

REVISION OF THE LAURACEAE III
THE GENERA AIOUEA, SYSTEMONODAPHNE, URBANODENDRON,
MEZILAURUS; ADDITIONS AND CORRECTIONS TO LICARIA
AND CRYPTOCARYA

by

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LIST OF ABBREVIATIONS:

Herbaria	
A. = Ann Arbor, Michigan	Lam. = Herb. Lamarck (Paris)
B. = Brussels	Lp. = Leipzig
Bl. = Breslau	M. = München
Br. = British Museum	Mi. = Missouri Bot. Garden
Bs. = Herb. Boissier (Genève)	Mn. = Herb. Museu Nacional
C. = Herb. Cosson, Paris	(Rio de Janeiro)
Ca. = Herb. Univ. California	Ms. = Meissner herb. (New York)
D. = Berlin-Dahlem	NY. = New York
DC. = Herb. de Candolle (Genève)	O. = Fielding herb. (Oxford)
Dl. = Herb. Delessert (Genève)	P. = Paris
Dm. = Jenman Herb., Demerara	R. = Jardim Botânico,
F. = Field Museum (Chicago)	Rio de Janeiro
G. = Göttingen	St. = Stockholm
Gr. = Gray Herb.	U. = Utrecht
H. = Arnold Arboretum	W. = Wien
H.M.G. = Herb. Museu Goeldi,	Ws. = Smithsonian Institution
Pará	Other abbreviations
H.R.J. = Herb. Inst. Biol. Veget.	Ar. = Arrawaccan language
(Rio de Janeiro)	(Surinam)
J. = Herb. Jussieu, Paris	B.W. = Forestry Bureau (Surinam)
K. = Kjöbenhavn	Car. = Carabib language
Ki. = Kiel (Germany)	(Surinam)
Kw. = Kew	N.E. = Negro English (Surinam)
L. = Leiden	Sar. = Saramaccan language
Lg. = Leningrad	(Surinam)
	S.D. = Surinam Dutch

To the directors and curators of the above-mentioned herbaria the author extends his sincere thanks for their courtesy and kindness in allowing him to study their material and for their cooperation throughout the progress of this work.

AIOUEA Aubl.

Aiouea Aublet, Hist. Guian. I (1775), p. 310; III, t. 120; Scopoli, Introductio Hist. nat. (Pragae 1777), p. 107, n. 277; Lamarck, Encyclop. méthod. I (1783), p. 72 (*Ajuvea*); Poiret, Encycl., Suppl. I (1890), p. 274, III (1893), p. 317; Illustrat. Genr. II, p. 395 et 367, t. 360; Jussieu, Genera (1789), p. 80 (*Ajovea*) (ed. Usteri 1791, p. 90); Schreber, Genera I (1789), p. 259; St. Hilaire, Exposit. fam. nat. I (1805), p. 190 (*Ajovea*); Hedwig, Genera (1806), p. 226, n. 920 (*Aiovea*); Sprengel, Anleit. Kenntn. Gewächse II (1817), p. 339 (*Aiovea*); Steudel, Nomenclator ed. 1 (1821), p. 23 (*Aiouea*) et p. 467 (*Auiouea*); ed. 2, I (1841), p. 46 (*Ajuvea* et *Aiovea*); II, p. 16 (*Ajovea*) et p. 398 (*Aiouvea*); Presl, Rostlinar (1825), p. 30 et 63; Jussieu, Diction. 25 (1825), p. 349; Schultes, Systema VII, 1 (1829), p. XII (*Aiuvea*); Bartling, Ordines nat. (1830), p. 112 (*Ajovea*); Nees ab Esenbeck, Laur. Expos. (Vratislaviae 1833), p. 16; id., Systema Laurin. (1836), p. 362 (*Ajovea*); Endlicher, Genera (1837), p. 320, n. 2050; id., Enchir. (1841), p. 197 (*Ajovea*); Dietrich, Synops. Pl. 2 (1840), p. 1332, n. 1844; Spach, Hist. Véget. Phaner. X (1841), p. 472; Meissner, Genera I (1841), p. 326 (*Aiouea*), II, p. 238 (*Ajovea*); Lindley, Veget. Kingd. (1846), p. 537 (*Ajovea*); Lem. in Orbigny, Dict. univers. VII (1846), p. 259; Reichenbach, Nomencl. (1861), p. 70, n. 2660 (*Ajovea*); Meissner in D.C., Prodrum. XV, 1 (1864), p. 82; id. in Martius, Fl. Brasil. V, 2 (1866), p. 169; Gmelin, Systema (1867), p. 574; Baillon, Hist. Plant. II (1870), p. 471 (*Aiouea*); Pfeiffer, Nomencl. I (1873), p. 90 (*Aiouea*; *Aiovea*); Bentham in Benth. et Hook., Genera III (1880), p. 153; Durand, Index Gen. (1888), p. 348 (*Ajovea*); Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 121; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 28; dalla Torre et Harms, Genera (1900—07), p. 178, n. 2803; Post et Kuntze, Lexicon (1904), p. 15 (*Aiouea*; *Aiovea*; *Ajuvea*; *Ajuea*); Lemée, Diction. I (1929), p. 130; Benoist in Arch. Botan. V (1931), p. 62; Brooks in Kew Bulletin 1933, p. 211; Kostermans in Pulle, Fl. Surinam. II (1936), p. 311. — *Apivea* Steudel, Nomencl. ed. 1 (1821), p. 25; dalla Torre & Harms, l.c., p. 178; Post & Kuntze, l.c., p. 38; Lemée, Dict. I, l.c., p. 130. — *Ehrhardia* Scopoli, Introductio Hist. nat. (Pragae 1777), p. 107, n. 277; Lindley, Veg. Kgd., l.c., p. 537 (*Ehrhartia*); Steudel, Nomencl. ed. 1, l.c., p. 293; ed. 2, l.c., p. 544; Meissner, Gen., l.c. II, p. 238; id. in D.C., Prodr., l.c., p. 82; id. in Fl. Bras., l.c., p. 169; Nees, Systema, l.c., p. 362; Pfeiffer, Nomencl. 2 (1874), p. 1173; Bentham in

Benth. et Hook., l.c., p. 153 (*Ehrardia*); Durand, Index, l.c., p. 348; Pax in Engler-Prantl, Pfl. fam., l.c., p. 121 (*Ehrardia*); dalla Torre et Harms, Gen., l.c., p. 178 (*Ehrhardia*); Lemée, Dict. I, l.c., p. 130 (*Ehrhardia*). — *Colomandra* Necker, Elem. botan. II (1790), p. 142, n. 831; Steudel, Nomencl. ed. 1, l.c., p. 212; ed. 2, p. 398; Nees, Systema, l.c., p. 362; Meissner, Gen. II, l.c., p. 238; id. in D.C., Prodr., l.c., p. 82; id. in Fl. Bras., l.c., p. 169; Pfeiffer, Nomencl. I (1873), p. 826; Durand, l.c., p. 348; Benth, l.c., p. 153; Pax, l.c., p. 121; Mez in Jahrb., l.c., p. 28; dalla Torre & Harms, l.c., p. 178; Lemée, Dict. I, l.c., p. 130; Post et Kuntze, Lexicon, l.c., p. 136. — *Douglasia* Schreber (nec aliis), Genera (1791), p. 809, n. 1761; Steudel, Nomencl. ed. 1, p. 284 (*Douglassia*); ed. 2, l.c., p. 526; Nees, Systema, l.c., p. 362 (*Duglassia*); Lindley, Veg. Kgd., l.c., p. 537 (*Douglasia*); Meissner, Gen. II, l.c., p. 238; id. in D.C., Prodr., l.c., p. 82 (*Douglassia*); id. in Fl. Bras., l.c., p. 169 (*Douglasia*); Benth in Benth. et Hook., Gen., l.c., p. 153 (*Douglassia*); Durand, l.c., p. 348 (*Douglassia*); Pax, l.c., p. 121; Mez in Jahrb., l.c., p. 28; dalla Torre & Harms, l.c., p. 178; Post & Kuntze, l.c., p. 185; Lemée, Dict. I, l.c., p. 130.

Type species: *Aiouea guianensis* Aubl.

On account of the presence of 9, 6 or 3 fertile stamens this genus is divided here in three subgenera. As in the family Lauraceae the number of fertile stamens is considered as an important character for the delimitation of the genera, one might ask whether these subgenera should not be raised to generic rank. As in the genus *Aiouea*, however, the species are all very similar, and as the number of fertile stamens does not run parallel with other characters, this way of treatment would appear here inadvisable.

One of the most striking features of the plants belonging to this genus is the yellowish-green colour of the fresh and dried leaves: on the upper side it is usually more pronounced than on the lower side, which, as a rule, is somewhat lighter; this character seems to be due to some peculiarity of the chlorophyll. The margin of the leaf is in several species conspicuously thickened, and, when mature, they are, with one exception, entirely glabrous. They are alternate, and by this character the species belonging to the subgenus *Hufelandiopsis* can be distinguished from many species of *Beilschmiedia*, even when no flowers are available. The nervation is, as a rule, reticulate, but just as in all other genera triplinerved leaves occur also. Both in shape and in venation the leaves are strikingly uniform, and

for the delimitation of the species no serviceable distinctions can be found here: for the purpose of identification flowers are required as a rule. The inflorescences are always lax, partly because the peduncle and the branchlets are thin, but even more because the pedicels are extremely slender. For the distinction of the species neither the size of the inflorescences nor the number of its flowers can be used. Bracts and bracteoles are, as a rule, very small and early deciduous. The values which Mez in his monograph gives for the length of the pedicels are often too high, probably because they include the length of the branchlet from which the pedicel springs and from which the latter does not differ conspicuously in diameter. In passing I should like to remark that my values for the height of the plants also differ often from those given by Mez: the latter, when converting feet in meters, put the foot at 20 cm, instead of 30 cm.

The flowers are, as a rule, subglobose-obconic; or, rarely, urceolate; they are, at least in dried material, often covered with a bluish-white dust. The size of the flower is an important character for the distinction of the species. The tube, as a rule, is not very deep and passes gradually into the limb; nevertheless, it is always easily recognizable. The perianth lobes are almost always erect (it is possible, however, that this position is acquired during the process of drying) or more or less incurved; between the lobes of the outer and the inner whorl there is no difference in length, but the inner ones may be slightly wider. The filaments of the outer six (or three) stamens are at the base sometimes shortly united with the perianth lobes, and, except in *A. demerarensis*, *A. guianensis* and in *A. Schomburgkii*, the anthers are introrse. In *A. piauihyensis* and in *A. myristicoides* the connective is enormously produced; the basal anther cells diverge somewhat, and are comparatively small. These forms might be regarded as primitive, because the ablatic upper anther cells are represented here by the apical extension of the connective. *A. myristicoides*, however, has but three stamens, and can not be regarded, therefore, as primitive.

In the other species the connective is but slightly produced and in the most progressive forms it is not produced at all: the anthers are here, on the contrary, emarginate at the top. It is rather remarkable that in some of these species the anthers of the outer stamens have become extrorse.

In the subgenus *Euaioëa* the staminodes of whorl 3 are very uniform and strap-shaped; if they are shortly described as

equalling the fertile stamens, this means that they reach the same height: as they are inserted at the lower level, they are in reality somewhat longer. Not rarely they are more or less conduplicate and then the top may appear emarginate: it is, however, nearly always entire. In *A. Warmingii* the apical part of some of the staminodes was provided laterally with anther cells. In other instances the position of the ablastic anther cells can be recognised by the apical swelling of the staminode. At the base the staminodes are accompanied or, sometimes, more or less surrounded by glands: the ring, however, is always open on the inside. Occasionally, e.g. in *A. hirtella*, the distance between the glands and the base of the staminodes is somewhat larger.

The staminodes of cycle 4 are in all species well developed; they are inserted distinctly below the other staminodes and stamens. Both their large size and their mode of insertion are important generic characters. The subgenus *Hufelandiopsis* for instance can always be distinguished from those species of *Aniba* in which the inner staminodes are present, because in this genus these staminodes are always very small and stipitiform, and, moreover, inserted between or at least very near to the fertile stamens. *A. costaricensis* and *A. chapadaensis*, the species in which the inner staminodes are small, can not be regarded as species of *Aniba*, because the insertion of the staminodes proves that it belongs to *Aiouea* (the character of the cupule points in the same direction). These inner staminodes are in all species large, ovate and foliaceous: exceptions to this rule are found in *A. costaricensis*, *A. chapadaensis* (v. sup.) and further in *A. Riedelii*, where they are strap- or tong-shaped and very long, and in *A. Warmingii*, where they are also strap-shaped and, moreover, provided with glands at the base, a character which does not occur elsewhere in the genus, but for the small appendages in *A. chapadaensis* (*A. Warmingii* has more aberrant characters, for instance the presence of anther cells in one or more of the staminodes of series 3, v. sup.). Along the upper margin these staminodes in all species often show a glandular swelling.

The styles are often sharply demarcated from the ovary, but in some instances the transition is gradual. The stigmata are, as a rule, well developed and peltate; just below the stigma the style is sometimes swollen. Occasionally the styles are persistent for a fairly long time on the enlarging ovary.

The berries possess nearly always the same shape and consis-

tency; the thin outer layer is fleshy. The cupule shows a good deal of variability. In the subgenus *Euaiouea* the typical form is found: a fleshy obconic body with but a slight concavity at the top and a very narrow, often undulate, margin; the berry here remains entirely free and the cupule passes gradually in the swollen pedicel. In the subgenus *Hufelandiopsis* the cupule is better developed and distinctly concave, for instance in *A. acarodomatifera* and in *A. angulata*. In *A. dubia*, *A. truxillensis* and *A. costaricensis* the perianth lobes are persistent and accrescent, and adorn the margin of the cupule in the form of six teeth. The shape and the consistency of the cupule is here the same as in the subgenus *Euaiouea*, namely obconic and fleshy. The persistent perianth lobes point to a relation with *Persea*.

Key to the species:

Stamens of series 1, 2 and 3 fertile; those of series 4 staminodial.

Subgenus: *HUFELANDIOPSIS* Mez

Stamens of series 1 and 2 fertile, those of series 3 and 4 staminodial.

Subgenus: *EUAIOUEA* Mez

Stamens of series 1 fertile, those of series 2, 3 and 4 staminodial.

Subgenus: *TRIANThERA* Mez

Subgenus *HUFELANDIOPSIS* Mez (species 1—11).

- 1a. Connective of outer six anthers as broad as anthers, protruding for one half the anther-length beyond the comparatively small, basal, introrse-lateral cells 11. *A. piauihyensis*
- b. Connective, if protruding beyond the large, introrse cells, small, never exceeding $\frac{1}{4}$ of the anther length 2
- 2a. Branchlets obviously 5-angled, the ribs strongly protruding 1. *A. angulata*
- b. Branchlets cylindrical or towards apex sub-angular .. 3
- 3a. Axils of lower primary nerves barbellate on the lower leaf surface 4
- b. Axils glabrous 7
- 4a. Cupule margin with 6 large teeth (persistent tepals) 7. *A. truxillensis*
- b. Cupule margin entire; tepals deciduous 5
- 5a. Flowers 3—3½ mm l. Cupule infundibuliform with a well developed cavity 4. *A. acarodomatifera*

- b. Flowers 1—2½ mm l. Cupule flattish above, cavity not developed 6
- 6a. Leaves subtriplinerved; 4—6 primary nerves per side. Flowers pellucid-punctulate 5. *A. Schwackeana*, var. *bullata*
- b. Leaves penninerved; 9—12 prim. nerves per side. Flowers without punctulation 6. *A. barbellata*
- 7a. Leaves triplinerved. Glands on long, slender stalks 10. *A. impressa*
- b. Leaves penninerved, rarely subtriplinerved. Glands sessile or nearly so 8
- 8a. Leaves spatulate or obovate-elliptical. Stamnodes of series 4 small, stipitiform 9. *A. costaricensis*
- b. Leaves elliptical, ovate-elliptical or suborbicular. Stamnodes of series 4 large, foliose, ovate 9
- 9a. Branchlets densely tomentose towards apex 2. *A. tambillensis*
- b. Branchlets glabrous or minutely, sparsely tomentellous at apex 10
- 10a. Leaf base more or less rounded. Flowers 3—3½ mm l. Outer stamens 1¾ mm l. 8. *A. dubia*
- b. Leaf base acute. Flowers 2—2½ mm l. Outer stamens ½—1 mm l. 11
- 11a. Branchlets minutely, sparsely tomentellous at apex; buds minutely sericeous-tomentellous. Leaves at base below (in youth) minutely pilose. Tepals pellucid-punctulate. Stigma minute 5. *A. Schwackeana*
- b. Branchlets glabrous; buds sparsely, minutely pilose. Leaves glabrous. Tepals not punctulate. Stigma large, discoid 3. *A. bracteata*

Subgenus *EUAIOUEA* Mez (species 12—26).

- 1a. Anther cells of outer six stamens extrorse 2
- b. Anther cells of outer six stamens introrse 4
- 2a. Flowers and panicles minutely, but obviously pilose 12. *A. demerarensis*
- b. Flowers and panicles glabrous 3
- 3a. Panicles slender, branchlets thin. Flowers slender, 1½—2 mm l. Outer stamens ¾ mm l. 13. *A. guianensis*
- b. Panicles rather slender, branchlets slender. Flowers pruinose, 2½ mm l., rather thick. Outer stamens 1 mm l. 14. *A. Schomburgkii*

- 4a. Adult leaves densely sublanuginose-tomentose beneath .. 27. *A. Rondoni*
- b. Adult leaves glabrous 5
- 5a. Flowers and panicles laxly pilose; hairs rather long 26. *A. hirtella*
- b. Flowers and panicles laxly, pulverulent-tomentellous; hairs very short 6
- c. Flowers and panicles glabrous 8
- 6a. Staminodes of series 4 liguliform, $\frac{3}{4}$ mm l. (stalk included) 15. *A. Riedelii*
- b. Staminodes ovate, foliose, sessile or nearly so, $\frac{1}{4}$ — $\frac{1}{2}$ mm l. 7
- 7a. Anthers of outer six stamens emarginate at apex; connective not protruding beyond the cells 17. *A. densiflora*
- b. Anthers of outer six stamens acute; connective conspicuously protruding beyond the cells 16. *A. laevis*
- 8a. Staminodes of series 4 stipitiform, provided with small, basal, sessile glands 20. *A. Warmingii*
- b. Staminodes stipitiform, glandless 24. *A. chapadaensis*
- c. Staminodes ovate, glandless 9
- 9a. Leaves triplinerved; margin strongly thickened 22. *A. trinervis*
- b. Leaves penninerved, margin usually not thickened 10
- 10a. Leaf base obtuse or rounded or nearly so 11
- b. Leaf base acute 12
- 11a. Leaves broadly ovate-elliptical, chartaceous-coriaceous; top obtusely acute, margin hardly thickened. Flowers up to $2\frac{1}{2}$ mm l. 18. *A. elliptica*
- b. Leaves elliptical, rigid-coriaceous; top obtuse, margin strongly thickened. Flowers 3 mm l. .. 23. *A. goyazensis*
- 12a. Leaves thinly chartaceous. Panicles slender with filiform branchlets 21. *A. Meissneri*
- b. Leaves chartaceous or coriaceous. Panicles rather slender 13
- 13a. Branchlets glabrous. Leaves chartaceous or rigid-chartaceous. Flowers 2— $2\frac{1}{2}$ mm l. Outer stamens $\frac{1}{2}$ —1 mm l. Staminodes of series three 1— $1\frac{1}{4}$ mm l., often exserted from the flower 19. *A. saligna*
- b. Branchlets densely villose-hirsute at apex. Leaves coriaceous or rigid-coriaceous. Flowers $2\frac{1}{2}$ —3 mm l. Stamens $1\frac{1}{4}$ mm l. Staminodes of series 3 as long as outer stamens 25. *A. Gardneri*

Subgenus: **TRIANThERA** Mez (species 27—28).

- 1a. Anther cells of stamens of series 1 extrorse, large. Staminodes of series 2 slender, stipitiform, pilose at base. Staminodes of series 3 stipitiform 28. **A. Benthamiana**
- b. Anther cells of stamens of series 1 basal-lateral, minute. Staminodes of series 2 nearly as large as fertile stamens, clavate at apex, glabrous. Staminodes of series 3 large, clavate 29. **A. myristicoides**

Subgenus: **HUFELANDIOPSIS** Mez (species 1—11).

1. **Aiouea angulata** Kosterm. nov. spec.

Typus: Lawrance 711; Colombia [H.].

Arbor 3—10 m alta, trunco $7\frac{1}{2}$ cm diametro (Lawrance) ramulis crassis angulatis (angulis 5 subalatis) glabris laevibus ramis cylindricis laevibus vel minute longitudinaliter striatis, gemmis fulvo-tomentellis. Folia alterna chartacea glabra opaca viridia elliptico-oblongata, 24—38 $\times$ 6—13 cm, basin versus sensim attenuata apice acuminata acumine usque ad 2 cm longo, margine vix incrassato subplano; supra nervo mediano sulcato-impresso costis sub-impressis venis obscure reticulatis; subtus concoloria nervo mediano valde prominente costis utrinque 10—14 erecto-patentibus arcuatis prominentibus, venis prominulis reticulatis. Petioli crassi glabri 2— $2\frac{1}{2}$ cm longi supra profunde canaliculati, basi in costas ramulorum decurrentes. Paniculae axillares pyramidales multiflorae glabrae (juniores perparce minutissime pilosae mox glabrae, nodis exceptis) 6—20 cm longae; pedunculis subcrassis angulatis 2—8 cm longis; ramulis erecto-patentibus 1—6 cm longis, floribus plerumque sub-umbellatis. Bractee bracteolaeque minutae lanceolatae vix pilosae, mox deciduae. Pedicelli glabri graciles 4—6 mm longi. Flores minuti pallide citrini (Lawrance) glabri 2— $2\frac{1}{2}$ mm longi, alabastris sparssissime minutissime pilosis; tubo obconico usque ad 1 mm longo intus dense piloso, in perianthium abrupte dilatato, tepalis carnosius erectis suborbiculari-ovatis, acutis concavis intus pilosis, 2 mm longis, exterioribus paullo minoribus. Stamina inclusa, seriei primae secundae et tertiae fertilia, $1\frac{1}{2}$ mm longa, antheris seriei primae et secundae ovatis minutissime pilosis apice obtusis vel subtruncatis in filamenta subaequilonga applanata pilosa basin versus angustata transeuntibus, connectivo cellulas introrsas majusculas vix superante. Antherae seriei tertiae non diversae, apice truncatae cellulis extrorsis glandulis basalibus $\frac{1}{2}$ mm longis, suborbicularibus applanatis sessilibus magnis. Staminodia

seriei quartae subovato-triquetra acuta crassa 1 mm longa (stipitibus latis pilosis inclusis). Ovarium obovoideo-globosum glabrum 1 mm longum in stylum cylindricum paullo longiorem apice vix dilatatum abrupte contractum, stigmatе conspicuo discoideo. Bacca ellipsoidea; cupula sub-matura laevis hemisphaerica tenuis carnosа 6 mm alta 8 mm diametro, pedicello fructifero carnosо subconico-cylindrico usque ad 7 mm longo insidens.

Distributio: Colombia: Boyaca.

Colombia: Boyaca in regione El Umbo, 200 km. a Bogota ad septentriones versus, alt. 1300 m., in clivis altis silvosis (Lawrance 711, fl., fr. 27 Mart. 1933 [D.Dl.H.Kw.Mi.St.]).

Specimen pulcherrimum a ceteris Aioueis e subgenere Hufelandiopsi foliis magnis ramulis sub-alatis florum characteribus longe distinctum.

2. *Aiouea tambillensis* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 33. — *Ajouea Jelskii* Mez in Jahrb., l.c., p. 33.

Typus: Jelski 185; Peru [D.].

„Ciruelillo” (Peru: Jelski).

Tree or shrub. Branchlets rather thick, sub-angular, towards apex densely yellowish tomentose; branches glabrous, cylindrical, darkbrown, smooth, older branchlets verruculose; buds densely sericeous-tomentose. Leaves alternate, coriaceous, green, glabrous (a few appressed hairs on midrib beneath sometimes sub-persistent), elliptical or subovate-elliptical, 7—15 × 3½—6 cm; base acute, margin slightly thickened, lightly recurved; top shortly, obtusely acuminate or obtuse; above shining, green, midrib lightly impressed or flattish, prim. nerves hardly prominent; beneath midrib strongly prominent, prim. nerves (6—12 per side) erect-patent, arcuate, slightly prominent, veins prominent, reticulate. Petioles glabrous, 1—1½ cm l., slightly canaliculate. Panicles axillary, pyramidal, many-flowered, lax, glabrous, somewhat pruinose, up to 12 cm l.; peduncles rather slender, up to 6 cm l., branchlets distant, slender. Bracts and bracteoles deciduous. Pedicels slender, glabrous, about 5 mm l., merging into the flower tube. Flowers glabrous, broadly obconical, sometimes pruinose, 2½—3 mm l., 2 mm in diam. at apex; tube obconical, slightly pilose within. Tepals slightly shorter than tube, erect, fleshy, equal, broadly ovate, obtusely acutish, concave, pilose within. Stamens included, those of the outer three rows fertile. Outer six stamens pilose, slightly shorter

than tepals, $1-1\frac{1}{2}$ mm l.; anthers ovate, connective distinctly protruding beyond the large, introrse cells; filaments conspicuous, as long or slightly longer than anthers, pilose. Stamens of series 3 as long, anthers broadly ovate, top obtuse or sub-emarginate, connective not or hardly protruding beyond the extrorse cells, filaments slightly longer; basal glands very large, orbicular-reniform, compressed, sub-sessile. Staminodes of series 4 large, ovate, foliose, acutish, $\frac{3}{4}-1$ mm l., base and the broad, $\frac{1}{4}-\frac{1}{2}$ mm l. stalks densely pilose. Ovary glabrous, obovoid-subglobose, 1 mm l., abruptly narrowed into the slightly shorter, cylindrical style with small, discoid stigma. Fruit unknown.

