gen. III (1880), p. 165; Fawcett, Provisional list flow. plants of Jamaica (1893), p. 33. — *Symphysodaphne cubensis* Rich. in R. de la Sagra, Fl. Cub. II, tomo 11 (1850), p. 190, t. 67; Benth., l.c., Meissn., l.c., p. 176; Griseb., Mez, l.c. — *Aydendron Cubense* Rich. in R. de la Sagra, l.c., p. 187; Griseb., Pl. Cub., l.c., p. 111. — *Misanteca Cubensis* Benth., l.c., p. 155. — *Laurus parviflora* Poeppig p.p. ex Meissn., l.c., p. 85.

Typus: Swartz s.n.; Jamaica [St.].

„Cigua prieta”; „Cigua gorrita” (S. Domingo: Ekman); „Lebisa, Levita, Leviza” (Cuba: Ekman, Luna, Sauvalle); „Gua-jané” (Habana: Leon); „Sweet-wood” (Jamaica: Fawcett et Rendle); „Laurier jaune” (Haiti: Barker et Dardeau).

Tree, 7-16 m high. (Harris, Jack, Swartz etc.); bark dark-grey (Jack); branchlets subangular, slender, those bearing the flowers minutely, sparsely yellowish-tomentellous, soon glabrous; buds tomentellous, soon glabrous; branches subcylindrical, rather slender, slightly shining, dark-violet or reddish-brown with conspicuous, prominent, orbicular, small lenticels; at last grey. Leaves alternate, chartaceous-coriaceous, glabrous (young ones sparsely tomentellous, soon glabrous); slightly shining, usually broadly ovate-elliptical, rarely lanceolate-elliptical, 8-12 (-15) × 3½-5½ cm; base contracted into the petiole, slightly cuneately decurrent, margin flat, top acuminate (acumen broad, usually obtuse, up to 2 cm l.); above slightly, densely areolate-reticulate or smooth, midrib (flattened towards base) and prim. nerves filiform, prominulous; beneath densely, conspicuously, prominulously areolate-reticulate, midrib prominulous, usually

flattened, prim. nerves (7-8 per side) prominulous, erect-patent, slightly recurved at margin. Petioles slender, glabrous, slightly canaliculate, 10-14 mm l. Panicles lax, axillary near the top of the branchlets, rather many-flowered, pyramidal, minutely, sparsely tomentellous, 5-8 (-12) cm l.; peduncles rather thick, 1-2 cm l., flowers more or less clustered. Bracts and bracteoles deciduous. Pedicels rather thick, at first slightly pilose, soon glabrous, $1\frac{1}{2}$ mm l., merging into the flower tube. Flowers glabrous (or minutely pilose at base), obconical, $2-2\frac{1}{2}$ mm l., $1-1\frac{1}{2}$ mm in diam. at apex, after anthesis soon longer; tube obconical, fleshy, $1-1\frac{1}{4}$ mm l., glabrous inside. Tepals fleshy, erect, glabrous, (base within excepted), broadly depressed ovate-triangular, acute, slightly contracted at base; inner ones narrower with fimbriate margins. Staminal tube exserted (after anthesis strongly exserted), cylindrical, $1\frac{3}{4}$ mm l., $1\frac{1}{4}$ mm in diam., top obtuse; anthers $\frac{3}{4}$ mm l. with large cells; filaments densely hirsute; glands flattish, pressed against staminal tube below the anthers, usually depressed-cordate, top emarginate or acutish, reaching up to half the filament length, pairwise united, touching each other. Ovary glabrous, ellipsoid, $\frac{3}{4}$ mm l., style thick, cylindrical, 1 mm l., stigma small, truncate, or discoid, papillose, exserted (immediately after anthesis included). Berry ellipsoid-ovoid, up to 20 mm l., 12 mm in diam., smooth, mucronulate. Cupule thick, hemispherical, 9-12 mm high, 12-18 mm in diam., 8 mm deep with rusty dots without; inner margin erect, entire, 2-3 mm high, outer one patent, thicker, irregular, up to 3 mm w.; pedicel obconical, merging into the tube, up to 5 mm l.

Distribution: West Indian islands from Florida to Martinique.

Cuba: Consolación del Sur (Hermann s.n. [NY.]); San Yago, Saladero et Santa Maria (Linden 1993, fl. June [B. Bs. D. Dl. Dr. Ms. Kw. Lg. Lp. NY. P. W. Br.], type of *Symphysodaphne Cubensis*); Monte Verde (Wright 1401 [NY. St. C. D. Lg. Mi. Gr. Bs. P. Kw. Dl. B. Ws.]; 1409, fl., fr. July [Kw.]; 1410, fl., fr. Apr. [Bs. Dc. Kw. Gr. Mi. St. NY. P. Dl. B. Lg. Ms. Br.]; 1410 a, fr. March [Gr. Kw. Dc. St. NY.]; 481 [Br. D. Kw. Gr. P. St. W.]); Cienfuegos, Limones, Soledad, Gavilan (Jack 5367, ster. Apr. [F. P. H.]; 4569, fr. Apr. [NY. H. P. Ws.]; 5702, fr. Febr. [F. H. St.]; 5022, ster. March [P. H. Ws. Kw.]; 5671, ster. Febr. [H.]); Prov. Oriente: Bayate (Ekman 4578, ster. Febr. [D. St.]; 7363, fl. June [D. St.]; 8587, fr. Apr. [St.]); Cayo del Rei near Paso Estancia (Ekman 2390, fr. Aug. [D. St.]); Barancoa (Ekman 4153, ster. Jan. [D. St.]); Mir at Rio Rioja (Ekman 4877, fr. March [D. St.]); Banes, Puerto Rico in pasture (Ekman 6635, fl., fr. Nov. [D. St.]); Ensenada de Mora (Britton, Cowell, Shafer 12938, fl. March [D. F. NY. Ws.]); Prov. Pinar del Rio; Toscana at Las

