

REVISION OF THE AMERICAN SPECIES OF *RINOREA*.

By S. F. BLAKE.

INTRODUCTION.

With the exception of *Viola* and *Hybanthus*, the genus *Rinorea* contains more American species than any other genus of Violaceae, and in the world at large it ranks next to *Viola* in number of species. One hundred four African species are listed by De Wildeman in a recent paper, and others occur in tropical Asia, Madagascar, and the Mascarene Islands. The variation in minor details of structure of the stamens, particularly in the species of the Old World, led to the proposal of a number of genera by earlier authors. The genus was first taken in essentially its modern sense by Robert Brown,¹ who used for it the name *Alsodeia* of Thouars, based on a species of Madagascar. The earlier name *Rinorea* of Aublet, adopted by Bailon in 1873 and by Kuntze in 1891, is now in practically universal use for the genus.

The species of *Rinorea* are shrubs or trees, with alternate or apparently opposite, or very rarely ternate, leaves, and axillary or sometimes terminal racemes, panicles, or cymes of small white or yellowish flowers. The genus is characterized by its regular flowers, with five free petals, and 3-valved capsule. In nearly all the American species the stamens are entirely free, and the connectives are dilated dorsally from base to apex into scarious brownish scales exceeding the anthers and free from them laterally and apically. In nearly all the American species, also, each filament is adnate outside at the base or throughout its length to a gland, which is sometimes longer than the filament and is usually free at apex. In a few species the filaments are borne on the inner side of a sometimes 5-lobate disk.

In *R. dichotoma*, of Colombia, the broad filaments are united for about two-thirds their length into a cup, and the connectives are dilated into a brownish scale only at the apex. This species also differs in its inflorescence from all other American species I have examined, the flowers being in short, dense, once or twice dichotomous cymes. Two related species, *R. andina* and *R. gossypium*, are

¹ In Tuckey, Narr. 440. 1818.

described from Colombia, with the same type of inflorescence and connective. Distinct as these species are in appearance, they are matched in their more important stamen characters by various species of the Old World.

In some species the anthers sacs bear at the apex one or two scarious cusps, sometimes nearly as long as the sacs; in one or two others they bear a few filiform setae. Although the presence or absence of these cusps has been considered of importance, and undoubtedly is so, I have not found it of sufficient constancy in the material examined to be of much use as a key character. Certain species, it is true, never possess these cusps, but in others in which they occur they may be found in one flower dissected, or on some anthers only, and may be absent in others from the same specimen. It may be that they are deciduous or easily broken off; but when found at all in dissected material they do not appear especially fragile, and I am unable to explain their irregular occurrence. In consequence, I have avoided in so far as possible the use of the presence or absence of these appendages as a character in the key, and when its use has seemed unavoidable have made provision under both headings for those species in which variation has been found in my dissections.

Rinorea is distinguished from *Hybanthus* (taken in its broad sense to include *Ionidium*, incorrectly called *Calceolaria* by some modern American authors²) by its regular flowers. Those of *Hybanthus* always show at least a slight enlargement of the keel petal and so far as the North American species of *Hybanthus* are concerned, at any rate, may also be distinguished by the fact that the anthers or connective scales of at least some of the stamens are connate. The sepals of *Rinorea* are generally described as equal, but this is not true of all the species. In *R. sylvatica*, for example, the two outer sepals are larger than the others and thicker; but all are similar in form, and the passage from the largest and thickest outer sepal to the smallest and thinnest innermost is gradually effected through the intermediate sepals.

²The genus *Calceolaria* of the Scrophulariaceae was founded by Linnaeus filius in 1771. Unfortunately, the name had already been used three times previously in botany. Its first publication by Loeffling (Iter Hisp. 183) in 1758 is invalid according to the American Rules, since no truly binominal species was included, the name *Calceolaria frutescens* used for Loeffling's third species being merely a chance binomial having no relation to the Linnaean binomial system. As used by American authors for the group of species sometimes separated from *Hybanthus* under the more commonly used name *Ionidium* Vent. (1800), it dates from the German edition (1766) of Loeffling's work, by Koelplin, in which binomial equivalents are given for Loeffling's three polynomial species. This use of the name is not valid under the American Code, since Fabricius in 1763 (Enum. Pl. Hort. Helmst. ed. 2, 37) had properly published a genus *Calceolaria* based on *Cypripedium calceolus* of Linnaeus.

The flowers of several species are known to be fragrant, and this is probably true of all. The capsules, when boiled, give forth the characteristic odor of slippery elm (*Ulmus fulva*), and this is sometimes apparent in the dried specimens.

The only treatment of the American species which is of any value in the determination of specimens is that of Eichler (1871) in the *Flora Brasiliensis*, and in this only 11 species are described, while the number of species now known from America is about 39. Of these, I have been able to examine 25, of which 16 or 17 are represented by types or by specimens or fragments of the type collections. In addition to the material in the U. S. National Herbarium, that in the Gray Herbarium and the herbarium of the New York Botanical Garden has been examined, through the kindness of the curators, and Dr. Otto Stapf has forwarded single flowers from the types of four of Bentham's species in the Kew Herbarium. Mr. E. G. Baker, of the British Museum (Natural History), has sent drawings of Aublet's types and notes which have been of great assistance in settling the identity of three species described by Aublet under as many generic names.

The status of most of the American species can now be regarded as definitely established. In several cases, however, it will be necessary to examine original specimens or more extensive series before the validity of some forms can be regarded as decided. Closely related pairs of species are *Rinorea dichotoma* and *R. andina*, *R. guianensis* and *R. paniculata*, *R. hymenosepala* and *R. ulmifolia*, *R. pubipes* and *R. squamata*. *Rinorea brevipes* may yet prove to intergrade with *R. passoura*, as may *R. pilosula* with *R. guatemalensis*. *Rinorea gracilis* is known only from fruiting material, like several apparently new species of which I have seen specimens in herbaria, but which I have omitted, since their description from fragmentary material would serve merely to swell the list of doubtful species without adding to our knowledge of the group.

In this revision the genus is taken in the limits given it by Bentham and Hooker, which were followed by Taubert in the *Pflanzenfamilien*. The fact that the apparently opposite leaves of *Rinorea* are not morphologically so has been demonstrated by Eichler,³ but for brevity's sake I have described the leaves in these species as opposite. All measurements of floral details are taken from boiled parts spread flat. In the case of the petals the measurements are often considerably greater than they appear in pressed specimens, since the tips are reflexed in nearly all the species. The descriptions of staminal details are based in nearly every case on repeated dissections. The measurements given for length of anthers apply to

³ In Mart. Fl. Bras. 13¹: 384. 1871.

the anther sacs only and do not include appendages. Except where otherwise indicated, all descriptions are based entirely on specimens examined. The following abbreviations are used in referring to herbaria in which specimens are deposited: G, Gray Herbarium; N, U. S. National Herbarium; Y, herbarium of the New York Botanical Garden.

No species of *Rinorea* is known to be of much economic importance, although a few are used by natives for one purpose or another. To this fact, as well as to a lack of striking features in habit or color, is due their comparative paucity of vernacular names. The only American species for which I have been able to find native names and uses recorded are listed here.

Rinorea physiphora, of the Rio de Janeiro region, is known as "lobolobo," and the leaves are said to be boiled and eaten as greens by negroes, a use for which they seem singularly unfitted. St. Hilaire, however, was of the opinion that the species might be improved and made of some importance by cultivation. Baillon states that the astringent bark of the same species is used as a febrifuge. The native name of *R. riana* in Colombia is given as "jazmin," and in Venezuela as "rabo de cachicamo" and "tabaquito." The names "conohorié" and "jacamim-renepea" are given for *R. flavescens*. *Rinorea hummelii* is known in British Honduras as "wild coffee."

SYSTEMATIC TREATMENT.

Flowers in forked cymes 10 to 15 mm. long; connectives dilated into a scarious scale only at apex; placentae about 12-ovulate or more, the ovules 3 to 6-seriate.

Pedicels 8 to 14 mm. long; leaves 3.5 to 5 cm. wide; connective scales ovate.

Connective scales acute, erose; anther cells 1 mm. long----- 1. *R. andina*.

Connective scales obtuse, 3 or 4-denticulate; anther cells 2 mm. long.

2. *R. dichotoma*.

Pedicels 5 mm. long; leaves 5 to 10 cm. wide; connective scales linear-oblong.----- 3. *R. gossypium*.

Flowers in usually longer racemes or panicles; connectives scarious-dilated and free laterally from the very base; placentae 1 to 4-ovulate, the ovules 1-seriate.

Leaves alternate.

Flowers racemose-paniculate.

Connective scales lance-ovate, narrowed to apex.

Petals little longer than calyx; connective scales somewhat barbate outside toward base----- 4. *R. paniculata*.

Petals twice as long as calyx or longer; connective scales glabrous.

Leaves essentially entire; ovary villosulous at apex. 5. *R. bahiensis*.

Leaves distinctly crenate-serrate; ovary densely hispid-pilose.

6. *R. guianensis*.

Connective scales oval or oblong, broadly rounded.

Ovary glabrous..... 7. *R. crenata*.

Ovary densely pubescent..... 15. *R. hymenosepala*.

Flowers strictly racemose.

Leaves cordate at base..... 8. *R. maximiliani*.

Leaves narrowed at base..... 9. *R. physiphora*.

Leaves opposite, very rarely ternate.

Flowers racemose-paniculate, forming a narrow thyse.

Ovary glabrous.

Petals 2.6 mm. long; leaves short-pointed, green beneath.

10. *R. racemosa*.

Petals 3.2 to 3.5 mm. long; leaves long-attenuate, glaucescent beneath.

11. *R. sprucei*.

Ovary pubescent.

Axis of inflorescence glabrous..... 12. *R. Lindeniana*.

Axis of inflorescence pubescent or puberulous.

Petals 2 to 3 mm. long.

Filaments bearing a gland at apex; petals glabrous or only obscurely ciliolate, 2.5 to 3 mm. long..... 13. *R. riana*.

Filaments bearing a gland at base; petals ciliolate, 2 mm. long.

14. *R. micrantha*.

Petals 4 to 5.2 mm. long.

Sepals 2 to 3 mm. long; leaves pubescent at least on the veins beneath; placentae 1-ovulate.

Connective scales erose; anthers with comparatively large terminal appendages; filaments bearing a gland.

15. *R. hymenosepala*.

Connective scales entire; anthers unappendaged; filaments eglandular..... 16. *R. ulmifolia*.

Sepals 1 to 1.2 mm. long; leaves glabrous beneath; placentae 2-ovulate..... 17. *R. hummeli*.

Flowers strictly racemose.

Petals only once and a half as long as sepals, or less.

Leaves puberulous and strigose on veins beneath; sepals hispid; filaments not bearing a gland; anthers 1-mucronate or unappendaged.

18. *R. sylvatica*.

Leaves glabrous; sepals puberulous; filaments bearing a gland at apex; anthers multisetose..... 19. *R. martini*.

Petals more than once and a half as long as sepals, usually twice as long or more.

Ovary glabrous or rarely with a few hairs..... 20. *R. flavescens*.

Ovary densely pubescent.

Anthers bearing at apex 1 or 2 cusps or mucros, or 1 to several setae.

Petals pubescent dorsally..... 21. *R. passoura*.

Petals glabrous or merely ciliolate, rarely with a few hairs on back.

Connective scales strongly erose or crisped below; placentae 1-ovulate..... 22. *R. guatemalensis*.

Connective scales entire or merely obscurely erose; placentae usually 2 to 4-ovulate (1-ovulate in *R. brevipes* and *R. deflexa*).

Leaves strongly coriaceous, strictly entire, with strongly thickened margin..... 23. *R. marginata*.

Leaves papery to coriaceous, serrulate to dentate.

Filaments 0.4 mm. long, about one-fifth as long as anthers;
anthers much more than half as long as connective
scales..... 24. *R. brachythrix*.

Filaments 0.6 to 1 mm. long, half as long as anthers;
anthers about half as long as connective scales, or less.

Leaves coriaceous, sharply serrulate, densely prominulous-
reticulate on both sides..... 25. *R. melanodonta*.

Leaves papery to pergamentaceous, obscurely serrulate
or obtusely dentate, not densely prominulous-retic-
ulate.

Petals 4 mm. long, glabrous; leaves falcate-acuminate.

26. *R. falcata*.

Petals 4.5 to 6 mm. long, ciliate or cillolate at least
at apex; leaves obtusely short-pointed.

Sepals thick, strongly striate; petals cillolate-tufted
at apex..... 27. *R. brevipes*.

Sepals thin, not strongly striate; petals short-ciliate.

28. *R. deflexa*.

Anthers not appendaged at apex.

Filaments 0.3 mm. long, about one-eighth as long as the connective
scales..... 29. *R. ovalifolia*.

Filaments 0.4 to 1.5 (usually 0.7 to 1) mm. long, one-fifth to two-
thirds as long as the connective scales.

Flowers subsessile; capsule 4 to 5 cm. long. 30. *R. macrocarpa*.

Flowers distinctly pedicellate; capsule (not known in all the
species) 2 cm. long or less.

Filaments nearly or quite as long as anther cells.

Leaves 4 to 6 cm. long; connective scales entire.

31. *R. juruana*.

Leaves 6 to 23.5 cm. long; connective scales erose.

Leaves 6 to 11.5 cm. long; placentae 1-ovulate.

32. *R. viridifolia*.