Distribution: Peru.

Peru: Prov. Cutervo, Dept. Cayamarca, Tambillo (Jelski 195 (= 47 in D.) in bud Sept. [D.Ws.]; 184, in bud Sept. [D.Ws.], type of *A. Jelskii*; 185, deflor. Oct. [D. and ex herb. Raimondi nos. 3270, 4120, 8359, all in D.]).

The type specimen has flowers already partly deflorate, hence their large size; neither leaves nor flowers show any difference with the other cited specimens; the staminodes have always the same broad stalks. The specimens from the Raimondi herb. have been collected most probably from the same plant. A specimen of Mutis (n. 1447 in Ws.) from Colombia may belong to this species, though the base of the leaves is long-acute and the petioles are longer as common. The flowers are identical with *A. tambillensis*.

3. *Aiouea bracteata* Kosterm. nov. spec. — *Aiouea Severini* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 31, p.p. (quoad cit. spec. Burchell 5491 et Lund 729).

Typus: Burchell 5491; Rio de Janeiro [Kw.].

Arbor vel frutex, ramulis angulatis sulcatis laevibus glabris, ramis atro-brunneis cylindricis gemmis apicem versus sparsissime pilosis. Folia alterna glabra rigide chartacea elliptica vel anguste elliptica, $5-11 \times 1\frac{1}{2}-4$ cm, basi acuta margine vix incrassato vix recurvulo apice distincte subgraciliter acuminata; supra viridia nitida laevia nervo mediano filiforme prominulo costis plerumque inconspicuis; subtus opaca dense prominulo-reticulata nervo mediano sub-prominente costis utrinque 4-7 vix prominulis erecto-patentibus valde arcuatis. Petioli glabri tenues sub-canaliculati 10-13 mm longi. Paniculae axillares pauciflorae glabrae laxae vix ramosae 5-10 cm longae pedunculis communibus tenuibus 3-6 cm longis ramis brevissimis infimis saepe in

axillis foliorum minutorum. Bracteolae bracteaque deciduae. Pedicelli tenues glabri 3—5 mm longi. Flores glabri 2—2½ mm longi, tubo obconico vix 1 mm longo intus sparse piloso; tepalis aequalibus erecto-patentibus vel patentibus tenuibus late ovatis concavis obtusiuscule acutis usque ad 1½ mm longis intus ad basin pilosis. Stamina inclusa glabra seriei primae secundae tertiaeque fertilia quartae staminodialia. Stamina sex exteriora ½—¾ mm longa antheris ovatis connectivis latis mucronatis cellulas introrsas multo superantibus filamentis brevioribus vel sub-aequilongis distinctis. Stamina tria interiora aequilonga antheris subquadrangulatis sub-emarginatis connectivis cellulas extrorsas vix superantibus, filamentis quam antherae sub-brevioribus glandulis basalibus magnis filamentis sub-aequilongis suborbiculari-reniformibus sub-sessilibus auctis. Staminodia seriei quartae magna foliacea ½ mm longa subovato-orbicularia sub-obtusa; stipite lato minuto pilose. Ovarium glabrum ellipsoideo-subglobosum 1 mm longum in stylum sub-longiorem vel aequilongum apicem versus manifeste incrassatum abrupte contractum, stigmate discoideo magno usque ad ½ mm diametro. Fructus ignotus.

Distributio: prope Rio de Janeiro.

Rio de Janeiro: San Carlos (Lund 729, fl. Jan. [K.]); locality unknown (Burchell 5491, fl. [Kw.]).

Aiouea piauihyense affinis sed floribus minoribus et antherarum forma differt.

4. *Aiouea acarodomatifera* Kosterm. nov. spec.

Typus: Nunes 201 = H.R.J. 28012; Rio de Janeiro [U.].

Arbor vel frutex ramulis gracilibus glabris laevibus viridibus cylindricis gemmis minute sparse pilosis. Folia alterna chartacea viridia sub-opaca glabra sed subtus in axillis vel prope axillis costarum praesertim basium longe rigide pilosa, elliptica 8—13 × 2½—4 cm; basi gradatim acuminata margine vix incrassato recurvulo apice distincte acuminata acumine obtuso 1½—2 cm longo; supra sublaevia vel obscure reticulata nervo mediano impresso costis vix conspicuis; subtus concoloria dense minuteque subprominulo-reticulata nervo mediano prominente costis utrinque 6—10 filiformibus erecto-patentibus arcuatis prominulis. Petioli glabri tenues 1—1½ cm longi canaliculati. Paniculae ad ramulorum apices confertae pauciflorae subpyramidales glabrae vix ramosae usque ad 4 cm longae, pedunculis gracilibus usque

ad 1 cm longis, ramis paucis brevissimis distantibus. Bracteae bracteolaeque deciduae. Petioli glabri graciles 4—6 mm longi in floris tubum sensim transeuntes. Flores glabri 3—3½ mm longi obconici; tubo obconico 1 mm longo intus glabro; tepalis erectis carnosus intus pilosis 2 mm longis late ovatis acutiusculis subaequalibus interioribus margine minute ciliatis. Stamina inclusa glabra; seriei primae secundae tertiaeque fertilia. Stamina sex exteriora tepalis paullo breviora, antheris ovatis obtusis, connectivis cellulas magnas introrsas superantibus, filamentis conspicuis antheras dimidio superantibus, applanatis. Stamina tria interiora aequalia et facie similia, cellulis extrorsis, glandulis sub-basalibus magnis orbiculari-subreniformibus, compressis, ½ mm et ultra longis, sessilibus. Staminodia seriei quartae glabra ¾ mm longa subcordato-ovata sub-acuta carnosae stipitibus conspicuis. Ovarium glabrum subgloboso-obovoideum, 1 mm longum in stylum cylindricum sub-gracilem 1½ mm longum stigmate conspicuo discoideo abrupte contractum. Bacca ellipsoidea acutiuscula 2 cm longa, 1 cm diametro. Cupula infundibuliformis bene evoluta, apice 12 mm diametro, margine tenuis, pedicello carnosus obconico haud distincto incluso 1½—2 cm longa.

Distributio: Rio de Janeiro.

Brasilia: Rio de Janeiro, Est. do Rio G. Portella, Monte Sinai (Nunes 201 = H.R.J. 28012, fl., fr. [U.]).

Ad subgenus *Hufelandiopsis* pertinens, *A. barbellatae* affinis, ramulis, inflorescentiis, floribus staminibusque glabris, foliorum forma, floribus duplo majoribus, cupula diversa dignoscenda.

5. *Aiouea Schwackeana* Mez in Engler's Botan. Jahrb. 30 (1902), Beiblatt 67 (1901), p. 12.

Typus: Schwacke 8742; Minas Gerães [D.].

Shrub (Schwacke) or tree (Glaziou); branchlets slender, sub-angular, smooth, minutely, sparsely tomentellous at apex; branches glabrous, cylindrical, smooth, at last verruculose, grey; buds minutely sericeous-tomentellous. Leaves alternate, coriaceous or rigid-coriaceous, glabrous (base below often with few, minute, appressed hairs), green, elliptical or subovate-elliptical, 5—10 × 2—4 cm; base acute or shortly acute, more or less contracted into the petiole; margin not thickened, hardly recurved, top conspicuously acuminate; above slightly shining, smooth or obscurely, laxly reticulate, midrib impressed, prim. nerves hardly visible; beneath dull, paler, densely, prominulously reti-

culate, midrib prominent, prim. nerves (4—6 per side) erect-patent, prominent, the 2 lower ones often sub-opposite, ascendant. Petioles slender, glabrous, canaliculate, 5—10 mm l. Panicles axillary, pyramidal, lax, few-flowered, glabrous, up to 6 cm l.; peduncles slender, smooth, up to 4 cm l., branchlets few, rather patent, slender, short. Bracts and bracteoles deciduous. Pedicels slender, glabrous, 3—6 mm l., merging into the flower tube. Flowers glabrous, broadly obconical, 2—2½ mm l., 2½ mm in diam. at apex; tube broadly obconical, pilose within, slightly shorter than perianth. Tepals erect-patent, fleshy, broadly ovate, acutish, appressed-pilose within, densely, conspicuously pellucid-punctulate. Stamens included, those of the three outer rows fertile. Outer six stamens slightly shorter than tepals, about 1 mm l., anthers ovate, obtuse or sub-truncate, connective distinctly protruding beyond the large, introrse cells; filaments distinct, slightly shorter, towards base hirsute. Stamens of series 3 slightly longer, anthers narrowly ovate, truncate, pilose without, connective hardly protruding beyond the extrorse cells; filaments slightly shorter, pilose without; glands large, sub-basal, subsessile, orbicular-reniform, compressed. Staminodes of series 4 large, foliose, ovate, acute; stalks as long, densely pilose. Ovary glabrous, ellipsoid, merging into the about as long, cylindrical, rather thick style with minute, discoid stigma. Fruit unknown.

Distribution: Minas Gerães.

Minas Gerães: Serra de Jucuba near Ouro Preto (Schwacke 8742, fl. Oct. [D.] id. 10520 [P.]); Pedra de Amolar (ex herb. Schwacke 11141, fl. Nov. [P.]).

var. *bullata* Kosterm. nov. var. — *Aiouea Severini* Mez in Engler's Bot. Jahrb. 30 (1902), Beiblatt 67 (1901), p. 12 in adnot. quoad cit. spec. Schwacke 8836 et Glaziou 20441. — *Ajouea trinervis* Auct. (non Meissn.) Glaziou in Bull. Soc. Botan. France 59 (1912), Mém. 3 (1913), p. 591.

differt a forma normali axillas nervorum inferiorum breviter barbellata et bullata.

Distribution: Minas Gerães.

Minas Gerães: Pedra de Amolar near Ouro Preto (Glaziou 20441, fl. Dec. [D.K.P.NY.Kw.]; id. ex herb. Schwacke 8836, fl. [D.P.]); inter Ouro Preto and Cachoeira do Campo (ex herb. Schwacke 8836a, fl. Sept., fr. Apr. [D.]).

Berry ellipsoid, 13 mm l., 8 mm in diam. Cupule obconical, fleshy, the fleshy pedicel included up to 7 mm l., apex 4 mm

diam., flattish. The type specimen of *A. Schwackeana* is a poor one, some leaves are penninerved, a few show a tendency to become triplinerved. None of the leaves is bullate or barbellate. The flowers are absolutely identical with the bullate specimen: Schwacke 8836 a. The species is closely related to *A. barbellata*, which differs in its leaf-shape, nervation, pilosity and the lack of the punctulation of the flowers.

6. *Aiouea barbellata* Kosterm. nov. spec.

Typus: Nunes 304 = H.R.J. 28003; Rio de Janeiro [U.].

Arbor vel frutex ramulis gracilibus subteretibus adpresso-cinereo-tomentellis, ramis glabris brunneis gemmis sericeo-tomentellis. Folia alterna chartacea viridia utrinque dense prominulo-reticulata lanceolata, $7-10 \times 1\frac{1}{2}-2\frac{1}{2}$ cm, basi acuta, apice acuminata, acuminibus conspicuis obtusis usque ad $1\frac{1}{2}$ cm longis; supra glabra nitida nervo mediano sub-impresso costis vix prominulis; subtus concoloria minutissime sparseque adpresso-pilosa demum glabra, axillis costarum basaliū barbellatis, nervo mediano prominente costis utrinque 9–12 filiformibus prominulis. Petioli minutissime pilosi glabrescentes graciles 10–12 mm longi supra subcanaliculati. Paniculae axillares submultiflorae pyramidales laxae sparsissime minutissime pilosae mox glabrae usque ad 5 cm longae, pedunculis gracilibus usque ad 2 cm longis, ramulis paucis tenuibus usque ad 2 cm longis. Bracteeae bracteolaeque deciduae. Pedicelli tenues glabri 2–5 mm longi. Flores glabri 1–2 mm longi, tubo obconico $\frac{3}{4}$ mm longo intus dense sericeo-hirsuto, tepalis aequalibus carnosis concavis erectis sub-orbiculari-ovatis acutis, $1-1\frac{1}{2}$ mm longis intus pilosis. Stamina inclusa, seriei primae secundae et tertiae fertilia. Stamina sex exteriora tepalis breviora, 1 mm longa, antheris ovato-orbicularibus glabris vel subglabris obtusis, connectivo cellulas magnas introrsas vix vel nec superante, filamentis antheras dimidio superantibus latiusculis planiusculis pilosis. Stamina seriei tertiae paullo breviora facie similia, cellulis extrorsis, glandulis sub-basalibus usque ad $\frac{1}{2}$ mm longis, globosis vel subreniformibus, compressis, sessilibus. Staminodia seriei quartae ovoidea, triquetra, acuta, crassa extus pilosa, $\frac{1}{2}-\frac{3}{4}$ mm longa. Ovarium glabrum, sub-globosum, 1 mm longum in stylum cylindricum subaequilongum abrupte transeuns, stigmate parvo, discoideo. Baccā ellipsoidea, 18 mm longa, 12 mm diametro; cupula vix evoluta in pedicellum obconicum crassum, 15 mm longum, apice 7 mm diametro transeuns.

Distributio: Rio de Janeiro.

Brasilia: Rio de Janeiro, Est. do Rio G. Portella, Monte Sinai (Nunes 304 = H.R.J. 28003, fl., fr. [U.]).

Ad subgenus Hufelandiopsin pertinens, florum structura cum *A. Schwackeana* var. *bullata* conveniens, axillis costarum barbellatis *A. acarodomatiferae* affinis, foliorum forma ab var. *bullata* diversa.

7. *Aiouea truxillensis* Kosterm. nov. spec. — *Aiouea dubia* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 34, p.p. (quoad cit. spec. Funck & Schlim 802); Knuth in Fedde, Repert., Beiheft 43 (1928), p. 340.

Typus: Funck & Schlim 802; Venezuela [Dl.].

Arbor ramulis subangulatis laevibus apicem versus flavo-tomentellis ramis atrobrunneis glabris gemmis dense flavo sericeo-tomentosis. Folia alterna rigide coriacea glabra sed subtus in axillis costarum binarum basalium majorum barbellata, subtripplinervia ovato-elliptica vel late elliptica, 3—8 × 2—4 cm, basi in petiolum contracta brevissime acuta margine haud incrassato plano, apice acuta vel obscure acuminata; supra nitida laevia nervo mediano impresso basin versus dilatato costis subimpressis in axillis costarum majorum bullata; subtus dense minute prominulo-reticulata, nervo mediano valde prominente, costis utrinque 4—7 prominentibus basalibus binis longioribus adscendentibus et dimidium folii longitudinis attingentibus, ceteris erecto-patentibus subrectis. Petioli glabri crassi 5—7 mm longi supra subplani lati. Flores ignoti. Paniculae paucae-fructiferae glabris, vix ramosae usque ad 5 cm longae, pedunculis communibus 2 cm longis. Bacca ellipsoidea, usque ad 12 mm longa 9 mm diametro; cupula carnosae laevae obconica vix evoluta 3 mm profunda, tepalibus persistentibus, margine 8—9 mm diametro, 6-dentata dentibus latis; pedicello fructifero crasso obconico vix distincto incluso 12 mm longa.

Distributio: Venezuela, Trujillo.

Venezuela: Los Andes, Prov. Trujillo, alt. 2300 m. (Funck & Schlim 802, fr. Aug. [Dl.Lp.P.]).

Teste facie *Aioueae dubiae* valde affinis sed ramulorum indumento et foliis subtripplinerviis in axillis bullatis barbellatisque diversa.

8. *Aiouea dubia* (H.B.K.) Mez in Jahrb. Botan. Garten Ber-

lin V (1889), p. 34 (excl. cit. spec. Funck & Schlim 802). — *Cryptocarya dubia* H.B.K., Nov. Gen. 2 (1817), p. 167 (p. 133 colour. edit.); Kunth, Synops. I (1822), p. 459; Sprengel, System. Veget. 2 (1825), p. 271 (excl. cit. spec. Sello); Juss. in Dict. Sc. nat. 12, p. 87; Mez in Jahrb., l.c., p. 34. — *Aydendron dubium*, Bailon, Hist. Pl. 2 (1870), p. 474 in adnot." ex Mez in Jahrb., l.c. — *Persea hypericifolia* Nees, Systema Laur. (1836), p. 165; Meissn. in D.C., Prodr. XV, 1 (1864), p. 56; Mez in Jahrb., l.c., p. 34. — *Laurus hypericifolia* Bonpland mscr. in herb. Willd. n. 7811 ex Nees, Systema, l.c.; Meissn. in D.C., Prodr., l.c.; Mez in Jahrb., l.c. — *Ajouea Granatensis* Mez in Jahrb., l.c., p. 32.

Typus: Humboldt et Bonpland s.n.; Colombia [P.].

Tree, up to 5 m high (Kalbreyer); branchlets usually rather thick, smooth, glabrous or with few hairs at utmost apex, sub-angular; branches cylindrical, smooth, dark-brown; buds yellowish sericeous-tomentose. Leaves alternate, rigid-coriaceous, adult ones glabrous, broadly elliptical, ovate-elliptical or sub-orbicular, $5-12 \times 2\frac{1}{2}-5$ ($-6\frac{1}{2}$) cm, base contracted into the petiole, obtuse or shortly acutish, margin not thickened, hardly recurved, top obtuse or obscurely, shortly, obtusely acuminate; above slightly shining, smooth, midrib impressed, prim. nerves lightly impressed or inconspicuous; beneath somewhat paler, densely prominulously reticulate or rather smooth, midrib prominent, prim. nerves (6—10 per side) prominent, rather patent. Petioles short, thick, glabrous, 4—7 mm l., conspicuously canaliculate. Panicles rather many-flowered or few-flowered, glabrous, slightly pruinose, pyramidal, axillary, lax, 5—10 cm l.; peduncles long and slender (2—5 cm), branchlets few, short, slender. Bracts and bracteoles deciduous. Pedicels slender, glabrous, 6—10 mm l. Flowers reddish (Kalbreyer), glabrous, obconical, $3-3\frac{1}{2}$ mm l., $2-2\frac{1}{2}$ mm in diam. at apex; tube obconical, about 1 mm l., merging into the pedicel, hardly pilose within. Tepals erect, fleshy, slightly concave, subequal, broadly ovate, obtusely acute, $2\frac{1}{4}$ mm l., appressed-pilose within. Stamens included, those of the three outer rows fertile. Outer six stamens slightly shorter than tepals, up to $1\frac{3}{4}$ mm l., anthers ovate, acutish or obtuse, connective protruding beyond the large, introrse cells; filaments conspicuous, densely pilose, nearly $1\frac{1}{2} \times$ as long as anthers. Stamens of series 3 hardly longer; anthers broadly ovate, obtuse-truncate, connective not or hardly protruding beyond the extrorse cells, filaments twice as long, pilose; glands sub-basal, sub-sessile, orbicular-reniform, com-

pressed, large. Staminodes of series 4 large, ovate, acutish, about 1 mm l. (the about as long, broad, densely pilose stalk included). Ovary glabrous, obovoid-globose, 1 mm l., abruptly narrowed into the cylindrical, slightly longer or as long style with minute, discoid stigma. Fruit unknown.

Distribution: Highlands of Colombia.

Colombia: Camarillo de Pena near Bogota (Goudot s.n., with unmaturing fruit Jan. [Kw.P.]); near Santa Fé de Bogota (Humboldt & Bonpland s.n., fl. [P. Willd. n. 7811], type specimen and type of *Laurus hypericifolia*); between Ocana and Pamplona, Dept. Santander, S. Francisco, alt. 2600 m. (Kalbreyer 891, fl. Dec. [D.P.], type of *A. Granatensis*); Dept. Norte de Santander, road from Pamplona to Toledo, crossing the divide between Rio La Teja (Maracaibo drainage) and Rio Mesme (Orinoco drainage), thickets along stream, alt. 2500—2800 m. (Killip & Smith 19898, fl. Febr. [Ws.NY.]); locality unknown (Mutis 1465, fl. [Ws.]).

The type specimen in the Paris herbarium bears the name *Laurus hypericifolia* in Bonpland's handwriting and the name *Cryptocarya dubia* in Kunth's handwriting. The former name has to be ascribed to Bonpland and not to Willdenow. The name *Aydendron dubium* Baillon is an error of Mez, Baillon does not cite this name. The species is closely related to *A. tambillensis*, it differs in the lack of the tomentum on the branchlets, the shape of the leaves and the very short petioles. The outer anthers in the flowers are more acutish, the glands of the inner staminal row smaller than those in *A. tambillensis*. The specimen, collected by Killip and Smith has much broader, orbicular leaves, the flowers and other characters, however, are the same as in the type specimen.

9. *Aiouea costaricensis* (Mez) Kosterm. nov. comb. — *Bellota Costaricensis* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 27; id. in Arb. Bot. Gart. Breslau 1 (1892), p. 109; Pittier, Plantas usuales Costa Rica (1908), p. 106; Standley in Publ. Field Mus. 18 (1937), p. 450. — *Boldus Costaricensis* O. Ktze., Revisio Gen. Pl. II (1891), p. 569; Mez in Arb. Bot. Gart. Breslau, l.c., p. 109; id. in Engler's Botan. Jahrb. 30 (1902), Beiblatt 67 (1901), p. 12.

Typus: Hoffmann 857; Costa Rica [D.].

„Ira colorado” (Pittier).

Shrub or tree, 3—7 m high (Hoffmann, Pittier). Branchlets thick, densely (rarely laxly) yellowish appressed-tomentose, angular, striate; buds yellowish sericeous-tomentose; branches glabrous, grey, irregularly sulcate. Wood reddish-brown (Pittier).

Leaves alternate, coriaceous, adult ones glabrous, obovate-elliptical or spatulate, $6\frac{1}{2}$ —15 $\times$ $2\frac{1}{2}$ —7 cm; base gradually acute, decurrent into petiole, margin slightly recurved, slightly thickened, basal part strongly recurved, top obtuse or obscurely, obtusely acute; above shining, laxly, rather obscurely reticulate or more or less smooth, midrib flattish, broadened towards base, prim. nerves prominulous; beneath rather dull, conspicuously, rather laxly, prominulously reticulate, midrib (often with appressed hairs at base) prominent, broad, prim. nerves (6—8 per side) erect-patent, prominent, arcuate. Petioles thick, broad, appressed-pilose, glabrescent, $\frac{1}{2}$ —1 cm l.; flattish above. Panicles axillary, ∞ -flowered, lax, pyramidal, glabrous, 5—14 cm l.; peduncles long (3—8 cm), branchlets divaricate. Bracts and bracteoles lanceolate, margin minutely ciliate, soon deciduous. Pedicels slender, glabrous, 3—5 mm l., merging into the flower tube. Flowers glabrous, obconical, pale-yellow (Hoffmann), $2\frac{1}{2}$ —3 mm l., 2 mm in diam. at apex; tube obconical, 1— $1\frac{1}{2}$ mm l., nearly glabrous within. Tepals erect, equal, fleshy, ovate, acute, as long or slightly shorter than tube, base hardly pilose within. Stamens included, those of the three outer rows fertile. Outer six stamens $1\frac{1}{4}$ mm l.; anthers ovate, obtuse, connective slightly protruding beyond the large, introrse cells, filaments slightly shorter, conspicuous, midline within and margin minutely pilose with stiff, patent hairs. Inner 3 fertile stamens slightly longer, anthers glabrous, narrowly ovate, sub-truncate, connective protruding beyond the extrorse cells, filaments pilose, slightly shorter; glands large, sessile, globose-reniform, compressed. Staminodes of series 4 minute, sagittate-stipitiform, pilose, $\frac{1}{2}$ mm l. Ovary glabrous, globose-ovoid, $1\frac{1}{4}$ mm l., abruptly narrowed into the $\frac{3}{4}$ mm l., cylindrical style; stigma minute, discoid. Berry ellipsoid, green (Standley), 15 mm l., 6 mm in diam.; cupule red (Standley), fleshy, hemispherical-infundibuliform, obconical, up to 1 cm high, 1 cm in diam., 4 mm deep; perianth persistent, forming six large teeth at margin; base of cupule merging into the fleshy, obconical, up to 5 mm l. pedicel.

Distribution: Costa Rica.