Calaveras in woods (Ekman 17425, fr. Sept. [St.]); Sierra Guane (Shafer 10551, fr. Nov. [D.NY.Ws.]); Mariel, San Ramon, road side (Ekman 12887, fl. June [St.]). Prov. Santa Clara: Caibarien, Potreros (Fernando 513, fl. Oct. [NY.]); Lomas de Banao (Luna 265, fr. Febr. [NY.]). Prov. Habana: valley of Rio Bacuranao (Wilson, Leon 11596 [Ws.], 11598, 2843, fr. Jan. [NY.]); Loma de Ramirez near Laguna Ariguanabo (Leon 9719, fl. Apr. [NY.]; 10703, fr. Apr. [P.NY.]); woods of Caval Rock (Shafer 52, fr. Apr. [NY.]); Inuas, Rio del Medio (Leon 12221, ster. Aug. [NY.]); Sierra Maestra Pico Turquino (Leon 11018, fl. July); la Havanne (de la Sagra 57 [D.C.]); local. unknown (la Sagra s.n. [D.P.W.]; 339 [Br.]; 342, 343, fr. [Bs.D.Dr.P.W.Kw.], type of *Aydenndron Cubense*; Alexander [NY.]; Wm. Wright [Br.]; Poeppig, p.p. [Kw.]). Hispaniola: Haiti: vallée des Trois Riv., Port de Paix at Petit Fond (Ekman H. 4856, fl. Sept. [D.St.Ws.]); ile de la Gonave, Ravine Forgue (Ekman H. 9607, fr. Febr. [D.St.]); Barrabas (Raunkiaer 1443, fr. Apr. [Ws.]). Santo Domingo: Prov. Santiago, Las Lagunas et Arroyo Harenquillo, alt. 300 m. (Ekman H. 16084, fl. Oct. [D.St.]); Llano Costero, prov. Seybo, Higüey in forest at Mata-Chalupa (Ekman H. 12157, fl. Apr. [D.St.]); Hygüey to Gato (Taylor 443, fr. Dec. [NY.D.F.]); prov. Barahona near Barahona (Fuertes 968 b [Dl.P.NY.W.]; 164 [D.U.], fl. March); Azua, hills north of town (Rosa Fitch, Russell 3935, fr. March [D.NY.]); local. unknown (Wright 422, fr. [Ws.Dc.]; coll. unkn. in hb. Spr. [D.]). Florida: Brickell hammocks south of Miami (Rodham s.n. [Gr.H.Kw.Ws.Mi.]; Small 2241, ster. Nov. [NY.], 3302, fr. Febr. [NY.], 4049, fl. Nov. [NY.]; 4832, fr. Nov. [NY.]; Simmonds s.n., fr. July [H.]). Porto Rico: Vieques isl., Isabel segunda to Martineau, alt. 150 m. (Shafer 2635, fr. Jan. [NY.Ws.]); Quebradillas (Stevens 2061, fr. May [NY.]); Bayamon (Stahl 85, fr. July [D.L.]). Jamaica: Tweadhilload, alt. 830 m. (Harris 5728, fr. June [Br.D.Gr.H.NY.]); Blue Mts., Chester valley road, alt. 1000 m. (Harris 5436, fl. Nov. [Br.Bs.D.F.L.NY.St.Ws.]); 6816, fr. Febr. [Br.D.NY.Ws.]; 5374, fl. Oct. [D.]; 5377, fl. Oct. [D.Br.H.Ws.]; Plato, alt. 1000 m. (Harris 5488, fr. Jan. [Br.D.St.]); Plato road, alt. 660 m. (Harris 6283, fr. May [NY.]); Green valley, St. Andrew, alt. 700 m. ((Harris 11003, fr. July [D.F.Kw.NY.Ws.Mi.]; 5630, fr. March. [Bs.Br.D.F.Gr.]; 5362, fl. Oct. [NY.Bs.Br.D.F.]); Berwick hill (Harris 5377, fl. Oct. [Bs.F.NY.]); Manchester, Mandeville (Britton 1051, fr. Aug. [NY.]; 3234, fl. Sept. [NY.]; Brown 113, fr. Febr. [NY.]); S. Anns Bay (Britton 2497, fr. March [F.NY.]); Santa Cruz Mts., Potsdam (Britton 1276, fl. Sept. [NY.]); Bluefields, roadside (Britton 1606, fr. Sept. [NY.]); St. Mary (Nab s.n. [Kw.O.]); local. unknown (Swartz s.n. [Br.K.Dc.St.]; March 1550 [Ca.D.Gr.Kw.NY.]; Bertero [W.D.DC.]; Zadyan [Kw.]; Wilson 630 [D.P.]; Hart 578 [Ws.]). Martiniqne: Hauteur du Prêcheur (Duss 85 [NY.]; Piée 244, fr. [P.]).

This species is very closely related with *L. limbosa*; the principal differences being the shape and length of the leaf and the glands at the base of the staminal tube.

17. *Licaria Cufodontisii* Kosterm. nov. spec. — *Ocotea tenera*, p.p. Auct. (non Mez), Schmidt in *Cufodontis*, *Piante*

racc. dur. la Spediz. Biolog. Austriaca in Costarica nel 1930 in Archivio Botanico XI (1935), p. 51.

Typus: Cufodontis 187; Costarica [D.].

Arbor humilis, ramulis cylindricis gracilibus brunneo-griseis glabris. Folia alterna tenuiter chartacea glabra opaca viridia elliptica 8-12 × 3-4 cm, basi breviter acuta apice caudato-acuminata; supra laevia nervo mediano prominulo, costis vix prominulis, subtus nervo mediano valde prominente costis utrinque 10-12 erecto-patentibus vix arcuatis prominulis, venis reticulatis vix prominulis, petiolis gracilibus glabris canaliculatis 5-8 mm longis. Paniculae axillares subterminales laxae multiflorae pyramidatae 5-11 cm longae, pedunculis gracilibus minute laxe cinereo-tomentellis, usque ad 3 cm longis, ramulis tenuibus patentibus glabrescentibus usque ad 2 cm longis, floribus subumbellatis bracteis bracteolisque deciduis. Pedicelli tenues glabri 3-5 mm longi in tubum perianthii transeuntes. Flores glabri, basi rubri apice flavescentes (Cufodontis) sub-hemispherici 1½ mm longi, 2 mm diametro; tubo late obconico, ½ mm alto, intus glabro; tepalibus subaequalibus subincurvis carnosis ovato-suborbicularibus acutis 1 mm longis intus ad basin minute pilosis. Stamina inclusa vel subexserta, connata tubo stamineo truncato 1½ mm longo hirsuto; antheris cellulis conspicuis apicalibus filamentis non distinctis glandulis basalibus per paria connatis, compressis, filamentis sub-aequilongis, tubum stamineum annulo cingentibus. Ovarium glabrum ellipsoideum 1½ mm longum in stylum conicum sub-gracilem aequilongum sensim transeuntes stigmate truncato inconspicuo. Fructus ignotus.