Leaves 13 to 23.5 cm. long; placentae 2-ovulate.

Leaves oblong or ovate-elliptic; connective scales lance-
ovate..... 33. *R. scandens*.

Leaves obovate; connective scales elliptic-oblong.

34. *R. deflexiflora*.

Filaments one-half or rarely two-thirds as long as anther cells,
or less.

Connective scales distinctly erose.

Petals about 3 mm. long..... 13. *R. riana*.

Petals 5.5 mm. long..... 22. *R. guatemalensis*.

Connective scales entire or merely obscurely erose chiefly
below.

Filaments about twice as long as the glands; sepals 2.4 to
2.7 mm. long..... 27. *R. brevipes*.

Filaments not twice as long as, sometimes shorter than, the
glands; sepals 1.2 to 2 mm. long.

Filaments more than half as long as anther cells; con-
nective scales 2.2 mm. long.

Leaves hispid-pilose and densely puberulous on the
veins beneath; connective scales ovate.

35. *R. pubipes*.

Leaves strigose or hispid-pilose, but not puberulous, on the veins beneath; connective scales oval-oblong----- 36. *R. squamata*.

Filaments not half as long as the anther cells; connective scales 2.8 to 3.5 mm. long.

Stamens 3.5 mm. long, the filaments exceeding the glands-----28. *R. deflexa*.

Stamens 3.8 to 4.2 mm. long, the glands exceeding the filaments-----37. *R. pilosula*.

1. *Rinorea andina* (Tulasne) Kuntze, Rev. Gen. Pl. 1:42. 1891.

Alsodeia andina Tulasne, Ann. Sci. Nat. III. Bot. 7: 366. 1847.

Tree, glabrous; leaves alternate; petioles 5 mm. long; blades ovate-lanceolate or lanceolate, 10 to 15 cm. long, 4 to 5 cm. wide, acute or acuminate, acute at base, obscurely serrulate; cymes twice bifid, 4-flowered, 1 cm. long; pedicels 1 cm. long; sepals suborbicular, very obtuse, the inner broader and thinner; corolla thrice as long as calyx, the petals elliptic-ovate, 8 mm. long, acute, deflexed at apex; stamens 3 mm. long, the filaments short, broad, bearing a gland at apex, connate below into an annulus, alternating with minute teeth, the anthers obtuse, about 1 mm. long, not appendaged, each connective dilated at apex into an ovate, acute, somewhat erose scale; ovary glabrous, the placentae bearing numerous 3 to 6-seriate ovules; fruit oblong-fusiform, 3 cm. long; seeds numerous, glabrous.

TYPE LOCALITY: Near La Trocha, in the Cordillera Central of Colombia. Type in the herbarium of the Jardin des Plantes, collected by Goudot (no 138).

Not seen; description condensed from that of Tulasne. M. Gagnepain of the Paris Herbarium has kindly communicated notes on the petals and the structure of the stamens.

2. *Rinorea dichotoma* Rusby, Descr. New So. Amer. Pl. 61. 1920. PLATE 31.

Tree; branchlets glabrous; leaves alternate; petioles glabrous, 3 to 6 mm. long; blades elliptic or oblong-elliptic, 10 to 14 cm. long, 3.5 to 5 cm. wide, obtusely acuminate, cuneate at base, remotely repand-serrulate, glabrous, papery, the lateral veins about 8 pairs, the secondaries loosely prominulous-reticulate; peduncles glabrous, axillary, about 4 mm. long; cymes 8 to 12 mm. long, once or twice bifid, the branches densely covered with small cilliate persistent bracts and the pedicels of fallen flowers, bearing at apex 1 or 2 flowers; pedicels glabrous, 8 to 14 mm. long; sepals orbicular, 1.8 to 2.4 mm. long, broadly rounded, slightly fleshy, cilliate, not evidently nerved; petals white, oblong-ovate, 9 mm. long, obtuse, slightly spreading at apex, obscurely cilliate below; stamens 3.8 mm. long, the filaments very broad, 0.8 mm. long, connate for two-thirds their length, glabrous, bearing at apex a fleshy rounded gland 0.3 mm. long, the anthers oblong-ovate, 2 mm. long, not appendaged, each connective dilated at apex into an ovate obtuse brownish scale, this 3 or 4-denticulate at apex, obscurely erose toward base; ovary glabrous, ovoid, the placentae about 12-ovulate, the ovules about 3-seriate.

TYPE LOCALITY: Above Valparaíso, Colombia.

SPECIMENS EXAMINED:

COLOMBIA: Above Valparaíso, vicinity of Santa Marta, altitude 1,525 meters, 1898-99, *Herbert H. Smith* 1492 (type; Y, photograph N).

This species with *R. andina* and *R. gossypium* forms a small group very different from all other American species in their comparatively large flowers in dense, once or twice bifurcate cymes, with the filaments connate into a ring below, the connectives dilated into scales only at apex above the tips of the anthers, and the ovules very numerous and several-seriate. Distinct

as this group seems in these characters, in several of which it approaches the genus *Gloeospermum*, it is connected with the more typical forms by numerous species of the Old World. The present species is close to *R. andina*, which I know only from description, but appears to differ in definite staminal characters. The description of the stamens in the original characterization of *R. dichotoma* is incorrect in almost every particular.

EXPLANATION OF PLATE 31.—*Rinorea dichotoma*, from the type specimen. Natural size.

3. *Rinorea gossypium* (Tulasne) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia gossypium Tulasne, Ann. Sci. Nat. III, Bot. 7: 367. 1847.

Tree, glabrous; leaves alternate; stipules 15 mm. long; petioles 5 to 8 mm. long; blades broadly elliptic or elliptic-oblong, 12 to 18 cm. long, 5 to 10 cm. wide, short-acuminate, rounded at base, subentire; cymes 15 mm. long, several times branched, 3 to 10-flowered; pedicels 5 mm. long; sepals ovate, obtuse, marcescent; petals (in bud) exceeding the sepals, ovate-oblong, obtuse; filaments united into an annulus, short, with a gland at base, alternating with 5 teeth of the annulus, the anthers oblong, the connective scales terminal, oblong-linear, obtuse; ovary glabrous, the ovules numerous and pluriseriate on each placenta; capsule globose, 3 cm. thick, 8 to 10-seeded; seeds white-woolly, 8 mm. long.

TYPE LOCALITY: Near Muzo, eastern Andes of Colombia. Type in the herbarium of the Jardin des Plantes, collected by Goudot.

Not seen; description condensed from the original. To be distinguished from *R. andina* and *R. dichotoma* by its shorter pedicels, broader leaves, and woolly seeds. Triana and Planchon⁴ record the species from the plain of San Martín, between Villavicencio and Jiramena, Colombia, altitude 250 meters. M. Gagnepain of the Paris Herbarium has sent me sketches of this species, which show that it is properly placed in this group.

4. *Rinorea paniculata* (Mart.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodea paniculata Mart. Nov. Gen. & Sp. 1: 30. pl. 21. 1823.

Tree, glabrous; leaves alternate; stipules lanceolate, fugacious; petioles 5 to 10 mm. long; blades elliptic, oval-oblong, or ovate-oblong, 8 to 15 cm. long, 3 to 6 cm. wide, acuminate or short-pointed, cuneate at base, entire or subrepand; panicles (including peduncle) 6 to 9 cm. long, about 2.5 cm. wide, terminal, loose, puberulous, the branches 2 to 5-flowered; sepals broadly ovate, obtusish, puberulous and cillolate; petals small, half longer than the calyx, white, ovate-lanceolate, obtuse, spreading at apex, somewhat puberulous outside; filaments short and broad, the anthers ovate, 2-mucronate, the connective scales about twice as long, lance-ovate, acute, serrate, somewhat barbate toward base outside; ovary villous; capsule obovoid-turbinate, about 1 cm. long, sericeous-pubescent, usually 1-seeded.

TYPE LOCALITY: Primeval woods near Teffé and Coari, Province of Alto Amazonas, Brazil. Type collected by Martius.

Not seen; description compiled from Martius. This species is close to *R. guianensis*, which Eichler united with it, but has considerably shorter petals, and, according to the original description, the connective scales are somewhat barbate outside toward base, which is not the case in *R. guianensis*.

5. *Rinorea bahiensis* (Moric.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia bahiensis Moric. Pl. Nouv. Amér. 68. pl. 46. 1839.

Glabrous; leaves alternate; petioles about 6 mm. long; blades ovate-elliptic or obovate-elliptic, 4 to 7.5 cm. long, 2.5 to 3.5 cm. wide, obtuse to short-acuminate, at base acute, subentire; panicles terminal, narrow, puberulous,

⁴ Ann. Sci. Nat. IV. Bot. 17: 126. 1862.

5 to 9 cm. long, the branchlets mostly 3 to 7-flowered; sepals ovate, 2.5 mm. long, obtuse, puberulous; petals twice as long as the sepals, ovate, narrowed to an obtusish apex, cillolate and dorsally puberulous; stamens shorter than petals, the filaments broad, very short, bearing a gland at base, the anthers 2-mucronate, the connective scales twice as long, ovate, narrowed to an obtusish apex, glabrous; ovary villosulous at apex.

TYPE LOCALITY: Bahia, Brazil. Types collected by Blanchet (nos. 1476, 1496).

Not seen; description compiled from the original and from Eichler. Eichler describes the leaves as 4 to 5 cm. long, but in the original they are described and figured as $1\frac{1}{2}$ to 3 inches long. The species is close to *R. guianensis*, but may be distinguished by its smaller essentially entire leaves.

6. *Rinorea guianensis* Aubl. Pl. Guian. 1: 235. pl. 93. 1775.

Conohoria rinorea St. Hil. Mém. Mus. Hist. Nat. 11: 495, excluding synonyms in part. 1824.

Alsodea rinorea Spreng. Syst. Veg. 1: 807. 1825.

Alsodeia floribunda Moric. Pl. Nouv. Amér. 70. pl. 47. 1839.

Alsodeia castaneaeifolia Eichl. in Mart. Fl. Bras. 13¹: 382. 1871. Not *Conohoria castanefolia* St. Hil., 1824.

Shrub or tree; branches strigillose, glabrate; leaves alternate; petioles 5 to 8 mm. long, strigillose, glabrate; blades elliptic to oval or oblong-ovate, 7 to 15 cm. long, 2.5 to 5 cm. wide, acuminate or short-pointed but obtuse, at base cuneate to rounded-cuneate, subcoriaceous, crenate-serrate, strigose on costa and sometimes on veins beneath; panicles axillary, about 6 cm. long and 2 cm. wide, ruful-puberulous, the branches 3 to 5-flowered; sepals ovate or oval, 1.5 to 2 mm. long, obtuse, apiculate dorsally below the apex, cillolate and puberulous; petals lance-ovate, 5 mm. long, obtuse, puberulous along midline, recurved at apex; stamens 3.3 mm. long, the filaments broad, 0.3 mm. long, bearing at base a fleshy triangular gland, the anthers 1.2 mm. long, bearing at apex 1 or 2 cusps 0.8 mm. long or less, the connective scales ovate, 3 mm. long, narrowed to an obtuse apex, glabrous; ovary densely hispid-pilose, the placentae 1-ovulate; "capsule oblique, 9 mm. long, tomentellous, 1-seeded; seed glabrous."

ILLUSTRATIONS: Aubl. Pl. Guian. pl. 93; Moric. Pl. Nouv. Amér. pl. 47; Mart. Fl. Bras. 13¹: pl. 77, f. 3 (fruit).

TYPE LOCALITY: Region of Caux, French Guiana. Type, collected by Aublet, in the British Museum.

SPECIMENS EXAMINED:

FRENCH GUIANA: Region of Caux, Aublet (sketch of type; N).

BRAZIL: Province of Bahia, Blanchet 1626 (type collection of *A. floribunda*; Y, photo. N). Monte Corcovado, near Rio de Janeiro, 1839, Martius 471 (Y). Without definite locality, Riedel (G, N, Y).

Eichler used for this species the name *Alsodeia castaneaeifolia*, based on *Conohoria castanefolia* St. Hil., and indicated by a sign of affirmation that the name was authenticated by specimens. Study of St. Hilaire's descriptions, however, indicates that this course is probably incorrect. *Conohoria castanefolia* was originally described in connection with *Conohoria lobo-lobo* (now *Rinorea physiphora*), a species with simple racemes, and was distinguished from that species by its broader, manifestly serrate, mucronulate leaves, its larger flowers, more pubescent pedicels, and very villous ovary with suspended ovules. In his memoir on the family, published in the same year, St. Hilaire⁶ described three species: *Conohoria lobo-lobo* (of which *A.*

⁶ Mém. Mus. Hist. Nat. 11: 495. 1824.

physiphora Mart. was given as a synonym), *C. castanaefolia*, and *C. rinorea*. The racemes in the first two species were described as simple, resembling those of the lily-of-the-valley, and the leaves as crowded at the tips of the branchlets. The third species, *Conohoria rinorea*, was described as with compound racemes and alternate, rather remote leaves, and to its synonymy were referred *Rinorea guayenensis* [sic] Aubl. and *Alsodea paniculata* Mart. Eichler himself refers this third name of St. Hilaire (*Conohoria rinorea*) to his own *A. castanaefolia*, a species characterized by its paniculate flowers, scattered (not crowded) leaves, and petals considerably longer than the sepals. *Conohoria castanaefolia*, described as with simple racemes and leaves crowded at the tips of the branches, is considered synonymous. This course is contrary to St. Hilaire's description; and since he showed a clear appreciation of the characters of most significance in this group, it seems necessary to follow his descriptions rather than the views of Eichler. The differences between *C. lobolobo* and *C. castanaefolia* indicated by St. Hilaire do not seem to be of any real consequence, and both are described from the vicinity of Sao Sebastião, so that their reference to the synonymy of *Rinorea physiphora* seems justified.