Costa Rica: near Candelaria (Hoffmann 857, fl. July [D.P.]); banks of Rio Segundo, alt. 2000 m. (Pittier 1794, fr. Jan. [B.D.]); Cerro de las Caricias, north of San Isidro, prov. de Heredia, wet forest, 2000—2400 m. alt. (Standley & Valerio 52072, in bud March [Ws.]); La Ventolera on the southern slope of the Volcán de Poás, wooded quebrada, alt. 1700 m. (Standley 34579, fr. Febr. [Ws.]).

This species has small staminodes of series 4; the insertion

of these staminodes, however, makes it sure, that it belongs to *Aiouea*. As I could study only a single specimen with full-grown flowers, it may prove later, that the staminodes in this specimen are only poorly developed. Another peculiar feature are the persistent, enlarged tepals of the cupule; shape and texture of the cupule are those of an *Aiouea* species. Petzold (Engler's Bot. Jahrb. 38, 1907, p. 451) cites, that hypoderm in the leaves is lacking in all *Aiouea* species and that the same holds true for *Bellota* (= *Aiouea*) *costaricensis*.

The species shows a striking likeness with *Ocotea Ira* Mez et Pittier the sterile or fruiting specimens being nearly identical. The branchlets of *Ocotea Ira*, however, are glabrous, as well as the young leaves. The flowers and inflorescences of *Ocotea Ira* are densely pilose, those of *Aiouea costaricensis* glabrous.

10. *Aiouea impressa* (Meissn.) Kosterm. nov. comb. — *Phoebe impressa* Meissner in D.C., Prodr. XV, 1 (1864), p. 33; id. in Fl. Brasil. V, 2 (1866), p. 150. — *Endlicheria impressa* (Meissn.) Mez in Jahrb. Botan. Garten Berlin V (1889), p. 132 (subgenus: *Anosphaeria* Mez); Benoist in Bull. Soc. Botan. France 75 (1928), p. 977; id. in Archiv. Botan. V (1931), Mém. 1, p. 64 (in clave).

Typus: Patris s.n.; French Guiana [DC.].

Tree, up to 30 m high, trunk 20 cm in diam. (Krukoff). Branchlets smooth, subangular, towards apex minutely, laxly pilose, glabrescent; branches glabrous, dark-brown, smooth; buds minutely yellowish tomentellous. Leaves alternate, coriaceous, triplinerved, ovate-elliptical or sub-ovate, $6-13 \times 2\frac{1}{2}-4\frac{1}{2}$ cm; base obtusely acute, margin slightly thickened, flattish, top distinctly acuminate (acumen obtuse, 1–2 cm l.). Young leaves sparsely, minutely pilose at base, soon glabrous; adult ones glabrous, above yellowish-green, shining, smooth, midrib impressed, prim. nerves flattish or slightly impressed, veins as a rule inconspicuous; beneath brownish (dried), densely, prominulously reticulate, midrib and the two lower prim. nerves (ascendant up to $\frac{2}{3}$ or nearly up to the apex of the leaf) strongly prominent, other prim. nerves (0–3 per side) erect-patent, prominent, arcuate. Petioles glabrous, $1\frac{1}{2}-2$ cm l., above flattish or slightly canaliculate. Panicles axillary, many-flowered, sparsely, minutely pilose, glabrescent, 5–10 cm l.; peduncles slender, 1–5 cm l.; branchlets slender; bracts and bracteoles deciduous. Pedicels thin, 2–3 mm l., glabrous. Flowers glabrous, sub-hemispherical,

1—1½ mm l., tube broadly obconical, hardly ½ mm deep, densely sericeous-hirsute within. Tepals equal, thin, broadly ovate, acutish, slightly concave, erect-patent, about 1 mm l., base pilose within. Stamens included; those of the outer three rows fertile, about ¾ mm l.; anthers of the two outer rows of stamens glabrous, hardly ¼ mm l., depressed-elliptical (broader than long), connective obtuse or subtruncate, not protruding beyond the distinct, introrse cells; filaments conspicuous, densely pilose, about as long or slightly longer than anthers. Anthers of series 3 longer than broad, elliptical, truncate, slightly longer than those of outer stamens, cells extrorse; filaments as long, pilose; glands globose, rather large on long, slender, densely pilose stalks. Staminodes of series 4 subhastate or sub-clavate, flat, hardly ½ mm l. (the distinct, longer, densely pilose stalks included). Ovary subglobose, glabrous, ¾ mm l.; style slender, ¼ mm l., stigma minute, discoid. Fruit unknown.

Distribution: French Guiana; lower Amazon Basin.

French Guiana: locality unknown (Patris s.n., fl. [D.DCLMs.]). **Brazil:** municipality São Paulo de Olivença, basin of Belem Creek, Restinga alto (Krukoff 8963 with unmaturing fruit Oct.-Dec. [NY.]).

11. *Aiouea piauiensis* (Meissn.) Mez in Jahrb. Botan. Garten Berlin V (1889), p. 30; Corrêa, Diccion. Pl. uteis Brasil. I (1926), p. 446. — *Aydendron Piauiense* Meissner in D.C., Prodr. XV, 1 (1864), p. 93; id. in Fl. Brasil. V, 2 (1866), p. 183 (nec alibi); Mez in Jahrb., l.c., p. 30. — *Ajouea Severini* Mez in Jahrb., l.c., p. 31 (excl. cit. spec. Lund 729 et Burchell 5491).

Typus: Gardner 2720; Piaui [Kw.].

Large tree (Gardner). Branchlets slender, glabrous, smooth, dull or slightly pruinose, subcylindrical; buds yellowish tomentellous; branches cylindrical, smooth, dark-brown or grey. Leaves alternate, chartaceous to rigid-chartaceous, elliptical or lanceolate-elliptical, glabrous, on both sides densely, minutely prominently reticulate (above obliterate), 10—17 × 2½—5½ cm; base acute or shortly acute, margin slightly thickened and recurved, top shortly, obtusely acuminate or subacute; above yellowish-green, midrib and prim. nerves slender, slightly prominent or the latter obliterate; beneath dull, paler, midrib prominent, prim. nerves (4—6 per side) rather erect, thin, arcuate, prominent. Petioles glabrous, slender, above flat or slightly channeled, 1—2½ cm l. Panicles axillary near the apex of the branchlets, pyramidal, glabrous, ∞-flowered, lax, 10—15 cm l.;

peduncles slender, up to 8 cm l., branchlets thin, erect-patent, distant. Bracts and bracteoles deciduous. Pedicels thin, glabrous, 5—10 mm l. Flowers glabrous, often somewhat pruinose, $2\frac{1}{2}$ —3 mm l., 3 mm in diam. at apex, broadly obconical-subhemispherical; tube broadly obconical, $\frac{3}{4}$ mm high; pilose within. Tepals sub-equal, rather thin, erect-patent, slightly concave, broadly ovate, acutish, base pilose within. Stamens included; those of the outer three rows fertile. Outer six stamens slightly shorter than tepals, about $1\frac{1}{4}$ mm l.; anthers subrectangular, glabrous or sparsely, minutely pilose at base, connective obtuse, as long as and strongly protruding beyond the rather small, introrse-lateral, sub-basal cells; filaments distinct, rather slender, slightly shorter, pilose. Stamens of series 3 about as long with smaller, subrectangular, slightly, minutely pilose or glabrous anthers, connective emarginate at apex, strongly protruding beyond the extrorse-lateral, subbasal, rather small cells, filaments about as long, pilose; glands large, subreniform, flattish, sub-sessile. Staminodes of series 4 large, foliose, ovate, acute, 1 — $1\frac{1}{2}$ mm l., pilose towards base without, stalks broad, flat, short, pilose. Ovary sub-globose, glabrous, about 1 mm in diam.; style slightly longer or as long, thick, thickened below the large, discoid stigma.

Distribution: Piauihy, São Paulo.

Piauihy: Sandy banks of Gurgeá (Gorguehã) (Gardner 2720, fl. [Bs.DC. D.L.Dr.Kw.Ms.NY.O.P.W.Ws.]); Tambury, Agreste (Lützelburg 329 a, fl. [M.]). São Paulo: Campinas (Severin 139, fl. Oct. [D.St.], type of *A. Severini*).

The leaves of the specimen Severin are rigid-chartaceous and more smooth on their upper surface as those of the type specimen; those of the Lützelburg specimen have a consistency intermediate between these two ones. The flowers of all three specimens are identical. The anther cells are not so small as stated by Mez; one is easily led astray by the minute valves, which contract strongly after dehiscence of the cells.

Subgenus: *EUAIIOUEA* Mez (species 12-27).

12. *Aiouea demerarensis* Kosterm. nov. spec. — *Aiouea densiflora* Nees in *Linnaea* 21 (1848), p. 513, p.p. (quoad cit. spec. Schomburgkii 1720), nec p. 268; Meissn. in D.C., *Prodr.* XV, 1 (1864), p. 83, p.p. (quoad cit. spec. Schomburgk 1720 = 1003 et Hancock 42); id. in *Fl. Brasil.* V, 2 (1866), p. 171, p.p. (quoad cit. sp. Hancock et Schomburgk); Mez in *Jahrb. Botan.*

Garten Berlin V (1889), p. 36, p.p. (quoad cit. spec. Hancock 42, Jenman 3913, Parker, Schomburgk 1003 = 1720); Corrêa, Diction. Pl. uteis Brasil. I (1926), p. 129, p.p. (quoad spec. Guian. anglica). — *Ajouea Brasiliensis* Meissn. in Fl. Brasil., l.c., p. 170, p.p. (quoad cit. spec. Parker).

Typus: Schomburgk 1720 = 1003; British Guiana [D.].

„Wild calabash” (Parker); „Wild currant” (Warren); „Boradiea” (Jenman)

Arbor usque ad 10 m alta (de la Cruz), ramulis crassis laevibus subnitidis apicem versus subangulatis glabris, ramis cylindricis laevibus, gemmis glabris vel pilis paucis adpressis ornatis. Folia alterna rigide-chartacea vel coriacea glabra elliptica $12-25 \times 4\frac{1}{2}-12$ cm, basi acuta vel brevissime acuta, margine vix incrassata recurvula, apice brevissime late obtuso-acuminata vel subobtusa; supra nitida laevia vel obscure laxe reticulata nervo mediano costisque prominulis vel applanatis; subtus opaca prominulo-reticulata vel sublaevia, nervo mediano prominente costis utrinque 7–14 prominentibus patentioribus marginem versus arcuatis. Petioli glabri crassiusculi subcanaliculati 1–3 cm longi. Paniculae plerumque ad apicem ramulorum confertae dense permultiflorae conspicue pilis patentissimis brevissimis pilosae late pyramidales 6–13 cm longae; pedunculis crassiusculis vel gracilibus laevibus basin versus glabrescentibus, ramulis erecto-patentibus gracilibus. Bractee bracteolaeque ovato-lanceolatae dense pilosae, minutae, deciduae. Pedicelli pilosi 2–3 mm longi in floris tubum transeuntes. Flores virides albi vel rubri (de la Cruz) conspicue sed brevissime patentissime pilosi, urceolato-campanulati subobconici $1\frac{1}{2}-2$ mm longi apice $1\frac{1}{2}$ mm diametro; tubo conspicuo suburceolato tepalibus fere duplo longiore intus dense adpresso-piloso. Tepala erecto-patentia carnosae subaequalia vel exteriora subbreviora late ovata obtusiusculo-acuta interiora plerumque latiora quam longiora basin versus constricta intus pilosa. Stamina inclusa serierum primae et secundae fertilia serierum tertiae et quartae staminodialia. Stamina sex exteriora $\frac{1}{2}-\frac{3}{4}$ mm longa antheris ovatis basi dense pilosis, apice extrorso-curvatis subemarginatis connectivis cellulas magnas extrorsas haud superantibus; filamentis brevissimis dense pilosis. Staminodia seriei tertiae plerumque quam stamina fertilia paulo longiora sed sub eis inserta, ergo primo visu breviora, ligulato-substipitiformia dense pilosa apice obtusa saepe incrassata; glandulis subbasalibus subsessilibus subgloboso-reniformibus

majusculis, staminodia sub glandulis dilatata. Staminodia seriei quartae foliosa, $\frac{1}{2}$ — $\frac{3}{4}$ mm longa membranacea ovata vel elliptica truncata vel obtusa, basi in stipitum latum brevissimum dense pilosum contracta. Ovarium glabrum ellipsoideum 1 mm longum stylo crassiusculo cylindrico paulo longiore apice incrassato, stigmatibus discoideo, magno. Bacca ellipsoidea laevia usque ad 14 mm longa, 12 mm diametro; cupula obconica carnosae pedicello obconico incluso $1\frac{1}{2}$ cm longa, apice sub-plana 10 mm diametro margine membranacea undulata vix conspicua.

Distributio: Guiana anglica.

Guiana anglica: Pomeroon district, Mora landing, Moruka R. (de la Cruz 1843, fl. Aug. [Mi.NY.Ws.]); Barima R., northwest district, lat. $8^{\circ} 20' N.$, long. $59^{\circ} 50' W.$ (de la Cruz 3381, in bud March [Ca.F.Gr.NY.Ws.], 3404, in bud March [Ca.Gr.Mi.NY.Ws.]); Amakura R., northwest district, lat. $8^{\circ} 10' N.$, long. $60^{\circ} W.$ (de la Cruz 3503, fl. March [Ca.Gr.Mi.NY.Ws.], 3461, fl. March [Ca.Gr.Mi.NY.Ws.]); sandhills on Demerara R. (Schomburgk 1003 = 1720, fl. March [Bl.Br.Bs.D.DC.Dl.Kw.Lp.Ms.W.Ws.]); Demerara R. (Jenman 5075, fl. June [Dm.Kw.NY.], 3913, fl. May [Dm.Kw.]); Sacra creek (Jenman 6559, fl. June [Dm.Kw.]); Moraballi creek near Bartica, Essequibo R., sea level (Sandwith 326, in bud Sept. [Kw.NY.U.]); Essequibo (Hancock 42, 232, fl. [Kw.O.], id. s.n., fr. [Dl.]); Rockstone, dense upland forest (Gleason 843, ster. [Ws.]); Hyde Park, Demerara (Warren s.n., fl. [F.]); locality unknown (Parker s.n., fl. [Kw.]).

In general facies this species is strongly alike *A. densiflora*; by its extrorse cells it is allied to *A. guianensis* and *A. Schomburgkii*. The type photograph (no. 27584, Chicago) is taken after the specimen Schomburgk 1003 [Dl.] and distributed as *A. densiflora*.

Use: a decoction is used for gurgling against sore throat (Warren).

13. *Aiouea guianensis* Aublet, Hist. Guian. I (1775), p. 310, III, t. 120; Lamarck, Encycl. I (1783), p. 72 (*Ajuvea*); Poiret, Encycl., Suppl. I (1890), p. 274, III (1893), p. 317; id., Illustr. II, p. 395 et 367, t. 260; Willdenow, Sp. Pl. II (1799), p. 482 (*Ajovea gujanensis*); St. Hilaire, Expos. fam. nat. I (1805), p. 190 (*Ajovea*); Persoon, Synops. Pl. I (1805), p. 449 (*Ajovea*); Steudel, Nomencl. ed. 1 (1821), p. 23 (*Aiouea guianensis*) et p. 467 (*Auiouea*), ed. 2 (1841), p. 46 (*Ajuvea* et *Aiouvea*), II, p. 16 (*Ajovea*); Presl, Rostlinar (1825), p. 63 (*Aiouea*); Schultes, Syst. VII, 1 (1829), p. XII (*Aiuvea*); Nees, Laur. Expos. (Vratislaviae 1833), p. 16 (*Ajouea guianensis*); id., Systema (1836), p. 363; id. in Linnaea 21 (1848), p. 512 (excl. cit. spec. Schomburgkii); Rafinesque, Sylva Tellur. (1838), p. 134 (*Ajovea*); Meissner in

D.C., Prodr. XV, 1 (1864), p. 82 (excl. cit. spec. Sprucei 3427); id. in Fl. Bras. V, 2 (1866), p. 169; Dragendorff, Heilpfl. (1898), p. 258; Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 42 (*Ajouea Guyanensis*), excl. cit. spec. Spruce 3427; Pulle, Enum. Pl. Surin. (1906), p. 185; Corrêa, Diccion. Pl. uteis Brasil. 1 (1926), p. 48; Benoist in Bull. Soc. Bot. France 75 (1928), p. 975; id. in Archiv. Bot. V, Mém. 1 (1931), p. 62; Kostermans in Meded. Bot. Mus. Utrecht 25 (1936), p. 33; id. in Pulle, Fl. Surin. II (1936), p. 313. — *Laurus hexandra* Willd. (nec aliis), Sp. Pl. II (1799), p. 482; Persoon, Synops. I (1805), p. 449; Steudel, Nomencl. ed. 1 (1821), p. 467, ed. 2, II (1841), p. 16; Presl, Rostlinar (1825), p. 63; Nees, Systema (1836), p. 363; Endlicher, Gen. II (1837), p. 321; Meissner in D.C., Prodr., l.c., p. 82; id. in Fl. Bras., l.c., p. 169; Poirer, Encycl., Suppl. I (1890), p. 274, III (1893), p. 317; Mez in Jahrb., l.c., p. 42; Kosterm. in Fl. Surin., l.c., p. 314. — *Laurus foliis lanceolato-ovatis acuminatis*, etc., Swartz, Fl. Ind. Occ. II (1800), p. 708; Willd., Sp. Pl. II, l.c., p. 482. — *Laurus Difformis* Richard in Actes Soc. Hist. nat. Paris I (1792), p. 108; Raeuschel, Nomencl. (1797), p. 115; Mez in Jahrb., l.c., p. 67 (sub *Aniba megaphylla*). — *Douglassia laurina* Sm. (?) in Rees, Cyclop. 12 ex Meissn. in D.C., l.c., p. 509; Kosterm. in Fl. Surin., l.c., p. 314. — *Ajouea tenella* Nees in Linnaea 21 (1848), p. 512; Walpers Ann. 3 (1852–53), p. 311; Meissn. in D.C., l.c., p. 82 (excl. sp. Spruce 3427); id. in Fl. Bras., l.c., p. 169; Baillon, Hist. Pl. 2 (1870), t. 245 (fructus); Mez in Jahrb., l.c., p. 43; Pax in Engl.-Prantl, Pfl. fam. III, 2 (1889), t. 71, f. L.; Dragendorff, Heilpfl. (1898), p. 238; Kosterm. in Pulle, Fl. Surin., l.c., p. 314. — *Ajouea rubra* A. C. Smith in Phytologia 1 (1935), p. 115; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 33; id. in Fl. Surin. II (1936), p. 314.

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

„Ajouvé” (French Guiana: Aublet); „Ajuba” (Amazonas: Corrêa).

Small tree, up to 8 m high (Mélinon, Krukoff). Branchlets rather slender, sub-cylindrical, smooth, glabrous (utmost apex with few, minute hairs); branches glabrous, smooth; buds yellowish, appressed tomentellous. Leaves alternate, chartaceous or rigid-chartaceous, glabrous, green, elliptical or lanceolate-elliptical, $8-24 \times 2\frac{1}{2}-9$ cm; base acuminate or acute, merging into the petiole, margin hardly thickened, flattish; top conspi-

cuously, usually sub-caudate acuminate, acumen usually slender, 1—2 cm l.; above smooth or obscurely reticulate, shining, midrib slender, prominulous and often impressed, prim. nerves thin, prominulous and often impressed; beneath dull, rather obscurely, prominulously reticulate, midrib prominent, prim. nerves (6—10 per side) prominent, erect-patent, strongly arcuate. Petioles comparatively slender, glabrous, canaliculate, 7—15 mm l. Panicles red (Aublet, Krukoff), axillary, clustered at the apex of the branchlets, glabrous (few hairs at the nodes), slender, lax, ∞ -flowered, broadly pyramidal, 10—16 cm l.; peduncles slender, smooth, reddish, cylindrical, 5—8 cm l.; branchlets thin, erect-patent. Pedicels filiform, glabrous, 3—7 mm l. Bracts and bracteoles deciduous. Flowers yellow (Krukoff), glabrous, slender, obconical, $1\frac{1}{2}$ —2 mm l.; tube slender, obconical, densely, minutely pilose within, slightly longer than tepals, base merging into the pedicel, top abruptly enlarged into the slightly broader perianth. Tepals equal, erect, slightly concave, fleshy, broadly ovate, acutish, (inner ones often broader than long, sub-orbicular, narrowed at base) glabrous, except a few hairs at base within, up to $\frac{3}{4}$ mm l. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter than tepals, about $\frac{3}{4}$ mm l., anthers ovate, obtuse, connective protruding slightly beyond the extrorse, large cells; filaments slender, shorter, sparsely, minutely pilose. Staminodes of series 3 stipitiform (top sometimes slightly thickened), pilose, up to $\frac{1}{2}$ mm l., hardly longer than the large, sessile, subglobose, towards base narrowed, glands. Staminodes of series 4 large, about $\frac{1}{2}$ mm l., foliose, sessile, ovate, obtuse, pilose. Ovary ellipsoid, glabrous, $\frac{3}{4}$ mm l., style cylindrical, same length; stigma discoid, conspicuous. Berry ellipsoid, smooth, up to 18 mm l., 11 mm in diam. Cupule flat, obconical, apex 8—10 mm in diam. with thin, 1—3 mm w., wavy margin; pedicel (cupule included) 11—18 mm l.

Distribution: French and Dutch Guiana; lower Amazon Basin.

French Guiana: Cayenne (Poiteau 61, fl. [Dl.Lg.] et s.n., fr. [Lg.]; Martin 106, fl. [Br.Kw.]); rives de la Comté (Mélion 147, fl. [Br.Dl.Kw.L. N.Y.P.Ws.]); locality unknown (Richard s.n., fl. [C.Dl.P.], type of *Laurus Difformis* Rich.; Leprieur 220, fl., fr. [DC.Dl.K.L.Ms.P.]; Aublet s.n., fl. [Br.P.J.]; Moricand 112, fr. [DC.Dl.]; Mélion 230, fl. [D.]; Perrottet 78, fr. [DC.P.]). **Dutch Guiana:** locality unknown (Hostmann 263, p.p., fl. [Br.Bs.Dl. Kw.O.P.U.W.], type of *Ajouea tenella* Nees). **Brazil:** Mouth of Tarauca R., Amazonas, Jurua region, varzea land (Krukoff 4606, fl. June [A.D.Dl.NY.St. M.U.], type of *Ajouea rubra*).

I do not understand, why Meissner and Mez excluded the description of *A. guianensis* of Nees (Systema, p. 363): the description of Nees is an exact copy of that of Aublet, and he cites moreover only the Aublet specimen.

The name *Laurus hexandra* has been published by Willdenow, not by Swartz, the latter does not mention this name.

The plate of Aublet is right, but for the drawing of the 6-lobed stigma: in *Aiouea guianensis* the stigma is discoid.

The type specimen of *Laurus Difformis* Richard has flowers attacked by some fungus, they are abnormally swollen and disfigured; the same specimen is labeled Leblond 219 in the Delessert herbarium in Geneva.

Use: Bark used against diarrhoea and colic (Dragendorff).

14. *Aiouea Schomburgkii* Meissn. in D.C., Prodr. XV, 1 (1864), p. 82 (excl. cit. *Aiouea Guyanensis* Nees, Systema, p. 363); id. in Fl. Bras. V, 2 (1866), p. 169; Mez in Jahrb. Botan. Garten Berlin V (1889), p. 35, t. III, f. 27; Knuth in Fedde, Repert., Beiheft 43 (1926), p. 340 (excl. cit. *Aiouea guayanensis* Nees); Brooks in Kew Bull. 1933, p. 212; Kostermans in Meded. Botan. Museum Utrecht 25 (1936), p. 34 (in clave). — *Ajouea Guyanensis* Auct. (non Aublet) Nees in Linnaea 21 (1848), p. 512, p.p. (quoad cit. spec. Schomburgk).

Typus: Schomburgk 590; British Guiana [DC.].

„Laurier pulcherro” (Trinidad: Brooks).

Tree. Branchlets rather slender, smooth, glabrous, subangular at apex; branches cylindrical, smooth, dark-brown; buds slightly pilose at apex. Leaves alternate, coriaceous or rigid-coriaceous, glabrous, yellowish-green, subovate-elliptical or elliptical, upper ones lanceolate-elliptical, 8—14 × (2—) 4—6 cm; base acute, margin hardly or not thickened, slightly recurved, top as a rule broadly, obtusely, shortly acuminate; above shining, smooth or (in young ones) obscurely reticulate, midrib slightly prominulous or flattish, prim. nerves slightly prominulous; beneath dull, densely prominulously reticulate, midrib prominent, prim. nerves (8—14 per side) prominent, rather patent, arcuate at margin. Petioles glabrous, thick, slightly canaliculate, 1—3 cm l. Panicles axillary, clustered near the apex of the branchlets, pyramidal, glabrous, lax, 6—20 cm l., peduncles rather slender, 4—10 cm l., smooth, branchlets slender, erect-patent, distant. Bracts and bracteoles deciduous. Pedicels slender, glabrous, 2—5 mm l.,

merging into the flower tube. Flowers glabrous, pruinose, obconical, $2\frac{1}{2}$ mm l.; tube obconical, nearly 1 mm l., pilose within, somewhat enlarged into the perianth. Tepals erect, equal, fleshy, scaly, broadly ovate, (inner ones orbicular-subrhomboid), obtusely acute, $1\text{--}1\frac{1}{2}$ mm l., pilose within. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens up to nearly 1 mm l.; anthers ovate, connective obtuse or subemarginate, slightly protruding beyond the large, extrorse cells; filaments distinct, shorter, densely pilose. Stamnodes of series 3 liguliform-stipitiform, top obtuse, hardly clavate, densely pilose, hardly shorter than stamens; basal or sub-basal glands large, suborbicular, compressed, sessile. Stamnodes of series 4 large, foliose, ovate, obtusely subemarginate, margins thickened, the often conspicuous, broad, short, densely pilose stalk included, up to $\frac{3}{4}$ mm l. Ovary glabrous, globose or ellipsoid, 1 mm l.; style rather thick, cylindrical, about as long or slightly longer; stigma discoid, conspicuous. Berry sub-globose, up to 1 cm in diam., smooth. Cupule flattish, fleshy, obconical, the fleshy, obconical, hardly distinct pedicel included up to 15 mm l., apex up to 9 mm in diam. with thin, narrow margin.

