

be absent even in fruiting specimens), tri-locular, multi-ovulate. Fruit ovoid, 8–10 cm. long and broad, 3-celled. Seeds many (over 100) minute, typical of the genus, 1 mm. or less long.

The above description seems quite essential, considering no record of measurements has ever been made. Humboldt and Bonpland refer to the 4-parted stigma and 4-celled ovary and fruit. The material examined by the present author exhibited only 3-celled ovaries and fruit.

The large flowers, seemingly woody, sometimes four to the axil, covered with a dense white tomentum, the large, quickly tapering fruit, the very brief style and the white tomentose coriaceous broadly ovate leaves distinguish this species from its relatives. The fruits grow to such proportions that the persistent calyx-lobes tend to split, giving a very ragged appearance to the fruit clusters.

The specimens *Mutis 695*, *Dryander 1655*, and *Pérez Arbeláez* and *Cuatrecasas 5975*, cited above, vary from the type in having smaller leaves (not over 9 cm. long and 3 cm. wide) and the stem decidedly geniculate. Otherwise, they agree with the description.

32A. ***Freziera canescens*** Humboldt & Bonpland forma ***rufescens***, forma nova.

A typo differt ramulis foliisque pubescentibus rufescentibus.

DISTRIBUTION: South America (Ecuador).

ECUADOR: In the Ecuadorian Andes, *R. Spruce 5089* (TYPE, G; isotypes, FM, NY), 1857–1859.

This form is separated from the species on the dense colorful pubescence on the under surface of the leaves. Otherwise, it agrees well with the species.

33. ***Freziera candicans*** Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 328. 1847.

Lettsomia candicans (Tul.) Choisy in Mém. Soc. Phys. Genève, 14: 125. 1855.

Eurya candicans (Tul.) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 149. 1925.

Eurya Seemanniana Pittier in Contrib. U. S. Nat. Herb. 20: 480. 1922. — Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, 21: 149. 1925. — Standley in Field Mus. Nat. Hist. Bot. ser. 18: 701. 1937.

Freziera Seemanniana (Pittier) Kobuski in Ann. Missouri Bot. Gard. 25: 355. 1938.

Freziera sericea Hemsley, Biol. Centr.-Amer. 1: 93. 1879. — Non Humboldt & Bonpland (1808).

DISTRIBUTION: Central America (Costa Rica, Panama); South America (Venezuela, Colombia).

PANAMA: Chiriquí, forests around El Boquete, alt. 1000–1300 m., *H. Pittier* 2944 (TYPE of *F. Seemanniana*, US; isotypes, FM, G), March 1911 (middle-sized tree; “sajinillo”).—Same locality, alt. 1800 m., *M. E. Davidson* 562 (AA, FM), April 11, 1938 (tree 6–15 m. with pale yellow flowers).—Volcan de Chiriquí, vicinity of Casita Alta, alt. 1500–2000 m., *R. E. Woodson*, *P. H. Allen* and *R. J. Seibert* 904 (AA, FM, MO), June 1938 (tree 5 m. with yellowish white flowers). COSTA RICA: region of Zarcero, alt. 1700–1800 m., *Austin Smith* 153 (FM, MO), *H* 224 (FM, MO), *A* 408 (FM, MO, NY), Aug. 1937–Jan. 1938.—La Palma de San Roman, alt. 1100 m., *A. M. Brenes* 4482, 5505 (FM).—Vara Blanca de Sarapiquí, north slope of Central Cordillera, between Poás and Barba Volcanoes, alt. 1950 m., *A. F. Skutch* 3479 (AA, NY), Jan. 1938 (tree 8 m. with white flowers).—Alajuela Prov., Volcan de Poás, moist forest, alt. 2100–2600 m., *P. C. Standley* 34641 (FM, US), Feb. 1924 (tree 6 m.).—San José Prov., moist forest, alt. 1500–1800 m., *P. C. Standley* 32629, 42534 (FM, NY, US), 42940 (US), Mar. 1924–Dec. 1925 (tree 6–15 m. with smooth, pale brown bark, white flowers and black fruit).—Prov. Cartago, brushy slope, *P. C. Standley* 39280 (US), Mar. 1924 (shrub 3.0–4.5 m.; fruit black). VENEZUELA: State of Aragua, near Colonia Tovar, *A. Fendler* 52 (G), 1854–1855.—Distr. Federal, Caracas, *A. Bonpland* s.n., (photo of TYPE, FM).—Camino de la Silla de Caracas, alt. 2100 m., *E. Delgado* 230 (US), Apr. 5, 1939.—La Cienega, Silla de Caracas, alt. 2000–2600 m., *H. Pittier* 8361 (G), Dec. 1918 (small tree, 6 m.).—Without exact locality, *H. Karsten* s.n. (FM). COLOMBIA: Dept. El Cauca, Popayán, Timbio en Hatovieja, alt. 1800 m., *E. Pérez Arbelde* and *J. Cuatrecasas* 6088 (US), July 14, 1939.

Tree medium sized; young branchlets densely hairy at first, later smooth. Leaves petiolate, subcoriaceous; petioles hairy, winged, canaliculate, ca. 1.0–1.5 cm. long; blades ovate-lanceolate or ovate-oblong, 7–15 cm. long, 3–5 cm. wide, acuminate at apex, cuneate at base, glabrous above, silky pubescent beneath, the margin usually serrulate, occasionally subentire. Flowers axillary, fasciculate (3–7), pedicellate, the pedicels 3–8 mm. long, hairy; bracteoles suborbicular, ca. 2–3 mm. long, sepaloid, densely pubescent; calyx-lobes 5, orbicular, imbricate, densely pubescent on outer surface (at least, the outer ones), 3–4 mm. long and broad; petals ovate, white, yellowish white or pale yellow, 6–8 mm. long, glabrous, lightly connate at base; stamens 20–25, uniseriate, adnate to the base of the petals, 2.0–2.5 mm. long; ovary

ovoid, tapering into the short style, topped by 3-5-parted stigma. Fruit globose, black, glabrous, 7-9 mm. diam., 3-4-5-celled, many-seeded.

This species, long overlooked by botanists, has an extensive range (Venezuela to Costa Rica) and has been misinterpreted as belonging to *F. sericea*, *F. chrysophylla*, and later to *F. Seemanniana*.

There is considerable variation in the species, but no more than is found in all other species of this genus. The Panamanian material is characterized by entire or nearly entire leaves, while at all other localities the material has serrulate leaves. This is one of the characters used by Pittier in separating the species from *F. sericea*. However, in the type of *F. Seemanniana* (Pittier 2944), evidences of serrulation can be seen on the leaf-margins. Woodson, Allen & Seibert 904 from the type locality has the more nearly entire-margins. However, in this specimen, the margin is somewhat revolute. In Davidson 562, also from the type locality, the leaf-margins are slightly serrulate. The Costa Rican material agrees more closely with that of South America. In both Standley 32636 (Costa Rica) and Delgado 230 (Venezuela) are found, on the same specimen, fruits with 3, 4 and 5 loculi. Karsten s.n. (Venezuela) has fruit that is 4-celled while in Skutch 3479 (Costa Rica), the fruit is 3-celled. Variation in density and color of pubescence is found. Usually the pubescence is white or yellowish. The variation in color is more particularly noticeable in the unfolding leaves.

Pittier intimates that his *Eurya Seemanniana* is close to *F. sericea*. However, it is more nearly related to *F. chrysophylla* from which it is separated by the longer pedicelled flowers, globose fruit, less dense pubescence, and the pronounced veining on the upper surfaces of the leaves.

34. ***Freziera chrysophylla*** Humboldt & Bonpland, Pl. Aequin. 1: 27, t. 7. 1808. — Smith in Rees, Cyclop. 15: no. 6, 1810. — De Candolle, Prodr. 1: 525. 1824. — Sprengel, Syst. Veg. 2: 596. 1825. — Spach, Hist. Nat. Vég. 4: 64. 1835.

Freziera sericea H. & B. var. *chrysophylla* (H. & B.) Triana & Planchon in Ann. Sci. Nat. Bot. sér. 4, 18: 263. 1862. — Wawra in Martius, Fl. Bras. 12¹: 283. 1886.

Eurya sericea (H. & B.) Blume var. *chrysophylla* (H. & B.) Hieronymus in Bot. Jahrb. 20, Beibl. 49: 49. 1895.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. El Cauca, near Popayán, A. Bonpland s.n. (TYPE, Herb. Mus. Paris; fragment FM). — Cauca Valley, Río Piendamó, alt. 1700-1900 m., F. W. Pennell & E. P. Killip 6386 (G, NY, US), June 6, 1922 (shrub in thicket growth). — Dept. El Cauca, Puracé, bushy

slopes, alt. 1900–2100 m., *Pennell & Killip 6403* (G, NY, US), June 1922 (tree with orange flowers).—Dept. El Cauca, Popayán, *F. C. Lehmann 4450* (FM, G, US).—Dept. El Cauca, Popayán, *H. Karsten s.n.* (FM, Vienna) (fruit fleshy, edible).—Dept. Antioquia, between Carolina and Santa Rosa, alt. 2000–2500 m., *F. C. Lehmann CCXIX* (US), Sept. 1884. — Dept. Antioquia, Sonson, *R. A. Toro 1230* (NY), July 20, 1928. — Dept. Antioquia, La Ceja, *Bro. Daniel 401* (US), July 1934 (“cerezo de monte”). — Dept. Antioquia, Cerro de la Vieja, alt. 2650 m., *Bro. Daniel 1708* (US), Dec. 1938. — Dept. Cundinamarca, Tenasuca, near Bogotá, alt. 1800 m., *J. Triana s.n.* (NY).

This species is characterized by lanceolate, petiolate, coriaceous leaves, glabrous above, sericeous below, acuminate at the apex, cuneate at the base, tapering into a winged, canaliculate petiole. The flowers are very short-pedicelled, quite small, with sericeous pedicels, bracteoles and calyx-lobes. The ovary is usually three-celled (four-celled, fide Humboldt and Bonpland) and the stigma three-lobed.

Triana and Planchon reduced this species to a variety of *F. sericea*. The pubescence and longitudinal striations on the under surface of the leaves indicate this relationship. However, *F. sericea* has larger, sessile flowers in which the calyx-lobes are glabrous and the ovary five-celled. The leaves are sessile or subsessile and not as pronouncedly acuminate.

More closely related is *F. candicans*. This last species ranges up into Costa Rica and has leaves which, though petioled and acuminate, are smaller, more ovate than lanceolate with pronounced, more strict veins on the upper surface and a much less dense and shorter pubescence on the under surface. The leaf-margin is entire, subentire or lightly serrulate. The flowers are definitely pedicellate, hence less crowded in the axils than those of *F. chrysophylla*.

DOUBTFUL SPECIES

Freziera Bonplandiana Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 335. 1847.

DISTRIBUTION: South America (Colombia?).

COLOMBIA: *A. Bonpland s.n.* (photo and leaf fragment of type, FM).

The leaf is coriaceous, shining and glabrous above, appressed puberulent below. The veins are distinct, and close together. The leaf-base is obtuse and tapers into a winged, canaliculate petiole. The calyx-lobes are glabrous. According to Tulasne, there are ca. 25 stamens and the ovary is 3-celled. This species is most closely related to *F. nervosa*, which has a rounded leaf-base. The veins are lax and open,

compared with those of *F. Bonplandiana*. The calyx-lobes are pubescent and the stamen number is ten.

