

stamina 6, libera; antherae 1.8–2 mm. longae, luteae, glabrae, apice mucronatae; ovarium oblongum, basi attenuatum, superne pilosum; stylus pilosus. Fructus?

NEW GUINEA: foothill forests, Borabere, alt. 360 m., *L. J. Brass*, no. 715, Nov. 30, 1925.

This species is called LINOÓ by the natives.

In the arrangement of its inflorescence this species recalls *B. Griffithiana* Munro, but differs in the more numerous flowers of the spikelets, in the mucronulate anthers, elongated style, the hairy apex of the ovary and finally in its sheaths and ligulae being glabrous at least in the fully developed leaves. It also resembles *B. Thorelii* G. Camus in the arrangement of the inflorescence, but the leaves are much larger, have 9–10 pairs of secondary veins with numerous intermediary veins, and are somewhat tessellate.

SOME NONDESCRIPT PIPERS FROM NEW GUINEA.

WILLIAM TRELEASE

THE following species form part of a collection of woody plants made in New Guinea in 1926–27 by Mr. L. J. Brass for the Arnold Arboretum. Ninety-three species of *Pipers* have been recorded for New Guinea and the adjacent Bismarck Archipelago and the eleven here described bring the number up to 104. It is not impossible that one or another of these may have been reported heretofore under the name of a non-endemic species; but as I have not seen these collections I am unable to indicate synonymy for any of the present list, though they cannot be reconciled with the characters on which such species rests.

The favorable location of New Guinea, with a diversified area of some 200,000 square miles (twice that of the West Indies and nearly equaling that of Central America) makes it probable that a much larger number of *Piperaceae* (*Piper* 104; *Peperomia* 22; *Macropiper* 2) may be expected than is now known; and except for the few that have been cultivated, they may be expected to be endemic.

Piper (Eupiper) *arbuscula*, n. sp.

An essentially glabrous compact small tree, 10–12 ft. tall; flowering internodes slender and somewhat elongated; leaves round-ovate, abruptly sharp-acuminate, slightly obliquely cordate, 12–14 × 15–16 cm., multiple-nerved, with about 6 lateral nerves from the base and the midrib with 2 alternate branches from its lower fifth, papery, minutely dark-punctulate beneath; petiole 15–20 mm. long, approximately equaling the open sinus, exceptionally somewhat hirtellous, not winged; pistillate spikes opposite the leaves, curved, 4 × 60 mm., closely flowered; peduncle 5 mm. long, bracts round-peltate; berries orange, ovoid, pointed; stigmas 3, small, sessile.

TYPE LOCALITY: young forest, U-uma river, *L. J. Brass*, no. 1449, May 18, 1926. — Called Boni.

DISTRIBUTION: New Guinea.

Piper (Eupiper) Brassii, n. sp.

A slender nodose glabrous liana, drying dark; flowering internodes 2×20 –35 mm.; leaves lanceolate, lance-oblong, or the lower lance-ovate, attenuate, acute-based, 3 or 3.5 – 4.5×10 –12 cm., palmately 5-nerved, the nerves impressed above and salient beneath with numerous ascending cross-veins, chartaceous and glossy; petiole about 5 mm. long, neither channelled nor winged; spikes opposite the leaves, slender and long (becoming 2×200 mm.) densely flowered; peduncle 20–30 mm. long; bracts round-peltate; fruit unknown.

TYPE LOCALITY: Iawarere, at 350 m. alt., in the foothill forest, *L. J. Brass*, no. 683, Nov. 24, 1925.

DISTRIBUTION: New Guinea.

Piper (Eupiper) corylistachyopse, n. sp.

A climbing shrub; flowering internodes thick (5 mm.) and short, dingy-velvety; leaves oblong, sharp-acuminate, rounded at base or minutely cordulate, with one side barely perceptibly shorter, 4.5 – 7×14 –19 cm., pinnately nerved from below about the middle, the nerves 5 or 6×2 gradually congested downwards, drying dull and papery, dingy-velvety beneath; petiole $10 + 1$ mm. long, velvety, channelled, sheathing below; pistillate spikes opposite the leaves, 5×20 –30 mm., densely flowered; peduncle stout, recurving, 10–15 mm. long; bracts round-peltate; ovary sessile; stigmas 3, linear, sessile.

TYPE LOCALITY: rain-forest, Sogeri, at 450 m. alt., *L. J. Brass*, no. 655, Nov. 17, 1925.

DISTRIBUTION: New Guinea.

Piper (Eupiper) flavifructum, n. sp.