Distribution: British Guiana; Trinidad.

British Guiana: Roraima Mts., lower shrub. Campo (Ule 8607, fl. Dec. [D.Dl.Kw.L.U.]; Schomburgk 913, fl. [Bl.D.Kw.Lp.]; 590, fl. [Bs.D.Dl.Kw.Lp.Ms.Ws.Br.]). **Trinidad:** Arima Blanchiseuse road, mile $9\frac{1}{2}$ (Brooks 12477, fl. Apr. [Kw.], fr. June [Kw.]).

This species is related with *A. guianensis*, the main differences being the thicker leaves with shorter acumen, the less slender panicles and the larger and thicker pruinose flowers. The length of the filaments depends on the age of the flower and cannot be used as specific character, the same holds true for the stalks of the staminodes of series 4. The pilosity of filaments and staminodes in this species is denser as in *A. guianensis*.

15. *Aiouea Riedelii* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 37, tab. III, f. 28. — *Ajouea Brasiliensis*, var. *attenuata* Meissner in D.C., Prodr. XV, 1 (1864), p. 83; id. in Fl. Brasil. V, 2 (1866), p. 170; Mez, l.c.

Typus: Riedel s.n.; Brazil [Lg.].

Tree or shrub. Branchlets thick, subangular at apex, glabrous, smooth; buds sparsely, minutely, yellowish pilose; branches glabrous, darkbrown, verruculous. Leaves alternate, coriaceous.

rigid, glabrous, lanceolate or lanceolate-elliptical, 12—21 $\times$ 3—5½ cm; base long-acuminate, margin hardly thickened, recurved; top obtusely acuminate; above yellowish-green, smooth or obscurely reticulate, midrib and prim. nerves slightly prominent; beneath dull, smooth or minutely, densely reticulate, midrib prominent, prim. nerves (5—7 per side) prominent, erect-patent, arcuate, more or less ascendant. Petioles glabrous, smooth, slightly canaliculate, 1½—2 cm l. Panicles axillary, clustered near the apex of the branchlets, many-flowered, lax, pyramidal, sparsely, minutely pilose, 3—8 cm l.; peduncles rather slender, glabrescent, up to 4 cm l.; branchlets distant, slender. Bracteoles ½ mm l., ovate, acute, pilose, sub-persistent. Pedicels slender, pilose, 2—3 mm l., merging into the flower tube. Flowers slender, urceolate, minutely, sparsely, pulverulently pilose, 1½—2 mm l., 1 mm in diam. at apex; tube slender, urceolate, ¾ mm diam, hardly pilose within, twice as long as perianth. Tepals erect, scaly, fleshy, equal, broadly ovate, acutish, inner ones subrhomboid, subapiculate. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter than tepals, minutely pilose, ¾ mm l.; anthers ovate, obtuse, connective hardly protruding beyond the large, introrse cells; filaments distinct, densely pilose, as long. Staminodes of series 3 slender, liguliform-stipitiform, slightly broadened at the obtuse or subtruncate apex, slightly longer than stamens, towards base pilose; basal glands small, subglobose, subsessile. Staminodes of series 4 liguliform-elliptical, ¾ mm l., apex elliptical-ovate, thickened at margin, base (stalk) densely pilose, nearly as broad. Ovary ellipsoid, glabrous, ¾ mm l., style thick, shorter, cylindrical, thickened below the discoid stigma. Fruit unknown.

Distribution: Brazil.

Brazil: locality unknown (Riedel s.n., fl. [Bs.D.G.Kw.L.Lg.Ms.]).

The species is alike *A. laevis*, but for its flower characters.

16. *Aiouea laevis* (Mart.) Kosterm. nov. comb. — *Cryptocarya* (?) *laevis* Martius, Herbar. Flor. Brasil. (1837), p. 144, n. 237; id. in Regensburg. Botan. Zeitung 21 (1838), Beiblatt II, 4, p. 64; Walpers Ann. 1 (1848—49), p. 575; Meissner in D.C., Prodr. XV, 1 (1864), p. 83; id. in Fl. Bras. V, 2 (1866), p. 170; Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 43. — *Ajouea Brasiliensis* Meissn. in D.C., Prodr., l.c., p. 83 cum var. *nitida* et *glabriflora* p.p., quoad cit. spec. Martius 237, cet. excl.; excl.

var. *attenuata*); id. in Fl. Bras., l.c., p. 170 (ultra exclus. spec. Parker); Mez in Jahrb., l.c., p. 43 (excl. cit. spec. Binot 46 et Salzmann); Dragendorff, Heilpfl. (1898), p. 238; Corrêa, Dicc. Pl. uteis Brasil. 1 (1926), p. 86; Wiessner, Rohstoffe 2 (1928), p. 1225. — *Persea macropoda* Nees (nec H.B.K.) in Linnaea 8 (1833), p. 50; id., Syst. (1836), p. 140, p.p.; Meissn. in D.C., Prodr., l.c., p. 56; id. in Fl. Bras., l.c., p. 162 (quoad cit. sp. Sellowii 1392, cet. exclus.); Mez in Jahrb., l.c., p. 41. — *Persea macropoda*, var. *Brasiliensis* Meissn. in D.C., Prodr., l.c., p. 56; id. in Fl. Bras., l.c., p. 162; Mez in Jahrb., l.c., p. 41. — *Drimys Granatensis* Sprengel mss. ex Nees, Syst., l.c., p. 140 (nec Sprengel, Syst. Veget. II, p. 628 et Cura Poster., p. 213); Mez in Jahrb., l.c., p. 41. — *Ajouea Burchelliana* Mez in Jahrb., l.c., p. 41, p.p. (quoad cit. spec. Sellowii 1392).

Typus: Martius 237; Rio de Janeiro [D.].

„Amajouva” (Brazil: Corrêa).

Tree or shrub. Branchlets rather thick, subcylindrical, smooth, utmost apex minutely tomentellous, soon glabrous; branches smooth, dark-brown; buds densely yellowish-tomentellous. Leaves alternate, coriaceous or rigid-coriaceous, glabrous, elliptical, $10-20 \times 3\frac{1}{2}-8$ cm; base acute or acuminate, margin slightly thickened, recurved, top obtusely, broadly, shortly acuminate; above yellowish-green, shining, smooth or obscurely reticulate, midrib and prim. nerves prominulous; beneath dull, midrib prominent, prim. nerves (7–10 per side) erect-patent, slightly arcuate, prominent, veins prominulous, reticulate or obliterate. Petioles glabrous, $1\frac{1}{2}-2\frac{1}{2}$ cm l., slightly canaliculate. Panicles axillary or often clustered at the apex of the branchlets, ∞ -flowered, pyramidal, rather lax, slender, minutely pilose, up to 18 cm l.; peduncles rather slender or slender, smooth, often sulcate, glabrous, up to 11 cm l., branchlets erect-patent, slender, pilose, up to $3\frac{1}{2}$ cm l. Bracts and bracteoles minute, ovate and ovate-lanceolate, pilose, sub-persistent or deciduous. Pedicels slender, minutely pilose, 1–2 mm l. Flowers broadly obconical, minutely, laxly pilose (hairs very short, patent), $1\frac{1}{2}-2$ mm l.; tube obconical, slightly longer than tepals, sericeous within. Tepals erect-patent, fleshy, slightly concave, equal, ovate-orbicular, acutish. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer stamens slightly shorter than tepals, about $\frac{1}{2}$ mm l.; anthers ovate, acute, connective acute, distinctly protruding beyond the large, introrse

cells; filaments very short, often nearly wanting, broad, but narrower than anthers, minutely, densely pilose. Stamnodes of series 3 as long or slightly shorter than stamens, liguliform, apex slightly or not enlarged, densely, minutely pilose; glands rather small, sessile, flat, sub-orbicular, base truncate. Stamnodes of series 4 ovate-triangular, flattish, obtuse, glabrous, about $\frac{1}{4}$ mm l. Ovary ellipsoid, about $\frac{1}{2}$ mm l., abruptly narrowed into a rather thick, cylindrical, towards apex hardly thickened, up to 1 mm l. style, stigma small, discoid. Berry ellipsoid, up to 14 mm l., 13 mm in diam. Cupule flat, obconical, about 1 cm l. (the fleshy, not distinct pedicel included), apex about 1 cm diam., with thin, wavy, narrow margin.

Distribution: Vicinity of Rio de Janeiro and Bahia.

Brazil: Bahia (Blanchet 3191, fl. [Bl.Bs.Dl.Dr.Ki.W.], 3159 et 3159a, fl. [Br.Bs.DC.Dl.Dr.Ki.O.W.], type of var. *nitida* Meissn., 75, fl. [Dl.P.]; 1043 et 1041 (2043 et 2041), fl. [Dl.], 1043 [Br.]). Rio de Janeiro: Capoeira near Sebastianopolis (Martius 237, fl. June [B.Bl.Br.Bs.D.DC.Dl.Dr.F.Gr.Kw.L.Lp. M.Ms.Mi.P.W.]); Itahype R. (Riedel 688, fl. March [Lg.]); locality unknown (Sello 1392, fr. [B.DC.D.Kw.M.], type of *Persea macropoda*, var. *Brasiliensis* Meissn.; Miers s.n., fl. [Br.]).

The fruiting type specimen of *Persea macropoda*, var. *Brasiliensis* must be reckoned to this species; the leaves are quite different from those of *A. Gardneri*. However, the interpretation of a fruiting specimen in this genus will remain always rather difficult. According to Nees, a specimen of this plant must have been named *Drimys Granatensis* by Sprengel, though I could not find a label, bearing this name; I suppose, that there must have been an error somewhere, as the *Drimys Granatensis*, described by Sprengel in his *Systema*, refers to a plant from Colombia.

Use: Bark against diarrhoea and colic; leaves for wounds (Dragendorff). Wood for constructions (Peckolt, Wiesner).

17. *Aiouea densiflora* Nees in *Linnaea* 21 (1848), p. 268; id., p. 513, p.p. (quoad cit. spec. Kegel 1185 et Hostmann 1042); Walp. Ann. 3 (1852—53), p. 311, p.p. (quoad cit. spec. Surin.); Meissner in D.C., Prodr. XV, 1 (1864), p. 83, p.p. (quoad cit. spec. Wulschlaegel 810 et Kegel 1185); id. in Fl. Brasil. V, 2 (1866), p. 170, p.p. (quoad cit. spec. Wulschlaegel et Kegel), tab. 58; Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 36, p.p. (quoad cit. spec. Hostmann, Kegel et Crüger); Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), tab. 77 E (del. ex icon. Fl. Brasil.);

Pull, Enum. Pl. Surin. (1906), p. 185; Corrêa, Dicc. Pl. uteis Brasil. 1 (1926), p. 129, cum tab. (del. ex icon. Fl. Brasil.); Brooks in Kew Bull. 1933, p. 211; Kosterm. in Meded. Bot. Mus. Utrecht 25 (1936), p. 33; id. in Pulle, Fl. Surin. II (1936), p. 312. — *Ajouea densiflora*, forma *Vivipara* Nees in Linnaea 21, l.c., p. 513; Meissn. in D.C., Prodr., l.c., p. 83; id. in Fl. Bras., l.c., p. 170; Mez in Jahrb., l.c., p. 36; Kosterm., ll.cc. — *Ajouea Brasiliensis* Meissn. in D.C., Prodr. XV, 1 (1864), p. 83, p.p. (quoad cit. spec. Salzmann 478); Mez in Jahrb., l.c., p. 43, p.p. (quoad cit. spec. Salzmann 478). — *Laurus maxima* Salzmann ex Meissn. in D.C., Prodr., l.c., p. 83; id. in Fl. Bras., l.c., p. 170; Mez in Jahrb., l.c., p. 43; Corrêa, Dicc., 1 (1926), p. 86. — *Aiouea scandens* Ducke in Archiv. Jard. Botan. Rio de Janeiro V (1930), p. 107.

Typus: Kegel 1185; Dutch Guiana [G.].

Small tree (Kegel) or the long, slender branches laying on small trees (Ducke). Branchlets thick, smooth, glabrous, sub-angular at apex; branches cylindrical, smooth, dark-brown; buds minutely appressed yellowish pilose, soon glabrous. Leaves alternate, chartaceous or coriaceous, glabrous, elliptical or subovate-elliptical, $8-22 \times 3-11$ cm; base acuminate or acute, margin slightly thickened, nearly flat, often slightly crisp; top shortly, broadly, obtusely, often obscurely acuminate, rarely obtuse; above yellowish-green, shining, smooth, midrib slender, prominulous, prim. nerves slightly prominulous; beneath dull, minutely, densely, rather obscurely reticulate or smooth, midrib prominent, prim. nerves slender, erect-patent, slightly curved, prominulous (7-10 per side). Petioles glabrous, smooth, slightly thickened at base, slightly channelled, $1\frac{1}{2}-5$ cm l. Panicles axillary, clustered near the apex of the branchlets, pyramidal, ∞ -flowered, rather lax, 5-30 cm l.; peduncles comparatively slender, long, smooth, glabrous, reddish (Ducke, Kegel), 3-15 cm l.; branchlets erect-patent and patent, distant, rather slender, reddish, minutely subpulverulent, whitish pilose, 2-7 cm l. Bracts and bracteoles ovate or ovate-lanceolate, acutish, $\frac{1}{2}-1$ mm l., puberulous, sub-persistent. Pedicels slender, minutely, laxly pilose, 3-5 mm l. Flowers urceolate or sub-campanulate, laxly, minutely pilose (hairs very short, patent), $2-2\frac{1}{2}$ mm l., 2 mm in diam. at apex; tube urceolate-obconical, slightly narrowed below perianth, nearly glabrous within, $1\frac{1}{2}-2 \times$ as long as tepals. Tepals erect-patent, fleshy, scaly, slightly concave, suborbicular, usually broader than long, acutish, $\frac{3}{4}-1$ mm l.,

inner ones narrowed at base, broader than long, apex depressed-triangular, subapiculate. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter than tepals, about $\frac{3}{4}$ mm l.; anthers broadly ovate, glabrous, top emarginate, connective not protruding beyond the large, introrse cells; filaments slightly shorter, broad, but narrower than anthers, densely, minutely pilose. Staminodes of series 3 slightly longer than stamens, stipitiform-liguliform, top truncate, glabrous, in the same level as anthers, basal part pilose; glands large, basal, flattish, suborbicular, base subtruncate, slightly distant from filaments. Staminodes of series 4 foliose, ovate, obtuse, $\frac{1}{2}$ mm l., sub-sessile, base densely pilose. Ovary glabrous, ovoid-subglobose, $\frac{3}{4}$ mm l., abruptly narrowed into a thick, cylindrical, slightly longer style, thickened below the large, discoid stigma. Berry sub-globose, 10–19 mm l. Cupule thick, fleshy, obconical, 10–20 mm l. (the thick, fleshy pedicel included); apex flattish, 10–17 mm in diam., with a narrow, thin, wavy margin.

Distribution: Dutch Guiana, Trinidad, lower Amazon Basin.

Dutch Guiana: Surinam R. near Jodensavanna (Kegel 1185, fl. Aug. [G.]); lower Surinam R. near Pl. Voorburg (Wulfschlaegel 810, fl. [B.G. U.W.]); locality unknown (Hostmann 1042, in bud [Bs.D.Dl.Dr.Kw.Mi.St. U.W.]; Hostmann & Kappler 263, p.p., fl. [M.Ms.St.W.]). **Brazil:** Bahia (Salzmann 478, fl. [Bl.Bs.C.DC.Dr.Kw.Lg.M.P.W.], type of *Laurus maxima* Salzm.); Pará, forest near Villa Braga, Tapajoz R. (Ducke H.R.J. 18350, fl. Aug. [D.St.U.Ws.], type of *Aiouea scandens*); Amazonas, São Paulo de Olivença near Palmares (Krukoff 8110, fr. Sept. [NY.]). **Trinidad:** Arena reserve (Gill 12624 in bud Jan. [NY.]; 2732, fl. [Ws.]; Brooks 12556, ster. [Kw.]); Mayaro (Broadway 12208, fr. March [Kw.]); locality unknown (Crüger 122, fr. March [D.G.Kw.]; id. s.n., fr. [D.]).

The figure in *Flora Brasiliensis* has been drawn apparently after the specimen: Kegel 1185; the anthers are badly drawn, the apex should be emarginate instead of acute. The specimen: Crüger 122 in the Kew herbarium bears in Grisebach's handwriting the name: *Oreodaphne strumosa*, but Grisebach in his *Flora* does not cite a Trinidad specimen of this species. The description of the Guadeloupe specimen, however, fits fairly well with the Crüger plant. *Aiouea scandens* Ducke does not differ in any way from this species, but for it being a climber, according to Ducke; at the end of his description Ducke, however, mentions, that its branches are laying only on lower shrubs, which would mean, that it is no true climber at all.

The exactly identical fruiting specimen of Krukoff is a tree. The Trinidad specimens have narrower leaves, than those from the mainland. About the identity of the specimen: Brooks 12556 I am not absolutely sure, the leaves are up to 30 cm l., 8 cm w. with a long, slender acumen.

18. *Aiouea elliptica* Meissner in D.C., Prodr. XV, 1 (1864), p. 83; id. in Fl. Brasil. V, 2 (1866), p. 171; Mez in Jahrb. Botan. Garten Berlin V (1889), p. 44.

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

Tree, 7—10 m high (Riedel). Branchlets subangular, smooth, glabrous; buds yellowish appressed-pilose; branches glabrous, dark-brown, verruculous. Leaves alternate, chartaceous-coriaceous, glabrous, broadly ovate-elliptical, 7—13 $\times$ 3½—6 cm; base contracted into the petiole, rounded or rounded-apiculate, margin hardly thickened, slightly recurved, top obtusely acuminate; above yellowish-green, smooth or obscurely reticulate, slightly shining, midrib thin, slightly prominulous; beneath dull, obscurely, very densely, minutely reticulate or smooth, midrib prominent, prim. nerves (5—7 per side) slightly prominent, erect-patent, slender. Petioles rather thick, smooth, glabrous, slightly canaliculate, 1½—2 cm l. Panicles axillary, usually congested near the apex of the branchlets, ∞ -flowered, lax, pyramidal, or subcorymbose, glabrous, 9—20 cm l.; peduncles long (up to 10 cm), rather slender, smooth, branchlets slender, up to 8 cm l. Bracteoles deciduous. Pedicels slender, glabrous, 3—4 mm l. Flowers greenish (Riedel), glabrous, obconical. 2 mm l. Characters as in *A. saligna*.

Distribution: Vicinity of Rio de Janeiro.

Rio de Janeiro: near Mandioca in forest (Riedel s.n., fl. Jan. [Bs.D. Gr.Kw.L.Lg.Ms.]); Organ Mts. (Wilkes s.n., fl. [Gr.Ws.]).

The specimen of Wilkes has smaller leaves, the specimen shows some likeness with *A. saligna*.

The type specimen [Lg.] bears two labels, the right one without number states, that the specimen has been collected from a tree of 20—30 ft. high with greenish flowers; the other label with the number 494 refers to a not Lauraceous shrub with red flowers.

19. *Aiouea saligna* Meissn. in D.C., Prodr. XV, 1 (1864), p. 82; id. in Fl. Bras. V, 2 (1866), p. 169; id. in Videnskab. Meddel. Naturhist. Foren. Kjöbenhavn 1870, p. 131 (Warming, Symbol.,

p. 203); Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 38, tab. II, f. 3 et III, f. 29; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591; Corrêa, Diccion. Pl. uteis Brasil. 1 (1926), p. 436. — *Ajouea Brasiliensis* Auct. (non Meissn.), Mez in Jahrb., l.c., p. 43, p.p. (quoad cit. spec. Binot 46). — *Ajouea Gaudichaudii* Mez in Jahrb., l.c., p. 38; Corrêa, l.c., p. 447. — *Aydendron Piahyense* var. Meissn. in Videnskab. Meddel., l.c., p. 132 (nec alibi).

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

„Canella Anhuiba” (Brasil: Corrêa).

Tree, 7—15 m high (Kuhlmann, Krukoff, Riedel). Branchlets slender, subangular, glabrous, smooth; branches cylindrical, smooth, dark-brown; buds yellowish appressed tomentellous. Leaves alternate, chartaceous to rigid-chartaceous, glabrous, yellowish-green, lanceolate or elliptical-lanceolate, 10—14 (—21) × 3—4 (—7) cm; base acute, margin hardly thickened, slightly recurved, more or less crisp, top obtusely, distinctly acuminate; above shining, smooth or sometimes reticulate, midrib and prim. nerves slightly prominulous, or the latter inconspicuous; beneath dull, paler, densely, minutely reticulate, midrib prominent, prim. nerves (7—12 per side) thin, prominulous, erect-patent, slightly arcuate. Petioles long, slender, glabrous, 1—2 cm, slightly canaliculate. Panicles axillary, often clustered near the apex of the branchlets, pyramidal or often umbel-like, ∞-flowered, glabrous, up to 21 cm l.; peduncles rather slender, long, smooth, glabrous, up to 9 cm l., branchlets slender, up to 6 cm l. Pedicels thin, glabrous, 3—5 mm l., merging into the flower tube. Bracts and bracteoles $\frac{1}{4}$ — $\frac{1}{2}$ mm l., ovate, acute, glabrous, deciduous. Flowers obconical or suburceolate, greenish (Kuhlmann), glabrous, glaucous (Riedel), 2—2½ mm l.; tube obconical, as long as or slightly longer than tepals, sericeous within. Tepals equal, erect or erect-patent, fleshy, slightly concave, ovate-suborbicular, acutish, inner ones broader, narrowed at base. Stamens included or often staminodes of series 3 exserted; those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens as long or sometimes slightly longer than tepals, $\frac{1}{2}$ — $\frac{3}{4}$ (—1) mm l.; anthers ovate-triangular, acutish or slightly obtuse, connective distinctly protruding beyond the large, introrse cells; filaments broad, but narrower and shorter than anthers, densely pilose. Staminodes of series 3 liguliform-rectangular, longer than stamens (1—1¼ mm), apex hardly or not broadened, glabrous,

truncate or subemarginate; $\frac{1}{2}$ or $\frac{3}{4}$ of the staminodes densely pilose; glands small, sub-basal, flattish, suborbicular, base truncate. Staminodes of series 4 large, foliose, glabrous, ovate-subtriangular, obtusely acute, $\frac{1}{2}$ mm l., sessile, margin thickened. Ovary subglobose, glabrous, about 1 mm l.; style as long or shorter; stigma small, discoid, at last exerted from the perianth. Berry smooth, globular or ovoid-globose, acutish in youth, 8—12 mm in diam. Cupule flattish, obconical, fleshy, (the obconical, fleshy pedicel included) up to 1 cm l.; margin thin, wavy, narrow, apex up to 6 mm in diam.

Distribution: Amazon Basin, South-eastern Brazil.

Brazil: Rio de Janeiro: near Gavea (Frazão H.R.J. 7465, fl. May [D.St.U.], 3507, fl. Febr. [D.Kw.St.U.Ws.]); Colhida Izabellas (Glaziou 20458, fl. [D.Kw.P.]; near Mundo Novo (Kuhlmann H.R.J. 3457, fl. Sept. [D.St.U.]); Theresopolis (Glaziou 12123, fl. March. [B.D.Dl.K.Kw.Lg.NY.P.W.]); Corcovado (Glaziou 11475, fl. Jan. [B.D.Dl.Gr.K.Kw.Lg.Mi.H.P.St.W.Ws.]; 15366, fl. Jan. [B.D.Dl.K.Kw.Lg.P.]; ex herb. Schwacke 7157, fr. Febr. [D.]; Gaudichaud s.n., fr. [P.], type of *A. Gaudichaudii*); territory of Acre, mouth of Macauhan R., lat. 9° 20' S., long. 69° W. (Krukoff 5399, fr. Aug. [A.Dl.H.NY.St.Kw.U.]); locality unknown (Wilkes s.n., fl. [Gr.]; Glaziou 1071, fl. [B.K.Kw.Ms.P.]; Glaziou 1128, ster. [B.Br.P.]; Bowie & Cunningham s.n., fr. [Br.]; Binot 46, ster. [B.]; Raddi s.n., fl. [Dl.]). Minas Gerais: Rio Novo (Araujo in herb. Schwacke 9391, fr. [D.]); between Jozé Diaz and Mandioca (Riedel s.n., fl. Jan. [Bs.D.Kw.L.Lg.Ms.O.St.W.]). São Paulo: Santos at Palmeiras (Mosén 3462, fl. March [B.D.K.Kw.Lg.M.P.St.U.]). Paraná: Alexandra in forest (Dusén s.n. ster. [St.]). Rio Grande do Sul: locality unknown (Tweedie 1, [Kw.Ms.], bearing the msc. name: *Acrodictidium laetevirens* Meissn.). Santa Catharina: Lagoa Santa (Warming 674, fl. [K.], type of *Aydenodon Piahyense*, var.); locality unknown (Pabst 686, fl. [D.]). Bolivia: Jumapara, sandy, shaded places (Cardenas 1988, fr. Oct. [A.Kw.]).