This species seems to have been collected only once (probably in Colombia), reported as a new species by Tulasne and then never mentioned again. The specific status must remain in question, perhaps, even after examining the type. The flowers appear (from photo) to be in the bud.

Freziera conocarpa (O. Schmidt) Kobuski in Ann. Missouri Bot. Gard. **25**: 354. 1938.

Eurya conocarpa O. Schmidt in Fedde, Rep. Spec. Nov. **22**: 98. 1925.

No material of this species is available for the present study. In the original description, Schmidt refers to the branchlets as opposite, alternate, or subverticillate, with the leaves at the apex of the branchlets. These characteristics plus a two-celled ovary with 4 ovules to each cell leads one to believe that the species probably belongs to *Ternstroemia* rather than *Freziera* as Schmidt suggests in his observations.

Freziera monzonensis (Melchior) Kobuski in Ann. Missouri Bot. Gard. **25**: 355. 1938.

Eurya monzonensis Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1938.

DISTRIBUTION: South America (Peru).

PERU: Precise locality lacking, *A. Weberbauer* 3422 (photo of type, AA, FM, G).

Melchior merely recorded this species in his treatment of the Theaceae (l.c.), intending, probably, to follow up later with a technical description. This, however, he neglected to do. From a photograph of the type, this species may be characterized by coriaceous, oblong-obovate leaves, 9–14 cm. long and 4–5 cm. wide, broadly acuminate at the apex, rounded or obtuse at the base, pubescent above where young, densely sericeous below, the margin slightly serrulate or subentire, the petiole 3.0–3.5 cm. long, winged, involute. Flowers 1–3, fasciculate, axillary, seemingly sessile and densely sericeous (buds only).

Very closely related is *F. reticulata* var. *subintegrifolia* (Hieron.) Kobuski. However, *F. monzonensis* varies from this variety in the acuminate apex of the leaf and in the type of pubescence (sericeous) on the under surface of the leaf. Because of the longer silky sericeous pubescence the veining on the under surface is obscured. Otherwise these two seem to agree very well.

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STUDIES OF PAPUASIAN PLANTS, IV*

A. C. SMITH

THIS paper discusses new and otherwise noteworthy species in the families Dilleniaceae, Actinidiaceae, and Ochnaceae. Specimens are cited from the herbaria of the Arnold Arboretum (A), New York Botanical Garden (NY), and Yale School of Forestry (Y); for specimens seen only in the herbarium of the Arnold Arboretum no place of deposit is indicated.

DILLENIACEAE

HIBBERTIA Andr.

Hibbertia Banksii (R. Br.) Benth. Fl. Austral. 1: 20. 1863; Bailey, Queensl. Fl. 1: 12. 1899.

Hemistemma Banksii R. Br. ex DC. Reg. Syst. Veg. 1: 414. 1817.

BRITISH NEW GUINEA: Western Division, Tumbuke, Wassi Kussa River, *Brass* 8431 (shrub 1–2 m. high, common in *Agonis* scrubs; leaves stiff, convex, brown-pubescent beneath; flowers yellow).

This is the second species of *Hibbertia* reported from New Guinea; it belongs in the Section *Hemistemma*, whereas *H. novo-guineensis* Gibbs, a montane species from the Arfak region, belongs in the Section *Cyclandra*, Group *Subsessiles*. The *Brass* specimen agrees precisely with Australian material of *H. Banksii*; some of its branchlets bear unusually large leaves, with blades up to 13 cm. long and 3 cm. broad.

WORMIA Rottb.

Diels (in Bot. Jahrb. 57: 436–439. 1922) referred the Papuan species of this alliance to *Dillenia*, but other recent students, including Gilg and Werdermann (in Engl. & Prantl, Nat. Pfl. ed. 2. 21: 33–36. 1925) and Corner (in Gard. Bull. Straits Settlm. 10: 3. 1939) separate *Wormia* and *Dillenia*. In view of the substantial differences in fruit between the two groups, this separation seems amply warranted; all of the Papuan species appear to belong to *Wormia*.

*(Botanical Results of the Richard Archbold Expeditions) See Jour. Arnold Arb. 22: 60–80. 1941; op. cit. 231–252; op. cit. 343–374.

Wormia (§ *Euwormia*) **macrophylla** (Lauterb.) Gilg & Werderm. in Engl. & Prantl, Nat. Pfl. ed. 2. **21**: 35. 1925.

Dillenia alata var. *macrophylla* Lauterb. in Bot. Jahrb. **45**: 362. 1911; Lane-Poole, Rep. For. Res. Papua 116. 1925.

Dillenia macrophylla Diels in Bot. Jahrb. **57**: 437. 1922.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, alt. 50 m., *Brass* 14114 (canopy tree, attaining a height of about 25 m., very abundant and often gregarious in flooded rain-forests of river-plain; trunk up to 80 cm. in diameter, usually hollow; bark flaky, pale reddish brown; petals yellow; anthers red).

The species has previously been reported from Neu-Mecklenburg and from the Ramu River in Northeastern New Guinea; according to Lane-Poole it is abundant in the latter locality.

Wormia (§ *Euwormia*) **crenata** sp. nov.

Arbor grandis ubique praeter inflorescentiam et petiolorum alas interdum sparse pallide puberulas glabra, ramulis fistulosis subteretibus vel apicem versus leviter complanatis siccitate rugosis cicatricosis; petiolis 4–6.5 cm. longis initio utrinque ala papyracea circiter 8 mm. lata superne auriculato-dilatata mox decidua ornatis, demum canaliculatis et longitudinaliter bicicatricosis; laminis subcoriaceis late ovato-ellipticis, 13–22 cm. longis, 10–18 cm. latis, basi truncatis vel obtusis, apice rotundatis vel inconspicue cuspidatis, margine grosse calloso-crenatis (dentibus 1–2.5 cm. distantibus), siccitate supra viridibus subtus fuscioribus, costa supra paullo elevata subtus prominente saepe carinata, nervis secundariis utrinsecus 8–14 rectis erecto-patentibus in dentibus exeuntibus utrinque manifeste elevatis, nervis tertiariis transversis numerosissimis rete venularum utrinque prominulo conjunctis; inflorescentiis in extremitate ramulorum oppositifoliis floribus inclusis 5–8 cm. longis 2- vel 3-floris, pedunculo et rhachi gracilibus juventute dense aureo-sericeis glabrescentibus, pedicellis sub anthesi circiter 1 cm. longis ut rhachi decidue sericeis; sepalis 5 subcoriaceis subaequalibus obovato-oblongis, 22–30 mm. longis, 18–24 mm. latis, apice rotundatis, margine subscariosis ciliatis et saepe inflexis, exterioribus extus dense et arcte aureo-velutinis, interioribus extus cinereo-sericeis; petalis desideratis; staminibus numerosis subaequalibus 11–13 mm. longis, filamentis castaneis ligulatis 6–8 mm. longis, antheris oblongis 5–7 mm. longis apice minute apiculatis poris subterminalibus dehiscentibus; carpellis circiter 7 glabris oblongis demum ad 15 mm. longis, stylis subulato-filiformibus circiter 15 mm. longis.

SOLOMON ISLANDS: Y s a b e l : Kakatio, alt. 900 m., *Brass* 3242

(handsome spreading tree, fairly common in rain-forests; bark thick, brittle, brown; wood yellowish; leaves very stiff, pale beneath; outer sepals orange; petals cream colored, falling without expanding; common name: *kepe*); Tatamba, alt. 50 m., *Brass* 3418 (TYPE), Jan. 4, 1933 (very large straight-boled flanged tree, common in hardwood forests; bark pale brown, falling in soft scales; wood hard, brown; leaves very stiff; three outer sepals golden-yellow, the two inner ones pale green; petals white, falling without opening). U l a w a: alt. 250 m., *Brass* 2957 (gregarious large tree, common in mountain rain-forests; branches widely spreading; bark reddish brown, exfoliating in very thin flakes; leaves stiff, shining above, pale beneath; sepals red; petals yellow, falling without opening; lower part of trunk often giving rise to numerous erect coppice shoots).

Wormia crenata is a relative of *W. macrophylla* (Lauterb.) Gilg & Werderm., from which it differs in its smaller and fewer-nerved leaf-blades with more conspicuously crenate margins, its fewer and smaller flowers, and its velutinous or sericeous rather than glabrous sepals.

***Wormia* (§ *Euwormia*) *nitida* sp. nov.**

Arbor grandis, ramulis glabris subteretibus stramineis vel fuscis cicatricosis; petiolis 4–6.5 cm. longis initio utrinque ala subcoriacea stramineo-sericea 4–5 mm. lata mox decidua ornatis; laminis subcoriaceis late ovatis, 11–20 cm. longis, 7–15 cm. latis, basi subcordatis, apice rotundatis, margine conspicue undulato-crenatis, supra nitidis glabris, subtus costa et nervis interdum inconspicue adpresso-sericeis et in angulis nervorum barbatis, costa supra paullo elevata et interdum inconspicue sulcata subtus prominente et carinata, nervis secundariis utrinsecus 11–16 rectis patentibus marginem versus curvatis et indistincte anastomosantibus supra subplanis vel impressis subtus elevatis, nervis tertiariis transversis numerosis et rete venularum utrinque prominulis vel subplanis; inflorescentiis sub anthesi ubique glabris apicem ramulorum versus oppositifoliis floribus inclusis 4–6 cm. longis 2–4-floris, pedunculo et rhachi crassis leviter angulatis, pedicellis sub anthesi 15–18 mm. longis; sepalis 5 subcoriaceis late ovatis vel suborbicularibus, apice rotundatis vel obtusis, exterioribus ad 33 mm. interioribus ad 25 mm. diametro; petalis desideratis; staminibus circiter 60 subaequalibus 15–18 mm. longis, filamentis ligulatis submembranaceis basim versus circiter 0.8 mm. latis, antheris lineari-oblongis acutis 7–8 mm. longis; carpellis 9–11 glabris sub anthesi rugosis et circiter 15 mm. longis sub fructu ad 25 mm. longis et 7–8 mm. latis, stylis filiformibus circiter 10 mm. longis.

BRITISH NEW GUINEA: Central Division, Mafulu, alt. 1400 m., *Brass* 5282 (A, TYPE, NY), Oct. 16, 1933 (large tree, plentiful in limestone forests, the trunk with heavy, rounded, short, spur buttresses; bark bright reddish brown, flaky; wood reddish brown, hard, heavy; leaves glossy, the nerves pale, impressed above, prominent beneath; outer sepals red, the inner ones yellow-green; common name [Kuni language]: *manava*; wood durable and used in building).

Wormia nitida is closely related only to *W. quercifolia* White & Francis, from which it differs in having its leaf-blades subcordate rather than obtuse at base, its secondary nerves more numerous and with barbellate tufts of hairs in their axils, its inflorescence more robust, and its flowers nearly twice as large in all parts.