A somewhat nodose fleshy scandent or straggling shrub; leaves broadly ovate, acuminate, shallowly (or the lower moderately deeply) cordate, slightly oblique, 7×13 – 11×16 cm., multiple-nerved from the basal 10 or 15 mm., the 7 nerves sparsely hirtellous beneath, dark green, drying thin; petioles 10 or on the lower leaves 30 mm. long, channelled but not winged, somewhat puberulent; pistillate spikes opposite the leaves, in fruit 20×50 mm., loosely flowered; peduncle about 20 mm. long, at most locally and obscurely puberulent; bracts round-peltate; berries yellow, pyriform, stipitate for an equal length, glabrous; stigmas 3, sessile, short.

TYPE LOCALITY: swampy rain-forest on the Domara River, *L. J. Brass*, no. 1644, June 4, 1926.

DISTRIBUTION: New Guinea.

Piper (Eupiper) fragrans, n. sp.

A somewhat succulent nodose glabrous shrub, decumbent, and rooting from some nodes; flowering internodes rather slender and short (2×15 –25 mm.), finely striate; leaves ovate, acuminate, round-based, 4.5×8 – $5.5 \times$

11 cm., sub-pinnately nerved with 3 pairs of strong nerves from the lower fourth and a fainter pair from the upper fourth, drying thin; petiole about 5 mm. long, channelled but not winged; spikes opposite the leaves, as yet 1.5×40 mm.; peduncle 5 mm. long; bracts round-peltate; flowers said to be very sweet-scented.

TYPE LOCALITY: Iawarere, at 550 m. alt., *L. J. Brass*, no. 701, Nov. 25, 1925.

DISTRIBUTION: New Guinea.

Piper (Eupiper) Melula, n. sp.

A high-climbing somewhat nodose glabrous shrub; flowering internodes moderately slender and elongated; leaves inequilaterally round-ovate; abruptly very short-acuminate, rounded at base, 6×9 – 11×12 cm., septuplinerved from within the lowest 10 mm., the midrib with a single upcurved branch one-fourth from the apex, drying thin-papery; petiole 10–15 mm. long, channelled, sheathing toward the base or the longer up to the middle; spikes opposite the leaves, as yet 2 – 3×60 mm., closely flowered, green; peduncle slender, 5 mm. long; bracts round-peltate.

TYPE LOCALITY: rain-forest, Hewa, Vaitata River, *L. J. Brass*, no. 1130, March 13, 1926. — Called Melula.

DISTRIBUTION: New Guinea.

Piper (Eupiper) morianum, n. sp.

A large glabrous nodose succulent climbing shrub; flowering internodes moderately slender and short; leaves elongated-ovate and obscurely cordulate above, broadly ovate and very shallowly cordate below, acuminate, slightly inequilateral, 5×11 , 7×15 , or 11×17 cm., palmately 5- or 7-nerved, chartaceous; petiole 10 mm. long, openly grooved, sheathing toward the base; spikes opposite the leaves (young) scarcely 2×40 mm., closely flowered, in fruit said to be long and red; peduncle slender, 20 mm. long; bracts round-peltate.

TYPE LOCALITY: rain-forest, lower Mori River, *L. J. Brass*, no. 1562, May 28, 1926. — Called Boidiboro.

DISTRIBUTION: New Guinea.

Piper (Eupiper) pavimentifolium, n. sp.

A low-climbing somewhat fleshy shrub; flowering internodes 5×100 –150 mm., harsh, subvillous; leaves lance-elliptic, sub-acuminately pointed, the slightly inequilateral cordulate base equally contracted, 10 – 11×25 cm., pinnately about 11-nerved from the lower third, the nerves and cross-veins impressed above and very salient beneath, hard, stiffly hirtous beneath; petiole 10 mm. long, harshly subvillous, channelled, sheathing only at base; pistillate spikes opposite the leaves, 5×60 mm., densely flowered, peduncle 10 mm. long, sparsely hirsute; bracts round-peltate; berries immersed in the rachis, globose; reddish-yellow; stigmas about 3, sessile, broad.

TYPE LOCALITY: rain forest on the Murua River, at 100 m. alt., *L. J. Brass*, no. 1338, March 29, 1926.

DISTRIBUTION: New Guinea.

Piper (Eupiper) pullibaccum, n. sp.

A weak zig-zag softly pubescent undershrub; flowering internodes moderately slender and short, villous; leaves ovate, acuminate, obliquely cordate, 6×10 – 10×16 cm., submultiple-nerved from the lower third, the nerves 4 or 5×2 , somewhat transiently short-pubescent above with hirtellous nerves, crisply subvillous beneath, drying thin; petiole about 10 mm. long, about equaling the sinus, sheathing for some distance above the base; pistillate spikes in fruit about 10×100 mm., closely flowered; peduncle slender, 15 mm. long, villous; bracts round-peltate; berries brown, ellipsoid, narrowed at base rather than stipitate; stigmas 3, linear, recurved, small.

TYPE LOCALITY: edge of rain-forest, Vaitata River, *L. J. Brass*, no. 966, Feb. 13, 1926.

DISTRIBUTION: New Guinea.

Piper (Eupiper) rhizocaula, n. sp.