Distributio: Costarica.

Costarica: Peninsula Osa ad Golfo Puerto Dulce, circa Puerto Jimenez, ad rivulos versus St. Domingo (Cufodontis 187, fl. Apr. [D.]).

L. triandrae affinis, differt foliorum forma et consistentia, florum characteribus.

18. *Licaria capitata* (Cham. & Schldl.) Kosterm. nov. comb.
— *Misanteca capitata* Cham. & Schldl. in *Linnaea* 6 (1831), p. 367; Nees, Laur. Expos. (1833), p. 13; id., Syst. (1836), p. 273; id. in *Linnaea* 21 (1848), p. 500; A. Gray in Proc. Amer. Acad. Arts & Sc. 5 (1862), p. 189; Meissn. in D.C., Prodr. XV, 1 (1864), p. 96; Baillon, Hist. 2 (1870), p. 466; Hemsley in Biol. Centr. Amer. 3 (1882-86), p. 71; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 101, t. 3, f. 37; Sargent, Trees and Shrubs 2

(1913), p. 133 in adn.; Standley in Contr. U. S. Nat. Herb. 23, 2 (1922), p. 292; id. in Publ. Field Mus. X (1931), p. 200; id., XII (1936), p. 142. — *Acrodiclidium glabrum* Brandegees in Univ. Calif. Publ. Bot. 6 (1919), p. 497; Standley, l.c. — *Misanteca Jürgensenii* Auct. (non Mez), Donn. Smith, Enum. Pl. Guatemal. 7 (1905), p. 30. (Fig. 5).

Typus: Schiede 1148; Mexico, Misantla [D.].

“Palo misanteco”; Laurel” (Veracruz: Schiede, Liebmann, Standley); “Laurel della sierra” (Oaxaca: Standley); “Agua-catillo” (Brit. Honduras: Standley).

Small and slender tree, up to 10 m high (Karwinski, Liebmann, Lundell, Standley). Branchlets rather slender, angular, sulcate, densely, minutely white-tomentellous or pulverulent-tomentellous, rarely yellowish hirsute-tomentellous; branches glabrous, smooth, with small, scattered lenticels, subangular, grey, buds densely tomentellous (the bud between the inflorescences protected by ovate, acute, at margin pilose, 5 mm l. scales). Leaves alternate, rigid-coriaceous, young ones sparsely, minutely, pulverulent-tomentellous, soon glabrous; adult ones glabrous, elliptical, (11-) 15-30 × (4-) 5-10½ cm, base shortly acute, top rather obscurely acuminate; above slightly shining, green, densely, minutely areolate-reticulate or smooth, midrib prominulous, thin or flattened, prim. nerves and veins usually inconspicuous; beneath paler, midrib strongly prominent, prim. nerves (8-11 per side) prominent, erect-patent, veins prominulous, very densely areolate-reticulate. Petioles stout, soon glabrous, striate, flattish above, 1½-2 cm l. Inflorescences clustered at the base of the young branchlets; peduncles stout, subcylindrical, slightly striate, densely, minutely grey pulverulent-tomentellous, 4-8 cm l., usually thickened at the apex, bearing the sessile flowers in a close head, about 1-1½ cm in diam. (each head usually composed of two lateral and an apical one); the lateral ones on short pedunclets, subtended by thin, ovate-suborbicular, acute, 3 mm l. bracts with tomentellous top outside and margins). Flowers sessile, subtended by similar bracteoles, up to 1½ mm l. Bracts and bracteoles deciduos. Flowers densely yellowish-rusty tomentellous, at the time of the dehiscence of the anther cells 2½-3 mm l., subcylindrical, rapidly growing out; tube urceolate-cylindrical, 2 mm l., soon strongly urceolate, glabrous inside. Tepals erect, fleshy, scaly, ovate-triangular, ½ mm l., at last 1 mm l., glabrous inside. Staminal tube attached below the tepals, conspicuously

exserted, at first $1\frac{1}{2}$, at last 3 mm l., top obtuse, cells large, $\frac{3}{4}$ mm l., filaments densely hirsute, staminal tube surrounded at base by 6 flat, liguliform (slightly broader towards apex), $\frac{3}{4}$ mm l. glands, touching each other. Ovary glabrous, ellipsoid, $\frac{3}{4}$ mm l., merging into the slender, cylindrical, $1\frac{1}{2}$ (at last



Fig. 5. *Licaria capitata*: Flowering branch with details of flower and fruit cupules.

2) mm l. style with truncate, hardly conspicuous stigma. Berry ellipsoid, smooth, mucronulate, up to $2\frac{1}{2}$ cm l., $1\frac{1}{2}$ cm in diam. Cupule deep-red (Standley), sub-hemispherical, thick, verruculose with rusty dots, up to 3 cm in diam., 2 cm high, 1 cm deep; outer margin patent, thick, irregular, up to 5 mm w., inner one thin, erect, entire, up to 1 mm high.

Distribution: Southern Mexico, Guatemala, Honduras.