***Wormia* (§ *Euwormia*) *insignis* sp. nov.**

Arbor ad 30 m. alta ubique praeter inflorescentiam glabra, ramulis subteretibus fuscis oblique cicatricosis; petiolis 4–6.5 cm. longis utrinque ala subcoriacea ad 8 mm. lata inferne gradatim attenuata superne ad laminam abrupte rotundata vel inconspicue auriculata persistenter ornatis; laminis subcoriaceis siccitate fuscis ellipticis, 8–11 cm. longis, 5–8 cm. latis, basi rotundatis vel obtusis et interdum alis petiolorum confluentibus, apice obtusis vel inconspicue cuspidatis, margine integris, costa supra inconspicue elevata subtus prominente et carinata, nervis secundariis utrinsecus 6–8 rectis erecto-patentibus marginem versus arcuatis et inconspicue anastomosantibus supra subplanis subtus acute elevatis, rete venularum supra immerso subtus leviter prominulo vel plano; racemis brevibus subterminalibus saepe 2-floris, pedunculo, rhachi, et pedicellis 35–45 mm. longis validis debiliter cinereo-pilosis; sepalis 5 subcoriaceis, suborbicularibus vel elliptico-oblongis, apice rotundatis, margine scariosis et saepe leviter ciliatis, extus sericeo-puberulis glabrescentibus, exterioribus 18–23 mm. interioribus 25–27 mm. diametro; petalis 5 papyraceis vel submembranaceis subcucullatis obovato-oblongis, 30–35 mm. longis, 20–30 mm. latis, apice rotundatis, basim versus angustatis, inconspicue nervatis, mox caducis; staminibus numerosissimis circiter 3-seriatis subaequalibus 23–28 mm. longis, filamentis castaneis submembranaceis ligulatis 14–20 mm. longis, basim versus 1–1.5 mm. latis, superne gradatim angustatis, antheris lineari-oblongis 7–9 mm. longis, apice minute apiculatis poris subterminalibus dehiscentibus; carpellis circiter 9 oblongis sub anthesi 10–12 mm. longis dense cinereo-sericeis (pilis 0.5–1 mm. longis); stylis subulato-filiiformibus 12–15 mm. longis, basi in columnam crassam circiter 4 mm. longam et 3 mm. diametro sericeam connatis, superne glabris et recurvatis.

SOLOMON ISLANDS: Bougainville: Kupei Gold Field, alt. 1000 m., *Kajewski 1740* (TYPE), April 18, 1930 (large tree to 30 m. high, common in rain-forest; pedicels pink, covered with light fine hairs; petals apricot to dark pink, very showy; stamens light brown, paler distally; styles light green).

This remarkably distinct species is characterized by its comparatively small and few-nerved leaf-blades, long petioles with conspicuously broad and persistent wings, few flowers, sericeous sepals, extremely long filaments, sericeous carpels, and basally connate styles. Probably most closely related to *W. macrophylla* (Lauterb.) Gilg & Werderm. and its allies, the new species is readily distinguished by the above-mentioned characters.

Wormia (§*Euwormia*) **ingens** (Burt) comb. nov.

Dillenia ingens Burt in Kew Bull. 1935: 299. 1935.

SOLOMON ISLANDS: Bougainville: Kugumaru, Buin, alt. 150 m., *Kajewski 1973* (large tree up to 20 m. high, common in rain-forest; leaf-blades up to 75 cm. long and 40 cm. broad; fruiting pedicels pink; common name: *aukaba*; fruits and leaves eaten by opossums). Y s a b e l: Garona River, *Brass 3353* (few-branched tree up to 20 m. high, common in swampy lowland rain-forests; bark brown, uneven; wood brown, with numerous very distinct rays; leaves clustered towards ends of branches, the blades up to 1 m. long and 50 cm. broad or more, with a broad pale stripe along center of costa on upper surface, the secondary nerves very pale; fruiting sepals red).

The type collection of this striking tree was obtained on Bougainville, and a second collection was mentioned by Burt as from New Georgia. Our material differs from the original description only in its even larger leaves, its stipules to 11 cm. in diameter, and its sepals to 5 cm. long. *Waterhouse 25* (Y, type coll.) also has larger stipules than those mentioned by Burt.

Wormia (§*Capellia*) **auriculata** (Martelli) Gilg & Werderm. in Engl. & Prantl, Nat. Pfl. ed. 2. 21: 35. 1925.

Dillenia auriculata Martelli in Becc. Malesia 3: 159. 1886.

BRITISH NEW GUINEA: Western Division, Fly River, 528-mile Camp, alt. 80 m., *Brass 6821* (tall tree, in canopy layer of ridge-forests; leaves glossy, glabrous; flowers showy, about 10 cm. in diameter, the petals and stamens yellow, the carpels red); Palmer River, 2 miles below junction with Black River, alt. 100 m., *Brass 7275* (slender tree 30 m. tall, in ridge-forest canopy layer; trunk supported on prop-roots

about 1 m. long; bark reddish brown, flaky; wood, hard, brown; leaves stiff, glabrous, smooth, shining; flowers yellow, 11 cm. in diameter).

Wormia auriculata has previously been reported only from the type collection from northwestern Netherlands New Guinea. The species is known to me only from the original description, which appears to agree precisely with the Brass specimens in all essential details. The present collections have leaves with deciduous barbellate tufts of hair in the axils of secondary nerves beneath, and the carpels are usually 7 (rather than 10 as reported by Martelli).

ACTINIDIACEAE

SAURAUIA Willd.

Burt (in Hook. Ic. Pl. **34**: pl. 3316. 1936) has remarked that the series proposed for the Papuan species of *Saurauia* by Diels (in Bot. Jahrb. **57**: 441. 1922) and subsequently adopted by Gilg and Werdermann (in Engl. & Prantl, Nat. Pfl. ed. 2. **21**: 44. 1925) are largely artificial. It is true that such characters as the position and branching of the inflorescence, the degree of development of enveloping bracts, the pubescence of the lower surfaces of leaf-blades, and several others used by Diels to distinguish his series do not seem fundamental. As Burt suggests, the type of indument may give a more dependable indication of the true relationships of the species. But, until some careful monographer has worked upon the genus in its entire range and has learned to distinguish between the fundamental and inconsequential characters, it seems advisable to follow the only system thus far proposed for the Old World species. The species of *Saurauia* are not difficult to recognize when adequate material is available, but characters which are fairly stable (i.e. type, direction, and length of hairs, shape of scales, size of flowers, number and arrangement of stamens, staminal arrangement, etc.) have not always been adequately described. In the following discussion of new and otherwise noteworthy species, the arrangement of Gilg and Werdermann is followed.

Many species of *Saurauia* have abundant and obvious fusiform crystal-bearing cells; the presence of these will perhaps be usable as a differentiating specific character, but up to the present they have scarcely been mentioned in formal descriptions. These cells contain both raphides and styloids and are most obvious in the leaves, petals, and ovaries of certain species.

From the material thus far available, it seems that only a few Papuan species of *Saurauia* are to be considered abundant. Among

these are *S. conferta* Warb. (throughout New Guinea and in the Solomons), *S. Dufaurii* (F. v. Muell.) Diels (in British New Guinea), and *S. Schumanniana* (in Northeastern New Guinea and the Solomons). These species occur in rain-forests at comparatively low altitudes, rarely as high as 1200 m. Most Papuan species of the genus, and especially those occurring at high elevations, appear to have very restricted ranges.

Saurauia calyptrata Lauterb. in Nova Guinea Bot. 8: 838. 1912; Diels in Bot. Jahrb. 57: 446. 1922.

Saurauia eximia Ridley in Trans. Linn. Soc. II. Bot. 9: 14. pl. 1, fig. 15-19. 1916.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, alt. 2600 m., *Brass* 10908 (tree 3 m. high, on open bank of stream in forest; flowers white).

A careful comparison of the original descriptions of *S. calyptrata* and *S. eximia* indicates that only one species is concerned. It appears that Ridley misinterpreted the calyptrate bracteoles as "outer sepals" (fig. 16); these bracteoles are clearly present and completely enclose the young flowers on the present specimen. *Brass* 10908 differs from the original descriptions in having its leaf-blades sometimes up to 7 cm. long and 3.5 cm. broad, its secondary nerves occasionally 8 in number, its pedicels to 3.5 cm. long, its flowers slightly smaller, and its stamens about 40 in number; these differences seem of no more than individual consequence. The leaf-blade and the ovary-wall of the *Brass* specimen have very obvious and abundant fusiform crystal-bearing cells.

Saurauia excurrens sp. nov.

Arbor 8-10 m. alta, ramis elongatis dependulis excurrentibus, ramulis gracilibus purpurascens apicem versus leviter angulatis et squamulas parvas deltoideas obtusas sparsas gerentibus demum subteretibus et glabris; petiolis gracilibus 7-22 mm. longis canaliculatis ut ramulis decidue squamulosis; laminis chartaceis anguste lanceolato-oblongis, 10-22 cm. longis, 1.5-3.5 cm. latis, basi acutis vel attenuatis, apice gradatim acuminatis, margine inconspicue crenato-serratis (dentibus 4-6 per centimetrum minute callosis) vel subintegris, supra siccitate fuscis et glabris, subtus pallidioribus et sparsim squamulosis mox glabris, costa supra valde impressa subtus prominente, nervis lateralibus utrinsecus circiter 50 cum aliis debilioribus interspersis patentibus nervo submarginali conjunctis supra subplanis subtus prominulis, rete venularum inconspicuo vel subtus paullo prominulo; inflorescentiis fasciculatis plerumque 4-10-floris axillaribus vel e ramulis defoliatis orientibus, bracteis ut videtur nullis vel mox caducis, pedicellis gracilibus 8-11 mm.

longis inconspicue squamulosis basim versus bracteolis 2 oblongis acutis 1.5–2 mm. longis squamulosis ornatis; floribus sub anthesi 10–13 mm. diametro ubique glabris; sepalis 5 papyraceis orbiculari-oblongis rotundatis valde inaequalibus, 2 exterioribus 2–2.5 mm. longis 1.5–2 mm. latis, 3 interioribus 3–4 mm. longis et latis; petalis 5 vel 6 sub anthesi patentibus membranaceis oblongis, circiter 7 mm. longis, 3–5 mm. latis, apice rotundatis vel leviter emarginatis; staminibus 30–40 plerumque 2-seriatis 2–3 mm. longis, filamentis membranaceis ligulatis basim versus connatis, antheris oblongis 1–1.2 mm. longis obtusis basim versus dorsifixis; ovario subgloboso 1.5–2 mm. diametro, stylis 3 inferne in columnam gracilem connatis 3–3.5 mm. longis in triente superiore liberis, loculis 3.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass 13265* (TYPE), March 1939 (tree 8–10 m. high, common in open seral growths on flood-plains in rain-forest; branches long, drooping, excurrent and grouped at intervals; flowers white).

Saurauia excurrens is a very distinct species, characterized by its narrow and multinerved leaf-blades, its compact inflorescence usually best developed on the older parts of branchlets, its glabrous flowers, unequal sepals, comparatively few stamens, and three styles. In the system of Diels, it should be placed in the Series *Ramiflorae*, but its relationship to the only Papuan species of this series, *S. Rodatzii* Lauterb. & K. Schum., is remote. A better place for the new species is probably the Series *Squamulosae*; the above mentioned characters amply distinguish it from its allies, of which *S. desquamulata* Diels is perhaps the closest.