About the identity of *A. Gaudichaudii* I am not absolutely sure, the shape of the leaves is exactly alike that of the specimen Glaziou 1071; the leaf base in these two specimens is more rounded as in the typical form; the specimen: Wilkes s.n., cited under *A. elliptica* may equally belong to this group.

20. *Aiouea Warmingii* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 46; Glaziou in Bull. Soc. Botan. France 59 (1912), Mém. 3 (1913), p. 591.

Typus: Glaziou 11460; Rio de Janeiro [K.].

Large tree (Glaziou). Branchlets slender, smooth, slightly pruinose, subangular and hardly pilose at apex; branches glabrous, smooth, cylindrical; buds densely yellowish tomentose. Leaves alternate, chartaceous, glabrous (young ones with few

hairs at base beneath), lanceolate, $8-14 \times 2\frac{1}{2}-4$ cm; base acuminate or shortly acute, margin slightly thickened and recurved, top obtusely acute or obscurely acuminate; above green, shining, midrib and prim. nerves slightly prominulous, veins reticulate, hardly prominulous; beneath dull, paler, rather smooth midrib prominent, prim. nerves (10—14 per side) thin, rather patent, arcuate, prominulous, veins often reticulate. Petioles slender, glabrous 10—18 mm l., slightly canaliculate. Panicles axillary, rather many-flowered, very lax, slender, pyramidal, glabrous, 10—15 cm l.; peduncles slender, in youth slightly pilose at base, 5—7 cm l.; branchlets few, distant, filiform, glabrous, 5—10 mm l. Flowers whitish (Glaziou), glabrous, broadly obconical, $2\frac{1}{2}-3$ mm l.; tube obconical, about as long as tepals, pilose within. Tepals equal, fleshy, erect-patent, slightly concave, ovate-suborbicular, acutish; inner ones broader. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter than tepals, anthers glabrous, ovate, acute, connective protruding beyond the introrse, large cells; filaments broad, densely pilose, at apex slightly narrower than anthers, as long as or $1\frac{1}{2} \times$ as long as anthers, at base broadened. Staminodes of series 3 as long as stamens, liguliform-rectangular, minutely pilose, top truncate or emarginate; glands rather large, subglobose, compressed, base truncate, sessile. Staminodes of series 4 liguliform, pilose, top obtuse, 1 mm l.; base provided with small, but obvious, subcylindrical, obliquely inserted, sessile glands. Ovary sub-globose, 1 mm l., glabrous, abruptly narrowed into the rather slender, cylindrical, up to $1\frac{1}{2}$ mm l. style with small, discoid stigma. Berry ellipsoid, smooth, up to 12 mm l., 9 mm in diam. Cupule flattish, fleshy, obconical, up to 12 mm l. (the obconical, fleshy, at base rather slender pedicel included), apex up to 8 mm in diam. with thin, narrow margin.

Distribution: Rio de Janeiro.

Rio de Janeiro: Collegio, near Campos (Glaziou 11460, fl. Oct. [K.Kw.P.]).

The species is very alike *A. Meissneri*, the only difference being the peculiar staminodes of series 4 with their basal glands, a character found nowhere else in this genus. This character has been overlooked by Mez; the differences in leaf-reticulation, as given by him, do not hold true; the inflorescence length has no specific value at all. I found several staminodes of the third series provided with minute, lateral cells.

21. *Aiouea Meissneri* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 46. — *Aydendron tenellum* Meissn. in D.C., Prodr. XV, 1 (1864), p. 93; id. in Fl. Brasil. V, 2 (1866), p. 184; Benth. in Benth. & Hook., Gen. Pl. 3 (1880), p. 153; Mez, l.c., p. 47; Wiesner, Rohstoffe 2 (1928), p. 1225.

Typus: Gardner 1990; Ceara [DC.].

Tree, up to 16 m high (Gardner). Branchlets slender, flexible, smooth, subcylindrical, at apex yellowish lanuginose-tomentose, soon glabrous; branches dark-brown, smooth, striate; buds densely yellowish tomentose-lanuginose. Leaves alternate, chartaceous, glabrous, narrowly elliptical or lanceolate, $7-19 \times 2\frac{1}{2}-5$ cm; base acute, margin hardly thickened, slightly recurved, crisp, top obtusely acuminate; above shining, yellowish-green, smooth, midrib and prim. nerves thin, prominulous or the latter inconspicuous; beneath dull, paler, smooth or veins obscurely densely reticulate, midrib prominent, prim. nerves (8-10 per side) filiform, prominulous, erect-patent or rather patent, arcuate. Petioles slender, glabrous, $1\frac{1}{2}-3$ cm l., thickened towards base, rugulose, slightly canaliculate. Panicles axillary, glabrous, pyramidal, lax, very slender, rather many-flowered, 5-16 cm l.; peduncles very slender, cylindrical, base often laxly pilose, branchlets filiform, erect-patent, few, distant, up to 3 cm l. Bracts and bracteoles minute, ovate-lanceolate, laxly pilose, deciduous. Pedicels filiform, glabrous, 3-6 mm l. Flowers glabrous, broadly obconical, $2\frac{1}{2}-3$ mm l., 2- $2\frac{1}{2}$ mm in diam. at apex; tube broadly obconical, about as long as tepals, densely sericeous-hirsute within. Tepals equal, erect-patent, fleshy, slightly concave, ovate-suborbicular, acutish, minutely pilose within. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter than tepals, up to $1\frac{1}{4}$ mm l., anthers broadly ovate, acute, glabrous, connectives acute, slightly protruding beyond the large, introrse cells; filaments thick, distinct, as long or slightly longer than anthers, densely pilose. Staminodes of series 3 as long, liguliform-rectangular, pilose, top truncate; basal glands sessile, rather large, compressed, suborbicular, base truncate. Staminodes of series 4 sessile, ovate-triangular, obtuse or acutish, glabrous, $\frac{1}{2}$ mm l. Ovary glabrous, ellipsoid, 1 mm l., abruptly narrowed into the slightly longer, rather thick, cylindrical style; stigma small, discoid. Berry smooth, ellipsoid, slightly mucronulate, up to 12 mm l., 9 mm in diam. Cupule shallow, obconical, fleshy, up to 15 mm l. (the fleshy,

obconical pedicel included); apex up to 6 mm in diam. with thin, wavy margin.

Distribution: Ceara.

Brazil: Ceara, ravine of the Serra de Araripe, Barra do Jardim (Gardner 1990, fl., fr. Dec. [Br.Bs.D.DC.Dl.Dr.Kw.Ms.NY.O.P.W.]).

In sterile condition it is impossible to distinguish this species from *A. Warmingii*.

Use: Wood for constructions (Peckolt, Wiesner).

22. *Aiouea trinervis* Meissner in D.C., Prodr. XV, 1 (1864), p. 83; id. in Fl. Brasil. V, 2 (1866), p. 171; Mez in Jahrb. Botan. Garten Berlin V (1889), p. 41. — *Aiouea marginata* Mez in Engler's Botan. Jahrb. 30 (1902), Beiblatt 67 (1901), p. 13; Glaziou in Bull. Soc. Botan. France 59 (1912), Mém. 3 (1913), p. 591. — *Aiouea Hassleri* Mez ex Chodat, Plant. Hasslerianae I (1902), p. 202 et in Bull. Herb. Boissier sér. 2, II (1902), p. 823 (nomen tantum; sub *Ajonea*, lapsus calami); id. Pl. Hassler. II (1903), p. 175 et in Bull. Herb. Boissier sér. 2, III (1903), p. 794 (nomen); Mez in Bull. Herb. Boissier sér. 2, III (1903), p. 229; Hassler in Annuaire Conservat. et Jardin Botan. Genève 21 (1919), p. 78.

Typus: Riedel 486; São Paulo [Lg.].

Shrub, 1–2 m. high (Glaziou, Hassler, Riedel). Branchlets thick, sub-cylindrical, densely yellowish lanuginose-hirsute at apex, towards base glabrescent; buds densely yellowish hirsute-velutinous; branches cylindrical, smooth or slightly striate, dark-brown, glabrous. Leaves alternate, rigid-coriaceous, triplinerved, very young ones sparsely pilose, soon glabrous, yellowish-green, on both sides densely, minutely, prominulously reticulate, broadly ovate or elliptical, rarely obovate, $7-18 \times 4-10$ cm, base contracted into the petiole, sub-acute or somewhat rounded, margin strongly thickened, recurved, top broadly, shortly, obtusely acuminate or obtuse; above shining, midrib and prim. nerves usually strongly prominent, secondary ones laxly prominulous; beneath dull, midrib strongly prominent, the lower 2 prim. nerves ascendant up to $\frac{3}{4}$ the leaf-length, arcuate, strongly prominent, the upper prim. nerves (2–4 per side) erect-patent, arcuate, prominent, second. nerves prominulous, lax. Petioles thick, glabrous, $1\frac{1}{2}-4$ cm l., above flat, apex cuneate with decurrent prim. nerves and leaf-margins. Panicles axillary at

the apex of the branchlets, clustered, glabrous (peduncles often hirsute at base), 5–15 cm l., many-flowered, lax, pyramidal; peduncles rather slender, 2–6 cm l., branchlets erect-patent, distant. Pedicels 2–4 mm l., rather slender, glabrous. Bracteoles $\frac{1}{2}$ mm l., ovate, acute, margin pilose, deciduous. Flowers obconical, glabrous, sometimes slightly pruinose, yellow (Riedel, Rojas) or greenish (Glaziou, Hassler), 2–2½ mm l., 1–1½ mm in diam. at apex; tube obconical, 1–1½ mm l., densely sericeous within. Tepals equal, fleshy, erect, broadly ovate-triangular, acute, 1–1½ mm l., slightly concave, base minutely pilose within. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens pilose, 1–1¼ mm l.; anthers ovate, connectives apiculate, distinctly protruding beyond the rather large, introrse cells, filaments broad, about as long, and slightly narrower than anthers, densely pilose. Staminodes of series 3 slightly longer than stamens, subrectangular-liguliform, not or hardly broadened at apex, truncate, densely pilose (except apex), sometimes longitudinally concave; glands small, sessile or nearly so, extrorse-lateral, sub-globose, irregular. Staminodes of series 4 foliose, ovate, acute or acuminate, pilose, flattish, about 1 mm l., nearly sessile, top glabrous, base densely pilose. Ovary subglobose, glabrous, about 1 mm l. style slender, cylindrical, 1½ mm l., stigma discoid, distinct. Fruit unknown.

Distribution: Paraguay, Goyaz, São Paulo.

Paraguay: Rio Verde, dry soil, Vista Alegre (Rojas 3865 = ser. 12352, fl. July [D.Ws.M.]); Plateaus and slopes of Sierra de Maracayu, campos Ipé-hú (Hassler 5004, fl. Oct. [Bs.Br.D.Dl.Kw.P.W.], type of *A. Hassleri*); Sierra de Amambay, "Cerrados" Esperanza (Rojas 10520, fl. July [Br.Dl.Kw. P.D.]). **Goyaz:** Waterfalls between Monte Alegre and Passa Tres (Glaziou 22050, fl. Aug. [B.D.Dl.K.Kw.Lg.P.St.], type of *A. marginata*). **São Paulo:** Rio Pardo, dry Campos (Riedel 486, fl. Sept. [Lg.Ms.]).

There is some discrepancy in the size of the leaves of the cited specimens: the largest leaves are those of *A. marginata*, collected in waterfalls, the smallest those of *A. Hassleri*, collected in dry campos. The specimens of Riedel are about intermediate. But in some specimens, collected in Paraguay I found leaves about as large as those in *A. marginata*. As there are no other differences in the three species, and the leaf size in Lauraceae merits not important specific value, I am sure, that they are identical.

23. *Aiouea goyazensis* (Meissn.) Benth. ex Mez in Jahrb. Bot. Garten Berlin V (1889), p. 40 (excl. cit. spec. Burchell

7211). — *Aydendron Goyazense* Meissn. in D.C., Prodr. XV, 1 (1864), p. 94; id. in Fl. Brasil. V, 2 (1866), p. 184; Benth. in Benth. et Hook., Gen., l.c., p. 153 (*Aydendron Goyazana*); Mez in Jahrb., l.c., p. 40. — *Ajouea Lützelburgii* Mez in Fedde, Reperit. 16 (1920), p. 305.

Typus: Gardner 3424; Goyaz [DC.].

Shrub, 2 m high (Gardner). Branchlets rather slender, smooth, dull, cylindrical, glabrous, towards apex pruinose; buds glabrous; branches smooth or lightly striate, glabrous. Leaves alternate, glabrous, rigid-coriaceous, elliptical, $6-10 \times 2\frac{1}{2}-4\frac{1}{2}$ cm; base rounded or shortly acutish, margin strongly thickened, recurved, top rounded or rarely obtusely acutish, on both sides densely, minutely reticulate; above yellowish-green, shining, midrib prominulous, distinct, rather broad, prim. nerves slightly prominulous; beneath dull, rather smooth, midrib strongly prominent, prim. nerves (4-8 per side) patent, thin, slightly prominulous. Petioles thick, glabrous, flattened above, 8-15 mm l., top cuneate with decurrent leaf margins. Panicles axillary, pyramidal, lax, few-flowered, glabrous, slender, 7-16 cm l.; peduncles slender, cylindrical, smooth, 2-7 cm l., branchlets few, short. Bracts and bracteoles ovate-lanceolate, acute, glabrous, 1-2 mm l., often sub-persistent. Pedicels slender, glabrous, 3-5 mm l. Flowers glabrous, obconical, about 3 mm l., slightly pruinose; tube broadly obconical, $1-1\frac{1}{2}$ mm l., densely sericeous within. Tepals equal, ovate or ovate-elliptical, acute, slightly concave, fleshy, erect or erect-patent, $1\frac{1}{2}-2$ mm l., base pilose within. Stamens included. Those of series 1 and 2 fertile, $1\frac{1}{2}$ mm l.; anthers ovate-triangular, glabrous, connectives distinctly, rather broadly protruding beyond the large, introrse cells, apex obtuse or subtruncate; filaments rather broad, slightly shorter, densely pilose, base adnate to tepals. Stamens of series 3 sterile, sub-rectangular, linear-liguliform, slightly shorter than stamens, truncate, towards base pilose; glands sub-basal, sub-globose, compressed, large ($\frac{1}{2}$ mm l.), apex often irregular. Staminodes of series 4 foliose, ovate-subhastate, 1 mm l., acute; stalks broad, very short, densely pilose. Ovary subglobose, glabrous, 1 mm l., abruptly narrowed into a cylindrical, rather slender, up to $1\frac{1}{2}$ mm l. style; stigma small, discoid. Berry ellipsoid, smooth, 12 mm l., 8 mm in diam. Cupule flattish at apex, shallow, the thick, fleshy, obconical, not distinct pedicel included about 1 cm l., at apex 5 mm in diam.

Distribution: Goyaz.

Brazil: Goyaz, Serra dos Macacos near Chapada Duro (Luetzelburg 573, fl., fr. Aug. [D.M.], type of *A. Lützelburgii*; id. 1423, fl., fr. Aug. [M.]); Missione Duro (Gardner 3424, fl., fr. Sept. [B.Br.Bs.C.D.DC.Dl.Dr.Kw.Ms.NY.O.P.W.]).

Mez erroneously described the staminodes of the innermost row of *A. Lützelburgii* as being stipitiform; they are foliose, ovate in the type specimen.

24. *Aiouea chapadaensis* Kosterm. nov. spec.

Typus: Snethlage 687; Maranhão [D.].

Arbuscula, 1—5 m alta (Snethlage) ramulis glabris laevibus subcylindricis gemmis dense sericeo-tomentellis. Folia alterna glabra rigide coriacea subovato-elliptica $6-9\frac{1}{2} \times 2\frac{1}{2}-4$ cm; basi in petiolum contracta brevissime obtusiuscule acuta margine manifeste incrassato apice obtusiuscule acuta vel saepe obtusa; supra nitida sub-laevia vel obscure plano-reticulata nervo mediano costisque prominulis; subtus opaca obscure prominulo-reticulata nervo mediano prominente costis utrinque 4—5 erect-patentibus curvatis prominulis. Petioli glabri gracilibus subcanaliculati 2 cm longi. Paniculae axillares pyramidales glabrae (juniores pilosae) perlaxae multiflorae 10—12 cm longae pedunculis communibus gracilibus 5—6 cm longis ramulis distantibus filiformibus sub-patentibus usque ad 4 cm longis. Bractee bracteolaeque lanceolatae acutae extus pilosae usque ad $\frac{1}{4}$ mm longae deciduae. Petioli glabri filiformibus 2—3 mm longi. Flores viridis $1\frac{1}{2}-2$ mm longi subhemisphaerici-obconici glabri tubo lato obconico tepalibus subaequilongo; tepalis aequalibus erectis crassis late ovato-triangularibus acutis usque ad 1 mm longis. Stamina inclusa seriei primae et secundae fertilia, seriei tertiae et quartae staminodialia. Stamina sex exteriora tepalibus sub-brevioribus, usque ad $\frac{3}{4}$ mm longa antheris ovatis acutis glabris connectivo cellulas introrsas distincte superante; filamentis crassis sublongioribus pilosis. Staminodia seriei tertiae quam stamina fertilia aequilonga lineato-liguliformibus pilosis apice truncatis glandulis basalibus magnis sub-globosis sessilibus. Staminodia seriei quartae stipitiformibus dense hirsuta usque ad $\frac{3}{4}$ mm longa. Ovarium glabrum ellipsoideum usque ad $\frac{3}{4}$ mm longum in stylum cylindricum crassiusculum sublongiorum stigmatem discoideo minuto abrupte contractum. Fructus ignotus.

Distributio: Brasilia: Maranhão.

Brasilia: Maranhão, Victoria, chapada, alt. 400—600 m. (Snethlage 687, fl. Jul. [D.]).

The species differs from *A. goyazensis* by its long and slender petioles, the shape of the leaves, the densely pilose leaf-buds and the flower characters; the leaves show some likeness to those of *A. elliptica*, the latter, however, has no thickened margin. I found some staminodes of series 4 provided with patent, small glands, attached at some distance from the base.

25. *Aiouea Gardneri* (Meissn.) Benth. ex Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 45 — *Acroclididium Gardneri* Meissner in D.C., Prodr. XV, 1 (1864), p. 87 et 510; id. in Fl. Brasil. V, 2 (1866), p. 175; Benth. in Benth. & Hook., Gen. 3 (1880), p. 155; Mez in Jahrb., l.c. — *Ajouea Burchelliana* Mez in Jahrb., l.c., p. 41 (exclus. syn. et spec. Sellowii et descript. fruct.). — *Ajouea Goyazensis* Auct. (non Benth.), Mez in Jahrb., l.c., p. 40, p.p. (quoad cit. spec. Burchell 7211). — *Ajouea Meissneri* Auct. (non Mez), Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591, p.p. (quoad cit. spec. Glaziovii 22051).

Typus: Gardner 5164; Minas Gerães [Kw.].

Shrub (Glaziou) or small tree (Gardner). Branchlets thick, subcylindrical, towards apex subangular, smooth, straight, densely yellowish villose-hirsute, glabrescent towards base; branches glabrous, dark-brown, smooth, lightly longitudinally striate; buds densely yellowish villose-hirsute. Leaves alternate, rigid-coriaceous or coriaceous, young ones sparsely pilose, soon glabrous, elliptical-lanceolate, $7-16 \times 2\frac{1}{2}-5$ cm; base shortly acute or acuminate, margin thickened, recurved, top acute or obscurely acuminate; above green, shining, smooth or nearly so, midrib and prim. nerves slightly prominulous; beneath dull, smooth or obscurely, densely reticulate, midrib prominent, prim. nerves (5-6 per side) slender, erect-patent, prominulous, slightly arcuate. Petioles soon glabrous, $1\frac{1}{2}-2$ cm l., flattened above, broad, at apex somewhat broadened. Panicles axillary, many-flowered, pyramidal, lax, glabrous, 8-13 cm l.; peduncles comparatively slender long (4-7 cm), branchlets distant, thin. Bracts and bracteoles minute, ovate-lanceolate, sparsely, minutely pilose, deciduous. Pedicels thin, glabrous, 3-5 mm l. Flowers glabrous, broadly obconical, $2\frac{1}{2}-3$ mm l., 2 mm in diam. at apex, often pruinose; tube obconical, about as long or slightly longer than perianth, densely sericeous within. Tepals equal, fleshy, erect-patent, slightly concave, ovate-suborbicular, acutish, base pilose within; inner tepals narrowed at base, subrhomboid. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4

staminodial. Outer six stamens slightly shorter than tepals, up to $1\frac{1}{4}$ mm l.; anthers ovate or ovate-triangular, acute, minutely pilose, connective mucronulate, strongly protruding beyond the large, introrse cells, filaments about as long or slightly longer, broad, slightly narrower than anthers, densely, minutely pilose, slightly narrowed towards base. Staminodes of series 3 as long as stamens, rectangular-liguliform, truncate, densely minutely pilose; basal glands sessile, conspicuous, flattish, suborbicular, base truncate or subcordate. Staminodes of series 4 large, foliose, ovate, acute or acuminate, $\frac{1}{2}$ — $\frac{3}{4}$ mm l., glabrous, sessile, back often keeled. Ovary glabrous, globose or ellipsoid, about 1 mm l., abruptly narrowed into a rather slender, 1—2 mm l. style, stigma conspicuous, discoid. Fruit unknown.

Distribution: Goyaz, Minas Gerães.

Goyaz: Mossamedes (Glaziou 22051, fl. Aug. [D.Dl.H.K.Kw.Lg.P.St.]); near Goyaz (Burchell 7288—2, fl. [Kw.P.], type of *A. Burchelliana*); along the Rio road, about a mile beyond the Rio Bacalhao (Burchell 7211, fl. [Kw.P.]). **Minas Gerães:** Tapinha canga (Gardner 5164, fl. Aug. [Br.Kw.W.O.]).

This species shows a strong likeness to *A. hirtella*, the main difference being its glabrous flowers and panicles.

26. *Aiouea hirtella* Mez in Jahrb. Bot. Gart. Berlin V (1889), p. 39. — *Aiouea pruinosa* Spencer le M. Moore in Transact. Linn. Soc. London, ser. 2, IV (1895), p. 448; Sampaio in Public. n. 56 da Commissao Linhas Telegraph. Matto Grosso-Amazonas, Anexo 5, Botanica, Parte X (1917), p. 70. — *Ajouea farinosa* Mez in Engler's Bot. Jahrb. 30 (1902), Beiblatt 67 (1901), p. 13. — *Ajouea Brasiliensis* Auct. (non Meissn.), Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591. — *Ajouea Meissneri* Auct. (non Mez), Glaziou in Bull., l.c., p. 591 p.p. (quoad cit. spec. Glaziovii 22054).

Typus: Tamberlik s.n.; Brazil [W.].

„Canella” (Goyaz: Glaziou).

Shrub, 1—2 m. high (Malme) or large tree (Glaziou). Branchlets rather thick, subangular, densely yellowish hirsute-villose or lanuginose-hirsute, glabrescent; branches glabrous, cylindrical, smooth, dark-brown; buds densely yellowish villose-hirsute. Leaves alternate, coriaceous or rigid-coriaceous, glabrous, elliptical or subovate-elliptical, 7—25 × 3—8 cm; base acute, margin thickened, recurved; top acute or obscurely acuminate; above green, shining, obscurely reticulate (especially in young leaves)

or smooth, midrib and prim. nerves prominulous; beneath dull, densely, minutely reticulate or rarely sub-smooth, midrib prominent, prim. nerves (6—8 per side) erect-patent, slightly arcuate, prominulous. Petioles glabrous, 1—2 cm l., slightly channeled or flattened above. Panicles axillary on the young branchlets, pyramidal, lax, mayn-flowered, laxly pilose, 4—20 cm l.; peduncles subangular, 2—10 cm l.; branchlets slender, distant. Bracts and bracteoles minute, deciduous. Pedicels slender, pilose, bluish pruinose (dried), 5—10 mm l. Flowers broadly infundibuliform, conspicuously, laxly pilose, 3—3½ mm l. Characters as in *A. Burchelliana*; the glands often slightly distant from the third series of staminodes, usually large. Flower tube densely sericeous within. Berry ellipsoid, smooth. Cupule obconical, flat, up to 1½ cm l. (the towards base rather slender, obconical, fleshy pedicel included), apex up to 7 mm in diam. with rather thin margin.