Mexico: Veracruz: Zacuapan (Schenck 706, fr. Oct. [D.]; Purpus 8143, fr. [Gr.NY.Ws.Mi.], 8096 [Ca.], type of *Acrodiclidium glabrum*); Misantla (Schiede et Deppe 1148, fl., fr. March [D.Br.Ki.W.Lg.]; Liebmann 726 (Laur. 105), ster. March [K.]); Lobani, Chinantla (Liebmann, Laur. 81 [Lg.]); Papantla (Schiede et Deppe s.n., fr. [Br.W.Lg.]); Paso del Correo on Rio Tecolata (Liebmann 730 (Laur. 111), fr. June [D.Gr.K.W.Lg.Mi.]); Barranca de Tenampa (Purpus 2354, fl. Nov. [Gr.NY.Ws.Mi.], 2068, fr. Sept. [Ca.Gr.Ws.Br.]); Corral de Piedras (Purpus 7802, fl. June [Gr.H.NY.Ws.Mi.]). Between Tihuatlan and Paso Real (Karwinsky 716 et 716 b. fl., fr. [Lg.]). Oaxaca: Teotalcingo (Liebmann 731 (Laur. 102), fr. Oct. [K.Kw.P.]); between San Carlos and Plantanillo (Liebmann 729 (Laur. 110), fr. Dec. [K.St.Ws.]); Colipa (Liebmann 728 (Laur. 106), fl. March [K.]; Karwinsky 57, ster. [Lg.]; Mirador (Liebmann 727 (Laur. 100), ster. Jan. [K.]; Purpus 12050, fl. Apr. [St.H.NY.Ws.Mi.]; Sartorius s.n., fl. [W.]); Xicaltepec (Liebmann 725 (Laur. 107), fr. Apr. [D.K.M.Ws.]); Huasteca, Wartenberg near Tantoyuca (Ervendberg 375, fr., fl. Aug. [Gr.]); local, unknown (Kerber 410, fl. [Ws.]). Honduras: Eldorado, Punta Gorda (Schipp 990, fr. Aug. [Br.Dl.Gr.H.Kw.St.Ws.Mi.]); El Cayo district, Chalillo crossing Cohune Ridge road (Lundell 6551, fr. June [A.]; 6539, fr. June [A.]); Middlesex (Schipp S. 24, fr. Sept. [D.]); Toledo (Peck 802, fl. March [D.Gr.]); Atlantida, Lancetilla valley, near Tela (Standley 54729, fr. Dec. [Ws.H.], 55798, ster. [Ws.H.]). Guatemala: Alta Verapaz, Cubilquitz (Türkheim 7885, fl. Febr. [D.Gr.H.Kw.M.NY.Ws.], 4085, fl. Apr. [Ws.], II, 291 [B.]).

Only in a few cases I have been able to confirm Mez' statement, that the plumule leaves are pilose; usually they are glabrous, but always strongly developed.

19. *Licaria excelsa* Kosterm. nov. spec.

Typus: Pittier 3200; Panama [Ws.].

Arbor 60 m alta trunco erecto (Pittier); ramulis crassis glabris subnitidis sulcatis, lenticellis cinereis crebriusculis, gemmis glabris, ramis glabris griseis, lenticellis magnis crebris. Folia alterna rigide coriacea glabra sub-nitida elliptica vel subovato-elliptica, 24×8 cm, basi breviter acutata margine vix recurvula apice acuminata; nervo mediano supra lato praesertim basin versus applanato costis filiformibus prominulis venis vix conspicuis obscure reticulatis; subtus nervo mediano prominulo lato applanato costis utrinque 10 erecto-patentibus arcuatis, venis prominulis perdense minuteque areolato-reticulatis. Petioli glabri crassi striati sub-canaliculati usque ad 23 mm longi. Paniculae axillarum sub anthesin dense ferrugineo-sericeo-tomentellae. Bractee ovatae acutae 5 mm longae. Flores ignoti. Paniculae fructiferae usque ad 15 cm longae glabrae pedunculis

percrassis rugulosis. Bacca laevis ellipsoideo-ovoidea. Cupula subhemispherico-cylindrica 20 mm alta, 25 mm diametro, 16 mm profunda; margine duplice, exteriore patente obscuro, $1\frac{1}{2}$ mm lato, interiore erecto, integro, 2 mm alto; pedicellis fructiferis crassis obconicis usque ad 15 mm longis apice usque ad 10 mm diametro.

Distributio: Panama.

Panama: In silva humida prope castra Las Siguas, in clivo meridionale montis Cerro de la Horqueta, alt. 1700 m. (Pittier 3200, fr. Mart. [Ws.]).

20. *Licaria debilis* (Mez) Kosterm. nov. comb. = *Acrodiclidium debile* Mez in Jahrb., l.c., p. 99.

21. *Licaria caudata* (Lundell) Kosterm. nov. comb. — *Chanekia caudata* Lundell in Phytologia I, 5 (1937), p. 178.

Typus: Lundell 6183; Brit. Honduras [A.].

Tree, 7-10 m high, $7\frac{1}{2}$ -15 cm in diam. (Lundell, Schipp). Branchlets slender, subangular, grey or yellowish hirsute-tomentose; branches glabrous, cylindrical, grey, with scattered, conspicuous, orbicular, protruding lenticels; buds densely grey or yellowish tomentose-hirsute. Leaves alternate, chartaceous, lanceolate or lanceolate-elliptical, $5-9 \times 1\frac{1}{2}-3$ cm; base acute or cuneate, margin slightly recurved, top long-caudate acuminate, acumen obtuse. Young leaves with grey hairs along midrib; adult ones glabrous (except for a few, scattered hairs along midrib beneath), dull; above midrib prominulous, veins minutely prominulous, laxly reticulate; beneath midrib prominent, prim. nerves (6-10 per side) erect-patent, rather straight, prominulous, veins prominulous, reticulate. Petioles slender, grey-tomentose, at last glabrescent, 4-7 mm l. Panicles axillary or internodial, slender, lax, hardly branched, few-flowered, 2-3 $\frac{1}{2}$ cm l., peduncles thin, with scattered grey hairs, $1\frac{1}{2}$ -2 cm l. Pedicels slender, 3 $\frac{1}{2}$ -5 mm l., glabrous, provided with sub-persistent, minute, ovate, acute, at margin pilose, bracteoles. Flowers white (Schipp), subglobose, truncate, $1\frac{1}{2}$ -2 mm l., glabrous; tube hemispherical, 1-1 $\frac{1}{4}$ mm l., densely hirsute inside. Tepals fleshy, erect, slightly concave, subequal, ovate-orbicular, acute, pilose inside, 1 mm l. Stamens included, slightly connate at base, thick, fleshy, hirsute within and at base without, $\frac{3}{4}$ mm l. and w.; anthers glabrous, depressed-triangular, broader than long, not distinct from filaments; cells large, extrorse-apical; basal glands small, free, suborbicular, flat. Ovary glabrous, ellipsoid, 1 mm l.,

merging into the rather slender, 1 mm l. style, usually slightly exerted beyond the stamens; stigma minute, truncate, inconspicuous. Fruit unknown.

