

REVISION OF THE LAURACEAE V
A MONOGRAPH OF THE GENERA: ANAUERIA, BEILSCHMIEDIA
(AMERICAN SPECIES) AND ANIBA

by

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LIST OF ABBREVIATIONS:

Herbaria

A. = Ann Arbor, Michigan
B. = Brussels
Bl. = Breslau
Br. = British Museum
Bs. = Herb. Boissier (Geneva)
C. = Herb. Cosson (Paris)
Ca. = Herb. Univ. California
D. = Berlin-Dahlem
Dr. = Herb. Drake (Paris)
DC. = Herb. de Candolle (Geneva)
DI. = Herb. Delessert (Geneva)
Dm. = Jenman Herb. (Demerara)
F. = Field Mus., Chicago
G. = Göttingen
Gr. = Gray Herb.
H. = Arnold Arboretum
H.M.G. = Herb. Mus. Goeldi, Pará
H.R.J. = Herb. Jard. Bot.,
Rio de Janeiro
J. = Herb. Jussieu, Paris
K. = Köbenhavn
Ki. = Kiel (Germany)
Kw. = Kew
L. = Leiden, Netherlands
Lg. = Leningrad

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

Other abbreviations

Ar. = Arawaccan language
(Surinam)
B.W. = Forestry Bureau
(Surinam)
Car. = Caraibic language
(Surinam)
N.E. = Negro English (Surinam)
Sar. = Saramaccan lang.
(Surinam)
S.D. = Surinam Dutch

I wish to tender my best thanks to the Directors and Curators of the above cited herbaria for the hospitality they offered me in their Institutes, as well as for their kindness in lending me the necessary material.

ANAUERIA Kosterm.

Anaueria Kosterm. in *Chronica Botanica* IV, 1 (1938), p. 14.

Arbores brasilienses foliis sub-oppositis. Flores hermaphroditi ex-involucrati paniculati; tepalis sex tribus exterioribus minoribus. Stamina novem quorum sex exteriora fertilia filamentis in anulum ovarium cingentem connatis antheris liberis bilocellatis sub-introrsis; tria interiora sterilia staminodialia sub-aequilonga. Ovarium subglobosum tubo planiusculo insertum, stylo obtuso brevi stigmatem inconspicuo. Staminodia seriei quartae nulla. Bacca magna ellipsoidea pedicello vix elongato cylindrico tepalis non incrassatis persistentibus insidens.

Staminum fertile numerus et antherae bilocellatae affinitatem cum *Anibae* subgenere *Aiueopside* indicant. Antherarum fertile forma eadem est ac in *Endlicheria* quadam a grege *Endlicheriae dysodanthae*. Ab *Aniba* autem hoc genus multo differt filamentis in tubum connatis (quod notum omnibus *Endlicheriis* pariter alienum est) et fructu cupula carente. Fructus *Beilschmiediam* in mentem revocant, sed tepalis persistentibus facile dignoscuntur. Floris indicia ab illis *Beilschmiediae* valde differunt. Novum genus affinitatis ambiguae locum secretissimum inter Lauraceas americanas obtinet.

Anaueria brasiliensis Kosterm. nov. spec.

Typus: Ducke 70 (= H.R.J. 21329); Amazonas [F.].

„Anauerá” (Amazonas: Ducke).

Arbor ramulis glabris (vel apice minute sparsissime pilosis) laevibus subcrassis ramis glabris cylindricis striatis laevis lenticellisque conspicuis. Folia sub-opposita vel alterna chartacea glabra elliptica, 9—15 × 4—5½ cm; basi breviter cuneata margine plana apice distincte acuminata acumine usque ad 2 cm longa; supra nitida nervo mediano plano costis vix prominulis venis prominulis laxè reticulatis vel rarius oblitteratis subtus nervo mediano prominente costis utrinque 7—9 prominulis erecto-patentibus arcuatis venis prominulis reticulatis; petiolis glabris canaliculatis 1 cm longis. Paniculae axillares pauciflorae usque ad 3½ cm longae, pedunculis subgracilibus compressis brevibus ramulis paucis patentibus distantibus usque ad 1 cm longis; paniculae juniores minute appresso-pilosae, glabrescentes. Pedicelli subcarnosi glabri usque ad 8 mm longi in perianthii tubum transeuntes. Bractee bracteolae minutae glabrae concavae ovatae acutae persistentes. Flores minute sparse pilosi glabrescentes late obconico-subglobosi, 2—3 mm

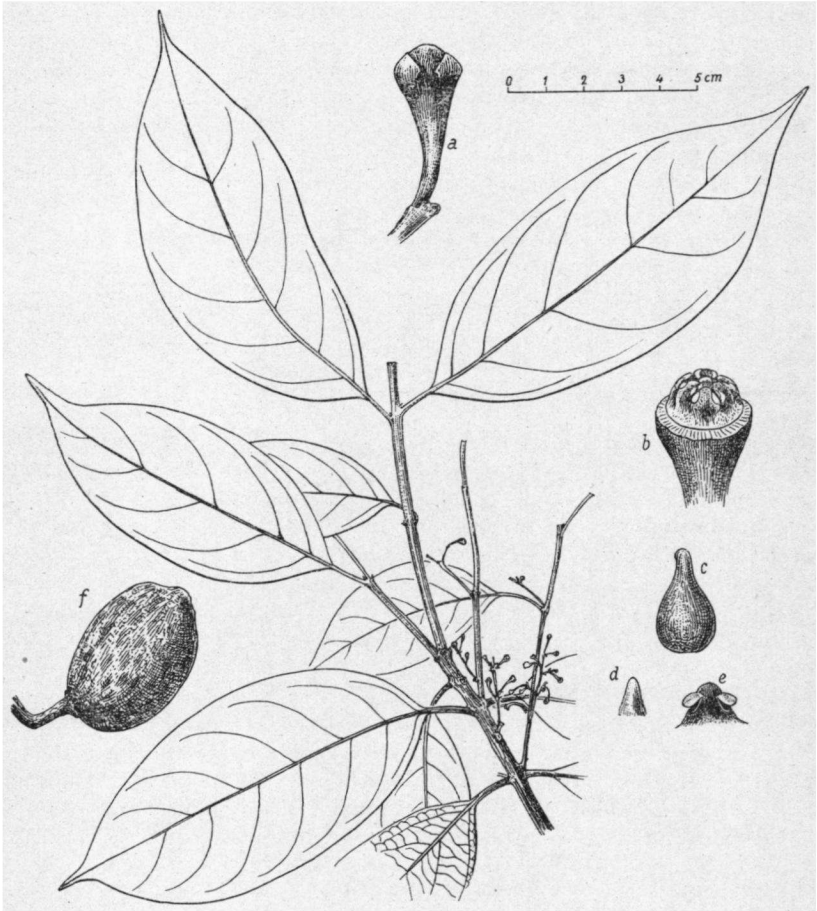


Fig. 1. *Anaueria brasiliensis* Kosterm. a. Flower bud; b. Flower with tepals removed; c. Ovary; d. Staminode; e. Stamen from within; f. Fruit. (Branch and fruit according scale; flower details strongly enlarged).

ovato-triangularibus acutis 1 mm altis paene $1\frac{1}{2}$ mm latis, interioribus triangularibus acutis $1\frac{1}{2}$ mm longis paene 2 mm latis. Stamina inclusa, filamentis non distinctis in anulum tenuem 1 mm altum extus glabrum intus dense pilosum ovarium cingent connatis. Antherae glabrae liberae $\frac{3}{4}$ mm longae applanatae anguste pyramidatae connectivis obtusis ultra cellulas magnas lateraliter introrsas manifeste apiculatis (ut in *Endlicheria dysodantha*). Staminodia seriei tertiae subaequilonga anguste pyramidata glabra obtusa. Staminodia seriei quartae nulla. Ovarium minute pilosum glabrescente globosum $1\frac{1}{2}$ mm longum stylo sub-gracile $\frac{1}{2}$ mm longo cylindrico obtuso stigmate inconspicuo. Bacca magna ellipsoideo-ovoidea laevis $4\frac{1}{2}$ cm longa 3 cm diametro pedicello crasso 1 cm longo $\frac{1}{2}$ cm diametro cylindrico reliquiis exiguis tepalorum persistentes coronato. Pericarpio 3 mm diametro sub-lignoso. Fig. 1.

Distributio: Amazonas.

Brasilia: Amazonas, São Paulo de Olivença (Ducke 70 = ser. number 2329, fl., fr. June [F.]).

BEILSCHMIEDIA Nees.

Beilschmiedia Nees in Wallich, Pl. Asiat. rar. 2 (1831), p. 61 et 69; id., Plantar. Laurin. secund affin. natur. exposito (Vratislaviae 1833), p. 12, n. 11; id., Systema Laurin. (1836), p. 21, 192 et 197; Endlicher, Gen. (1837), p. 318, n. 2034; id., Enchiridion (1841), p. 197; Dietrich, Synops. Pl. 2 (1840), p. 1331 et 1342; Spach, Végét. Phan. X (1841), p. 470; Meissner, Genera I (1841), p. 325, II, p. 238; Lindley, Veget. kingdom (1846), p. 537; Blume, Mus. Lugduno Batav. I (1851), p. 332; Miquel, Pl. Junghun. 2 (1852), p. 176; id., Fl. India Batav. I (1855), p. 919; Meissner in D.C., Prodr. XV, 1 (1864), p. 62; Baillon, Hist. Plant. 2 (1870), p. 471; Pfeiffer, Nomencl. 1 (1873), p. 384; Bentham in Benth. et Hook., Gen. III (1880), p. 152; Bailey, Synops. Queensland Fl. (1883), p. 424; id., Queensland Fl. IV (1901), p. 1302; Durand, Index Gen. (1888), p. 348, n. 6180; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 120; Mez in Jahrb. Bot. Gart. V (1889), p. 17; Hooker, Fl. Brit. India V (1890), p. 121; Trimen, Handb. Fl. Ceylon 3 (1895), p. 439; Boerlage, Fl. Nederl. Indië 3 (1900), p. 122; Harms et dalla Torre, Gen. (1900—07), p. 178, n. 2801; Post et Kuntze, Lexicon (1904), p. 64; Koorders et Valetton in Meded. 's Lands Plantentuin Buitenzorg 68 (1904), p. 192 et 193; Cheeseman, alti post anthesin mox incrassati tubo planiusculo, sed annuli

modo in quo antherae insertae sunt elongato; tepalis carnosis erectis sub lente pilosis sub-concavis; exterioribus depresso Man. New Zealand Fl. (1906), p. 601; Cooke, Fl. Bombay 2 (1908), p. 534; Gamble, Fl. Madras 2 (1921), p. 1220; Ridley, Fl. Malay Penins. 3 (1924), p. 82; Lemée, Diction. 1 (1929), p. 539; Lecomte, Fl. Indochine 5 (1930—31), p. 148. — *Beilschmidia* Reichenbach, Nomencl. (1841), p. 71, n. 2676; Steudel, Nomencl. ed. 2 (1841), p. 195; Lemr. in Orbigny, Dict. univ. 2 (1842), p. 528; Pfeiffer, Nomencl. 1 (1873), p. 384. — *Bielschmeidia* Pancher et Sebert, Not. Bois Nouv. Calédon. (1874), p. 176; Harms et dalla Torre, Gen. (1900—07), p. 178 (sub *Beilschmiedia*). — *Hufelandia* Nees, Pl. Laurin. expos. (Vratisl. 1833), p. 11, n. 9 et p. 21; id., Syst. Laur. (1836), p. 187 et 674; Endl., Gen. (1837), p. 317, n. 2031; id. Enchir. (1841), p. 197; Dietrich, Synops. 2 (1840), p. 1331 et 1341; Meissn., Gen. I (1841), p. 325, II, p. 238; Spach, Veg. Phan. X (1841), p. 470; Steudel, Nomencl. ed. 2 (1841), p. 778; Reichenb., Nomencl. (1841), p. 71, n. 2682; Lindl., Veg. kgdm. (1846), p. 537; Grisebach in Fl. Brit. W.-I. isl. (1860), p. 280; Meissn. in D.C., Prodr. XV, 1 (1864), p. 65; id. in Martius, Fl. Bras. V, 2 (1866), p. 142; Baillon, Hist. Pl. 2 (1870), p. 470; Pfeiffer, Nomencl. 2 (1874), p. 1676; Benth. in Benth. et Hook., Gen. 3 (1880), p. 152 (sub *Beilschmiedia*); Durand, Index (1888), p. 348 (sub *Beilschmiedia*); Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 120 (sub *Beilschmiedia*); Mez in Jahrb. Botan. Garten Berlin V (1889), p. 17; Harms et dalla Torre, Gen. (1900—07), p. 178 (sub *Beilschmiedia*); Post et Kuntze, Lexicon (1904), p. 288; Lemée, Diction. 1 (1929), p. 539 (sub *Beilschmiedia*), 3 (1931), p. 664. — *Boldu* Nees (non Feuillée, aliisque), Laur. expos. (Vratislav. 1833), p. 11; id., Systema (1836), p. 20, 122 et 177 (excl. cit. synonym. *Peumi* Mol. et *Boldu* Feuillée); Endl., Gen. (1837), p. 2029, n. 317; id., Ench. (1841), p. 107; Dietrich, Syn. 2 (1840), p. 1331 et 1341; Spach., Veg. Phan. X (1841), p. 493; Meissn., Gen. I (1841), p. 325, II, p. 238; Lindl., Veg. kgdm. (1846), p. 537; Meissn. in D.C., Prodr. XV, 1 (1864), p. 67 (excl. cit. syn. *Boldu* Feuillée et *Peumi* Mol.); Pfeiffer, Nomencl. 1 (1873), p. 431; Baillon, Hist. Pl. 2 (1870), p. 435 et 472 (excl. cit. Feuillée et descript. fruct.); Durand, Index (1888), p. 348 (sub *Cryptocarya*); Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 24 (excl. cit. Feuillée); Harms et dalla Torre, Gen. (1900—07), p. 178 (sub *Cryptocarya*). — *Boldus* O. Ktze (non Adanson, aliisque), Revisio Gen. Pl. 2 (1891), p. 569; Mez in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Post et Kuntze,

Lexicon (1904), p. 73. — *Bellota* Cl. Gay, Flora Chilena V (1849), p. 297; Baillon, Hist. Pl. 2 (1870), p. 435 (excl. descr. fruct.); Pfeiffer, Nomencl. 1 (1873), p. 388; Benth. in Benth. et Hook., Gen. 3 (1880), p. 151 (sub *Cryptocarya*); Durand, Index (1888), p. 348 (sub *Cryptocarya*); Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 24; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Post et Kuntze, Lexicon (1904), p. 64; Harms et dalla Torre, Gen. (1900—07), p. 178 (sub *Cryptocarya*). — *Wimmeria* Nees ex Meissn. (non aliis) in D.C., Prodr. XV, 1 (1864), p. 65; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 17; Harms et dalla Torre, Gen. (1900—07), p. 178 (sub *Beilschmiedia*); Lemée, Dict. 1 (1929), p. 539 (sub *Beilschmiedia*). — *Nesodaphne* Hooker f., Fl. Novae Zelandia I (1855), p. 217; id., Handb. New Zealand Fl. (1867), p. 238; Bentham, Fl. Austral. V (1870), p. 299; Pfeiffer, Nomencl. 2 (1874), p. 436; Meissn. in D.C., Prodr. XV, 1 (1864), p. 66; Baillon, Hist. Pl. 2 (1870), p. 470; Benth. in Benth. et Hook., Gen. 3 (1880), p. 152 (sub *Beilschmiedia*); Bailey, Synops. Queensl. Fl. (1883), p. 424; id., Queensl. Fl. (1901), p. 1302; Durand, Index (1888), p. 348 (sub *Beilschmiedia*); Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 120 (sub *Beilschmiedia*); Lemée, Dict. 1 (1929), p. 539 (sub *Beilschmiedia*).

Type species: *Beilschmiedia Roxburghiana* Nees.

Trees or shrubs in the tropics of both hemispheres. Leaves chartaceous to rigid coriaceous, glabrous or pilose, penninerved, often prominently, usually laxly reticulate on the upper surface, beneath often pruinose. Panicles axillary or clustered near the apex of the branches, usually short and few-flowered. Involucre none. Flowers hermaphrodite; tube shallow, short, broadly obconical. Tepals 6, sub-equal or outer ones shorter, deciduous. Fertile stamens 9, free; the 6 outer ones with large, ovate, flattish anthers; connectives conspicuously protruding beyond the large, introrse cells; filaments glandless, more or less adnate to tepals. The three inner stamens with narrower, thicker anthers; connectives strongly protruding beyond the lateral or extrorse-lateral, large cells; filaments with basal, sessile glands without. Valves dehiscent from base to apex. Staminodes of series four large, ovate-acute or triquetrous, shortly stalked or sessile. Ovary subglobose, usually glabrous, short, merging into the short, thick, conical, obtuse style; stigma almost inconspicuous. Berry usually ellipsoid, obtuse, outer layer thick or thin, usually fleshy. Cotyledons large, flat-convex, embryo minute. Fruit pedicel cylindrical, hardly elongated, deprived of each trace of perianth.

The genus *Beilschmiedia* was based by NEES in 1831 (Wallich, Pl. Asiat. rar. 2, page 69) on two species: *B. Roxburghiana* and *B. fagifolia*. Unluckily these two belong to a small group of species, characterised by large scales at the base of the inflorescence, covering it almost completely before anthesis. On the strength of this character the genus *Hufelandia* has been separated from *Beilschmiedia*, an opinion maintained by MEZ in his monograph of the American species.

While studying other non-american *Beilschmiedia* species I came to the conclusion, that this character had no generic value. Most of the species possess the common, small bracts and when the panicles of *B. Roxburghiana* are developed, the scales drop and no difference at all remains with other species. Another difficulty arose from the character of *B. Roxburghiana*, that in some fruit the testa protrudes between the cotyledons, giving the impression of a more or less two-celled ovary, but as NEES himself pointed out already, this character is not constant in this species and may be found in other genera as well.

BENTHAM (in Benth. et Hook., Genera 3, 1880, page 151) has the merit to have recognised, first of all, that neither *Hufelandia* nor *Nesodaphne* could be kept segregated from *Beilschmiedia*. His opinion is not shared by MEZ in his monograph and most botanists, dealing with the American flora, followed MEZ' example.

In the interpretation of the genus *Boldu* Nees, BENTHAM has not been so felicitous. The misinterpretation goes back to NEES, Systema (1836) who considered the *Boldu* of FEUILLÉE identical with the specimens enumerated under his own genus *Boldu*. For further details on this matter see under *Beilschmiedia Miersii*.

In 1849 CL. GAY redescribed *Boldu chilanum* Nees under the generic name of *Bellota*, a name, adopted by MEZ, but the latter altered (in Arb. Bot. Gart. Breslau 1, 1892, page 109) this name into *Boldus*, though hesitatingly, as O. KUNTZE (Revisio 2, page 569) had pointed out, that Feuillée's name *Boldu* had been taken up already by ADANSON (as: *Boldus*), but Kuntze has been unaware of the fact, that Feuillée's description of *Boldu* covers for the greater part the Monimiaceous *Peumus Boldus* (*Boldea Boldus* Looser); he based his revision merely on Mez' interpretation, though BENTHAM had already discovered, that *Boldu* Feuillée was not identical with *Bellota* Gay. The fruit, that should have given the solution of the puzzle, where to put *Bellota* Gay has been unknown to GAY, but the specimens of *Beilschmiedia Berteroana*, known to MEZ could have given an indication (GAY described them as *Cryptocarya*).

BAILLON (Hist. Pl. 2, 1870, page 435) described under *Boldu* the fruit of *Cryptocarya rubra*, a fact, already stressed by BENTHAM. The latter curiously based his opinion, that *Bellota* had to be reckoned to *Cryptocarya*, on fruit of a specimen of LEIBOLD in the Kew herbarium; in the meantime he denied that NEES could have had the right fruit, though the specimen of POEPPIG, described by NEES, possesses young fruit still adnate to the plant. I myself had no opportunity to see the fruit of Leibold's specimen, but the fruits of *Beilschmiedia Miersii*, show such a strong resemblance with that of *Cryptocarya rubra*, that I am nearly sure, that BENTHAM described the fruit of *Beilschmiedia Miersii*, especially as he states, that no apical pore is visible.

The genus *Beilschmiedia* is a well defined one as to its fruit characters, which places it in the vicinity of *Dehaasia*, different by its long, thickened pedicels and of *Endiandra*, differing in its flower characters. The flowers are not easy to distinguish from those of *Cryptocarya*, but for the long and narrow tube of the latter and (at least in American species) the shape of the stigma, that has not developed in *Beilschmiedia*, but for a papillose lateral, apical part of the acutish or obtuse style.

The flowers with their shallow, broad tubes often possess shorter outer tepals; in American species the stamens of series one and two have broadly ovate, flattish anthers, with connectives strongly protruding beyond the introrse cells, their filaments are short, partly adnate to the tepals. The anthers of series three are narrower and thicker, with strongly protruding connectives and usually more or less lateral cells. The staminodes of series four are thick, triquetrous, usually keeled without, either stalked or sessile and fairly well developed. The ovary is glabrous (except in *B. rigida*) broad and not distinct from the thick, short, obtuse style. The fruit, deprived of each trace of perianth may be fleshy or more or less dry. The leaves of most of the American species are opposite, a character they share with several non-american species. As a rule the leaves (also in non-American species) possess a lax, conspicuous reticulation, lying on the upper surface. Several American species (*B. rigida*, *emarginata*, *sulcata*) show curious small nodules on both surfaces of the leaves, especially on midrib.

Key to the species:

- 1a. Leaves very densely areolate-reticulate or pitted on the upper surface 2
- b. Leaves reticulate (usually laxly) on the upper surface. 6

- 2a. Anthers glabrous 3
 b. Anthers pilose 4
 3a. Leaves (at least young ones) pruinose beneath, coriaceous or rigid-coriaceous 1. *B. pendula*
 b. Leaves concolorous, green, chartaceous or rigid-chartaceous 2. *B. mexicana*
 4a. Leaves hirsute (hairs erect) on lower surface. Anthers of the outer stamens sub-emarginate or truncate. Leaves pitted or tessellate above 4. *B. alloiophylla*
 b. Leaves minutely pilose or glabrescent or shortly tomentose or sericeous beneath; areolate-reticulate above. Anthers of outer stamens obtuse 5
 5a. Young leaves sericeous beneath. Connectives of outer anthers produced for $\frac{1}{2}$ mm beyond the cells
 5. *B. sulcata*
 b. Young leaves tomentose beneath. Connectives less than $\frac{1}{4}$ mm produced beyond the cells 3. *B. Anay*
 6a. Leaves lanceolate 10. *B. angustifolia*
 b. Leaves elliptical or broadly elliptical 7
 7a. Ovary pilose 9. *B. rigida*
 b. Ovary glabrous 8
 8a. Leaves hirsute (hairs erect) beneath. 14. *B. Taubertiana*
 b. Leaves microscopically, sparsely pilose or glabrous beneath 9
 9a. Leaves rather densely reticulate above 10
 b. Leaves laxly reticulate above 11
 10a. Secondary nerves parallel. Leaves acuminate; nodules none 7. *B. hondurensis*
 b. Secondary nerves reticulate. Leaves acute, covered by small nodules 15. *B. fluminensis*
 11a. Anthers of outer stamens glabrous 12
 b. Anthers pilose 13
 12a. Leaves 4—12 \times 2—7 cm, rather laxly reticulate above, primary nerves 10—12 per side. Flowers densely rusty-tomentellous 12. *B. Miersii*
 b. Leaves 3—7 $\frac{1}{2}$ \times 2—5 $\frac{1}{2}$ cm, very laxly reticulate above, primary nerves 5—7 per side. Flowers glabrous
 11. *B. Berteroana*
 13a. Leaves emarginate at apex 8. *B. emarginata*
 b. Leaves acute or acuminate 14
 14a. Leaves 8—20 \times 3—7 cm, very laxly, slightly prominently reticulate above. Flowers sparsely, minutely pilose
 6. *B. curviramea*

- b. Leaves 6—9 × 2½—3½ cm, conspicuously, prominently reticulata above. Flowers laxly tomentose. 13. **B. stricta**

1. **Beilschmiedia pendula** (Sw.) Benth. in Benth. & Hook., Gen. 3 (1880), p. 152 (excl. cit. spec. Müller); Fawcett, Provisional List Pl. Jam. (Kingston 1893), p. 33; Fawcett et Rendle, Fl. Jamaica 3 (1914), p. 204; Record and Mell, Timbers of Trop. Am. (1924), p. 174. — *Laurus pendula* Swartz, Prodr. (1788), p. 65; id., Fl. Ind. Occ. 2 (1800), p. 719; Willd., Spec. Pl. 2 (1799), p. 484; Persoon, Synops. 1 (1805), p. 449; Poir. Encycl. méth., Suppl. 3 (1813), p. 321; Lunan, Hort. Jamaic. 1 (1814), p. 79; Sprengel, Syst. 2 (1825), p. 266 n. 11; Nees, Syst. (1836), p. 188; Meissn. in D.C., Prodr. XV, 1 (1864), p. 65; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 20; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Fawcett et Rendle, Fl. Jam., l.c., p. 204. — *Hufelandia pendula* Nees, Laurin. Progr. Vrat. (1833), p. 22, n. 1; id., Syst. (1836), p. 188; Griseb., Fl. Brit. W.I. isl. (1860), p. 280; id., Pl. Wright. Cubens. in Mem. Acad. Americ. Scient. et Artium n. ser. 8 (1860), p. 188; id., Pl. Cubens. (1866), p. 111; Sauvage, Fl. Cubana, n. 2217; Meissn. in D.C., l.c., p. 65 (excl. cit. spec. Müller. 1460); Eggers, Fl. St. Croix in Bull. U.S.A. Mus. 13 (1897), p. 89, n. 719; Duss in Ann. Inst. Colon. Marseille 3 (1897), p. 299; Mez in Jahrb. Bot. Gart. Berl., l.c., p. 20, t. II f. 2, t. III f. 8, 25, 25a; id. in Arb. Bot. Gart. Breslau, l.c., p. 109; Urban, Symbol. Antill. 4 (1905), p. 243; id. 8 (1920), p. 230; Fawcett et Rendle, Fl. Jam., l.c., p. 204, t. 83; Britton et Wilson, Fl. Portorico and Virgin isl. 5 (1924), p. 316; Schmidt in Fedde, Repert. 27 (1929—30), p. 150; Barker et Dardeau, Fl. d'Haiti (1930), p. 120. — *Hufelandia Thomaea* Nees, Laurin. Exp. (1833), p. 23 cum tab.; id., Syst. l.c., p. 189; id. in Linnaea 21 (1848), p. 494; Griseb., Vegetat. der Karaiben (1857), p. 71, n. 580; Eggers, Fl. St. Croix, l.c., p. 89, n. 719; Mez in Jahrb., l.c.; Meissn. in D.C., l.c.; Fawcett et Rendle, Fl. Jam., l.c. — *Beilschmiedia Thomaea* Benth. in Benth. et Hook., Gen., l.c., p. 152; Maza, Anal. Inst. Seg. Ens. 2 (1895), p. 207; Fawcett, Provis. list, l.c.; id., Fl. Jam., l.c., p. 204. — *Wimmeria Thomaea* Nees ex Meissn. in D.C., l.c., p. 65; Mez in Jahrb., l.c. — *Laurus foliis obverse ovatis* etc., Browne, Jam. (1756), p. 214; Mez in Jahrb., l.c.; Fawcett et Rendle, Fl. Jam., l.c., p. 204. — *Laurus globosa* Lamarck (haud aliis), Encycl. méth. III (1789), p. 451, no. 13.

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

„Aguacatillo; Mulato de la sierra” (Cuba, Oriente: Ekman);

„Azeitunillo” (Cuba, Pinar del Rio: Ekman); „Carue de doucella” (Cuba: Luna); „Olive” (Haiti: Buch); „Bois noir” (Haiti: Ekman); „Carrasqueno” (Domingo: Ekman); „Aguacate cimarron; Cedro macho; Laurel; Palo colorado” (Portorico: Sintenis); „Slogwood; slugwood” (Jamaica: Harris, Swartz); „Ragoon” (Jamaica: Maxon); „Isabelle blanc; Bois doux vert; Bois doux muscadier” (Martinique: Duss); „Laurier fourmi” (St. Lucia: Ramage); „Laurier madame” (Dominica: Fawcett); „Bois négresse” (Guadeloupe: Record).

Tree, 6—30 m high (Eggers, Fawcett, Sintenis, etc.); trunk up to 1 m in diam. (Duss); branchlets thick, sulcate, subangular, minutely, sparsely yellowish-tomentellous; branches glabrous, cylindrical, dark-brown; buds yellowish-sericeous. Leaves alternate (rarely sub-opposite), chartaceous or coriaceous, elliptical or obovate-elliptical, 5—17 × 1½—8 cm; base cuneately narrowed, margin hardly recurved, top broadly, shortly acuminate or obtuse (very rarely emarginate). Young leaves minutely, sparsely yellowish-sericeous; adult ones above glabrous, dull-green, densely, prominulously areolate-reticulate, or sub-smooth, midrib flat, broadened towards base; beneath pruinose or green, minutely, sparsely, appressed-pilose, glabrescent, densely, conspicuously areolate-reticulate, midrib flattened, prominulous, prim. nerves (6—10 per side) erect-patent, arcuate at margin, slightly prominulous. Petioles thick, flattened, slightly canaliculate, sparsely, minutely tomentellous, glabrescent, 1—2 cm l. Panicles axillary near the apex of the branchlets, rather many-flowered, lax, narrowly pyramidal, 5—15 cm l.; peduncles thick, slightly pilose, up to 3 cm l.; branchlets rather thick, few, patent, or erect-patent, short. Bracts and bracteoles deciduous. Pedicels slender, glabrescent, 2—5 mm l. Flowers greenish-yellow to white (Eggers, Fawcett, Harris, Sintenis, etc.), sparsely, minutely pilose, sub-hemispherical, 2—2½ mm l.; tube broadly obconical, shallow, 1 mm high, pilose inside. Tepals erect, rather thin, ovate, acutish, slightly concave, 1½ mm l., pilose inside, inner ones slightly longer. Stamens slightly longer than outer tepals, as long as inner ones; outer ones with ovate, obtuse, ½ mm l., glabrous anthers (connectives conspicuously protruding beyond the introrse, large cells), filaments hardly longer, broad, flattened, pilose. Inner stamens with as long, narrowly ovate, glabrous anthers (connectives conspicuously protruding beyond the extrorse-lateral, large cells), basal glands large, sessile, often connate, sub-globose, as long as filaments. Staminodes large, cordate-

ovate, acuminate or acute, $\frac{3}{4}$ —1 mm l., pilose without (cell-rudiments within visible) on short, broad, pilose stalks or sessile. Ovary glabrous, sub-globose, $\frac{3}{4}$ mm l., merging into a rather thick, conical, as long style with small stigma. Fruit elongated-ellipsoid, black (Jack) or darkpurple (Wright), smooth, apiculate, $2\frac{1}{2}$ —4 cm l., 1— $1\frac{1}{2}$ cm in diam.; pedicel hardly thickened, 2—3 mm l., 1— $2\frac{1}{2}$ mm in diam. Plumule usually densely pilose, minute.

Distribution: Antilles from Cuba to St. Lucia.

Cuba: Monte Verde (Wright 485, fl. fr. [Br.Bs.Dl.Kw.Mi.Gr.NY.St.W.], 486, fr. [D.Dl.Gr.Kw.Mi.NY.St.Ws.], 1402, fl. May [Bs. Gr. Kw.Mi.Ms.P.St.], 1403, fr. [Bs.Gr.Kw.Mi.P.W.]; 1414, fr. Dec. [B.Bs.Gr.Mi.Ms.Kw.NY.P.W.]; Prov. Santa Clara: top of Loma la Gloria Banao Mts., alt. 950 m. (Leon & Roca 7975, fr. July [NY.]); Las Lagunas, Bs.-Aires, alt. 800 m. (Jack 6806, fr. Dec. [F.NY.Ws.]); Trinidad Hills alt. 1200 m. (Jack 7016, fr. March [Gr.NY.Ws.]); Trinidad Mts., El Porvenir (Britton & Wilson 5320, fl. March [NY.Ws.]); Banao Mts. (Luna 650, fr. May [NY.]); Loma del Gato, Cobre Range of Sierra Maestra (Leon, Clement & Roca 10451, fr. July [NY.]); Sierra de Gavilanes, S. Spiritus Mts. (Leon, Clement & Luna 6612, fr. Aug. [NY.]); Prov. Oriente, Sierra Maestra, on the ridge between Rio Oro and Rio Yao (Ekman 7229, fr. May [St.]); Corajo, on the path to Pinar del Jigué, in forest, alt. 550 m. (Ekman 5143, ster. March [St.]); Nagua in forest at Rio Yara, alt. 150 m. (Ekman 5363, fl. Apr. [St.]); Sierra de Nipe in manacales at Rio Piloto, alt. 350 m. (Ekman 5009, ster. March [St.]); Sierra de Nipe, at Rio Piedra in manacales, alt. 500 m. (Ekman 6402, fr. Aug. [D.St.]); Prov. Pinar del Rio: Sierra de los Organos, San Diego de Tapias, in forest (Ekman 10636, ster. Apr. [St.]); Between P. de Palmamocha and Loma Joaquin, Sierra Maestra, alt. 1200 m. (Ekman 5570, ster. Apr. [St.]); Southern Oriente and Pico Turquino: banks of Arroyo El Christo, Sierra Maestra, west of Jara R. (Ekman 14826, fr. Aug. [D.NY.St.]); Rio Purial, alt. 200 m. (Eggers 5434, fr. May [Bl.D.Dr.Kw.M.]); Baracoa, in the foothills (Ekman 4197, ster. Jan. [St.]). Jamaica: Whitfield Hall, alt. 1500 m. (Harris 5575, fr. Febr. [Br.Bs.F.Gr.]); Blue Mts., Spanish R. (Harris 5326, fr. Aug. [Br.D.K.]); above Silver Hill Gap (Harris 5843, fl. Aug. [Br.D.NY.Ws.], 5286, ster. July [Br.Ws.]); above Cedar Valley, along the parochial road to Silver Hill Gap (Maxon 10320, fr. July [St.Ws.]); Parish of Manchester, New Green (Britton 3691, fr. Sept. [NY.]); Cockpit country, valley, Iroy (Britton 660, fl. Sept. [F.NY.]); Iroy, alt. 500 m. (Harris 9447, fl., fr. Sept. [D.NY.]); Mandeville, woods New-Green, alt. 700 m. (Harris & Britton 10594, fr. Sept. [F.Kw.NY.Ws.]); Rio Manna, woods St. Mary (Purdies, n. [Kw.]); St. Anns (Alexander s.n. [Kw.]; Purdie s.n. [Kw.] *); locality unknown (Marsh 1539, fl. [Gr.Lg.Kw.]; Seeds 285 [Kw.]; Ryan s.n., fl. [K.], *Laurus discolor* Vahl mscr.; Swartz s.n., fl. [Br.K.St.]). Hispaniola: Haiti: Plateau near Corrail, alt. 700 m. (Nash & Taylor 1035, fr. July [D.NY.Ws.]); Massif du Nord, Port-de-Paix, Haut Piton, on eruptives, alt. 1000 m. (Ekman H. 3692, fl. Apr. [St.Ws.]); Massif de la Pelle, Morne Tranchant near Godet, alt. 1600 m. (Ekman H. 1950, fl. Sept. [D.St.Ws.]); Furcy, Port-au-Prince, alt. 1500

*) A specimen of Purdie [Kw.] is labeled St. Anns, Trinidad, this is an error; it must be St. Anns on Jamaica.

m. (Buch 2078, fl. Sept. [D.]); 470, fl. July [D.]); Pérodin (Picarda 1606, fr. July [D.]); Dept. du Sud, Morne de la Hotte, Ma Blanche, alt. 800 m. (Ekman 470, fl. July [D.]). Santo Domingo: locality unknown (Martin 248, fl. fr. [Lam.]), type of *Laurus globosa* Lam.; Prov. Barahona, near Paradis (Abbott 1605, fl. Febr. [D.Kw.Ws.]); Jovero, road to Seiba, sea-level (Abbott 2529, fl. Febr. [D.Ca.Ws.]); Prov. Pacificador near S. Francisco de Macoris, Bracito (Abbott 2167, fl. Apr. [D.Ws.]); Prov. la Vega near Jarabacoa, alt. 600 m. (Fuertes 1617, fl. June [D.Dl.NY.P.U.W.Ws.]); la Hagua and Jarabacoa, Arroyo de la Muz (Eggers 2087, fl., fr. May [Br.Bs. C.D.Dl.Bl.Kw.L.M.NY.Ws.]); Cordilleras septentrional, prov. Puerto Plata, Sosua near Jaguamocho (Ekman H. 14565, fr. Apr. [D.St.]); locality unknown (Poiteau s.n., fr. [D.Ba.]; Nectoux, fl. [P.]). Portorico: Sierra de Naguabo, in forest on Rio Blanco (Sintenis 5317, fr. Nov. [B.Bl. Br.Bs.C.D.Dl.Dr.F.Gr.K.L.M.Mi.Lg.NY.P.St.W.Ws.]); Sierra de Juncos on „Guvuy Mt.” (Sintenis 2678, fl. Aug. [Bl.Bs.C.D.Dl.Gr.Lg.M.NY.St.Ws.]); Adjuntas, Juncos (Sintenis 4700, fr. June [Bl.Br.Bs.C.D.Dl.Dr.F.Gr.L.Lg.M. Mi.NY.P.St.W.Ws.Kw.]); Adjuntas in forest of La Vega Mts. (Sintenis 4398, fr. May [Bl.Br.Bs.C.Ca.D.Dl.Dr.F.Gr.L.Lg.M.Mi.NY.P.St.W.Ws.]); near Adjuntas, „Galsa” Mts. (Sintenis 4083, fl. Apr. [D.K.]); near Adjuntas on „Bajaya” Mt. (Sintenis 4268b, fl. May [D.Gr.K.]); Adjuntas, forest on Mt. Cienaga near La Lucia (Sintenis 4137, fl. Apr. [Br.Dr.Ws.]); Rubias, north of Yaco, alt. 800 m. (Britton & Britton 7364, fr. Febr. [NY]; Palacky s.n. [W.]); Utuado, Mameyes (Sintenis 6523, fl. March [D.L.]). St. Thomas: locality and collector (Riedlé?) unknown [D.P.], type of *Hufelandia Thomaea* Nees and of *Wimmeria Thomaea* Nees; Riedlé 84, fl. [P.]. St. Kitts: Lambert Estate, forest ravine (Britton & Cowell 634, fr. Sept. [NY.]). Guadeloupe: Bois de la Pointe noire et des Bains jaunes, alt. 700 m. (Duss 3863, fl. Jan. [D.NY.]); Vallée de St. Louis, alt. 700 m. (Duss 4006, fl. Sept. [NY.], 4014, fl. Sept. [D.NY.]). Montserrat: Trailwest of Soufrière (Shafer 588, fr. Febr. [NY.]). Dominica: locality unknown (Imray 357, in bud [D.]). Martinique: Bois de la Calebasse, Morne Martin et Morne Vert (Duss 222 [D.NY.], 4096, fl. Aug. [D.NY.Ws.]); Bois de la Basse pointe (Hahn 1368, fr. March [Bs.C.D.Dl.Gr.Kw.P.W.]); Case pilote, Hauteur des deux Choux (Hahn 1511, fl. June [B.Dl.Kw.Lg. St.]); locality unknown (Plée 204, ster. [P.]). St. Lucia: Fonds St. Jacques (Ramage s.n., fl. March [Br.D.Kw.]).