Distribution: Matto-Grosso, Goyaz.

Goyaz: Fazenda de la Serra dos Pyreneos (Glaziou 22054, fl. July [B.D.Dl.K.Kw.Lg.NY.St.], type of *A. farinosa* Mez); Abbade de Meia Ponte (Glaziou 22053, fl. Sept. [D.Dl.Kw.P.]). **Matto-Grosso:** Serra da Chapada, „Buritos” in less dense „Cerrados” (Malme 1728b, fl. June [St.]); Santa Anna da Chapada in „Cerrados” (Malme 2014, fl. July [D.St.]; Robert 533b, fr. Sept. [Kw.], 389, fl. July [Br.]); Serra da Chapada, between Cuyaba and S. Anna da Chapada (Moore 127, fl. Aug. [Br.D.NY.], type of *A. pruinosa* Moore); Burity, Cuyaba (Dorrien Smith 326, fl. June [Kw.]).

The general facies of this species is so much alike that of *A. Gardneri*, that it is impossible to distinguish them without flowers, whose main difference is their conspicuous pilosity. Though the leaves of the specimens from Matto-Grosso are usually smaller, than those collected by Glaziou, there is one specimen of Malme, provided with leaves of a sterile branch, that are as large as the Goyaz specimens. Malme states moreover, that, though this species was a shrub, it had a thick, subterranean trunk.

27. Aiouea Rondoni Sampaio in Comissão Linhas Telegraficas de Matto Grosso ao Amazonas, Public. n. 56, Anexo n. 5; Botanica, Parte X (1917), p. 10, t. 7.

Typus: Hoehne 3501; Matto Grosso [Museu Nacional, Rio de Janeiro]. „Itauba” (Matto-Grosso: Hoehne).

Shrub, up to 1½ m high (Archer, Hoehne). Branchlets rather thick, cylindrical, densely velutinous; branches glabrous, smooth,

dark-brown; buds densely hirsute-velutinous. Leaves alternate, subtriplinerved, coriaceous and rigid-coriaceous, ovate-elliptical or broadly elliptica 8—10 × 4—6 cm; base contracted into the petiole, shortly acute or sub-cuneate, margin thickened, recurved, top obtuse or rounded or obscurely acuminate; above glabrescent (midrib and base with long, appressed, sub-persistent hairs), shining, green, densely, prominulously reticulate, midrib and prim. nerves slightly prominent; beneath densely sublanuginose-hirsute, midrib and the erect-patent (lower ones ascendant), arcuate prim. nerves (4—5 per side) prominent, veins minutely, densely reticulate. Petioles densely villose, $1\frac{1}{2}$ —2 cm l., flattened above, apex broadened. Panicles clustered near the apex of the branchlets, ∞ -flowered, lax, broadly pyramidal, densely tomentose-hirsute, 10—20 cm l.; peduncles rather slender, cylindrical, tomentose, 2—10 cm l.; branchlets slender, distant, patent, glabrescent towards apex. Bracts and bracteoles minute, ovate-lanceolate, pilose, deciduous. Pedicels slender, sparsely hirsute, 4—5 mm l. Flowers with few patent hairs, greenish (Archer), 2—3 mm l.; tube obconical, about as long or slightly longer than tepals, densely sericeous-hirsute within. Tepals equal, fleshy, erect-patent, slightly concave, ovate-suborbicular, obtusely acute, inner ones narrowed at base. Stamens included, those of series 1 and 2 fertile, those of series 3 and 4 staminodial. Outer six stamens slightly shorter or about as long as tepals, $1\frac{1}{2}$ mm l., anthers glabrous, ovate, connective strongly, apiculately protruding beyond the large, introrse cells, filaments hardly narrower, broad, flattish, densely pilose, as long as or slightly longer than anthers. Staminodes of series 3 as long as stamens, liguliform, top not broadened, truncate or sub-emarginate, longitudinally concave within, densely pilose; glands sub-basal, rather large, suborbicular-reniform, flattish, sub-sessile. Staminodes of series 4 very large, 1 mm l., foliose, rather thin, ovate, acute or sub-acuminate, base sericeous. Ovary glabrous, ellipsoid, $\frac{3}{4}$ mm l., abruptly narrowed into the rather thick, cylindrical, up to $1\frac{1}{2}$ mm l. style, stigma large, discoid. Fruit unknown.

Distribution: Matto-Grosso.

Matto-Grosso: Coxim (Hoehne 3501, fl. May [Mn.]); Campo Grande (Archer 175, fl. Dec. [Ws.]).

Subgenus: *TRIANThERA* Mez (species 28—29).

28. *Aiouea Benthamiana* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 48. — *Ajouea Brasiliensis*, var. *glabriflora*

Meissn. in D.C., Prodr. XV, 1 (1864), p. 83 et in Fl. Brasil. V, 2 (1866), p. 170, p.p. (quoad cit. spec. Spruce 2414); Benth. in Benth. & Hooker, Genera III (1880), p. 154. — *Ajouea Guyanensis* Auct. (non Aublet) Mez in Jahrb., l.c., p. 42, p.p. (quoad cit. spec. Spruce 3427); Knuth in Fedde, Repert. Beiheft 43 (1928), p. 340. — — *Ajouea tenella* Meissn. (non Nees) in D.C., Prodr., l.c., p. 82, p.p. (quoad cit. spec. Spruce 3427).

Typus: Spruce 2414; Rio Negro [Dl.].

Tree, 7 m high (Spruce). Branchlets smooth, slightly shining, glabrous, subangular and sulcate at apex; bud-scales slightly pilose at apex. Leaves alternate, chartaceous and coriaceous, glabrous (sparsely pilose in young leaves along midrib beneath), lanceolate or lanceolate-elliptical, $10-17 \times 3-4\frac{1}{2}$ cm, base acute, margin slightly thickened, recurved, top with long and rather slender acumen; above shining, smooth, midrib slender, prominulous, prim. nerves impressed in young leaves; beneath dull, midrib prominent, prim. nerves (6–8 per side) prominulous, slender, arcuate, erect-patent, veins obliterate. Petioles slender glabrous, canaliculate, 1–2 cm l. Panicles axillary near the apex of the branchlets, many-flowered, lax, glabrous or nearly so, up to 15 cm l.; peduncles slender compressed, up to 6 cm l. branchlets thin, patent up to 4 cm l. Bracteoles deciduous. Pedicels thin, 3–5 mm l., glabrous. Flowers green (Spruce), glabrous, $2-2\frac{1}{2}$ mm l., tube about as long as tepals, obconical, glabrous within. Tepals slightly pilose within, fleshy, erect-patent, slightly concave, ovate-orbicular, obtuse or acutish, 1 mm l. Stamens of series 1 fertile, 1 mm l., S-curved, attached to tepals; anthers ovate, obtuse or truncate, cells large, extrorse or extrorse-lateral; filaments as long, slender, sparsely pilose. Staminodes of series 2 filiform or stipitiform, slightly pilose, $\frac{1}{2}-\frac{3}{4}$ mm l., attached to tepals. Staminodes of series 3 filiform, slightly longer than the large (up to $\frac{1}{2}$ mm l.) clavate, sessile, subglobose, elongate glands (touching each other). Staminodes of series 4 foliose, ovate or ovate-subcordate, glabrous, acutish, $\frac{1}{2}$ mm l., stalks hardly developed sparsely pilose. Ovary subglobose, glabrous, $\frac{1}{2}$ mm l., abruptly narrowed into a slender, up to 1 mm l. style; stigma discoid, rather small. Fruit unknown.

Distribution: Brazil: Rio Negro.

Brazil: Rio Negro, San Gabriel da Cachueira (Spruce 2414, fl. Aug. [Bs.D.Dl.Dr.K.Kw.Lg.Gr.P.NY.O.W.Br.]; id. 2415, fl. Aug. [Kw.]). Venezuela: Bolivar, Casiquari R., Naciva da Pacimoni (Spruce 3427, fl. Jan. [Br.Dr.Kw.NY.O.P.W.]).

The fertile stamens are distinctly extrorse and not introrse, as stated by Mez in his monograph.

29. *Aiouea myristicoides* Mez in Jahrb. Botan. Garten Berlin V (1889), p. 48.

Typus: Collect. unknown; Brazil [P.].

„Louro” (Brazil: Froes).

Tree, up to 8 m high, 15 cm in diam. (Froes), aromatic (Ducke); branchlets glabrous, smooth, lightly striate, slightly shining, sub-angular, slender; branches cylindrical, dark-brown; bud scales slightly yellowish pilose at apex. Leaves alternate, chartaceous or coriaceous, glabrous, elliptical or lanceolate-elliptical, $7-11 \times 2\frac{1}{2}-5$ cm; base acute or acuminate, margin hardly thickened, slightly recurved, top obtusely acuminate; above shining, rather smooth, midrib slightly prominent, prim. nerves and veins hardly prominulous in adult leaves; beneath dull, midrib prominent, prim. nerves (6—8 per side) slender, prominulous, erect-patent, arcuate towards margin, veins slightly prominulous, reticulate or more or less obliterate. Petioles slender, glabrous, about 1 cm l., canaliculate, merging into the leaf blade. Panicles many-flowered, lax, axillary at the apex of the branchlets, glabrous, up to 13 cm l., peduncles slender, reddish (Ducke), up to 6 cm l., branchlets thin, rather patent, up to 5 cm l. Bracteoles glabrous or nearly so, about $\frac{1}{2}$ mm l., ovate, deciduous. Pedicels thin, glabrous, 4—7 mm l. Flowers glabrous, 2— $2\frac{1}{2}$ mm l., greenish (Ducke); tube obconical, slightly longer than the tepals, glabrous inside. Tepals erect-patent, fleshy, concave, nearly equal, ovate-suborbicular, acutish (inner ones slightly contracted at base). Stamens included, glabrous; only those of series 1 fertile with suborbicular, flattish, acutish, $\frac{3}{4}$ mm l. anthers; cells small, basal-lateral; filaments hardly $\frac{1}{2}$ mm l., distinct. Staminodes of series 2 nearly as large, top clavate, flattish (sometimes with fertile, extrorse-lateral, basal, minute cells), filaments distinct. Staminodes of series 3 somewhat shorter, clavate, flattish, slightly longer or nearly as long as the large, flattish, sub-basal glands. Staminodes of series 4 foliose, ovate, acutish, glabrous, $\frac{1}{2}-\frac{3}{4}$ mm l., shortly stipitate. Ovary glabrous, sub-globose, $\frac{3}{4}$ mm l., abruptly narrowed into a cylindrical, thick, about as long style with conspicuous, discoid stigma. Fruit unknown.

Distribution: Amazon Basin.

Brazil: State of Maranhão, Maracassume R. region, Estrada da Feitoria

(Froes 1957, fl. Oct. [Br.Dl.H.Kw.Mi.NY.P.St.U.Ws.]); Pará, Jurupa (Ducke H.R.J. 19972, fl. Aug. [Bs.D.Kw.St.U.Ws.]); locality unknown (unknown collector s.n., fl. [P.]).

In one flower I found a staminode of series 2 provided with 2 fertile (?) cells, another with a single cell. This species is closely allied to *A. piauihyensis*; the shape of the anthers and insertion of the cells is alike; the presence of fertile cells in the second row of staminodes of some flowers is a further indication that it is derived from *A. piauihyensis*.

Use: timber used in industry (Froes).

Species excludendae:

Ajouea Guyanensis Hb. Kunth = *Ocotea*

Ajouea Guyanensis „Griseb.” = *Aniba*

Ajouea tenuiflora Nees in Hb. Monacens. = *Ocotea*

Ajouea Malabonga Blanco = ?

SYSTEMONODAPHNE Mez

Systemonodaphne Mez in Jahrb. Botan. Garten Berlin V (1889), p. 78; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 276; id. in Nachträge I (1897), p. 174; Dalla Torre et Harms, Genera (1900—07), p. 178, n. 2805; Post et Kuntze, Lexicon (1904), p. 547; Benoist in Archiv. Botan. V, Mém. 1 (1931), p. 63; Lemée, Diction. descript. VI (1935), p. 425; Kostermans in Pulle, Fl. Surinam. II (1936), p. 310.

Trees or shrubs in French and Dutch Guiana. Leaves alternate, penninerved, glabrous. Panicles axillary, reduced, usually 2-flowered, unbranched, very short. Flowers hermaphrodite. Involucre none. Flower tube short, obconical. Tepals 6, equal, rigid. Fertile stamens 9 in three rows; anthers 2-celled. Stamens of series 4 wanting. Anther cells of outer six stamens introrse, large; filaments of outer six stamens distinct, free. Anther cells of inner stamens extrorse or extrorse-apical; filaments connate into a large, broad, conical staminal tube, $\frac{1}{2}$ mm from base provided with six small, sessile, globose glands. Ovary ellipsoid-ovoid, pilose, merging into a rather thick, longer, pilose style with discoid, small stigma. Berry ellipsoid-ovoid, smooth. $\frac{1}{5}$ covered by a pateriform, double-margined cupule with persistent tepals.

Type species: *Systemonodaphne Mezii* Kosterm.

The facies of the only species of this genus shows affinity to *Urbanodendron* and *Phyllostemonodaphne*. Notwithstanding the 9 fertile stamens, it is, like *Urbanodendron*, closer related to *Licaria* than to *Aniba*. It would be unwise to combine it either with *Aniba* or with *Licaria*.

Systemonodaphne Mezii Kosterm. in Recueil Trav. Bot. Néerl. 33 (1936), p. 756; id. in Meded. Botan. Museum Utrecht 37 (1936), p. 756. — *Systemonodaphne geminiflora* Mez in Jahrb. Bot. Garten Berlin V (1889), p. 79 (excl. cit. syn. *Laurus geminiflora* Desv.), tab. III, f. 33; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 276; Benoist in Bull. Soc. Bot. France 75 (1928), p. 976; id. in Arch. Botan. V, Mém. 1 (1931), p. 63; Kosterm. in Pulle, Fl. Surin. II (1936), p. 310. — *Goeppertia geminiflora* Meissn. in D.C., Prodr. XV, 1 (1864), p. 175 et in Fl. Brasil. V, 2 (1866), p. 286, p.p. (quoad cit. spec. Martin); Mez in Jahrb., l.c., p. 79. — *Mespilodaphne indecora*, var. *minor* Meissn. in D.C., Prodr., l.c., p. 102 et in Fl. Brasil., l.c., p. 196, p.p. (quoad cit. spec. Martin); Mez in Jahrb., l.c., p. 79.

Typus: Martin 45; French Guiana [D.].

„Pisie” (Surinam).

Small tree or shrub. Branchlets slender, subcylindrical, smooth, densely yellowish appressed-tomentose, especially at apex; branches glabrous, grey, verruculous; buds densely appressed yellowish-tomentose. Leaves alternate, chartaceous, glabrous (a few hairs at base beneath often sub-persistent), ovate or elliptical, 7—15 × 2—5 cm; base contracted into the petiole, rounded or shortly acute, margin flat, often crisp; top conspicuously, obtusely acuminate; above greenslightly shining, smooth, midrib only visible as a rule; beneath paler, densely, minutely, prominulously reticulate, sub-smooth, slightly shining, midrib prominent, prim. nerves (7—12 per side) slender, erect-patent or rather patent, slightly arcuate, prominulous. Petioles slender, short, soon glabrous, canaliculate, 3—7 mm l. Panicles axillary on the youngest branchlets, reduced, usually 2-flowered, ½—1 cm l., slender, appressed-tomentellous, peduncles slender, branchlets wanting. Bracts and bracteoles deciduous. Pedicels thin, appressed, yellowish-tomentellous, 4—7 mm l., merging into the flower tube. Flowers appressed tomentose, 2—2½ mm l., 5 mm in diam. at apex; tube obconical, ½ mm high, broad, hardly narrowed below perianth, densely sericeous-hirsute within. Tepals equal, patent or erect-patent, rigid-coriaceous, ovate or broadly

ovate, obtusely acute, slightly concave, 2—3 mm l., densely rusty sericeous-hirsute within. Stamens included. Outer six stamens shorter than tepals, $1\frac{1}{2}$ —2 mm l., anthers broadly or depressed-ovate, glabrous, obtuse, base truncate, $\frac{3}{4}$ mm l., connective not protruding beyond the large, introrse cells; filaments slightly longer, broad, at apex usually narrower than anthers, towards base broadened, densely rusty sericeous-hirsute. Stamens of series 3 connate into a large, broad, conical, staminal tube, slightly longer than outer stamens; anthers suborbicular, glabrous (except base within), $\frac{1}{2}$ mm l., top subemarginate, cells extrorse or extrorse-apical, large; filaments united, densely rusty sericeous-hirsute. Glands minute, subglobose, sessile, about $\frac{1}{2}$ from the base of the staminal tube. Staminodes of series 4 wanting. Ovary ellipsoid-ovoid, rusty-pilose (utmost base excepted), about 1 mm l., merging into a rather thick, subconical-cylindrical, up to $1\frac{1}{2}$ mm l., pilose style (apex glabrous); stigma small, discoid, before anthesis exerted from the staminal tube, after anthesis included. Berry ovoid, smooth, up to 15 mm l., 10 mm in diam. Cupule broadly obconical, thin, double-margined, outer margin of the persistent, thin, slightly enlarged tepals; berry covered for $\frac{1}{5}$.

Distribution: French and Dutch Guiana.

French Guiana: Roura Mt., Cayenne (Leprieur 223, fl. [C.DC.DLL.]); locality unknown (Martin 45, fl. [C.D.Kw.P.]; Poiteau s.n., fl. [C.]; Poiteau 63 et 64, fr. [DL.]). **Dutch Guiana:** Zanderij I (B.W. 158, ster. [U.]).

Mez erroneously described the glands as very large; they are very small, as may be seen in his figure tab. III, f. 33.

URBANODENDRON Mez

Urbanodendron Mez in Jahrb. Botan. Garten Berlin V (1889), p. 80; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 276; id. in Nachträge I (1897), p. 174; Dalla Torre et Harms, Genera (1900—07), p. 178, n. 2806; Lemée, Diction. descript. VI (1935), p. 793. — *Urbanodendrum* Post et Kuntze, Lexicon (1904), p. 581.

Trees or shrubs of Eastern Brazil. Leaves alternate, penninerved, glabrous. Flowers hermaphrodite in few-flowered, hardly branched panicles. Involucre wanting. Panicles pseudo-terminal on shortened branchlets, base surrounded with many scale-like

leaves. Flower tube broadly obconical, rather shallow; tepals 6 in two rows, equal. Stamens 9 fertile; anthers 2-celled. Staminodes of series 4 as a rule wanting (rarely a minute, single one present). Anther cells of outer six stamens introrse, those of series 3 extrorse. Filaments of all stamens provided without with very large, sessile glands. Ovary glabrous, ellipsoid-ovoid; style slender, cylindrical, as long; stigma minute, discoid. Berry ellipsoid-ovoid, thin-fleshy, smooth; base for $1/3$ immersed in a hemispherical, smooth, double-margined cupule; fruiting pedicel hardly thickened. Cotyledons large, flat-convex, including the minute, 2-leaved, glabrous plumule and minute, thick, conical radicle.

Type species: *Urbanodendron verrucosum* (Nees) Mez.

All characters of the only species of this genus point to a relationship with *Licaria*, but the well developed stamens of series 1 as well as the glands makes it easily separable from *Licaria*.

Urbanodendron verrucosum (Nees) Mez in Jahrb. Botan. Garten Berlin V (1889), p. 80, tab. I, fig. 7; tab. III, fig. 13 et 34; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 276; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591. — *Aydendron verrucosum* Nees in Linnaea 8 (1833), p. 37, n. 3; id., Systema Laur. (1836), p. 259; Dietrich, Synops. Pl. 2 (1840), p. 1344; Meissn. in D.C., Prodr. XV, 1 (1864), p. 91 et in Fl. Brasil. V, 2 (1866), p. 181 (cum var.); id. in Videnskab. Meddel. Naturhist. Foren. Kjöbenhavn 1870, p. 131.

Typus: Sellow 1374; Rio de Janeiro [D.].

Shrub (Riedel). Branchlets slender, with 4 or 5 small longitudinal ribs, smooth, with scattered, protruding, roundish lenticels; branches grey, verruculous; buds glabrous. Leaves alternate, leathery chartaceous, glabrous, slightly shining on both sides, lanceolate or narrowly ovate-lanceolate, $8-23 \times 1-4$ cm; base rounded or sometimes shortly acute, margin flat, top long, slender subcaudate-acuminate or acute; above obscurely reticulate or smooth, green, midrib and prim. nerves flat or hardly prominulous; beneath paler, densely, conspicuously, prominulously reticulate, midrib prominent, prim. nerves (12—20 per side) rather patent, straight, prominulous, at margin arcuately anastomosing. Petioles glabrous, black (dried), canaliculate, 5—10 mm l. Panicles sub-terminal on very shortened branchlets, with

many scale-like, lanceolate, acute, glabrous, 3—10 mm l. leaves at base; few-flowered, glabrous, slender, lax, 3—8 cm l., hardly or not branched; peduncles slender, smooth, longitudinally striate, 1—2 cm l., branchlets few, thin, basal, up to $1\frac{1}{2}$ cm l. Bracts and bracteoles comparatively large, lanceolate, acute, glabrous, deciduous. Pedicels slender, glabrous, 3—5 mm l. Flowers glabrous, yellowish (Riedel) or white (Glaziou), subhemispherical, 2—3 mm l., 3 mm in diam. at apex; tube short, broadly obconical, $\frac{1}{2}$ —1 mm high, glabrous within. Tepals equal, erect-patent, fleshy, slightly concave, suborbicular, often broader than long, obtuse, often pellucid-punctulate, up to 2 mm l. Stamens included, glabrous, thick, fleshy. Outer six stamens up to $1\frac{1}{2}$ mm l.; anthers triangular or depressed-triangular, base thick, connective acutish, conspicuously protruding beyond the large, introrse cells; filament slightly shorter or as long as anthers, thick, but narrower than anthers; glands basal, sub-rectangular and touching each other without, leaving only part of the filaments free within, as long as or slightly longer than filaments. Inner stamens slightly longer; anthers sub-globose-ovoid, thick, especially at base, top obtuse or subtruncate, connective not protruding beyond the large, extrorse cells; filaments slightly longer, thick, but narrower than anthers; basal glands extrorse, subrectangular, slightly shorter than filaments, touching each other. Staminodes of series 4 wanting, rarely a minute, stipitiform single one present. Ovary ellipsoid-ovoid, glabrous, 1— $1\frac{1}{2}$ mm l., style slender, cylindrical, about as long; stigma minute, discoid or nearly inconspicuous. Berry ellipsoid-ovoid, up to 2 cm l., $1\frac{1}{2}$ cm in diam. Cupule sub-hemispherical, smooth, up to 8 mm high, 10—15 mm in diam., about 5—6 mm deep; margin double, outer one irregular, patent, 1— $1\frac{1}{2}$ mm w., inner one erect, $\frac{1}{2}$ mm high. Berry exserted for $\frac{2}{3}$. Fruit pedicel hardly thickened, obconical, up to 7 mm l.

Distribution: Rio de Janeiro and adjacent Minas Gerães.

Rio de Janeiro: Estado do Rio G. Portella (Nunes H.R.J. 28001, fl. [R.U.]); Tijuca, Jacarepagna (Glaziou 8102, fl. June [D.K.P.]); Petropolis (Glaziou 11472, fl. March [P.K.Kw.]); Morro da Boa Viagem near São Domingos (ex herb. Schwacke 7063 [D.]); Serra da Bica (Ule 3937, fr. July [D.]); Gavea (Kuhlmann s.n., fl. [Mn.]); Aldea dos Indos (Luschnath s.n., fr. July [Ki.]); Rio de Janeiro (Riedel 479, fl. [Bs.K.Kw.L.O.Lg.NY.P.Ws.]; id. 1141, fr. [Bs.K.Kw.P.O.Lg.NY.Ws.]); between Mandioca and Cordoaria (Riedel s.n., in bud [Bs.NY.D.Kw.L.Lg.], type of var. *attenuatum* Meissn.); locality unknown (Lund 704, fl. [K.]; Sellow B. 1374 = C. 407, fl. [D.]). **Minas Gerães:** Rio Novo (Araujo 18, fr. Nov. [P.]). **French Guiana:** Cayenne (Sagot 5, ster. [D.C.P.], type of var. *elongatum* Meissn.).

About the identity of the Sagot specimen from French Guiana I am not absolutely sure; the specimen is sterile and has very long leaves.

MEZILAURUS O. Kuntze.