I have not been able to find any difference of importance indicated by the description of *R. guianensis*, when compared with an authentic specimen of *Alsodea floribunda* Moric., and Mr. E. G. Baker, who has compared the still existent type of Aublet's species with material of *A. floribunda* which I sent him, has likewise not discovered any difference between them. Consequently, in spite of the considerable gap in the ranges as now known, the two names are here considered to refer to one species.

7. *Rinorea crenata* Blake, sp. nov.

Branchlets glabrous; leaves alternate; petioles minutely hirtellous, 4 to 7 mm. long; blades oblong-obovate, rarely elliptic-obovate, 8 to 13.5 cm. long, 2.5 to 5 cm. wide, short-pointed with obtuse mucronulate apex, rounded at base, crenate-serrate with obtuse teeth, papery, glabrous above, beneath paler green, minutely hirtellous beneath along the costa and the 5 or 6 pairs of lateral veins, prominulous-reticulate on both sides; panicles axillary, 1 to 3, puberulous, about 4 cm. long (including the short peduncle), about 1 cm. wide, the lower branchlets 3-flowered, the upper 1-flowered; bracts and bractlets minute; pedicels about 2 mm. long; sepals oval, 1.2 mm. long, rounded, very thin, 3-nerved, ciliolate, somewhat puberulous at base; petals oval, 3 mm. long, rounded, ciliolate nearly to apex, scarcely reflexed; stamens 2.1 mm. long, borne on the inner side of a repandly 5-lobed ciliate disk (composed of the united glands of the filaments?), the free portion of the filaments slender, 0.4 mm. long, the anthers roundish, 0.8 mm. long, sometimes bearing at apex 1 or 2 ligulate appendages 0.4 mm. long or less, the connective scales oblong-oval, 1.7 mm. long, rounded, erose-lacerate, pilose on back below; ovary and style glabrous; placentae 1-ovulate.

Type in the U. S. National Herbarium, no. 935868, collected in forests of Shirores, Talamanca, Costa Rica, altitude about 100 meters, February, 1895, by H. Pittier and A. Tonduz (no. 9183).

Readily distinguished among North American species by its alternate leaves, paniculate inflorescence, and glabrous ovary.

8. *Rinorea maximiliani* (Eichl.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia maximiliani Eichl. in Mart. Fl. Bras. 13¹: 381. pl. 77, f. 1. 1871.

Shrub 2.5 meters high, hirtellous, glabrescent; leaves alternate; petioles 1 to 2 mm. long; stipules lance-subulate, 4 to 5 mm. long, persistent; blades oblong-obovate, 8 to 12 cm. long, 3 to 4 cm. wide, obtuse or subacute, cordate at base,

subentire or remotely serrate, hirtellous, glabrescent; racemes 6 to 8 cm. long, erect, hirtellous; pedicels 4 to 6 mm. long; sepals lanceolate, 1.5 mm. long, acute, 1-nerved, puberulous; petals lanceolate, 5 to 6 mm. long, acutish, sparsely pubescent dorsally, erect; filaments much shorter than the anthers, the anthers oblong, unappendaged (according to description, but apparently figured as with 2 appendages), the connective scales about one and one-half times as long, oblong-lanceolate, obtusish, woolly on the back below; ovary villosulous, the placentae 1-ovulate.

TYPE LOCALITY: Southeastern Brazil, probably in the Province of Espiritu Santo. Type collected by Prince Maximilian von Neuwied.

Not seen; description condensed from Eichler's original. To be distinguished from *R. physiphora*, its only close ally, by its shorter-petioled leaves, with cordate bases.

9. *Rinorea physiphora* (Mart.) Baill. Hist. Pl. 4: 346. 1873.

Alsodea physiphora Mart. Nov. Gen. & Sp. 1: 28. pl. 19. 1823.

Conohoria lobolobo St. Hil. Pl. Usuell. Bras. pl. 10. 1924; Mém. Mus. Hist. Nat. 11: 494. 1824.

Conohoria castanefolia St. Hil. Pl. Usuell. Bras. under pl. 10. 1824; Mém. Mus. Hist. Nat. 11: 495, as *castaneaefolia*, 1824.

Physiphora laevigata Soland.; DC. Prodr. 1: 314. 1824.

Alsodea castaneaefolia Spreng. Syst. Veg. 4: Cur. Post. 99. 1827.

Rinorea castaneaefolia Baill. Hist. Pl. 4: 346. 1873.

Shrub or tree, 15 meters high or less, with dense spreading crown; branchlets puberulous, glabrate; leaves alternate; stipules lance-subulate, 1.5 mm. long, subpersistent; petioles 2 to 4 mm. long; blades elliptic or oblanceolate to oblong-elliptic, 6 to 10.5 cm. long, 1.5 to 3.2 cm. wide, acute, at base acutely cuneate to rounded-cuneate, remotely crenate-serrulate, becoming subcoriaceous, glabrous; racemes axillary and subterminal, 8 cm. long or less, puberulous; pedicels 2 to 5 mm. long; sepals ovate, 1.5 mm. long, acute to obtusish, cillolate, otherwise nearly glabrous; petals white, lance-ovate, 4 mm. long, narrowed to an obtuse reflexed apex, sparsely cillolate at apex and rarely toward base, glabrous on back; stamens 3.2 mm. long, the filaments 0.3 mm. long, exceeded by the triangular basal gland, the anthers oblong-ovate, 1.5 mm. long, bearing at apex 2 sometimes connate cusps about 0.4 mm. long, the connective scales oblong, 2.8 to 3 mm. long, obtuse, somewhat erose especially below, lanate-pilose dorsally to middle; ovary hispid-pilose, the placentae 1-ovulate; capsule very sparsely pilose, 9 mm. long, about 3-seeded; seeds glabrous, 4 mm. in diameter.

ILLUSTRATIONS: Mart. Nov. Gen. & Sp. 1: pl. 19; St. Hil. Pl. Usuell. Bras. pl. 10; Mart. Fl. Bras. 13¹: pl. 77, f. 2 (fruit); Baill. Hist. Pl. 4: f. 358-362.

TYPE LOCALITY: Near San Sebastião, Province of Rio de Janeiro, Brazil. Type collected by Martius.

SPECIMENS EXAMINED:

BRAZIL: Near Praia Grande, Rio de Janeiro, 1863, Netto (G). Rio de Janeiro, Wilkes Expedition (N). Without definite locality, Riedel (G, N, Y).

This species is apparently known only from the vicinity of Rio de Janeiro, where it is common. St. Hilaire gives its native name as "lobolobo," and states that the leaves become mucilaginous when cooked and are eaten by negroes. He believed that the plant might be improved by cultivation and become of value for food purposes, but I can find no record of any attempt to do this. According to Baillon, the bark of this species is bitter and astringent, and is used as a febrifuge.

The reasons for the reference of *Conohoria castanefolia* to the synonymy of this species are given under *R. guianensis* (no. 6).

10. *Rinorea racemosa* (Mart.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodea racemosa Mart. Nov. Gen. & Sp. 1: 29. pl. 20. 1823.

Shrub or tree, the branchlets rufid-puberulous, glabrate; leaves opposite; petioles 3 to 10 mm. long; blades oval-oblong or elliptic-oblong, 10 to 24 cm. long, 5 to 10 cm. wide, short-pointed, cuneate at base, entire or repand, membranaceous or pergamentaceous, green on both sides, glabrous above, finely strigillose beneath; panicles subspiciform, 10 to 20 cm. long or more, about 1.2 cm. thick, obscurely puberulous, floriferous almost from the base, the cymules 3 to 6-flowered; sepals oblong to ovate, 2 mm. long, obtuse, cillolate and puberulous; petals ovate, 2.6 mm. long, white, obtuse, scarcely recurved, slightly puberulous on middle of back; stamens 1.8 mm. long, the filaments 0.2 mm. long, the anthers 0.8 mm. long, bearing a pair of cusps fully as long, the connective scales lance-ovate, narrowed to an acutish apex, 1.6 mm. long, glabrous, serrulate; ovary glabrous, the placentae 1-ovulate; capsule 8 mm. long, trigonous-globose, 1 or 2-seeded; seeds glabrous, whitish, 3.5 mm. long.

TYPE LOCALITY: Near Lake Teffé and elsewhere on the shore of the Solimoes, Brazil. Type collected by Martius.

SPECIMEN EXAMINED:

BRAZIL: Near Panuré, on the Rio Uaupés, 1852-53, *Spruce* 2519 (G).

The above description is drawn up partly from the original and from Eichler, and partly from the single specimen examined, which is not in good condition for description. This collection (*Spruce* 2519) is referred to by Eichler as a variety with firmer, more velvety leaves and shorter racemes.

11. *Rinorea sprucei* (Eichl.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia sprucei Eichl. in Mart. Fl. Bras. 13: 385. 1871.

Branchlets sordid-puberulous; leaves opposite; petioles 4 to 7 mm. long, incurved-puberulous; blades elliptic or elliptic-oval, 12 to 23 cm. long, 3 to 8 cm. wide, long-attenuate and cuspidulate, at base acutely cuneate, papyraceous, entire or slightly repand, above deep green, incurved-puberulous along costa and sometimes along veins, beneath paler or glaucescent, uniformly strigillose, sometimes pilose-tufted in the axils; panicles subspiciform, about 13 cm. long or less, about 12 mm. thick, rufidulous-puberulous, the cymules 3 to 6-flowered; sepals oval or ovate, obtuse, cillolate and puberulous, 1.5 mm. long; petals ovate, 3.2 to 3.5 mm. long, narrowed to a rounded somewhat reflexed apex, puberulous along middle of back; stamens 2.8 mm. long, the filaments 0.3 mm. long, inserted inside a pubescent disk, the anthers 0.8 mm. long, not appendaged, the connective scales lance-ovate, 2.5 mm. long, narrowed to apex, entire, glabrous; ovary glabrous, the placentae 2-ovulate; "seeds 2 to each placentae, 3.5 mm. long."

TYPE LOCALITY: Along the Rio Negro and Rio Uaupés, Brazil. Types collected by Spruce (nos. 1834, 1947, 2633).

SPECIMENS EXAMINED:

BRITISH GUIANA: Along the Rio Negro, 1840, *Schomburgk* 947 (N).

BRAZIL: Along the Rio Negro, between Barra and Barcellos, 1851, *Spruce* "1834 & 1947" (type collection ?; G).

This species is distinguished from its only close relative, *R. racemosa*, by its long-attenuate leaves, which are distinctly paler beneath, and its longer petals, as well as by the different number of ovules. The difference in venation indicated by Eichler does not seem to be of much consequence. Eichler describes the anthers as similar to those of *R. racemosa*, except that their appendages

are perhaps a little shorter, but I have found no trace of appendages on the anthers in any of several flowers dissected.

According to Eichler the uncertain genus *Exotantha* Turcz.* (type and only species *E. racemosa*) may have been based on this species. The name, preoccupied in *Rinorea*, is unavailable in any case for this species.

12. *Rinorea lindeniana* (Tulasne) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia lindeniana Tulasne, Ann. Sci. Nat. III. Bot. 7: 364. 1847.

Alsodeia guianensis lindeniana Eichl. in Mart. Fl. Bras. 13²: 387. 1871.

Branchlets glabrate; leaves opposite; petioles 3 to 10 mm. long; blades lanceolate, 12 to 16 cm. long, 4.5 to 5.5 cm. wide, narrowly long-acuminate, remotely undulate-crenulate, glabrous; panicles racemiform, 8 to 12 cm. long, the axis glabrous, the lower cymes 2 or 3-flowered, the pedicels subglabrous; sepals ovate, about 1.5 mm. long, obtuse, cillolate, striatulate; petals ovate-lanceolate, 3 mm. long, glabrous, with obtuse deflexed apex; filaments thick, their glands adnate to middle, free above, shorter than the filaments, the anthers ovate, acute, unappendaged, the connective scales oblong, obtuse, longer than the anthers; ovary hispidulous, the style sigmoid at base, the placentae 1-ovulate.

TYPE LOCALITY: "Truxillo, Mérida," Venezuela, altitude 3,000 meters. Type collected by Linden (no. 247 of 1842).

Not seen; description condensed from the original. This species is evidently close to *R. riana*, but to be distinguished by the glabrous axis of its panicle, its narrowly long-acuminate lanceolate leaves, and its different staminal glands. It was referred to *Alsodeia guianensis* (= *Rinorea passoura*) by Eichler, but this was certainly incorrect. Eichler gives the type locality as near Carabobo. Triana and Planchon⁷ record the species from the basin of the Río Meta, between Villavicencio and Jiramena, altitude 250 meters, Colombia.

13. *Rinorea riana* (DC.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

PLATE 32.

Riana guianensis Aubl. Pl. Guian. 1: 237. pl. 94. 1775. Not *Rinorea guianensis* Aubl. 1775.

Conohoria? riana DC. Prodr. 1: 312. 1824.

Alsodea prunifolia Spreng. Syst. Veg. 1: 807. 1825.