Use: The timber is useful for general purposes, the wood being hard and standing exposure; it is yellowish-brown, darkening upon exposure, straight-grained and fine-textured.

2. *Beilschmiedia mexicana* (Mez) Kosterm. nov. comb. — *Hufelandia mexicana* Mez in Jahrb. Bot. Garten Berlin V (1889), p. 20; Standley in Contrib. U. States Nation. Herbar. 23, 2 (1922), p. 292. — *Hufelandia costaricensis* Mez et Pittier ex Mez in Bull. Herb. Boissier sér. 2, III (1903), p. 228 (excl. spec. Tonduz 1863 et 1873); Standley in Public. Field Mus. 18 (1937), p. 451. — *Hufelandia pendula* Meissn. in D.C., Prodr. XV, 1 (1864), p. 65, p.p. (quoad cit. spec. Müller 1460); Mez in Jahrb., l.c., p. 20. — *Beilschmiedia pendula* auct. (non Benth.) Hemsl. in

Biologia Centr. Americ. 3 (1882—86), p. 70; Mez in Jahrb., l.c., p. 20.

Typus: Müller 1460; Mexico [Kw.].

„Quizarra” (Costarica: Tonduz); „Laurel canime calentano” (Colombia: Duque).

Tree, up to 25 m. high, 60 cm in diam. (Duque). Branchlets angular, sulcate, rather thick, minutely yellowish tomentellous at apex; branches glabrous, cylindrical, longitudinally sulcate, dark or reddish-brown; buds densely, minutely yellowish tomentellous. Leaves alternate, chartaceous or rigid-chartaceous, glabrous, green, on both sides densely, prominulously reticulate, elliptical, 6—18 × 3—7 cm; base shortly acute, margin slightly recurved, top shortly, broadly acuminate or obtusely, shortly acute; above slightly glossy, midrib flattish or faintly raised, prim. nerves faintly prominulous; beneath rather dull, midrib prominent, reddish (dried), primary nerves (7—14 per side) prominent, erect-patent, slightly arcuate. Petioles slender, glabrous, 5—15 mm l., canaliculate above. Panicles, flowers (slightly smaller) and fruits as in *Beilschmiedia pendula*.

Distribution: Mexico, Costarica, Colombia.

Mexico: Orizaba (Müller 1460, fr. [D.Kw.Lg.W.]); Cosalpa (Purpus 8745, fl. March [Ca.Gr.Mi.Ws.]); Mirador, Aguas Santas (Liebmann 711 = Laurac. n. 16 et 19, fr. March [K.P.Ws.]; id. 714 = Laur. n. 21, fr. Febr. [K.Lg.]); Totutla (Liebmann 713 = Laur. n. 17 et 18, fr. Jan. [K.St.Ws.]); Dos Puentes (Liebmann 712 = Laur. n. 20, fl. Apr. [K.Kw.Ws.]). Costarica: Near Copey, alt. 1800 m. (Tonduz 11713, fl. Febr. [Bs.D.Kw.P.], type of *Hufelandia costaricensis*); oak forest near Quebradillas, about 7 km. north of Santa Maria de Dota, prov. de San José, alt. 1800 m. (Standley 42865, fr. Dec. [Ws.]). Colombia: Dept. del Valle, Rio Cauca, Cordilleras Central, forest, alt. 1200 m. (Duque 293, fr. Dec. [D.]).

Use: wood for constructions (Duque).

The species is closely related to *Beilschmiedia pendula*; the leaves, however, are thinner, concolorous and with a more prominent reticulation. The flowers are as a rule slightly smaller than those of *B. pendula*.

3. *Beilschmiedia Anay* (Blake) Kosterm. nov. comb. — *Hufelandia anay* Blake in Journ. Washington Acad. Scienc. IX (1919), p. 459. — *Hufelandia costaricensis* Mez in Bull. Herb. Boissier 2 me série III (1903), p. 228, p.p. (quoad cit. spec. Pittier 1863 = 1873).

Typus: Popenoe 754; Guatemala [Ws.].

„Anay” (Guatemala: Johnson, Popenoe); „Laurel canime” (Colombia: Duque).

Large tree, up to 22 m high and 40 cm in diam. (Duque, Popenoe); bark thick, reddish-brown (Popenoe); branchlets thick, angulate, sulcate, densely rusty lanuginose-tomentellous or hirsute-tomentose; branches cylindrical, glabrous, buds densely rusty-tomentellous or tomentose-hirsute. Leaves alternate, rather crowded towards the end of the branchlets, chartaceous, broadly elliptical to broadly ovate, $13-30 \times 7\frac{1}{2}-19$ cm; base rounded or shortly cuneate, margin slightly recurved, top very shortly, broadly, obtusely acuminate (acumen up to 1 cm l.). Young leaves above sparsely lanuginose-tomentellous (denser on principal nerves); adult ones above glabrescent (tomentum on midrib often sub-persistent), green, midrib and prim. nerves slightly impressed or flattish, nerves very densely, prominulously reticulate; beneath pruinose, laxly rusty-tomentellous or hirsute (denser on principal nerves), midrib strongly prominent, prim. nerves (10–14 per side) prominent, rather patent, straight, arcuate at margin, veins reticulate (secondary nerves usually conspicuous). Petioles stout, sulcate, canaliculate, densely lanuginose-tomentellous, glabrescent, $2\frac{1}{2}-3\frac{1}{2}$ cm l. Panicles axillary, crowded near the top of the branchlets, pyramidal, densely rusty-lanuginose-tomentellous, 10–15 cm l.; peduncles long, rather stout, compressed, 4–7 cm l.; branchlets few, distant, short, up to 3 cm l. Bracts and bracteoles deciduous. Pedicels relatively slender, 2–5 mm l., densely pilose. Flowers pilose, sub-hemispherical, 3–4 mm l.; tube shallow, hardly 1 mm l., glabrous within (throat excepted).

Tepals sub-equal, erect, rather thin, densely pilose within, ovate or elliptical, obtuse, $2\frac{1}{2}-3$ mm l., 1–2 mm w., margins densely ciliate. Stamens included; outer ones $\frac{1}{2}$ mm shorter than tepals, with ovate or ovate-acuminate, $1\frac{1}{2}$ mm l., densely pilose anthers (connectives obtuse or acutish, fimbriate, strongly protruding beyond the large, introrse cells); filaments rather broad, flat, pilose, almost completely adnate to tepals. Stamens of series three slightly shorter with narrowly elliptical, 1– $1\frac{1}{2}$ mm l., pilose anthers with ciliate margins and apex (connectives thick, obtuse, sub-clavate, papillose-pilose, protruding nearly $\frac{1}{2}$ mm beyond the large, lateral or extrorse-lateral cells); filaments comparatively slender, pilose, nearly 1 mm l.; basal glands subglobose, compressed, rather large, $\frac{1}{2}-\frac{3}{4}$ of the filament-length. Staminodes large, densely pilose, narrowly ovate, triangular, acuminate, 1– $1\frac{1}{2}$ mm l., glabrous within (sometimes with

fertile cells), stalks broad, pilose, very short. Ovary sub-globose, about $\frac{1}{2}$ mm l., not distinct from the thick, conical, as long, obtuse style. „Fruit ellipsoid-pyriform, glossy black, thin-skinned, 10—15 cm l.; seed very large, obovoid with thick outer coat; embryo at extreme base of cotyledons” (Popenoe).

Distribution: Guatemala, Colombia.

Guatemala: Finca Chama, Alto Verapaz, alt. 900 m., heavy, moist soil in partly cleared forest, rare (Popenoe 884, ster. Dec. [Ws.]; Johnson 170, fl. June [Ws.]); Finca Compromiso, Mazatenango (Popenoe 754, with young fruit Jan. [Ws.]). Costa Rica: forest of Juan Vinas, alt. 1130 m. (Pittier 1863 et 1873, fr. Jan. [B.D.]). Colombia: Dept. del Valle, Cabeceras del Rio Cali, alt. 2000 m., forest (Duque 43, ster. March [D.]).

I am not absolutely sure about the identity of the specimen Pittier 1863 (1873); Mez referred it to *Hufelandia costaricensis*, but the large leaves with traces of a tomentum and the long petioles point more to *B. Anay*. The specimen of Duque from Colombia has also almost glabrous leaves.

4. *Beilschmiedia alloiophylla* (Rusby) Kosterm. nov. comb. — *Ocotea alloiophylla* Rusby in *Descript. of three hundred new species of south american plants* (1920), p. 21.

Typus: Smith 2104, Colombia [NY.].

Large tree (Smith). Branchlets stout, angular, sulcate, densely rusty lanuginose-tomentose; buds densely rusty tomentose. Leaves alternate, chartaceous, elliptical, 21—26 × 9—12 cm; base contracted into the petiole, shortly acute, margin hardly recurved, top very shortly, broadly, obtusely acuminate. Young leaves above sparsely pilose, densely tomentose on principal nerves. Adult ones on both sides very densely conspicuously pitted, areolate-tesselate (beneath less); above glabrous (midrib excepted), prim. nerves and midrib impressed; beneath pruinose rusty-hirsute-tomentose (denser on principal nerves), midrib strongly prominent, prim. nerves (8—11 per side) prominent, erect-patent, arcuate towards margin, veins laxly reticulate, prominulous. Petioles stout, densely rusty-tomentose, canaliculate, 1—1½ cm l. Panicles axillary, many-flowered, lax, densely rusty-tomentellous or tomentose, pyramidal, 10—18 cm l.; peduncles comparatively stout, compressed, long (8—12 cm); branchlets few and distant, the lower ones up to 3 cm l., bearing the more or less clustered flowers. Bracts and bracteoles 1—1½ mm l., densely pilose, deciduous. Pedicels (sub-mature) up to 2 mm l., densely pilose. Flowers densely sericeous-tomentellous, sub-hemispherical, (sub-mature) 3 mm l., 3 mm in diam. at apex;

tube shallow, 1 mm high, glabrous inside (throat sericeous). Tepals erect, rather thin, pilose inside ovate or elliptical, subequal, obtuse, margin pilose, $1\frac{1}{2}$ mm w. Stamens included: outer ones $\frac{1}{2}$ mm shorter than tepals with glabrous (except base without) ovate, truncate or sub-emarginate anthers (connectives rather thick, strongly protruding beyond the large, introrse cells) 1 mm l.; filaments shorter, rather broad, flattish, pilose, partly adnate to tepals. Stamens of third row same shape or narrower, cells extrorse, basal glands globose, compressed, sessile, about as long as filaments. Staminodes 1 mm l., ovate-subcordate, acuminate, pilose without, glabrous and with conflattish, pilose, partly adnate to tepals. Stamens of series three same shape or anthers narrower, cells extrorse; basal glands globose, sessile, about as long as filaments. Staminodes 1 mm l., ovate-subcordate, acuminate, pilose without, glabrous and with conspicuous cellrudiments within, stalks short, broad, sericeous. Ovary subglobose, glabrous, hardly more than $\frac{1}{2}$ mm l., not distinct from the thick, conical, slightly longer, obtuse style. Fruit unknown.

Distribution: Colombia: Santa Marta.

Colombia: Santa Marta, mountain forest 5 miles S.E. of Don Amo, alt. 800 m. (H. H. Smith 2104, fl. March [D.L.H.N.Y.P.Ws.]).

A species showing strong resemblance with *B. Anay*, the main differences being the densely pitted leaves and the shorter petioles. The truncate, nearly glabrous anthers of the outer staminal rows are also different, but as the flowers are known only in sub-mature state, it is not sure, whether these are constant characters.

5. *Beilschmiedia sulcata* (R. et P.) Kosterm. nov. comb
 — *Laurus sulcata* Ruiz et Pavon, Fl. Peruv. IV (1802), t. 356 et Laurogr., t. 11 (excl. anther. anormal.); Nees in Linnaea 21 (1848), p. 494; Walp. Ann. 3 (1852—53), p. 307. — *Hufelandia sulcata* Nees in Linnaea 21 (1848), p. 494; Walp. Ann., l.c., p. 307; Meissn. in D.C., Prodr. XV, 1 (1864), p. 54; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 22 et 23. — *Persea sulcata* Meissn. in D.C., Prodr., l.c., p. 54; Mez in Jahrb., l.c. p. 23. — *Hufelandia latifolia* Nees, Syst. (1836), p. 674; Meissn. in D.C., l.c., p. 66; Mez in Jahrb., l.c., p. 22. — *Hufelandia Tovarensis* Kl. et Karst. ex Meissn. in D.C., Prodr., l.c., p. 65; Mez in Jahrb., l.c., p. 22; Knuth in Fedde, Repert., Beiheft 43 (1928), p. 340. — *Hufelandia ovalis* Blake in Washington Acad. Scienc. IX (1919), p. 461; Standley in Public. Field Mus. 18 (1937), p. 451. — *Hufelandia* spec., Williams in Public. Field Mus. Chicago

n. 377, XV (1936), p. 461.

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

„Ushun moena” (Peru: Williams); „Tashango colorado” (Peru: Raimondi). „Aguacatillo Cordillero” (Colombia: Duque).

Tree, 10—40 m. high (Lehmann, Williams), $1\frac{1}{2}$ mm in diam.; branchlets stout, angulate, sulcate, towards apex yellowish or rusty tomentellous or sericeous-tomentellous, glabrescent; branches glabrous, cylindrical, smooth, slightly striate, dark-brown; buds densely yellowish or rusty tomentellous or sericeous-tomentellous. Leaves glaucous (Lehmann), alternate or the apical ones often sub-opposite, usually rigid-coriaceous, broadly elliptical to ovate-suborbicular, (5—) 9—18 \times ($2\frac{1}{2}$ —) 6—10 cm; base contracted into the petiole, obtuse or shortly acute, margin hardly recurved, top very shortly acuminate, often rounded. Young leaves above sparsely pilose, beneath densely tomentellous or sericeous; adult ones above glabrous, green, densely, conspicuously areolate-reticulate or punctulate, midrib rather broad, flattish, prim. nerves slender, slightly prominulous; beneath usually pruinose, minutely areolate-reticulate with sub-persistent, appressed, lax, minute hairs, at last glabrous, midrib prominent, prim. nerves (6—11 per side) rather patent or in the narrower leaves erect-patent, prominulous or prominent, slightly arcuate at margin. Petioles thick, tomentellous, glabrescent, 1—2 ($-2\frac{1}{2}$) cm l., above broad, flattish or hardly canaliculate, nodulate. Panicles axillary, narrowly pyramidal, lax, rusty-tomentellous, 5—20 cm l.; peduncles stout, sulcate, compressed, tomentellous, glabrescent, up to 10 cm l.; branchlets few, erect-patent, distant, short (up to 4 cm l.); flowers more or less clustered. Pedicels 1—3 mm l., tomentose. Bracteoles lanceolate to ovate-lanceolate, acute, tomentose, $1-1\frac{1}{2}$ mm l., at last deciduous. Flowers laxly tomentose, whitish, fragrant (Lehmann), 3— $3\frac{1}{2}$ mm l., $3\frac{1}{2}$ —4 mm in diam. at apex; tube shallow, broadly obconical, hardly 1 mm l., sericeous in throat within. Tepals equal, erect, fleshy, hardly concave, ovate or broadly ovate, obtuse or acutish, sericeous or tomentose and translucent-punctulate without, about $2\frac{1}{2}$ mm l. Stamens included, slightly shorter than tepals; outer ones with broadly ovate, pilose, about 1 mm l. anthers; connectives obtuse or acutish, protruding more than $\frac{1}{2}$ mm beyond the large, introrse cells; filaments slightly shorter than anthers, broad, flat, sericeous-hirsute (especially along midline within), partly adnate to tepals. Inner stamens about 2 mm l., anthers narrowly ovate, thick, with extrorse cells, elongated by the thick, broad,

obtuse, or truncate, microscopically papillose connectives (often longer than anthers); filaments about $\frac{3}{4}$ mm l., gradually merging into the anthers, sericeous-hirsute; basal glands large, globose, shortly stipitate. Staminodes large, 1—1½ mm l., ovate, acute or acuminate, pilose outside, within the flat, subcordate, pale cell-rudiments; stalks broad, sericeous, up to ½ mm l. Ovary glabrous, ovoid-globose, the thick, conical, short, obtuse style included 1½—2 mm l. Berry ellipsoid, smooth, up to 3½ cm l., 1½ cm in diam. Base sometimes with a short neck, top obtuse. Pericarp thin, fleshy. Cotyledons large, flat-convex, including the small, pilose plumule. Fruit pedicel 3—5 mm l., 2—3 cm across, cylindrical.

Distribution: Highlands of Costa Rica, Colombia and Peru.

Costa Rica: Volcan de Poas, alt. 2300 m. (Pittier 2040, fl. March [F.Ws.], type of *Hufelandia ovalis*). **Colombia:** Region of Mt. Chapon, extreme western part of Dept. Boyaca, northwest of Bogota, alt. 1200 m., high, thick forest (Lawrance 353, fr. July [D.Dl.F.Gr.NY.St.Ws.]; Juza, alt. 1600—2000 m. (Lehmann 6647, fl. March [D.F.Kw.Ws.]); Altos de Mismis, alt. 1800—2400 m. and Mont. de Caramenta, Cauca and Antioquia (Lehmann 7226, fl. July [F.Kw.]; Zigua, Capilla (Lehmann B.T. 401 [L.]); Dept. del Valle, Cordilleras occid., Rio Cali, alt. 2600 m. (Duque 53, fr. Nov. [D.]); Angelopolis near Medellin (Toro 895, fl. Jan. [NY.]); Cerro Quemada region near Santa Marta, alt. 2250 m. (Espina & Giacometto A. 170 = ser. n. 20945, ster. [NY.]); locality unknown (Mutis 1442, fl. [Ws.]; Karsten 88, fr. [D.Lg.], type of *Hufelandia Tovarensis*). **Peru:** San Roque, Dept. San Martin, alt. 1500 m. (Williams 7077, fr. July [F.]); Muña (Ruiz s.n., fr. [Br.Bs.D.]); San Carlos (Matthews 1433, fl. [Br.Kw. Lg.O.], type of *Hufelandia latifolia*); Tambillo, Dept. Cajamarca, Prov. Cutervo (Jelski 187, fl. July [D.]; ex herb. Raimondi 4465 et 5658, fr. Apr. [D.]).

Use: The heavy and dense wood is used for constructions.

According to the flower details in the drawing of Ruiz and PAVON, the anthers should have 4, instead of 2 cells. Meissner for this reason transferred the species to *Persea*. The type specimens, I could study, had no flowers at all, but leaves and fruits correspond exactly with Ruiz' figure. The species is characterised by strongly produced connectives, and it may be possible, that in the flowering specimen, drawn by Ruiz, this part of the connectives was provided with cells. The anthers of the specimen: Lehmann 6647 with the large, ablastic part of the connectives above the cells, point to this supposition. The leaves of the type specimen of Ruiz are thinner than those of the other cited plants, otherwise I can see no difference. The species varies strongly in the shape of its leaves; the most aberrant are those of the specimens collected by WILLIAMS and LAWRENCE.

The same may be said of the tomentum of leaves and flowers; the leaves may be nearly glabrous finally. The young leaves are often densely sericeous beneath, but nearly glabrous, pruinose ones are not uncommon. The flowers of the specimen from Costarica have a denser and longer tomentum, than those from the other localities, otherwise I find no difference. The ablastic, produced part of the anthers of the outer rows of stamens is sometimes emarginate, sometimes obtuse; both sorts occur in the same flower.

The species shows a strong likeness with *Beilschmiedia Tarairi* of New Zealand.

6. *Beilschmiedia curviramea* (Meissn.) Kosterm. nov. comb. — *Aydendron curvirameum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 90; id. in Fl. Bras. V, 2 (1866), p. 180; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 19. — *Hufelandia curviramea* (Meissn.) Mez in Jahrb., l.c., p. 19; Knuth in Fedde, Repert. Beiheft 43 (1928), p. 340. — *Aydendron firmulum* Nees in Linnaea 21 (1848), p. 496, p.p. (quoad cit. spec. Schomburgk.) — *Aydendron firmulum*, forma *rigidior* Nees mscr. in herb. Berol. ex Meissn. in D.C., l.c., p. 90; Mez in Jahrb., l.c.

Typus: Schomburgk 1009 (= 1730); British Guiana [D.].

„Lana-balli; Lana” (British Guiana; Ar.: Persaud, Forestry Bur.).

Tree or shrub. Branchlets rather thick, smooth, smooth, glabrous (towards apex minutely, sparsely appressed-pilose); branches stout, cylindrical, verrucous, grey; buds densely yellowish-tomentose. Leaves sub-opposite, rigid-coriaceous, glabrous (very young leaves minutely sericeous, soon glabrous), on both sides prominulously, laxly reticulate, elliptical, 8—20 × 3—7 cm; base acute or sub-acuminate, top acuminate or acute, margin slightly recurved; above green, slightly shining, midrib flattish or prominulous, prim. nerves prominulous, beneath rather dull, midrib prominent, prim. nerves (9—11 per side) rather patent, arcuate (especially towards margin), prominulous, alternate with nearly as distinct, parallel nerves (not attaining margin). Petioles glabrous, smooth, at last rugulose, rather thick, 1—1½ cm l. Panicles axillary, more or less clustered near the top of the branchlets, few-flowered, narrowly pyramidal, laxly rusty-tomentellous, 2—5 cm l.; peduncles comparatively thick, smooth, short; branchlets few, patent, distant, the longest 5 mm l. Bracteoles ovate, acute, concave, pilose without, 1 mm l., deciduous. Pedicels

pilose, rather thick, 1—2½ mm l. Flowers pale yellow or yellow (Sandwith, Forestry Bur.) broadly obconical, sparsely, minutely pilose, 2—2½ mm l., 3 mm in diam. at apex; tube shallow, broadly obconical, hardly 1 mm high, pilose within (especially in throat). Tepals erect-patent, fleshy; outer ones ovate, obtuse or acutish, hardly 1½ mm l.; inner ones ovate-orbicular, acutish, 2 mm l. Stamens slightly exerted or included (those opposite outer tepals visible from without); outer ones 2 mm l., with large, ovate, acute, pilose, ¾ mm w. anthers (those of series two narrower, more acute); connectives strongly protruding beyond the large, introrse cells; filaments slightly shorter, pilose, rather broad, base adnate to tepals. Inner stamens 1½ mm l., with narrowly elongate-ovate, pilose anthers; connectives obtusely acute, strongly protruding beyond the large, extrorse-lateral cells; filaments shorter, nearly as broad, pilose (especially within); basal glands large, globose, sessile. Staminodes nearly sessile, pilose, ½—¾ mm l., acute, keeled without, subcordate with visible, glabrous cell-rudiments within. Ovary glabrous, ovoid, (the broad, very short, conical style included) 1 mm l.; stigma inconspicuous. Berry ellipsoid or ellipsoid-ovoid, rugulose, base sometimes with a distinct neck; up to 5½ cm l., 3 cm in diam.; pedicel about 5 mm l., 4 mm in diam., cylindrical. Pericarp about 1½ mm thick.

Distribution: British Guiana.

British Guiana: Demerara R. (Schomburgk 1009 (= 1730), fl. [Bs.Bl.D.Dl.Kw.Lp.Ms.W.], type and type of *Aydenndron firmulum*, forma *rigidior*); Malali on Demerara R., lat. 5° 35' N. (de la Cruz 2725, fl. Nov. [F.Gr.Ws.]; Jenman 3920, fl. May [Dm.Kw.]); Demerara R., Kara-kara Creek (For. Bur. 542, fr. Febr. [Kw.]); Essequibo R., Moraballi Creek near Bartica (Sandwith 288, fl. Sept. [DKw.NY.]); Mazaruni R., long. 60° 10' W. (de la Cruz 2379, fl. Sept. [F.NY.]; 2249, fl. Sept. [Ca.Gr.]; Jenman 5320, fl. June [Dm.Kw.]); Mazaruni Station (For. Bur. 2401, fl. Nov. [Kw.]; Jenman 5319, fl. June [Dm.Kw.]; 657, fl. Sept. [Dm.Kw.]); Wini-bini (Persaud 70, fr. July [F.Kw.]); Kalacoon (Jenman 3624, fl. Apr. [Dm.Kw.]); Macouria R. (Jenman 2433; 2515, fl. Nov. [Dm.Kw.]).

7. *Beilschmiedia hondurensis* Kosterm. nov. spec.

Typus: Schipp 1262; Brit. Honduras [Kw.].

Arbuscula ramulis gracilibus cylindricis glabris laevibus, ramis gracilibus cinereis. Folia alterna vel ad ramulorum innovationes subconferta, chartacea, glabra, subnitida; lanceolato-elliptica, elliptica vel subobovato-elliptica, utrinque permanifeste laxequ prominulo-reticulata; basi acutata apice acuminata; supra nervo

mediano costisque prominulis; subtus nervo mediano et costis utrinque 9—12 erecto-patentibus ad marginem arcuatis, prominentibus, nervis secundariis paralellis petiolis gracilibus canaliculatis glabris 5—9 mm longis. Flores ignoti. Paniculae fructiferae usque ad 4 cm longae glabrae. Bacca nigra (Schipp) ellipsoidea laevis 3 cm longa $1\frac{1}{2}$ cm diametro, pedicello fructifero 3 mm longo 2 mm diametro insidens.

Distributio: Honduras britannica apud fines Guatemalae.

Honduras Britannica: Apud castra 31-ma expeditionis ad fines hondurensi-guatemelenses designandos (Schipp 1262, fr. Apr. [A.D.Kw.Br.]).

8. *Beilschmiedia emarginata* (Meissn.) Kosterm. nov. comb. — *Hufelandia emarginata* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 18. — *Cryptocarya emarginata* Meissn. in D.C., Prodr. XV, 1 (1864), p. 76; id. in Fl. Bras. V, 2 (1866), p. 166; Mez, l.c.

Typus: Riedel 1585; São Paulo [Lg.].

Tree, 7—10 m high (Riedel). Branchlets stout, subangular, minutely rusty or yellowish tomentellous; branches glabrous, cylindrical, darkbrown; buds minutely tomentellous. Leaves subopposite or opposite, rigid-coriaceous, glabrous, on both sides conspicuously, prominently rather laxly reticulate (especially above), elliptical, $6\frac{1}{2}$ — $10\frac{1}{2}$ × $2\frac{1}{2}$ — $5\frac{1}{2}$ cm; base sub-acuminate, tapering, margin strongly recurved, top subcordate-emarginate, rarely obtuse; above shining, midrib broadened towards base, slightly prominent, prim. nerves slightly prominent, beneath dull, midrib broad, prominent, prim. nerves (8—10 per side) slender, slightly prominent, erect-patent, arcuate. Petioles stout, glabrescent, about 5 mm l., flattish above, bordered by the leaf margins. Panicles axillary, pyramidal, few-flowered, minutely, sparsely tomentellous, 2—4 cm l.; peduncles thick, compressed, $\frac{1}{2}$ — $1\frac{1}{2}$ cm l.; branchlets few, short. Bracts and bracteoles deciduous. Pedicels rather thick, minutely, sparsely tomentellous, $1\frac{1}{2}$ —3 mm l. Flowers nearly glabrous, yellowish (Riedel), 2— $2\frac{1}{2}$ mm l., 2— $3\frac{1}{2}$ mm in diam. at apex; tube shallow, broadly obconical, hardly 1 mm deep. Tepals erect-patent, ovate or ovate-elliptical, slightly concave, incurved, rather thick, obtuse, pilose within, margins ciliate, $1\frac{1}{2}$ —2 mm l. (outer ones slightly shorter). Stamens included (those of series one visible from without), nearly $\frac{1}{2}$ mm longer than outer tepals; anthers broadly ovate, obtuse, pilose, margins ciliate (connectives protruding beyond the large, introrse cells), filaments shorter, rather broad, compressed, den-

sely pilose, partly adnate to tepals. Stamens of series two with narrower anthers. Those of series three with narrowly ovate, obliquely truncate-obtuse pilose anthers (connectives thick, protruding nearly $\frac{1}{2}$ mm beyond the large, extrorse-lateral cells); filaments comparatively slender, about $\frac{1}{2}$ mm l.; basal glands sessile, globose, as long as filaments. Staminodes thick, ovate-triangular, acute, pilose and keeled without, slightly more than $\frac{1}{2}$ mm l. on conspicuous, shorter, densely pilose stalks. Ovary glabrous, sub-globose, $\frac{3}{4}$ mm l., merging into the rather thick, conical, as long, obtuse style. Fruit unknown.

Distribution: São Paulo.

São Paulo: near Lorena (Riedel 1585, fl. Oct. [Bs.Kw.Ms.Lg.]).

But for its shorter petioles, its smaller, glabrous flowers with glabrous ovaries, this species is exactly like *B. rigida*. The latter might be an extremely developed form.

9. *Beilschmiedia rigida* (Mez) Kosterm. nov. comb. — *Hufelandia rigida* Mez ex Taubert in Engler's Botan. Jahrb. 17 (1893), p. 519; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590.

Typus: Glaziou 19790; Rio de Janeiro [D.].

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

Large tree (Glaziou). Branchlets glabrous (utmost apex excepted), stout, angular, sulcate; branches cylindrical, rough, brown or grey; buds minutely, rather laxly sericeous-tomentelous. Leaves opposite or sub-opposite, rigid-coriaceous, glabrous, on both sides conspicuously, prominently, rather densely reticulate, broadly elliptical, 11—22 × 6—10 cm; base acuminate or shortly acute, often slightly tapering into the petiole; margin lightly recurved, top emarginate or rarely obtuse; above shining, green, midrib flat, broadened towards base, prim. nerves prominent; beneath paler, dull, midrib broad, prominent, prim. nerves (9—12 per side) prominent, erect-patent, rather straight, arcuate at margin. Petioles stout, glabrous, flattened above, $1\frac{1}{2}$ — $2\frac{1}{2}$ cm l. Panicles axillary near the top of the branchlets, rather many-flowered, lax, 4—8 cm l., peduncles stout, angular, hardly pilose, 2—3 cm l., branchlets few, distant, short. Bracts and bracteoles minute, ovate, densely pilose, deciduous. Pedicels thick, laxly pilose, 2—4 mm l. Flowers laxly tomentose, yellowish-white (Glaziou), 3 mm l., about 3 mm in diam. at apex; tube

shallow, broadly obconical, hardly 1 mm l. Tepals fleshy, erect or erect-patent, slightly concave, ovate, obtuse, 2—2½ mm l., pilose within, equal. Stamens included, about 2 mm l.; outer ones with pilose, broadly ovate, obtuse or sub-emarginate 1½ mm l. anthers, fimbriate at margin (connectives protruding strongly beyond the large, introrse cells); filaments short, broad, flat, nearly completely adnate to the tepals. Inner stamens with narrowly ovate, thick, pilose, large anthers (connectives thick, truncate or sub-emarginate, protruding nearly ½ mm beyond the lateral, large cells), filaments rather thick, about ½ mm l., pilose; glands as long, globose, sessile. Staminodes thick, ovate, acute, hardly 1 mm l., back and apex pilose; stalks broad, pilose, very short. Ovary pilose, sub-globose, 1 mm l., merging into the thick, conical, as long, pilose style with obtuse apex. Fruit unknown.

Distribution: Vicinity of Rio de Janeiro.

Rio de Janeiro: Alto Macahé de Nova Friburgo and Serra Estrella (Glaziov 11468, ster. [D.]; 19790, fl. Oct. [Br.D.K.Lg.P.]; 19793, fl. Oct. [Bs.D.Lg.Kw.P.Ws.]; 20444, fl. Oct.-Nov. [D.K.Kw.NY.P.]).

The species is very similar to *B. emarginata*, but for the size of its leaves and flowers and the pilosity of flowers and ovary. The panicles of most specimens give the impression of being abnormally strongly developed. Among other American species it is the only one with pilose ovaries.