Mezilaurus *) O. Kuntze ex Taubert in Botan. Centralblatt 50 (1892), p. 21; Mez in Arb. Bot. Garten Breslau 1 (1892), p. 111; dalla Torre & Harms, Genera (1900—07), p. 178, n. 2818; Post & Kuntze, Lexicon (1904), p. 363; Lemée, Diction. descript. 4 (1932), p. 431; Kostermans in Meded. Bot. Mus. Utrecht 25 (1936), p. 38; id. in Pulle, Fl. Surinam. 2 (1936), p. 325. — *Silvia* Fr. Allemão (nec aliis), Dissertatio Rio de Janeiro (1848); id. in Trabalh. da Sociedade Vellosiana, Bibliotheca Guanabarina, Seção Botanica (1852), p. 57; id. in Mohl & Schlechtendahl, Botan. Zeitung XII (1854), p. 454; Baillon, Hist. Pl. 2 (1870), p. 474; Pfeiffer, Nomencl. 2 (1874), p. 1167; Benth. in Benth. & Hook., Gen. 3 (1880), p. 154; Durand, Index Gen. (1888), p. 349; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 104; id. in Arb. Bot. Garten Breslau 1 (1892), p. 111; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 123; id. in Nachträge 1 (1897), p. 174; Kuntze, Revisio Gen. Pl. 2 (1891), p. 573; dalla Torre & Harms, l.c., p. 178; Post & Kuntze, l.c., p. 519; Benoist in Arch. Botan. V, Mém. 1 (1931), p. 65; Lemée, Dict., l.c. 6 (1935), p. 113; Ducke in Tropical Woods 42 (1935), p. 18; Kosterm. in Meded., l.c., p. 38. — *Silvaea* Meissner (nec aliis) in D.C., Prodr. XV, 1 (1864), p. 84; id. in Martius, Fl. Brasil. V, 2 (1866), p. 171; Baillon, l.c., p. 474 in adnot.; Durand, Index, l.c., p. 349; Mez in Jahrb., l.c., p. 104; id. in Arb. Breslau, l.c., p. 111; Pax in Engler-Prantl, l.c., p. 123; id. in Nachtr., l.c., p. 174; dalla Torre & Harms, l.c., p. 178; Post & Kuntze, l.c., p. 519; Lemée, Diction., l.c. 6 (1935), p. 113. — *Endiandra* Benth. (nec R.Br.), p.p. in Benth. & Hook., Gen. 3 (1880), p. 154; Mez in Jahrb., l.c., p. 104. — *Mezia* O. Kuntze (nec Schwacke), Revisio Gen. Pl. 2 (1891), p. 573; Mez in Arb. Breslau, l.c., p. 111; Pax in Nachtr., l.c., p. 174; dalla Torre & Harms, l.c., p. 178; Kosterm. in Meded., l.c., p. 39. — *Neosilvia* Pax in Engler-Prantl, Nachträge 1 (1897), p. 174; dalla Torre & Harms, l.c., p. 178; Post & Kuntze, l.c., p. 387; Kosterm. in Meded., l.c., p. 39.

Trees or shrubs in tropical South America from Guiana to Matto Grosso, lacking in the western regions. Leaves alternate,

*) For a discussion of this name see: Kostermans in Meded. Bot. Mus. Utrecht 25 (1936), p. 38.

as a rule congested near the apex of the branchlets. Petioles swollen at base. Panicles axillary, few- to many-flowered; bracts and bracteoles deciduous. Flowers hermaphrodite, without involucre, usually in umbel-like clusters. Flower tube conspicuous, broadly obconical or hemispherical. Tepals 6, equal or nearly so, erect, scaly, small. Only stamens of whorl 3 present, fertile; staminodes none. Stamens free, confluent or connate, glandless; filaments broad, not distinct from anthers; anther cells usually extrorse, usually convergent; valves dehiscent from base to summit, from summit to base or from lateral side to centre. Ovary ellipsoid to ovoid, glabrous or pilose, immersed in the tube. Style shorter, comparatively slender, cylindrical-conical; stigma minute, hardly conspicuous. Berry ellipsoid, outer layer fleshy, thin; fruit pedicel woody, cylindrical, short, surmounted by a minute, pateriform, flat, thin, disc-like enlargement, with more or less persistent, not enlarged tepals.

Type species: *Mezilaurus navalium* (Allem.) Taubert.

This genus is closely related to *Licaria*: the main difference being the lack of a fruit cupule, though there is always a small, pateriform enlargement at the top of the fruit-bearing pedicel with more or less persistent, not enlarged tepals. Shape and size of stamens are those of *Licaria*, especially those of the species without the outer cycles of staminodes.

The glands of the filament-base are always lacking; in *Licaria*, however, there are equally species without glands; this character is not of much importance to delimitate the two genera.

From *Endiandra*, where we find equally glandbearing and glandless species, *Mezilaurus* differs chiefly by the above mentioned enlargement of the pedicel; in *Endiandra* the fruit is attached immediately on the pedicel.

Key to the species:

- 1a. Leaves hirsute beneath 2
- b. Leaves glabrous beneath 3
- 2a. Flowers densely pulverulent-pilose; branches with a thick, suberous layer 1. *M. crassiramea*
- b. Flowers glabrous; branches without suberous layer 2. *M. Lindaviana*
- 3a. Leaf base obtuse or subcordate. Anthers introrse 8. *M. subcordata*
- b. Leaf base acute or cuneately acuminate; anthers extrorse. 4
- 4a. Flowers glabrous; valves of anthers apical 5

- b. Flowers pilose; valves usually basal (in *M. synandra* apical) 6
- 5a. Leaves conspicuously acuminate; acumen slender, long 7. *M. Sprucei*
- b. Leaves obtuse 3. *M. navale*
- 6a. Valves apical 6. *M. synandra*
- b. Valves basal 7
- 7a. Leaves elliptical or obovate-elliptical, $8-20 \times 3\frac{1}{2}-10$ cm; base gradually, cuneately acute. Petioles rather slender. Panicles many-flowered; peduncles rather slender. Flowers $1\frac{1}{2}-2$ mm l. Stamens free 4. *M. Itauha*
- b. Leaves narrowly obovate-elliptical, $14-25 \times 4-7\frac{1}{2}$ cm; base decurrent, gradually acute. Petioles thick. Panicles few-flowered; peduncles rather thick. Flowers $2-2\frac{1}{2}$ mm l. Stamens connate 5. *M. decurrens*

1. *Mezilaurus crassiramea* (Meissn.) Taubert ex Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112. — *Oreodaphne crassiramea* Meissner in D.C., Prodr. XV, 1 (1864), p. 117; id. in Fl. Brasil. V, 2 (1866), p. 212; Benth. in Benth. & Hook., Gen. 3 (1880), p. 158. — *Misanteca crassiramea* Benth. ex Mez in Jahrb. Bot. Garten Berlin V (1889), p. 106. — *Silvia crassiramea* (Meissn.) Mez in Jahrb., l.c., p. 106. — *Mezia crassiramea* (Meissn.) O. Kuntze, Revisio Gen. Pl. 2 (1891), p. 574; Mez in Arb. Breslau, l.c., p. 112.

Typus: Pohl 1463 = 1932d; Brazil [DC.].

Shrub or tree, 3–7 m high (Burchell, Weddell); branchlets very stout, cylindrical, rough, beset with large, orbicular leaf-scars, towards apex densely rusty or yellowish lanuginose-tomentose; buds densely tomentose; branches glabrous, grey, very thick, covered with a thick, rough, suberous, grey layer. Leaves alternate, clustered on the young branchlets, coriaceous or rigid-coriaceous, sub-bullate, sessile or nearly so (young leaves concave beneath), obovate-elliptical or obovate-spathulate, $8\frac{1}{2}-15 \times 3\frac{1}{2}-10$ cm; base contracted into the petiole, obtuse or subcordate, rarely acutish, margin in young leaves revolute, in adult leaves flattish; top obtuse; above laxly hirsute, glabrescent, shining; midrib and prim. nerves impressed; beneath dull, densely hirsute (hairs up to $\frac{3}{4}$ mm l.), midrib strongly prominent, broad, prim. nerves (6–12 per side) prominent, rather patent, rather straight, arcuate at margin, secondary nerves laxly reticulate, prominulous. Petioles wanting or up to 3 mm l.,

broad, above flattish, densely tomentose. Panicles clustered on the young branchlets, axillary, narrowly pyramidal, rather many-flowered, rusty- or yellowish-tomentellous, up to 10 cm l.; peduncles rather thick, cylindrical, up to 4 cm l., branchlets up to 2 cm l., the basal ones distant. Bracts and bracteoles minute, ovate, acute, minutely tomentellous without, subpersistent. Pedicels 1—2 mm l., comparatively thick, merging into the flower tube, densely rusty pulverulent-tomentellous. Flowers yellowish (Weddell), densely rusty pulverulent-tomentellous, ellipsoid-obconical, $1\frac{1}{2}$ —2 mm l., 1— $1\frac{1}{2}$ mm in diam. at apex; tube obconical, as long as or twice as long as perianth. Tepals sub-equal, scaly, erect, fleshy, depressed-ovate, obtuse or obtusely acutish, $\frac{1}{4}$ — $\frac{1}{2}$ mm l. Stamens exserted, confluent into a staminal, obtuse tube, $\frac{1}{4}$ mm below apex with minute, extrorse anther cells; valves dehiscent from lateral side to centre, minute; anthers not distinct from the pilose filaments. Ovary ellipsoid-obovoid, glabrous, up to $\frac{3}{4}$ mm l., style comparatively slender, conical, hardly $\frac{1}{2}$ mm l.; stigma minute, hardly conspicuous. Fruit unknown.

Distribution: Goyaz.

Brazil: Goyaz: Nené (Burchell 6758, fl. [Kw.]); Serra d'Ourada (Pohl 1463 = 1932d, fl. [Kw.W.]); Salinas (Weddell 2066, fl. May-July [L.]).

Some flowers have free stamens, in others they are confluent, but never connate.

2. *Mezilaurus Lindaviana* Schwacke et Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 592. — *Miscanteca Duckei* A. Sampaio in Public. n. 56, Anexo 5, Botanica, Parte X da Comissão de Linhas Telegraphicas Estrategicas de Matto Grosso ao Amazonas (1917), p. 15, tab. XII et XIII; Ducke in Tropical Woods 42 (1935), p. 21. — *Silvia Duckei* (Samp.) Sampaio in Boletim Museu Nacional Rio de Janeiro IV (1928), p. 39; Sandwith in Kew Bulletin 1933, p. 338; Ducke in Tropical Woods 42 (1935), p. 21; Kosterm. in Meded. Bot. Museum Utrecht 25 (1936), p. 41.

Typus: Schwacke 7080 = Glaziou 19798; Minas Gerães [D.].

„Itaúba”; „Itaúba amarella”; „Itaúba Abacate” (Ducke).

Tree, 6—23 m. high (Ule; For. Dept. Brit. Guia.). Branchlets thick, subcylindrical, densely rusty-tomentose at apex. Leaves

alternate, clustered near the apex of the branchlets, chartaceous or coriaceous, obovate-spathulate, $8-17 \times 4-8\frac{1}{2}$ cm; base gradually acute or sometimes abruptly contracted into the petiole, shortly obtuse, margin recurved; top obtuse, rarely obtusely acutish; young leaves hirsute; adult ones above glabrous (midrib and prim. nerves with subpersistent tomentum), shining, often sub-bullate, midrib flattish or impressed, broad at base, prim. nerves impressed, secondary nerves impressed, parallel; beneath dull, hirsute, midrib prominent, prim. nerves (5-9 per side) prominent, erect-patent, arcuate, veins prominulous, reticulate. Petioles short, thick, densely rusty-tomentose, 4-8 mm l., above flattish or slightly concave. Panicles axillary, ∞ -flowered, clustered on the young branchlets, pyramidal, rusty-tomentellous, glabrescent towards extremity, 6-17 cm l.; peduncles rather thick, subangular, short; branchlets rather patent, slender, 1-3 cm l., bearing the subracemose flowers. Bracts and bracteoles minute, ovate-lanceolate, pilose, at last deciduous. Pedicels $1\frac{1}{2}$ -2 mm l., merging into the flower tube, glabrous. Flowers green (Ducke, Ule), subglobose-ellipsoid, $1-1\frac{1}{2}$ mm l.; tube broadly obconical, $2-2\frac{1}{2} \times$ as long as tepals, glabrous within. Tepals subequal, or outer ones shorter, erect, minute, fleshy, scaly, depressed-triangular, acutish, about $\frac{1}{2}$ mm l., minutely pilose within. Stamens exserted, confluent (anthers connate), forming a prismatic, triangular, fleshy, staminal tube, about $\frac{3}{4}$ mm l. and w.; anthers subglobose, obtusely acutish between the sub-orbicular, extrorse cells, as long as the thick, not distinct filaments, pilose especially at base and at margins; top of staminal tube obtuse, inside glabrous; valves dehiscent from lateral side to centre. Ovary glabrous, or pilose at apex, ellipsoid-obovoid, with a small margin at base, up to $\frac{3}{4}$ mm l.; style cylindrical-conical, rather slender, hardly $\frac{1}{2}$ mm l. Berry ellipsoid, smooth, black, bluish-pruinose (Ducke), up to 25 mm l., 14 mm in diam.; pedicel woody, cylindrical, 3 mm l., 2 mm in diam., crowned by a small (4 mm diam.), pateriform, thin margin with persistent, not enlarged tepals.

Distribution: Lower and dry forests of upland campos region in the lower Amazon and the upper Rio Branco and Rupununi R.

Brazil: Amazonas: Boa Vista, upper Rio Branco, margin of Campos (Kuhlmann H.R.J. 3378, fl. July [D.Kw.St.Ws.]; Ule 7578, fl. Oct. [D.Di.L. Ws.]); Retiro da Serra, Rio Branco (Kuhlmann H.R.J. 3377, fl. Aug. [Bs.D. Kw.P.]); Montealegre, dry campos along forest margin (Ducke H.M.G. 16032 = H.R.J. 17540, fl. Apr. [D.], type of *Silvia Duckei*). Minas Gerães:

Serra d'Antonio Pereira (Glaziou 19798 = Schwacke 7080, in bud May [D.Kw.]). Pará: Jutahy between Almeirim and Prainha, campos (Ducke H.R.J. 17539, defl. Sept. [D.U.]); Santarem, Ipanema, dry forest (Ducke H.R.J. 17538, fr. Sept. [U.]). British Guiana: Kanaku Mts. near source of Moco-moco Creek, Takutu R., in miscellaneous forest on steep, rocky slope, alt. 200 m. (For. Dept. 2196, fl. [Kw.]).

The common leaf base is cuneately acute, but (on the same branch) one may find equally such with acute base, abruptly rounded at the end.

The type specimen of *Silvia Duckei* has ovaries pilose in their upper part; apart from the somewhat shorter pedicels, I could not find another difference with *M. Lindaviana*. It is not advisable to keep this species separate, merely on the strength of the pilosity of the ovary, as in other *Mezilaurus* species the pilosity of the ovaries proved to be equally inconstant. All other specimens, collected from the same locality have glabrous ovaries. As the valves open from the lateral side to the centre, we may find them not only attached at last basally, but also in the centre or apically.

A specimen of Monteiro Costa (n. 323 [F.]) has narrower leaves, the stamens are partly diverging; a sterile specimen (Kaufmann 605 [F.]) may as well belong to this species, though the leaves show some difference with those of the typical form: they are distinctly acuminate and strongly narrowed towards base.

Use: The yellowish brown wood is good for constructions, but less esteemed than that of *M. Itauba* (Ducke).

3. *Mezilaurus navalium* (Allem.) Taubert ex Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112. — *Silvia navalium* Allemão, Dissertatio Rio de Janeiro (1848) cum tabula; id. in Trabalhos da Sociedade Vellosiana, Bibliotheca Guanabarina, Seção Botanica (1852), p. 57; Mohl et Schdl., Bot. Zeitg. 12 (1854), p. 454; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 106, tab. II, f. 6; id. in Arb. Bot. Garten Breslau, l.c., p. 112; Walpers Ann. 3 (1852—53), p. 936; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 591; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 123; Huber in Boletim Museu Goeldi VI (1909), p. 175; Chancerel, Flore forestière du Globe (Paris 1920), p. 327; Baillon, Hist. Pl. 2 (1870), p. 474; Ducke in Tropical Woods 42 (1935), p. 21. — *Endiandra navalium* (Allem.) Benth. in Benth. & Hook., Gen. 3 (1880), p. 154; Mohl & Schlechtend., Bot. Zeitung, l.c., p. 454 in adnot.; Mez

in Jahrb., l.c. — *Silvaea navalium* Meissner in D.C., Prodr. XV, 1 (1864), p. 84; id. in Fl. Brasil. V, 2 (1866), p. 172; Baillon, Hist. Pl. 2 (1870), p. 466 et 474. — *Mezia navalium* (Allem.) O. Kuntze, Revisio Gen. Pl. 2 (1891), p. 574; Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112.

Typus: Allemão s.n.; Brazil [Mn.].

„Tapinhoam; Tapinhoam amarillo; Tapinhoam-olho-de-sapo” (Huber, Glaziou, Allemão); „Itaúba verdadeira; Itaúba amarella” (Huber).

Large tree, up to 25 m high (Allemão). Branchlets rather slender, subcylindrical, towards apex yellowish-tomentellous, beset with minute, orbicular lenticels; buds densely yellowish-sericeous-tomentose; branches rough, grey. Leaves alternate, clustered at the apex of the branchlets, oblanceolate or narrowly elliptical, chartaceous or chartaceous-coriaceous, glabrous, shining (young ones with few, minute hairs), on both sides rather densely, prominulously reticulate, $7\frac{1}{2}$ –14 $\times$ 2–5 cm; base gradually, cuneately or acuminate acute, margin flattish, often crisp, top obtusely, obscurely acuminate or obtuse; above midrib rather broad, prominulous, prim. nerves prominulous; beneath midrib prominent, prim. nerves (about 15–20 per side) rather patent, straight, prominulous. Petioles rather slender, glabrous, swollen at base, 1–2 cm l., above flattish or slightly canaliculate. Panicles axillary, pyramidal, rather many-flowered, laxly, minutely pilose, glabrescent, 3–5 cm l.; peduncles slender, 1–2 cm l.; branchlets thin, up to $1\frac{1}{2}$ cm l., bearing the sub-umbellate flowers. Bracts and bracteoles deciduous. Pedicels thin, glabrous, $1\frac{1}{2}$ – $2\frac{1}{2}$ mm l. Flowers glabrous, obconical, $1\frac{1}{2}$ –2 mm l., about 1 mm across at apex; tube obconical, about as long or slightly longer than perianth, glabrous within. Tepals sub-equal or outer ones slightly shorter, erect, fleshy, broadly ovate-suborbicular, obtusely acute. Stamens exserted, free, 1 – $1\frac{1}{4}$ mm l., elliptical-rectangular, top obtuse; anthers thick, obtuse, as long as the slightly broader, flattish filaments, the latter slightly pilose without, densely pilose within; cells large, extrorse; valves attached apically. Ovary ellipsoid, glabrous, about 1 mm l.; style conical-cylindrical, rather slender, slightly shorter; stigma minute, hardly conspicuous. Berry ellipsoid or ovoid-ellipsoid, 2 – $3\frac{1}{2}$ cm l., 1–2 cm in diam. Pedicel cylindrical, woody, up to 4 mm l., $2\frac{1}{2}$ mm in diam., crowned by a thin, flat, pateriform margin (5 mm in diam.) with subpersistent, not enlarged tepals.

Distribution: Subtropical mountain forests of the State of Rio de Janeiro.

Brazil: Rio de Janeiro: Theresopolis (Glaziou 11583, ster. [K.P.]; id. 11470, ster. Febr. [D.Dl.Lg.P.]; id. 11473, ster. May [D.K.L.Lg.P.]; id. s.n., fl. Jan. [Br.P.]); Petropolis, alto da Imperatriz (Glaziou 12124, young fruit Apr. [Ca.D.Dl.K.Kw.Lg.P.]; id. 12125, fl. Febr. [D.Dl.H.K.Kw.Lg.P.M.Ws.]); Estado de Rio. G. Portella, Monte Sinai (Nunes H.R.J. 28020, fl., fr. [U.]); Est. do Rio. Fazenda Rocha Negra. G. Portella (Nunes H.R.J. 28010, fl., fr. [U.]); locality unknown (Allemão s.n., fl. [DC.Br.Ms.]).

Use: Furnishes the Tapinhoam, a durable but less useful wood for naval constructions (Ducke).

4. *Mezilaurus Itauba* (Meissn.) Taubert ex Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112; Kostermans in Meded. Bot. Mus. Utrecht 25 (1936), p. 40; id. in Pulle, Fl. Surinam. II (1936), p. 326. — *Acrodiclidium Ita-uba* Meissner in D.C., Prodr. XV, 1 (1864), p. 86 et 510; id. in Fl. Brasil. V, 2 (1866), p. 174 (cum var. *amarella* Meissner), tab. 60 (excl. flor.); Benth. in Benth. & Hook., Gen. 3 (1880), p. 154; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 108; Kosterm. in Fl. Surin., l.c., p. 326. — *Endiandra Ita-uba* (Meissn.) Benth. in Benth. & Hook., Gen. 3 (1880), p. 154; Mez in Jahrb., l.c., p. 108; Kosterm. in Fl. Surin., l.c., p. 326. — *Silvia Ita-uba* (Meissn.) Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), p. 123; Mez in Jahrb., l.c., p. 107 et 494; Peckolt in Ber. Pharm. Gesellsch. 6 (1899), p. 442; Huber in Boletim Museu Goeldi, Pará V (1908), p. 361; Ducke in Archiv. Jard. Bot. Rio de Janeiro IV (1925), p. 190; id. in Tropical Woods 42 (1935), p. 18; Benoist in Bull. Soc. Bot. France 75 (1928), p. 976; id. in Arch. Botan. V, Mém. 1 (1931), p. 65; Kosterm. in Fl. Surin., l.c., p. 326. — *Mezia Ita-Uba* (Meissn.) O. Kuntze, Revisio Gen. Pl. 2 (1891), p. 574; Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112; Kosterm. in Fl. Surin., l.c. — *Oreodaphne Hookeriana* Meissn. in D.C., Prodr., l.c., p. 131, p.p.; id. in Fl. Brasil., l.c., p. 230, p.p.; Mez in Jahrb., l.c., p. 108; Kosterm. in Fl. Surin., l.c., p. 326. — *Silvia polyantha* Mez in Bull. Herb. Boissier 2e série V (1905), p. 233; Ducke in Tropical Woods, l.c., p. 19; Kosterm. in Fl. Surin., l.c., p. 326. — *Silvia Rondonii* Mez et Hoehne in Botan. Archiv VI (1924), p. 230; Ducke in Tropical Woods, l.c., p. 19; Kosterm. in Meded. Bot. Mus., l.c., p. 40. — „*Ita-uba*” Spruce in Hooker’s Journ. Botany III (1851), p. 145. — *Mezilaurus anacardioides* (Spruce ex Meissner) Taubert ex Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112; Knuth in Fedde, Repert., Beiheft 43 (1928), p. 341. — *Acrodiclidium anacardioides* Spruce ex Meissner in

D.C., Prodr. XV, 1 (1864), p. 86; id. in Fl. Brasil. V, 2 (1866), p. 174; Mez in Jahrb. Bot. Garten Berlin V (1889, p. 109; Knuth in Fedde, Repert., l.c., p. 341. — *Misanteca anacardioides* (Spruce ex Meissn.) Benth. in Hooker's Icones Pl. 13 (1878), t. 1259 (excl. flor.); Mez in Jahrb., l.c., p. 109; Knuth, l.c., p. 341. — *Silvia anacardioides* (Spruce ex Meissner) Mez in Jahrb., l.c., p. 108, tab. III, f. 39; id. in Arb. Bot. Garten Breslau 1 (1892), p. 112; Knuth, l.c., p. 341; Ducke in Trop. Woods, l.c., p. 20. — *Mezia anacardioides* (Spruce ex Meissn.) O. Kuntze, Revisio Gen. Pl. 2 (1891), p. 574; Mez in Arb. Bot. Garten Breslau, l.c., p. 112.

Typus: Spruce 643; Brazil [Kw.].

„Itaúba; Itaúba amarella; Itaúba preta” (Spruce); „Itaúba verdadeira, Itaúba amarella” (Huber); „Taoub jaune; Taoub brun” (Mélion); „Kaneelhout (S.D.); Kaneeri-pisi (N.E.); Apisi-ie (Sar.); Siruaballi tataroo; Ajomonto horadihor; Ajomonto diamaro; Kjarie kjanarie; Kaneerju”. (Car.).