Distribution: Brit. Honduras.

Brit. Honduras: El Cayo district, Arenal-Valentin road (Lundell 6183, fl. June [A.]); Toledo Distr., camp 32 Guatem.-Hondur. boundary survey alt. 700 m. (Schipp 1279, fl. March [A.Br.H.]).

22. *Licaria Meissneri* (Mez) Kosterm. nov. comb. = *Acrodiclidium Meissneri* Mez in Jahrb., l.c., p. 98.

23. *Licaria aurea* (Hub.) Kosterm. nov. comb. = *Acrodiclidium aureum* Huber in Bot. Mus. Goeldi (Pará) VI (1910), p. 69. New locality: Amazonas, S. Paulo de Olivença, basin of Belem Creek. (Krukoff 8923, fl., fr. Oct.-Dec. [NY. U.]).

24. *Licaria oppositifolia* (Nees) Kosterm. nov. comb. = *Acrodiclidium oppositifolium* Nees in Linnaea 21 (1848), p. 500.

Addit. liter.: Knuth in Fedde, Repert., Beiheft 43 (1927), p. 341.

25. *Licaria salicifolia* (Sw.) Kosterm. nov. comb. = *Acrodiclidium salicifolium* (Sw.) Griseb. in Fl. Brit. W. I. isl. (1860), p. 280. Ad synonym: *Ocotea mucosa* Hemsl., Biol. Centr. Amer. 3 (1883), p. 73.

This species does not occur in Mexico at all; *Ocotea mucosa* Hemsl. has been based on a specimen labeled: "Pavon, Mexico"; this, however, is an error; the specimen is one of Sessé and Mocino, collected probably in Portorico (cf. Urban, Symb. Antill. 4, p. 665 and Sprague in Kew Bull. 1926, p. 417).

26. *Licaria sericea* (Griseb.) Kosterm. nov. comb. = *Acrodiclidium sericeum* Grisebach in Fl. Brit. W. I. isl. (1860), p. 280. New locality: Guadeloupe (de Ponthieu s.n. [Br.]).

27. *Licaria Peckii* (Johnst.) Kosterm. nov. comb. — *Misan-teca Peckii* I. M. Johnston in Contr. Gray Herb. n.s. 70 (1924), p. 70. — *Chanekia Peckii* (Johnst.) Lundell in Phytologia I, 5 (1937), p. 178.

Typus: Peck 826; Brit. Honduras [Gr.].

"Zootzni" (Guatemala: Lundell).

Small tree (Aguilar, Bartlett, Lundell), 30-60 cm in diam. (Bartlett); branchlets cylindrical, rather thick, densely rusty or

yellowish, velutinous-hirsute; branches glabrous, grey; buds densely yellowish hirsute. Leaves alternate, chartaceous, elliptical, $10-16 \times 3\frac{1}{2}-8$ cm, base gradually acute or sometimes slightly rounded, margin slightly recurved, top acuminate (acumen obtuse); above at last glabrous (midrib excepted) rather dull or somewhat shining, midrib and prim. nerves (often more or less also second. ones) conspicuously impressed (leaves hence often sub-bullate), veins minutely, densely prominulously reticulate or obliterate; beneath laxly hirsute, hairs patent, $\frac{1}{2}-\frac{3}{4}$ mm l., midrib strongly prominent, prim. nerves (7-9 per side) prominent, erect-patent, slightly arcuate, second. nerves laxly reticulate, prominulous, veins hardly conspicuous. Petioles rather thick, cylindrical densely hirsute, 5-15 mm l. Panicles (often raceme-like) hardly branched, axillary, clustered near the top of the branches, rather few-flowered, 4-6 cm l.; peduncles usually thick, densely yellowish velutinous-hirsute, 2-3 cm l. Pedicels thick, obconical, glabrous, merging into the flower tube, $\frac{1}{2}-1$ mm l. Bracts and bracteoles deciduous. Flowers yellow (Bartlett), glabrous, subglobose, apex truncate, $1\frac{1}{2}-2$ mm in diam.; tube broadly conical, fleshy, 1 mm l., glabrous inside. Tepals thick, fleshy, incurved; outer ones triangular, acutish, 2 mm w., 1 mm high; inner ones visible between the outer ones, ovate-suborbicular, obtuse, about 1 mm in diam. Stamens included, glabrous, thick, depressed-triangular, slightly connate at base, $\frac{1}{2}-\frac{3}{4}$ mm l., 1 mm w.; cells large, lateral-apical, valves thickish; basal glands as long as stamens, flattened, pairwise united, touching each other, upper margin irregular. Ovary glabrous, ovoid, $\frac{3}{4}$ mm l., style slender, as long, usually exerted, stigma minute, truncate. Berry ellipsoid-ovoid, smooth, mucronulate, up to 25 mm l., 15 mm in diam. at base, purple. Cupule thick, red (Bartlett), subhemispherical or conical-hemispherical, up to 16 mm in diam., 15 mm high, smooth, usually with minute, yellowish spots; margin double, inner one thin, erect, entire, up to 4 mm high, outer one patent, thick, irregular, up to 3 mm w.; pedicel obconical, thick, short, merging into the cupule.

Distribution: Guatemala, Honduras.

Guatemala: Dept. of Peten, La Libertad (Lundell 2865, fr. March [A.]; 3435, fr. May [A.Kw.H.]); Plancha Piedra (Lundell 2216, fr. March [A.]; Aguilar 242, fl. June [A.]); Uaxactun (Barlett 12214, fl. March [A.], 12236, fr. March [A.], 12550, fl. Apr. [A.]). **Brit. Honduras:** El Cayo distr. (Chanek 140, fl. March-June [A.]); Retiro (Lundell 6315, ster. June-Aug. [A.]); San Antonio (Barlett 13072, fr. May [A.]); local. unknown (Peck 826, fl. [Kw.]).

28. *Licaria mexicana* (Brandeg.) Kosterm. nov. comb. — *Acrodiclidium mexicanum* Brandege in Univ. Californ. Publ. 6 (1919), p. 497. — *Chanekia mexicana* (Brandeg.) Lundell in Phytologia I, 5 (1937), p. 181.