10. *Beilschmiedia angustifolia* Kosterm. nov. spec. — *Silvia navalium* Mez (non Allemão) in Jahrb. Bot. Gart. Berl. V (1889), p. 107, p.p. (quoad specim. a Miersio citato e montibus Orgãos).

„Tapinhao” (Miers).

Arbor ramulis angulatis crassiusculis glabris apicem versus sub lente sparsissime minutissime pilosis gemmis luteo-tomentellis ramis teretibus verruculosis glabris cinereis. Folia opposita rigide coriacea glabra utrinque permanifeste prominulo-reticulata concoloria lanceolata 7—9 × 1—2 cm; basi acuta in petiolum decurrentia margine recurvulo apice acuta; supra nitida nervo mediano plano basin versus sub-dilatato costis prominentibus; subtus sub-nitida nervo mediano prominente costis utrinque 6—10 prominentibus gracilibus erecto-patentibus sub-arcuatis. Petioli subgraciles glabri supra applanati vel canaliculati usque ad 1 cm longi, in foliorum laminae sensim transeuntibus. Flores

ignoti. Fructus subglobosus verruculosus 3 cm longus $2\frac{1}{2}$ cm diametro extus tenuiter carnosus.

Distributio: Rio de Janeiro in monte Orgãos.

Ad cataractam Vargem, Theresopolis, Serra dos Orgãos (Miers s.n., fr. 2 Febr. [Br.]).

Facie et praesertim foliorum texturá *Beilschmiediae rigidae* valde similis nomen vernaculum eodem spectat, sed folii forma potissimum apex acutus obsistit ne hanc plantam in varietatem reducam antequam plura specimina viderim.

11. *Beilschmiedia Berteroana* (Gay) Kosterm. nov. comb. — *Cryptocarya Berteroana* Gay, Fl. Chilena V (1849), p. 301 (nec alibi); F. Philippi, Catal. Pl. Vasc. Chil. (1881), p. 257. — *Bellota nitida* R. A. Philippi in Linnaea 29 (1857—58), p. 39; F. Philippi, Catal., l.c., p. 256 et 257; Meissn. in D.C., Prodr. XV, 1 (1864), p. 506; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 25 (excl. cit. spec. Bertero ex Lisimacha). — *Boldu nitidum* Meissn. in D.C., l.c., p. 506; F. Philippi, Catal., l.c., p. 256; Mez in Jahrb., l.c., p. 25. — *Adenostemum nitidum* Bertero (non Persoon) in El Mercurio Chileno no. 12 (March 1829), p. 557; Gay, Fl. Chil., l.c., p. 301; Looser, Lista Pl. Bert. (1933—36), p. 12; Meissn. in D.C., l.c., p. 67, p.p. (quoad cit. spec. Bertero 4); Mez in Jahrb., l.c., p. 25. — *Boldus nitidus* Meissn. ex O. Ktze. Revis. 2 (1891), p. 569; Mez in Arb. Bot. Gart. Breslau 1 (1892), p. 109. — *Cryptocarya nitida* R. A. Philippi in Linnaea 33 (1864—65), p. 228; F. Philippi, Catal., l.c., p. 257; Meissn. in D.C., l.c., p. 509; Mez in Jahrb., l.c., p. 25. — *Boldu Chilenum* Meissn. (non Nees) in D.C., l.c., p. 67, p.p. (quoad cit. spec. Bertero 4). — *Bellota pauciflora* R. A. Philippi in Anales de la Universidad de Chile 26 (1865), p. 649.

Typus: Bertero 4; Chile [P.].

„Ulmo” (Chile: Bertero).

Tree, 12—20 m high (Gay). Branchlets thick, subangular, striate, densely, minutely rusty-tomentellous; branches cylindrical, thick, dark-brown, smooth, glabrous; buds densely rusty subsericeous-tomentellous. Leaves sub-opposite, rigid-coriaceous, broadly ovate or ovate-elliptical, $3-7\frac{1}{2} \times 2-5\frac{1}{2}$ cm; base shortly cuneate or sub-rounded, top obtuse or slightly emarginate or rarely acutish. Young leaves sparsely, minutely appressed-pilose; adult ones glabrous (tomentum beneath sub-persistent at base); above green, shining, smooth; midrib, prim. nerves

and the very laxly reticulate second. nerves conspicuously prominulous; beneath dull, pruinose, midrib prominent, prim. nerves (5—7 per side) prominent, erect-patent, strongly arcuate, arcuately united along margin, veins prominent, laxly reticulate. Petioles rather thick, densely rusty tomentellous, glabrescent, slightly canaliculate, 3—8 mm l. Panicles axillary near the apex of the branchlets, few-flowered, 1—1½ cm l., peduncles rather thick, compressed, densely, minutely rusty-tomentellous, hardly or not branched. Bracts and bracteoles ovate, pilose, deciduous. Pedicels rather thick, glabrescent, 1—3 mm l. Flowers glabrous, broadly obconical, 3 mm l., 4 mm in diam. at apex; tube about 1 mm l., broadly obconical, densely sericeous within. Tepals erect-patent, rather fleshy, ovate and broadly ovate, obtuse or acutish; outer ones 1¾ mm l., inner ones 2 mm l., pilose inside. Stamens included; outer six ones about 1 mm l. with glabrous, broadly ovate, obtuse or sub-acutish anthers (connectives protruding beyond the large, introrse cells), filaments broad, pilose, very short. Inner stamens same length with narrowly ovate, truncate anthers with lateral cells, filaments nearly as long, pilose; glands as long as filaments, irregularly sub-globose, touching each other. Staminodes ovate-subcordate, acute, nearly sessile, pilose without, nearly ½ mm l., cell-rudiments within conspicuous. Ovary glabrous, ellipsoid, 1 mm l., style rather slender, conical, 1 mm l., stigma obtuse, hardly conspicuous. Fruit smooth, subglobose, mucronulate, pruinose, 18 mm in diam. Calyx dropping soon after anthesis, along a prefixed line. Pericarp rather fleshy ¾ mm thick. Cotyledons smaller than pericarp.

Distribution: Chile.

Chile: San Fernando (Gay s.n., fr. [P.]); La Leona Mts., Rancagua (Bertero 4, fl., fr. Nov. [Dl.Dr.Gr.P.W.], type of *Adenostemum nitidum* Bertero); la Concepcion (Germain s.n., fl. [Br.Bs.C.D.Dl.F.Gr.Kw.W.Ws.]); Cordilleras de Linares (Philippi 906, fl. [D.Kw.W.]; Reiche s.n., fl. Jan. [D.]); Prov. de Santiago (Philippi s.n., fl. [W.], type of *Cryptocarya nitida* Phil.); near Colchagua, Cauquenes (Gay s.n., fl. [P.]).

Though GAY (*Flora Chilena V*, page 301) indicated no type specimen of his *Cryptocarya Berteroana* it is evident, that he described the specimens collected by Bertero (n. 4), as he cites the vernacular name: Ulmo and the name: *Adenostemum nitidum* Bertero, both names figuring on the labels of these specimens.

The type specimen of *Bellota pauciflora* Phil. was not available

(the specimens of PHILIPPI are deposited in the herbarium of Santiago de Chile; duplicates have been distributed in several european herbaria, but the labels bear usually only the indication of the locality, although very insufficiently), but the description makes it clear, that no other species than *Beilschmiedia Berteroana* was meant. Some specimens of GERMAIN show the typical dropping-stage of the perianth, as described by PHILIPPI; these specimens might be duplicates of *Bellota pauciflora*.

Characteristic for this species is the dropping of the perianth: soon after anthesis a circular incision, somewhat above the implantation of the pedicel, becomes visible and the entire upper part of the flower with tepals and stamens still in perfect state, drops off.

12. *Beilschmiedia Miersii* (Gay) Kosterm. nov. comb. — *Bellota Miersii* Gay, Fl. Chilena V (1849), p. 298; id., Atlas Botan. (1854), tab. 59; R. A. Philippi in Linnaea 29 (1857—58), p. 39; id. in Linnaea 33 (1864—65), p. 229; F. Philippi, Catal. Pl. Vascul. Chilens. (1881), p. 256 et 257 (excl. syn. *Adenostemum nitidum* Bertero); Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 26 (excl. synonym.: *Peumus Boldus* Mol.; *Boldus chilensis* Mol.; *Peumus fragrans* Bertero; *Boldo* Grah., *Boldu arbor olivifera* Feuillée); Boll. de Bosques, Pesca i caza Chil. I, 10 (1913), p. 652, 653. — *Boldu chilanum* Nees (non Molina), Syst. (1836), p. 178 (excl. syn.: *Boldu arbor olivifera* Feuillée; *Peumus Boldus* Mol.; *Boldus chilensis* Mol.; *Peumus fragrans* Bertero; *Boldo* Grah.); id. in Linnaea 21 (1848), p. 493; Meissn. in D.C., Prodr. XV, 1 (1864), p. 67 (excl. cit. spec. Bertero 4 et 760 et syn.: *Boldus chilensis* Mol.; *Peumus Boldus* Mol.; *Adenostemum nitidum* Bertero); F. Philippi, Catal., l.c., p. 256 et 257; Mez in Jahrb., l.c., p. 26; Looser in Revista Chilena Hist. nat. 39 (1935), p. 210. — *Laurus Bellota* Miers mscr. in sched. Bertero n. 1078 ex Nees, Syst., l.c.; Gay, Fl. Chil., l.c., p. 298; Meissn. in D.C., l.c.; F. Philippi, Catal., l.c.; Mez in Jahrb., l.c. — *Persea* spec. Poeppig, Diar. 112 et Pl. exsicc. I n. 259 ex Nees, Syst., l.c., p. 178; Meissn. in D.C., l.c.; Mez in Jahrb., l.c. — *Laurus Lingui* Bridge mscr. in sched n. 506 ex Nees, Syst., l.c., p. 672; Mez, l.c.

Typus: Gay 236; Chile [P.].

„Bellota; Belloto” (Chile: Bertero, Gay, West).

Tree, up to 25 m high (Gay, West). Branchlets stout, sub-

angular, compressed (especially at nodes), densely, rusty-tomentellous; branches cylindrical, dark-brown, smooth, glabrous; buds densely rusty-tomentose. Leaves sub-opposite, coriaceous, broadly ovate or ovate, rarely ovate-elliptical, 4—12 × 2—7 cm; base obtuse or somewhat subcordate, rarely acutish; top usually obtuse, or slightly emarginate, rarely acutish; margin slightly recurved. Young leaves sparsely appressed-pilose, adult ones glabrous, conspicuously, prominently, rather laxly reticulate on both sides; above green, shining, midrib and prim. nerves prominent; beneath dull, pale-green or pruinose, midrib strongly prominent, prim. nerves (10—12 per side) prominent, straight, rather patent, arcuate at margin. Petioles rather thick, densely rusty-tomentellous, slightly canaliculate, 5 to 12 mm l. Panicles axillary, near the apex of the branchlets, densely rusty-tomentellous, many-flowered, broadly pyramidal, 2—10 cm l.; peduncles rather thick, compressed, 1—4 cm l.; branchlets patent and erect-patent, up to 4 cm l. Bracts and bracteoles deciduous. Pedicels rather slender, tomentellous, 1—3 mm l. Flowers greenish-yellow (West), broadly obconical, densely rusty-tomentellous, 3—4 mm l., 2 $\frac{1}{2}$ —3 mm in diam. at apex; tube 1 mm l., broadly obconical, pilose inside. Tepals erect-patent, rather fleshy, acutish, 1 $\frac{1}{2}$ mm l.; outer ones narrowly ovate, inner ones ovate-orbicular, pilose inside. Stamens included, as long as tepals; outer six ones with ovate, obtuse, glabrous anthers (connectives protruding beyond the large, introrse cells), filaments conspicuous, $\frac{1}{2}$ mm l., pilose, partly adnate to tepals; inner stamens with narrowly ovate, glabrous, truncate anthers (connectives protruding beyond the extrorse-lateral cells); basal glands rather large, globose, sessile, touching each other, as high as the about $\frac{1}{2}$ mm l., pilose filaments. Staminodes narrowly ovate, acute, pilose, $\frac{1}{2}$ mm l., cell-rudiments hardly conspicuous within. Ovary glabrous, ellipsoid, 1 mm l., merging into a slightly shorter, cylindrical-conical style with obtuse, sub-capitellate, papillose, rather small stigma. Unmature fruit with persistent tepals; mature one ellipsoid, smooth, up to 40 mm l., 30 mm in diam., top obtuse, base sometimes with a short, broad, obconical neck; pericarp $\frac{3}{4}$ mm thick, woody, brittle; testa membranous, dark, shining, adnate to pericarp; cotyledons up to 25 mm l. (shranked).

Distribution: Chile.

Chile: Prov. Santiago (Philippi 964, fl. [Bs.D.Dr.P.W.]; Goldfink s.n. [Br.]); Aconcagua (Philippi s.n., fl. [D.Dl.W.Ws.]; Gay s.n., fl. [P.]

Aconcagua, Serra Campana (Looser 580, fl. Febr. [Gr.]); El Salto (Sargent s.n., fl. Febr. [H.]); near Valparaiso, Concon (Poeppig 259, Diar. 112, fr. Aug. [D.Dl.Br.Lp.Ki.P.W.]); Günther & Buchtien s.n., fl., fr. Oct. [St.]; Lisimachi (Bertero s.n., fr. Oct.-Nov. [Br.Dr.]); San Pedro, Quillota (Bridges 506, fl. [Br.Kw.O.], type of *Laurus Lingui* Bridges); Cajon de San Pedro, westside of Campana de Quillota, dense forest, alt. 700—900 m. (West 5195, fl. Jan. [Gr.]); Quillota (Bertero 1078, fl. Oct. [Br.D.Dl.Dr.Gr. M.P.W.], type of *Boldu chilanum* Nees); Germain s.n. [D.Dl.]; Philippi 908 [D.]; Quilqué (Dessauer s.n., fl. [M.]); Quintero (Berninger 272, ster. [D.]); locality unknown (Leibold 3008, fl. [B.Dl.W.]); cultiv. in Los Angeles, Claremont (Popenoe s.n., fl. Dec. [Ws.]); San Rafael (Walther 56, fl. [H.]).

NEES described (Systema, page 178) this species as *Boldu chilanum*, considering it identical with *Boldus Chilensis* Mol., a name, figuring in synonymy. As the latter species is treated synonymous with *Peumus Boldus* Molina, belonging to the Monimiaceae, the name, given by NEES has to be canceled.

A good description of this species has been given by CL. GAY under the name of *Bellota Miersii*.

A single specimen in the Drake herbarium in Paris labeled: *Adenostemum nitidum* Bertero belongs to *Beilschmiedia Miersii*, all other specimens with that name to *Beilschmiedia Berteroana*. All the specimens of Bertero, bearing the name: *Peumus fragrans* are identical with *Peumus Boldus* Mol. (Monimiaceae) (= *Boldea Boldus* (Mol.) Looser).

Boldo Graham refers probably equally to the latter species. The *Boldu* of Feuillée has also been misinterpreted as being lauraceous. FEUILLÉE, Beschreibung der Arznei dienlicher Pflanzen welche in dem Reichen des mittägigen America in Peru und Chili vorzüglich im Gebrauche sind, in dem Lande selbst auf königlichen Befehl angesetzt (Nürnberg 1766), cites on page 13: „*Boldu arbor olivifera* sind den Blättern des *Tinus* lorbeerbaumes (*Viburnum Tinus*) vollkommen ähnlich. Die kleinsten sind drei Zoll lang und etwas weniger als halb so breit. Sie sind rauh anzufühlen, oben glänzend grün und an beiden Seiten mit kurzen rauhen Härlein besetzt.” „These characters make it absolutely sure, that he described *Peumus Boldus* Mol. and not *Beilschmiedia Miersii*; the latter has smooth leaves; those of the former are covered with rough emergences. The fruit, however, may belong to a species of Lauraceae. I therefore agree with LOOSER (Revista Chilena Hist. nat. 39, p. 211) to reject Feuillée's Name, as being a source of constant error.

The specimens with unmaturing fruit, studied by Mez, puzzled him by their persistent tepals, that made it difficult to put this

species in this genus; the specimen Bertero from Lisimachi has somewhat older fruits: the tepals are already partly dropped in this specimen. The specimen: Sargent from El Salto has mature fruit; they make it absolutely sure, that this species must be reckoned to *Beilschmiedia*; a large number of fruits, forwarded to me by Mr. LOOSER, confirmed my opinion. There is a distinct difference in the dropping off of the perianth compared with *B. Berteroana*; in the latter it drops very early along a prefixed line.

Use: The wood is used for naval constructions.

13. *Beilschmiedia stricta* Kosterm. nov. spec.

Typus: Nunes 313 (= H.R.J. 28013); Rio de Janeiro [U.].

Arbor ramulis subangulatis sulcatis strictis verruculosis glabris apicem versus minutissime perlaxe pilosis luteo-tomentellis ramis glabris cinereis. Folia opposita rigide chartacea adulta glabra nitida elliptica 6—9 × 2½—3½ cm; basi apiceque acuminata vel acuta margine sub-plana; supra permanifeste laxequae prominente reticulata nervo mediano impresso; subtus mox glabra dense prominulo-reticulata nervo mediano valde prominente costis utrinque 8—12 erecto-patentibus margine versus arcuatis prominentibus. Petioli mox glabri canaliculati 6—10 mm longi. Paniculae axillares pauciflorae sub-racemosae ferrugineo-tomentosae usque ad 2 cm longae pedunculis ramulisque subnullis, bracteis lanceolatis 1 mm longis pilosis deciduis vel sub-persistentes. Flores laxe tomentosi 2—2½ mm longi. Cetera ut in *B. Taubertianae*. Fructus sub-maturus ellipsoideus, maculis conspicuis cinereis obtectis.

Distributio: Rio de Janeiro in monte Sinai.

Rio de Janeiro: Est. do Rio G. Portella, Monte Sinai (Nunes 313 = H.R.J. 28013, fl. [R.U.]).

B. Taubertianae valde affinis (an var.?), sed foliis minoribus subtus glabris diversa.

14. *Beilschmiedia Taubertiana* (Schwacke et Mez) Kosterm. nov. comb. — *Hufelandia Taubertiana* Schwacke et Mez ex Mez in Arb. Bot. Gart. Breslau 1 (1892), p. 108.

Typus: Araujo in herb. Schwacke 7047; Minas Gerães [D.].

Tree or shrub. Branchlets rather slender, sub-angular, laxly rusty-tomentose; branches glabrous, cylindrical, verruculous, grey

or brown; buds densely rusty strigose-hirsute. Leaves sub-opposite or rarely alternate, crowded near the top of the branchlets, rigid-chartaceous, on both sides prominulously reticulate (especially above), elliptical, $7-15 \times 3-5\frac{1}{2}$ cm; base contracted into the petiole, rounded or shortly acute, margin flattish, top obtusely acute or obscurely acuminate; above glabrous, shining, midrib and prim. nerves impressed; beneath dull, laxly rusty hirsute (hairs rather long, patent), denser on nerves; midrib strongly prominent, prim. nerves (8-11 per side) erect-patent or rather erect, prominent, slightly arcuate. Petioles glabrescent, canaliculate above, 6-11 mm l. Panicles axillary, raceme-like, few-flowered, hardly or not branched, laxly rusty-tomentose, $1\frac{1}{2}-3$ cm l.; peduncles comparatively thick, short, branchlets (if present) very short. Bracts and bracteoles ovate to lanceolate, densely pilose without, $\frac{1}{2}-1$ mm l., at last deciduous. Pedicels rather slender, about 1 mm l., pilose. Flowers rather densely rusty-tomentose, $2-2\frac{1}{2}$ mm l., 2 mm in diam. at apex; tube shallow, broadly obconical, $\frac{1}{2}-1$ mm deep, pilose within. Tepals erect-patent or erect, rather thick, slightly concave, nearly equal or outer ones shorter, ovate, obtuse or acutish, $1\frac{1}{2}-2$ mm l. Stamens included; those of series one as long as tepals, those of series two slightly shorter than tepals of second row; anthers densely pilose, margins ciliate, broadly ovate, obtuse, flattish, $1-1\frac{1}{2}$ mm l. (connectives strongly protruding beyond the large, introrse cells); filaments about $\frac{1}{2}$ mm l., broad, flat, partly adnate to tepals, midline within and back pilose. Stamens of series three erect, with narrowly ovate-elliptical, truncate or sub-obtuse, thick, pilose anthers (connectives stout, pilose, protruding nearly $\frac{1}{2}$ mm beyond the large, lateral cells, filaments more slender than those of outer stamens, densely pilose, about $\frac{1}{2}$ mm l.; basal glands globose, sessile, as long as filaments. Staminodes thick, triquetrous, small, $\frac{1}{4}-\frac{1}{2}$ mm l., back keeled and densely hirsute, within glabrous, flat, cell rudiments visible, stalks inconspicuous. Ovary glabrous, sub-globose, 1 mm l., merging into the slightly shorter, thick, conical, obtuse style; stigma inconspicuous. Fruit pear-shaped, or ellipsoid, ruglose, densely covered by pale spots, base with a rather obscure, thick neck, up to $5\frac{1}{2}$ cm l., $2\frac{1}{2}$ cm in diam.; pedicel cylindrical, 3 mm l., 5 mm in diam.

Distribution: Minas Gerães.

Minas Gerães: Rio Novo (Araujo in herb. Schwacke 7047, fl., fr. [D.Mn.P.]).

15. *Beilschmiedia fluminensis* Kosterm. nov. spec.

Typus: Nunes 323 (= H.R.J. 28008); Rio de Janeiro [U.].

Arbor ramulis gracilibus apicem versus subangulatis minutissime sparsissime pilosis gemmis minute sericeis ramis glabris verruculosus cinereis. Folia sub-opposita chartacea glabra concoloria elliptica 9—17 × 4—7 cm basi acuminata in petiolum sub-decurrentia margine basin versus recurvula apice obtusiuscule acuta utrinque nitida, viridia permanefeste denseque prominulo-reticulata, nodulata; supra nervo mediano plano basin versus sub-dilatato, costis gracilibus prominulis; subtus nervo mediano manifeste prominente costis utrinque 10—16 erecto-patentibus gracilibus sub-prominentibus marginem versus arcuatis. Petioli mox glabri subgraciles canaliculati 1—2 cm longi. Paniculae axillares ad apicem ramulorum saepe confertae sub-multiflorae glabrae usque ad 4 cm longae, pedunculis plerumque sub-crassis brevibus angulatis ramulis paucis brevibus bracteolis deciduis. Pedicelli glabri 1—3 mm longi. Flores sub-globosi glabri 1½—2 mm longi, tubo sub-nullo, tepalis sub-aequilongis carnosius glabris concavis ovato-suborbicularibus. Stamina inclusa exteriora glabra tepalibus sub-aequilonga antheris magnis ovatis obtusius connectivo cellula introrsa magna manifeste superante, filamentis latis ½ mm longis tepalis partim adnatis. Stamina tria interiora 1½ mm longa antheris crassis intus minute pilosis ovato-triangularibus obtusius vel truncatis, connectivo crasso cellula sublaterales permanefeste superante; filamentis subaequilongis pilosis glandulis basalibus magnis globosis sessilibus. Staminodia seriei quartae crassa subsessilia ¾ mm longa extus carinata minute pilosa intus glabra subcordata rudimentis cellularum conspicuis. Ovarium glabrum subglobosum 1 mm longum in stylum conicum ½ mm longum obtusum transeuns. Fructus ignotus.

Distributio: Rio de Janeiro in monte Sinai.

Estado do Rio G. Portella, Monte Sinai (Nunes 323 = H.R.J. 28008 [R.U.]).

Beilschmiediae emarginatae affinis sed reticulatione nervorum densiore foliorum forma, petiolis longioribus diversa.

Species excludendae:

Beilschmiedia sphaerocarpa Winkler = *Persea*

Bellota Costaricensis Mez = *Aiouea costaricensis* (Mez) Kosterm.

Hufelandia Caracasana Kl. et Karst. = *Ocotea*

Hufelandia sphaerocarpa Winkler = *Persea*

Hufelandia thyrsoflora Nees = non est Lauracea (Monimiacea?)

ANIBA Aubl.

Aniba Aublet, *Guia*. I (1775), p. 327, II, t. 126; Scopoli, *Introd.* (1777), p. 3335; Lamarck, *Encycl.* 1 (1793), p. 191; Juss., *Gen.* (1789), p. 438 (ed. Usteri 1791, p. 478); Juss., *Dict.* 2 (1804), p. 156; St. Hil., *Expos. Pl.* 2 (1805), p. 364; Juss. in *Ann. Mus. Par.* 7 (1806), p. 480; Hedwig, *Gen.* (1806), p. 281, n. 1130; Reichenbach, *Conspect.* (1828), p. 87, n. 1914; Spreng., *Gen.* I (1830), p. 318, n. 1621; Bartling, *Ordin. nat. Pl.* (1830), p. 112; Endlicher, *Gen.* (1841), p. 1327, n. 6840; id., *Ench.* (1841), p. 685; Meissner, *Gen.* 2 (1841), p. 237; Steudel, *Nomencl. ed.* 2 (1841), p. 98; Lindley, *Veg. Kgdm.* (1846), p. 795; Pfeiffer, *Nomencl.* (1873), p. 193; Mez in *Jahrbuch Bot. Gart. Berlin-Dahlem* 5 (1889), p. 50; Pax in *Engl.-Prantl, Pfl. fam., Nachtr.* 1 (1897), p. 174; dalla Torre et Harms, *Gen.* (1900—07), p. 178; Post et Kuntze, *Lexicon* (1904), p. 31; Lemée, *Dict.* 1 (1929), p. 272; Benoist in *Arch. Bot.* 5 (1931), p. 62; Brooks in *Kew Bull.* 1933, p. 212; Britton and Wilson, *Fl. Portorico and Virgin isl.* 5 (1924), p. 316; Kosterm. in *Pulle, Fl. Surin.* 2 (1936), p. 295. — *Cedrota* Schreber, *Gen.* 1 (1789), p. 259, n. 660; Raeuschel, *Nomencl.* (1797), p. 111, n. 802; Willdenow, *Spec. Pl.* 2 (1799), p. 338, n. 756; Persoon, *Synopsis Pl.* 1 (1805), p. 415, n. 937; Spreng., *Syst.* 2 (1825), p. 243, n. 1486; Agardh, *Aphor.* (1825), p. 228; Bartling, *Ord.* (1830), p. 112; Endl., *Ench.* (1841), p. 685; Steudel, *Nomencl.* (1841), p. 314; Lindl., *Veg. Kgdm.* (1846), p. 795; Meissn., *Gen.* 2 (1841), p. 237; Gmelin, *Syst.* (1867), p. 629; Pfeiffer, *Nomencl.* (1873), p. 638; Mez in *Jahrb.* (1889), p. 50; Post et Kuntze, *Lex.* (1904), p. 107. — *Aydendron* Nees et Martius in *Linnaea* 8 (1833), p. 36 (p.p.); Nees, *Laurin. Expos. Vratisl.* (1836), p. 13; id., *Systema Laurin.* (1836), p. 22 et 245; Endl., *Gen.* (1837), p. 319, n. 2040; id., *Ench.* (1841), p. 197; Dietrich, *Synops. Pl.* (1842), p. 1332, n. 1834; Spach, *Veg. Phan.* 10 (1841), p. 496; Steudel, *Nomencl.* (1841), p. 174; Reichb., *Nomencl.* (1841), p. 71, n. 2670; Meissn., *Gen.* I (1841), p. 325, II, p. 238; Orbigny, *Dict. univers.* 2 (1841), p. 391; Lindley, *Veg. Kdm.* (1847), p. 537; Grisebach, *Fl. Brit. W.I. isl.* (1860), p. 284 (p.p.); Meissn. in *D.C., Prodrom.* XV, 1 (1864), p. 88; id. in *Martius, Fl. Brasil.* V, 2 (1866), p. 176; Baillon, *Hist. Pl.* 2 (1870), p. 473; Pfeiffer, *Nomencl.* (1873), p. 342; Bentham in *Benth. et Hook. f., Gen. Pl.* 3 (1880), p. 163 (p.p.); Durand, *Index Gen.* (1888), p. 348, n. 6182 (p.p.); Pax in *Engl.-Prantl, Pfl. fam.* III, 2 (1889), p. 121 (p.p.); Mez in *Jahrb.* V (1889), p. 50; Harms et dalla Torre, *Gen.* (1900—07), p. 178; Post et Kuntze, *Lex.* (1904), p. 56.

Large trees or shrubs throughout tropical south America east of the Andes; two species on the West Indian islands. Leaves alternate or subverticillate, usually coriaceous or rigid-coriaceous, upper surface glabrous, dull or shining, green, lower surface glabrous, usually paler and brownish when dried, or densely, and microscopically yellowish-papillose, rarely densely tomentellous or tomentose. Flowers in usually sub-terminal, congested panicles (rarely in raceme-like panicles); involucre wanting, base of the young inflorescences often surrounded by scale-like, large, deciduous bracts. Flowers hermaphrodite, small or minute, as a rule densely, and minutely tomentellous; tube conspicuous, obconical or urceolate, after anthesis rapidly increasing, becoming conspicuously urceolate. Tepals erect or erect-patent, equal or unequal, ovate, acutish, usually fleshy and smaller than the tube. Stamens 9, fertile, 2-celled, as a rule included. Outer 6 stamens slightly incurved with usually broad and hirsute filaments and glabrous anthers with introrse or sublateral-introrse cells. Inner 3 stamens erect, anthers glabrous, larger or smaller than those of the outer stamens; cells extrorse, in the large anthers opening with minute, often slit-like apertures; in the smaller with large apertures; upper part of filaments usually slender, glabrous, lower part thick, pilose, provided by usually large, sessile, sub-globose glands. Valves dehiscent from base to apex. Staminodes minute, stipitiform, as a rule wanting. Ovary ellipsoid or ovoid, glabrous or densely, minutely pilose, included in the tube; style distinct, cylindrical-conical; stigma as a rule minute, hardly conspicuous, obtuse or truncate. Berry ellipsoid, smooth, slightly mucronulate; base covered for 1/3 by the usually thick and rather woody, sub-hemispherical cupule, this with minute or large wart-like spots; fruiting pedicel woody, usually short and distinct from the cupule. Cotyledons flat-convex, large, including the minute plumule and radicle.

The genus *Aniba* includes most of the species of *Aydendron*, a genus established by NEES and maintained by MEISSNER. GRISEBACH included *Endlicheria* in this genus and this example has been followed by BENTHAM, but the latter kept separate in the meantime the genus *Ampelodaphne*, covering only true *Endlicheria* species.

MEZ revived the genus *Aniba* of AUBLET and kept it separate from *Endlicheria*, and in my opinion, he has rightly done so.

Both genera, though closely related, form two natural groups and may be easily separated from each other, not only on the strength of the hermaphroditical flowers in *Aniba* and the mono-

sexual ones in *Endlicheria*, but also in several other characters. The *Aniba* species form such a homogenous group that it is often difficult to separate the different species. Their leaves are usually more rigid than those of *Endlicheria*; the lower surface often glabrous or minutely tomentellous or tomentose, but never hirsute as in *Endlicheria* (the hairs possess a typical shape, according to PÉTZOLD in Engl. Jahrb. 38, 1907, p. 474); a number has the lower surface covered with a dense, pale-yellow, microscopical papillose layer; the punctulation of the lower leaf-surface, as may be found in several *Endlicheria* specimens, does not occur here. The anther cells of *Endlicheria* are as a rule larger than those of *Aniba*, their shape is quite different; only in the group of *E. dysodantha* there is some likeness with the anthers of *Aniba*. The cupules of both genera are quite different, those of *Aniba* being more or less woody, with a woody, short pedicel; those of *Endlicheria* fleshy with a long and fleshy pedicel. The flowers of the *Aniba* species are usually smaller than those of *Endlicheria*.

Aniba granatensis, the sole representative of the section: *Isoporanthera* has anthers similar to those of *Endlicheria*. It links the two genera *Endlicheria* and *Aniba*. The development of the fruit is very gradual. After pollination the flower tube enlarges and becomes urceolate with a constriction below the tepals. At first the ovary is completely included in the enlarged subglobose flower tube, with the still persistent tepals and stamens. In this period of development the fruits have some likeness with those of *Cryptocarya*, but they may be recognised by the large orifice at the apex, whereas in *Cryptocarya* there is only a minute pore. After that the berry grows out from the cupule, which becomes hemispherical.

Key to the species:

- I. Stamens of third row large, but sterile or provided with minute lateral cells Subgenus *Aiueopsis* Mez
- II. Stamens of third row fertile with extrorse cells
Subgenus *Euaniba* Mez
 - a. Stamens of third row with large (larger than those of outer stamens), thick, globose-subquadratical anthers with protruding minute cells, valves minute, partly dehiscent, hence pores crescent-shaped. Connectives of stamens of outer rows apiculate, conspicuously protruding beyond

the small, introrse-lateral, oblique cells

Section *Microporanthera* Kosterm.

- b. Stamens of third row with flattish, ovate-orbicular, small (smaller than those of outer stamens, rarely as large) anthers with large, extrorse, not protruding cells, pores suborbicular. Connectives of outer anthers usually not or hardly protruding beyond the large, introrse cells

Section *Macroporanthera* Kosterm.

- c. Stamens of third row with flattish, ovate, large (as large as those of outer stamens) anthers with large, ovate, not protruding cells. Connectives of outer anthers obtuse, obscurely protruding beyond the large, introrse cells

Section *Isoporanthera* Kosterm.

Subgenus *Aioeopsis*:

- 1a. Inner stamens acute with minute, lateral cells
 1. *A. pseudo-coto*
 b. Inner stamens truncate, sterile 2
 2a. Flower tube densely sericeous-hirsute within 3
 b. Flower tube slightly, minutely pilose within
 2. *A. Kappleri*
 3a. Flowers slender, cylindrical-urceolate, 3 mm l., 1¼ mm in diam. at apex; glands of the third row of filaments sub-basal, minute 3. *A. ovalifolia*
 b. Flowers broad, 3 mm l., 2 mm in diam.; glands basal, very large 4. *A. perutilis*

Subgenus *Euaniba*:

Sectio *Microporanthera* Kosterm.; Stamina sterili tertiae antheris magnis (quam antherae exteriores majoribus) crassis globoso-subquadratis, locellis productis valvulis minutis, vix dehiscentibus poris inde lunaribus.