***Saurauia rubrisquamata* sp. nov.**

Arbor gracilis 3–5 m. alta, ramulis gracilibus fistulosis subteretibus mox glabris; squamulis ramulorum juvenilium, petiolorum, inflorescentiae ramulorum, et calycis rubris carnosus (ex Brass) elongato-deltaideis acutis (1–)2–4 mm. longis; petiolis 10–18 mm. longis; laminis chartaceis obovatis, 8–15 cm. longis, 4–7 cm. latis, basi late cuneatis vel obtusis, apice cuspidatis vel breviter acuminatis, margine conspicue calloso-mucronulatis (setis crassis paullo curvatis 1–2 mm. longis), utrinque hinc inde praecipue in costa nervisque squamulosis, subtus pallidioribus, costa supra paullo elevata subtus prominente, nervis lateralibus utrinsecus 5–9 arcuato-adscendentibus supra prominulis subtus elevatis, venulis supra paucis prominulis; inflorescentiis axillari-bus cymosis plerumque 3–5-floris, pedunculo gracili 3–6 cm. longo sparsim squamuloso, bracteis papyraceis obovato-oblongis cuspidatis

ad 15 mm. longis utrinque squamulosis, pedicellis gracilibus 10–22 mm. longis medium versus vel supra bracteolis 2 linearibus circiter 4 mm. longis ornatis; floribus sub anthesi circiter 3 cm. diametro; calyce ut pedicellis bracteolisque squamulis deltoideis ad 3 mm. longis interdum imbricatis ornatis, sepalis 5 papyraceis lanceolato-oblongis, 7–9 mm. longis, 3–4 mm. latis, apice obtusis; petalis 5 patentibus membranaceis anguste oblongis, 13–15 mm. longis, 5–6 mm. latis, integris, apice rotundatis; staminibus circiter 60 plerumque 2-seriatis 3.5–5 mm. longis, filamentis submembranaceis castaneis 1–2.5 mm. longis inferne connatis, antheris oblongis circiter 2.5 mm. longis; ovario depresso-subgloboso 2–3 mm. diametro glabro, stylis 5 basim versus in columnam crassam connatis 5–6 mm. longis superne liberis, stigmatibus minute capitatis.

BRITISH NEW GUINEA: Central Division, Mt. Tafa, alt. 2400 m., *Brass* 4878 (A, TYPE, NY), Aug. 27, 1933 (slender tree 3–5 m. high, plentiful on forest regrowths on landslides; leaves fleshy, rough with pale fleshy processes; pedicels and sepals covered with fleshy red scales; petals white).

Saurauia rubrisquamata is best placed in the Series *Squamulosae* as a relative of *S. desquamulata* Diels and *S. Lorentzii* Lauterb.; it differs from both in the more numerous and persistent scales of its petioles, leaf-blades, inflorescences, etc., and in its much larger flowers. From *S. desquamulata* it further differs in its leaf-blades with conspicuously callose-mucronulate margins and fewer secondaries, and from *S. Lorentzii* in its proportionately broader leaf-blades. Possibly a closer relative of the new species is *S. bifida* Warb., which Diels refers to the Series *Setosae*, although it seems somewhat transitional between the two series. *Saurauia rubrisquamata* is readily distinguished from *S. bifida* by its more conspicuous, larger, and usually less pointed scales and its large flowers.

***Saurauia belensis* sp. nov.**

Arbor parva circiter 2.5 m. alta, ramulis gracilibus purpurascentibus subteretibus juventute squamulis deltoideis obtusis circiter 1 mm. longis dispersis ornatis mox glabris; petiolis gracilibus leviter canaliculatis 7–15 mm. longis ut ramulis parce decidue squamulosis; laminis subcoriaceis obovato-ellipticis, 7–10 cm. longis, 3–4.5 cm. latis, basi obtusis et in petiolum decurrentibus, apice acuminatis (acumine angusto 5–12 mm. longo), margine anguste recurvatis et superne grosse calloso-crenulatis, utrinque glabris vel subtus disperse squamulosis, supra cellulis crystalliferis copiose ornatis, costa utrinque paullo elevata, nervis lateralibus utrinsecus 6–8 arcuato-adscendentibus supra paullo impressis

subtus prominulis, rete venularum inconspicuo supra interdum leviter impresso; inflorescentiis axillaribus cymosis ut videtur 3-floris, pedunculo gracili ad 4.5 cm. longo et pedicellis parce squamulosis, bracteis papyraceis glabris anguste obovato-oblongis circiter 10 mm. longis et 3 mm. latis, pedicellis gracilibus 1–4 cm. longis medium versus bracteolis 2 ut bracteis sed 3–6 mm. longis ornatis; floribus ubique glabris sub anthesi circiter 25 mm. diametro, segmentis perianthii cellulis crystalliferis ornatis; sepalis 5 anguste imbricatis papyraceis subaequalibus concavis suborbiculari-oblongis, 6–8 mm. longis et latis; petalis 5 submembranaeis obovato-oblongis, 13–15 mm. longis, 7–9 mm. latis, apice rotundatis vel leviter emarginatis; staminibus 80–100 plerumque 2-seriatis 3–6 mm. longis, filamentis ad 2.5 mm. longis basim versus connatis, antheris lineari-oblongis 2.5–3.5 mm. longis; ovario depresso-subgloboso circiter 3 mm. diametro pilis pallidis breviter villosis, stylis 5 gracilibus circiter 5 mm. longis ad basim liberis, stigmatibus minute capitatis.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habbema, alt. 2200 m., *Brass 11274* (TYPE), Nov. 1938 (tree 2.5 m. high, in rain-forest of flood-banks; flowers white).

Saurauia belensis is characterized by its essentially glabrous habit, sharply acuminate leaf-blades, large flowers, and conspicuous narrow bracts. It is apparently best placed in the Series *Squamulosae*, differing from *S. Lorentzii* Lauterb., probably its closest ally, in the above mentioned characters and its proportionately broader leaf-blades.

***Saurauia albiflora* sp. nov.**

Arbor parva circiter 2 m. alta, ramulis gracilibus subteretibus nigrescentibus squamulas suborbitales 0.5–1 mm. longas saepe apiculatas copiose gerentibus demum glabrescentibus; petiolis leviter canaliculatis 6–10 mm. longis ut ramulis squamulosis; laminis chartaceis siccitate fuscis oblongis vel anguste obovato-oblongis, 7–12 cm. longis, 2.5–4 cm. latis, basi acutis, apice inconspicue cuspidatis, margine subintegris vel obscure calloso-crenulatis, supra glabris (in costa interdum parce squamulosis), subtus in costa nervisque squamulis ut eis ramulorum hinc inde ornatis, costa supra acute elevata subtus prominente, nervis lateralibus utrinsecus 13–18 (cum aliis debilioribus interspersis) patentibus valde curvatis et marginem versus adscendentibus supra subplanis subtus prominulis, rete venularum inconspicuo supra interdum impresso; inflorescentiis breviter cymosis vel pseudofasciculatis ad 1.5 cm. longis 1–3-floris, pedunculo brevi pedicellisque nigrescentibus parce squamulosis glabrescentibus, bracteis anguste oblongis 2–3 mm. longis acutis, pedicellis gracilibus sub anthesi 5–9 mm. longis minute bibracteo-

latis cum calyce articulatis; floribus glabris, sepalis 5 inaequalibus concavis chartaceis suborbicularibus rotundatis, 2 exterioribus 3–3.5 mm. 2 interioribus 4–5 mm. diametro; petalis 5 patentibus submembranaceis oblongis, circiter 8 mm. longis et 4 mm. latis, apice rotundatis; staminibus numerosissimis (circiter 150) pluriseriatis, filamentis 2–4 mm. longis basim versus connatis superne filiformibus, antheris oblongis circiter 1.5 mm. longis; ovario subconico 1–1.5 mm. longo glabro, stylis 5 circiter 2 mm. longis in columnam ad apicem connatis, stigmatibus minute divaricatis.

NETHERLANDS NEW GUINEA: Balim River, alt. 1800 m., *Brass* 11767 (TYPE), Dec. 1938 (tree 2 m. high, rare in sparse secondary forest; flowers white).

A member of the Series *Squamulosae*, *S. albiflora* is closely related only to *S. Dufaurii* (F. v. Muell.) Diels, from which it differs in its more numerous and more definitely spreading secondary nerves, its short pedicellate flowers, and the absence of scales from its calyces.

***Saurauia macrantha* sp. nov.**

Arbor ad 22 m. alta, ramulis crassis fistulosis squamulas suborbiculares umbonatas circiter 1 mm. diametro copiose gerentibus atque aculeis ad 1.5 mm. longis hinc inde saepe armatis; foliis apicem ramulorum versus saepe aggregatis, petiolis crassis leviter canaliculatis 1–5 cm. longis squamulis ut eis ramulorum vel deltoideo-cuspidatis dense praeditis; laminis subcoriaceis siccitate fusco-olivaceis oblongis vel obovato-oblongis, 10–23 cm. longis, 4–8.5 cm. latis, basi obtusis et interdum inaequilateralibus, apice obtusis saepe apiculatis, margine dentibus inconspicuis callosis 3–7 per centimetrum crenulatis, supra praeter costam sparse umbonato-squamulosam glabris, subtus squamulis parvis umbonatis vel interdum setiformibus et patentibus praecipue in costa nervisque ornatis, costa supra prominula subtus prominente, nervis secundariis utrinsecus 12–20 arcuatis supra prominulis subtus paullo elevatis, rete venularum subimmerso; inflorescentiis axillaribus paniculatis sub anthesi 4–14 cm. longis plerumque 3–5-floris, pedunculo, bracteis, pedicellis ut ramulis squamulosis, pedunculo gracili apice flores saepe congestos gerentibus, bracteis anguste oblongis acutis ad 5 mm. longis mox caducis, pedicellis gracilibus ad 30 mm. longis, bracteolis 2 inconspicuis vel nullis; floribus sub anthesi circiter 25 mm. diametro; sepalis 5 inaequalibus, 2 exterioribus subcoriaceis oblongis apice rotundatis, 6–9 mm. longis, 6–7 mm. latis, extus squamulis adpressis deltoideo-suborbicularibus plerumque obtusis saepe mucronulatis praeditis, 3 interioribus papyraceis orbiculari-obovatis rotundatis, 12–15 mm. longis, 9–15 mm. latis, glabris

vel ad lineam medianam dorso parce squamulosis; petalis 5 glabris sub anthesi patentibus tenuiter carnosius vel submembranaceis obovato-oblongis, 13–16 mm. longis, 8–11 mm. latis, apice rotundatis; staminibus numerosissimis pluriseriatis, filamentis liberis filiformi-ligulatis gracilibus 2–4 mm. longis, antheris oblongis 2.5–3.5 mm. longis; ovario glabro conico circiter 3 mm. longo, stylis 5 ad apicem in columnam crassam circiter 5 mm. longam coalitis, stigmatibus minute capitatis subcohaerentibus.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, alt. 2700–2800 m., *Brass & Versteegh 10497* (TYPE), Nov. 7, 1938 (tree 22 m. high, common in old secondary forest in a valley, the trunk 28 cm. diam., the crown not wide-spreading, the bark black, 7 mm. thick, fissured, rough, the wood yellow; flowers white), *Brass 10780* (tree to 18 m. high, frequent in older secondary forest on landslips and banks of creeks; flowers white).

Apparently a member of the Series *Squamulosae*, *S. macrantha* does not seem closely related to any described species. Its closest ally is perhaps *S. Gjellerupii* Lauterb., from which it obviously differs in its squamulate indument, the obtuse apex of its leaf-blades, its comparatively few-flowered inflorescence, and its much larger flowers. The presence of a few obscure thorns on the branchlets may indicate a relationship with such species of the Series *Armatae* as *S. sterrolepida* Diels, a species with a contracted inflorescence and much smaller flowers and leaf-blades, the latter with only 5 or 6 lateral nerves.