Typus: Purpus 8081; Mexico [Ca.].

Small tree; branchlets rather thick, cylindrical, densely rusty hirsute or tomentose; branches glabrous, dark-brown with scattered lenticels; buds densely sericeous-hirsute. Leaves alternate, coriaceous, lanceolate to elliptical, 4—14 × 2—5 cm, base acutish or obtuse, margin flattish, top rather obscurely, broadly acuminate. Young leaves above sparsely tomentose; adult ones above glabrous (tomentum on midrib often subpersistent), smooth, dull, midrib and prim. nerves usually impressed, veins hardly conspicuous (often microscopically areolate), beneath brownish, dull, laxly hirsute (denser on midrib and in the axils of midrib and prim. nerves), midrib strongly prominent, prim. nerves (8—12 per side) prominent, slightly arcuate, erect-patent, often more or less arcuately united along margin, veins prominulous, densely reticulate. Petioles stout, densely tomentose, cylindrical, hardly canaliculate, 3—9 mm l. Panicles axillary, rather many-flowered, up to 7 cm l.; peduncles long, rather slender, densely rusty-tomentose, up to 4 cm l.; branchlets few, patent, slender, laxly tomentose, short, up to 1 cm l. Bracts and bracteoles deciduous. Pedicels glabrous, slender, 2—3 mm l. Flowers glabrous, rather slender, 2 mm l., 1 mm in diam. at apex; tube urceolate or subconical, 1¼ mm l., glabrous inside. Tepals nearly equal, erect, fleshy, glabrous, depressed ovate-suborbicular, acute, ¾ mm l. Stamens exerted, 1 mm l., free or connate at base; anthers depressed-triangular, hardly ¼ mm l.; filaments as broad, ½—¾ mm l., densely hirsute; basal glands free, flat, thin, suborbicular, acutish, nearly as long as stamens. Ovary glabrous, ellipsoid, ¾ mm l., style as long, slender, cylindrical, stigma truncate, inconspicuous, included. Berry not seen. Cupule rather smooth with few small, rusty spots, sub-hemispherical, up to 1 cm high, 1½ cm in diam., 7 mm deep; margin double, outer one irregular, patent, thick, up to 2 mm w., inner one thin, erect, 1 mm high.

Distribution: Mexico: Veracruz.

Mexico: Veracruz: Zacuapan near Tlacoquistla (Purpus 2293, fr. Nov. [Gr.], 8081, fl. June [Gr.H.]; 8164, fl., fr. Dec. [Ca.Gr.Mi.NY.Ws.]; 8430, fl. [Ca.D.K.Gr.Mi.NY.Ws.]; 14335, fl. Apr. [A.K.H.]).

29. *Licaria campechiana* (Standl.) Kosterm. nov. comb. —

Ocotea campechiana Standley in Carnegie Inst. Washington, Publ. 461 (1935), p. 56; id. in Field Mus., Publ. 350, Vol. XII (1936), p. 143. — *Chanekia campechiana* (Standl.) Lundell in Phytologia I, 5 (1937), p. 178. — *Misanteca campechiana* (Standl.) Lundell, Carnegie Inst. Wash., Publ. 478 (1937), p.; id. in Phytologia, l.c. — *Phoebe campechiana* Standl. (nomen) ex Lundell, Phytography of Yucatan in Carnegie Inst., Publ. 436 (1934), p. 281 et 312.

Typus: Lundell 1295; Mexico: Campeche [F.].

„Ektit”; „Dzol” (Guatemala: Lundell); „Laurelillo” (Mexico: Lundell); „Copal-chi” (Guatemala: Bartlett).

Tree, 8—25 m high, 35—45 cm in diam. (Bartlett, Lundell). Branchlets slender, angular, densely grey sericeous-tomentellous; branchlets glabrous, grey with many small lenticels; buds densely grey-sericeous. Leaves alternate, coriaceous, lanceolate-elliptical or narrowly lanceolate, (4—) 7—11 × (1/2—) 1 1/2—3 cm, base gradually acute, margin slightly recurved, top long-caudate, obtusely acuminate; young leaves laxly sericeous, adult ones above glabrous, dull-green, smooth, midrib impressed or flat, nerves inconspicuous; beneath paler, smooth, slightly, minutely sericeous, glabrescent, midrib prominent, prim. nerves (11—18 per side) patent, straight, hardly conspicuous. Petioles slender, glabrescent, canaliculate, 5—8 mm l. Panicles axillary, minutely rusty-tomentellous, rather few-flowered, 2—6 cm l., peduncles rather slender, 1—2 1/2 cm l.; branchlets few, patent, very short; flowers in clusters. Pedicels slender, minutely tomentellous, 1—2 mm l. Flowers sub-globose, minutely tomentellous, 1 1/2—2 mm l.; tube 1 1/2 mm l., hirsute inside. Tepals fleshy, slightly incurved, pilose inside; outer ones ovate-triangular, acute, depressed, 1/2—3/4 mm l., inner ones smaller, 1/2 mm l. Stamens slightly exerted, partly connate, 3/4 mm l.; anthers ovate-elliptical, obtuse, cells large, extrorse; filaments shorter, as broad as anthers, slightly pilose, especially within; basal glands small, flat, free. Ovary glabrous, ellipsoid-ovoid, 1/2 mm l., style slender, 1 mm l., stigma minute, inconspicuous. Fruit unknown.

Distribution: Mexico, Campeche; Guatemala.

Mexico: Campeche, Tuxpena (Lundell 1295, 1380, fl. Febr. [A.]). Guatemala: Distr. of Peten, La Libertad (Lundell 3065, fl. Apr. [A.H.]; 3359, fl. May [A.]; 3409, fl. May [A.Kw.]); Uuxactun (Bartlett 12339, fl. March [A.]).

30. *Licaria Mutisii* Kosterm. nov. comb. = *Acrodiclidium*

Mutisii Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 745.

Addit. description of fruit: Berry smooth, mucronulate, ellipsoid, 3 cm l., 18 mm in diam. Cupule large, rather thick, smooth, hemispherical, (upper part sub-cylindrical) 2 cm l., 2 cm in diam.; margin double (leg. Dawe 36 [Kw.]).