- 1a. Ovary glabrous 2
 b. Ovary tomentellous 7
 2a. Leaves glabrous beneath (see also *A. desertorum*) 3
 b. Leaves densely tomentellous or tomentose beneath 6
 3a. Leaves distinctly sub-verticillate. Branchlets dull, verruculous, minutely rusty-tomentellous. Anthers of third staminal row subquadratical, large, not broader than long 4
 b. Leaves alternate, rarely more or less clustered. Branchlets smooth, shining, glabrous, reddish-brown or grey. Anthers of third staminal row subquadratical, very large, broader

- than long 5
- 4a. Leaves 15—25 (—40) × 4—7 (—12) cm; base gradually acute towards base, at base abruptly rounded or rarely acutish. Petioles short, thick, suberous, grey, $\frac{1}{2}$ —1 cm l. 5. *A. bracteata*
- b. Leaves 7—15 × 2—4 cm; base tapering into the slender, smooth, $1\frac{1}{2}$ cm l. petiole 11. *A. guianensis*
- 5a. Branchlets reddish. Leaves obovate-elliptical to elliptical, 12—20 × 4—7 cm; base gradually acute or cuneate. Lower leaf surface reticulate or veins obliterate. Petioles glabrous, dark 12. *A. trinitatis*
- b. Branchlets grey. Leaves broadly elliptical, 6—12 × $3\frac{1}{2}$ —5 cm; base very shortly acute; lower surface prominulously areolate-reticulate. Petioles grey, same texture as branchlets 13. *A. citrifolia*
- 6a. Branchlets densely rusty-tomentellous. Leaves sub-verticillate, elliptical or obovate-elliptical, 15—25 (—50) × 5—10 (—15) cm; towards base gradually acute, at base abruptly rounded; lower leaf surface densely, minutely tomentellous 6. *A. Hostmanniana*
- b. Branchlets densely yellowish or rusty tomentose-lanuginose. Leaves broadly elliptical or elliptical, 10—16 × $4\frac{1}{2}$ —7 cm; base subcordate or rounded. Lower surface densely tomentose (glabrescent) 15. *A. desertorum*
- 7a. Lower leaf surface densely, microscopically papillose, yellowish 16. *A. Burchellii*
- b. Lower leaf surface glabrous and smooth, or tomentellous, not papillose 8
- 8a. Lower leaf surface densely rusty-tomentose. 10. *A. excelsa*
- b. Lower leaf surface glabrous or minutely tomentellous .. 9
- 9a. Leaves alternate, rarely more or less clustered 14. *A. affinis*
- b. Leaves distinctly sub-verticillate 10
- 10a. Leaf towards base gradually acute, at base abruptly rounded 7. *A. gigantifolia*
- b. Leaf base gradually acute or tapering into the petiole .. 11
- 11a. Lower leaf surface dull, sparsely tomentellous, glabrescent. Petioles densely rusty-tomentellous, 1 cm l., distinct from the leaf blade 8. *A. Taubertiana*
- b. Lower leaf surface smooth, shining, glabrous. Petioles smooth, glabrous, $1\frac{1}{2}$ —3 cm l., gradually merging into the leaf blade 9. *A. terminalis*

Sectio *Macroporanthera* Kosterm.; stamina sterili tertiae antheris applanatis ovato-suborbicularibus minimis (quam antheras exteriores minoribus vel raro subaequalibus), locellis magnis, poribus suborbicularibus magnis.

- 1a. Leaves glabrous and smooth, or pilose, not papillose beneath 2
- b. Leaves densely, microscopically yellowish papillose beneath 10
- 2a. Ovary densely tomentellous 3
- b. Ovary glabrous 5
- 3a. Leaves densely rusty-tomentellous beneath 17. *A. permollis*
- b. Leaves glabrous beneath 4
- 4a. Leaves coriaceous and rigid-coriaceous, more or less clustered, obovate-elliptical or elliptical .. 18. *A. venezuelana*
- b. Leaves alternate, thinly chartaceous or chartaceous 24. *A. riparia*
- 5a. Outer tepals shorter than inner ones 6
- b. Tepals equal in length 7
- 6a. Leaves sub-verticillate, obovate or obovate-elliptical; towards base gradually acute, at base abruptly rounded; lower surface laxly reticulate or smooth. Stigma very large, peltate, turned to one side 26. *A. megaphylla*
- b. Leaves alternate, elliptical to narrowly lanceolate-elliptical; base cuneate, slightly decurrent; lower surface densely subareolate-reticulate. Stigma minute, hardly conspicuous 19. *A. Canelilla*
- 7a. Leaves alternate. Peduncles slender. Pedicels slender, 1—5 mm l. 8
- b. Leaves sub-verticillate. Peduncles thick. Pedicels thick, 0—1 mm l. 9
- 8a. Leaves elliptical, chartaceous, dull, 16—19 × 5—7 cm; lower surface obscurely, laxly reticulate. Outer filaments rather broad 22. *A. pedicellata*
- b. Leaves ovate-elliptical or rarely elliptical, rigid-coriaceous, shining, 8—11 × 4½—5 cm; lower surface conspicuously, densely subareolate-reticulate; base contracted into petiole, very shortly acute. Outer filaments broad 20. *A. Ramageana*
- c. Leaves elliptical, 5 × 13½ cm, chartaceous, shining; base acute; lower surface conspicuously, densely reticulate. Outer filaments slender 21. *A. Jenmani*
- 9a. Branchlets slender, smooth, shining, slightly tomentellous

- at apex. Leaves rather thinly chartaceous, absolutely smooth beneath. Petioles slender, glabrous, $\frac{1}{2}$ —1 cm l. 25. *A. salicifolia*
- b. Branchlets thick, verruculous, rimose, rusty-tomentellous. Leaves chartaceous, laxly reticulate beneath. Petioles thick, densely, minutely tomentellous, rugulose at base, up to $1\frac{1}{2}$ cm l. 23. *A. Puchury-minor*
- 10a. Tepals strongly unequal, inner ones twice as long as outer ones 27. *A. parviflora*
- b. Tepals equal or subequal in length 11
- 11a. Ovary glabrous. Flower tube up to $2\frac{1}{2}$ mm l., 1 mm in diam. Leaves long-acuminate; bracteoles persistent 28. *A. cylindriflora*
- b. Ovary densely, microscopically pilose. Flower tube up to 1 mm l., $\frac{1}{2}$ mm in diam. Leaves acuminate or shortly acuminate; bracteoles deciduous 12
- 12a. Leaves at base abruptly rounded; upper surface conspicuously, densely reticulate. Flowers $1\frac{1}{2}$ —2 mm l. Leaves very rigid-coriaceous 29. *A. rosaeodora*
- b. Leaves at base acute; above inconspicuously reticulate or smooth, rigid-coriaceous to chartaceous. Flowers 1—3 mm l. 13
- 13a. Flowers 1— $1\frac{1}{2}$ mm l. 14
- b. Flowers $1\frac{1}{2}$ —3 mm l. 16
- 14a. Leaves very rigid-coriaceous. Flowers $1\frac{1}{2}$ mm l. Cupule large, thick, 20 mm high, 22 mm in diam. 30. *A. Coto*
- b. Leaves chartaceous or coriaceous. Flowers 1, rarely $1\frac{1}{2}$ mm l. Cupule 15 mm high, 15 mm in diam. 15
- 15a. Midrib channeled above. Panicles up to 4 cm l. 32. *A. Muca*
- b. Midrib slender, prominulous above. Panicles 4—11 cm l. 34. *A. Duckei*
- 16a. Leaves chartaceous, broadly elliptical, 11—22 \times 4— $8\frac{1}{2}$ cm l., base acutish or somewhat rounded 31. *A. mas*
- b. Leaves oblanceolate or oblanceolate-elliptical 7—22 \times 2—7 cm l., base gradually acute 33. *A. firmula*

Subgenus *Aioueopsis* (Species 1—4).

1. *Aniba pseudo-coto* (Rusby) Kosterm. nov. comb. —
Ocotea pseudo-coto Rusby in Bull. Torrey Bot. Cl. 49 (1922), p. 261; id. in Journ. Amer. Pharmac. Assoc. XI, 10 (1922), p. 777; Wiessner, Rohstoffe des Pflanzenreiches ed. 4, I (1927), p. 225.

Typus: White 1051; Bolivia [NY].

„Coto ordinario” (Bolivia: White).

Tree; bark thick and easily peeled, not specially aromatic and not pungent; the peeled wood remains white (White). Branchlets rather thick, sulcate, densely, minutely yellowish tomentellous at apex; branches glabrous, verruculous, dark-brown or grey; buds densely tomentellous. Leaves alternate, coriaceous, subobovate-elliptical or elliptical, 7—10 × 2½—4 cm; base gradually acute, top shortly, obtusely acuminate, margin flat; above glabrous, slightly shining, rather smooth or obscurely reticulate, midrib prominulous or flattened, prim. nerves prominulous; beneath smooth, brownish, midrib sulcate, prominent, prim. nerves (6—7 per side) rather erect, prominulous, second. nerves hardly conspicuous. Petioles rather broad, glabrescent, flattish above, up to 1½ cm l., merging into the leaf blade. Panicles clustered near the top of the branchlets, pyramidal, many-flowered, densely, minutely tomentellous, up to 5 cm l. (sub-mature); peduncles thick; bracts and bracteoles deciduous. Pedicels of sub-mature flowers thick, pilose, 1 mm l. Flowers (sub-mature) minutely, sparsely, pilose, 2½ mm l.; tube obconical, 1 mm l. Tepals sub-equal, concave, fleshy, broadly ovate-suborbicular, acutish, 1½ mm l. Stamens included; outer ones flattish, ovate-suborbicular or narrowly ovate, fimbriate at margin, pilose; connectives acutish or obtuse, protruding beyond the small, introrse cells, filaments not distinct from anthers. Inner stamens thick, ovate-stipitiform, pilose, connectives acutish, long-protruding beyond the minute, lateral cells, filaments slightly narrowed, pilose; basal glands very large, globose, sessile, touching each other. Staminodes none. Ovary glabrous, sub-globose, merging into a slightly longer, conical style with inconspicuous, obtuse stigma. Fruit unknown.

Distribution: Bolivia.

Bolivia: Mountains south of Huachi, Cochabamba R. near Covendo, alt. 1000 m. (White 1051, in bud Sept. [A.Di.Gr.K.NY.Ws.]).

Use: The bark yields a drug, containing cotoin. It is called para-coto bark in commerce, to distinguish it from the real coto-bark of *Aniba Coto*.

2. *Aniba Kappleri* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 52; Pulle, Enum. Pl. Surin. (1906), p. 185; Kosterm. in Pulle, Fl. Surin. 2 (1936), p. 297. — *Ajouea Guyanensis* Griseb. (non

Aublet) in Kappl., Pl. Surin. n. 1981 ex Mez, l.c.; Kosterm., l.c. — *Ayden-dron riparium* Meissn. (non Nees), p.p. in D.C., Prodr. XV, 1 (1864), p. 89, quoad cit. spec. Kappler 1981; Mez, l.c.; Kosterm., l.c.

Typus: Kappler 1981; Dutch Guiana [U.].

„Ginger gale silver-balli” (Brit. Guiana).

Tree up to 13 m high. Branchlets slender, minutely, sparsely tomentellous, glabrescent, subangular; branches cylindrical, grey, glabrous with many small lenticels; buds densely tomentellous; bark strongly scented. Leaves alternate, chartaceous or thinly chartaceous, glabrous, dull, lanceolate or obovate-lanceolate, (6—) 11—14 (—16) \times (2—) $3\frac{1}{2}$ —4 (— $6\frac{1}{2}$) cm; base cuneate, slightly tapering, top distinctly acuminate (acumen broad, obtuse, up to $1\frac{1}{2}$ cm l.); above green, smooth, midrib prominulous or flat, nerves inconspicuous; beneath brownish, smooth, midrib prominent, prim. nerves (6—8 per side) prominulous, arcuately ascendant, the upper ones united, veins obscurely reticulate, usually obliterate. Petioles slender, glabrous, slightly canaliculate, 1 cm l. Panicles subterminal, many-flowered, pyramidal, rusty-tomentellous, up to 8 cm l.; peduncles slender, short, branchlets slender, patent, up to $3\frac{1}{2}$ cm l. Pedicels thick, sulcate, tomentellous, 1—2 mm l. Bracts and bracteoles deciduous. Flowers white (Kappler) or dull golden-yellow (Forestr. Bur. Brit. Guia.), rusty-tomentellous, 2 mm l.; tube slender, conical, not distinct from pedicel, sulcate, about 1 mm l., pilose inside. Tepals slightly incurved, fleshy, more or less carinate, $1\frac{1}{4}$ — $1\frac{1}{2}$ mm l.; outer ones narrowly ovate, acutish; inner ones obovate-orbicular, acute, margin densely fimbriate. Stamens included, 1 mm l.; outer ones incurved, broadly elliptical or elliptical with glabrescent, ovate-triangular anthers (connective not or hardly protruding beyond the conspicuous cells), filaments broad, densely hirsute, twice as long. Inner stamens sterile, erect, stipitiform, truncate or obtuse, glabrous, base thick, hirsute; basal glands globose, sessile, very large, touching each other. Staminodes none. Ovary slender, ellipsoid, $\frac{3}{4}$ mm l., tomentellous (base excepted); style rather thick, tomentellous, about $1\frac{1}{4}$ mm l.; stigma minute, truncate. Berry unknown. Cupule rather thick, hemispherical-subglobose, 14 mm high, 15 mm in diam., beset with many rusty warts. Fig. 2.

Distribution: Dutch and British Guiana.

Dutch Guiana: Marowijne R. (Kappler 1981, fl. Aug. [Bs.D.Lp.St.U.]);

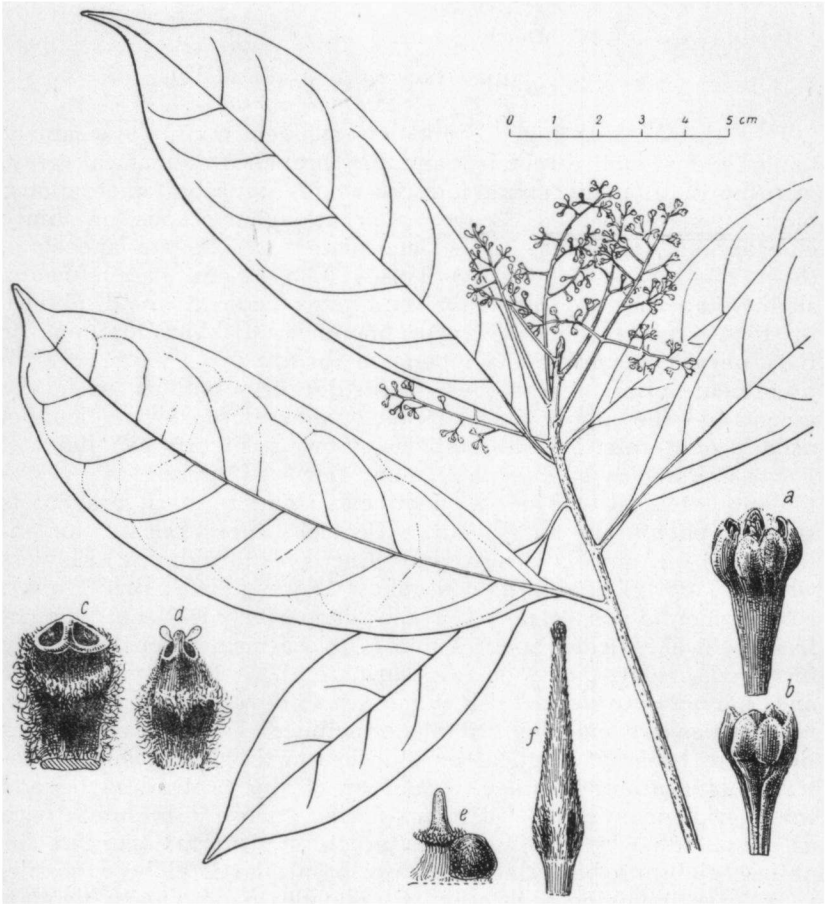


Fig. 2. *Aniba Kappleri* Mez; a. and b. Flower shortly after and shortly before anthesis; c. and d. Fertile stamens from within; e. Staminode from without; f. Ovary. (Branch according to scale; flower details strongly enlarged).

Brownsberg, tree n. 1253 (B.W. 6618, fl. Aug. [U.]; 6765, fr. Jan. [U.]), tree 1263 (v. Emnden s.n., fr. Oct. [U.]); upper Surinam R., Wane creek (Junker 246, fr. Oct. [U.]); British Guiana: Mazaruni Station (Forestr. Dept. 2532, fl. July [Kw.]).

3. *Aniba ovalifolia* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 77. — *Aniba hypoglauca* Sandwith in Kew Bull. 1932, p. 222.

Typus: Thurn s.n., fr.; Brit. Guiana [Kw.].

„Yellow or gale silverballi” (Brit. Guiana: Arawac.); „Bastard silverballi” (Thurn); „Keriti” (Anderson).

Small tree, up to 15 m. high (Thurn), 30 cm diam. (Anderson); bark brown, peeling off in vertical stripes (For. Bur.). Branchlets rather thick, smooth, sub-angular, minutely rusty-tomentellous, glabrescent; branches cylindrical, glabrous, dark-brown or grey; buds tomentellous. Leaves alternate, coriaceous, smooth, lanceolate-elliptical, elliptical or subobovate-elliptical, 4—14 × 2—5 cm; base shortly cuneate or subrounded; top distinctly acuminate (acumen broad, obtuse, up to 1½ cm l.), above green, glabrous, midrib prominulous or flattened, veins hardly conspicuous; beneath brownish or pruinose, sparsely, minutely pilose, glabrescent, midrib prominent, prim. nerves (6—10 per side) prominulous, slightly arcuate, veins inconspicuous. Petioles slender, glabrous, canaliculate, 6—12 mm l. Panicles sub-terminal, many-flowered, pyramidal, densely tomentellous, up to 6 cm l.; peduncles rather thick, sulcate, up to 2 cm l., branchlets erect-patent, up to 1 cm l. Pedicels rather thick, sulcate, pilose, 1½—3 mm l. Flowers yellow, minutely pilose, slender, 3 mm l., 1¼ mm in diam.; tube cylindrical-urceolate, 2 mm l., 1 mm in diam., slightly constricted below tepals, densely sericeous-hirsute inside. Tepals erect, nearly equal, thin, hardly concave, ovate (inner ones narrowly ovate), acutish, ¾ mm l. Stamens included, ¾ mm l.; outer ones with large, ovate or ovate-triangular anthers (glabrous towards apex); filaments 1—1½ × as long, nearly as broad, flattened, densely pilose. Inner stamens sterile, ligulaceous-stipitiform, truncate or obtuse, pilose; glands sub-basal, subsessile, minute, globose. Staminodes none. Ovary ellipsoid, glabrous, 1 mm l.; style rather slender, glabrous, 1½ mm l., as long as the inner stamens or slightly protruding out of the flower; stigma minute, truncate. Berry ovoid-ellipsoid, up to 22 mm l., 15 mm in diam. Cupule rather smooth or verruculose, base thickened, sub-hemispherical, up to 10 mm high, 15 mm in diam., covered with rusty spots; margin double.

Distribution: British and Dutch Guiana.

British Guiana: Corantyne R. (Thurn s.n. [Kw.]; Jenman 349, fr. [C.Dm.Kw.]); Essequibo R., Warima Creek, white sand soil (For. Dept. 941 et 942, fl., fr. June [Dm.Kw.], type of *A. hypoglauca*); Essequibo R., Treekabura Creek (Anderson 533, fr. March [Kw.]); Northwest District, Amakura R., lat. 8° 10' N., long. 60° W. (de la Cruz 3477, fl. March [Ca.Gr.NY. Ws.]); Jatrewata Hill, Japacooma Creek (Jenman 6571, fl. June [Dm.Kw.]); Penal Settlement, Mazaruni R. (Anderson 169, fr. March [Dm.]). Dutch Guiana: Emma Range, alt. 250 m. (B.W. 5808, fr. March [U.]).

This species is very similar to *A. perutilis* in general facies and flower characters; it may be distinguished immediately on the strength of its smaller, slender flowers with the minute basal glands of the inner staminal row. The type specimen consists of a branch with leaves rounded at their base, so strongly like the leaves of *Ocotea pallida* Mez from Rio de Janeiro, that one is easily led astray, moreover the fruit cupule of *Ocotea pallida* is nearly that of *Aniba ovalifolia*. Beside this branch the type specimen has also leaves with acutish base. The flowering specimen: de la Cruz 3477 has also several leaves with rounded bases.

Use: Wood pale whitish-yellow, silvery-coloured, heartwood darker. It is used for constructions (Anderson).

4. *Aniba perutilis* Hemsley in Kew Bull. 1894, p. 7 & 197; Hook., Icon. Pl. 25 (1896), t. 2485; Cortès, Flora de Colombia 1 (1898) p. 122 et 144 (*Aneba*); Wiessner, Rohstoffe 2 (1928), p. 1225. — *Aniba compacta* A. C. Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 97 et in Contr. New York Bot. Gard. 324 (1931), p. 97.

Typus: W. Gordon s.n.; Colombia [Kw.].

„Comino or Laurel Comino” (Colombia: Gordon; Lehmann); „Comino liso and comino cresco” (Gordon: the latter with harder wood with beautiful structure; see Hemsley, l.c.). „Muena negra” (Peru: Klug).

Tree, 9–30 m high (Klug, Lehmann). Branchlets angular, thick, stiff, sulcate, rusty-tomentellous, glabrescent, at last smooth, grey; buds densely tomentose, usually surrounded by large scales. Leaves alternate, coriaceous, lanceolate to elliptical or oblanceolate to obovate-elliptical (5—) 9–15 × (1½—) 4–6 cm; base cuneately decurrent, top shortly, obtusely acuminate, margin flattish; above glabrous, green, smooth, midrib prominu-

lous or flattened, prim. nerves hardly conspicuous; beneath pulverulent-tomentellous, glabrescent, usually pruinose, midrib prominent, prim. nerves (7—12 per side) prominulous, erect-patent, towards margin arcuate, veins obliterate. Petioles rather thick, tomentellous, glabrescent, canaliculate, 1—2 cm l. Panicles subterminal, narrowly pyramidal, many-flowered, densely yellowish tomentellous, up to 13 cm l.; peduncles thick, sulcate, up to 4 cm l., branchlets patent, rather few, short, thick. Pedicels thick, sulcate, densely yellowish sericeous-tomentellous, 2—3 mm l. Flowers brownish (Klug), densely sericeous-tomentellous, 3 mm l., 2 mm w.; tube broad, hardly narrowed below tepals, 2 mm l., densely sericeous-hirsute inside. Tepals erect, fleshy, slightly concave, depressed ovate-orbicular, acutish, 1—1¼ mm l. (inner ones slightly smaller), inside sericeous at base. Stamens included, erect, 1 mm l.; outer ones narrowly ovate, not narrowed towards base (those of second row slightly smaller), with ovate-elliptical, glabrous anthers; connective not protruding beyond the conspicuous cells, filaments as broad, thick, densely hirsute. Inner stamens sterile, hirsute, pyramidal, top truncate; basal glands globose, sessile, very large. Staminodes minute, hirsute, stipiti-form, or wanting. Ovary ellipsoid, glabrous, 1 mm l.; style slightly shorter, stigma minute, truncate. Berry ellipsoid, smooth, mucronulate, up to 27 mm l., 20 mm in diam. Cupule thick, hemispherical, irregularly thickened at base, rather smooth or verrucous, 8—15 mm high, 15—20 mm in diam., beset with few, minute, rusty spots.

Distribution: Colombia, Bolivia, Peru.

Bolivia: Mapiro region, San Carlos, alt. 850 m. (Buchtien 749, fl. Jan. [Ws.]). **Colombia:** vicinity of Medellin, Antioquia (Gordon s.n. [Kw.]); above las Caldas, near Medellin, alt. 1800 m. (Lehmann 3848, fr. Sept. [Br.Bs.]; id. 4007, ster. [Bs.]); Fredonia near Medellin (Toro 1085, ster. [NY.]); Magdalena R. (Dawe 945, ster. [Kw.]); locality unknown, fruit only (White s.n. [Kw.]). **Peru:** Dept. Loreto, Mishuyacu near Iquitos, alt. 100 m., forest (Klug 755, fl. Jan. [Ws.]; 608, fl. Oct. [NY.Ws.], type of *Aniba compacta*).

The specimen: Lehmann 4007, has leaves, that are up to 18 cm l. and 5 cm wide; as it is a sterile one, I am not absolutely sure about its identity, though it is very like *A. perutilis*; the name: „Comino” on the label, points also to it.

Use: The tree produces an excellent wood for the use of cabinetmakers, and possesses some exceptional properties, not only for highclass furniture, but for building purposes. The com-

mon kind of „Comino” is very much appreciated for house-building, its merit being that it is a perfect proof against all wood-destroying insects, water, soil, or climate (especially against the „Comejew”, a winged insect). There is another kind of Comino wood, having the same properties as above described, but commanding a high price and used mostly for veneering purposes. It is of a beautiful dark and light undulating colour of a yellowish tortoise-shell appearance; it is called: „Comino cresso”; the other: „Comino liso”. It is said that the „Comino cresso” is due to a disease of the tree, or in the roots of the tree, that makes the wood shaded (Kew Bulletin l.c.).

Subgenus *Euaniba*.

Section: *Microporanthera* (Species 5—16).

5. *Aniba bracteata* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 66, t. III, f. 32; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Flora of St. Vincent in Kew Bull. 1893, p. 273; Duss in Ann. Inst. Colon. Marseille 3 (1897), p. 304; Urban, Symb. Antil. 4 (1905), p. 243; Britton & Wilson, Fl. Portorico and Virg. isl. 5 (1924), p. 316. — *Aydendron bracteatum* Nees, Syst. (1836), p. 256 & 675; Dietrich, Synops. 2 (1840), p. 1344; Meissn. in D.C., Prodr. XV, 1 (1864), p. 91; Mez, l.c.; Urban, l.c.; Britton, l.c. (nec Griseb., Fl. Br. W.I. isl., p. 284). — *Aydendron argenteum* Grisebach, Fl. Brit. W.I. isl. (1860), p. 285; Sieber, lat. flor. Mart. Suppl., n. 110; Mez, l.c.; Dragendorff, Heipflanzen (1898), p. 238; Urban, l.c.; Britton, l.c. — *Aydendron verticillatum* Meissn. in D.C., l.c., p. 91; Benth. in Benth. & Hook., Gen. 3 (1880), p. 153; Mez, l.c. — *Goepertia argentea* Meissn., in D.C., l.c., p. 174; Benth., l.c.; Mez, l.c. — *Oreodaphne parviflora* Griseb. (non Nees), Veget. Karaib. (1857), p. 71, n. 583. — *Aniba bracteata*, var. *l'Herminieri* Meissn. in D.C., l.c., p. 174; Mez, l.c., p. 67.

Typus: Ex Herb. Schott & Arnott; St. Vincent [?].

„Bois jaune” (Martinique: Duss); „Canelillo” (Portorico: Sintenis).

Tree, up to 10 m high, trunk straight, rough, bark grey (Duss, Sintenis). Branchlets thick, stiff, straight, cylindrical, scabrous, grey, with conspicuous lenticels and large, protruding leaf-scars, rusty pulverulent-tomentellous at apex; buds sericeous; branches stout, scabrous, grey, glabrous. Leaves sub-verticillate, chartaceous or coriaceous, glabrous, dull (beneath often slightly shining),

obovate-elliptical or oblanceolate, or elliptical to lanceolate-elliptical, 15—25 (—40) \times 4—7 (—12) cm; base tapering and abruptly, rather inconspicuously rounded or cuneate, margin flat, top acutish or obscurely acuminate; above green, midrib and prim. nerves flat or slightly impressed, veins inconspicuous; beneath brownish-yellow, midrib strongly prominent, prim. nerves (10—17 per side) erect-patent, arcuately united along margin, veins prominulous, reticulate. Petioles thick, flattened above, glabrous, 5—10 mm l., covered with the same greyish suberous texture as that of the branchlets, distinct from midrib. Panicles axillary and subterminal, many-flowered, pyramidal, rusty-tomentellous, 10—19 cm l.; peduncles relatively slender, compressed, 1—6 cm l., branchlets erect-patent or patent, up to 5 cm l. Bracts numerous, soon deciduous. Pedicels slender, tomentellous, $1\frac{1}{2}$ —2 mm l. Flowers white (Duss), densely tomentellous, 2— $2\frac{1}{2}$ mm l., $1\frac{1}{2}$ —2 mm w.; tube urceolate, slightly contracted below tepals, about 1 mm l., tomentellous inside. Tepals equal, erect, fleshy, concave, ovate-orbicular, acutish or obtuse, 1— $1\frac{1}{4}$ mm l. Stamens included, $1\frac{1}{4}$ mm l.; outer ones with slender, hirsute, $\frac{3}{4}$ mm l., incurved filaments, merging into the clavate, glabrous, broadly depressed-triangular, $\frac{1}{4}$ mm w. anthers, connectives obtuse, conspicuously protruding beyond the small, introrse-lateral cells. Stamens of third row erect, filaments hirsute, nearly as broad as the thick, obtuse or truncate, rarely subemarginate, subquadratical, glabrous anthers with minute, extrorse, protruding cells; glands globose, sessile, large, at $\frac{1}{3}$ from the filament base. Staminodes of row four minute, or none. Ovary ellipsoid, glabrous, $\frac{3}{4}$ mm l., merging into the thick, $\frac{3}{4}$ mm l. style with inconspicuous stigma. Berry ellipsoid, smooth, 22 mm l., 12 mm in diam., mucronulate, smudgy red (Eggers) or dark-brown (Duss). Cupule sub-hemispherical, rusty-verrucous, scabrous, up to 13 mm high, 15 mm in diam., covering $\frac{1}{3}$ of the berry, margin entire, thin.

Distribution: West Indian islands from Portorico to St. Vincent.

Portorico: Sierra de Naguabo, forest on Mt. Piedra pelada (Sintenis 1047, fr. Apr. [Ca.C.Bl.Br.Bs.D.Dl.Dr.F.Gr.Kw.L.Lg.M.Mi.NY.P.St.W.Ws.]); sierra de Naguabo, forest on Mt. Cerro gordo (Sintenis 2682 b, ster. Sept. [D.]); Sierra de Naguabo, forest on Rio Blanco (Sintenis 5366, ster. Nov. [D.Ws.]); near Jabucoa, forest on Mt. Piedra azul, at Hacana (Sintenis 5254, ster. Oct. [D.Gr.Kw.Br.Lg.L.NY.W.Ws.]); near Hatto grande, forest on Mt. Gregorio (Sintenis 2640, ster. Aug. [D.]); Liguillo Nat. Forest (Home 307, fr. Apr. [NY.]). Guadeloupe: Gourbeyre, morne Gobelin (Duss 3433, fl. May [D.F.Mi.NY.Ws.]); Gourbeyre, morne Caraibe (Duss 579, fl.

May [P.]; locality unknown (Duchassaing s.n. [D.C.P.]; Balbis 1010 [D.]; Sieber 110 [M.]; l'Herminier s.n. [Bs.DC.]; coll. unknown ex herb. Griseb. [Ms.], type of *Oreodaphne parviflora* Meissn.). Dominica: locality unknown (Imray s.n. [D.Gr.Lg.Kw.], type of *Goepertia argentea* Meissn. and of *Ayden-dron argenteum* Griseb.; Fishlock 9 [Kw.NY.]). Martinique: Forêt de la Calebasse (Hahn 729, fr. July [Dl.C.Kw.St.]); Montagne Pelé, Case Pilote (Hahn 1283, fr. July [Ca.B.Br.Bs.C.Bl.Dl.Kw.P.Ws.]); Bois Didier (Hahn 553, fr. Febr. [Bs.Br.C.P.D.M.]); Case Brulée (Hahn 1448, fr. Apr. [B.Br.Bs.D.Kw.P.W.Ws.]); habit. St. Martin (Duss 233 & 4563, fl. Aug. [D.K.NY.]); Ajoupa Bouillon de la Calebasse (Duss 223 [NY.]); locality unknown (Plée 721 [P.]; Duss 235 [D.]; Duss 44 (= 148) [D.]; Bélanger 741, fr. [C.]; Hahn 713, fl. Dec. [Gr.C.]). St. Lucia: Belair (Ramage s.n., fl. May [D.Kw.Br.]); Fonds St. Jacques (Ramage s.n., fl. March [D.Kw.]; Anderson s.n., fr. [Kw.]). St. Vincent: Andrew Mt. at Calvary, alt. 600 m. (Eggers 6784, fr. Jan. [D.H.L.P.Ws.]); Walelaban valley (H. & G. Smith 687 [Gr.Br.Kw.NY.]; 1839, fl. Aug. [D.]); locality unknown (Guilding s.n. [Kw.], type of *Ayden-dron verticillatum*). Montserrat: locality unknown (Vahl s.n. ex herb. Ryan [K.Br.P.J.]).

Use: Wood hard, yellowish, for constructions and used by cabinet-makers. The bark is used in medicin (Dragendorff, l.c.).

6. *Aniba Hostmanniana* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 67; Pulle, Enum. Pl. Surin. (1906), p. 185; Koster. in Pulle, Fl. Surin. 2 (1936), p. 304. — *Ayden-dron Hostmannianum* Nees in Linnaea 21 (1848), p. 499 (cum var. a et b.); Walp., Ann. 3 (1852—53), p. 309; Meissn. in D.C., Prodr. XV, 1 (1864), p. 93; id. in Fl. Bras. V, 2 (1866), p. 183.

Typus: Hostmann 155; Surinam [D.].

„Waikarra Pisi (N.E.), Waikiarra sipiropipo (Car.), Kanoaballi (Arow.), Apisie-ie, Banba apisie-ie” (Saram.) (Dutch Guiana). „Louro amarelo” (Manáos: Ducke).

Tree or shrub. Branchlets stout, sulcate, densely rusty-tomentellous, glabrescent, lenticels conspicuous; branches glabrous, grey, rugose; buds densely sericeous-tomentose. Leaves subverticillate, coriaceous and rigid-coriaceous, elliptical or obovate-elliptical, sometimes oblanceolate-elliptical, (5—) 15—25 (—50) × (3—) 5—10 (—15) cm, base gradually acute and abruptly rounded, margin slightly revurved, top acuminate (acumen up to 2½ cm l.) or acutish; above green, rather dull, glabrous, midrib broad, flat, impressed, prim. nerves impressed, veins obliterate; beneath brownish, densely, minutely tomentellous, midrib strongly prominent, prim nerves (12—22 per side) prominent, erect-patent, arcuate, the upper ones arcuately united, second. nerves prominulous, often obliterate, veins inconspicuous. Petioles stout, tomentellous, at last glabrous, rugulose, slightly canaliculate, up

to 3 cm l. Panicles clustered, sub-terminal, densely rusty-tomentellous, many-flowered, pyramidal, 10—25 cm l.; peduncles rather thick, striate, compressed, up to 4 cm l.; branchlets patent, up to 6 cm l. Bracts ovate, acute, 1—3 mm l., deciduous. Pedicels rather slender, 1—3 mm l. Flowers yellow, densely, minutely sericeous-tomentellous, 2—2½ mm l., 1 mm w.; tube obconical, striate, ¾ mm l., abruptly enlarged into the perianth, glabrous inside. Tepals erect or slightly incurved, equal, rather fleshy, ovate or ovate-orbicular, acutish, concave, 1½ mm l. Stamens included; outer ones slightly incurved, 1 mm l., with large, glabrous, depressed ovate-triangular anthers (connectives broad, obtuse, protruding beyond the introrse-lateral cells), gradually merging into the rather slender, hirsute, 1—1½ × as long filaments. Inner stamens erect with globose, sub-quadratical, truncate, larger, glabrous anthers, cells minute, extrorse, protruding; filaments nearly as broad, hirsute; glands sub-basal, small, globose or compressed, sessile. Staminodes none. Ovary ellipsoid, ½ mm l., glabrous, gradually merging into the thick, glabrous, up to 1 mm l. style with inconspicuous, truncate stigma. Berry ellipsoid, smooth, mucronulate. Cupule sub-hemispherical, rather thin, up to 8 mm high, 7 mm in diam., beset with small rusty warts.

Distribution: Dutch Guiana, lower Amazon Basin.

Dutch Guiana: Upper Gonini R. (Versteeg 246, fl. Sept. [U.]); Section O, tree n. 829 (B.W. 2445, ster. Sept.; 5862, fl. June [U.]), tree n. 594 (B.W. 1597, fr. Febr.; 1891, fr. June; 2609, fr. Jan.; 3963, fl. Aug.; 5841, fl. June [U.]); Zanderij I, tree n. 143 (B.W. 1495, ster. Dec.; 4359, fr. July; 4452, fr. Dec.; 5078, fr. Jan. [U.]), tree n. 32 (B.W. 1258, ster. Nov.; 4353, fr. July; 4476, fr. Dec.; 4738, fl. July; 485, fr. Sept. [U.]); Forest of Zanderij (Samuels 526, ster. July [D.H.Kw.L.Gr.P.]; s.n., fl. [NY.]; Patrick savanna (Gonggrijp s.n., fr. Sept. [U.]); upper Surinam R. (Westphal s.n., fr. [L.]); Watramiri, tree n. 1675 (B.W. 1834, ster. June; 4719, fr. June [U.]); locality unknown (Hostmann 155, fl. [Br.Bs.D.Kw.O.W.]; 1031 [Br.Bs.D.Dr.Lp.Kw.W.Mi.]; 1117 [Br.Bs.D.Dr.Kw.Mi.Lp.Ms.St.U.W.]; Mulder s.n. [U.]). Brazil: Manáos, road of José Romão (Ducke H.R.J. 21338, fl. March [F.]); road to Aleixo (Krukoff 7922, fl., fr. Aug. [NY.]).