A large glabrous climbing shrub, abundantly rooting from the nodes; internodes rather thick and elongated, angular and striate, concolorously verruculose; leaves round-ovate, abruptly and obtusely short-acuminate, 14×16 – 19×30 cm., round-based, the minutely cordulate margin sometimes connate across the petiole, multiple-nerved, with 6 nearly based lateral nerves and the midrib 2-branched one-third above the base, drying rather thin and cellular-pale-punctulate beneath; petiole 10–15 cm. long, winged toward the base; fruit said to be red.

TYPE LOCALITY: rain-forest at Kira, Vaitata river, *L. J. Brass*, no. 1115, March 9, 1926.

DISTRIBUTION: New Guinea.

Piper (Eupiper) rhodocarpum, n. sp.

A sparsely hirtellous nodose rambling shrub; flowering internodes moderately slender and elongated, sparingly hirtellous; leaves elliptic or subovate-elliptic, acuminate, obtuse or subacute at base, 7.5 – 13×15 – 22 cm., submultiple-nerved from the lower half or third, the nerves about 3×2 , at most slightly hirtellous beneath, drying thin; petiole 10–20 mm. long, transiently velvety, scarcely channelled or sheathing; pistillate spikes opposite the leaves, in fruit 10×35 mm., very closely flowered; peduncle 10 mm. long, hirtellous; bracts round-peltate, concave and crisped; berries bright red, with a stout style; stigmas 2.

TYPE LOCALITY: rain-forest on the U-uma river, at 150 m. alt., *L. J. Brass*, no. 1427, May 14, 1926. — Called O-o-o.

DISTRIBUTION: New Guinea.

Piper (Eupiper) viridibaccum, n. sp.

A slender nodose climbing shrub; flowering internodes rather short, crisp-pubescent in lines; leaves oblanceolate-subobovate, sharply acuminate, the narrowed base somewhat inequilaterally cordate, $6-8 \times 15-17$ cm., submultiple-nerved from the lower fourth, the larger nerves 4×2 , drying thin, the nerves finely crisp-pubescent beneath; petiole about 5 mm. long, shorter than the auricles, crisp-pubescent, scarcely sheathing; pistillate spikes opposite the leaves, $4-5 \times 30$ mm., densely flowered; peduncle filiform, 80 mm. long, glabrous; bracts round-peltate; berries green, sub-oblong, mucronately contracted; stigmas 2.

TYPE LOCALITY: rain-forest, Mowabula, *L. J. Brass*, no. 1370, May 10, 1926.

DISTRIBUTION: New Guinea.

ADDITIONS TO THE KNOWLEDGE OF CHINESE TREES, I

WOON-YOUNG CHUN

✓ **Castanopsis Greenii, sp. nov.**

Arbor 18-metralis, cortice fusco vel cinereo, in lamellas irregulares oblongas detergentes fissis; ramuli graciles, glabri, teretes, viridi-brunnei, vetustiores nigricantes; gemmae obtusae, perulis fuscis extus adpresse pilosis. Folia persistentia, coriacea, graciliter petiolata, integra, glabra, lanceolata vel elliptico-lanceolata, breviter acuminata, apice obtusa vel acutiuscula, basi subinaequilaterialia, breviter cuneata, in petiolum breviter decurrentia, 5-10 (-15) cm. longa, 1.5-3.5 (-5) cm. lata, supra laete viridia, subtus opaca, pallida, obsolete reticulata, costa supra plana, subtus elevata, nervis lateralibus utrinsecus 8-10, sub angulo circiter 30° a costa divergentibus utrinque vix prominulis ante marginem anastomosantibus; petioli graciles, supra plani, glabri, 1.5-2.5 cm. longi. Amenta mascula ad basin innovationum pluria, ascendunt, ad 7 cm. longa, rachi tenuissima pilosula; flores 2-3-fasciculati; stamina 12, perianthio 5-fido circiter 2-plo longiora; ovarii rudimentum pilosum. Spicae femineae masculis fere dimidia breviores, 2-4 cm. longae, puberulae, in superiore ramuli novelli parte solitariae, in axillis foliorum juvenilium; flores pauci, sparsi, alterni. Fructus globosi, in valvas 4 aequales dehiscentes, solitarii vel bini; involucri aculeis fasciculatis acicularibus gracilibus subulatis, fere rectis brunneis densissime echinata; valvae extus cinerae, pilosulae, intus densissime sericeo-villosae, circiter 5 mm. crassae; glans solitaria, depresso-globosa, dense puberula.

Tree about 18 m. high with umbrageous, densely foliaged crown about 20 m. across. Bark of trunk dark or pale gray, peeling off in irregularly oblong somewhat fibrous, thick plates, the inner bark cinnamon-red. Branchlets 3-4 mm. in diameter, glabrous, terete, brownish green, sublustrous, minutely grayish lenticellate, becoming dark brownish black the



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