Shrub 1 to 2.5 meters high; branches sparsely hispidulous, glabrate; leaves opposite; petioles puberulous, 3 to 5 mm. long; blades elliptic-oblong to oval-oblong, 8 to 20 cm. long, 4 to 8.5 cm. wide, short-acuminate with obtuse apex, cuneate or rounded-cuneate to the sometimes obscurely cordate base, crenate-serrate, chartaceous, above deep green, beneath brownish green, glabrous or sparsely puberulous beneath along costa, the lateral veins 8 to 10 pairs, with the secondaries prominulous on both sides; flowers in a narrow racemiform puberulous panicle or rarely simple racemose, the lower branches usually 2 or 3-flowered, the upper or rarely all 1-flowered, the peduncle 3 to 10 mm. long, the axis 3.8 to 9 cm. long, rather loosely flowered; pedicels spreading or somewhat deflexed, 1 to (in fruit) 4 mm. long; sepals oval or broadly ovate, 1.2 to 1.5 mm. long, obtuse, cillolate and somewhat appressed-puberulous, about 4-ribbed; petals pale yellow or white, oval, 2.5 to 3 mm. long, rounded at apex and scarcely reflexed, glabrous or cillolate below; stamens free, 1.7 to 2.1 mm. long, the thick filaments 0.4 to 0.5 mm. long, adnate throughout to the glands, these free at apex, linear, usually tridenticulate, the free portion about 0.7 mm. long; anthers ovate, emarginate, not appen-

* Bull. Soc. Nat. Moscou 27²: 342. 1854.

⁷ Ann. Sci. Nat. IV. Bot. 17: 126. 1862.

daged, 0.8 to 1.3 mm. long; connective scales oval, obtuse, finely erose, glabrous, 1.3 to 1.7 mm. long; ovary densely hispid; style strongly bent at base, then straight; placentae 1-ovulate; capsule sparsely hispidulous, 15 to 18 mm. long; placentae glabrous, each with a single seed; seeds subglobose, mottled, about 7 mm. long, rather densely rufulous-puberulent.

ILLUSTRATION: Aubl. Pl. Guian. pl. 94.

TYPE LOCALITY: Forests of Aroua, French Guiana. Type, collected by Aublet, in the British Museum.

SPECIMENS EXAMINED:

COLOMBIA: Tierra Alta, on Río Sinu, Department of Bolívar, altitude 100 to 200 meters, March, 1918, *Pennell* 4634 (G, Y). Río Sinu, 1918, *Pennell* 4776 (Y). Low forest, Sahagún, Department of Bolívar, altitude 150 to 200 meters, 1918, *Pennell* 4079 (Y).

VENEZUELA: Hacienda Puerto La Cruz, Coastal Range, Federal District, 1918, *Pittier* 8056 (N). Around Palmasola, in forest along the Aroa River, State of Lara, near sea level, June, 1913, *Pittier* 6378 (N). Guaremales, February, 1919, *Pittier* 8402 (N); in June, 1920, *Pittier* 8908 (N). Forested hills of Guaremales, altitude 350 meters, July, 1920, *Pittier* 8915 (N). Alto de Macanilla, Miranda, altitude 700 meters, June, 1923, *Jahn* 1284 (N).

TRINIDAD: Maracas, 1900, *Dannouse* 6421 (Y). Carapichaima, 1903, *Dannouse* (Y). Arima, 1904, *McLean* (Y).

FRENCH GUIANA: Aroua, *Aublet* (sketch of type; N).

This species may be distinguished by its small flowers, erose connective scales, apically unappendaged anthers, and very short filaments with the glands apical. The bent style is apparently peculiar to this and *R. lindeni-ana*. *Pennell* gives the vernacular name as "jazmin," *Jahn* as "tabaquito," and *Pittier* as "rabo de cachicamo." At first I considered all the material above cited to represent a new species, and labeled it with a manuscript name, but information as to Aublet's type communicated by Mr. E. G. Baker makes it fairly certain that the species described is the hitherto misunderstood *Rinorea guianensis* of Aublet.

Eichler's *Alsodeia guianensis* var. *parviflora*,¹ based on *Kappler* 2111, from Surinam, may be referable to this species, but the description is insufficient.

EXPLANATION OF PLATE 32.—*Rinorea riana*, from *Pittier* 8908. Natural size.

14. *Rinorea micrantha* Ule, Verh. Bot. Ver. Brand. 47: 157. 1905.

Shrub or tree, 3 to 15 meters high, the branchlets sparsely pilosulous; leaves opposite; petioles 3 to 6 mm. long; blades oblong, 13 to 15 cm. long, 5 to 7 cm. wide, long-acuminate, usually slightly cordate at the oblique base, crenulate or serrulate, glabrous; panicles racemiform, 9 cm. long, pilosulous, the lower branchlets about 4-flowered; sepals elliptic, 1 mm. long, ciliolate; petals ovate-elliptic, 2 mm. long, ciliolate; stamens 1.5 mm. long, the filaments bearing a subulate gland at base, the connective scales ovate, erose, nearly twice as long as the anthers; ovary densely pilose, the placentae 1-ovulate.

TYPE LOCALITY: Upper Río Juruá, at Bocca do Tejo, Province Amazonas, Brazil. Type collected by Ule (no. 5477).

Not seen; description compiled from the original. Ule apparently considered the presence of staminal glands a new feature in the genus, but they are obvious in nearly every American species.

15. *Rinorea hýmenosepala* Blake, sp. nov.

PLATE 33.

Shrub; branchlets sordidly incurved-puberulous, glabrescent; leaves opposite or alternate; petioles incurved-puberulous, 2 to 6 mm. long; blades some-

¹ Fl. Bras. 13¹: 387. 1871.

what rhombic-obovate or oval-obovate, 7 to 14.5 cm. long, 2.5 to 6 cm. wide, acuminate or short-pointed, narrowed to the rounded or subcordate often oblique base, coarsely crenate-serrate with acutely mucronulate teeth, chartaceous, puberulous on costa above or glabrate, beneath lighter green, hispidulous along costa and sometimes along the 8 to 13 pairs of lateral veins, loosely reticulate; panicle terminal, 4.5 cm. long, sordid-puberulous with ascending hairs, the peduncle 2.2 cm. long, equaling the axis of inflorescence, the few branches 3-flowered, the pedicels about 2.5 mm. long; sepals ovate or lance-ovate, 2.5 to 3 mm. long, acuminate, hyaline, weakly 3-veined, ciliate, on back sparsely pilose; petals white, oblong, 5.2 mm. long, rounded at apex, glabrous except for the tufted apex; stamens 3.7 mm. long, the filaments 0.4 to 0.5 mm. long, rather broad, slightly exceeded by the small adnate gland, the anthers oblong-ovate, 1.7 mm. long, bearing at apex 1 or 2 linear to oblanceolate membranaceous upwardly serrate appendages about 0.8 mm. long, the connective scales oblong, 3.2 mm. long, broadly rounded at apex, strongly erose especially below, glabrous; ovary densely hispid-pilose, the placentae 1-ovulate.

Type in the herbarium of the New York Botanical Garden, collected in forests at Malena, Department of Antioquia, Colombia, altitude 150 to 170 meters, January 12, 1918, by F. W. Pennell (no. 3783). Photograph in the U. S. National Herbarium.

This species is distinguished from *R. ulmifolia*, apparently its closest ally, by its oblong, strongly erose scales and appendaged anthers. It is of special interest as the only species seen in which opposite and alternate leaves occur on the same branch. In this case all the leaves on the older part of the specimen are truly alternate, while those on the younger shoots are opposite. It is noteworthy also for the size of the anther appendages.

EXPLANATION OF PLATE 33.—*Rinorea hymenosepala*, from the type specimen. Natural size.

16. *Rinorea ulmifolia* (H. B. K.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Conoria ulmifolia H. B. K. Nov. Gen. & Sp. 5: 387. pl. 491. 1825.

Alsodea ulmifolia Spreng. Syst. Veg. 1: 807. 1825.

Shrub with glabrous branches; leaves opposite; petioles 2 to 4 mm. long, puberulous; blades obovate or elliptic-obovate, 7.5 to 11 cm. long, 2.5 to 4 cm. wide, acuminate or short-pointed, at base usually subcordate, serrate, the younger pilose on both sides, the older puberulous on the venation; panicles about 3 cm. long, pubescent, the branchlets 1 or 2-flowered; sepals elliptic, ciliolate; petals ovate, 4 or 5 mm. long, obtusish, glabrous, about twice as long as the sepals; filaments very short, unappendaged, the anthers unappendaged, the connective scales about twice as long, oblong-obovate (in figure), rounded, entire, glabrous; ovary pilose, the placentae 1-ovulate; capsule 3-seeded, about 9 mm. long, pilosulous above; seeds glabrous.

TYPE LOCALITY: Near La Boca de San Bartolomé, shore of the Río Magdalena, Colombia. Type collected by Humboldt and Bonpland.

Not seen; description condensed from the original. To be distinguished by its entire connective scales, eglandular filaments, and leaves puberulous on the veins. Triana and Planchon* record the species from Santa Ana, on the Río Magdalena, altitude 1,168 meters (*Linden* 1168), and from Agua Chica, Province of Ocaña, altitude 165 meters (*Schlim* 272).

17. *Rinorea hummelii* Sprague, Kew Bull. 1921: 307. 1921.

Medium-sized tree; young branchlets minutely spreading-pubescent; leaves opposite; petioles 3 to 5 mm. long, minutely pubescent; blades obovate,

* Ann. Sci. Nat. IV. Bot. 17: 126. 1862.

6 to 13 cm. long, 2.5 to 6.5 cm. wide, acutely acuminate (the point 6 to 12 mm. long), subcuneate at base, obscurely denticulate, chartaceous, above glabrous except for the minutely furfuraceous-pubescent costa, beneath glabrous, shining, the veins (7 or 8 pairs) and reticulate veinlets prominulous on both sides; panicles racemiform, terminal and axillary, 1.5 to 3 cm. long, shortly spreading-pubescent, the lower branches with 5 flowers or fewer, the pedicels 2 mm. long, the bracts 1 mm. long, pubescent and ciliolate; sepals broadly ovate, 1 to 1.2 mm. long and wide, short-cuspidate or apiculate, ciliolate; petals lanceolate, 4.5 mm. long, 1.7 to 2 mm. wide, obtuse, revolute above; filaments 0.5 mm. long, 0.6 mm. wide, the connective scales narrowly lanceolate, 3 mm. long, 1 to 1.1 mm. wide, the anthers ovate, 1.5 mm. long, minutely biapiculate; ovary fulvous-velutinous, the placentae 2-ovulate, the style pubescent in its lower third, 3 mm. long.

TYPE LOCALITY: Salt Creek, British Honduras. Type collected by Hummel.

Description compiled from the original. The local name is given as "wild coffee." The collector states that the young plants are often mistaken for mahogany seedlings.

18. *Rinorea sylvatica* (Seem.) Kuntze, Rev. Gen. Pl. 1:42. 1891, as *R. silvatica*.

Alsodeia sylvatica Seem. Bot. Voy. Herald 79. pl. 14. 1852.

Shrub or small tree; branchlets puberulent and hispid-pilose, glabrate; leaves opposite; petioles 3 to 6 mm. long, similarly pubescent; blades oval-obovate or obovate, 6 to 12 cm. long, 2.8 to 5.5 cm. wide, short-acuminate, narrowed to an oblique subcordate base, crenate-serrulate or subentire, papery, puberulous on costa above, beneath on the veins and toward margin puberulous and hispid-pilose or strigose; racemes about 4 cm. long, rather dense, densely hispid-pilose with rufescent erect or appressed hairs, the pedicels 2 mm. long or usually less, exceeded by the bracts and bractlets; sepals ovate, 3 to 4.5 mm. long, acute, dry, indurated, scarious-margined, strongly many-nerved, hispid with erect rufescent hairs; petals oblong, yellowish white, 5 mm. long, obscurely short-pointed but obtuse, spreading at apex, rufescent-hispid along midline with erect hairs; stamens 3.5 mm. long, the filaments 0.8 mm. long, not bearing a gland, the anthers 1.5 mm. long, sometimes 1-mucronate at apex, the connective scales elliptic-ovate, narrowed to an obtuse apex, entire or obscurely erose below, appressed-rufescent-hispid on back above middle; ovary densely rufescent-hispid, the placentae 3-ovulate; capsule oblong-ellipsoid, 2.2 cm. long, spreading-puberulous; seeds about 3 to each placenta, subglobose, 4.5 mm. thick, densely spreading-puberulous with sordid hairs.

TYPE LOCALITY: Near Cruces, Panama. Type collected by Seemann.

SPECIMENS EXAMINED:

PANAMA: Along Caño Quebrado, Canal Zone, June, 1914, Pittier 6665 (N).

COLOMBIA: Forest, Boca Verde, on Rio Sinú, Department of Bolívar, altitude 100 to 300 meters, 1918, Pennell 4212 (G, Y), 4569 (Y).

Distinct in its dry, indurate, strongly striate, hispid sepals only slightly shorter than the petals, and short pedicels exceeded by the bracts and bractlets.

19. *Rinorea martini* (Turcz.) Blake.

Alsodeja martini Turcz. Bull. Soc. Nat. Moscou 36¹: 557. 1863.