7. *Aniba gigantifolia* O. C. Schmidt in Notizblatt Berlin-Dahlem 10 (1928), p. 225; id. in Fedde, Repert. 31 (1933), p. 169. — *Aniba Pittieri* O.C. Schmidt in Fedde, Repert. 31 (1933), p. 168. — *Aniba Williamsii* O.C. Schmidt in Fedde, Repert. 31 (1933), p. 169; Williams in Publ. Field Mus. n. 377 (1936), p. 149. — *Aniba bracteata* Rusby (non Mez) in Bull. Torrey Bot. Cl. 6 (1896—99), p. 113.

Typus: Tessmann 3628; Peru [D.].

„Moena amarilla” (Peru: Williams); „Coto” (Bolivia: Bang); „Laurel capuchino” (Venezuela: Whitford); „Louro abacata” (Para: Capucho).

Tree, 10—20 m high (Tessmann, Capucho, Pittier). Branchlets stout, straight, cylindrical, densely rusty-tomentellous or tomentose; branches verticillate (Pittier), glabrescent; buds densely sericeous-tomentose. Leaves sub-verticillate, chartaceous to coriaceous, obovate-elliptical, oblanceolate-elliptical or elliptical, 16—40 (—70) × 7—12 (—35) cm; base gradually acute, abruptly rounded or slightly sub-cordate, margin slightly recurved, top acuminate (acumen distinct, obtuse, up to 3 cm l.); above green, glabrous, rather dull, midrib (especially towards base) flattened, impressed, prim. nerves and often the few second. ones impressed, veins inconspicuous; beneath paler, yellowish-brown, smooth, densely, minutely tomentellous, glabrescent, midrib strongly prominent, prim. nerves (10—30 per side) prominent, erect-patent, slightly curved, often arcuately united towards margin, second. nerves prominent, veins prominulous or obliterate. Petioles stout, rugulose, sulcate, rimose, canaliculate above, densely tomentellous, glabrescent, 1—2 cm l. Panicles sub-terminal, many-flowered, pyramidal, densely rusty-tomentellous, 13—23 cm l.; peduncles stout, striate, 4—9 cm l.; branchlets patent, stout, up to 6 cm l. Pedicels rather thick, 1 mm l., merging into the flower tube. Flowers yellow or orange-yellow (Tessmann), densely, minutely, sericeous-tomentellous, 2—2½ mm l., 1—2 mm w.; tube obconical, slightly sulcate, 1 mm l., abruptly enlarging into the perianth, sericeous-tomentellous inside. Tepals erect, rather thin, pilose inside, strongly concave, sub-carinate, ovate or ovate-orbicular, acutish, nearly equal with 3 longitudinal veins inside. Stamens included, 1—1¼ mm l.; outer ones slightly incurved with broad, transversally elliptical or depressed sub-rhomboid, nearly glabrous anthers (connectives broad, obtuse, conspicuously protruding beyond the introrse-lateral cells), merging into the rather slender, hirsute, 1—1½ × as long filaments. Inner stamens erect, with glabrous, thick, globose-subquadratical truncate anthers with minute, protruding, extrorse cells; filaments as broad, hirsute; glands sub-basal, globose-compressed, rather small, sessile. Staminodes none. Ovary ellipsoid, about 1 mm l., densely tomentellous (base excepted), merging into the stout, densely pilose, slightly longer style, stigma minute, truncate. Cupule (unmature) sub-hemispherical, rather thin, about 1 cm in diam. and high, beset with rusty, small warts.

Distribution: Amazon Basin.

Venezuela: Quebradita de las Ruinas, near Caracas, alt. 800—1000 m. (Pittier 9535, fl. May [NY.Ws.], type of *Aniba Pittieri*); Puerto Cruz, Federal district, mountain slope (Whitford 47, ster. [Gr.]); Ocumare valley, trophophilous forest, alt. 500 m. (Pittier 14145, fl. Sept. [Ws.]); Chacaito Gorge in forest near cascade, near Caracas, alt. 800—1000 m. (Pittier 10332, fr. May [Gr.NY.Ws.]); Caracas, Avila Mts. (Ernst s.n., fl. [Ws.]). Bolivia: Cochabamba (Bang 1180, ster. [NY.], type of *Aniba bracteata* Rusby). Peru: Dept. Loreto near Iquitos, alt. 100 m., forest (Killip & Smith 27217, fl. Aug. [F.Ws.]; Tessmann 3628, fl. June [D.]); Dept. Loreto, alto Rio Itaya, San Antonio, alt. 145 m. (Williams 3495, fl. Aug. [D.Dl.F.Ws.], type of *Aniba Williamsii*). Brazil: Para, Tapajoz R., Boa Vista (Capucho 410, fr. Aug. [F.]).

This species is closely related to *A. Hostmanniana* and can be separated only on the strength of its pilose ovaries. There is practically no difference in the shape of the leaves; those of *A. Hostmanniana* may often surpass those of *A. gigantifolia* in length. There may be found a slight difference in the tomentum of the leaves of the different specimens of *A. gigantifolia*. The type specimen has a minute, dense tomentum, the same is the case with the specimen of Whitford of Venezuela. The other Venezuelan specimens possess a more lax tomentum with slightly longer hairs; the same may be said of the specimen from Para; they all become more or less glabrous. As the other characters are exactly identical, it is impossible, to keep these collections separate. The differences in shape and size of the flowers, as given by Schmidt are of no importance at all, as in all *Aniba* species the flowers rapidly increase after anthesis and the inflorescences become laxer. The type specimen of *A. Williamsii* is rather different and I have put it here only hesitatingly. The leaves become glabrous as the Venezuelan ones; they are, however, slightly broader. The branchlets are more slender than those of the other specimens. As to the shape of the leaves they correspond mostly with the specimen from Brazil. The flowers of all the specimens are identical, but those of *A. Williamsii* are slightly smaller.

8. *Aniba Taubertiana* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 65; Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 62; Kosterm. in Pulle, Fl. Surin. 2 (1936), p. 303.

Typus: Mélinon s.n.; French Guiana [P.].

„Pisie (N.E.); white apisie-ie (Saram.); Siruaballi tetero, Kural-

laballi (Arow.); Waikarra Pisie, Topopren-wéwé, Tamuna wawaé (Car.)" (Dutch Guiana).

Tree. Branchlets thick, cylindrical, densely rusty-tomentellous; branches glabrous, rugulose or smooth, grey; buds densely rusty-tomentose. Leaves sub-verticillate, chartaceous and coriaceous, subobovate-elliptical, (10—) 15—20 (—25) \times (3—) 4—5 (—6 $\frac{1}{2}$) cm; base gradually acute, merging into the petiole, margin nearly flat, top shortly acuminate; above glabrous, dull, green, smooth, midrib flattish, prim. nerves impressed; beneath slightly tomentellous, glabrescent, rusty-brown, dull, midrib strongly prominent, prim. nerves (12—18 per side) prominent, erect-patent, arcuately united along margin, veins prominulous, laxly reticulate. Petioles thick, densely rusty-tomentellous, flattish above, about 1 cm l. Panicles pyramidal, ∞ -flowered, clustered near the top of the branchlets, densely, minutely rusty-tomentellous, up to 14 cm l.; branchlets patent, slender, up to 5 cm l. Flowers rusty-tomentellous up to 2 mm l. Tepals ovate, obtuse or acutish, rather thick, concave, 1 mm l., glabrous inside (base excepted). Stamens included; outer ones slightly incurved, $\frac{3}{4}$ mm l., with depressed-ovate, subrhomboid, glabrous anthers (connectives obtuse, conspicuously protruding beyond the small, introrse-lateral cells), filaments distinct, rusty-pilose, merging into the anthers, slightly longer than the latter. Stamens of third row erect, anthers subglobose, truncate, cells minute, protruding, extrorse, filaments hardly narrower, pilose; basal glands globose, sessile, rather large. Staminodes none. Ovary ellipsoid, densely pilose, 1 mm l., merging into the rather thick, cylindrical, as long style with minute, truncate stigma. Berry smooth. Cupule sub-hemispherical, minutely rusty-verrucous, margin entire, (sub-mature) 1 cm in diam., 7 mm high, pedicel obconical, up to 5 mm l., merging into the cupule.

Distribution: French and Dutch Guiana.

French Guiana: Acarouany (Sagot s.n. [C.]); Maroni (Mélinon s.n., fr. [Br.D.Dl.F.Kw.NY.P.]; Wachenheim 15, fl. [P.]). Dutch Guiana: Section O, tree n. 752 (B.W. 58, ster. Jan.; 1436, fr. Nov.; 1643, fr. Febr.; 4809, fr. Nov. [U.]).

9. *Aniba terminalis* Ducke in Rev. Bot. Appl. 8 (1928), p. 846; id. in Arch. Jard. Rio de Janeiro 5 (1930), p. 111.

Typus: Ducke H.R.J. 18352; Brazil [R.].

„Páo rosa" (Para: Ducke); „Bois de rose mâle" (French Guiana: Benoist).

Small tree, wood fuscous, aromatic (Ducke). Branchlets stout, cylindrical, minutely tomentellous; branches glabrous, verrucous, grey; buds surrounded by large, ovate, acute, 1 cm l., 3—4 mm w., densely appressed-hirsute, scale-like bracts. Leaves subverticillate, coriaceous, glabrous, obovate-elliptical, 15—25 × 5—7 cm; base gradually acute, tapering into the petiole, top very shortly acuminate, margin flat; above green, smooth, dull, midrib prominulous or flattened, prim. nerves slightly impressed, veins usually obliterate; beneath paler, yellowish-brown (dried), slightly shining, midrib strongly prominent, prim. nerves (12—15 per side) prominent, erect-patent, arcuate, usually arcuately united along margin, veins prominulous, reticulate or obliterate. Petioles rather thick, glabrous, flat above, merging into the leaf-blade, 1½—3½ cm l. Panicles sub-terminal, many-flowered, pyramidal, 10—12 cm l., rusty-tomentellous; peduncles stout, sub-angular, glabrescent, 1½—4 cm l.; branchlets erect-patent, stiff, up to 2½ cm l. Bracts and bracteoles deciduous. Pedicels tomentellous, thickish, 0—1 mm l. Flowers densely rusty-tomentellous, 2—2½ mm l., 2½—3 mm in diam. at apex; tube obconical (after anthesis soon urceolate), pilose inside, 1 mm high, abruptly enlarging into the perianth. Tepals equal (inner ones narrower), rather thick, strongly concave, slightly incurved, ovate, acute, 1½—1¾ mm l., pilose inside, margin fimbriate. Stamens included, 1 mm l.; outer ones incurved, with glabrous, depressed-rhomboid, anthers (connectives obtuse, conspicuously protruding beyond the small, introrse-lateral cells), filaments as long, hirsute. Inner stamens erect, with orbicular, subquadratical, glabrous, larger anthers with obtuse apex, cells minute, protruding, extrorse; filaments broad, hirsute, basal glands large, globose, sessile. Ovary slender, ellipsoid, densely pilose (base excepted), merging into a rather thick, cylindrical, pilose, as long style; stigma minute, truncate. Fruit unknown.

Distribution: Lower Amazon Basin, French Guiana.

Brazil: Belem do Pará, moist forest (Ducke H.R.J. 18352, fl. Sept. [Bs.Kw.St.U.Ws.]). French Guiana: Gourdonville (Benoist 1628, ster. Dec. [P.]).

This species can be separated from *A. Taubertiana* only by the length of its petioles, the more glabrous branchlets and the smooth, glabrous, shining lower leaf surface. The flowers, as far as can be concluded from the poor material of *A. Taubertiana*, are identical.

Use: The tree furnishes a dark-brown, aromatic wood for constructions (Ducke).

10. *Aniba excelsa* Kosterm. nov. spéc.

Typus: Sandwith 431; Brit. Guiana [Kw.].

„Long-leaved yellow silverballi” (Brit. Guiana: Sandwith).

Arbor, fere 35 m. alta (Sandwith). Ramuli robustissimi rugosi dense ferrugineo-tomentelli glabrescentes grisei; gemmae dense ferrugineo-velutinae squamis magnis obtectae. Folia subverticillata rigide coriacea oblanceolata, 38×8 cm.; basi in petiolos attenuata sub-decurrentia, apice acuta vel obscure acuminate; supra viridia laevia glabra, sub-opaca, nervo mediano lato applanato costis vix impressis; subtus rufescentia dense ferrugineo-tomentosa nervo mediano valde prominente, costis utrinque fere 20 prominentibus sub-erectis sub-arcuatis superioribus arcuatis conjunctis venis prominentibus laxe reticulatis. Petioli crassi dense ferrugineo-tomentelli glabrescentes rugulosi canaliculati $1\frac{1}{2}$ —2 cm longi 5 mm diametro. Paniculae sub-terminales congestae dense ferrugineo-tomentellae statu deflorato 10—13 cm longae, pedunculis crassis rugulosis usque ad 3 cm longis, ramulis erecto-patentibus usque ad 4 cm longis. Flores maturi ignoti; deflorati dense ferrugineo-tomentelli. Tepala incurva carnosa ovata acutiuscula subconcava, $1\frac{1}{2}$ mm longa. Stamina inclusa $\frac{3}{4}$ —1 mm longa, exteriora sub-incurva, antheris glabris depresso ovato-triangularibus connectivo lato obtuso producto, gradatim in filamenta aequilonga crassiuscula hirsuta transeuntibus; cellulis introrso-lateralibus. Interiora antheris glabris crassis sub-globosis truncatis praedita, cellulis minimis extrorsis, filamentis latissimis et crassissimis hirsutis glandulis sub-basalibus majusculis globosis sessilibus. Staminodia nulla. Ovarium dense tomentellus. Fructus ignotus.

Distributio: Guiana anglica.

Guiana anglica: Flum. Essequibo, Moraballi Creek, prope Bartica, alt. maris (Sandwith 431, defl. Oct. [Kw.]).

Haec species *A. Taubertianae* et *terminalis* affinis est, sed foliis majoribus, rigide coriaceis infra dense tomentosis differt.

11. *Aniba guianensis* Aublet, Guia. I (1775), p. 327, II, t. 126; Lam., Enc. 1 (1783), p. 191; id. Illustr. 2, p. 436, t. 298; St. Hil., Expos. fam. natur. 2 (1805), p. 364; Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 72; Benoist in Bull. Soc. Bot. France 75 (1928),

p. 975; id. in Arch Bot. V (1931), p. 63; Corrêa, Dicc. 2 (1931), p. 175 (cum tab.), — *Cedrota longifolia* Willd., Spec. pl. 2 (1799), p. 338. — *Cedrota guianensis* Raeuschel, Nomencl. (1797), p. 111 (?).

Typus: Aublet s.n.; French Guiana [Br.].

„Bois de cèdre” (French Guiana: Aublet); „Cedro amarello” (Corrêa).

Tree or shrub. Branchlets slender, cylindrical, densely rusty-tomentellous; branches glabrous, verruculose, grey; buds tomentose. Leaves sub-verticillate, chartaceous, glabrous, lanceolate to obovate-lanceolate, 7—15 × 2—4 cm; base gradually acute, decurrent into the petiole, margin hardly recurved, top acuminate; above green, dull, smooth, midrib prominulous, prim. nerves slightly impressed; beneath paler, yellowish brown (dried), slightly shining, smooth, midrib strongly prominent, prim. nerves (10—12 per side) prominent, erect-patent, arcuately united along margin, veins prominulous, laxly reticulate. Petioles slender, glabrous, flattish above, merging into the leafblade, about 1½ cm l. Panicles sub-terminal, slender, few-flowered, pilose, about 10 cm l. Bracts and bracteoles deciduous. Pedicels slender, pilose, 2—4 mm l. Flowers rusty-tomentellous, 1 mm l., 2 mm in diam.; tube hardly ½ mm l., suburceolate. Tepals equal, concave, ovate, acutish. Stamens included; outer ones with depressed-ovate anthers (connectives obtuse, protruding beyond the extrorse-lateral cells), filaments incurved, pilose, as long as anthers. Inner stamens erect with sub-globose, truncate, larger anthers with minute, protruding extrorse cells, filaments as long, broad, pilose; basal glands globose, sessile, rather small. Ovary glabrous, sub-ovoid, merging into a nearly as long, glabrous style with inconspicuous stigma. Fruit unknown.

Distribution: French Guiana.

French Guiana: locality unknown (Aublet s.n. [Br.K.St.]).

The type specimen, drawn by Aublet, is deposited in the British Museum, London. It consists of a young branch with a single, badly preserved, inflorescence. Duplicates of the type, but without flowers may be found in Stockholm and in Copenhagen.

I am not absolutely sure, whether this species belongs to the *Macranthera*. Its general facies is very like that of *Aniba Taubertiana*.

12. *Aniba trinitatis* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 68, t. III, f. 31; Brooks in Kew Bull. 1933, p. 212 et 227; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 32. — *Aydendron Trinitatis* Meissn. in D.C., Prodr. XV, 1 (1864), p. 91; Mez, l.c. — *Aydendron citrifolium* Griseb. (non Nees), Fl. Brit. W.I. isl. (1860), p. 284; Mez, l.c. — *Aniba Mülleriana* Mez in Jahrb., l.c., p. 72; Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. 5 (1931), p. 63. — *Cryptocarya pachycarpa* Gleason in Bull. Torrey Bot. Cl. 54 (1927), p. 607. — *Aniba opaca* A. C. Smith in Bull. Torrey Bot. Cl. 61 (1934), p. 191; Kosterm. in Meded., l.c. — *Aydendron affine* Meissn. in D.C., l.c., p. 92 et in Fl. Bras. V, 2 (1866), p. 182, p.p. (quoad cit. spec. Riedel).

Typus: Crüger 59; Trinidad [G.].

„Louro abacate” (Brazil: Froes); „Laurier Canelle” (Trinidad: Brooks).

Tree, about 10 m high (Froes). Branchlets rather slender, shining, violet or reddish-brown with many conspicuous lentils, slightly apressed-tomentellous at apex, soon glabrous: branches cylindrical, dark-brown or grey; buds sericeous-tomentellous. Leaves alternate, obovate-elliptical to elliptical, chartaceous, at last coriaceous, glabrous, 12—20 × 4—7 cm; base gradually, cuneately decurrent, margin slightly recurved, top shortly, obtusely, broadly acuminate; above green, smooth, dull, midrib prominulous, prim. nerves hardly prominulous; beneath brownish or reddish-brown (dried), shining, midrib prominent, prim. nerves (8—12 per side) prominulous, slightly arcuate, the upper ones somewhat united, veins prominulous, densely reticulate, at last obliterate. Petioles thick, rugulose, glabrous, fuscous, slightly canaliculate, 5—10 mm l. Panicles sub-terminal, pyramidal, lax, many-flowered, tomentellous, glabrescent, 10—16 cm l.; peduncles slender, compressed, 4—6 cm l.; branchlets slender, rather few, patent, short. Pedicels thin, tomentellous, 1—3 mm l. Flowers minutely rusty-tomentellous, 2—2½ mm l.; tube conical, 1—1½ mm l. (after anthesis soon urceolate) inside glabrous (throat excepted), abruptly enlarged into the perianth. Tepals equal, rather thin, erect or slightly incurved, 1½—2 mm l., concave, ovate-orbicular, acutish or obtuse, glabrous inside. Stamens included, up to 1 mm l.; outer ones slightly incurved with broad, depressed-subtriangular-ovate, glabrous anthers (connectives broad, obtuse, conspicuously protruding beyond the rather

large, introrse-lateral cells), tapering into the rather slender, up to $1\frac{1}{2} \times$ as long filaments, pilose especially on midrib and at margins. Inner stamens erect with very thick, sub-globose, quadratical, glabrous anthers (broader than long), apex somewhat obliquely truncate, cells rather small, extrorse, protruding; filaments nearly as broad, slightly shorter, pilose; glands globose, sessile, sub-basal, distinct. Staminodes none or minute, stipiti-form, glabrous. Ovary ellipsoid, glabrous, narrowed at base, $\frac{3}{4}$ mm l., style rather thick, nearly as long; stigma minute, truncate. Berry ellipsoid, smooth, mucronulate. Cupule sub-hemispherical, rather thick, nearly as long, stigma minute, truncate. Berry ellipsoid, smooth, mucronulate. Cupule sub-hemispherical, rather thick, rather smooth as a rule, beset with small, rusty warts, up to 7 mm high, 10 mm in diam. (sub-mature).

Distribution: Trinidad, Amazon Basin, Guiana.

Trinidad: Cumutu-Tunapuna road (Brooks 12465, fr. Febr. [Kw. NY.]); Arima (Dannouse s.n. [Kw.]); Carenage, Beard's property (Broadway 7187, fl. Aug. [Kw.]); Aripo savanna (Alexander 5096, fr. Jan. [D.]); Maracas Bay (Dannouse 6426 [NY.]); St. Anns (Crüger 59, fl. July [D.G. Kw.]); locality unknown (Britton, Britton & Freeman 2132, fr. Jan. [D.Kw.]; Hart 5876 a [D.]; collect. unknown n. 6654 [D.NY.]). French Guiana: locality unknown (Aublet s.n. [Br.Lam.]; Leprieur 224 [D.L.P.], type of *A. Mülleriana* Mez; id. 226 [P.]). Brazil: State of Maranhão, Maracassumé R. region (Froes 1730, fl. May [Dl.F.St.Br.Mi.H.P.NY.U.Ws.], type of *A. opaca*); Amazon R., near Barra (Riedel s.n., fl. Sept. [Ms.Lg.]). British Guiana: upper Mazaruni R., Kamakusa (de la Cruz 4215, fr. July [Gr.NY. Mi.Ws.], type of *Cryptocarya pachycarpa*).

13. *Aniba citrifolia* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 74, Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590. — *Ay dendron citrifolium* Nees (non Griseb.), Syst. (1836), p. 257; Dietrich, Synops. Pl. 2 (1840), p. 1344; Meissn. in D.C., Prodr. XV, 1 (1864), p. 93; id. in Fl. Bras. V, 2 (1866), p. 183; Mez, l.c.

Typus: Martius s.n.; Brazil, Rio Negro [M.].

Tree. Branchlets rather slender, smooth, shining, grey, glabrous, lenticels minute; buds minutely tomentellous. Leaves alternate, chartaceous-coriaceous, glabrous, rather dull, elliptical, $6-12 \times 3\frac{1}{2}-5$ cm.; base shortly acute, margin slightly recurved, top shortly, broadly, obtusely acuminate; above green, midrib and prim. nerves flattish, veins inconspicuous; beneath reddish-brown, smooth, minutely, rather obscurely prominulously areolate, midrib slightly prominent, prim. nerves (8-12 per side) prominulous,

erect-patent, rather straight, arcuate towards margin. Petioles rather thick glabrous, grey (the same texture as that of the branchlets), canaliculate or flattish above, 5—10 mm l. Panicles and flowers white (Jobert), as those of *A. trinitatis*. Cupule grey, smooth.

Distribution: Amazon Basin, Guiana, Esp. Santo.

Espirito Santo: Serra de Itabapoana (Glaziou 10027, fl. Sept. [P.K. Kw.]). **Rio Negro:** Yapura R. mouth of Rio Jui (Martius s.n. [M.]). **Pará:** Marajo, furo das laranjeiras (Schwacke 265 [D.]); Copacabana, lower Amazon (Jobert 309, fl. [C.]). **French Guiana:** Para R. (Richard s.n., fr. [P.], mscr. *Laurus globosa* Richard).

This species can be separated from *A. trinitatis* by its grey branchlets, its acute leaf base and the texture of the lower leaf surface. I doubt, however, if these characters are constant and feel that there is perhaps only one variable species. Both „species” possess flowers with the typical, very broad anthers of the third row of stamens.

14. *Aniba affinis* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 63; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 32. — *Aydendron affine* Meissn. in D.C., Prodr. XV, 1 (1864), p. 92; id. in Fl. Bras. V, 2 (1866), p. 182 (excl. cit. spec. Riedel); Mez, l.c.

Typus: Spruce 3769 (p.p.); Rio Negro [Kw.].

Tree, 7—25 m. high (Spruce, Krukoff). Branchlets rather thick, cylindrical, minutely, dusty, brownish tomentellous, the dark brachlet visible, lenticels conspicuous; branches glabrous, dark-brown or grey, buds sericeous-tomentose. Petioles rather slender, tomentellous, glabrescent, slightly canaliculate, up to 2 cm l. Leaves alternate, near the top of the branchlets, chartaceous-coriaceous, elliptical or elliptical-lanceolate, 11—18 × 3—6 cm.; base acutish or subrounded, margin slightly recurved, top shortly, obtusely, broadly acuminate; above green, rather dull, smooth, glabrous, midrib and prim. nerves flattish or hardly impressed, veins inconspicuously densely areolate, impressed or obliterate; beneath paler, yellowish-brown (dried) sparingly, minutely, pulverulent-tomentellous, smooth, glabrescent, midrib prominent, prim. nerves (9—11 per side) prominulous, arcuate, veins hardly conspicuous. Panicles sub-terminal, narrowly pyramidal, lax, many-flowered, minutely, densely rusty-tomentellous, 10—16 cm l.; peduncles short, rather slender, branchlets rather few, short,

patent or erect-patent. Pedicels rather slender, tomentellous, 1—2 mm l. Flowers yellowish (Spruce), fragrant, densely, minutely tomentellous, 2—2½ mm l., 2 mm in diam. at apex; tube obconical, abruptly enlarging into the perianth, pilose inside, 1 mm l. Tepals subequal, concave, fleshy, ovate-suborbicular, slightly acutish, 1½ mm l. (inner ones slightly smaller). Stamens included, 1¼—1½ mm l., outer ones incurved with very broad, depressed-ovate, glabrous anthers (connectives broad, obtuse, conspicuously protruding beyond the rather large, introrse-lateral cells), merging into the as long, distinct, hirsute filaments. Inner stamens erect, with sub-globose-quadratical, glabrous anthers (cells minute, extrorse, protruding), filaments hirsute, nearly as broad; glands sub-basal, small, globose, sessile. Staminodes none. Ovary ellipsoid, minutely tomentellous, 1 mm l.; style thick, as long, glabrous at apex, stigma minute, truncate. Berry ellipsoid, smooth, mucronulate, up to 22 mm l., 15 mm in diam. Cupule sub-hemispherical, rather thin, rugose with many rusty warts, up to 10 mm high, 15 mm in diam., covering 1/3 of the berry, margin entire, rather thin.

Distribution: Lower Amazon Basin.

Brazil: Rio Negro near San Gabriel do Cachueiro (Spruce 3769 p.p., fl., fr. Dec. [B.Br.Bs.D.Gr.Kw.O.P.Lg.Dr.Dl.NY.W.]); Rio Negro, Rio Pada-wire (Schomburgk s.n. [Kw.]); Amazonas, Humayta near Tres Casas on varzea land (Krukoff 6126, in bud Sept. [NY.H.U.Ws.]); Humayta near Livramento on Rio Livramento on terra firma (Krukoff 6752, fl. Oct. [NY.U.Ws.H.]).

The specimen Krukoff 6752 differs slightly in having shorter petioles and a more rounded leaf base. The difference may be due to different edaphic conditions as this specimen has been collected on terra firma, the others on varzea land.

15. *Aniba desertorum* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 76. — *Aydendron desertorum* Nees, Syst. (1836), p. 260; Dietrich, Synops. pl. 2 (1840), p. 1344; Meissn. in D.C., Prodr. XV, 1 (1864), p. 92 (cum var. *glabratum*); id. in Fl. Bras. V, 2 (1866), p. 182, t. 65; Mez, l.c. — *Ocotea desertorum* Mart. ex Nees, l.c.; Meissn., l.c.; Mez, l.c. — *Ocotea obtusifolia* Mart. (non H.B.K.) ex Nees, l.c.; Meissn., l.c.; Mez, l.c. — *Aniba robusta* (Klotsch & Karst.) Mez in Jahrb., l.c., p. 75, t. III, f. 20; Knuth in Fedde, Repert. Beih. 43 (1928), p. 341. — *Aydendron robustum* Klotsch ex Nees in Linnaea 21 (1848), p. 497; Walp. Ann. 3 (1852—53), p. 308; Meissn. in D.C., l.c., p. 90.

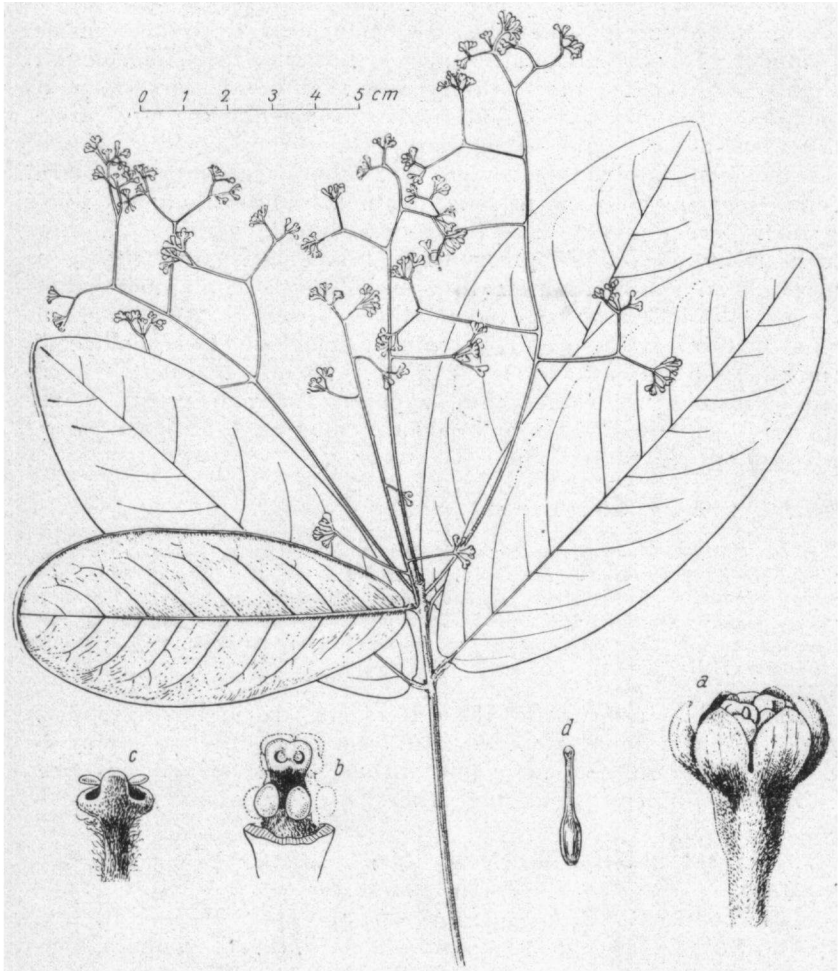


Fig. 3. *Aniba desertorum* Mez; a. Flower; b. Stamen of the inner row; c. Stamen of the outer row from within; d. Ovary. (Branch according to scale; flower details strongly enlarged).

Typus: Martius s.n.; Brazil [M.].

Tree. Branchlets thick, sulcate, densely yellowish or rusty-tomentose-lanuginose, glabrescent; branches glabrous, grey; buds densely lanuginose-tomentose. Petioles thick, tomentose, canaliculate, 4—5 (—10) mm l. Leaves alternate, coriaceous or rigid-coriaceous, broadly elliptical or elliptical, 10—16 × 4—7½ cm; base subcordate or rounded, margin recurved, top rounded or obscurely acuminate; above glabrous, green, shining, midrib (impressed at base) and prim. nerves flat, veins obscurely, densely reticulate, usually obliterate; beneath densely tomentose, at last glabrous, yellowish-brown, dull, midrib prominent, prim. nerves (9—12 per side) rather straight, erect-patent, prominulous, veins prominulous, densely reticulate, at last obliterate. Panicles lax, rather many-flowered, pyramidal, sub-terminal and axillary, densely tomentose-lanuginose, 6—15 cm l.; peduncles rather thick, sub-cylindrical, 4—7 cm l., branchlets patent, short. Pedicels tomentose, 0—2 mm l. Flowers white (Nees), densely tomentellous, 2—3 mm l.; tube urceolate, slightly narrowed below tepals, about as long as them, glabrous inside. Tepals erect, concave, ovate, acutish, nearly equal, rather fleshy, 1—2 mm l. Stamens included, 1—2 mm l.; outer ones with triangular, sub-rhomboid, depressed, glabrous anthers (connectives conspicuously protruding beyond the introrse-lateral cells), decurrent into the hirsute, ½—1 mm l., incurved, rather slender filaments. Inner stamens with depressed-ovoid, subquadratical, thick, glabrous, larger anthers, cells minute, extrorse; filaments broad, hirsute; glands sub-basal, very large, globose, sessile. Staminodes stipitiform, rather thick, minute, glabrous. Ovary ellipsoid, 1 mm l., glabrous, style thick, slightly longer, stigma minute, truncate. Berry ellipsoid, smooth, mucronulate, up to 14 mm l., 8 mm in diam. Cupule rather thick, sub-hemispherical, smooth with minute, rusty dots, up to 10 mm high, 12 mm in diam.; pedicel rather thick, up to 5 mm l. Fig. 3.

Distribution: Brazil, Colombia.

Brazil: Minas Gerães, Capoes forest near S. Francisco and Rio Verde and Chapada do Pará (Martius s.n., fl. fr. Aug. [D.M.]); Minas Gerães, (ex herb. Zuccarini [M.]); Piauh, sandy island of Gurgêa (Gardner 2719, fr. Aug. [Br.Bs.DC.Dr.Ms.NY.O.Kw.W.Ws.]); Bahia, Bareiros (Zehntner 490, H.R.J. 6431, fl. Oct. [R.]); Western Bahia, Riacho Novo (Zehntner 3041, fl. Dec. [D.M.]), Chapada da Varzea Grande (Zehntner 4001, fl. [M.]). Colombia: locality unknown (Karsten 89 [D.P.Lg.Ki.], type of *Aniba robusta*).

It is only hesitatingly that I put *A. robusta* as a synonym

under this species. The shape of the leaves vary strongly in *A. desertorum*; elliptical, acutish leaves as well as broadly ovate-orbicular, rounded ones may be found. The leaves of the type specimens of *A. robusta* agree in shape and texture fairly well with those of *A. desertorum*, but for the longer petioles, but these specimens give as a whole the impression of having been collected from an extremely developed plant. The specimen of Leningrad has a branch with short-petioled leaves. The flowers, though slightly larger are exactly like those of *A. desertorum*; the same may be said of the fruit cupules.

16. *Aniba Burchellii* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 27. — *Aniba firmula* (Nees & Mart.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 58, p.p. (quoad cit. spec. Burchell 9620); Kosterm., l.c.

Typus: Burchell 9620; Brazil [L.].

„Preciosa” (Brazil: Krukoff).