***Saurauia fimbriata* sp. nov.**

Arbor 4–5 m. alta, ramulis purpurascens subteretibus fistulosis squamulas adpressas deltoideas ad 1.5 mm. longas obtusas margine erosulas vel fimbriatas gerentibus demum glabrescentibus; petiolis canaliculatis 1.5–4 cm. longis ut ramulis squamulosis; laminis chartaceis oblongo-ellipticis, 12–21 cm. longis, 4.5–8 cm. latis, basi obtusis, apice conspicue acuminatis (acumine ad 15 mm. longo), margine dentibus parvis spinulosis 3–5 per centimetrum crenulatis, supra siccitate fuscis glabris, subtus pallidioribus et squamulis ut eis ramulorum vel piliformibus praecipue in costa nervisque ornatis, costa supra paullo elevata subtus prominente, nervis secundariis utrinsecus 10–13 adscendentibus utrinque paullo elevatis, rete venularum intricato subtus leviter prominulo; inflorescentiis axillaribus paniculatis vel pseudocymosis 3–9-floris sub anthesi ad 8 cm. longis, pedunculo gracili ut ramulis foliatis squamulosis; squamulis bractearum, bracteolarum calycisque stramineis adpressis imbricatis oblongis vel elongato-deltoideis obtusis ad 1 mm. longis

margine saepe conspicue multifimbriatis; bracteis papyraceis oblongis 7–12 mm. longis, pedicellis ad 17 mm. longis bracteolas 2 vel 3 calyci adpressas apice gerentibus, bracteolis submembranaceis elliptico-oblongis apice rotundatis, 6–9 mm. longis, 4–7 mm. latis; sepalis 5 papyraceis vel submembranaceis concavis ellipticis, 9–10 mm. longis, 6–8 mm. latis, apice rotundatis; petalis 5 membranaceis elliptico-oblongis glabris, 10–12 mm. longis, 5–6 mm. latis, apice plerumque emarginatis; staminibus 100–125, 2- vel 3-seriatis 3.5–5.5 mm. longis, filamentis membranaceis 1.5–3 mm. longis basim versus connatis superne ligulato-filiformibus, antheris lineari-oblongis 2–2.5 mm. longis acutis; ovario subgloboso 2–3 mm. diametro pilis pallidis circiter 1 mm. longis dense tomentoso, stylis 5 triente inferiore coalitis 4–5 mm. longis superne gracilibus, stigmatibus capitatis.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, alt. 850 m., *Brass* 13394 (TYPE), March 1939 (tree 4–5 m. high, common in young seral growths on sandy flood-banks in rain-forest; flowers white).

Saurauia fimbriata is a very distinct species of the Series *Squamulosae*, readily distinguished by its conspicuous (but scarcely enveloping) bracts and bracteoles, which, together with the sepals, are densely squamulate with imbricate and beautifully fimbriate scales. Its closest relative may be *S. iboana* Diels, from which it differs in its proportionately broader leaf-blades, more numerous flowers, and pubescent ovary, as well as in the scales of the inflorescence.

Saurauia Schumanniana Diels in Bot. Jahrb. 57: 448. 1922.

Saurauia rosea Lauterb. & K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzg. Südsee 446. 1901; Rechinger in Denkschr. Akad. Wiss. Wien 89: 579. 1913; non *S. rosea* Jungh. (1841).

SOLOMON ISLANDS: Bougainville: Keita, near sea-level, *Kajewski* 1527. Florida (N'Gela): alt. 50 m., *Brass* 3506. Ysabel: Meringe, alt. 250 m., *Brass* 3188. Guadalcanal: Uulolo, Tutuve Mt., alt. 1200 m., *Kajewski* 2523. San Cristoval: Huro River, *Brass* 2608; Hinuahaoro, alt. 900 m., *Brass* 3038.

Saurauia Schumanniana has previously been reported from several collections in Northeastern New Guinea and also from Bougainville (by Rechinger). It appears to occur in some abundance in the Solomons, where Brass and Kajewski report it as a large shrub or a small tree sometimes up to 12 m. high, with white or pale pink petals. A common name is *teng-eng-sorsor* (Guadalcanal).

Saurauia purgans Burt, as represented by *Waterhouse* 33 (Y, type

coll.) from Bougainville, is very close to *S. Schumanniana* and doubtfully distinct from it. The hairs of the calyx are slightly denser, crisper, and more spreading than those found on the above-cited specimens, but this is a character of dubious specific value in *Saurauia*.

Saurauia holotricha Diels in Bot. Jahrb. **57**: 450. 1922.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, alt. 1750 m., *Brass* 12228 (small tree to 3 m. high, common in rain-forest gullies; branches spreading; flowers white).

The species has previously been reported only from the neighboring Sepik region in Northeastern New Guinea. Our specimen agrees very well with the original description in all details except its somewhat shorter sepals.

Saurauia Dielsiana sp. nov.

Arbor parva ad 6 m. alta, ramulis gracilibus subteretibus fistulosis juventute pilis ad 2 mm. longis dense setosis vel strigosis demum glabrescentibus; petiolis gracilibus 10–15 mm. longis ut ramulis pubescentibus; laminis chartaceis obovato-ellipticis, 8–16 cm. longis, 3–6 cm. latis, basi acutis, apice cuspidatis vel acuminatis (acumine ad 1 cm. longo), margine dentibus parvis spinulosis numerosis inconspicue crenulatis, supra fuscis breviter strigosis demum glabrescentibus, subtus pilis pallide brunneis crispulis simplicibus 0.5–1 mm. longis ubique et uniformiter setosis vel strigosis, costa supra paullo elevata subtus prominente, nervis secundariis utrinsecus 8–12 arcuatis vel adscendentibus supra subplanis subtus prominulis, venulis plerumque planis; inflorescentiis axillaribus paniculatis sub anthesi 4–9 cm. longis plerumque 6–12 (–25)-floris, pedunculo, ramulis, pedicellis sepalisque ut ramulis foliatis pubescentibus (pilis ad 2 mm. longis); bracteis papyraceis extus vel utrinque setosis nunc foliaceis et ad 15 mm. longis et 6 mm. latis nunc lineari-oblongis vel ellipticis et 3–6 mm. longis demum caducis; pedicellis gracilibus ad 13 mm. longis bracteolas 2 ut bracteas sed 2–5 mm. longas caducas gerentibus; sepalis 5 papyraceis oblongis, 5–7 mm. longis, 3–4 mm. latis, apice obtusis vel acutis, interioribus margine glabris; petalis 5 membranaceis glabris oblongis, 6–11 mm. longis, 3–4 mm. latis, apice leviter emarginatis vel rotundatis; staminibus plerumque 100–150 et pluriseriatis 2–4 mm. longis, filamentis ligulato-filiformibus 1–2.5 mm. longis basim versus cohaerentibus, antheris dorsifixis oblongis 1–1.8 mm. longis acutis; ovario glabro depresso-subgloboso 2–4 mm. diametro, stylis 5 infra medium vel basi coalitis 3–4 mm. longis superne liberis et gracilibus, stigmatibus minute capitatis.

BRITISH NEW GUINEA: Central Division, Mafulu, alt. 1250 m., *Brass* 5414 (A, TYPE, NY), Nov. 1, 1933 (common small tree of secondary forest growths; flowers white); Mt. Tafa, alt. 2400 m., *Brass* 4837 (A, NY) (tree 2.5–3 m. high, common on brushy banks of a gully in forest; leaves dull; flowers pale pink); Eastern Division, U-uma River headwaters, *Brass* 1462 (tree to 6 m. high, in riverine rain-forest; leaves pale and prominently nerved beneath; flowers pink).

I cannot agree with Diels (in Jour. Arnold Arb. 10: 241. 1929) in referring *Brass* 1462 to *S. Andreana* (F. v. Muell.) Oliver of Queensland, which, however, is apparently a closely related species. *Saurauia Dielsiana* differs from *S. Andreana* in having its inflorescence much longer, freely branched, and with many (rather than 1–3) flowers, its pedicels longer, and its petals oblong rather than obovate or orbicular-obovate. Both species are perhaps best referred to the Series *Setosae*; among Papuan species of this series, *S. holotricha* Diels is related to the new species but differs in the long setose hairs of its branchlets, petioles, and leaf-nerves, its shorter inflorescence, larger flowers, etc. *Saurauia Dielsiana* also bears a resemblance to such species of the Series *Rufae* as *S. egregia* Diels, from which it differs in its lack of swollen scales on the branchlets, the simple hairs of the lower surfaces of leaves, its acute leaf-base, fewer secondaries, etc.

Brass 4837, occurring at higher elevations than the other two specimens cited, disagrees with them in having slightly longer pubescence, more ascending secondaries, longer petals, and fewer stamens; these differences appear to me of little more than individual consequence and are included in the description.

***Saurauia Kajewskii* sp. nov.**

Arbor parva ad 10 m. alta, ramulis purpurascens fistulosis juvenute pilis circiter 2 mm. longis densissime adpresso-strigosis mox glabrescentibus; petiolis 15–22 mm. longis ut ramulis strigosis; laminis chartaceis oblongo-ellipticis, 14–23 cm. longis, 6–10 cm. latis, basi obtusis, apice acuminatis (acumine conspicuo ad 15 mm. longo), margine dentibus callosis et setosis inconspicuis 6–8 per centimetrum ornatis, utrinque praecipue subtus pilis subadpressis 1–2 mm. longis sericeis vel crispulo-strigosis indutis, costa utrinque elevata, nervis secundariis utrinsecus 10–13 arcuato-adscendentibus supra planis subtus prominulis, venulis inconspicuis; inflorescentiis axillaribus vel e ramulis infra folia orientibus paniculatis sub anthesi 5–10 cm. longis 3–9-floris, pedunculo, ramulis, pedicellis, bracteis, bracteolis sepalisque ut ramulis foliatis dense ferrugineo-strigosis; bracteis linearibus circiter 10 mm. longis et

2 mm. latis, bracteolis infra medium pedicellorum sed minoribus, pedicellis gracilibus 10–25 mm. longis; sepalis 5 subcoriaceis deltoideo-oblongis acutis sub fructu ad 10 mm. longis et 6–8 mm. latis; petalis 5 submembranaceis oblongis, 8–10 mm. longis, apice leviter emarginatis; staminibus numerosissimis pluriseriatis 2–4 mm. longis, filamentis ligulatis 1.5–2.5 mm. longis basi cohaerentibus, antheris anguste oblongis obtusis 1.5–2 mm. longis; ovario depresso-subgloboso glabro, stylis 5 circiter 4 mm. longis ad basim liberis, stigmatibus minute capitatis.

SOLOMON ISLANDS: *Bougainville*: Kupei Village, alt. 750 m., *Kajewski 1726* (TYPE), April 16, 1930 (small tree to 10 m. high, common in rain-forest; petals white; anthers yellow; fruit light green, depressed-globose, about 11 by 15 mm., the pericarp more or less transparent).

Saurauia Kajewskii falls into the Series *Setosae* and appears related to *S. holotricha* Diels and the preceding new species (*S. Dielsiana*). From the former it differs in the closer and subappressed (rather than spreading) hairs of branchlets, leaves, and inflorescences, in its larger leaf-blades, more copiously branching inflorescences, and proportionately broader sepals. From the latter it is readily distinguished by the more copious pubescence throughout, the larger leaf-blades, fewer and larger flowers, etc. *Saurauia Kajewskii* is not closely related to the few other species known from the Solomons.

Saurauia Brassii Diels in Jour. Arnold Arb. **10**: 81, 240. 1929.