Leaves opposite; petioles very short; blades rhombic-ovate, long-pointed, narrowed at base, serrulate, glabrous; racemes axillary, half as long as the leaves, densely pubescent; sepals striate, puberulous; petals once and a half as long as the sepals, narrowed to an obtuse point; filaments very short, free, bearing a gland at apex; anthers multisetose.

TYPE LOCALITY: Cayenne. Type collected by Martin.

Not seen; description translated from the original. The plant described and figured by Oudemans¹⁰ as *Alsodeia flavescens*, from material collected by Martin in French Guiana, is probably the same. The petals are said to be little longer than the sepals, but the stamens are figured as with filaments nearly as long as the anthers. In this respect his plant resembles *Rinorea passoura*, but that has petals more than twice as long as the sepals.

20. *Rinorea flavescens* (Aubl.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Conohoria flavescens Aubl. Pl. Guian. 1: 239. pl. 95. 1775.

Alsodeia flavescens Spreng. Syst. Veg. 1: 806. 1825.

Shrub; branchlets puberulous and hispid-pilose, glabrate; leaves opposite; petioles 3 to 7 mm. long, pubescent like the branchlets; blades obovate to oval, 7 to 20 cm. long, 2.2 to 8 cm. wide, short-acuminate, at base cuneate to rounded, obsoletely crenate-serrulate or subentire, papery, above puberulous along costa or glabrous, beneath sparsely hispid or strigose on costa or glabrous; racemes about 7 cm. long, finely spreading-puberulous; pedicels 2 to 4 mm. long; sepals oval or ovate, 1.5 to 2.3 mm. long, rounded or obtuse, ciliolate, weakly several-nerved; petals oblong-lanceolate to elliptic-ovate, yellow, 4.2 to 4.5 mm. long, obtusish, with recurved very sparsely hispidulous apex, otherwise glabrous; stamens 2.7 to 3 mm. long, the filaments 0.7 mm. long, equaling or exceeding the deltoid tridenticulate gland, this adnate for half its length or more, the anthers 1 mm. long, not appendaged, the connective scales 2.3 mm. long, oblong-ovate, obtuse, entire or obscurely erose below, glabrous; ovary glabrous, sometimes with a few hairs, the placentae 1 or 2-ovulate; capsule 2 to 2.5 cm. long, usually 2-seeded; seeds glabrous.

ILLUSTRATION: Aubl. Pl. Guian. pl. 95.

TYPE LOCALITY: Near the River Sinémari, French Guiana, forty leagues from the coast. Type, collected by Aublet, in the British Museum.

SPECIMENS EXAMINED:

BRITISH GUIANA: Without definite locality, *Schomburgk* 119 in part (N), 336 in part (N).

FRENCH GUIANA: Near the River Sinémari, *Aublet* (sketch of type, N).

BRAZIL: Without definite locality, *Burchell* 9727 (G, Y).

Readily distinguished among the species with opposite leaves and simply racemose flowers by its glabrous ovary. As already noted by Eichler in the case of no. 336, both nos. 119 and 336 of *Schomburgk* are mixtures, the other species in each case being *R. passoura*.

Aublet gives the native name as "conohorié," and Eichler, on the basis of a drawing from Pará, gives the name "jacamim-renepea" for this species.

I have followed Eichler in the interpretation of Aublet's species. Aublet describes and figures the sepals and petals as acute or acuminate, which is not the case in any specimens I have examined. Eichler lists the species from Pará, the three Guianas, and eastern Peru. Mr. Baker writes me that the type bears a few hairs on the ovary, an occasional feature already mentioned by Eichler in describing the species. I have found it perfectly glabrous in the material examined.

21. *Rinorea passoura* (DC.) Kuntze, Rev. Gen. Pl. 1: 42. 1891, as *R. passura*.

Passoura guianensis Aubl. Pl. Guian. 2: Suppl. 21. pl. 380. 1775. Not *R. guianensis* Aubl. 1775.

¹⁰ Arch. Néerl. 2: 194. pl. 4. 1867.

Conohoria passoura DC. Prodr. 1: 312. 1824, in part.

Alsodeia pubiflora Benth. Journ. Bot. Hook. 4: 106. 1842.

Alsodeia guianensis Eichl. in Mart. Fl. Bras. 13¹: 387. 1871.

Rinorea panura Dur. & Jacks. Ind. Kew. Suppl. 1: 365. 1906, as synonym.

Shrub or small tree; branches puberulous and hispid-pilose; leaves opposite; petioles 5 to 10 mm. long; blades oval to elliptic, 8 to 17.5 cm. long, 3 to 8 cm. wide, short-pointed to acuminate, at base rounded to cuneate, obscurely crenate-serrulate or subentire, puberulous on costa above, sparsely hispid-pilose on costa and sometimes on veins beneath; racemes 3.5 "to 10" cm. long, densely ferrugineous-puberulous, the pedicels about 4 mm. long; sepals broadly ovate or orbicular-ovate, 1.8 to 2 mm. long, obtusish, strongly several-ribbed, ciliolate, on back rather densely pilosulous and more or less puberulous; petals oval-oblong, "white or yellow," 4.2 to 5.5 mm. long, obtuse, scarcely narrowed toward apex, very shortly reflexed, pilose along midline with erect rufidulous hairs, ciliolate near apex; stamens 3.1 to 3.8 mm. long, the filaments 0.8 to 1 mm. long, equaling or exceeding the oblong gland which is free above the middle, the anthers 1.3 to 1.5 mm. long, 1 or 2-cuspidate or 2 to 4-setose at apex, the connective scales oblong-ovate, 2.3 to 2.6 mm. long, obtuse, obscurely erose; ovary densely hispid-pilose, the placentae 2 or 3-ovulate; "capsule 2 to 3 cm. long, tomentose, glabrate; seeds 3 to each placenta, velvety-tomentose."

ILLUSTRATIONS: Aubl. Pl. Guian. pl. 380; Mart. Fl. Bras. 13¹: pl. 78, f. 2 (fruit, seed).

TYPE LOCALITY: Forests of Timoutou, French Guiana. Type collected by Aublet.

SPECIMENS EXAMINED:

COLOMBIA: Between Villavicencio and San Martín, basin of the Río Meta, altitude 250 meters, *Triana* (Y).

BRITISH GUIANA: Banks of rivers, *Schomburgk* 573 (type of *A. pubiflora*; a single flower examined, N). Without definite locality, 1837, *Schomburgk* 119 in part (N), 336 in part (N, Y).

This species was originally described by Aublet from fruiting material. De Candolle united *Conohoria flavescens* Aubl. and *Passoura guianensis* under the name *Conohoria passoura*, indicating by a sign of affirmation that he had seen authentic material of the former but not of the latter name. I have followed Eichler in his interpretation of the species, but not in all his reductions. *Alsodeia pubiflora*, known to me only by a single flower from the type forwarded by Dr. Otto Stapf, I was at first inclined to consider a distinct species, having found the anther cells about 4-setose with filiform setae at apex, while in Eichler's *A. guianensis* (*R. passoura*) they were described as like those of *A. falcata*, that is, 1 or 2-cuspidate. In a single flower of Schomburgk's no. 336, however, I found anthers with 2 or 3 filiform setae or with a single linear-lanceolate cusp passing at apex into three filiform setae, showing that Eichler's reduction of this species is correct. On the other hand, *A. Undeniana* Tulasne, considered a variety by Eichler, is certainly a very distinct species, having unappendaged anthers, racemo-paniculate flowers, small petals, and solitary ovules. *Alsodeia brevipes* and *A. laxiflora*, treated as independent varieties by Eichler, I consider inseparable from one another but specifically distinct from the *Alsodeia guianensis* described by Eichler. Eichler's var. *parviflora* is unknown to me. *Alsodeia flavescens*, as described and figured by Oudemans¹¹ (but not *Conohoria flavescens* of Aublet), is also referred by Eichler to his *A. guianensis*, but from the description of the petals as little exceeding the sepals

¹¹Arch. Néerl. 2: 194. pl. 4. 1867.

it is probably rather *Rinorea martini* (above, no. 19). Eichler records the typical form of *R. passoura* from Pará, the three Gulanas, and Maynas, Peru.

A sheet in the herbarium of the New York Botanical Garden, belonging to a collection originally recorded and described by Triana and Planchon¹² as *Alsodeia flavescens*, shows a peculiar abnormality in the stamens. The filaments are 1 mm. long, about twice as long as the pubescent basal glands; the connective scales narrowly lanceolate, 3 mm. long, entire, sparsely strigose dorsally; the anthers, described by Triana and Planchon as about equaling the scale, are in this specimen almost entirely aborted; the ovary is densely hispid-pilose, with the placentae 2-ovulate. Triana and Planchon questioned whether this collection might be abnormal or might indicate polygamy or dicliny in the flowers of *Alsodeia*. As this is the only specimen of *Rinorea* out of several score I have examined which shows such stamens, it is clear that the peculiarity is a purely individual and abnormal one.

22. *Rinorea guatemalensis* (S. Wats.) Bartlett, Proc. Amer. Acad. 43: 56. 1907.

Alsodeia guatemalensis S. Wats. Proc. Amer. Acad. 21: 458. 1886.

Branchlets densely spreading-puberulous, glabrate; leaves opposite; petioles puberulous, 4 to 9 mm. long; blades oval or obovate-oval to elliptic-oblong, 7 to 14.5 cm. long, 2.5 to 6 cm. wide, short-pointed or acuminate with obtuse apex, at base cuneate, pergamentaceous, subentire, obscurely puberulous along costa and sometimes along veins above, sparsely strigose or hispidulous along costa and sometimes along veins beneath, loosely prominulous-reticulate; racemes 3 to 6.5 cm. long, densely rufescent-puberulous with spreading hairs, the pedicels 2 to 4 mm. long; sepals ovate to deltoid-ovate, 1 to 1.5 mm. long, acute or acutish, rarely obtuse, not striate, cillolate, usually puberulous along midline; petals lance-ovate, 5.5 mm. long, narrowed to an obtusish reflexed apex, cillolate below and very sparsely so at tip, rarely with three or four hairs on back; stamens 4 to 4.5 mm. long, the filaments slender, 0.8 mm. long, about equaled by the sometimes puberulous gland, the anthers 1.6 mm. long, bearing 1 or 2 cusps or unappendaged, the connective scales lance-ovate, 3.2 to 3.7 mm. long, narrowed to an obtuse apex, strongly erose or crisped below; ovary densely hispid-pilose, the placentae 1-ovulate; capsule 13 to 19 mm. long, spreading-puberulous, the placentae and young seeds glabrous; mature seeds subglobose, 6 mm. thick, fuscous-brown, rather sparsely puberulous.

TYPE LOCALITY: Banks of the Río Chocón, Guatemala.

SPECIMENS EXAMINED:

OAXACA: Teotalcingo to Choapan, altitude 1,800 meters, 1919, *Reko* 4082 (N). Near Santo Domingo, altitude 270 meters, 1895, *Nelson* 2661 (N).

GUATEMALA: Banks of the Río Chocón, Department of Izabal, March 4 and 25, 1885, *Watson* 15 (type; G, photograph N). Finca Sepacuité, Department of Alta Verapaz, 1902, *Cook & Griggs* 744 (N).

HONDURAS: Tree on mountain creek among rocks, San Pedro Sula, Department of Santa Bárbara, altitude 400 meters, April, 1890, *Thieme* 820 (J. D. Smith, no. 5339; G, N, Y). Puerto Sierra, 1903, *Wilson* 295 (Y), 675 (Y).

This is the only species with opposite leaves, simple racemes, and appendaged anther sacs known north of the Isthmus of Panama. Its closest relative is undoubtedly *R. pilosula* (no. 37), of Tabasco, which has entire connective scales and always unappendaged anthers.

¹²Ann. Sci. Nat. IV. Bot. 17: 127. 1862.

23. *Rinorea marginata* (Triana & Planch.) Rusby; J. R. Johnston, Proc. Bost. Soc. Nat. Hist. 34: 238. 1909.

Alsodcia marginata Triana & Planch. Ann. Sci. Nat. IV. Bot. 17: 127. 1862.

Tree; branchlets densely spreading-puberulous, glabrate; leaves opposite; petioles densely puberulous, 3 to 5 mm. long; blades oval to oblong-elliptic, 6 to 11 cm. long, 2.4 to 4.3 cm. wide, short-acuminate, at base equal and cuneate, with thickened strictly entire margin, coriaceous, prominulous-reticulate especially beneath, above light green, glabrous or densely spreading-puberulous along costa, beneath sparsely strigose along costa or densely and softly rufidulous-puberulous with spreading hairs over whole surface, then also ciliolate on margin; racemes (immature) puberulous, about 2 cm. long, the pedicels short; sepals deltoid-ovate to suborbicular-ovate, 1.5 to 2 mm. long, acutish to obtuse, apiculate, strongly striate-veined, ciliolate, otherwise glabrous; petals (scarcely mature) ovate, 4.7 mm. long, obtuse, ciliolate below middle and at apex, erect; stamens 3.8 mm. long, the filaments broad, 0.5 mm. long, adnate throughout to the glands, these rounded and free for 0.3 mm. at apex of filament, the anthers oblong, 1.8 mm. long, 2-aristate, the connective scales oblong-ovate, 3.3 mm. long, obtuse, glabrous, obscurely erose below; ovary densely hispid, the placentae 4-ovulate; "capsule trigonous-oblong, 3.5 cm. long, veiny; seeds 2 to each placenta," globose, 7 mm. in diameter, mottled, densely rufid-puberulous.