Tree, up to 25 m high (Krukoff). Branchlets sub-angular, striate, densely rusty-tomentellous; branches cylindrical, smooth, grey. Leaves alternate, chartaceous, elliptical-lanceolate or narrowly elliptical, 13—20 × 4—6½ cm; base shortly acute, margin slightly recurved, top acuminate; above glabrous, green, shining, midrib and prim. nerves flattish, veins inconspicuous; beneath yellowish-brown, dull, microscopically papillose, minutely, sparsely pilose, glabrescent, midrib prominent, prim. nerves (10—14 per side) slightly arcuate, prominent, veins prominulous, reticulate. Petioles rather thick, sulcate, densely sericeous-tomentellous, up to 1½ cm l. Panicles on the young branchlets, lax, densely rusty-tomentellous, many-flowered, up to 14 cm l.; peduncles rather slender, compressed, short; branchlets few, patent, up to 5 cm l. Pedicels short, striate, up to 1 mm l. Flowers densely, minutely rusty-tomentellous, 2—2½ mm l.; tube obconical, slightly contracted below tepals, sulcate, hardly 1 mm l., nearly glabrous inside. Tepals erect, fleshy, slightly concave, nearly glabrous inside, outer ones narrowly ovate, acutish, 1 mm l., inner ones slightly longer, broadly sub-obovate, top triangular, margin fimbriate. Stamens included or nearly so, 1 mm l.; outer ones incurved with ovate-triangular, depressed, glabrous anthers, connectives obtuse, conspicuously protruding beyond the large, introrse-lateral cells, filaments 1—1½ × as long, rather slender, hirsute; inner stamens erect with rather large, subglobose-quadrate anthers, cells minute, extrorse, protruding; filaments

broad, hirsute; glands sub-basal, globose, sessile, large. Stamino-
des none. Ovary ellipsoid, $\frac{3}{4}$ mm l., minutely tomentellous,
glabrescent; style rather thick, nearly as long, minutely pilose;
stigma minute, truncate. Fruit unknown.

Distribution: Amazon Basin.

Brazil: Basin of Rio Madeira between Rio Ituxi and Rio Abuna
(Krukoff 5827 a, fl. Nov. [Dl.NY.Ws.H.]); State of Amazonas, Humayta
near Livramento on Rio Livramento, on terra firma (Krukoff 6731, fl. Oct.
(NY.U.Ws.H.); Humayta on Plateau between Rio Livramento and Rio
Ipixuna on terra firma (Krukoff 7050, fl. Nov. [U.H.Ws.]; 7133, fl. Nov.
[U.H.Ws.]); Pará, near the Church of Nossa Senhora de Nazareth, road
from S. José to Mr. Williams Rocinha (Burchell 9620, fl. Sept. [Gr.L.Kw.
P.Ws.]).

Section Macroporantha:

17. *Aniba permollis* (Nees) Mez in Jahrb. Bot. Gart. Berl. V
(1889), p. 55; Corrêa, Dicc. 1 (1926), p. 47. — *Aydendron*
permolle Nees, Syst. (1836), p. 246; id. in Linnaea 21 (1848), p.
495; Dietrich, Synops. Pl. 2 (1840), p. 1344; Meissn. in D.C.,
Prodr. XV, 1 (1864), p. 88; id. in Fl. Bras. V, 2 (1866), p. 176;
Mez, l.c.; Dragendorff, Heilpflanzen (1898), p. 238. — *Crypto-*
carya ? *Aü-üva* Mart. ex Nees, Syst., l.c.; Mez, l.c. — *Ocotea*
dealbata Poeppig ex Meissn., ll.cc.; Mez, l.c.

Typus: Martius s.n.; Brazil [M.].

„Aü-üva” (Brazil: Martius); „Aiuba, Ayuba, Aniuba” (Brazil:
Corrêa).

Large tree, 30—50 m. high (Martius). Branchlets thick, cylin-
drical, densely rusty, velutinous-tomentellous; branches glabrous,
dark-grey; buds densely rusty-tomentose. Leaves alternate,
coriaceous, elliptical, (12—) 15—20 × (5—) 6—8 cm; base obtuse
or shortly acute, margin slightly recurved, top acuminate (acu-
men up to 2 cm l.) or acutish; above glabrous, smooth, slightly
shining, green, midrib impressed, veins inconspicuous, beneath
densely velutinous, rusty-tomentellous (tomentum turning grey
in old age), midrib strongly prominent, prim. nerves (8—12 per
side) prominent, erect-patent, arcuate, veins as a rule obliterate.
Petioles thick, rusty-tomentose, deeply canaliculate, 1—2 cm l.
Panicles sub-terminal, rather lax, many-flowered, pyramidal,
densely rusty velutinous-tomentellous, 6—15 cm l.; peduncles
slender, compressed, up to 4 cm l., branchlets patent, rather few,
up to 4 cm l. Pedicels thick, sulcate, densely tomentellous,
 $1\frac{1}{2}$ —4 mm l., merging into the flower tube. Flowers slender,

densely rusty-tomentellous, $1\frac{1}{2}$ — $2\frac{1}{2}$ mm l.; tube sub-urceolate, slightly narrowed below tepals, tomentose inside. Tepals erect, nearly equal, fleshy, concave, acutish, 1 — $1\frac{1}{4}$ mm l., slightly sericeous inside, margin (especially of inner ones) fimbriate. Stamens included, about 1 mm l.; outer ones sub-elliptical, filaments densely lanuginose-hirsute, not distinct from the glabrous, ovate-triangular anthers with large cells (connectives obtuse, hardly protruding); second row of stamens with narrower filaments, anthers often narrowed at base. Stamens of third row with broad, hirsute filaments, abruptly narrowed into a glabrous upper part, surmounted by the small, sub-ovate-orbicular, rather flat, glabrous anthers with relatively large, extrorse cells; glands sub-basal, globose, sessile, rather large. Ovary ellipsoid, $2\frac{1}{4}$ mm l., basal part glabrous, upper part and thick style densely tomentellous (except below stigma); stigma minute, truncate. Berry smooth, mucronulate, ovoid. Cupule sub-hemispherical, smooth, rather thin, up to 12 mm high, 20 mm in diam., beset with minute, rusty warts., base merging gradually into the obconical, short pedicel.

Distribution: Amazon Basin.

Amazon R. forest near Ega (Poeppig 2769, fl. Nov. [Bl.Br.Bs.D.DC.Dl. Ki.Lp.Lg.F.M.O.P.W.], type of *Ocotea dealbata*; Martius s.n., fl. Dec. [D.M. Ms.]); Para (s. coll., s.n. [P.]); locality unknown (Ferreira s.n. [Lisboa. Kw.P.]); Manáos (Ducke H.R.J. 22571, fl. [H.]).

Use: The aromatic seed is used against diarrhoea, colics, etc. (Dragendorff, l.c.).

18. *Aniba venezuelana* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 63; Knuth in Fedde, Repert. Beiheft 43 (1928), p. 341. — *Aydendron riparium* Nees, p.p., Meissn. in D.C., Prodr. XV. 1 (1864), p. 89 et in Fl. Bras. V, 2 (1866), p. 178 (quoad cit. spec. Funck & Schlim 569).

Typus: Funck & Schlim 569; Venezuela [B.].

Tree. Branchlets thick, sulcate, minutely, densely rusty tomentellous; branches glabrous, thick, cylindrical, dark-brown or grey; buds densely tomentellous. Leaves more or less clustered near the top of the branchlets, coriaceous and rigid-coriaceous, glabrous, dull, obovate-elliptical or elliptical, 11 — 23×4 — 8 cm, base gradually acute, margin recurved, top shortly, broadly acuminate or often obtuse; above rather smooth, midrib impressed, rather broad, prim. nerves hardly visible; beneath mid-

rib prominent, prim. nerves (6—8 per side) prominulous, rather patent, arcuate, veins prominulous, reticulate or more or less obliterate. Petioles thick, glabrous, deeply canaliculate, rugulose, 1—1½ cm l. Panicles sub-terminal, many-flowered, pyramidal, densely, minutely rusty-tomentellous, up to 12 cm l., peduncles stout, sulcate, up to 3 cm l., branchlets patent, thick, up to 3 cm l. Pedicels thick, striate, densely, minutely tomentellous, 1½—2 mm l., merging into the flower tube. Flowers yellow (Funck & Schlim), densely, minutely rusty-tomentellous, 1½—2 mm l., 2 mm in diam. at apex. Flower characters as those of *A. riparia*; the outer stamens slightly broader, ovate-suborbicular (those of the second row narrower). Fruit unknown.

Distribution: Venezuela.

Venezuela: Province de Carabobo, alt. 1200 m. (Funck & Schlim 569, fl. May [B.Br.Bs.DC.Lg.Lp.P.W.D.]).

19. *Aniba Canelilla* (H.B.K.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 53 (excl. cit. syn. *Laurus quixos* Lam. et *Aydendron verrucosum*, var. *elongatum* Meissn.); Pulle, Enum. Pl. Surin. (1906), p. 185; Huber in Bol. Mus. Goeldi V (1908), p. 360; Ducke in Arch. Jard. Rio de Janeiro 4 (1925), p. 187; Pittier, Pl. usual. Venezuel. (1926), p. 159; Knuth in Fedde, Repert., Beiheft 43 (1928), p. 340; Corrêa, Dicc. 2 (1931), p. 113; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 30; id. in Pulle, Fl. Surin. 2 (1936), p. 301 (excl. cit. syn. *Laurus quixos* Lam. et *Aydendron verrucosum*, var. *elongatum* Meissn.); Campos Porto in Rodriguesia II, 5 (1936), p. 107. — *Cryptocarya Canelilla* H.B.K., Nov. Gen. 7 (1825), p. 148 (col. ed.), t. 645; Dietrich, Synops. Pl. 2 (1840), p. 1343; Nees, Syst. (1836), p. 237; Bassagaña, Flora medico-farmaceutica abreviada (Barcelona 1859), p. 421; Meissn. in D.C., Prodr. XV, 1 (1864), p. 103; id. in Fl. Bras. V, 2 (1866), p. 198; Mez, l.c.; Kosterm., l.c. — *Laurus Canelilla* Willd. Herb. n. 7784 ex Nees, Syst., l.c.; Meissn., l.c.; Mez, l.c.; Kosterm., l.c. — *Mespilodaphne pretiosa*, var. *angustifolia* Nees, Syst., l.c., p. 237 (excl. cit. syn. *Laurus quixos* Lam. et *Borbonia Peruviana laurifolia* etc. Lam.); id. in Linnaea 21 (1848), p. 495; Meissn. in D.C., l.c., p. 103; id. in Fl. Bras., l.c., p. 198, 317 et 318; Baillon, Hist. Pl. 2 (1870), p. 462; Mez, l.c.; Kosterm., l.c. — *Cryptocarya pretiosa* Mart. ex Nees, Syst., l.c., p. 237; Meissn. in D.C., l.c., p. 103; id. in Fl. Bras., l.c., p. 198; Mez, l.c. — *Oreodaphne fragrans* Meissn. in D.C., l.c., p. 127, p.p. (quoad cit. spec. Schomburgk 157). — *Aniba elliptica* A. C. Smith in

Phytologia 1 (1935), p. 115; Kosterm., l.c. — *Canelilla*, der berühmte Zimmt des Orinoco, Humboldt in Herb. Willd. ex Nees, Syst., l.c., p. 237.

Typus: Humboldt 1018 (n. 7784 in Herb. Willd. [D.]); Orinoco.

„Casca preciosa” (Burchell, Ducke, Martius: Brazil); „Páo preciosa” (Brazil: Martius); „Casca de Maranhao” (Brazil: Riedel); „Louro precioso” (Brazil: Krukoff); „Preciosa” (Brazil: Kaufmann); „Canelilla” (Orinoco: Humboldt); „Wabaima, Weibeima or Arabaima” (Brit. Guiana: Hancock, Schomburgk); „Ashmud” (Brit. Guiana: Wapissian language); „Guariman” (Venezuela: Pittier); „Capoche or Capucci” (Brit. Honduras: Hummel).

Tree, up to 35 m high (Krukoff); trunk without buttresses, slightly swollen at base; bark brown, slightly scaly; wood heavy, dark-brown (For. Bur.). Branchlets smooth, shining, grey, angular, rather slender, yellowish pulverulent-tomentellous near apex; branches glabrous, cylindrical, grey; bark with taste and smell of cinnamon; buds densely yellowish tomentellous. Leaves alternate, thinly chartaceous or chartaceous, glabrous, shining, elliptical to narrowly lanceolate-elliptical, sometimes narrowly lanceolate, (9—) 13—18 (—23) \times (2—) 3—5 (—9) cm; base cuneate, more or less tapering; top acute or obscurely acuminate, margin slightly recurved, more or less undulate; above green, smooth, midrib slender, prominulous, prim. nerves slightly prominulous, veins hardly prominulous, very densely areolate or obliterate; beneath green or paler, midrib prominent, prim. nerves (8—10 per side) patent, prominulous, towards margin arcuate, more or less united, veins slightly prominulous, very densely areolate. Petioles slender, glabrescent, distinctly canaliculate, 8—20 mm l. Panicles rather few-flowered, axillary on the branchlets, yellowish or grey-tomentellous, 4—10 cm l.; peduncles rather thick, sulcate, angular, up to 5 cm l.; branchlets few, patent, up to 3 cm l., dichotomous. Pedicels thickish, tomentellous, $1\frac{1}{2}$ —2 mm l. Flowers greenish (Ducke), tomentellous, $2\frac{1}{2}$ —3 mm l.; tube broadly conical, not narrowed below perianth, sericeous inside (after anthesis soon urceolate). Tepals fleshy, scaly, erect, concave, tomentellous; outer ones depressed-triangular-ovate, acutish, $\frac{3}{4}$ —1 mm l.; inner ones ovate, $1\frac{1}{2}$ —2 mm l. Stamens included; outer ones incurved, $1\frac{1}{2}$ — $1\frac{1}{4}$ mm l. (second row slightly smaller); anthers depressed ovate-orbicular, glabrous (connective not or hardly protruding beyond the large, introrse cells); filaments distinct, broad, twice as long, tomentellous.

Inner stamens with depressed ovate-orbicular, rather thick anthers, top obtuse or truncate, cells rather small, extrorse; filaments nearly as broad, tomentellous, thrice as long; basal glands very large, globose, sessile. Staminodes none. Ovary ellipsoid, glabrous, 1 mm l.; style rather thick, 1 mm l., stigma minute, obtuse. Mature fruit unknown.

Distribution: Lower and middle Amazon Basin, Guiana, Venezuela; cultivated.

Brazil: Tapajoz R. (Pará), Repartição, in forest (H.R.J. 17533, fl., fr. Oct. [Bs.D.St.U.Ws.]); Tapajoz region, Boa Vista (Kauffmann 602 [F.]); Basin of Rio Acre near mouth of Rio Macauhan (trib. of R. Yaco), lat. 9° 20' S, long. 69° W, on terra firma (Krukoff 5601, fl. Aug. [D.Dl.F.St.NY. U.H.], type of *A. elliptica*); near Santa Fé on Rio Abuna (Krukoff 5826 A [Dl.NY.H.]); Rio Negro and Pará (Martius s.n. [B.D.Dl.M.], type of *Cr. pretiosa*, var. *angustifolia*); Manáos (Ducke 85 [F.H.]); Rio Negro, acima da boca do Curicuriary (Ducke 85 A, fl. Dec. [F.]); Matto Grosso, upper Machado R., Tabajaza on terra firma (Krukoff 1385 [A.D.Dl.H.NY.St.U.Br.]); Pará (Riedel s.n.? [Lg.]; Burchell 9473, cultiv. [Kw.]). **Venezuela:** Monte Canelillo near Maypure and Esmeralda (Humboldt & Bonpland 1018 (D.P.); Herb. Willd. [D.]; Herb. Bonpland [P.]), type of *Cr. Canelilla*). **British Guiana:** Berbice (Schomburgk 157 [DC.Dl.Kw.]); Essequibo (Hancock s.n. [Dl.]); Simuni Creek, Rupununi R., near Kanaku Mts., alt. 100 m. in forest (For. Dept. 2148 [Kw.]); southern slopes of Kanaku Mts. near Rupununi R., alt. 400 m., on loamy sand (For. Dept. 2251, fl. Oct. [Kw.]). **Dutch Guiana:** Koffiekamp (Wulschlaegel 1679 [B.W.]). **British Honduras:** Punta Gorda (Hummel 41 [Kw.]).

This species has often been confused with *Ocotea Quixos* (Lam.) Kosterm. nov. comb., a species of the eastern Andean regions. The fruit cupules of which have a cinnamon taste and are sold on the markets of Rio Bamba in Ecuador (Diels in sched.). These cupules with their broad, double margin are quite different from those of *A. Canelilla*. Of the latter species especially the bark seems to possess the cinnamon constituents. The specimen from British Honduras is sterile; I am not absolutely sure about its identity, though the leaves match exactly those of *A. Canelilla*. It may be a branch of a cultivated specimen, as no other collection has been made so far north.

Use: The bark, with the taste and smell of cinnamon, though fainter, is sold on the smaller markets in the Amazonian inland; it is much used in the shape of powder for perfuming linen and sometimes for making a stimulating tea (Ducke). The wood is dark grey and compact and is noted for its durability.

20. *Aniba Ramageana* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 494; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 110;

Duss in An. Inst. Colon. Marseille 3 (1897), p. 304.

Typus: Ramage s.n.; Dominica [D.].

„Laurier falaise” (Martinique: Duss).

Tree, 12—16 m high (Duss). Branchlets stiff, cylindrical, sparsely sericeous-tomentellous; branches glabrous, black (Duss); buds sericeous-tomentellous. Leaves alternate, rigid-coriaceous, ovate-elliptical or elliptical, 8—11 × 4—5½ cm; base contracted into petiole, shortly acute, top shortly, broadly acuminate, margin recurved; on both surfaces glabrous, shining; above midrib flattish, veins densely reticulate, hardly visible; beneath midrib prominent, prim. nerves (5—7 per side) prominulous, rather straight, erect-patent, veins slightly prominulous, densely reticulate. Petioles thick, glabrescent, deeply canaliculate, 5—8 mm l. Panicles lax, few-flowered, hardly branched, sparingly appressed-tomentellous, axillary, up to 6 cm l.; peduncles thin, up to 3 cm l. Pedicels slender, sparingly tomentellous, 2—4 mm l. Flowers white, touched with green (Ramage), sparingly tomentellous, about 3 mm l. and w.; tube urceolate-obconical, slightly narrowed below tepals, densely sericeous inside. Tepals erect, rather thin, slightly concave, 1 mm l., densely sericeous at base within; outer ones depressed-ovate, obtuse, inner ones narrower. Outer stamens spear-shaped, 1½ mm l.; anthers triangular-subrhomboid, glabrous (connectives slightly protruding beyond the large, introrse cells), filaments broad, hirsute, merging into the anthers. Inner stamens conical or pyramidal with rather narrow-triangular, glabrous anthers (cells large, extrorse), filaments very broad, pyramidal, hirsute; glands sub-basal, sessile, globose, large. Staminodes none or sometimes one present (½ mm l., subulate, sericeous). Ovary ellipsoid, glabrous, 1 mm l.; style thick, 1½ mm l., stigma minute. Berry ellipsoid, smooth, mucronulate, up to 2½ cm l., 1½ cm in diam. Cupule sub-hemispherical-obconical, thick, smooth, up to 1 cm high, 1½ cm in diam.; gradually merging into the thick, obconical pedicel.

Distribution: West Indian islands: Dominica and Martinique.

Dominica: Mountain ridge near lake above Laudat, alt. 1000 m. (Ramage s.n., fl. Sept. [D.Br.]). **Martinique:** Hills of the Grande Rivière and of Le Prêcheur (Duss 217 [D.]).

21. **Aniba Jenmani** Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 70.

Typus: Jenman 3949; British Guiana [Kw.].

Tree or shrub. Branchlets slender, glabrous, grey, slightly striate, towards apex minutely, greyish pulverulent-tomentellous, buds sericeous-tomentellous. Leaves alternate, chartaceous, glabrous, shining, elliptical, $5 \times 13\frac{1}{2}$ cm; base acute, margin slightly recurved, top conspicuously, obtusely acuminate; upper surface obscurely, densely reticulate, midrib prominulous, prim. nerves hardly visible; lower surface conspicuously, densely, prominulously reticulate, midrib prominent, prim. nerves (5—6 per side) slightly prominent, erect-patent, towards margin more or less arcuately united. Petioles slender, glabrous, canaliculate, about 1 cm l. Panicles few-flowered, hardly branched, minutely, pulverulent-tomentellous, 2 cm l., peduncles 1 cm l.; bracts deciduous. Pedicels rather slender, pulverulent-tomentellous, 1— $1\frac{1}{2}$ mm l. Flowers greyish pulverulent-tomentellous, obconical, 2 mm l.; tube broadly obconical, $1\frac{1}{2}$ mm l., not constricted, densely sericeous-hirsute within. Tepals erect, rather thin, equal in length; outer ones ovate-suborbicular, acutish, inner ones narrowly ovate. Stamens exerted; 1 mm l., outer ones with ovate-triangular, glabrous, hardly $\frac{1}{2}$ mm l. anthers, connectives slightly protruding beyond the large, introrse cells, filaments slender, slightly longer, densely sericeous-hirsute. Inner stamens with ovate-suborbicular, glabrous, about as large anthers, cells large, extrorse; filaments hardly narrower, hirsute, slightly longer, glands large, globose, sessile, attached at $\frac{1}{3}$ from the filament base. Ovary slender, glabrous, 1 mm l., ellipsoid, gradually merging into the 1 mm l., slender style with truncate, hardly visible stigma. Fruit unknown.

Distribution: British Guiana.

British Guiana: Demerara R. (Jenman 3949, fl. July [Kw.Dm.]).

A rare species; the leaves are exactly those of *Endlicheria paradoxa*; the shape of the stamens points to relationship with *A. Ramageana*.

22. *Aniba pedicellata* Kostermans nov. spec.

Typus: Kuhlmann H.R.J. 19908; Rio de Janeiro [U.].

Arbor. Ramuli crassi minute dense ferrugineo-tomentelli rami grisei rugosi glabri gemmae sericeo-tomentosae. Folia alterna chartacea glabra opaca elliptica $16-19 \times 5-7$ cm basi breviter acutata apice indistincte late acuminata supra viridia nervo

mediano applanato precipue parte basali, costis impressis, venis inconspicuis; subtus brunnea (sicca) nervo mediano prominente costis utrinque 7—8 prominentibus arcuatis venis prominulis reticulatis. Petioli crassi minute tomentelli vix canaliculati rugulosi 12 mm longi. Paniculae subterminales laxae sub-pauciflorae minute tomentellae fere 8 cm longae, pedunculis gracilibus brevibus ramuli gracilibus patentibus usque ad 3 cm longis. Pedicelli graciles 4—5 mm longi. Flores gracilibus, 3 mm longi 2 mm diametro, tubo gracile obconico minute pilose $1\frac{1}{2}$ mm longo intus apicem versus dense hirsuto. Tepala erecta tenuiora extus tomentella intus sub-glabra exteriora valde concava anguste ovata acutiuscula circa 1 mm longa; interiora late obovata concaviuscula acuta $1\frac{1}{2}$ mm longa, $1-1\frac{1}{2}$ mm diametro, margine dense fimbriata. Stamina inclusa 1 mm longa, exteriora incurva antheris depresso ovato-triangularibus apice glabris loculamentis magnis introrsis (connectivo haud vel paullo producto), sensim in filamenta, $1-1\frac{1}{2}$ -plo longiora, lata, praesertim extus et intus sub antheribus hirsuta, attenuatis; interiora erecta, antheris glabris ovato-orbicularibus (quam exterioribus minoris), loculamentis magnis extrorsis praeditis, abrupte in filamentum partem superiorem glabram tenuam contractis, basi hirsuta; glandulis basilibus magnis globosis sessilibus. Staminodia nulla. Ovarium glabrum, anguste ellipsoideum 1 mm longum stylo glabro gracile $1\frac{1}{2}$ mm longo stigmatibus inconspicuis. Fructus ignotus.

Distributio: Rio de Janeiro.

Rio de Janeiro: Friburgo (Kuhlmann H.R.J. 19908, fl. Nov. [R.U.]).

A. *Ramageanae* affinis sed foliorum forma magnitudine venisque floribus minoribus stylo longiore aliisque notis diversa.

23. *Aniba Puchury-minor* (Mart.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 70; Baillon in Journ. Bot. 29 (1891), p. 56 (sphalm.: *A. Puchury-major*); Warburg, der Muskatnuss (1897), p. 511 et 512, f. 9 (c.d.e.) et 11. — *Ocotea Puchury-minor* Martius in Buchner, Repert. pharmac. 35 (1830), p. 172; Férussac, Bull. sc. nat., Janv. 1831, p. 62; Nees, Syst. (1836), p. 336; Nees et Dierbach, Handb. med.-pharm. Bot. I, ed. 2 (1839), p. 341; Meissn. in D.C., Prodr. XV, 1 (1864), p. 166; id. in Fl. Bras. V, 2 (1866), p. 277; Mez, l.c. — *Nectandra Puchury-minor* Nees et Mart. ex Nees, Syst., l.c., p. 336; Leunis, Synops. Pl. II, ed. 2 (1840), p. 488; Martius, Syst. mater. med. veg. Brasil. (1843), p. 109; Meissn. in D.C., l.c., p. 166; id. in Fl. Bras., l.c., p. 277, t. 101 (excl. cit. *Ocotea Pichurim* H.B.K.); Mez, l.c. — *Aniba*

amazonica (Meissn.) Mez in Jahrb., l.c., p. 69; Williams in Publ. n. 377 Field Mus. (1936), p. 148. — *Aydenndron amazonicum* Meissn. in D.C., l.c., p. 89; id. in Fl. Bras., l.c., p. 179; Mez, l.c., p. 69. — *Aydenndron firmulum* Nees, p.p., Syst., l.c., p. 250 et in Linnaea 21 (1848), p. 496 (quoad cit. spec. Poeppig 2478); Meissn. in D.C., l.c., p. 89; id. in Fl. Bras., l.c., p. 179; Mez, l.c., p. 69. — *Aniba Tessmannii* O.C. Schmidt in Notizbltt. Berl.-Dahlem X (1928), p. 226.

Typus: Martius s.n.; Rio Negro [M.].

„Puchery” (Brazil: Martius); „Louro” (Brazil: Krukoff); „Moena amarilla” (Peru: Williams, Tessmann).

Tree, 7—20 m high (Krukoff, Killip, Tessmann, Ule), bark reddish or dark purplish-brown (Williams). Branchlets cylindrical, thick, stiff, straight, angular, ribbed, rimose, densely, minutely rusty-tomentellous; branches rimose, dark-brown or grey; buds densely, sericeous-tomentellous. Petioles stout, densely, minutely sericeous-tomentellous, slightly canaliculate, towards base usually thickened and rugulose, up to $1\frac{1}{2}$ cm l. Leaves usually clustered near the top of the branchlets, rarely alternate, chartaceous, elliptical or ovate-elliptical, $12-26 \times 4\frac{1}{2}-10$ cm, base shortly acute or distinctly cuneate, margin hardly recurved, top shortly, obtusely acuminate; above glabrous, green, smooth, dull, midrib hardly prominulous or impressed, prim. nerves usually impressed; beneath paler or brownish (dried), dull, in young leaves minutely tomentellous, glabrescent, midrib prominent, prim. nerves (8—10 per side) prominent, erect-patent, arcuate, the upper ones more or less united, veins prominulous, reticulate, rarely more or less obliterate. Panicles sub-terminal, short, densely rusty, minutely sericeous-tomentellous, few-flowered, 3—7 cm l., peduncles thick, sulcate, short, branchlets few, patent, up to $\frac{1}{2}$ cm l. Pedicels thick, sulcate, about 1 mm l., merging into the flower tube. Flowers yellow (Poeppig, Tessmann), densely, minutely, rusty-sericeous-tomentellous, $2\frac{1}{2}-3$ mm l., $2\frac{1}{2}$ mm in diam. at apex; tube obconical, sulcate, $1\frac{1}{2}$ mm l., glabrous inside as far as the throat, abruptly enlarging into the perianth. Tepals erect, incurved, concave, rather thin, equal, glabrous within, $1\frac{1}{4}$ mm l., broadly depressed ovate-suborbicular (usually broader than long) acutish; inner ones fimbriate at margins. Stamens included, $\frac{3}{4}$ mm l.; outer ones nearly elliptical or sub-obovate, with glabrous, transversally elliptical or depressed subtriangular anthers (connectives hardly protruding beyond

the large, introrse cells), merging into the broad, towards base hardly narrowed, $1-1\frac{1}{2} \times$ as long filaments, densely rusty-hirsute outside, within only immediately below anthers. Inner stamens erect, with elliptical-ovate, smaller, glabrous, obtuse anthers (cells relatively large, extrorse), filaments very broad, hirsute, narrowed into a slender, glabrous part below anthers; basal glands large, globose, sessile, touching each other. Staminodes none. Ovary ellipsoid, glabrous, 1 mm l.; style slender, glabrous, $1\frac{1}{2}$ mm l., stigma minute. Berry smooth, ellipsoid, up to $2\frac{1}{2}$ cm l., $1\frac{1}{2}$ cm in diam. Cupule red (Killip & Smith), thin (especially at margin), sub-hemispherical-obconical, rather shallow, up to 13 mm high, 18 mm in diam., rather smooth, with small, rusty spots; fruit pedicels short and thick, not distinct from cupule.

Distribution: Amazon Basin.

Brazil: Amazonas, Rio Madeira, Humayta near Tres Casas on varzea land (Krukoff 6142, fr. Sept. [NY.U.]); Rio Madeira near Bella Vista (Krukoff 6008, fr. Sept. [NY.U.]); Rio Negro, Rio Solimoes (Martius s.n., fr. [M.]); Rio Japure (Martius s.n., fr. [D.M.]); Rio Acre, Seringal San Francisco (Ule 9407, fl. July [D.Dl.Kw.]). **Peru:** upper Amazonas, lower Itaya, Soledad, alt. 110 m. (Tessmann 5222, fl. June [D.St.], type of *A. Tessmannii*); Maynas, forest at Yurimaguas (Poeppig 2478, fl. June [Br.D.Dl.Ki.L.Lg.Lp.Ms.P.W.Bl.], type of *A. amazonica*); Dept. Loreto, Yurimaguas, forest, alt. 135 m. (Killip & Smith 27658, fr. Sept. [Ws.]); Dept. Loreto, lower Rio Huallaga, Fortaleza, Yurimaguas, alt. 200 m. (Williams 4287, fr. Oct. [F.]); Yurimaguas, Puerto Arturo (Williams 5897, fr. Nov. [F.]). **Bolivia:** Junction of rivers Beni and Madre de Dios (Rusby 709, fr. Aug. [Br.Bs.D.Ws.C.]). **Colombia:** Dept. Santander, Rio Surata valley above Surrata, alt. 2000 m., dense forest (Killip & Smith 16649, fr. Jan. [Ws.]).

It is impossible to keep *A. Tessmannii* as a separate species; the leaves possess a more acuminate base and top than those of the type specimen of *A. Puchury-minor*, but leaves of this shape are not uncommon in other specimens, mixed with the usual leaf shape. The panicles are slightly longer; the flowers are absolutely identical. The fruit cupules, though very immature, agree well in texture with the other material. The reticulation of the leaves and especially the characteristic texture of the branchlets make it sure that it belongs to *A. Puchury-minor*.

Use: The seeds are sold as Pichurim beans and are used against diarrhoea, dysentery and fluor albus.

var. *intermedia* (Meissn.) Kosterm. nov. comb. — *Aniba intermedia* (Meissn.) Mez in Jahrb., l.c., p. 73. — *Aydendron intermedium* Meissn. in D.C., l.c., p. 89; id. in Fl. Bras., l.c., p.

179; Mez, l.c. The differences with the typical form are the long (up to 17 cm) panicles and the slightly larger flowers.

Brazil: Castelnovo (Riedel 732, fl. Apr. [Bs.D.L.Lg.Kw.Gr.Ms.St.W.]).
Peru: Dept. Puno, Isillum in Valle Grande (Raimondi 11121, fl. Nov. [D.]).

Both specimens give the impression of having belonged to a strongly developed plant. Mez based the difference mainly on the sub-basal, instead of basal glands, but the specimen of Raimondi has the normal, basal glands. In both specimens the stamens are grown out, with very large filaments; they are glabrous in the Raimondi specimen. All other characters are identical with *A. Puchury-minor*.

24. *Aniba riparia* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 62 (excl. cit. spec. Leprieur 224 et Spruce 3769); Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 62; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 63; id. in Pulle, Fl. Surin. 2 (1936), p. 307. — *Ayden-dron riparium* Nees in Linnaea 21 (1848), p. 497; Walp. Ann. 3 (1852—53), p. 308; Meissn. in D.C., Prodr. XV, 1 (1864), p. 89; id. in Fl. Bras. V, 2 (1866), p. 178 (excl. cit. spec.: Funck & Schlim 569, Kappler 1981, Leprieur 224, Spruce 3769 et syn. *Aiouea Guianensis* Griseb.); Mez, l.c.; Kosterm., l.c. — *Aniba viridis* Mez in Jahrb., l.c., p. 61.

Typus: Schomburgk 1405; British Guiana [D.].

„Louro; Louro rosa” (Brazil: Krukoff).

Tree, 10—15 m high (Glaziou, Schomburgk, Krukoff). Branchlets rather slender, slightly angular, minutely rusty-tomentellous, sulcate; branches cylindrical, glabrous, grey or dark-brown with many conspicuous lenticells; buds sericeous-tomentellous. Leaves alternate, thinly chartaceous or chartaceous, glabrous, rather dull, green (beneath paler), elliptical or slightly obovate-elliptical (10—) 15—23 × (3—) 4—9 cm; base acute, margin flattish, top shortly (up to 1½ cm) obtusely, broadly acuminate; above smooth, midrib and prim. nerves slightly prominulous; beneath in youth sparsely, minutely pilose, soon glabrous, midrib prominent, prim. nerves (7—12 per side) prominent, erect-patent, slightly arcuate (upper ones often arcuately united), veins prominulous, reticulate, rarely more of less obliterate. Petioles rather slender, or thickish, minutely tomentellous, glabrescent, canaliculate, ½—2 cm l. Panicles axillary, lax, rather many-flowered, pyramidal, densely, minutely rusty-tomentellous, 6—9

cm l.; peduncles rather slender, sulcate, 3—5 cm l.; branchlets few, patent, up to 2 cm l. Pedicels short, thick, 1—2 mm l., merging into the flower tube. Flowers densely, minutely sericeous-tomentellous, 2—2½ mm l., 2 mm diam. at apex; tube obconical, sulcate, ½—1 mm l., pilose inside, abruptly enlarging into the perianth. Tepals fleshy, equal, erect, concave, ovate-elliptical, acutish (inner ones broader), 1½ mm l., glabrous inside, margin fimbriate. Stamens included, densely hirsute, 1—1¼ mm l., outer ones slightly incurved, more or less elliptical, anthers depressed ovate-triangular (often broader than long), glabrous (connectives not or hardly protruding beyond the large, introrse cells), filaments 2—2½ × as long, densely hirsute (especially without and inside below anthers). Inner stamens erect, anthers ovate-elliptical, obtuse, small, glabrous (cells large, extrorse); upper part of filaments glabrous, hardly narrower; lower part thick, hirsute; basal glands very large, globose, sessile. Staminodes minute or none. Ovary ellipsoid, tomentellous, about 1 mm l., style thick, conical, slightly pilose, 1 mm l., stigma minute. Berry ellipsoid, smooth, mucronulate, 2—3 cm l., 1½ cm in diam. Cupule sub-hemispherical, up to 14 mm high, 20 mm in diam., with many rusty wart-like spots.

Distribution: Amazon District; Guiana; Rio de Janeiro.