BRITISH NEW GUINEA: Central Division, Kubuna, alt. 100 m., *Brass 5624* (A, NY) (erect small tree, not common, in forest on river-bank; branches few; flowers white).

The second collection of this species agrees perfectly with the type, having its leaf-blades, however, up to 40 cm. long and 15 cm. broad. As flowers were lacking from the original collection, I add a description of the inflorescences:

Inflorescences loosely short-paniculate, 1.5–4 cm. long at anthesis, arising from defoliate branchlets, the few branches, bracts, pedicels, and bracteoles sparsely puberulent and soon glabrous; bracts and bracteoles oblong, obtuse, 1–2 mm. long; pedicels slender, 5–20 mm. long, the flowers at anthesis 15–18 mm. in diameter; sepals 5, erecto-patent, papyraceous, elliptic or obovate, 6–7 mm. long, 4–5 mm. broad, rounded at apex, sparsely puberulent and soon glabrous; petals 5, subspreading, submembranous, obovate-oblong, 8–9 mm. long, 3–4 mm. broad, usually emarginate at apex; stamens about 100, 3–4 mm. long, 2–4-seriate, the filaments membranous, 1.5–2.5 mm. long, firmly connate toward base, the anthers narrowly oblong, 2–2.5 mm. long, dehiscing by short oval

pores; ovary glabrous, subglobose, 2–2.5 mm. in diameter at anthesis, the styles 5, about 3.5 mm. long, free nearly to base, the stigmas minutely capitate.

***Saurauia collina* sp. nov.**

Arbor circiter 3 m. alta, ramulis subteretibus apicem versus ad 7 mm. diametro et pilis 4–7 mm. longis densissime setosis demum glabrescentibus et papilloso-rugulosis; petiolis ad 12 mm. longis ut ramulis setosis; laminis chartaceis anguste obovato-oblongis, 11–19 cm. longis, 3.5–6 cm. latis, basi obtusis, apice abrupte cuspidatis vel breviter acuminatis, margine pilis 5–8 per centimetrum ad 3 mm. longis calloso-setulosis ornatis, utrinque praecipue in costa parce strigosis (pilis 2–3 mm. longis) demum subglabris, costa utrinque elevata, nervis lateralibus utrinsecus circiter 11 arcuato-adscendentibus supra planis subtus elevatis, rete venularum interdum subtus leviter prominulo; floribus paucis ut videtur subfasciculatis vel breviter paniculatis, bracteis bracteolisque parvis setosis, pedicellis gracilibus ad 11 mm. longis pilis circiter 1.5 mm. longis setosis; floribus ubique glabris, sepalis 5 papyraceis oblongis, 5–7 mm. longis, 3–4 mm. latis, apice obtusis, interioribus marginem versus scariosis; petalis 5 submembranaceis oblongis, 6–7 mm. longis, 2.5–3 mm. latis, apice rotundatis vel leviter emarginatis; staminibus 35–40 uniseriatis 3.5–5 mm. longis, filamentis submembranaceis ligulatis 1.5–2.5 mm. longis laxe connatis, antheris oblongis 2–3 mm. longis, tubulis apicem versus distinctis; ovario glabro subgloboso circiter 3 mm. diametro, stylis 5 fere ad basim liberis circiter 3 mm. longis, stigmatibus capitatis.

BRITISH NEW GUINEA: Central Division, Iawarere, alt. about 350 m., *Brass* 667 (TYPE), Nov. 22, 1925 (small tree about 3 m. high, in foothill forest; petals pink).

The cited specimen was merely referred to the genus by Diels (in Jour. Arnold Arb. 10: 241. 1929), doubtless because of the scarcity of flowers on the specimen. In spite of this, the material is sufficiently ample to indicate that an undescribed species of the Series *Setosae* is represented. Its relationship is with *S. Brassii* Diels, from which it differs in the finer and denser hair-like paleae of the distal portions of its branchlets, its strigose rather than essentially glabrous leaf-blades, its setose pedicel, and its slightly smaller flowers with fewer stamens and with filaments laterally connate in a single series.

***Saurauia idenburgensis* sp. nov.**

Arbor parva 2–3 m. alta, ramulis subteretibus gracilibus apicem versus pilis ad 8 mm. longis densissime setosis demum glabrescentibus; petiolis

crassis 12–25 mm. longis ut ramulis setosis; laminis papyraceis lanceolato-obovatis, 20–30 cm. longis, 5.5–7.5 cm. latis, basi gradatim attenuatis, apice acutis vel inconspicue acuminatis, margine integris setosis, utrinque praecipue in costa nervisque pilis longis setuliferis strigosis (pilis costae subtus copiosis patentibus curvatis 3–7 mm. longis), costa supra elevata subtus prominente, nervis lateralibus utrinsecus 13–16 arcuato-adscedentibus utrinque valde prominulis, rete venularum inconspicuo utrinque interdum leviter prominulo; inflorescentiis paucis apicem ramulorum versus axillaribus ad 5 cm. longis ut videtur 1–3-floris, pedunculo, bracteis pedicellisque pilis patentibus 3–7 mm. longis dense et conspicue setosis; bracteis papyraceis lanceolatis, 15–18 mm. longis, circiter 3 mm. latis, pedicellis 5–8 mm. longis, bracteolis 2 ut bracteis sed circiter 10 mm. longis mox caducis; floribus sub anthesi circiter 4 cm. diametro, sepalis 5 erecto-patentibus papyraceis oblongis, 13–15 mm. longis, 5–7 mm. latis, extus dense setosis (pilis circiter 3 mm. longis patentibus curvatis), apice obtusis, interioribus marginem versus scariosis; petalis 5 membranaceis anguste spathulato-oblongis, circiter 22 mm. longis et 8 mm. latis, basim versus ad 4 mm. angustatis, apice rotundatis vel leviter emarginatis; staminibus numerosis (60–80) 2- vel 3-seriatis 5–8 mm. longis, filamentis stramineis 3–5 mm. longis basim versus connatis superne anguste ligulatis, antheris basim versus dorsifixis oblongis 3–4 mm. longis acutis; ovario depresso-subgloboso 3–4 mm. diametro minute et dense tomentello, stylis 5 in columnam crassam coalitis circiter 5 mm. longis apicem versus liberis, stigmatibus minute capitatis.

NETHERLANDS NEW GUINEA: 6 km. southwest of Bernhard Camp, Idenburg River, alt. 1200 m., *Brass 12977* (TYPE), Feb. 1939 (tree 2–3 m. high, frequent in rain-forest undergrowth of gullies and ridges; petals pinkish white).

A member of the Series *Setosae*, *S. idenburgensis* is related to *S. amplifolia* Diels, *S. mollissima* Ridley, and *S. mamberamana* Diels, differing from them in details of pubescence and leaf-shape, its few secondary nerves, its large flowers, etc.

***Saurauia Archboldiana* sp. nov.**

Arbor parva circiter 2 m. alta, ramulis crassis subteretibus fistulosis squamulis stramineis lanceolatis (3–6 mm. longis, basi 0.5–1 mm. latis) imbricatis subadpressis dense indutis demum glabrescentibus; petiolis crassis 5–10 mm. longis anguste alatis ut ramulis squamulas minores gerentibus; laminis chartaceis obovato-oblongis, 15–27 cm. longis, 6.5–8.5 cm. latis, basim versus gradatim angustatis, basi ipso obtusis et in petiolum decurrentibus, apice subacutis vel breviter cuspidatis, mar-

gine dentibus spinulosis 3–5 per centimetrum inconspicue serratis, utrinque praecipue in costa nervisque pilis brevibus interdum subsquamulaceis adpressis disperse strigosis, costa supra subplana vel leviter depressa subtus prominente, nervis secundariis utrinsecus 15–27 erectopatentibus supra subplanis subtus valde prominulis, venulis subtus saepe leviter prominulis; inflorescentiis axillaribus sub anthesi circiter 4 cm. longis plerumque 3-floris, pedunculo, bracteis, pedicellis sepalisque dense et conspicue setosis (pilis subadpressis vel subpatentibus complanatis ad 6 mm. longis); bracteis papyraceis ellipticis foliaceis ad 25 mm. longis et 15 mm. latis interdum multo minoribus, pedicellis ad 25 mm. longis; floribus sub anthesi 3–4 cm. diametro, sepalis 5 subcoriaceis oblongis, 11–13 mm. longis, 5–7 mm. latis, apice rotundatis vel obtusis, marginem versus saepe scariosis; petalis tenuiter carnosus vel submembranaceis oblongis, 17–19 mm. longis, 7–10 mm. latis, apice rotundatis vel leviter emarginatis; staminibus numerosis (80–100) 2- vel 3-seriatis 5–7 mm. longis, filamentis 2.5–4 mm. longis basi interdum subcohaerentibus, antheris dorsifixis anguste oblongis 4–4.5 mm. longis, tubulis apicem versus distinctis; ovario glabro subconico circiter 4 mm. diametro, stylis 5 fere ad basim liberis circiter 5 mm. longis, stigmatibus minute capitatis.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habbema, alt. 2300 m., *Brass 11231* (TYPE), Nov. 1938 (tree 2 m. high, occasional in moist sheltered hollows in forest undergrowth; flowers white).

Saurauia Archboldiana, belonging in the Series *Setosae*, is characterized by its large many-nerved leaf-blades which are short-strigose on both surfaces, its few-flowered inflorescences with elongate setae, and its large flowers. Probably belonging in the same group as the preceding new species (*S. idenburgensis*), *S. Archboldiana* differs from that and its allies not only in its indument, but also in its large bracts, glabrous ovary, etc.

Saurauia sterrolepida Diels in Bot. Jahrb. **57**: 453. 1922.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass 9353* (erect small tree or shrub 3–4 m. high, common along streams in forest; flowers white); 9 km. northeast of Lake Habbema, alt. 2900 m., *Brass 10705* (compact small tree to 2 m. high, common in shrubby forest openings on wet sandy soil; flowers white); Bele River, 18 km. northeast of Lake Habbema, alt. 2200 m., *Brass 11079* (low tree about 2 m. high, abundant in grassy second forest growth; leaves stiff; flowers white; fruit red).

Although this species, originally reported from a single collection from

the Bismarck Mountains, is known to me only from the description, I have little hesitation in referring to it the cited specimens. The species is well marked by its stout spines, small leaves, and compact inflorescences.