TYPE LOCALITY: Pass of Opia, along the Río Magdalena, Colombia.

SPECIMENS EXAMINED:

COLOMBIA: Pass of Opia, along the Río Magdalena, Provinces of Bogotá and Mariquita, altitude 600 meters, *Triana* (type collection; Y, photograph and fragment N).

This species is very distinct in its thick, entire, marginate leaves. The sheet examined bears two branches and a pocket containing a single seed. The branches are remarkably dissimilar. One, a small piece bearing four leaves and a short raceme with the flowers in bud only, has the leaves strictly glabrous except for a few appressed hairs on the costa beneath. In the other, an ample branch bearing a couple of still younger racemes, the leaves are puberulous on the costa above, and densely and softly rufid-puberulous beneath, with the margins ciliolate. Triana's description was drawn up to cover both. In view of the entire agreement of the leaves in all other features than pubescence, I can only consider them as two extremes of a single species, which in this respect shows a variation unequalled by any other American member of the genus. Field observations on the species are greatly to be desired.

This species has been confused in herbaria with *R. melanodonta*. As originally published, the combination *Rinorea marginata* referred entirely to the latter species, which is at once distinguished by its sharply serrulate leaves, as well as by its shorter filaments, somewhat different glands, fewer ovules, and smaller capsule.

24. *Rinorea brachythrix* Blake, sp. nov.

PLATE 34.

Shrub; branches in age sparsely hirtellous or glabrate; leaves opposite; petioles hirtellous, 8 to 14 mm. long; blades oblong-elliptic, 11.5 to 16 cm. long, 3.8 to 5.3 cm. wide, acuminate, at base cuneate or cuneate-rounded, repand-serrulate with acute black gland-tipped teeth, coriaceous and strongly prominulous-reticulate, sparsely hirtellous on costa above, sparsely strigose on costa beneath; racemes terminal, 2 to 4 cm. long, fulvescent-puberulous with spreading hairs, the pedicels 2 to 4 mm. long; sepals ovate, 2 to 2.5 mm. long, acute, firm, scarcely striate, ciliolate, strigillose chiefly above; petals yellow,

oblong-ovate, 5 mm. long, obtuse, reflexed at apex, sparsely cillolate below, otherwise glabrous; stamens 3.8 to 4 mm. long, the filaments 0.4 mm. long, about equaled by the small adnate gland, the anthers elliptic-oblong, 2.2 mm. long, 2-mucronate, the connective scales 3.5 mm. long, oblong-ovate, obtuse, glabrous, obscurely erose; ovary densely hispidulous, the placentae 2-ovulate; immature capsule apiculate, 15 mm. long, densely hispidulous, the inner surface, placentae, and seeds (2 to each placenta) sparsely puberulous.

Type in the U. S. National Herbarium, no. 716664, collected on hills, vicinity of La Palma, southern Darién, Panama, altitude 50 meters or less, April 26, 1914, by H. Pittier (no. 6601).

Related to *R. melanodonta*, but distinguished by the very short filaments and comparatively long anther sacs.

EXPLANATION OF PLATE 34.—*Rinorea brachythrix*, from the type specimen. Natural size.

25. *Rinorea melanodonta* Blake, sp. nov.

PLATE 35.

Tree 4 to 5 meters high; branchlets sparsely or rather densely puberulous and hispid-pilose, glabrate; leaves opposite; petioles more or less puberulous and hispid-pilose, 3 to 8 mm. long; blades lance-elliptic, sometimes elliptic-oval, 7 to 16 cm. long, 2.5 to 5.5 cm. wide, gradually acuminate, at base acutely cuneate or acuminate, serrulate with small but usually conspicuous black glandular teeth, coriaceous, thickened on margin, strongly prominulous-reticulate on both sides, above puberulous on costa or glabrous, beneath sparsely rufid-strigose on costa; racemes terminal, 3 to 5 cm. long, loosely flowered, densely rufid-puberulous with spreading or ascending hairs and sometimes sparsely hispid-pilose, the lowest pedicels rarely 2-flowered; pedicels 3 to 7 mm. long; sepals deltoid or deltoid-ovate, 2 to 3.2 mm. long, acute to obtuse, cillolate, sometimes sparsely pubescent on back, strongly about 5-ribbed at least in age; petals oblong-ovate, 5.5 to 5.8 mm. long, obtuse, cillolate below and toward apex, sometimes tufted at the reflexed apex; stamens 4.5 mm. long, the filaments 1 mm. long, equaled by the fleshy oblong sometimes ciliate glands which are free above the middle, the anthers oblong-ovate, 1.8 to 2 mm. long, 2-cuspidate, the connective scales oblong-ovate, obtuse, obscurely erose, 3.5 mm. long; ovary densely hispid-pilose, rarely densely hispidulous, the placentae 2-ovulate; capsule 2.4 to 2.7 cm. long, apiculate, finely hispidulous; seeds 2 to each valve, densely rufidulous-pilosulous.

Type in the U. S. National Herbarium, no. 533722, collected on bank of stream in forest near Masinga Vieja, near Santa Marta, Colombia, altitude 245 meters, February 3, 1898-99, by Herbert H. Smith (no. 1756). Duplicates in the Gray Herbarium and the herbarium of the New York Botanical Garden.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Local in damp forest near Masinga, vicinity of Santa Marta, altitude 150 to 760 meters, *Herbert H. Smith* 900 (G, N, Y).

VENEZUELA: El Valle, Margarita Island, 1901, *Miller & Johnston* 225 (G).
San Juan Mountain, Margarita Island, altitude 300 meters, 1903, *Johnston* 120 (G, N).

A species well characterized by its usually lance-elliptic, strongly coriaceous and reticulate, rather sharply serrulate leaves, usually gradually acuminate at both ends. Specimens in herbaria have been distributed as *Alsodeia guianensis* and *Rinorea marginata*.

EXPLANATION OF PLATE 35.—*Rinorea melanodonta*, from the type specimen. Natural size.

26. *Rinorea falcata* (Mart.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia falcata Mart.; Eichl. in Mart. Fl. Bras. 13¹: 386. 1871.

Branchlets puberulous, quickly glabrate; leaves opposite; petioles 4 to 6 mm. long; blades elliptic to oblong-oval, 9.5 to 13 cm. long, 3 to 5 cm. wide, falcate-

acuminate, at base acutely cuneate, remotely and obscurely serrulate, papery, glabrous on both sides or obscurely strigillose on costa beneath; racemes about 8 cm. long, sordid-puberulous, the pedicels deflexed, 3 mm. long; sepals oval or oval-ovate, rounded, 1.6 to 2.3 mm. long, cillolate, along midline somewhat puberulous or subglabrous; petals "yellow," elliptic-ovate, 4 mm. long, obtuse, reflexed at apex, glabrous; stamens 3.2 mm. long, the filaments 0.7 mm. long, usually much longer than the basal gland or rarely equaled by it, the anthers 1.2 mm. long, 2-cuspidate, the connective scales ovate, 2.5 mm. long, obtuse, somewhat erose below; ovary densely pilose, the placentae 2-ovulate; "capsule 2 cm. long, glabrate; seeds 2 to each valve, glabrous."

TYPE LOCALITY: Forests along the Rio Yapurá, Province of Alto Amazonas, Brazil. Type collected by Martius.

SPECIMEN EXAMINED:

BRAZIL: Upper Amazon and tributaries, *Traill* (G).

Eichler records this species from along the Rio Negro between Barcellos and Santa Isabel, and from near Manáos, as well as from the type locality. He describes also a variety *grandifolia*, with leaves 15 to 20 cm. long, 6 to 10 cm. wide, from woods near Ega, where it was collected by Martius. My description is drawn from the excellent specimen in the Gray Herbarium collected by Traill.

27. *Rinorea brevipes* (Benth.) Blake.

Alsodeia brevipes Benth. Journ. Bot. Hook. 4: 106. 1842.

Alsodeia laxiflora Benth. Journ. Bot. Hook. 4: 107. 1842.

Conohoria brevipes Miquel, Linnaea 22: 556. 1849.

Conohoria laxiflora Miquel, Linnaea 22: 556. 1849.

Alsodeia guianensis brevipes Eichl. in Mart. Fl. Bras. 13¹: 387. 1871.

Alsodeia guianensis laxiflora Eichl. in Mart. Fl. Bras. 13¹: 387. 1871.

Branchlets puberulous and hispid, glabrate; leaves opposite; petioles densely puberulous and somewhat hispid, 4 mm. long; blades elliptic or elliptic-oval, 5 to 8 cm. long, 2 to 2.8 cm. wide, obtusely short-pointed, at base cuneate or rounded-cuneate, pergamentaceous, crenate-serrulate, puberulous on costa above, beneath strigose on costa and often on veins, sometimes also on surface, sometimes barbate in the axils of the veins; racemes about 4 cm. long or less, densely sordid-puberulous; pedicels 3 mm. long, or obsolescent; sepals oval or oval-ovate, 2.4 to 2.7 mm. long, acutish to obtusish, cillolate, on back sparsely or usually densely puberulous, strongly striate; petals elliptic or lance-elliptic, 4.5 to 6 mm. long, obtuse, shortly reflexed, glabrous except for the cillolate-tufted apex; stamens 3.8 to 4 mm. long, the filaments 0.6 to 0.8 mm. long, about twice as long as the sometimes pubescent apically free glands, the anthers 1.3 to 1.6 mm. long, unappendaged or rarely bearing at apex one or two filiform setae, the connective scales 3 to 3.2 mm. long, oblong-ovate, obtuse, finely erose; ovary densely hispid, the placentae 1 or 2-ovulate.

ILLUSTRATION: Hook. Icon. Pl. 1: pl. 63 (as *Conohoria castanaefolia*).

TYPE LOCALITY: Banks of the Rio Quitaro, British Guiana.

SPECIMENS EXAMINED:

BRITISH GUIANA: Banks of the Rio Quitaro, 1838, *Schomburgk* 574 (type collection; N). Banks of the Rio Rupunoony, 1837, *Schomburgk* 125 (type collection of *A. laxiflora*; N).

Eichler considered Bentham's two species to represent two varieties of *Alsodeia guianensis* (*R. passoura*), distinguished in common from the typical form by their small leaves, and from one another chiefly by the difference in length of the pedicels. Fortunately both species are represented in the U. S. National Herbarium by specimens of the type collections, which agree precisely in all features except the inflorescence. The specimen of *A. brevipes*

has a very young inflorescence, with crowded subsessile flowers, while that of *A. laxiflora* is mature and loose. The species as here taken is distinguished from *Rinorea passoura* chiefly by its externally glabrous petals and unappendaged or merely 1 or 2-setose anther cells. Benthams gives the number of ovules as 1 or 2 on the placentae; I have found them solitary in the only ovary dissected. The figure in Hooker's *Icones* is a good illustration of the species, except that the leaves are represented as alternate. Dr. Stapf informs me, however, that they are opposite in the type in the Kew Herbarium, which is doubtless the specimen from which the figure was drawn.

28. *Rinorea deflexa* (Benth.) Blake.

Alsodeia deflexa Benth. Bot. Voy. Sulph. 67. 1844.

Branchlets and petioles hirtellous, glabrate; leaves opposite; petioles hirtellous, glabrate, 4 to 6 mm. long; blades oval-elliptic, 5 to 10 cm. long obtusely short-acuminate, rounded at base, obtusely dentate, submembranaceous; racemes simple, 5 cm. long, hirtellous; pedicels 2 mm. long, deflexed; sepals ovate, 2 mm. long, obtusish, thin, about 5-veined, ciliolate or ciliate, puberulous along midline; petals lance-ovate, 4.5 mm. long, narrowed to an obtuse apex, short-ciliate, otherwise glabrous; stamens 3.5 mm. long, the filaments 0.7 mm. long, somewhat exceeding the gland, the anthers 1.5 mm. long, shortly 1-mucronate or unappendaged, the connective scales elliptic-ovate, 2.8 mm. long, narrowed to an obtuse apex, obscurely erose below; ovary densely hispid-pilose, the placentae 1-ovulate.

TYPE LOCALITY: Atacames, Ecuador.

SPECIMEN EXAMINED:

ECUADOR: Atacames, *Barclay* (type collection; a single flower, N).

This description is compiled from the original, except for the characters of the flower, which are drawn from a single flower of the type forwarded by Dr. Otto Stapf, who states that the leaves are opposite.

29. *Rinorea ovalifolia* (Britton) Blake.

PLATE 36.

Alsodeia ovalifolia Britton, Bull. Torrey Club 16: 18. 1889.

Branchlets densely hirtellous, tardily glabrate; leaves opposite; petioles densely hirtellous, 3 to 5 mm. long; blades oval or obovate-oval, 7 to 11 cm. long, 3.5 to 6 cm. wide, acutely short-pointed, at base cuneate to rounded, serrulate, papery, hirtellous on costa and veins above, beneath hirtellous on all the veins and veinlets; racemes 5 to 10.5 cm. long, densely hirtellous, densely flowered; pedicels 2 mm. long, strongly deflexed; sepals oval to orbicular-ovate, 1.6 mm. long, obtuse or rounded, ciliolate, more or less puberulous on back, not striate; petals ovate, 3.3 mm. long, narrowed to an obtuse reflexed apex, ciliolate above or glabrous; stamens 2.7 mm. long, inserted on the inner side of a short sparsely pilose disk, the filaments 0.3 mm. long, shorter than the triangular glands, the anthers 1.1 mm. long, unappendaged, the connective scales narrowly oblong-ovate, 2.4 mm. long, narrowed to an obtuse apex, glabrous, entire or obscurely erose; ovary and base of style densely hispidulous, the placentae 2-ovulate; capsule puberulous, 12 to 18 mm. long; seeds solitary on the valves, about 4 mm. thick, glabrous.