Brazil: Madeira R. region, near Calama on terra firma (Krukoff 1296, fr. Nov. [A.Br.D.Dl.Kw.NY.P.St.U.H.]); Amazonas, Humayta near Tres Casas on restinga alto (Krukoff 6202, fr. Sept. [U.]); São Paulo de Olivença near Palmares (Krukoff 8357, fr. Sept. [NY.]); Rio de Janeiro Corcovado (Glaziou 12117, fl. Jan. [B.D.K.Kw.P.Lg.], type of *A. viridis*); Matto Grosso, between Buriti and Chapada (Malme s.n., fl. Sept. [St.]); São Paulo, Caraguatububa (Edward 1776, fr. Apr. [K.]). **French Guiana:** locality unknown (Perrottet 77, fr. [DC.P.]; Mélinon 524, fl. [P.]). **Dutch Guiana:** Brownsberg (B.W. 3187, fr. Sept. [U.]). **British Guiana:** Roraima (Schomburgk 832, fl. [Bs.DC.Ms.W.Lp.]); Pomeroy R. (Schomburgk 1405, fl. Aug. [D.F.Kw.L.P.Lp.]). **Colombia:** Barbacoa, Magdalena (Lehmann s.n., fl. [W.]). **Peru:** Dept. Loreto, Yurimaguas (Williams 4746, fr. Nov. [F.]).

25. *Aniba salicifolia* (Nees) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 71 (excl. cit. spec. Mélinon. ex herb. Paris.); Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 63. — *Aydendron salicifolium* Nees, Syst. (1836), p. 252; id. in Linnaea 21 (1848), p. 498 (excl. syn. *Laurus salicifolia* Sw., Willd. et Sprgl.); Dietrich, Synops. Pl. 2 (1840), p. 1344; Meissn. in D.C., Prodr. XV, 1 (1864), p. 91; id. in Fl. Bras. V, 2 (1866), p. 181; Mez, l.c. — *Laurus hexandra* Richard in Herb. Willd. n. 7804 ex Nees, Syst.,

l.c., p. 252; Willd., Spec. Pl. 2 (1799), p. 482 (excl. syn. Swartz, Schreber et Aublet).

Typus: Richard s.n.; French Guiana (Herb. Willd. 7804 [D.]).

„Muscadier de Para” (French Guiana: Richard, v. Rohr); „Louro” (Brazil: Krukoff); „Sinchicaspi” (Peru: Williams).

Tree, up to 13 m high (Krukoff). Branchlets thin, straight, stiff, shining, reddish-brown or grey, cylindrical, lenticels conspicuous, slightly rusty-tomentellous at apex; branches slender, greyish, with many, large lenticels; buds tomentellous. Petioles slender, glabrous, 5–10 mm l., slightly canaliculate, merging into the leaf blade. Leaves sub-verticillate, thinly chartaceous or chartaceous, glabrous, dull, lanceolate or elliptical-lanceolate or subobovate-elliptical, 9–18 × 2½–5 cm; base gradually sub-acuminate or acute, margin flattish, undulate, top acuminate (acumen distinct, broad, obtuse); above green, midrib thin, prominulous, prim. nerves hardly prominulous; beneath brownish or paler (dried), midrib prominent, prim. nerves (6–8 per side) prominulous, erect-patent, arcuate, the lower ones slightly ascendant, veins obliterate. Panicles sub-terminal, few-flowered, rusty-tomentellous, 4–6 cm l.; peduncles slender, short, compressed, branchlets few, patent, very short. Pedicels tomentellous, 0–1 mm l. Flowers minutely tomentellous, 2–3 mm l., 2 mm diam. at apex; tube narrowly obconical-urceolate, 1½ mm l., abruptly enlarging into the perianth, glabrous inside. Tepals equal, erect, rather thin, concave, ovate-orbicular, acutish, 1–1½ mm l., inner ones fimbriate at margin. Stamens included, 1¼ mm l.; outer ones elliptical (those of second row slightly narrower), incurved, filaments broad, densely rusty-villose, anthers broad, short, depressed-triangular-ovate, glabrous (connectives hardly protruding beyond the large, introrse cells). Inner stamens erect with very broad, hirsute filaments, abruptly narrowed into a glabrous, slender, upper part; anthers glabrous, small, depressed-ovate; cells relatively large, extrorse; glands attached somewhat above the filament base, large, globose, sessile. Ovary ellipsoid, glabrous, 1 mm l., style slender, up to 1½ mm l., stigma minute, obtuse. Berry ellipsoid, smooth, mucronulate. Cupule hemispherical with rather large rusty wart-like spots; about 1 cm high, 11 mm in diam.; base merging into an inconspicuous petiole; fruiting peduncles slender.

Distribution: Amazon Basin; Guiana.

French Guiana: Montabo (Richard s.n., fl. Sept. [Dl.Lg.Dr.P.]);

Cayenne (Patris s.n. [Dl.Ms.]); locality unknown (Leprieur 221 [D.P.]; v. Rohr 140 [Br.K.Willd.]). Brazil: Amazonas, Humayta near Livramento on Rio Livramento on varzea land (Krukoff 6560, fr. Oct. [NY.U.Ws.]). Peru: Huallaga, Dept. Loreto, Yurimaguas (Williams 4638, fr. June [F.D.]).

This species has been mixed with *Aiouea guianensis* by Willdenow. The specimen of Rohr in Copenhagen bears a label with: *Laurus hexandra* Willd. and *Dougllassia guianensis*. The latter name has never been published.

Mez in Jahrb., l.c. cites erroneously a *Laurus hexandra* of Aublet; this should be Willdenow.

26. *Aniba megaphylla* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 67 (excl. cit. syn. *Laurus difformis* Rich.); Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. 5 (1931), p. 63. — *Aniba anisosepala* Sandwith in Kew Bull. 1933, p. 336. — *Aniba Koumaroucapa* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 24, f. 1. — *Aniba salicifolia* (Nees) Mez in Jahrb., l.c., p. 71, p.p. (quoad cit. spec. Mélinon. ex herb. Mus. Paris.); Kosterm., l.c. — *Laurus koumaroucapa* Richard ex Kosterm., l.c.

Typus: Leprieur 225; French Guiana [P.].

„Ayou-ouy”; „graine koumarou” (French Guiana: Richard) *).

Tree, up to 18 m high (Sandwith). Branchlets rather slender, cylindrical, stiff, straight, smooth, shining, glabrous, dark-red or greyish; buds nearly glabrous. Leaves sub-verticillate, glabrous, dull, smooth, chartaceous or chartaceous-coriaceous, obovate or obovate-elliptical, 10—23 × 3½—9 cm; towards base gradually acute, at base abruptly rounded, margin flattish, top distinctly acuminate; above greenish, midrib and prim. nerves prominulous, veins obliterate; beneath paler, yellowish-brown or reddish-brown (dried), midrib prominent, prim. nerves (11—16 per side) prominulous, erect-patent, arcuate, towards margin more or less united, veins reticulate, at last obliterate. Petioles short, thick, glabrous, verruculous, canaliculate, 3—7 mm l. Panicles sub-terminal, pyramidal, sparsely tomentellous, up to 11 cm l.; peduncles thin, glabrescent, shining, reddish-brown, up to 4 cm l.; branchlets patent, up to 3 cm l. Pedicels tomentellous, sulcate, ½—1 mm l., merging into the flower tube. Flowers cream-coloured (Sandwith), densely tomentellous, up to 2¼ mm l.; tube cylindrical-obconical, glabrous inside, abruptly enlarging

*) According to Richard the fruit is used to catch koumarou fish.

into the perianth. Tepals erect, concave, fleshy, tomentellous, ciliate at margin; outer ones smaller, lanceolate-ovate, $\frac{3}{4}$ mm l. (after anthesis enlarging); inner ones ovate, acutish, up to $1\frac{1}{2}$ mm l. Stamens included, $1\frac{1}{4}$ mm l., outer ones with glabrous, depressed, ovate-orbicular anthers (connectives obtuse, minutely or not protruding beyond the large, introrse cells); filaments slightly narrower, flattish, linear, hirsute, twice as long (second row with slightly smaller anthers and narrower filaments); inner stamens with broad, hirsute basal part of filaments, abruptly narrowed into a glabrous, slender part below the small, ovate-suborbicular, glabrous anthers with conspicuous, extrorse cells; glands sub-basal, very large, globose, sessile. Staminodes none. Ovary glabrous, ellipsoid, 1 mm l.; style thick, 1 mm l.; stigma very large, peltate, turned to one side. Berry ellipsoid, smooth, mucronulate, up to 28 mm high, 13 mm in diam. Cupule sub-hemispherical, rather thick, 1 cm high, $1\frac{1}{2}$ cm in diam., beset with many, rather large, rusty warts.

Distribution: Guiana.

French Guiana: Kourou R. (Richard s.n., fr. Dec. [P.], type of *A. koumaroucapa*); Cayenne (Mélinon s.n. [P.]); locality unknown (Leprieur 225 [D.P.]). **British Guiana:** Kanaku Mts., near Nappi Creek (trib. of Pirara R.), alt. 250 m., miscellaneous forest on sandy, loam soil (For. Dept. 2216, fl. Oct. [Kw.], type of *A. anisosepala*).

27. *Aniba parviflora* (Meissn.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 56; Huber in Bolet. Mus. Goeldi 6 (1909), p. 175; Ducke in Bolet. Mus. Goeldi 7 (1909), p. 360; id. in Arch. Jard. Rio de Janeiro 4 (1925), p. 188; id. in Arch. 5 (1930), p. 108. — *Aydendron parviflorum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 90; id. in Fl. Bras. V, 2 (1866), p. 179; Mez, l.c.

Typus: Riedel 1383; Amazonas [Leningrad].

„Páo (de) rosa” (Para: Ducke, Krukoff); „Louro rosa” (Brazil: Krukoff).

Tree, 5—11 m. high (Ducke, Krukoff, Riedel). Branchlets rather slender, slightly angular, sulcate, densely, minutely rusty- or yellowish-tomentellous; branches glabrous, cylindrical, grey, verruculous; buds densely tomentellous. Leaves alternate, rather thinly chartaceous, elliptical (upper ones narrowly elliptical), (12—) 15—23 × (4—) 5—10 cm.; base acute or shortly acute, margin slightly recurved, top shortly, broadly, obtusely acuminate; above glabrous, green, slightly shining or dull, smooth,

midrib flattish, slightly impressed, prim. nerves hardly visible; beneath dull, yellowish, densely, microscopically papillose, (sparsely, minutely pilose, soon glabrous), midrib prominent, prim. nerves (8—10 per side) prominulous, slightly arcuate, veins prominulous, reticulate. Petioles thickish, rugulose, canaliculate, sulcate, densely, minutely tomentellous, glabrescent, 6—18 mm l. Panicles axillary, densely, minutely rusty-tomentellous, few-flowered, usually short (4—10 cm), peduncles thin, sulcate, short, stiff, branchlets short, patent, few. Pedicels relatively thick, $\frac{1}{2}$ mm l. or none, not distinct from the flower tube. Flowers yellow (Riedel) or yellowish-white (Krukoff), densely, microscopically tomentellous, slender, 1— $1\frac{1}{2}$ mm l.; tube narrowly cylindrical-obconical, sulcate, $\frac{1}{2}$ — $\frac{3}{4}$ mm l., glabrous (throat excepted) within. Tepals erect, fleshy, slightly concave, glabrous inside; outer ones ovate-suborbicular, acute, $\frac{1}{2}$ mm l.; inner ones broadly ovate, acute, margin fimbriate at base, 1 mm l. Stamens hardly exerted (those opposite the outer tepals visible), about $\frac{3}{4}$ mm l.; outer ones with ovate-triangular, depressed, glabrous anthers (connectives acutish, hardly protruding beyond the introrse, distinct cells); filaments as long or slightly longer, hardly narrower, densely hirsute (second row of stamens often slightly narrower). Inner stamens with broadly elliptical, glabrous anthers (smaller than those of outer ones; connectives obtuse, not protruding beyond the conspicuous, extrorse cells), abruptly narrowed into the glabrous upper slender part of the filaments; lower part broad, hirsute. Glands sub-basal or basal, rather large, globose, sessile. Ovary ellipsoid, minutely pilose, $\frac{1}{2}$ mm l.; style rather slender, glabrous, 1 mm l., stigma minute. Berry ellipsoid-ovoid, smooth, mucronulate, up to 25 mm l., 18 mm in diam. Cupule usually rather shallow, sub-hemispherical, rugulose, beset with many rusty, wart-like spots, 8—14 mm high, up to 20 mm in diam., relatively thin.

Distribution: Amazon Basin.

Brazil: Pará, Belem do Pará, cult. in the Bot. Gard. Goeldi Mus. (Krukoff 1003, fl. Sept. [A.Br.Ca.D.Dl.F.H.Mi.NY.P.St.U.]; Ducke H.R.J. 19979, fl. July [Bs.Ws.]); Obidos (Riedel s.n., fl. Nov. [Lg.Ms.]); Borba (Riedel 1383 *), fl. July [Bs.Kw.Lg.Ms.O.]); Faro (Ducke H.R.J. 8559, fl. Aug. [Ws.]; 11369, fl. Jan. [D.St.U.]); Parintino (Ducke H.R.J. 22599, fl. [F.H.]); Manáos, Cachoeira de Faro (ex Herb. Schwacke III, 434, fr. [G.]); Tapajoz region, Amorin lake (da Costa 314, ster. [F.]); Tapajoz R., Bella Vista (Ducke H.R.J. 17530, fr. Aug. [D.]); upper Cupari R., plateau between

*) The original label in the Leningrad herb. bears the number 1383 and not 1381.

Xingu and Tapajoz R., forest (Krukoff 1189, fl., fr. Sept. [A.Ca.D.Dl.H.Mi. N.Y.P.St.U.]).

Use: The powdered aromatic, pungent bark is used for perfuming linen (Ducke). The heavy yellowish-green wood is nearly inodorous, it is easy to work.

28. *Aniba cylindriflora* Kosterm. nov. spec.

Typus: Krukoff 6589; Brazil [U.].

Arbor usque ad 10 m alta (Krukoff). Ramuli crassi cylindrici dense minute ferrugineo-tomentelli, rami brunescetes glabrescentes, gemmae sericeo-tomentellae. Folia alterna coriacea vel rigide coriacea, laneolata vel elliptico-lanceolata, 12—19 × 3½—7 cm, basi subrotundati in petiolum contracta margine recurvo, apice distincte acuminata acumine graciliore usque ad 1½ cm longo; supra glabra, nitida, viridia laevia, nervo mediano costisque vix prominulis plerumque sub-impressis venis inconspicuis; subtus opaca sub lente dense papillosa luteo-viridea minute pilosa (glabrescentia), nervo mediano costisque utrinque 10—12 prominentibus sub-arcuatis plerumque marginem versus arcuato-connexis, venis prominulis laxe reticulatis saepe oblitteratis. Petioli crassi rugulosi dense minute pilosi canaliculati 1 cm longi. Paniculae sub-terminales pauciflorae late pyramidales dense minute ferrugineo-pilosae usque ad 5 cm longae, pedunculis brevibus crassis sulcatis, ramulis paucis patentibus crassis usque ad 2½ cm longis. Bractee lanceolatae 3 mm longae sub-persistentibus. Flores sessiles dense minute ferrugineo sericeo-tomentelli 3—3½ mm longi graciles 1—1½ mm diametro; tubo cylindrico paullo constricto usque ad 2½ mm longo intus glabro. Tepala erecta subaequalia carnosa paullo concava anguste ovata, obtusiuscula fere 1 mm longa margine fimbriata intus glabra. Stamina vix exserta circa 1 mm longa; exteriora antheris ovotriangularibus glabris connectivi vix producto in filamenta hirsuta graciliora usque ad duplo longiora transeuntibus; interiora glabris depresso-orbicularibus obtusis filamentis parte superiora distincta glabris, parte basali lato glandulis sub-basalibus magnis globosis sessilibus praeditis. Staminodia nulla. Ovarium ellipsoideum glabrum ¾ mm longum stylo gracile 1¼ mm longo glabro stigmatate minute obtuso. Bacca (in co-typo) ellipsoidea-ovoidea laevis mucronulata usque ad 25 mm longa 15 mm diametro. Cupula sub-hemispherica planiuscula rugulosa minute ferrugineo-verruculosa usque ad 10 mm alta, 18 mm diametro.

Distributio: Regio fluminis Amazonae.

Brasilia: Civ. Amazonas, Humayta prope Livramento ad flum. Rio Livramento, terra firma (Krukoff 6589, fl. Oct. [U.]). Peruvia: Colonia Perene, alt. 700 m. (Killip & Smith 25061, fr. Jun. [D.F.Ws.]).

Anibae parviflorae affinis sed folia coriacea tepala aequalia ovario glabro stylo longo gracilisque differt.

29. *Aniba rosaeodora* Ducke in Rev. Bot. Appl. 8 (1928), p. 845; id. in Arch. Jard. Rio de Janeiro 5 (1930), p. 109, t. IV, f. 5 (excl. var. *amazonica*); Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 298 (excl. cit. spec. B.W. 5729 et 7159). — *Aniba citrifolia* A. C. Smith (non Mez) in Bull. Torrey Bot. Cl. 58 (1931), p. 100. — *Bois de rose*, Gonggrijp in de Indische Mercur, Apr. 23 & 30 (1920). — *Aniba rosaeodora*, forma *typica*, Campos Porto in Rodriguesia II, 5 (1936), p. 108.

Typus: H.R.J. 19923; Brazil [R.].

„Páo rosa” (Brazil: Ducke); „Bois de rose femelle” (French & Dutch Guiana); „Real rosewood” (Dutch Guiana).

Tree, up to 30 m high (Gonggrijp, Lawrence), stem straight, cylindrical $1\frac{1}{2}$ –2 m in diam. (Lawrence). Bark rufous, flakes off in patches; wood yellowish-grey, aromatic (Ducke). Branchlets thick, angular, sulcate, densely, minutely rusty-tomentellous, lenticels large, distinct, numerous; branches cylindrical, glabrous, grey or dark-brown. Leaves alternate, rigid-coriaceous, (rarely chartaceous on young shoots), elliptical or broadly elliptical, to ovate or subobovate-elliptical, 14–20 (–32) \times 4–6 (–13) cm; base in adult leaves conspicuously rounded, margin strongly recurved, top shortly, broadly, obtusely acuminate (acumen up to 1 cm l.); upper leaves smaller; above glabrous, green, slightly shining, midrib flat or slightly impressed, prim. nerves flat, rather inconspicuous, veins densely, prominulously areolate-reticulate, at last slightly obliterate; beneath dull, yellow or orange-yellow (dried), densely microscopically papillose; densely pulverulent-tomentellous, the latter disappearing; midrib strongly prominent, prim. nerves (9–11 per side) prominent, rather patent, slightly arcuate, veins prominulous, densely reticulate-areolate. Petioles stout, glabrescent, canaliculate, 10–17 mm l. Panicles pyramidal, sub-terminal, densely, minutely rusty-tomentellous, up to 14 cm l.; peduncles stout, sulcate, up to 4 cm l., branchlets rather few, thick, sulcate, patent, up to 7 cm l. Pedicels thick, sulcate, $\frac{1}{2}$ –1 mm l., densely, minutely sericeous-

tomentellous, not distinct from flower tube. Flowers orange (Klug), densely rusty, minutely sericeous-tomentellous, $1\frac{1}{2}$ —2 mm l.; tube subcylindrical-obconical, sulcate, abruptly enlarging into the perianth, glabrous within (throat excepted), 1 mm l. Tepals erect, fleshy, concave, ovate-orbicular, about 1 mm l., and w. (second row slightly smaller), acutish, margin slightly ciliate, nearly glabrous inside. Stamens included, outer ones slightly incurved, $\frac{3}{4}$ mm l. (those of second row slightly smaller), with depressed, triangular-ovate, glabrous anthers (usually broader than long; connectives minutely protruding beyond the conspicuous, introrse cells); filaments slightly broader or as broad as anthers, densely lanuginose-hirsute, gradually tapering from top to base. Inner stamens erect, lower part of filaments thick, hirsute, upper part, above the very large, globose, sessile glands, glabrous, slightly narrower than the ovate, obtuse, small anthers (smaller than those of outer stamens) with conspicuous, extrorse cells. Staminodes usually none or minute. Ovary ellipsoid, minutely pilose, $\frac{1}{2}$ — $\frac{3}{4}$ mm l., style relatively thick, nearly 1 mm l., stigma minute, obtuse. Berry ellipsoid, smooth, mucronulate, up to 4 cm l., 2 cm in diam. Cupule rather shallow, thick, sub-hemispherical or cup-shaped, irregularly thickened, beset with few, rusty spots, up to 2 cm high, 3 cm in diam., margin obscurely double, the outer formed by the thick tubercles; pedicel obconical, up to $1\frac{1}{2}$ cm l., 1 cm in diam. at apex. Fig. 4.

Distribution: Amazon Basin, Guiana, Colombia.

Brazil: Clevelandia, Rio Oyapoc near frontier of Pará and French Guiana (H.R.J. 19922, fr. Nov. [St.]; 19923, fr. Febr. [Bs.D.NY.St.U.]; 19924 [D.U.]; 23420 [Bs.D.F.NY.St.U.]). **Peru:** Dept. Loreto, near Iquitos, alt. 100 m., forest (Klug 1313, fl. May [F.NY.Ws.]). **Colombia:** Western part of Dept. Boyaca, region of Mt. Chapon, El Umbo district, alt. 1000 m., forest (Lawrence 452, fr. Sept. [Dl.U.]). **Dutch Guiana:** Upper Marowijne R., Njam Creek (Bünzli s.n., fl., fr. March [D.]); Tapanahoni R., Doemansingi Falls (B.W. 4141, ster. Nov. [U.]); Drietabbetje (B.W. 5085, fr. Aug. [U.]); Gonini R., Langafoetoe Falls (B.W. 3711, ster. Febr. [U.]); Paramaribo, Plantage Onverwacht (Stahel s.n., fl. March [U.]). **French Guiana:** Cayenne (Coll. unknown ex herb. Moricand n. 115 [Dl.]); locality unknown (coll. unknown ex herb. Ventenat [Dl.J.P.]). **British Guiana:** locality unknown (Persaud 78, fl. July [F.H.Kw.]).

Use: In 1875 a Frenchman by the name of SAMAIN succeeded in distilling from the wood of this species a sweet-smelling oil and this new use of the wood eventually replaced all others. The „Bois de rose” is one of the best known timbers of French Guiana and for a long time was shipped to France for the manu-

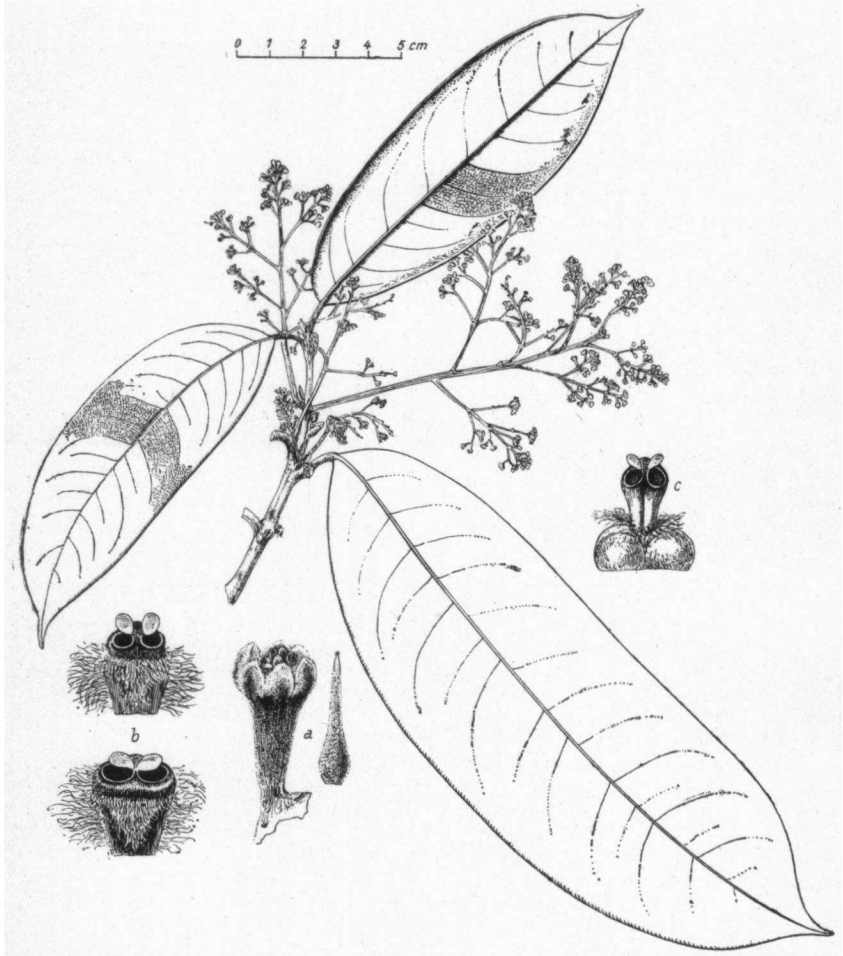


Fig. 4. *Aniba rosaeodora* Ducke; a. Flower with ovary; b. Stamens of the outer row from within; c. Stamen of the inner row from without. (Branch according to scale; flower details strongly enlarged).

facture of furniture. The oil first appeared on the export list of Cayenne in 1889 under the name of „Huile de linaloès” or „Huile d’aloès” and later as „Essence de bois de rose”. For a time the wood was shipped to France for distillation, but owing to the loss of oil in transportation it was found best to manufacture the essence in Cayenne. The industry which is a very important one, is now monopolised by a French concern and nearly all of the product goes to France for the use in perfume manufacture.

The trees are felled and cut into convenient lengths as for firework, the wood of the roots included, and conveyed to the nearest creek, where it is shipped in small boats to larger river vessels which take it to Cayenne. Before the war the price of the wood was from 75—80 francs per 1000 kg., but later this was materially increased and in some instances more than doubled. The oil content of the wood is about 18%. The wood is „hogged” or chipped by special machines and the fresh chips are run into retorts, having a capacity of 900—1000 liters. The usual charge is 90 to 100 kg. of wood and 100 liters of water and the process of distillation requires an hour and a half. Steam is admitted into coils at the bottom of the retort at a pressure of 3 atmospheres and the distillate of oil and water is caught in vessels and separated by gravity, the oil having a specific gravity of from 0,86 to 0,88. The essence must be stored in a cool place in dark, hermetically sealed in containers, since upon prolonged exposure to air, light, or heat it loses its clearness and its pleasant scent and becomes yellow, syrupy, and of a turpentine odor (RECORD and MELL, *Timbers of Tropical America*, pp. 187 et 188).

30. *Aniba Coto* (Rusby) Kosterm. nov. comb. — *Nectandra Coto* Rusby in Bull. Torrey Bot. Cl. 49 (1922), p. 260; id. in Journ. Amer. Pharmac. Assoc. XI, 10 (1922), p. 777; Wiessner, *Rohstoffe des Pflanzenreiches* ed. 4 II (1927), p. 225.

Typus: White 1048; Bolivia [NY.].

„Coto (Coto piquante and Coto fino)” (Bolivia: White).

Tree, 15—20 m. high (Lehmann, White) with few branches except near the top and these short in comparison of the height of the tree; trunk up to 60 cm in diam. (Lehmann); bark of a cinnamon-brown colour, peeling with difficulty, aromatic and very pungent a few seconds after being chewed, the odour

pungent, when fresh; wood of a sandalwood yellow and satiny luster (White). Branchlets angular, sulcate, stout, densely, minutely, rusty-tomentellous; branches glabrous, verruculous, subangular, glabrous, grey, covered with many lenticels; buds densely tomentose. Leaves alternate, rigid-coriaceous, pale-green or whitish beneath (Lehmann, White), dark to light green and glossy above (White), oblanceolate or oblanceolate-elliptical, 9—20 × 2½—5 cm; base gradually acute, margin slightly recurved, top shortly acuminate or acutish. Young leaves minutely pilose beneath; adult ones glabrous (pilosity on midrib beneath often sub-persistent); above smooth, midrib slightly impressed, prim. nerves hardly impressed; beneath midrib strongly prominent, prim. nerves (10—12 per side) prominent, slightly arcuate, often arcuately united at margin; veins prominulous, densely reticulate or obliterate. Petioles rather thick, glabrescent, 1—1½ cm l., deeply canaliculate. Panicles axillary, clustered near the top of the branchlets, rather many-flowered, narrowly pyramidal, densely rusty-tomentellous, up to 7 cm l., peduncles stout, sulcate, up to 3 cm l., branchlets erect-patent, thick, up to 1½ cm l. Pedicels thick, densely tomentellous, short. Bracts and bracteoles deciduous. Flowers (sub-mature) densely, minutely tomentellous, greenish-yellow (Lehmann); tube obconical, pilose inside. Tepals equal, fleshy (inner ones broader), ovate, acutish, fimbriate, up to 1½ mm l. Stamens included; outer ones elliptical, with depressed-triangular, glabrous anthers, merging into the gradually narrowed, hirsute (especially outside and inside below anthers) 1—1½ as long filaments with a longitudinal ridge within; cells introrse, connective not protruding. Inner stamens erect with ovate-obtuse, glabrous anthers, filaments distinct, as long, hirsute; basal glands large, globose, sessile. Ovary densely tomentellous (base excepted), ellipsoid, merging into a rather thick, conical, pilose, nearly as long style with minute, truncate stigma. Berry smooth, light-brown (White), ovate-suborbicular, mucronulate, up to 16 mm l., 15 mm in diam., its summit finely granular or mottled (White). Cupule sub-hemispherical, thick, woody, dark-brown (White), roughly tuberculate, especially downward, margin obscurely double, up to 22 mm in diam., 20 mm high, 12 mm deep; pedicel thick, woody, verrucous, short, merging into the cupule.

Distribution: Highlands of Bolivia and Colombia.

Bolivia: Mountains south of Huachi, near Covendo near the Cochabamba R., alt. 1000 m. (White 1048, fl., fr. Sept. [A.Kw.Gr.NY.Ws.], 1050,

ster. Sept. [A.Kw.Gr.NY.Ws.]; 2148, fl., fr. Aug. [A.Kw.Gr.Ws.]. Colombia: Forests of the highlands of Popayan, alt. 1500 m. (Lehmann 9094, fl. [Br.Kw.L.W.]).

Use: The bark furnishes the drug: „Coto”, containing cotoin (Benzoyl-phloroglucin-monomethylaether) used against diarrhoea and in case of phtysis. Coto bark was first imported under the name: Coto cinchona into Europe, from Bolivia about 1873 and a few years later replaced by a similar bark called paracoto from Bolivia, which is now also rare in commerce.

31. *Aniba mas* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 30; id. in Pulle, Fl. Surin. 2 (1936), p. 306. — *Aniba Gonggrijpii* Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 37, f. 2; id. in Pulle, Fl. Surin. 2 (1936), p. 309.

Typus: Forestry Bureau 6337; Dutch Guiana [U.].

„False or male rosewood” (Forestry Bureau: Dutch Guiana).

Tree: branchlets rather slender, sub-angular, sulcate, densely rusty-tomentellous; branches glabrous, cylindrical, dark-brown or grey; buds densely tomentellous. Leaves alternate, thinly chartaceous or chartaceous, elliptical or broadly elliptical, 11—22 × 4—8½ cm; base contracted into petiole, shortly acute or somewhat rounded, margin slightly recurved, top broadly, obtusely acuminate; above glabrous, green, dull, smooth, midrib slightly prominulous or flat, prim. nerves hardly visible, beneath densely, microscopically, yellowish papillose, midrib slightly pilose, strongly prominent, prim. nerves (6—12 per side) rather patent, prominent, the upper ones arcuately united, veins obscurely reticulate. Petioles verruculous, densely tomentellous, glabrescent, deeply canaliculate, 1—2 cm l. Panicles rather many-flowered, axillar, clustered near the top of the branchlets, densely, minutely tomentellous, pyramidal, lax, 3—9 cm l.; peduncles slightly compressed, furrowed, rather slender, 1—3 cm l., branchlets patent, slender, compressed, 1—2 cm l. Pedicels thick, sulcate, densely, minutely tomentellous, 1—2 mm l. Bracteoles ovate, acute, carinate, 1—2 mm l., deciduous. Flowers densely, minutely sericeous-tomentellous, 2—3 mm l., 2 mm in diam. at apex; tube obconical, about 1 mm l., gradually merging into the pedicel, sulcate, densely pilose (in throat hirsute) within. Tepals erect-patent, fleshy, 1—1½ mm l., outer ones narrowly ovate, acutish, inner ones broadly ovate, margins fimbriate. Stamens included, 1¼ mm l., outer ones slightly incurved, anthers large, depressed-ovate, glabrous (connectives acutish, slightly protruding beyond

the large, introrse cells), filaments $1-1\frac{1}{2} \times$ as long, densely hirsute-villose, as broad as or slightly broader than anthers (those of the second row always slightly narrower than anthers). Inner stamens erect, anthers glabrous, large (but smaller than those of outer stamens), ovate, obtuse, cells extrorse; filaments slightly broader, upper part glabrous, lower part and inside hirsute; basal glands large, globose, sessile. Staminodes as a rule wanting. Ovary ellipsoid, densely, minutely tomentellous (base excepted), $1-1\frac{1}{2}$ mm l., gradually merging into an as long, conical style with minute, hardly conspicuous stigma. Berry ovoid, ellipsoid, yellow (dried), smooth, mucronulate, up to 2 cm l., $1\frac{1}{2}$ cm in diam. Cupule thick, woody, rather smooth, but covered with large, rusty, wart-like spots, hemispherical, up to 15 mm high, 17 mm in diam.; margin entire, rather thin; pedicel thick, woody, obconical, verrucous, merging into the cupule.

Distribution: Amazon Basin; Guiana.

Brazil: Amazonas, mouth of Rio Embira, lat. $7^{\circ} 30' S.$, long. $70^{\circ} 15' W.$ (Krukoff 4724, fl. June [A.D.Dl.NY.St.U.Ws.F.H.]). **Dutch Guiana:** upper Surinam R., Parwa and Wane Creek (B.W. 369, fr. Oct. [U.], type of *A. Gonggrijpii*); Brownsberg, tree n. 1024 (B.W. 6337, fl. Nov.); Gonini R. (B.W. 3278, ster. July); Tapanahoni R. (B.W. 4124, ster. Nov.); Driettabetje (B.W. 5388, ster. July); Patrick savanna (B.W. 165, ster. Nov.); Voltzberg (Pulle 304, ster. [U.]).

The specimens Krukoff 6246 (Amazonas, near Tres Casas, Humayta) may belong to this species. The fruit cupules are identical. The leaves, however, are much larger and thicker; the same may be said of the specimen Krukoff 4883 (Amazonas, mouth of Rio Embira).

32. *Aniba Muca* (R. et P.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 57; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 26. — *Laurus Muca* Ruiz et Pavon, Flora Peruv. IV (1802), t. 360 et Laurogr. t. 18. — *Aydendron Muca* Nees in Linnaea 21 (1848), p. 498; Walp. Ann. III (1852—53), p. 309; Meissn. in D.C., Prodr. XV, 1 (1864), p. 88. — *Ocotea oblanceolata* Rusby in Bull. New York Bot. Gard. 6 (1910), p. 507.

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

„Picodocaspe” (Colombia: Uribe).