***Saurauia alpicola* sp. nov.**

Arbor ad 5 m. alta, ramulis crassis aculeis paucis ad 2 mm. longis hinc inde armatis atque squamulis orbiculari-deltaideis spinulosis ad 1 mm. longis imbricatis dense praeditis demum glabrescentibus; petiolis crassis 10–20 mm. longis ut ramulis dense squamulosis; laminis subcoriaceis anguste oblongis, 8–18 cm. longis, 3–6 cm. latis, basi obtusis, apice breviter cuspidatis, margine dentibus parvis calloso-spinulosis 4–7 per centimetrum inconspicue crenulatis, supra glabris, subtus squamulis minutis interdum spinulosis vel fimbriatis disperse scabrido-papillosis, in costa subtus etiam interdum aculeatis, costa supra paullo impressa subtus prominente, nervis secundariis utrinsecus 12–20 arcuatis supra leviter insculptis subtus prominulis, rete venularum subimmerso; inflorescentiis apicem ramulorum versus axillaribus sub anthesi 5–13 cm. longis plerumque 1–3-floris, pedunculo, bracteis pedicellisque aculeis numerosis ad 1.5 mm. longis valde papilloso-rugosis, pedunculo crasso ad 9 cm. longo; bracteis subcoriaceis oblongis 15–20 mm. longis, pedicellis ad 25 mm. longis sed plerumque multo brevioribus, bracteolis mox caducis; floribus sub anthesi 5–6 cm. diametro; sepalis 5 valde inaequalibus, 2 exterioribus coriaceis obtusis oblongis, 10–14 mm. longis, 7–10 mm. latis, extus dense spinulosis (spinulis crassis ad 1.5 mm. longis interdum minoribus et squamulaceis), 3 interioribus tenuiter carnosius vel submembranaceis obovato-ellipticis, 18–28 mm. longis, 15–25 mm. latis, apice rotundatis, glabris vel tertio partim spinuloso; petalis 5 carnosius patentibus obovato-ellipticis, 22–30 mm. longis, 15–23 mm. latis, apice profunde emarginatis; staminibus numerosis (circiter 125) 2- vel 3-seriatis subaequalibus 7–8 mm. longis, filamentis anguste ligulatis 3.5–5 mm. longis liberis vel basi cohaerentibus, antheris pallidis dorsifixis crassis oblongis, 3–3.5 mm. longis; ovario glabro breviter conico 3–4 mm. diametro, stylis 12–13 mm. longis in columnam crassam triquetram omnino connatis, stigmatibus 3 subconnatis, loculis 3.

NETHERLANDS NEW GUINEA: Lake Habbema, alt. 3225 m., *Brass* 9140 (common marginal tree 4–5 m. high, in forest of moist hollows; branches erect and armed with prickles; flowers pale green); 7 km. northeast of Wilhemina-top, alt. 3560 m., *Brass & Myer-Drees* 9952 (TYPE), Sept. 1938 (flat-topped tree 5 m. high, represented by several examples in soil-pockets on a warm cliff-face; flowers greenish white).

Saurauia alpicola, belonging in the Series *Armatae*, is characterized by having the large leaf-blades conspicuously papillose-scabrid beneath with peculiar scale-like fimbriate papillae, the peduncle, pedicels, and outer sepals conspicuously rugose-spinescent, the flowers very large in all parts, and the styles 3 and completely connate. These characters amply distinguish the new species from the known species of the *Armatae*, to none of which it seems closely related.

***Saurauia tafana* sp. nov.**

Frutex vel arbor parva 2–4 m. alta, ramulis subteretibus juventute pilis ferrugineis circiter 1 mm. longis basi incrassatis dense setosis demum glabrescentibus; petiolis gracilibus 13–18 mm. longis ut ramulis densissime et breviter setosis; laminis chartaceis oblongo-ellipticis, 8–13 cm. longis, 3–5 cm. latis, basi subacutis, apice breviter cuspidatis, margine integris et copiose setosis, utrinque praecipue in costa nervisque pilis ad 1 mm. longis dense ferrugineo-hirsutis (pilis supra subadpressis subtus patentibus) costa supra subplana subtus prominente, nervis lateralibus utrinsecus 7–10 arcuato-adscedentibus supra subplanis subtus elevatis, rete venularum subtus saepe prominulo; inflorescentiis axillaribus sub anthesi 3–10 cm. longis plerumque 3-floris, pedunculo, bracteis, pedicellis bracteolisque pilis 0.5–1 mm. longis dense ferrugineo-setosis; pedunculo ad 7 mm. longo, bracteis papyraceis breviter stipitatis elliptico-oblongis ad 10 mm. longis et 4 mm. latis, pedicellis ad 15 mm. longis, bracteolis ut bracteis sed minoribus; sepalis 5 subcoriaceis obtusis oblongis, 7–9 mm. longis, 5–7 mm. latis, extus pilis circiter 4 mm. longis dense setoso-strigosis; petalis 5 erecto-patentibus submembranaceis vel papyraceis oblongis, 13–15 mm. longis, circiter 6 mm. latis, apice rotundatis vel leviter emarginatis; staminibus numerosis (120–140) 3–6 mm. longis plerumque 3-seriatis, filamentis subcoriaceis 2–4 mm. longis inferne connatis superne anguste ligulatis, antheris basifixis oblongis 2–3 mm. longis; ovario glabro depresso-globoso sub anthesi circiter 6 mm. diametro, stylis 5 basim versus in columnam crassam coalitis circiter 6 mm. longis in triente superiore liberis, stigmatibus capitatis.

BRITISH NEW GUINEA: Central Division, Mt. Tafa, alt. 2400 m., Brass 4963 (A, TYPE, NY), Sept. 3, 1933 (bush or small tree 2–4 m. high, very common in forest secondary growths on clearings; indument of inflorescence and lower leaf-surface red; leaf-blades pale brown-pubescent above; petals white, pink-tinged).

Saurauia tafana is probably best placed in the Series *Rufae*, where it seems most closely related to *S. buddleifolia* Diels, differing in having its leaf-blades cuspidate (rather than obtuse) at apex and subacute (rather

than subrotund) at base, its secondary nerves fewer, its flowers obviously pedicellate, and its styles more highly connate. The new species also bears a resemblance to *S. Poolei* White & Francis, placed in the Series *Setosae* by its describers, but differs in its denser and longer tomentum throughout, its narrower and differently shaped leaf-blades, partially connate styles, etc.

***Saurauia arcana* sp. nov.**

Arbor parva circiter 2 m. alta, ramulis gracilibus subteretibus juventute squamulis pallidis angustis fragilibus 2–3 mm. longis acutis praeditis mox glabrescentibus; petiolis gracilibus canaliculatis 1–3 cm. longis supra saepe breviter squamulatis mox glabris; laminis papyraceis obovato-oblongis, 8–16 cm. longis, 3.5–6 cm. latis, basi acutis, apice breviter cuspidatis, margine integris et setis curvatis ad 2 mm. longis basi incrassatis 3–5 per centimetrum ornatis, supra costa pallide squamulosa excepta inconspicue papilloso-rugosis vel glabris, subtus primo praecipue in costa pallide et arcte lanatis mox glabris, costa utrinque elevata, nervis secundariis utrinsecus 11–15 arcuato-adscendentibus utrinque prominulis, rete venularum inconspicuo; inflorescentiis simplicibus paucis axillaribus sub anthesi 3–7 cm. longis 1–3-floris, pedunculo gracili saepe squamulis subadpressis 1–1.5 mm. longis mox caducis sparse setoso-squamulato ac etiam arcte et pallide tomentello demum glabrescente; bracteis 2 conspicuis papyraceis inconspicue reticulato-nervatis circiter 18 mm. longis apiculatis mox glabrescentibus, basi connatis, ante anthesim flores includentibus; pedicellis subnullis, sepalis 5 submembranaceis vel papyraceis orbiculari-oblongis, 8–14 mm. longis, 6–12 mm. latis, apice rotundatis, marginem versus saepe scariosis, utrinque dense et pallide tomentellis glabrescentibus, ubique cellulis crystalliferis aureis numerosis ornatis; petalis 5 membranaceis glabris obovato-oblongis, 18–22 mm. longis, 12–14 mm. latis, apicem versus undulato-rotundatis; staminibus 80–100 valde inaequalibus 5–10 mm. longis plerumque 3-seriatis, filamentis membranaceis 3–7 mm. longis basim versus connatis, antheris dorsifixis oblongis 2.5–3 mm. longis acutis; ovario depresso-subconico sub anthesi 3–4 mm. diametro dense et pallide tomentello, stylis 3 basim versus in columnam crassam coalitis 7–8 mm. longis superne liberis, stigmatibus capitatis.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, alt. 1800 m., *Brass 12034* (TYPE), Jan. 1939 (tree 2 m. high, in undergrowth of a ravine; flowers white).

The new species, referable to the Series *Bibracteatae*, is closely related to the only previously described species of this group, *S. bibracteata*

Lauterb., differing in its thinner and smaller leaf-blades with longer petioles and in its sessile and much larger flowers.

***Saurauia congestiflora* sp. nov.**

Arbor ad 15 m. alta, ramulis gracilibus purpurascentibus subteretibus juventute squamulis peltato-ellipticis ad 1 mm. longis breviter fimbriatis dense ornatis demum glabrescentibus; petiolus gracilibus 1.5–4 cm. longis ut ramulis decidue squamulatis; laminis chartaceis elliptico-oblongis, 13–26 cm. longis, 5–10 cm. latis, basi obtusis et saepe inaequilateralibus, apice subacutis vel breviter cuspidatis, margine dentibus minutis callosis 5 vel 6 per centimetrum ornatis, supra glabris et cellulis crystalliferis copiose praeditis, subtus squamulis minutis ferrugineis copiosissime fimbriatis dense tomentellis demum subglabris, costa supra leviter paullo elevata subtus prominente, nervis secundariis utrinsecus 12–20 erecto-patentibus supra prominulis subtus elevatis, rete venularum conspicuo supra leviter subtus valde prominulo; inflorescentiis compactis axillaribus sub anthesi 4–8 cm. longis circiter 20-floris, pedunculo gracili ad 6 cm. longo et bracteis ut foliorum facie inferiore squamulatis; bracteis 2 vel 3 submembranaceis conspicue nervatis late ovatis circiter 2 cm. longis et latis, margine calloso-serrulatis, apice subacutis, ante anthesim flores includentibus; bracteolis numerosis ut bracteis sed minoribus, saepe circiter 10 mm. longis et 3 mm. latis; pedicellis gracilibus ad 5 mm. longis squamulis fimbriatis dense ferrugineo-tomentellis; sepalis 5 papyraceis vel submembranaceis obovato-oblongis, 7–9 mm. longis, 4–5 mm. latis, apice obtusis, extus pilis circiter 1 mm. longis adpresso-setosis ac etiam arcte squamuloso-tomentellis; petalis 5 membranaceis oblongis circiter 10 mm. longis et 5–6 mm. latis, apice rotundatis vel leviter emarginatis, margine saepe undulatis; staminibus circiter 50 plerumque 2-seriatis 3–6 mm. longis, filamentis gracilibus 2–4 mm. longis basi connatis superne filiformibus, antheris crassis oblongis 1.5–2 mm. longis; ovario ovoideo sub anthesi circiter 4 mm. longo glabro, stylis 5 ad basim liberis circiter 5 mm. longis, stigmatibus minute capitatis.

NORTHEASTERN NEW GUINEA: Morobe District, Sattelberg, alt. about 900 m., *Clemens* 340 (TYPE), Oct. 4, 1935 (tree about 12 m. high, in hillside forest, the trunk about 15 cm. diam.; flowers white), *Clemens* 436 (tree about 15 m. high, at head of stream in forest, the trunk about 20 cm. diam.; flowers white).

This striking species is characterized by having the indument of its leaves, bracts, etc. made up of densely fimbriate minute scales, by its numerous flowers, and by its submembranous conspicuously nerved

bracts. I believe that it is best placed in the Series *Bibracteatae*, but it sharply differs from *S. bibracteata* Lauterb. and *S. arcana* (above described) in its tomentellous branchlets and leaves, its different bracts and bracteoles, its appressed-setose as well as tomentellous sepals, and its 5 styles. Possibly the new species should be referred to the Series *Obvallatae*, but here also it appears to be without close relatives.