31. *Licaria brasiliensis* (Nees) Kosterm. nov. comb. = *Acroclidium brasiliense* Nees, Syst. (1836), p. 267.

32. *Licaria latifolia* (Smith) Kosterm. nov. comb. = *Acroclidium latifolium* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 100.

33. *Licaria Martiniana* (Mez) Kosterm. nov. comb. = *Acroclidium Martinianum* Mez in Jahrb., l.c., p. 93.

Type: Martin 105; Cayenne [Br.] (not Mélinon 628). New locality: Amazonas, Manáos, along road to Aleixo (Krukoff 7989, fl. Aug. [NY.U.]).

34. *Licaria guianensis* Aubl., Guia. I (1775), p. 313, III, t. 121. = *Acroclidium Aubletii* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 34. Type: Aublet s.n., French Guiana [Herb. Jussieu, Paris, not in Brit. Mus.]

Addit. liter.: Lamarck, Encycl. 3 (1789), p. 470; Heckel, Pl. médic. Guia. franç. (1897), p. 77.

35. *Licaria chrysophylla* (Meissn.) Kosterm. nov. comb. = *Acroclidium chrysophyllum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 87.

Addit. liter.: Heckel, Pl. médic. Guia. fr. (1897), p. 34; Dragendorff, Heilpfl. (1898), p. 238; Knuth in Fedde, Repert., Beiheft 43 (1927), p. 341.

36. *Licaria Appellii* (Mez) Kosterm. nov. comb. = *Acroclidium Appellii* Mez in Engler's Jahrb. 17 (1893), p. 519.

Addit. liter.: Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591. Flowers yellowish white (Glaziou). New locality: Matto Grosso, S. Anna da Chapada (Robert 617, fl. Oct. [Br.]); Amazonas, Manáos (Ducke 215, fl. June [Ws.]). Vernac. name: „Louro aritu” (Ducke). These two specimens are less densely sericeous on the lower leaf surface as the type specimen; the flowers are identical. The specimen: Krukoff 6900, cited under *L. multiflora* in Rec. Trav. Bot. Néerl., l.c., p. 736, belongs to *L. Appellii*.

37. *Licaria cubensis* (Schmidt) Kosterm. nov. comb. —

Nobeliodendron cubensis O. C. Schmidt in Fedde, Repert. 27 (1929—30), p. 151, t. 99.

Typus: Ekman 9442; Cuba [St.].

Tree, branchlets slender, densely, minutely rusty-yellowish tomentellous; branches slender, grey, glabrous, rimose, with scattered lenticels; buds tomentellous. Leaves alternate, coriaceous or rigid-coriaceous, lanceolate or elliptic-lanceolate, minutely, prominulously areolate on both sides, $4-8 \times 1\frac{1}{2}-3$ cm; base acute, margin slightly recurved, top obscurely acuminate or acute; above green, shining, smooth, midrib flat or slightly impressed, prim. nerves hardly conspicuous; beneath paler, in young leaves minutely, sparsely, shortly pilose, adult ones glabrous, midrib prominent, prim. nerves (8—12 per side) erect-patent, straight, hardly conspicuous. Petioles slender, canaliculate, glabrous, 4—6 mm l. Flowers glabrous, solitary on slender, minutely grey-tomentellous up to 5 mm l. pedunclets. Bracts minute, deciduous. Pedicels slightly, minutely tomentellous, 1 mm l. Flower tube subhemispherical-obconical, 1—2 mm l., glabrous inside. Tepals fleshy, incurved, outer ones depressed ovate-orbicular, acutish, broader than long, 1 mm l., nearly 2 mm w., inside pilose at base; inner ones as long, half as wide. Stamens included, conglutinate, ovate-suborbicular, thick, fleshy, 1 mm l., outside slightly pilose at base, inside densely hirsute; anthers not distinct from filaments with small, extrorse-apical cells, top obtuse or slightly emarginate; basal glands none. Ovary glabrous, ovoid-ellipsoid, $\frac{3}{4}$ mm l., style nearly as long, rather thick, stigma truncate, inconspicuous; cupule double-margined.

Distribution: Cuba: Prov. Oriente.

Cuba: Prov. Oriente, Papayo (of the Sevilla track) in the hill „Mandinga”, alt. 600 m. (Ekman 9439, fl. July [D.St.NY.], 9442, fl. Aug. [D.St.]).

The facies of this species shows a great resemblance to *L. sericea*; the reduced panicle points to a relationship with *L. misantlae*, as well as the missing glands. The (sub-mature) double-margined cupules makes its place among *Licaria* certain.

38. *Licaria misantlae* (Brandeg.) Kosterm. nov. comb. — *Acrodiclidium misantlae* T. S. Brandegee in Univ. Calif. Publ. Bot. 6 (1919), p. 497. — *Chanekia misantlae* (Brandeg.) Lundell in Phytologia I, 5 (1937), p. 180.

Typus: Purpus 8145; Mexico [Ca.].

Small tree; branchlets slender, subangular, glabrous, smooth;

branches cylindrical, glabrous, grey, striate; buds glabrous. Leaves alternate, chartaceous-coriaceous, glabrous, conspicuously, prominulously areolate, somewhat shining, elliptical or obovate-elliptical, $4\frac{1}{2}$ — $12\frac{1}{2}$ \times 2 — $4\frac{1}{2}$ cm; base cuneate or acute, top usually obtuse; above midrib flat, prim. nerves filiform, hardly prominulous; beneath midrib prominent, prim. nerves (9—12 per side) erect-patent, straight, filiform, hardly prominulous. Petioles glabrous, rather slender, slightly canaliculate or flattened above, 5—14 mm l. Panicles axillary, glabrous, hardly or not branched, slender, $1\frac{1}{2}$ — $3\frac{1}{2}$ cm l.; peduncles slender, 1— $2\frac{1}{2}$ cm l., bearing 1—3 flowers. Bracts minute, glabrous, ovate, acute, deciduous. Pedicels slender, glabrous, about 5 mm l., slightly thickened towards apex, after anthesis rapidly growing out. Flowers glabrous, subglobose, about 2 mm in diam., rapidly increasing after anthesis; tube sub-hemispherical-conical, $1\frac{1}{2}$ mm l., glabrous inside. Tepals fleshy, incurved, ovate-sub-orbicular, acute, 1— $1\frac{1}{2}$ mm l., up to 2 mm w.; inner ones slightly smaller. Often one or two, stipitiform, glabrous, $\frac{1}{2}$ mm l. outer staminodes present. Stamens included, nearly free, ovate-sub-orbicular, fleshy, flattened within, convex without, $\frac{1}{2}$ — $\frac{3}{4}$ mm l.; anthers not distinct from filaments, with small, extrorse-apical cells; basal glands none. Ovary sub-globose, glabrous, 1 mm l., style rather slender, glabrous, $\frac{1}{2}$ mm l., not protruding beyond stamens, stigma truncate, inconspicuous. Cupule rather shallow, double-margined, (sub-mature) 9 mm in diam.; pedicel 1 cm l., slender, slightly thickened towards apex.