Tree, 11 m high (Weberbauer). Branchlets thick, angular, densely, minutely rusty-tomentellous, often with many small, pro-

truding lenticels; branches cylindrical, glabrous, dark-brown; buds rusty-tomentose. Petioles thick, rugulose, densely, minutely tomentellous, at last glabrescent, 1—1½ cm l. Leaves alternate, thinly chartaceous or chartaceous, oblanceolate-elliptical or oblanceolate, (7—) 13—22 × (2—) 3—6 cm; base acute, margin hardly recurved, top obtusely acuminate (acumen rather short); above glabrous, green, shining, smooth, midrib as a rule slightly channeled; beneath yellowish-green (caused by a dense layer of microscopical papils), minutely tomentellous, glabrescent (papils persistent); midrib prominent, prim. nerves (7—10 per side) prominent, arcuate, usually arcuately united towards margin, veins prominulous, reticulate or obliterate. Panicles axillary on the young branches, short, densely, minutely tomentellous, up to 4 cm l., rather many-flowered, peduncles short, comparatively thick, angulate, branchlets patent, few, thick, up to 1 cm l. Pedicels short, 1 mm l., merging into the flower tube. Flowers greenish (Weberbauer), densely, minutely rusty-tomentellous, about 1½ mm l., 1 mm in diam. at apex; tube narrowly obconical, hardly 1 mm l., sulcate, abruptly enlarging into the perianth, pilose within. Tepals erect-patent, nearly equal, about ¾ mm l., fleshy, concave, glabrous within; outer ones narrowly ovate, obtuse or acutish, inner ones broader; margins ciliate. Stamens included, about ¾ mm l.; outer ones sub-elliptical or slightly narrowed towards base with glabrous, ovate-triangular (usually broader than long) anthers (connectives not or hardly protruding beyond the cells), filaments densely pilose, broad, 1—1½ × as long as anthers; inner stamens with ovate-orbicular, obtuse or truncate (smaller than those of outer row) glabrous anthers, abruptly narrowed into the upper, glabrous, rather slender upper part of the filaments, lower part densely pilose with sub-basal, very large, globose, sessile glands. Staminodes none. Ovary ellipsoid, densely, minutely pilose (base excepted), up to ¾ mm l., merging into the rather thick, pilose (top excepted), about ¾ mm l. style; stigma minute, truncate. Berry ellipsoid, smooth, mucronulate, up to 2½ cm l., 1½ cm in diam. Cupule rather thin, subhemispherical, up to 1½ cm high, 1½ cm in diam., rugulose with minute rusty warts, merging into the thick, short, obconical pedicel.

Distribution: Eastern mountain slopes of Peru, Colombia and Bolivia.

Peru: Pozuzo, Cuchero (Ruiz s.n., fr. [Bs.Br.D.F.Kw.Ms.O.P.]); Cosñipata, lat. 13° S., in forest, Dept. Cuzco, Prov. Paucartambo, alt. 700—800 m. (Weberbauer 6961, fl. May [D.F.Gr.Kw.NY.St.Ws.]); la Merced Chancha-

mayo valley, Dept. Junin, Prov. Tarma, alt. 1000 m. (Weberbauer 1919, fl. Dec. [D.Bl.]); Dept. Junin, Vitoc (Raimondi 1994 et 2533, fr. [D.]). Bolivia: Mapiro region, San Carlos near Sarampiuni, alt. 500 m. (Buch-tien 1666, fl. Dec. [D.], 719 [D.], 720, fl. Dec. [D.Ws.]; Williams 822, fr. Sept. [Kw.NY.Ws.], type of *Ocotea oblanceolata*); Charopampa near Mapiro, forest, alt. 570 m. (Buchtien 1878, ster. Nov. [Ws.]). Colombia: Caqueta, Rio Dedo (Uribe s.n., ster. [Ws.]).

About the determination of the specimen of Colombia, I am not sure, — it may be as well *Aniba firmula*. See discussion of *Aniba firmula*.

33. *Aniba firmula* (Nees et Mart.) Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 57 (excl. cit. spec. Burchell. 9620); Glaziou in Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590; Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Arch. Bot. V (1931), p. 62; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 28; id. in Pulle, Fl. Surin. II (1936), p. 300. — *Ay dendron firmulum* Nees et Mart. in Linnaea 8 (1836), p. 36; id., Systema (1836), p. 250; id. in Linnaea 21 (1848), p. 496; Dietrich, Synops. Pl. 2 (1840), p. 1344; Mez in Jahrb., l.c.; Kosterm. in Fl. Surin., l.c. — *Ay dendron Sellowii* Meissn. in D.C., Prodr. XV, 1 (1864), p. 88; id. in Fl. Bras. V, 2 (1866), p. 177; Mez in Jahrb., l.c.; Kosterm. in Fl. Surin., l.c. — *Aniba Panurensis* (Meissn.) Mez in Jahrb., l.c., p. 58; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 590; Smith in Bull. Torrey Bot. Cl. 58 (1931), p. 99; Brooks in Kew Bull. 1933, p. 214; Kosterm. in Fl. Surin., l.c. — *Ay dendron Panurensis* Meissn. in D.C., Prodr., l.c., p. 89; id. in Fl. Bras., l.c., p. 178; id. in Vidensk. Meddel. Naturhist. Foren. Kjöbenhavn 1870, p. 131 (Warming, Symbolae); Mez in Jahrb., l.c., p. 58; Brooks in Kew Bull., l.c.; Kosterm. in Fl. Surin., l.c. — *Aniba laevigata* (Meissn.) Mez in Jahrb., l.c., p. 59; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Corrêa, Dictionario 1 (1926), p. 433; Kosterm., ll.cc. — *Ay dendron laevigatum* Meissn. in D.C., Prodr., l.c., p. 88; id. in Fl. Bras., l.c., p. 178, t. 63; Mez in Jahrb., l.c., p. 59; Kosterm. in Fl. Surin., l.c. — *Aniba Gardneri* (Meissn.) Mez in Jahrb., l.c., p. 60, t. III, f. 30; id. in Arb. Bot. Gart. Breslau, l.c., p. 109; Glaziou in Bull. Soc. Bot. France 59, l.c., p. 590; Corrêa, Dicc., l.c., p. 454; Kosterm. in Meded., l.c. — *Ay dendron Gardneri* Meissn. in D.C., Prodr., l.c., p. 89; id. in Fl. Bras., l.c., p. 178; Mez in Jahrb., l.c., p. 60. — *Aniba fragrans* Ducke in Arch. Jard. Rio de Janeiro IV (1925), p. 189; Kosterm. ll.cc. — *Aniba albida* Mez in Jahrb., l.c., p. 64. — *Laurus revoluta* Willd. ex Nees, Systema, l.c., p. 250. — *Aniba Williamsii* Brooks

(non Schmidt), nomen tantum, in Leaflets Forest. Dept. Trinidad and Tobago n. 4 (1931), p. 19.

Typus: Sellow 369; Brasil [D.].

„Canella Sassafras” (Rio de Janeiro: Glaziou, Porto, Pohl); „Macacaporonga” (Pará: Ducke); „Laurier Canelle” (Trinidad: Brooks); „Ishpingu chico” (Peru: Jelski).

Tree, about 10 m high (Ducke, Glaziou, Kuhlmann), whole plant fragrant (Ducke, Damazio). Branchlets rather thick, subangular, densely, minutely tomentellous or tomentose, rarely glabrescent; branches cylindrical, glabrous, dark-brown or grey, buds rusty-tomentose. Leaves alternate, chartaceous to coriaceous, usually obovate-elliptical, varying from narrowly oblanceolate to broadly obovate-elliptical, 7–22 × 2–7 cm; base acute, margin slightly recurved, top obtusely acuminate or often more or less obtuse, acumen usually rather short; above glabrous, green, shining, smooth (in young leaves densely reticulate), midrib as a rule channeled, veins at last usually obliterate; beneath densely, microscopically, yellowish papillose, in young leaves minutely pilose, soon glabrous (papils persistent), except on midrib, midrib strongly prominent, prim. nerves (7–10 per side) prominent, arcuately patent, the upper ones usually arcuately united, veins prominulously reticulate, often obliterate. Petioles rather thick, rugulose, tomentellous, glabrescent, channeled, 1–1½ cm l. Panicles axillary on the young branches, densely, minutely tomentellous, rather many-flowered, 4–10 cm l., peduncles rather slender, sulcate, up to 4 cm l., branchlets few, patent, 1–3 cm l. Bracts and bracteoles deciduous. Pedicels thick, 1 mm l., merging into the flower tube. Flowers greenish or yellowish, densely, minutely tomentellous, 1½–2½ mm l., 1–2 mm in diam. at apex. Other characters as in *A. Muca*. Cupule rather thin, up to 15 mm high, 16 mm in diam.

Distribution: Tropical south America, eastern of the Andes.

Brazil: Rio de Janeiro: Nova Friburgo (Glaziou 17193, fl. Dec. [Ca.D.Dl.B.K.NY.P.Ws.Lg.]); Petropolis (Glaziou 8104, fl. Jan. [Ca.D.Dl.K.Kw.P.]; 12118, fl. Febr. [B.D.K.Kw.P.Lg.]); Fazenda Inglesa near Petropolis (Glaziou s.n., fl. Febr. [NY.P.]); Vista Chinaza road, Gavea (Bandeira et Ducke, H.R.J. 8580, fl. Jan. [R.U.]); road of Paneiras, Tijuca, Ponte do Inferno, forest (Bandeira H.R.J. 16203, fl. Febr. [R.U.]); near Rio de Janeiro (Widgren s.n. [St.]); Matta da Horto Florestal (Kuhlmann H.R.J. 6533, fr. Nov. [R.U.]); near Theresopolis (ex herb. Moura 1001, fl. Sept. [D.]); Villa Nova ad Porto das Caixas (Glaziou 7809, fl. May [D.K.P.]);

between Hortus and Vista Chineza (ex Herb. Schwacke 6654 [D.]); Itatiaya (Campos Porto H.R.J. 15987 [R.U.]); San Luzia (Pohl 962 [B.M.W.]); Serra dos Orgãos, Vargem. (Miers 4271, fr. Dec. [Br.]; 1958 [Kw.]; Wilkes s.n. [Gr.]); Corcovado (Glaziou 861, fl. Sept. [B.K.Ms.NY.P.]); Taipu (Schott 5606 [W.], type of *Aydenndron laevigatum*; 5606 [Br.Dl.Ms.Ws.]); locality unknown (Sellow 369 [Bl.D.Dl.F.Ws.], type of *Aydenndron Sellowii* and type of *A. firmulum*; Burchell 8410 [Gr.Kw.P.]; Bowie & Cunningham [Br.]). Minas Geraes: Viçosa, border of cut-over wood, hills northwest of Agric. College, alt. 700 m. (Mexia 4512 a, fr. Sept. [NY.Ws.]; 5112, fl. Sept. [Br.D.Dl.Gr.H.Mi.NY.St.Ws.]; 5163, fl., fr. Oct. [Br.D.Dl.Gr.H.Mi.NY.St.Ws.]); Ouro Preto (Damazio 1675, fl. Febr. [Bs.]; ex herb. Schwacke 9903, fl. Jan. [Dr.P.]; id. 318 [Dl.]); Serra da Lapa near Ouro Fino (Gardner 5156, fl. [Br.Bs.D.Dr.Kw.Lg.Ms.Gr.W.Ws.], type of *Aydenndron Gardneri*; Riedel 929 et 930, fl. Nov. [Lg.Ms.Ws.]); Uberava (Regnell II, 241^{1/2}, ster. Dec. [Ws.]). São Paulo: Nogy das Cruzes (ex herb. Schwacke 6608, fr. Apr. [D.]); Jardim Botânico (Hoehne H.R.J. 28513, fl. Nov. [D.]); locality unknown (Gaudichaud 216 a [P.]). Pará: Belem do Para, cultivated (H.R.J. 19978, fl. June [Bs.D.St.U.Ws.]); Serra de Santarem (H.R.J. 18349, fl. Sept. [Bs.St.U.Ws.], type of *Aniba fragrans*; Ducke 202, fr. Febr. [F.H.NY.Ws.]). Amazonas: Panuré on Rio Uaupes (Spruce 2603, fl. Oct. [B.Bs.D.Dl.Dr.Gr.K.Kw.Lg.Ms.P.NY.W.], type of *Aydenndron Panurense*). Dutch Guiana: locality unknown (For. Bur. s.n., fl. Dec. [U.]); Voltzberg, forest (Pulle 304 [U]). Trinidad: road to Maracas Bay (Cheeseman, Freeman and Williams 11242, fl. July [Kw.], type of *Aniba Williamsii* Brooks); Aripo road (Broadway 6439, fr. Dec. [Br.H.Kw.]); Arena reserve (Brooks 12458, fr. Jan. [Kw.NY.]; id., fl. [NY.]); Maraval (Hart 5876 b, fl. [D.]). Tobago: summit of Pigeon Hill (Freeman & Williams 11366, fr. Oct. [Kw.]; The widowlands (Broadway 4193, fl. July [D.]). Peru: Dept. Loreto, near Iquitos Mishuyacu, alt. 100 m. forest (Klug 409, fl. Oct.-Nov. [F.NY.Ws.]); Tambillo, Dept. Cajamarca, prov. Cutervo (Jelski 192 [Ws.D.], fr. Sept. 203 [Ws.D.], fl. Sept. et ex Herb. Raimondi 1995, ster., 2533 ster., 3271, ster.; 3510, ster.; 3686, fl. Sept.; 3764, fl. fr. Sept.; 3812, fl. Sept. [F.]; 4055, fl. Sept.; 4156, ster.; 4168, fr. Sept.; 4346, ster.; 4473, fl. Sept.; 5329, ster.; 6011, ster.; 6098, ster.; 6119, ster. [all in D.]). Colombia: Montana de Barbula (Humboldt s.n., ster. [D.P.], type of *Laurus revoluta* Willd.); locality unknown (Goudot s.n., fr. [P.]).

The abundant material I could study makes it sure that the species of the *Aniba Muca* group, as characterised by Mez, possess no specific value. The leaves, though different in size are fairly well characterised by the oblanceolate to obovate-elliptical shape, in well-developed leaves distinctly acuminate. The reticulation, conspicuous on the upper surface in young leaves may disappear entirely, especially in the thick leaves; on the lower surface it remains visible. The flowers are identical, but for their size and I therefor strongly doubt, whether *Aniba Muca* can be kept separate, as the only difference with *A. firmula* lies in the smaller flowers, but I need more material from Peru to settle this. The flowers of *A. firmula* also vary between 1½ and 2½ mm in length.

Use: The whole plant is fragrant; the powdered bark is used for perfuming linen. (Ducke).

34. *Aniba Duckei* Kosterm. nov. spec. — *Aniba rosaeodora*, var. *amazonica* Ducke in Archiv. Jardim Rio de Janeiro V (1930), p. 110, f. 6.

Typus: Ducke H.R.J. 24914; Amazonas [U.].

„Pao rosa” (Amazonas: Ducke).

Arbor ramulis subangulatis minutissime denseque ferrugineo-tomentellis ramis cylindricis glabris brunneis vel cinereis gemmis dense ferrugineo-tomentellis. Folia alterna chartacea vel rigide chartacea, elliptica vel suboblanceolato-elliptica, 8—16 × 3—6½ cm; basi acuta apice acuminata margine recurvulo; supra glabra nitidia viridia sublaevia nervo mediano gracilibus prominulis costis gracilibus vix prominulis; subtus opaca sub lente perdense minutissime luteo-papillosa pilis minutissimis obtectis, nervo mediano valde prominente costis utrinque 8—14 erecto-patentibus subarcuatis gracilibus venis minute denseque prominulo-reticulatis. Petioli dense minutissime ferrugineo-tomentelli canaliculati 8—12 mm longi striati. Paniculae axillares subterminalisque perdense minutissime ferrugineo-tomentellae 4—11 cm longae pedunculis sub-crassis angulatis sulcatis usque ad 3 cm longis ramulis subcrassis erecto-patentibus, usque ad 4 cm longis. Bracteeae bracteolaeque deciduae. Pedicelli subcrassi densissime minutissime tomentelli usque ad 1 mm longi in tubum floriferum transeuntibus. Flores 1—1½ mm longi; characteribus ut in *Aniba rosaeodora*.

Distributio: Brasilia.

Amazonas: Juruty Velho (Ducke H.R.J. 19925, fl. May. [Bs.St.U.Ws.]; 19926, fl. May [Bs.D.F.St.U.Ws.]; 19927, fl. May [Bs.St.U.Ws.]; 19928, fr. May [Bs.F.St.U.Ws.]; 19929, ster. [U.Ws.St.]; 19922, fr. [U.]); São José, Lago Mamory (Ducke H.R.J. 24914, fl. May [St.U.Ws.]; 22570, fl. [F.H.NY.]); Lacum Massauary prope Maues (Ducke H.R.J. 19931, fr. June [St.Ws.U.]); Manaus (Ducke H.R.J. 21355, fr. June [F.H.]). Dutch Guiana: Emma Range, Wilhelmina Mts., Montis Hendrik (B.W. 7159, fl. June [U.]; 5729, fr. March [U.]).

This species, though in flower characters identical with *Aniba rosaeodora*, cannot be considered as a mere variety of it, because the shape and texture of the leaves is quite different. It shows a strong resemblance with *Aniba firmula*, but for its minute flowers and the not channeled midrib on the upper surface. For

the latter reason I am not sure about the identity of the specimens Duce 19922, 19928, 19931, 19929 and 21355; the leaves of these are somewhat like those of *A. firmula* but no flowers are present.

Section: *Isoporanthera*.

35. *Aniba granatensis* (Mez) Kosterm. nov. comb. — *Nectandra Granatensis* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 463. — *Aniba Lehmannii* O. C. Schmidt in Fedde, Repert. 31 (1933), p. 170.

Typus: Triana 1050; Colombia [P.].

Tree or shrub. Branchlets rather thick, sub-angular, densely, minutely, rusty or grey tomentellous; branches glabrous, slightly sulcate, smooth, shining, reddish or pruinose; buds sericeous. Leaves alternate, rigid-chartaceous, ovate-elliptical or elliptical, 15–23 × 5½–7½ cm; base contracted into the petiole, shortly acute, margin slightly recurved, top distinctly acuminate (acumen rather slender, obtuse, up to 1½ cm l.); above glabrous, dull, smooth glaucous, midrib prominulous, prim. nerves and the more or less parallel second. ones hardly prominulous; beneath brown (dried), densely, microscopically papillose, slightly pilose, glabrescent, midrib prominent, prim. nerves (5–8 per side) prominent, arcuately ascendant (especially lower ones), more or less united towards margin; axils strigose or barbellate; second. and tert. nerves prominulous, reticulate. Petioles thick, glabrescent, slightly canaliculate, about 1 cm l. Panicles axillary, pyramidal, rather few-flowered, very lax, densely, minutely rusty-tomentellous, 10–14 cm l.; peduncles rather slender, cylindrical, up to 7 cm l.; branchlets few, patent, distant, compressed, up to 3 cm l. Pedicels thick, densely rusty-tomentellous, 1–1½ mm l. Flowers densely rusty-tomentellous, 2–2¼ mm l., 2½ mm in diam. at apex; tube obconical, hardly 1 mm l., glabrous or nearly so inside. Tepals erect-patent, equal, fleshy, ovate, acutish, 1–1½ mm l., glabrous inside. Stamens included, 1 mm l.; outer ones erect or erect-patent with narrowly ovate, obtuse, glabrous anthers (connective slightly protruding beyond the large cells), merging into the shorter, pilose, distinct filaments. Inner stamens nearly same shape and size, slightly thicker; basal glands large, globose, sessile. Ovary ovoid, glabrous, 1 mm l., merging into the rather thick, ½ mm l. style, stigma minute. Berry unknown. Cupule sub-hemispherical-obconical, rather thin, smooth, merging into the obconical, 6 mm l. pedicel.

Distribution: Colombia.

Colombia: Buenaventura (Lehmann 4989, fl. Nov. [D.F.Kw.], type of *A. Lehmannii*); Province del Choco (Triana 1050, fr. [P.], id. 2052, fr. March [Kw.]).

The shape of the stamens of this species is quite different from that of the other *Aniba* species. They show some resemblance with those of *Endlicheria* species. The leaves are strikingly like those of *Endlicheria tomentella*; though the latter has longer petioles. Also, the cupules are more like those of an *Endlicheria* species than those of an *Aniba*.

Species incertae sedis:

36. *Aniba mexicana* Kosterm. nov. spec.

Typus: Reko 3563; Mexico, Oaxaca [Ws.].

Arbor ramulis crassis subangulatis apicem versus minute pilosis mox glabrescentibus ramis cylindricis cinereis glabris lenticellis conspicuis crebris gemmae flavido-hirsutae. Folia alterna chartacea glabra elliptica 14—24 × 5—8 cm basi acutata margine vix recurvula apice distincte acuminate acumine gracilibus; supra opaca viridia, sub-laevia nervo mediano prominulo vel plano costis vix prominulis venis reticulatis vel oblitteratis; subtus subnitidis manifeste dense prominulo-reticulatis nervo mediano valde prominente costis utrinque 12—15 erecto-patentibus arcuatis prominentibus; petiolis glabris vix canaliculatis 10—12 mm longis. Flores ignoti. Paniculae fructiferae glabrae pyramidatae usque ad 5 cm longae subterminales. Bacca ovoideo-subglobosa laevia mucronulata usque ad 12 mm longa; cupula crassa subverruculosa minute, sparse ferrugineo-maculata, hemispherico-subglobosa, usque ad 25 mm diametro, 28 mm alto, margine integro; pedicellis obconicis 5 mm longis, apice usque ad 6 mm diametro.

Distributio: Mexico, Oaxaca.

Oaxaca: Cumbre de Teotalcingo (Liebmann Laur. n. 104, fr. June [K.]); San Rafael (Cerro Espino), alt. 800 m. (Reko 3563, fr. Oct. [Ws.]).

A. citrifoliae affinis, differt forma texturae foliorum.

37. *Aniba Brittonii* Mez in Jahrb. Bot. Gart. Berl. V (1889), p. 54.

Typus: Unknown collector n. 3032; Rio de Janeiro [Br.].

I did not succeed to trace the type specimen in the herbarium

of the British Museum, London. As Mez has given no description of the anthers of the second row of stamens, the place of this species remains uncertain. Here follows the description as given by Mez: „Tree or shrub; branchlets nearly glabrous, cylindrical; buds minutely pubescent; bark without smell. Leaves alternate, chartaceous, nearly glabrous, lanceolate, base long-cuneately acute, top distinctly acuminate, about $13\frac{1}{2}$ cm l., $3\frac{1}{2}$ cm w., penninerved or subtripli-nerved, on both sides prominulously veined and very laxly reticulate; prim. nerves rather ascendant, margin slightly recurved. Petioles up to $1\frac{1}{2}$ cm l., slightly canaliculate. Panicles few-flowered, glabrous, raceme-like, very short. Pedicels 1—2 mm l.; bracteoles deciduous. Flowers glabrous, 3 mm l., tube slightly shorter than tepals, hemispherical. Outer tepals very short; inner ones longer than stamens, broadly ovate, acute. Outer anthers subovate-orbicular; connectives conspicuously protruding beyond the cells; filaments $2\frac{1}{2}$ × as long as anthers, broad, but narrower than anthers, minutely pilose at base, top surrounded by long, lanuginose hairs. Glands of the second row of stamens large, sub-globose, sessile, attached at $\frac{1}{3}$ from the base of the filaments. Staminodes none. Ovary large, glabrous, globose; style rather thick, cylindrical, slightly shorter; stigma capitulate-discoid. Fruit unknown.

Rio de Janeiro: Iguassu (unkn. coll. 3032 [Br.]).

Species excludendae:

<i>Aniba cujumari</i> Nees ex Lyons	= Ocotea
<i>Aniba flexuosa</i> A. C. Smith	= Endlicheria pyriformis Nees
<i>Aniba foeniculacea</i> Mez	= Licaria Pucheri Kosterm.
<i>Aniba Guyanensis</i> Meissn. (nec Aubl.)	= Ocotea
<i>Aniba juruensis</i> A. C. Smith	= Endlicheria juruensis Kosterm.
<i>Aniba Krukovii</i> A. C. Smith	= Endlicheria Krukovii Kosterm.
<i>Aniba longifolia</i> Mez	= Ocotea
<i>Aniba megacarpa</i> Hemsl.	= Licaria Canella Kosterm.
<i>Aniba reticulata</i> A. C. Smith	= Endlicheria rubriflora Mez
<i>Aniba Ridleyana</i> Mez	= Ocotea
<i>Aniba sericea</i> (Nees) Brooks	= Endlicheria sericea Nees
<i>Aniba sulcata</i> Benoist	= Nectandra
<i>Aydendron aciphyllum</i> Nees	= Ocotea
<i>Aydendron bracteatum</i> Griseb.	= Ocotea
<i>Aydendron Brasiliense</i> Meissner	= Licaria brasiliensis Kosterm.
<i>Aydendron Canella</i> Meissner	= Licaria Canella Kosterm.

- Aydendron cayennense* Meissner = *Licaria cayennensis* Kosterm.
Aydendron Cubense Richard = *Licaria triandra* Kosterm.
Aydendron Cujumari Nees = *Ocotea*
Aydendron curvirameum Meissn. = *Beilschmiedia curviramea*
Kosterm.

Aydendron dubium Baill. = *Aiouea dubia* Mez
Aydendron firmulum Nees, p.p. = *Beilschmiedia et Ocotea*
Aydendron floribundum Meissn. = *Cryptocarya minima* Mez
Aydendron glaucum Kl. & Karst. = *Ocotea*
Aydendron Goyazense Meissner = *Aiouea goyazensis* Bentham
Aydendron Laurel Nees = *Nectandra*
Aydendron macrophyllum Meissn. = *Endlicheria Brownii* Mez
Aydendron microbotryum Nees = *Licaria salicifolia* Kosterm.
Aydendron nitidum Meissn. = *Ocotea*
Aydendron obtusifolium Nees = *Ocotea*
Aydendron pachycarpum Meissn. = *Licaria pachycarpa* Kosterm.
Aydendron pallidum Meissner = *Nectandra*
Aydendron Piauihyense Meissner = *Aiouea piauihyensis* Mez
Aydendron sericeum Gris. = *Endlicheria sericea* Nees
Aydendron suaveolens Nees = *Ocotea*
Aydendron tenellum Meissner = *Aiouea Meissneri* Mez
Aydendron verrucosum Nees = *Urbanodendron verrucosum* Mez

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<i>foeniculacea</i> Mez	927	<i>Ramageana</i> Mez	900, 902, 903
<i>fragrans</i> Ducke	921, 923	<i>reticulata</i> A. C. Smith	927
<i>Gardneri</i> (Meissn.) Mez	921	<i>Ridleyana</i> Mez	927
<i>gigantifolia</i> O. C. Schmidt	882, 884	<i>riparia</i> (Nees) Mez	906
<i>Gonggripii</i> Kosterm.	918, 919	<i>robusta</i> (Kl. et Karst.) Mez	892, 894, 895
<i>granatensis</i> (Mez) Kosterm.	868, 925	<i>rosaedora</i> Ducke	913, 924
<i>guianensis</i> Aubl.	887		
<i>Guyanensis</i> „Meissn.”	927		

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forma <i>typica</i> C. Porto	913	<i>pallidum</i> Meissn.	928
var. <i>amazonica</i> Ducke		<i>Panurense</i> Meissn.	921, 923
	913, 924	<i>parviflorum</i> Meissn.	910
<i>salicifolia</i> (Nees) Mez	907, 909	<i>permolle</i> Nees	896
<i>sericea</i> (Nees) Brooks	927	<i>Piauhysense</i> Meissn.	928
<i>sulcata</i> Benoist	927	<i>riparium</i> Meissn.	874
<i>Taubertiana</i> Mez		<i>riparium</i> Nees	897, 906
	884, 886, 887, 888	<i>robustum</i> Kl. et Karst.	892
<i>terminalis</i> Ducke	885, 887	<i>salicifolium</i> Nees	907
<i>Tessmannii</i> O. C. Schmidt		<i>Sellowii</i> Meissn.	921, 923
	904, 905	<i>sericeum</i> Griseb.	928
<i>trinitatis</i> (Meissn.) Mez	889, 891	<i>suaveolens</i> Nees	928
<i>venezuelana</i> Mez	897	<i>tenellum</i> Meissn.	928
<i>viridis</i> Mez	906, 907	<i>Trinitatis</i> Meissn.	889
<i>Williamsii</i> Brooks	921, 923	<i>verrucosum</i> Nees	928
<i>Williamsii</i> O. C. Schmidt	882, 884	var. <i>elongatum</i> Meissn.	898
<i>Aydendron</i> Nees	866, 867	<i>verticillatum</i> Meissn.	879, 881
<i>aciphyllum</i> Nees	927	<i>Beilschmidia</i> Nees	835, 837, 839
<i>affine</i> Meissn.	889, 891	<i>alioiophylla</i> (Rusby) Kosterm.	849
<i>amazonicum</i> Meissn.	904	<i>Anay</i> (Blake) Kosterm.	
<i>argenteum</i> Griseb.	879, 881		847, 849, 850
<i>bracteatum</i> Griseb.	927	<i>angustifolia</i> Kosterm.	857
<i>bracteatum</i> Nees	879	<i>Berteroana</i> (Gay) Kosterm.	
<i>Brasiliense</i> Meissn.	927		840, 858, 860, 862, 863
<i>Canella</i> Meissn.	927	<i>curviramea</i> (Meissn.) Kosterm.	853
<i>cayennense</i> Meissn.	928	<i>emarginata</i> (Meissn.) Kosterm.	
<i>citrifolia</i> „Griseb.”	889		855, 865
<i>citrifolia</i> „Nees”	890	<i>fagifolia</i> Nees	840
<i>cubense</i> Rich.	928	<i>fluminensis</i> Kosterm.	865
<i>cujumari</i> Nees	928	<i>hondurensis</i> Kosterm.	854
<i>curvirameum</i> Meissn.	853, 928	<i>mexicana</i> (Mez) Kosterm.	846
<i>desertorum</i> Nees	892	<i>Miersii</i> (Gay) Kosterm.	
var. <i>glabratum</i> Meissn.	892		840, 860, 862
<i>dubium</i> Baill.	928	<i>pendula</i> (Sw.) Benth.	843, 847
<i>firmulum</i> Nees et Mart.		<i>pendula</i> Hemsl.	846
	853, 921, 923, 928, 904	<i>rigida</i> (Mez) Kosterm.	
forma <i>rigidior</i> Nees ex			856, 858
Meissn.	853, 854	<i>Roxburghiana</i> Nees	839, 840
<i>floribundum</i> Meissn.	928	<i>sphaerocarpa</i> Winkl.	865
<i>Gardneri</i> Meissn.	921, 923	<i>stricta</i> Kosterm.	863
<i>glaucum</i> Kl. et Karst.	928	<i>sulcata</i> (R. et P.) Kosterm.	850
<i>Goyazense</i> Meissn.	928	<i>Tarairi</i> Hook.	853
<i>Hostmannianum</i> Nees	881	<i>Taubertiana</i> (Schw. et Mez)	
<i>intermedium</i> Meissn.	905		Kosterm. 863
<i>laevigatum</i> Meissn.	921, 923	<i>Thomaea</i> Benth.	843
<i>Laurel</i> Nees	928	<i>Beilschmidia</i> Rehb.	838
<i>macrophyllum</i> Meissn.	928	<i>Bielschmeidia</i> Panch. et Seb.	838
<i>microbotryum</i> Nees	928	<i>Bellota</i> Gay	838, 840
<i>Muca</i> Nees	919	<i>Costaricensis</i> Mez	865
<i>nitidum</i> Meissn.	928	<i>Miersii</i> Gay	860, 862
<i>obtusifolium</i> Nees	928		
<i>pachycarpum</i> Meissn.	928		

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<i>nitida</i> R. A. Phil.	858	<i>Taubertiana</i> Schw. et Mez	863
<i>pauciflora</i> R. A. Phil.	858, 859, 860	<i>Thomaea</i> Nees	843, 846
Bois de rose	913	<i>thyrsiflora</i> Nees	865
<i>Boldea Boldus</i> (Mol.) Looser	862	<i>Tovarensis</i> Kl. et Karst.	850, 852
<i>Boldo</i> Grah.	860, 862	Isoporanthera Kosterm.	925
<i>Boldu</i> Nees	838, 840	<i>Laurus Bellota</i> Miers ex Nees	860
<i>Boldu</i> Feuillée	838, 862	<i>Canelilla</i> Willd. ex Nees	898
<i>arbor olivifera</i> Feuillée	860	<i>difformis</i> Rich.	909
<i>Chil anum</i> Meissn.	858	<i>discolor</i> Vahl	845
<i>Chil anum</i> Nees	840, 860, 862	<i>foliis obverse ovatis</i> Browne	843
<i>Boldus</i> Adans.	840	<i>globosa</i> Rich.	891
<i>Boldus</i> O.Ktze.	838, 840	<i>hexandra</i> Rich. ex Nees	907
<i>chilensis</i> Mol.	860, 862	<i>hexandra</i> Willd.	909
<i>nitidus</i> Meissn. ex O.K.	858	<i>Koumaroucapa</i> Rich. ex Kosterm.	909
<i>Borbonia Peruviana laurifolia</i> Lam.	898	<i>Lingui</i> Bridge ex Nees	860, 862
<i>Canelilla</i> H.B.K.	899	<i>Muca</i> R. et P.	919
<i>Cedrota</i> Schreb.	866	<i>pendula</i> Sw.	843
<i>guianensis</i> Raensch.	888	<i>revoluta</i> Willd. ex Nees	921, 923
<i>longifolia</i> Willd.	888	<i>quixos</i> Lam.	898
<i>Cryptocarya</i> R.Br.	840, 868	<i>salicifolium</i> Sw., Willd., Spr.	907
<i>Aii-uva</i> Mart. ex Nees	896	<i>sulcata</i> R. et P.	850
<i>Berteroana</i> Gay	858, 859	Macroporanthera Kosterm.	871, 879
<i>Canelilla</i> H.B.K.	898	<i>Mespilodaphne pretiosa</i> , var. <i>angustifolia</i> Nees	898
<i>emarginata</i> Meissn.	855	Microporanthera Kosterm.	869, 896
<i>nitida</i> R. A. Phil.	858, 859	<i>Nectandra Coto</i> Rusby	916
<i>pachycarpa</i> Gleason	889, 890	<i>Puchury-minor</i> Nees et Mart.	903
<i>pretiosa</i> Mart. ex Nees	898	<i>Nesodaphne</i> Hook. f.	839, 840
<i>Douglassia guianensis</i>	909	<i>Ocotea alloiophylla</i> Rusby	849
<i>Endlicheria</i> Nees	835, 868, 869	<i>dealbata</i> Poepp. ex Meissn.	896, 897
<i>dysodantha</i> Mez	835, 837, 868	<i>desertorum</i> Mart. ex Nees	892
<i>paradoxa</i> Mez	902	<i>oblanceolata</i> Rusby	919, 921
<i>tomentella</i> Mez	926	<i>obtusifolia</i> Mart. ex Nees	892
<i>Euaniba</i> Mez	879	<i>pallida</i> Mez	877
<i>Goepertia argentea</i> Meissn.	879, 881	<i>Pichurim</i> H.B.K.	903
<i>Hufelandia</i> Nees	838, 840	<i>pseudo-coto</i> Rusby	872
<i>anay</i> Blake	847	<i>Puchury-minor</i> Mart.	903
<i>Caracasana</i> Kl. et Karst.	865	<i>quixos</i> (Lam.) Kosterm.	900
<i>Costaricensis</i> Mez et Pitt.	846, 847, 849	Oreodaphne fragrans Meissn.	898
<i>curviramea</i> (Meissn.) Mez	853	<i>parviflora</i> Griseb.	879, 881
<i>emarginata</i> (Meissn.) Mez	855	<i>Persea sulcata</i> Meissn.	850
<i>latifolia</i> Nees	850, 852	<i>Peumi</i> Mol.	838
<i>mexicana</i> Mez	846	<i>Peumus</i> Mol.	860
<i>ovalis</i> Blake	850, 852	<i>Boldus</i> Mol.	840, 860, 862
<i>pendula</i> Nees	843	<i>fragrans</i> Bert.	860, 862
<i>pendula</i> Meissn.	846	<i>Silvia navalium</i> "Mez"	857
<i>rigida</i> Mez ex Taub.	856	<i>Wimmeria</i> Nees	839
<i>sphaerocarpa</i> Winkl.	865	<i>Thomaea</i> Nees ex Meissn.	843, 846
<i>sulcata</i> Nees	850		