TYPE LOCALITY: Junction of the Rivers Beni and Madre de Dios, Bolivia.

SPECIMENS EXAMINED:

BOLIVIA: Junction of the Rivers Beni and Madre de Dios, August, 1886,

Rusby 1916 (type collection; G, N, Y).

This species is well marked by its oval hirtellous leaves and dense conic-cylindric racemes of very small, strongly deflexed flowers. The original description of the leaves as glabrous is incorrect.

EXPLANATION OF PLATE 36.—*Rinorea ovalifolia*, from a specimen of the type collection. Natural size.

30. *Rinorea macrocarpa* (Mart.) Kuntze, Rev. Gen. Pl. 1: 42. 1891.

Alsodeia macrocarpa Mart.; Eichl. in Mart. Fl. Bras. 13¹: 385. pl. 78, f. 1. 1871.

Branchlets puberulous, glabrate; leaves opposite; petioles 5 to 10 mm. long; blades oval or obovate-oval, 10 to 20 cm. long, 5 to 8 cm. wide, short-pointed, acute at base, membranaceous, repand-serrate, at first puberulous, quickly glabrate; racemes spiciform, 4 to 6 cm. long, yellowish-puberulous, the flowers subsessile; sepals ovate-oblong, 1 mm. long, acute, puberulous and ciliolate; petals oblong-lanceolate, 3 mm. long, obtuse, glabrous, revolute at apex; stamens scarcely shorter than the petals, the filaments nearly as long as the anthers, apparently not gland-bearing, the anthers obtuse, the connective scales scarcely once and a half as long, oval, rounded, lacerate-erose; ovary villous, the placentae 2 or 3-ovulate; capsule acute, 4 to 5 cm. long, at length glabrate, the valves 2-seeded, the seeds glabrous.

TYPE LOCALITY: Province of Alto Amazonas, Brazil. Type collected by Martius.

Not seen; description taken from the original. In addition to the type, Eichler refers to this species material from the southern shore of the Amazon at the mouth of the Solimoes, and from Manáos, collected by Spruce (nos. 1603, 1320 *), as well as material from Borba, Pará, collected by Riedel. The species is noteworthy for its capsule, the largest known among American species of the genus, and for its subsessile flowers. The figures of the stamens indicate that they are much like those of *R. riana*, but no mention is made of the gland on the filament.

31. *Rinorea juruana* Ule, Verh. Bot. Ver. Brand. 47: 158. 1905.

Shrub or tree, 3 to 10 meters high; branchlets puberulous; leaves opposite; petioles 2 to 3 mm. long; blades obovate or oblong, 4 to 6 cm. long, 2 to 2.5 cm. wide, acuminate, obtuse at apex, minutely subspinulose-serrate, short-pubescent on the veins especially above; racemes 2 to 3 cm. long, few-flowered, puberulous, the pedicels 3 mm. long; sepals broad-elliptic, 1.5 mm. long, acutish; petals oblong-obovate, whitish yellow, 4 to 5 mm. long; stamens 3.5 mm. long, the filaments 1 mm. long, strongly thickened, the connective scales ovate, entire, 2.5 mm. long, twice as long as the anthers; ovary densely hairy; capsule trigonous, 15 mm. long, acuminate, sparsely pilose; seeds solitary on each valve, glabrous, 6 mm. thick.

TYPE LOCALITY: Miry, on the Rio Juruá, Province of Amazonas, Brazil. Type collected by Ule (no. 5633).

Not seen; description translated from the original.

32. *Rinorea viridifolia* Rusby, Mem. Torrey Club 6: 5. 1896.

Branchlets sparsely hispid-pilose, quickly glabrate; leaves opposite; petioles densely puberulous, glabrate, 4 to 10 mm. long; blades obovate or oblong-obovate, 6 to 11.5 cm. long, 2 to 4.5 cm. wide, obtusely acuminate or short-pointed, at base cuneate or rounded-cuneate, crenate-serrulate, subpergaminateous, puberulous on costa above, sparsely strigose along base of costa beneath or glabrous; racemes 4.5 cm. long, sparsely and obscurely puberulous; pedicels essentially glabrous, 2.5 to 3.5 mm. long; sepals oval-ovate, 1.2 to 1.5 mm. long, obtuse or acutish, ciliolate, sparsely puberulous along midline or glabrous; petals elliptic, 4.8 mm. long, obtuse, slightly reflexed, ciliolate at base and apex; stamens 3.5 mm. long, the filaments stout, 1 to 1.2 mm. long, somewhat exceeding the emarginate sparsely puberulous gland, the anthers unappendaged, 1.2 mm. long, the connective scales oblong-ovate, 2.4 mm. long, obtuse, distinctly erose especially below the middle; ovary densely hispid-pilose, the placentae 1-ovulate.

TYPE LOCALITY: Between Guanai and Tipuani, Bolivia.

SPECIMENS EXAMINED:

BOLIVIA: Guanai to Tipuani, Province of La Paz, April to June, 1892, *Bang* 1337 (type collection; G, N, Y).

Rusby also refers *Spruce* 1855b to this species.

33. *Rinorea scandens* Ule, Verh. Bot. Ver. Brand, 47: 157. 1905.

Scandent; branchlets ferruginous-puberulous; leaves opposite; petioles 5 to 10 mm. long; blades ovate-elliptic or oblong, 15 to 20 cm. long, 6 to 9 cm. wide, acuminate, subentire or slightly serrulate, pubescent on the veins especially above; racemes puberulous, 4 to 6 cm. long; pedicels 2 mm. long; sepals broadly triangular, acute, cordate; petals lance-ovate, 3.5 mm. long; stamens 3 mm. long, the filaments 1 mm. long, the connective scales lance-ovate, 2 mm. long, erose, about twice as long as the anthers; ovary densely pubescent; capsule oblong, 2 cm. long, acuminate, puberulous; seeds 2 to each valve, glabrous.

TYPE LOCALITY: Lower Rio Juruá, near Marary and Bom Fim, Province of Amazonas, Brazil. Type collected by Ule (no. 5018).

Not seen; description taken from the original.

34. *Rinorea deflexiflora* Bartlett, Proc. Amer. Acad. 43: 56. 1907.

Shrub 2.5 meters high; branchlets sparsely hispid-pilose, glabrate; leaves opposite or ternate; petioles sparsely puberulous, 2 to 5 mm. long; blades obovate, mostly 13 to 23.5 cm. long, 4 to 8 cm. wide, acuminate, at base unequal and subcordate, remotely mucronulate-serrate, nearly membranaceous, puberulous on costa above, tufted in the axils beneath; racemes sordid-puberulous, 4 to 6 cm. long, the pedicels 4 to 6 mm. long; sepals ovate or oblong-ovate, 1.8 to 2.5 mm. long, acute, ciliolate, rather densely strigillose at least along midline; petals oblong-ovate, 4.2 to 4.8 mm. long, obtuse, sparsely ciliolate at the reflexed apex; stamens 3.3 to 3.7 mm. long, glabrous, the filaments slender, 1.2 to 1.5 mm. long, twice as long as the broader bidentate basal gland, the anthers 1 to 1.3 mm. long, unappendaged, the connective scales elliptic-oblong, 2 to 2.2 mm. long, obtuse, erose especially below; ovary globose, densely hispid-pilose, the placentae 2-ovulate.

TYPE LOCALITY: Livingston, Guatemala.

SPECIMENS EXAMINED:

GUATEMALA: Livingston, February 18, 1905, *Deam* 61 (type collection; G, N).

A very distinct species, readily recognized among North American species by its large obovate leaves and long filaments.

35. *Rinorea pubipes* Blake, sp. nov.

Branchlets densely puberulous and more sparsely hispid-pilose with rufid hairs, glabrescent; leaves opposite; petioles pubescent like the branchlets, 3 to 5 mm. long; blades oblong-elliptic or obovate-elliptic, 9 to 12.5 cm. long, 3 to 4.5 cm. wide, abruptly acuminate, at base cuneate or rounded-cuneate, crenate-serrulate, papery, puberulous on costa above or glabrate, beneath along the costa and the 8 to 10 pairs of lateral veins densely puberulous and more sparsely hispid-pilose; racemes about 6 cm. long, densely sordid-puberulous; pedicels 1.5 to 2 mm. long; sepals orbicular-ovate, 1.2 mm. long, obtuse or apiculate, not striate, ciliolate and densely strigillose at least along midline; petals lance-oblong, 4.2 mm. long, ciliolate below, with obtuse reflexed apex; stamens 3 mm. long, glabrous, the slender filaments 0.8 mm. long, equaling or somewhat exceeding the broader emarginate gland which is free from

about the middle, the anthers unappendaged, 1.2 mm. long, the connective scales ovate, 2.2 mm. long, obtuse, somewhat erose below; ovary densely hispid-pilose, the placentae 1-ovulate; capsule 15 mm. long, puberulous and sparsely hispid-pilose, 3-seeded, the placentae puberulous; submature seeds glabrous, 6 mm. long.

Type in the U. S. National Herbarium, no. 578517, collected at Zent Farms, about 20 miles west of Puerto Limón, Costa Rica, by H. Pittier, the date not specified.

36. *Rinorea squamata* Blake, sp. nov.

Tree about 5 meters high; branchlets densely puberulous and hispid-pilose, tardily glabrate; leaves opposite; petioles pubescent like the branchlets, 3 mm. long; blades elliptic-obovate, 6.5 to 10.5 cm. long, 2.3 to 3.8 cm. wide, rather abruptly caudate-acuminate, at base rounded or truncate-rounded, crenate-serrulate, papery, puberulous on costa and sometimes on veins above, sparsely strigose or hispid-pilose on costa and sometimes on the 6 to 8 pairs of veins beneath; racemes about 5 cm. long, rufid-puberulous and hispid-pilose; pedicels 1.5 mm. long; sepals ovate to suborbicular-ovate, 1.5 mm. long, slightly apiculate, ciliolate, rufid-pubescent above at least along midline, not striate; petals oblong, 3.5 mm. long, ciliolate below, with obtuse reflexed apex; stamens 3 mm. long, the filaments 0.8 mm. long, rather broad, slightly exceeded by the broader oblong truncate gland (this free from near the middle), the anthers unappendaged, 1.2 mm. long, the connective scales oval-oblong, 2.2 mm. long, obtuse, entire or obscurely erose below; ovary densely hispid-pilose, the placentae 1-ovulate; capsule puberulous and sparsely hispid-pilose, glabrescent, 2 cm. long.

Type in the U. S. National Herbarium, no. 690300, collected near Gatún, Canal Zone, Panama, February 10, 1911, by E. A. Goldman (no. 1864).

ADDITIONAL SPECIMEN EXAMINED:

PANAMA: Marraganti and vicinity, altitude 60 meters or less, 1908, *Williams* 1031 (Y).

Closely related to *R. pubipes*, but distinguished by its oval connective scales, and leaves not puberulous on the veins beneath.

37. *Rinorea pilosula* Blake in Standl. Contr. U. S. Nat. Herb. 23: 838. 1923.

PLATE 37.

Branchlets densely and finely spreading-pilosulous, glabrate; leaves opposite; petioles densely pilosulous or puberulous, 3 to 7 mm. long; blades oval or obovate-oval, 7.5 to 11.5 cm. long, 3.2 to 5.2 cm. wide, short-pointed, at base rounded-cuneate or cuneate, obscurely crenate or rather coarsely crenate-serrulate, papery, puberulous on costa above, beneath sparsely hispidulous along costa or glabrous; racemes 3 to 7.5 cm. long, densely sordid-puberulous with spreading hairs; pedicels 3 to 5 mm. long; sepals ovate or oval-ovate, 1.2 to 1.7 mm. long, acutish, ciliolate, puberulous at least along midline, not striate; petals elliptic-ovate or lance-ovate, 5 mm. long, narrowed to an obtuse reflexed apex, sparsely ciliolate, rarely with a very few hairs on back; stamens 3.8 to 4.2 mm. long, the filaments 0.7 mm. long, slightly exceeded by the emarginate or entire sometimes sparsely ciliate gland, this free from near the middle, the anthers 1.8 mm. long, unappendaged, the connective scales lance-ovate or elliptic-ovate, 3.1 to 3.5 mm. long, narrowed to an obtuse apex, entire or obscurely erose below; ovary and base of style densely hispidulous-pilosulous, the placentae 1-ovulate.

Type in the U. S. National Herbarium, no. 40190, collected at El Macayei, near San Juan Bautista, Tabasco, Mexico, February 1, 1888, by J. N. Rovirosa (no. 100).

ADDITIONAL SPECIMEN EXAMINED:

MEXICO: Without definite locality, *Kerber* 407 (N).

Related to *R. guatemalensis*, but distinguished by the entire lack of appendages to the anther sacs, even in the bud, and by the entire or subentire connective scales.

EXPLANATION OF PLATE 37.—*Rinorea pilosula*, from the type specimen. Natural size.

SPECIES OF UNCERTAIN POSITION.

38. *Rinorea albicaulis* (Turcz.) Blake.