Distribution: Mexico: Veracruz.

Mexico: Veracruz near Misantla (Purpus 8145 [A.Ca.D.Gr.NY.Mi]); near Acazonica (Purpus 8433, fl. Aug. [Gr.]); near Los Conejos, Anoyo (Purpus 15372, ster. Apr. [Ca.]).

39. *Licaria tenuifolia* Kosterm. nov. spec.

Typus: Curran 172; Colombia [Ws.].

Arbor usque ad 10 m alta, 25 cm diametro; ramulis gracilibus angulatis dense ferrugineo-tomentosis ramis cylindricis glabris cinereis lenticellis conspicuis sparsis. Folia alterna membranaceo-chartacea lanceolata vel lanceolato-elliptica 11—15 \times 3—4 cm, nervo mediano basi minute sparse pilosa excepta, glabra, subnitida dense manifeste prominulo-intricato-reticulata, nervo mediano costisque supra vix prominulis subtus prominentibus costis utrinque 10—18 erecto-patentibus strictis vix prominulis. Petioli graciles glabri 1 cm longi. Flores ignoti. Paniculae fructiferae axillares vix ramosae, dense ferrugineo-tomentosae usque

ad 3 cm longae. Bacca ellipsoidea acuta usque ad 20 mm longa, 12 mm diametro. Cupula plana tenuis 1 cm diametro margine duplo, exteriore recurvo vix 1 mm lato irregulare, interiore vix 1 mm lato integro, pedicellis tenuibus 1 cm longis 1—1½ mm diametro.

Distributio: Colombia: Prov. Bolivar.

Colombia: Dept. Bolivar, Norosi-Tiquisio trail, Land of Loba, alt. 150—600 m. (Curran 172, fr. Apr.-May [Ws.]).

Species incertae sedis:

40. *Licaria vernicosa* (Mez) Kosterm. = *Acrodictidium vernicosum* (Mez) Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 753.

New locality: Brit. Guiana: Berbice R., Kerimeru Creek (For. Dept. 805 a, fr. Oct. [Kw.]). Addit. fruit description: Berry bright green, purplish-black, when ripe, smooth, ellipsoid, 2 cm l., 1 cm in diam. Cupule bright-cherry, smooth, rather thick, double-margined; inner margin 1—2 mm high.

41. *Licaria pachycarpa* (Meissn.) Kosterm. nov. comb. = *Acrodictidium pachycarpum* (Meissn.) Mez in Jahrb., l.c., p. 91.

42. *Licaria coriacea* (Lundell) Kosterm. nov. comb. = *Chanekia coriacea* Lundell in Phytologia I, 5 (1937), p. 179.

Type: Schipp 1282, Brit. Honduras [A.]. This species, only known in fruiting condition is exactly alike *L. triandra*. The region, where it has been collected, makes it however rather certain, that it is a different species.

Species excludendae:

<i>Acrodictidium anacardioides</i> Spruce ex Meissn.	= Mezilaurus
<i>Acrodictidium Canelo</i> Rose ex A. C. Smith	= Ocotea
<i>Acrodictidium cinnanmomoides</i> (H. B. K.) Mez	= Ocotea
<i>Acrodictidium elaeophorum</i> Barb. Rodr. ex Lecointe	= Ocotea
<i>Acrodictidium Gardneri</i> Meissn.	= Aiouea
<i>Acrodictidium geminiflorum</i> (Meissn.) Mez	= Phyllostemonodaphr
<i>Acrodictidium Itauba</i> Meissn.	= Mezilaurus
<i>Acrodictidium Kunthianum</i> Nees	= Ocotea
<i>Acrodictidium Mahuba</i> Sampaio	= Clinostemon
<i>Acrodictidium Sprucei</i> Meissn.	= Ocotea
<i>Acrodictidium Wrightii</i> Meissn.	= Ocotea
<i>Misanteca anacardioides</i> Benth.	= Mezilaurus
<i>Misanteca crassiramea</i> Benth.	= Mezilaurus

Phyllostemonodaphne Kosterm.

Phyllostemonodaphne geminiflora (Meissn.) Kosterm. in Rec. Trav. Bot. Néerl. 33 (1936), p. 755. New literature: Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591. New localities: Serra dos Orgãos (Luschnath s.n., fl., fr. June [Ki.O.]); Rio de Janeiro, near aquaduct, $\frac{1}{2}$ mile from town (Bowie & Cunningham s.n., fl. Febr. [Br.]).

According to Glaziou the flowers are whitish.

In the diagnosis of the genus instead of „stamina seriei quartae parva”, should be read: „staminodia seriei, etc.”. The text below fig. 3., sub d. should be read: „inner”, instead of „outer” staminode.

Dryadodaphne Spencer Le M. Moore. (*Levieria* sp.)

This genus from New Guinea, described by S. le M. Moore in Journal of Botany 61 (1923), page 109 and considered by him as a new Lauraceous genus, belongs in reality to the family of the Monimiaceae. The type specimen of the only species: *Dryadodaphne celastroides* (Forbes n. 724), deposited in the Herbarium of the British Museum, represents a male plant with flowers still in bud. There is no doubt, that it belongs to the genus *Levieria* Becc. The species is closely related to *Levieria montana* Becc. and may be even identical with it.

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