***Saurauia eburnea* sp. nov.**

Arbor ad 6 m. alta, ramulis crassis rugosis juventute dense et pallide tomentellis mox glabris; petiolis crassis anguste alatis 1–2 cm. longis glabris vel primo evanescenti-tomentellis; laminis coriaceis glabris siccitate olivaceis anguste elongato-obovatis, 18–27 cm. longis, 4–7 cm. latis, basim versus gradatim attenuatis et in petiolum decurrentibus, apice breviter cuspidatis, margine dentibus calloso-spinulosis 2–4 per centimetrum serratis, costa valida supra paullo elevata subtus prominente, nervis secundariis utrinsecus 18–27 arcuato-adscendentibus cum aliis debilioribus interspersis supra insculptis vel leviter prominulis subtus paullo elevatis, rete venularum copioso conspicuo utrinque subplano vel supra impresso; inflorescentiis simplicibus axillaribus sub anthesi 12–19 cm. longis, floribus summo pedunculi 8–12 aggregatis, pedunculo gracili ad 16 cm. longo glabro vel squamulis pallidis evanescentibus parvis obtusis ornato apice bibracteato, bracteis subcoriaceis orbiculari-oblongis rotundatis ad 22 mm. diametro ante anthesim flores includentibus; pedicellis sub anthesi 15–25 mm. longis rugulosis arcte et pallide tomentellis demum glabrescentibus, bracteolis evanescentibus vel nullis, floribus sub anthesi circiter 25 mm. diametro; sepalis 5 papyraceis ovato-ellipticis 5–6 mm. longis et latis, apice rotundatis, marginem versus scariosis, extus puberulis glabrescentibus; petalis 5 submembranaceis vel papyraceis obovato-oblongis, 10–12 mm. longis, 8–9 mm. latis, apice plerumque emarginatis; staminibus circiter 50 plerumque 2-seriatis 3.5–4 mm. longis, filamentis ligulatis membranaceis 2–3 mm. longis basi cohaerentibus, antheris crassis oblongis circiter 2 mm. longis medium versus dorsifixis saepe recurvatis; ovario glabro truncato-conico sub anthesi 4–5 mm. diametro, summo conspicue 5-sulcato, stylis circiter 2 mm. longis in columnam crassam omnino connatis, stigmatibus in pelta coalitis; fructibus carnosius ut videtur ovoideis ad 15 mm. diametro.

BRITISH NEW GUINEA: Central Division, Mt. Tafa, alt. 2400 m., *Brass* 4872 (A, TYPE, NY), Aug. 26, 1933 (spreading stiffly branched tree up to 6 m. high, common in secondary forest on old landslides; leaves shining, with red margins; corolla cream colored; fruit fleshy, red, dehiscent at apex).

Saurauia eburnea is readily distinguished by its elongate glabrous

leaves with winged petioles, its long peduncles surmounted by conspicuous coriaceous bracts and a cluster of numerous flowers, and its closely tomentellous pedicels. It appears to be a member of the Series *Bibracteatae*, in which it is obviously different from *S. bibracteata* Lauterb. and *S. arcana* (above described) in foliage and inflorescence characters, its 5 completely connate styles, etc. The new species also bears a resemblance to such members of the Series *Squamulosae* as *S. Gjellerupii* Lauterb. and *S. plurilocularis* White & Francis, but differs from them in its bracts, numerous flowers, and many other details.

Saurauia pleurotricha Diels in Jour. Arnold Arb. **10**: 80, 240. 1929.

BRITISH NEW GUINEA: Fly River, 528-mile Camp, alt. 80 m., *Brass* 6851 (large loosely branched shrub 2.5 m. high, at head of a heavily shaded gully; branchlets, leaves, and inflorescence densely covered with coarse red hairs).

The cited specimen, the second referable to the species, agrees well with the type from the Vailala River; its leaf-blades are slightly longer in proportion and more obviously acuminate, and its peduncle is up to 5 cm. long.

Saurauia capitulata sp. nov.

Arbor 6–18 m. alta, ramulis subteretibus aculeis validis 2–4 mm. longis saepe curvatis armatis atque juventute squamulis peltato-ellipticis umbonatis fimbriatis ad 1 mm. longis dense obtectis; petiolis crassis (6–)10–28 mm. longis ut ramulis squamulosis et interdum aculeatis; laminis subcoriaceis elliptico- vel obovato-oblongis, 7–21 cm. longis, 3.5–11.5 cm. latis, basi rotundatis vel obtusis, apice rotundatis vel breviter cuspidatis, margine dentibus parvis callosis et interdum spinulosis 2–4 per centimetrum ornatis, supra juventute pilis ad 6 mm. longis spinuloso-strigosis mox glabris, subtus densissime ferrugineo-pannosis, costa leviter elevata subtus prominente, nervis secundariis utrinsecus 10–16 erecto-patentibus subrectis supra prominulis subtus valde elevatis, rete venularum utrinque paullo prominulo subtus tomento obscuro; inflorescentiis simplicibus axillaribus sub anthesi 6–12 cm. longis, floribus summo pedunculi 2–10 aggregatis, pedunculo gracili rugoso-squamulato vel aculeis ad 1.5 mm. longis recurvatis interdum copiose armato apice 2- vel 3-bracteato; bracteis persistentibus coriaceis suborbicularibus, 8–10 mm. longis, 9–13 mm. latis, basi connatis, apice rotundatis vel obtusis, ut pedunculo spinulosis vel squamulatis atque interdum pallide tomentellis, flores juveniles includentibus; floribus congestis sessilibus sub anthesi circiter 2 cm. diametro, bracteolis papyraceis acutis oblongis circiter 10 mm. longis et 6 mm. latis extus dense adpresso-

setosis atque tomentellis; sepalis 5 papyraceis concavis elliptico-oblongis, 7–9 mm. longis, 4–6 mm. latis, apice rotundatis, margine saepe scariosis, exterioribus pilis complanatis 3–6 mm. longis dense adpresso-setosis atque interdum tomentellis, interioribus saepe glabris; corolla subrotata circiter 15 mm. longa, petalis 5 vel 6 basim versus connatis membranaceis obovato-oblongis, 5–9 mm. latis, apice rotundatis vel emarginatis; staminibus 80–150 circiter 6 mm. longis 2- vel 3-seriatis, filamentis ligulato-filiformibus 4–5.5 mm. longis basim corollae adnatis, antheris dorsifixis oblongis 1.5–2 mm. longis obtusis saepe recurvatis; ovario glabro ovoideo-conico circiter 3 mm. diametro, stylis 5 in columnam crassam inferne coalitis 6–7 mm. longis apicem versus liberis gracilibus, stigmatibus minute capitatis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, alt. 2600–2750 m., *Brass & Versteegh 10465* (tree about 12 m. high, rare on banks of streams in secondary forest, the trunk 30 cm. diam., the crown very small, the bark 4 mm. thick, blackish brown, scaly, the wood white), *Brass 10698* (TYPE), Oct. 1938 (tree to about 18 m. high, common in secondary forest on landslips, etc.; leaves stiff, convex; flowers white), *Brass 10843* (tree 6 m. high, on bank of a forest stream; leaves convex; flowers white); Balim River, alt. 2100 m., *Brass & Versteegh 11178* (tree 10 m. high, on edge of a landslide in forest, the trunk 28 cm. diam., the crown not wide-spreading, the bark 7 mm. thick, scaly, dark brown; flowers white).

Saurauia capitulata is clearly a member of the Series *Obvallatae*, but I have not been able to find a description which satisfactorily fits the specimens. A close relative seems to be *S. rufa* Burkill (which appears to belong in this series rather than in the "*Rufae*" of Diels), a species occurring at lower elevation in British New Guinea; from this *S. capitulata* differs in its longer petioles and larger leaf-blades, sessile flowers, more numerous stamens, and styles connate except at apex. Other related species are *S. hystrix* Ridley and *S. achyrantha* Diels. From the first of these the new species differs in its longer petioles, its smaller leaf-blades which are obtuse or rounded at base, its shorter peduncles, smaller sepals, and glabrous petals. *Saurauia capitulata* differs from *S. achyrantha* in its arborescent habit, the presence of spines on its branchlets, petioles, peduncles, etc., its shorter petioles, smaller leaf-blades, bracts which are squamulate or spinulose but hardly setose, smaller inflorescences, sessile and smaller flowers, and glabrous ovary. It is not yet possible to evaluate the constancy of these characters without many more specimens, but in my present opinion the mentioned species of this alliance seem well founded.

***Saurauia occulta* sp. nov.**

Arbor ad 10 m. alta, ramulis gracilibus subteretibus fistulosis aculeis brevibus disperse armatis ac etiam juventute squamulis coriaceis deltoideis acutis interdum spinulosis 0.5–2 mm. longis dense indutis demum glabrescentibus; petiolis gracilibus 7–20 mm. longis ut ramulis spinuloso-squamulatis; laminis subcoriaceis elliptico-oblongis, 7–16 cm. longis, 3–7.5 cm. latis, basi obtusis, apice obtusis vel breviter cuspidatis, margine dentibus callosis 3–8 per centimetrum crenulato-serratis, supra costa inferne interdum spinuloso-squamulata excepta glabris, subtus pilis simplicibus subspinulosis ad 1.5 mm. longis disperse setosis atque in costa deltoideo-squamulatis, costa supra valde prominula subtus prominente, nervis secundariis utrinsecus 10–14 erecto-patentibus supra prominulis subtus valde elevatis, rete venularum conspicuo utrinque prominulo; inflorescentiis simplicibus axillaribus sub anthesi 3–8 cm. longis, floribus summo pedunculi gracilis ut ramulis squamulati plerumque 5–8 aggregatis; bracteis 2–4 papyraceis ellipticis, 7–10 mm. longis, 3–7 mm. latis, saepe connatis et flores juveniles includentibus, apice subacutis, margine breviter setosis, extus squamulis elongato-deltoideis cuspidatis circiter 1 mm. longis ornatis atque interdum setosis; pedicellis crassis sub anthesi 5–7 mm. longis squamulatis, floribus sub anthesi 15–20 mm. diametro, bracteolis inconspicuis vel subnullis; sepalis 5 papyraceis vel submembranaceis oblongis, 6–7 mm. longis, circiter 4 mm. latis, apice obtusis, extus pilis stramineis rigidis 2–4 mm. longis dense sericeo-setosis; petalis 5 glabris membranaceis obovato-oblongis, 9–12 mm. longis, 5–6 mm. latis, apice rotundatis vel leviter emarginatis; staminibus circiter 60 plerumque 2-seriatis 3–4.5 mm. longis, filamentis 2–3 mm. longis basim versus connatis superne liberis et filiformi-ligulatis, antheris oblongis circiter 1.5 mm. longis; ovario glabro subgloboso 2–2.5 mm. diametro, stylis 5 circiter 3 mm. longis ad medium in columnam crassam coalitis superne gracilibus, stigmatibus minute capitatis.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habbema, alt. 2200 m., *Brass 11208* (TYPE), Nov. 1938 (one of the principal trees in young secondary forest, about 10 m. high; bark brown, fibrous and fissured; flowers white); 15 km. southwest of Bernhard Camp, Idenburg River, alt. 1800 m., *Brass 12063* (tree 2 m. high, in secondary forest; flowers white).

A member of the Series *Obvallatae*, *S. occulta* is closely related only to *S. scaberrima* Lauterb., differing in its more slender branchlets and petioles, the smaller and sparser spines of its branchlets, the lack of spines on its leaves, the obtuse rather than subcordate leaf-base, the pedicellate flowers, and the less obvious setae of its bracts. These two



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