Alsodeja albicaulis Turcz. Bull. Soc. Nat. Moscou 36¹: 558. 1863.

Shrub, white-barked, glabrous; leaves opposite, lanceolate, acuminate, subsessile, membranaceous, sharply serrate; racemes many-flowered, slightly shorter than the leaves; petals contorted at apex, twice as long as the sepals; stamens united into an urceole.

TYPE LOCALITY: Chiquitos, Bolivia. Type collected by D'Orbigny (no. 987).

Known to me only from the original description. The species is evidently distinct from *R. gracilis* and *R. viridifolia* Rusby, the only other species known from Bolivia.

39. *Rinorea gracilis* Rusby, Bull. N. Y. Bot. Gard. 8: 106. 1912.

Slender shrub, about 2 meters high; branchlets rufous-hispid and finely puberulous, glabrescent; leaves opposite; petioles pubescent like the branchlets, 3 to 5 mm. long; blades obovate or elliptic-obovate, 5 to 9 cm. long, 2.2 to 3.5 cm. wide, short-pointed, acutely cuneate at base, puberulous on costa above, beneath sparsely strigose on costa or glabrous, obsoletely crenate, papyraceous; racemes puberulous, about 4.5 cm. long; ovary densely rufous-hispid; capsule glabrescent, 17 mm. long; placentae glabrous.

SPECIMEN EXAMINED:

BOLIVIA: San Buenaventura, altitude 455 meters, November 24, 1901, *Williams* 611 (type; Y, photograph and fragment N).

Rusby also refers to this species a specimen collected by Spruce at Tarapota. The material is not sufficiently complete to indicate to what group of the genus the species belongs.

DOUBTFUL SPECIES.

ALSODEIA CAMPTONEURA Radlk. Sitzungsab. Math. Phys. Akad. Wiss. München 20: 186. 1891.

Based on *Spruce* 1964 and 1069. The species is said to be allied to *A. falcata*, to which these collections were referred by Eichler. The fragmentary description given does not suffice for separation.

ALSODEIA JAPURANA (Meisn.) Radlk. Sitzungsab. Math. Phys. Akad. Wiss. München 20: 182. 1891.

Coccoloba japurana Meisn. in Mart. Fl. Bras. 5¹: 25. 1855.

This was described from specimens with very young flowers. It is said by Radlkofer to be allied to *A. racemosa*.

ALSODEIA PALLIDA Klotzsch; Schomb. Versuch Fauna & Fl. Br. Guian. 1165. 1848, nomen nudum.

ALSODEIA RAMIZIANA Glaz. Bull. Soc. Bot. France 52: Mém. 3: 22. 1905, nomen nudum.

Glaziov 12425 is cited, but no description is given.

EXCLUDED SPECIES.

ALSODEIA LONGIFLOBA Oudem. Arch. Néerl. 2: 195. pl. 5. 1867; in Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 68. 1867.

This is evidently a species of *Amphirrox*, related to *A. surinamensis* Eichl. and *A. juruana* Ule in its elongated anther appendages, but distinguished by its much smaller flowers only 9 mm. long. The species becomes *Amphirrox longiflora* (Oudem.) Blake. The specific name is very inappropriate, as the flowers are the smallest known in the genus. No specimens have been examined.

ALSODEA MEGAPOTAMICA Spreng. Syst. Veg. 4: Cur. Post. 99. 1827.

According to Garcke,¹² who examined an original specimen, this is *Dalbergia variabilis* Vogel.

ALSODEIA PARVIFOLIA S. Wats. Proc. Amer. Acad. 25: 142. 1890.

This is *Hybanthus mexicanus* Ging.¹³ The type and much other material have been examined.

ALSODEA PERRINI Spreng. Syst. Veg. 1: 807. 1825.

Garcke examined an original specimen and reports¹⁴ that this does not belong to the Violaceae, but is probably one of the Apocynaceae, perhaps *Echites*.

ALSODEA PIPAREA Spreng. Syst. Veg. 1: 807. 1825.

Piparea dentata Aubl. Pl. Guian. 2: App. 31. pl. 386. 1775.

Conohoria aubletii D. Dietr. Syn. Pl. 1: 831. 1839.

This is a species of *Casearia*.

ALSODEIA REGNELLII (Miquel) Walp. Ann. Bot. Syst. 2: 67. 1851-52.

Conohoria regnellii Miquel, Linnaea 22: 555. 1849.

According to Eichler,¹⁵ this is identical with *Ionidium atropurpureum* St. Hil.

CONOHOBIA ALTERNIFOLIA Spreng. Neue Entd. 2: 151. 1821.

Rinorea? integrifolia Ging. in DC. Prodr. 1: 313. 1824.

Alsodeia integrifolia Steud. Nom. Bot. ed. 2. 1: 64. 1840.

Having 1-flowered axillary peduncles, this can not be a *Rinorea*. Garcke¹⁶ considers the species indeterminable.

RINOBEA CUSPA (H. B. K.) Baill. Hist. Pl. 4: 346. 1873.

Conoria? cuspa H. B. K. Nov. Gen. & Sp. 7: 242. 1825.

According to Eichler, this is certainly not one of the Violaceae, but the flowers are too young to determine its real relationship. The bark and leaves of this species are used as a febrifuge.

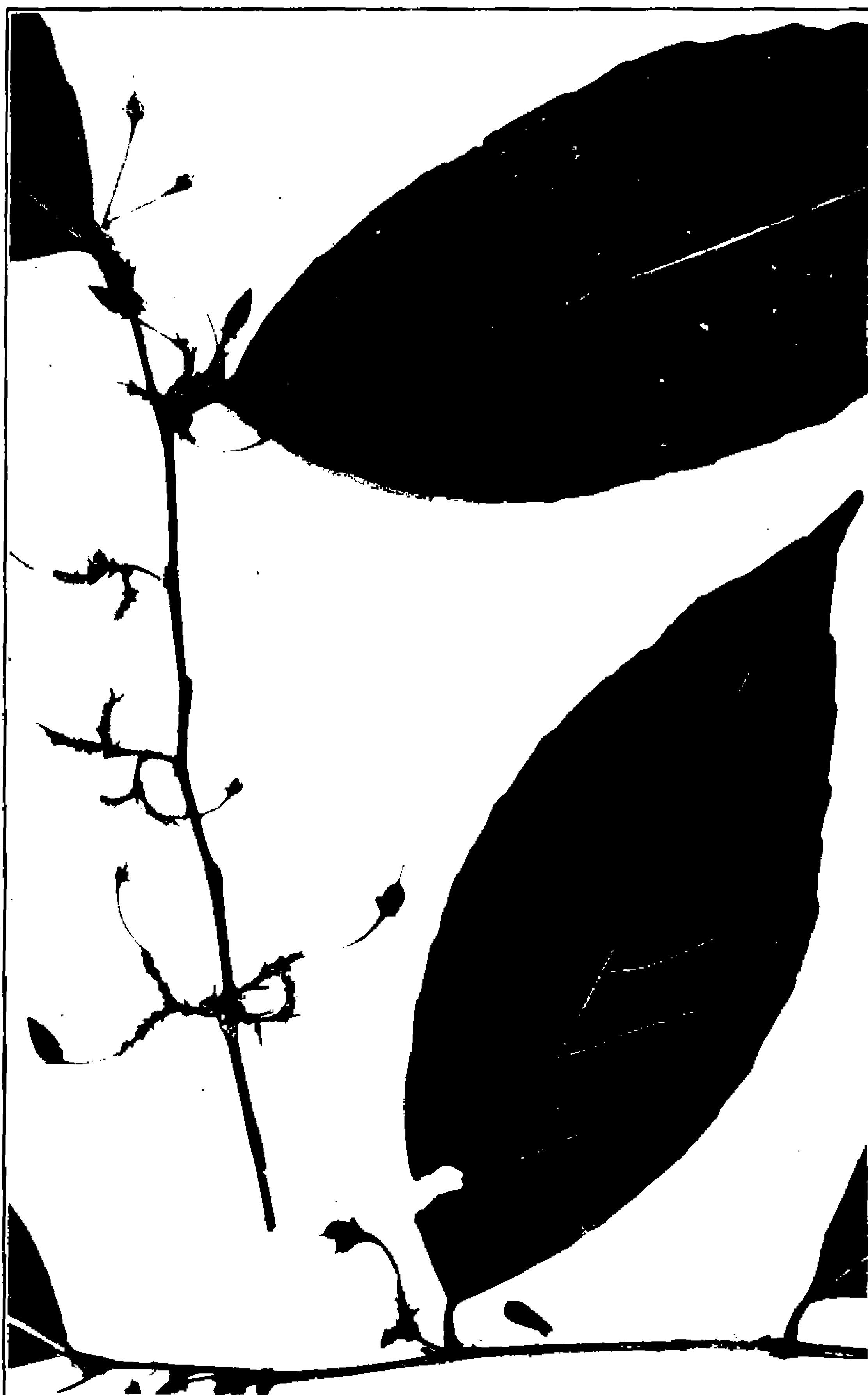
¹² Bot. Zeit. 25: 14. 1867.

¹³ In DC. Prodr. 1: 312. 1824.

¹⁴ Bot. Zeit. 25: 14. 1867.

¹⁵ In Mart. Fl. Bras. 13: 372. 1871.

¹⁶ Bot. Zeit. 25: 14. 1867.



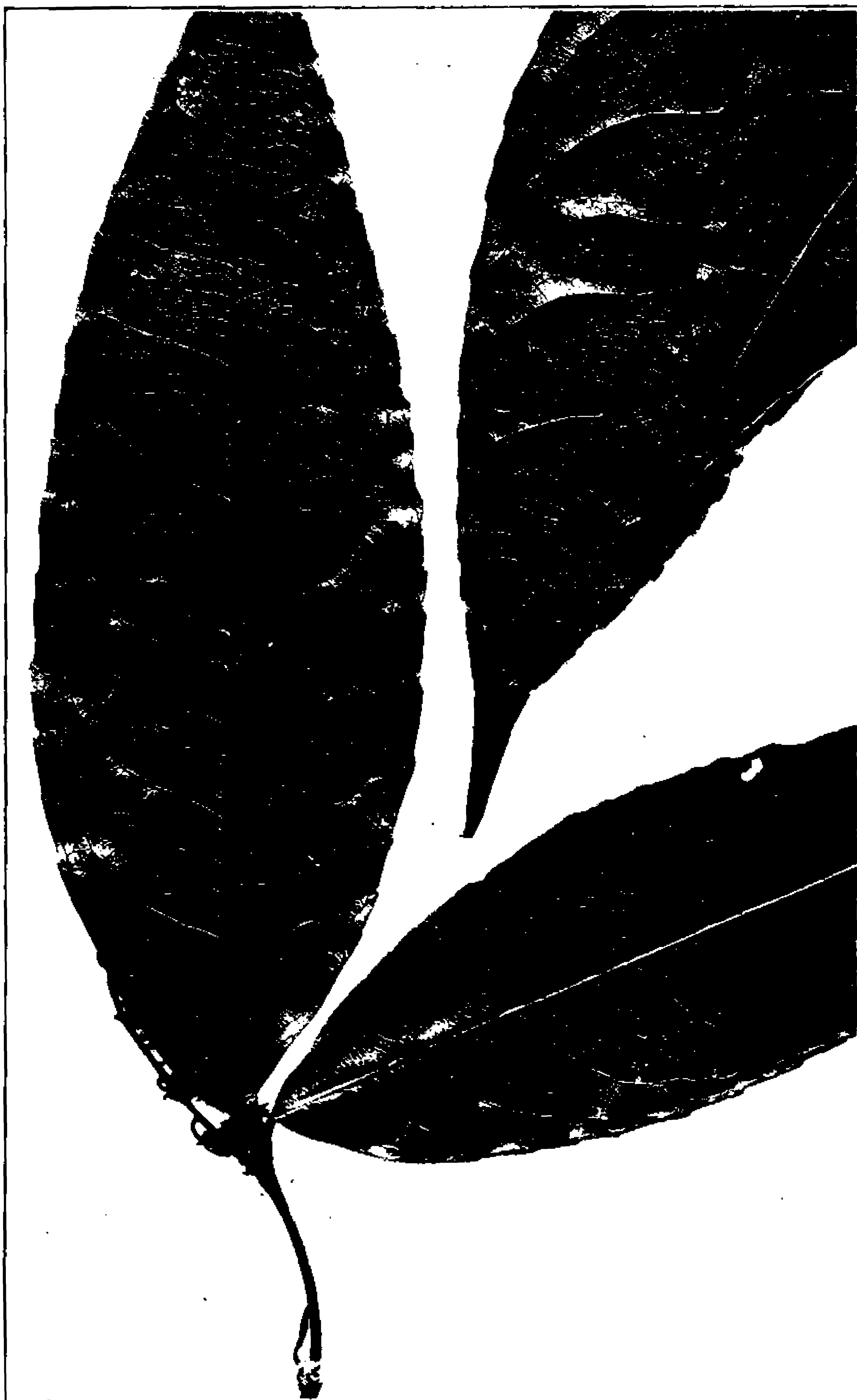
RINOREA DICHOTOMA RUSBY



RINOREA RIANA (DC.) KUNTZE



RINOREA HYMENOSEPALA BLAKE



RINOREA BRACHYTHRIX BLAKE



RINOREA MELANODONTA BLAKE



RINOREA OVALIFOLIA (BRITTON) BLAKE



RINOREA PILOSULA BLAKE