Large tree, 7—33 m. high (Krukoff, Spruce), 30—75 cm in diam. breast high; bark reddish, outer layer cracked and shaly, wood scented (Spruce). Branchlets rather slender, cylindrical, brownish or grey, beset with many, linear lenticels, towards apex subangular and minutely, laxly tomentellous; branches rough, grey; buds densely yellowish tomentellous. Leaves alternate, clustered at the apex of the branchlets, chartaceous-coriaceous or coriaceous, glabrous (young leaves on both sides laxly, minutely pilose), elliptical or obovate-elliptical, 8—20 × 3½—10 cm; base gradually, cuneately acute, margin flattish, top obtuse or sometimes slightly emarginate, on both sides prominulously reticulate; above rather smooth, the rather broad midrib and prim. nerves prominulous; shining; beneath dull, the broad midrib prominent, prim. nerves (8—12 per side) erect-patent, slightly arcuate, prominent. Petioles glabrous, smooth, comparatively slender, 1—2½ cm l., above flattish, base slightly swollen, apex merging in the leaf blade. Panicles axillary, clustered on the young branchlets, many-flowered, usually narrowly pyramidal, laxly, minutely, appressed yellowish or rusty-tomentellous, 9—14 cm l.; peduncles comparatively slender, glabrescent towards base, 2—4 cm l., branchlets rather patent, as a rule not more than 2 cm l., bearing the more or less subumbellate flowers. Bracts and bracteoles deciduous. Pedicels rather slender, 1½—4 cm l., minutely, yellowish appressed pilose. Flowers hemispherical-obconical, 1½—2 mm l., 1½ mm in diam. at apex, yellowish-

green or green (Krukoff, Spruce), minutely, yellowish appressed tomentellous, glabrescent towards apex; tube broadly obconical, about as long as perianth, pilose within. Tepals equal, fleshy, erect, apex slightly patent, broadly depressed ovate-suborbicular (broader than long), obtuse, inner ones often broader, $\frac{3}{4}$ —1 mm l. Stamens exserted, free, more or less appressed against each other, elliptical or ovate-elliptical, obtuse, $1\frac{1}{4}$ mm l., $\frac{3}{4}$ mm diam.; anthers $\frac{1}{2}$ mm l., fleshy, glabrous without, with large, suborbicular, extrorse cells; valves attached at the basal-central side; filaments as broad, or broader, flattish, densely pilose. Ovary ellipsoid, slightly pilose, glabrescent, about 1 mm l.; style about $\frac{1}{2}$ mm l., cylindrical-conical; stigma small, discoid, exserted. Berry ellipsoid, black (Krukoff, Spruce), 18—23 mm l., 11—13 mm in diam.; fruit pedicel 3—5 mm l., cylindrical, at apex 2—3 mm in diam., slightly thickened, surmounted by a flat, undulate margin, about 5 mm in diam., with persistent or at last deciduous, not enlarged tepals.

Distribution: From Guiana through western Pará and eastern Amazonas to northwestern Matto-Grosso.

Brazil: Basin of Rio Jurua, territory of Acre, upper Rio Jurupari, lat. 8—9° S., long. about 70° W., on terra firma (Krukoff 5221, fr. July [A.D.F.H. NY.St.U.Ws.]); basin of Rio Purus, territory of Acre near mouth of Rio Macauhan (tributary of Rio Yaco), lat. 9° 20' S., long. 69° W. on terra firma (Krukoff 5317, fr. Aug. [A.D.F.H.Mi.NY.St.U.]); Pará; lower Tapajoz R., Frechal (Ducke H.M.G. 17078 = H.R.J. 11049, fr. June [Br.D.Dl.U.Ws.]); Villa Braga, lower falls of Tapajoz R., prim. dry forest (Ducke H.R.J. 17537, fl. May [Bs.D.P.St.U.Ws.]; id. 20049, fl. Apr. [St.U.Ws.]); Santarem (Kuhlmann H.R.J. 20021, fl. March [Kw.St.U.Ws.]; Spruce 818, fl. Apr. [Kw.]; id. 643, fl. Apr. [Bs.D.DC.Dr.Gr.Kw.M.Ms.Lg.NY.O.W.]; id. 646, fr. July [Bs.D.DC.Br.Dl.Dr.Gr.Kw.Lg.M.Ms.NY.O.P.W.]; type of var. *amarella* Meissn.; Ducke H.R.J. 19975, fl. March [D.U.]); forest beyond the Indian village of Mahicá (Spruce 965, fr. July [Dr.Kw.]); Mayaca (Spruce 669, ster. Febr. [Kw.], type of *O. Hookeriana*); Faro (Ducke H.R.J. 19976, fl. June [D.Kw.St.U.Ws.]; Moura, Rio Negro (Ule 6055, fl. Jan. [D.Dl.L.], type of *Silvia polyantha*); San Carlos de Rio Negro (Spruce 2961, fl. Apr. [Bs.D.DC.Dr.Kw.Lg.Ms.NY.O.P.Ws.], type of *Silvia anacardioides*). Dutch Guiana: Sectie O, tree n. 760 (B.W. 2398, fr. June [U.]; 3088, fl. Nov. [U.]; 4790, fr. Nov. [U.]. French Guiana: Maroni (Mélinon 46, fl. [P.]); banks of Mana R. near falls (Louis s.n. ster. [P.]).

The type specimen of *Silvia anacardioides* differs from the typical form merely by its shorter petioles, but these may equally be found in the other cited specimens.

Use: Berries edible, but with a strong resinous flavour; a wine is also made of them. It is one of the most useful timber trees, especially for naval constructions, of the lower Amazon;

the Itaúba-wood is dingy yellow, becoming grey with time (Ducke).

5. *Mezilaurus decurrens* (Ducke) Kosterm. in Meded. Bot. Museum Utrecht 25 (1936), p. 40. — *Silvia decurrens* Ducke in Tropical Woods 42 (1935), p. 19.

Typus: Ducke H.R.J. 23669; Amazonas [R.].

„Itaúba” (Ducke).

Large tree, wood yellowish (Ducke). Branchlets thick, verruculous, reddish-brown, towards apex minutely, yellowish-tomentellous; leaf scars large; buds densely yellowish sericeous-tomentellous; branches rough, grey. Leaves alternate, clustered near the apex of the branchlets, coriaceous, glabrous, on both sides laxly, smoothly, prominulously reticulate, narrowly obovate-elliptical, $14-25 \times 4-7\frac{1}{2}$ cm; base gradually acute or sub-acuminate, decurrent into petiole; margin flattish, top obtuse; above rather smooth, shining, midrib broad, flattish or prominulous, prim. nerves prominent; beneath rather smooth, rather dull, brownish (dried), midrib stout, prominent, prim. nerves (8–14 per side) prominent, erect-patent, arcuate. Petioles thick, swollen at base, glabrous, $1-2\frac{1}{2}$ cm l., slightly flattened above. Panicles axillary, clustered at apex of branchlets, few-flowered, lax, pyramidal, microscopically, yellowish, appressed-pilose, 10–18 cm l.; peduncles comparatively thick, 5–10 cm l., branchlets few, distant, patent, up to 4 cm l. Bracts and bracteoles minute, deciduous. Pedicels 3 mm l., rather slender, laxly pilose. Flowers subglobose-obconical, $2-2\frac{1}{2}$ mm l., $1\frac{1}{2}$ mm in diam., microscopically, laxly, appressed yellowish pilose, green (Ducke); tube broadly obconical-hemispherical, slightly longer than perianth, pilose within. Tepals equal, erect, fleshy, depressed-triangular, obtusely acute, about 1 mm l., broader than long. Stamens connate; staminal tube obtuse, $1-1\frac{1}{4}$ mm l., hardly exerted, densely pilose on both sides; anthers hardly $\frac{1}{2}$ mm high, depressed triangular, broader than long, obtuse; cells extrorse, valves attached at basal-central side; filaments as broad as anthers. Ovary densely pilose (base excepted), subglobose-ovoid, about 1 mm l., contracted into a rather slender, cylindrical-conical, $\frac{1}{2}$ mm l. style; stigma hardly conspicuous. Fruit unknown.

Distribution: Vicinity of Rio Negro in dry, upland forests.

Brazil: Amazonas: Rio Negro, mouth of Curicuriary R., dry upland

forest (Ducke H.R.J. 23669, fl. Nov. [D.F.Kw.Ws.]).

6. *Mezilaurus synandra* (Mez) Kosterm. in Meded. Bot. Museum Utrecht 25 (1936), p. 40. — *Silvia synandra* Mez in Fedde, Repert. 16 (1920), p. 306; Ducke in Tropical Woods 42 (1935), p. 20.

Typus: Ule 8835; Rio Negro [D.].

„Itaúba” (Ducke).

Tree, up to 15 m high (Ule). Branchlets thick, angular, towards apex minutely, yellowish tomentellous, beset with large leaf scars; buds yellowish sericeous-tomentellous; branches glabrous, grey, rough. Leaves alternate, more or less clustered near the apex of the branchlets, coriaceous, glabrous, on both sides prominulously reticulate, elliptical, $8-20 \times 4\frac{1}{2}-8$ cm; base cuneately acute, margin hardly recurved, top obtuse or emarginate; above shining, the rather broad midrib and prim. nerves prominent; beneath dull, brownish (dried), midrib prominent, prim. nerves (10–12 per side) rather patent, slightly arcuate, prominent, second. nerves laxly reticulate, prominent, veins prominulous. Petioles large, glabrous, smooth, 3–5 cm l., base swollen, flattish above. Panicles clustered near apex, 2–3 cm l., few-flowered, hardly branched, minutely, yellowish appressed-tomentellous; peduncles thick, often sulcate and verrucous, 1–2 cm l., branchlets 1 or 2, up to $\frac{1}{2}$ cm l., bearing clusters of 3–5 flowers. Bracts and bracteoles deciduous. Pedicels thick, tomentellous, $1-1\frac{1}{2}$ mm l. Flowers depressed subglobose or subglobose-conical, about 2 mm l., minutely, rather laxly, appressed-tomentellous; tube hemispherical, 1 mm high, glabrous within. Tepals equal, scaly, erect, pressed against staminal tube, depressed-triangular, broader than long, hardly $\frac{1}{2}$ mm high, obtusely acutish. Stamens exserted, $1-1\frac{1}{2}$ mm l.; anthers triangular, obtuse, thick, $\frac{1}{4}$ mm high, $\frac{1}{2}$ mm w., top free; cells extrorse, rather large; valves attached at central-apical side; filaments connate, broader than anthers, flattish, densely tomentellous. Ovary ellipsoid-ovoid, about 1 mm l., contracted into a minute, hardly $\frac{1}{2}$ mm l., cylindrical-conical style, stigma hardly conspicuous. Berry ellipsoid, 22 mm l., 13 mm in diam.; fruit pedicel cylindrical, 4 mm l., 2 mm in diam., woody, surmounted by a rather thin, pateriform, flat margin (4 mm in diam.), with subpersistent tepals.

Distribution: Drier upland forest around Manáos.

Brazil: Rio Negro in forest near Pensados, Manáos (Ule 8835, fl. June

[D.L.Ws.]; Ducke H.R.J. 25042, fl. June [D.U.Ws.]; Manáos, dry upland forest near Flores (Ducke H.R.J. 23964, fl. May [D.Kw.St.U.Ws.]; 22574, fl., fr. [H.]).

7. *Mezilaurus Sprucei* (Meissn.) Taubert ex Mez in Arb. Bot. Garten Breslau 1 (1892), p. 112. — *Acrodiclidium Sprucei* Meissner in D.C., Prodr. XV, 1 (1864), p. 86; id. in Fl. Brasil. V, 2 (1866), p. 174, tab. 61; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 109; Pax in Engler-Prantl, Pfl. fam. III, 2 (1889), tab. 77, fig. F. et G. — *Silvia Sprucei* (Meissn.) Mez in Jahrb., l.c., p. 109; id. in Arb. Bot. Gart. Breslau, l.c., p. 112. — *Mezia Sprucei* (Meissn.) O. Kuntze, Revisio Gen. Pl. 2 (1891), p. 574; Mez in Arb. Bot. Gart. Breslau, l.c., p. 112.

Typus: Spruce 2323; Brazil [Kw.].

Tree or shrub. Branchlets slender, cylindrical, utmost apex with few, strigose, appressed, yellowish hairs; buds densely yellowish-strigose (hairs long); branches slender, glabrous, grey or brownish, with many, minute lenticels. Leaves alternate, clustered at the end of the branches, chartaceous, glabrous (very young leaves with few, strigose hairs), elliptical, $8-15 \times 3\frac{1}{2}-6$ cm; base acute, margin flattish, top conspicuously acuminate (acumen slender, acute, up to 2 cm l.); above rather dull, midrib and prim. nerves prominent, veins obscurely prominulous; beneath dull, midrib prominent, prim. nerves (8-12 per side) prominent, erect-patent, strongly arcuate, veins densely, prominulously reticulate. Petioles slender, smooth, glabrous, $2-3\frac{1}{2}$ cm l., flattish or sub-canaliculate above, base slightly swollen. Panicles axillary, clustered near the apex of the branchlets, lax, glabrous, slender, many-flowered, 10-15 cm l., pyramidal; peduncles slender, smooth, up to 3 cm l., branchlets distant, filiform, lower ones up to 4 cm l., flowers in sub-umbels. Bracts and bracteoles minute, ovate and lanceolate-ovate, acute, laxly strigose, persistent. Pedicels filiform, glabrous, 10-18 mm l. Flowers glabrous, subglobose-obconical, $1-1\frac{1}{2}$ mm l., 1 mm in diam. at apex; tube obconical, slightly shorter than perianth, glabrous within. Tepals erect, rather thin, broadly ovate-sub-orbicular, obtusely acute, about $\frac{1}{2}$ mm l. Stamens exserted, conglutinate into an obtuse, 1 mm l. tube, densely rusty-strigose at base; anthers not distinct from filaments with large, elliptical, convergent cells; valves dehiscent from base to apex. Ovary ellipsoid-obovoid, glabrous, up to $\frac{3}{4}$ mm l., style rather slender, conical, slightly shorter, stigma minute, hardly conspicuous. Fruit unknown.

Distribution: Vicinity of the Rio Negro.

Brazil: Rio Negro, San Gabriel de Cachoeira (Spruce 2323, fl. May [Bs.D.DC.Dl.Dr.Gr.Kw.Lg.Ms.NY.O.P.]).

The stamens are not divergent, as drawn in Flora Brasiliensis, but conglutinate.

8. *Mezilaurus subcordata* (Ducke) Kosterm. in Meded. Bot. Museum Utrecht 25 (1936), p. 40. — *Silvia subcordata* Ducke in Archiv. Jard. Bot. Rio de Janeiro V (1930), p. 112; id. in Tropical Woods 42 (1935), p. 20.

Typus: Ducke H.R.J. 19974; Brazil [R.].

Small tree (Ducke). Branchlets thick with large leaf-scars; apex microscopically, yellowish, appressed-tomentellous; buds minutely yellowish-tomentellous; branches glabrous, grey, rough, rimose. Leaves alternate, more or less clustered near apex of the branchlets, glabrous, coriaceous, ovate-elliptical or elliptical, $10-19 \times 4-8$ cm, base contracted into the petiole, obtuse or rarely subcordate-obtuse, margin hardly recurved, top obtuse; above shining, rather smooth or laxly, prominulously, smoothly reticulate, midrib and prim. nerves prominulous; beneath dull, midrib strongly prominent, prim. nerves (6–11 per side) rather patent, arcuate, prominent, veins prominulously reticulate. Petioles slender, glabrous, 3–5 cm l., canaliculate above, base swollen. Panicles axillary on the young branchlets, lax, rather manyflowered, pyramidal, minutely, laxly, yellowish appressed-tomentellous, 5–12 cm l.; peduncles rather thick, 3–6 cm l., branchlets slender, distant, short, up to $1\frac{1}{2}$ cm l., bearing the sub-umbellate flowers. Bracts and bracteoles deciduous. Pedicels slender, tomentellous, $1-1\frac{1}{2}$ mm l. Flowers obconical-subglobose, $1-1\frac{1}{2}$ mm l., $1-1\frac{1}{2}$ mm in diam. at apex, minutely, yellowish, appressed-tomentellous, greenish (Ducke); tube hemispherical, about as long as perianth. Tepals equal, fleshy, erect or incurved, ovate-triangular, $\frac{1}{2}-\frac{3}{4}$ mm l., obtusely acute, inner ones broader. Stamens free, slightly exserted, about 1 mm l.; anthers thick, glabrous, obtuse, cells conspicuous, introrse; valves central-apically; filaments rather thin, hollow within, broader than anthers, densely pilose without and above cavity within. Ovary glabrous, ellipsoid, $\frac{3}{4}$ mm l., merging into a slender, conical-cylindrical, $\frac{1}{2}$ mm l. style with minute stigma. Berry ellipsoid, $2\frac{1}{2}-3$ cm l., $1\frac{1}{2}$ cm in diam. (Ducke), pedicel obconical-cylindrical, about 3 mm l., at apex $2\frac{1}{2}-3$ mm in diam., crowned by

a thin, wavy, pateriform, flat margin (4—5 mm in diam.), with sub-persistent tepals.

Distribution: Pará, vicinity of Jumanda R.

Brazil: Pará: dry upland forest of Jumanda R., below Paranapitinga R. (Ducke H.R.J. 19974, fl., fr. May [D.St.U.]).

The only species of this genus with introrse anthers.

Species excludendae:

Acrodictidium oppositifolium Nees = *Licaria oppositifolia*.

Mezia oppositifolia O. Kuntze = *Licaria oppositifolia*.

Mezilaurus oppositifolia Taubert = *Licaria oppositifolia*.

Silvia oppositifolia Mez = *Licaria oppositifolia*.

Additions and corrections to *Licaria* and *Cryptocarya*.

Licaria latifolia (Smith) Kosterm. in Recueil Trav. Bot. Néerl. 34 (1937), p. 601.

Additional material, obtained from the Museu Nacional in Rio de Janeiro (Schwacke 610, fl. Sept.), confirmed my supposition, put forward in Rec. Trav. Bot. Néerl. 33 (1936), p. 748, that this species is nothing but a broad-leaved form of *Licaria brasiliensis* (Nees) Kosterm.

Licaria Mahuba (Samp.) Kosterm. nov. comb. — *Acrodictidium Mahuba* A. Sampaio in: Comissão de Linhas Telegraficas Estrategicas de Matto Grosso ao Amazonas, Public. n. 56, Anexo n. 5, Botanica, Parte X (1917), p. 14, tab. X et XI; id. in Boletim do Museu Nacional de Rio de Janeiro IV, 2 (1928), p. 57 (cum 2 tab.). — *Clinostemon Mahuba* (A. Samp.) Kuhlmann et Sampaio in Boletim Museu Nacion., l.c., p. 57.

Typus: Ducke H.M.G. 16538 = H.R.J. 17582; Pará [H.M.G.].

„Mahuba” (Ducke).

Large tree (Ducke); branchlets stout, rough, irregularly angulate at apex, densely velutinous-tomentellous; buds densely tomentellous. Leaves alternate, clustered at the apex of the branchlets, chartaceous, obovate-elliptical, 18—40 × 6—20 cm; base acute, margin flat, top obtuse or emarginate, rarely obtusely acute; above at last glabrous (tomentum on midrib sub-persistent), rather dull, smooth, midrib flattish, broad, prim. nerves

often slightly impressed; beneath hirsute, midrib strongly prominent, prim. nerves (20—25 per side) prominent, erect-patent, slightly arcuate, secondary nerves sub-parallel, distant, prominent, veins laxly reticulate, slightly prominulous. Petioles stout, densely rusty velutinous-tomentellous, 2—3½ cm l., 3—5 mm in diam., above flat or slightly concave. Panicles axillary, clustered at the apex of the branchlets, ∞-flowered, lax, pyramidal, densely, rusty-tomentellous, 25—40 cm l.; peduncles stout, sub-angular, the lower 3—5 cm unbranched; branchlets comparatively slender, distant, erect-patent or patent, straight, the lower ones up to 12 cm l.; secondary branchlets short (the lower ones up to 2 cm l.), bearing the glomerate, sessile (or nearly so) flowers. Bracts and bracteoles minute, hardly more than ¼ mm l., lanceolate-triangular, acute, densely pilose without, persistent. Flowers green (Ducke), subglobose-obconical, densely velutinous-tomentellous, about 1½ mm l.; tube sub-hemispherical, glabrous within, about twice as long as inner tepals. Tepals erect, fleshy, scaly, triangular, obtusely acute, inner ones about ½ mm l., outer ones ¼ mm l. Outer six staminodes included, stipitiform, densely hirsute, about 1 mm l. The 3 fertile stamens with entirely exserted, glabrous, elliptical-ovate, obtuse ½ mm l. anthers, bent downwardly over the perianth; cells distinct, extrorse; filaments about 1 mm l., very broad, flat at base, densely pilose, narrowed below the anthers. Glands minute, flat, hardly ¼ mm l., on distinct, flat, densely pilose, slightly longer stalks, appressed to the filaments. Ovary ellipsoid-ovoid, glabrous, about 1 mm l.; style subcylindrical, rather slender, about as long, stigma minute, hardly conspicuous. Upper part of the style exserted from the perianth. Berry ellipsoid, smooth, up to 37 mm l., 20 mm in diam. (Sampaio). Cupule hemispherical, smooth, glabrous, rather shallow, up to 20 mm l., 17 mm in diam. (Sampaio); margin entire, obscurely double.

Distribution: Flooded forests of Pará.

Brazil: Pará; flooded forest on Guamá R. (Ducke H.R.J. 17583, fr. Oct. [U.St.Ws.]); Gurupa, flooded forest (Ducke H.M.G. 16538 = H.R.J. 17582, fl. Sept. [D.P.St.U.Ws.]).

Use: the fetid, yellowish wood is used for constructions (Ducke).

There is no reason to keep this species separate from the other *Licarias*, despite its different facies. Sessile, glomerate flowers are also found in *L. capitata*, which inflorescences differ

still more from the common type in *Licaria* than those of *L. Mahuba*. Another example to demonstrate, that this character has no generic value, we may find in *Endlicheria*, where *E. glomerata* has glomerate, sessile flowers, the only example in this genus.

The number of staminodes and fertile stamens, their shape and insertion indicate too, that this species belongs to *Licaria*. The peculiar curvature of the anthers merits not more attention than the anthers of *L. macrophylla* with their aberrant shape and those of *L. amara*. In the genus *Licaria* we may find all sorts of anther shapes.

The ovary, style and especially the minute stigma are those of a *Licaria* species and the same may be said of the fruit cupule. The position of the leaves at the end of the branchlets is an exception in this genus, but we have already opposite and alternate leaves in this genus. In the genus *Aniba* we equally find species with alternate and such with leaves clustered at the end of the branchlets.

***Cryptocarya moschata* N. & M. and *Cr. mandioccana* Meissn.**

The type specimen of *Cr. moschata* not being available to me, I based my opinion on the description of Nees, who cited 2 specimens, the fruiting one of Martius and a flowering one of Sellow; both had glabrous leaves according to Nees.

Now I have the type specimen of *Cr. moschata* in hand it proved to have pilose leaves and as the description of Nees refers especially to this species and not to that of Sellow, I am obliged to alter the synonymy as follows:

Revision of the Lauraceae II in *Recueil Trav. Bot. Néerl.* 34 (1937), p. 570 sub 5 instead of *Cr. moschata* should be read:

***Cryptocarya Aschersoniana* Mez** in *Jahrb. Bot. Gart. Berlin* V (1889), p. 11. — *Cryptocarya minutiflora* Mez in *Engler's Bot. Jahrb.* 30 (1902), Beiblatt 67 (1901), p. 11. — *Cryptocarya subcorymbosa* Mez in *Arb. Bot. Gart. Breslau* 1 (1892), p. 106; Glaziou in *Bull. Soc. Bot. France* 59 (1912), *Mém.* 3 (1913), p. 590. — *Cryptocarya moschata* Nees in *Linnaea* 8 (1833), p. 37, p.p. (quoad cit. spec. Sellow); id., *Systema Laur.* (1836), p. 213, p.p. (quoad cit. spec. Sellow); Meissner in *D.C., Prodr.* XV, 1 (1864), p. 74 (excl. cit. spec. Martius et Martin); id. in *Fl. Brasil.* V, 2 (1866), p. 164, p.p. (excl. cit. spec. Martius et Martin), tab. 56; id. in *Videnskab. Meddel. Naturhist. Foren. Kjöbenhavn* 1870, p. 131 (Warming, *Symbolae*, p. 303); Mez in *Jahrb., l.c.*, p. 8 (cum forma *angustifolia*, l.c., p. 9; excl. cit. spec. Martius, Miers

4275 et Pohl); Warburg, die Muskatnuss (1897), p. 508, p.p., t. 6; Glaziou in Bull. Soc. Bot. France 59 (1912), Mém. 3 (1913), p. 589.

Typus: Sellow s.n.; Brazil [D.].

Revision of the Lauraceae II in Rec. Trav. Bot. Néerl. 34 (1937), p. 572 sub 6 instead of *Cr. mandioccana* should be read:

Cryptocarya moschata Nees et Martius ex Nees in Linnaea 8 (1833), p. 37 (excl. cit. spec. Sellow); id. Systema (1836), p. 213 (excl. spec. Sellow); Meissner in D.C., Prodr. XV, 1 (1864), p. 74 p.p. (quoad cit. spec. Martius); id. in Fl. Brasil. V, 2 (1866), p. 164, p.p. (quoad cit. spec. Martius); Martius, Reise 2, p. 553; id., Materiae medicae veget. Brasil. (1843), p. 110; Mez in Jahrb. Bot. Garten Berlin V (1889), p. 8, p.p. (quoad cit. spec. Martius, Miers 4275 et Pohl); Warburg, die Muskatnuss (1897), p. 508, p.p.; Dragendorff, Heilpfl. (1898), p. 237 (excl. cit. Peckolt *); Wehmer, Pflanzenstoffe (1911), p. 222. — *Cryptocarya mandioccana* Meissn. in D.C., Prodr. XV, 1 (1864), p. 75; id. in Fl. Brasil. V, 2 (1866), p. 165; Mez in Jahrb., l.c., p. 10.

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

*) Peckolt's material, cited in Pharm. Rundschr. 14 (1896), n. 11 refers probably to *Cr. minima*.

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