Observations on the Flora of Japan.

(Continued from vol. XXVI. p. 402.)

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Burmattia Itoana MAKINO, sp. nov. (Fig. I.)*

Burmattia sp. ITÔ, Mem. Work Bot. a. Zool. Commemor. Ninet. Anniv. K. ITÔ (KINKWA-Ô Kujû Gaju Hakubutsu Kwai-Shi), I. (1893), p. 14, tab. 2, fig. 1-2.

? *Cryptonema malaccensis* KRÄNZL. in ENGLER's Bot. Jahrb. VI. (1885), p. 55; MATSUM. Ind. Pl. Jap. II. 1 (1905), p. 234, non TURCZ.

? *Burmattia cælestis* C. H. WRIGHT in Journ. Linn. Soc. XXXVI. p. 4 (1903) quoad pl. Amami-Osima. (leg. DÖDERLEIN); MATSUM. l. c., non D. DON.

A terrestrial plant, aphyllous, erect, small, about 5-13 cm. in height, glabrous, cæruleo-violaceous; roots hypogæous, fibrous, thickly filiform, terete, simple, loosely fasciculate, radiate, glabrous, attaining 1 mm. in diameter, with a filiform vascular bundle in centre. Stem solitary, gracile, slender, terete smooth, simple, or furnished with the erect 1-3-branches above pale in hypogæous portion towards the base, about $\frac{4}{5}$ - $1\frac{1}{2}$ mm. across. Scales sparse on the stem throughout, small, rather closely placed and smaller in the basal ones, but the rest very remotely placed, adpressed or erect-patent, membranaceous, amplexicaul, ovato-deltoid, elliptical, ovate, or ovato-semiorbicular, entire, obtuse, cucullato-fornicate at the obtuse apex and subconduplicate and carinate dorsally in the superior ones, 1-nerved, about 2-5 mm. long, with a young flower-bud, which at length not developed, in the axil; those under the

* Figure will appear in the fore-coming number 315.

flower bract-like, protecting the flower-bud, often 2, alternate, approximate, shorter than the flower, erect or erect-patent, membranaceous, elliptical to elliptical-oblong, obtuse, entire, conduplicate, carinate dorsally, 1-nerved, 4–5 mm. long. Flower erect, terminal, 8–9 mm. long, longitudinally 3-winged, broadly acute at the base and continued to the pedicel which is the top of the main stem and branches. Perianth superior, erect, straight; limb small, much shorter than the tube, 6-lobed; external-lobes 3, small, erect, ovato-deltoid, subrhombic towards the base, obtuse, entire, thick, nearly plane dorsally, thicker and convex towards the centre internally, 1-nerved, about $1\frac{1}{2}$ mm. long, $1\frac{1}{4}$ mm. broad, induplicato-valvate in bud; interior-lobes 3, much smaller and minute, erect, depressed-deltoid, entire, thick, about $\frac{1}{3}$ mm. long; tube broadly cylindrical, often somewhat enlarged below, about 4 mm. long, $2\frac{1}{2}$ mm. across, membranaceous, longitudinally 6-nerved; wings membranaceous, cuneate, entire, obliquely obtuso-truncate at the apex, shorter than the floral body and about 5–6 mm. long, $1\frac{1}{2}$ –2 mm. broad. Stamens 3, sessile, inserted in a short distance under the throat, opposite to the interior-lobes of perianth, lower than the stigmas; anther-cells remote by the horizontal connective, transversely oblong, scarcely 2-lobed, about $\frac{1}{2}$ mm. broad, separating the inside into 2 loculaments by a vertical dissepiment, longitudinally dehiscent; connective stout, thick, longer than the anther-cells, with the minutely papillose processes at the base, the superior appendage 2-parted and the inferior one integral. Style erect, springing from the thickened truncate top of the ovary, included, just reaching to the throat of perianth, 4 mm. long, rather stout, straight, terete, smooth, 3-nerved; arms short, thick, erect-patent, enlarged towards the stigma: stigmas 3, large, dilated, truncate, orbiculate, disciform, directing outwards, 1 mm. across. Ovary inferior, obovato-globular, 3-ridged, about 3 mm. long, 3-celled, with very numerous ovules; ovules minute, densely attached to the thick 2-parted prominent axile placentas, obovato-oblong or obovato-fusiform, obtuse at the apex, with a funicle which is shorter than the ovule, about $\frac{1}{3}$ mm. long. Capsule

crowned by the marcescent perianth, globular, about 3 mm. across, with membranaceous carpels, transversely ruptured between the ridges. Seeds very numerous, minute, oblong, elliptical, or fusiform, yellow, about $\frac{1}{3}$ mm. long; testa thin, inconspicuously reticulated, slightly loose; embryo obovately oblong or elliptical, cellular, a little shorter than testa.

Nom. Jap. *Ruri-shakudyô*, *Yayeyama-shakudyô*.

Hab. YAYEYAMA ARCHIP.: Mt. Fazan in Ôkawa-mura, Isl. Ishikaki (SETSUSABURÔ TANAKA, June 28, 1891); LIUKIU: Nago-mura in Kunchan-gôri, Isl. Okinawa (YOYEMON NAKANO! Aug. 9, 1912).

Burmannia cryptopetala* MAKINO, sp. nov. (Fig. II.)

A terrestrial plant, about 6–17 cm. high, erect, aphyllous, white, glabrous; roots hypogæous, fibrous, fasciculate, radiate, filiform and often thickish, terete, glabrous, simple or very loosely ramose with patent branches, with a filiform vascular-bundle in centre. Stem solitary, slender, often rather stout, simple, or rarely 1-branched above, terete, smooth, diaphanous, $\frac{3}{4}$ – $1\frac{3}{4}$ mm. across. Scales small, distichously or subsparsely alternate on the stem throughout, remote but closely placed at the base, adpressed or erect-patent, $1\frac{1}{2}$ –6 mm. long, amplexicaul, each with a young flower, which at length not developed, in the axil, ovate to ovato-subulate, obtuse or acutish-tipped, entire, membranaceous, 1-nerved; the superior ones subconduplicate and subcarinate dorsally, subfornicate at the apex. Cyme with 2–7-flowers, or 1-flowered; rachises of the cyme dichotomously 2, secondly 1–3-flowered, attaining about 1 cm. in length, stright, erect-patent or nearly erect, rather stout, angulate; pedicels short or very so, straight, 1–2 mm. long, triquetrous; bracts laxly placed, scaly, adpressed or erect-patent, about 4–6 mm. long, amplexicaul, membranaceous, 1-nerved, subulate or oblong-subulate, obtuse to acuminate at the apex, obscurely serrulate, carinate dorsally. Flowers erect, close each other, acute and continued to the pedicel at the base,

* Figure will appear in the fore-coming number 315.

longitudinally 3-winged, 8–11 mm. long. Perianth superior, erect, straight; limb yellow, small, much shorter than the tube, 6-lobed or sub-6-lobed or 3-lobed; external lobes 3, sub-recurvo-erectpatent, induplicato-valvate in bud, broadly ovato-deltoid, obtuse- or acutish-tipped, entire, thicker and very minutely papillose towards the margin, thinner in centre, slightly concave internally, alato-carinate dorsally, 1-nerved, about $1\frac{1}{2}$ mm. long, $1\frac{1}{2}$ – $1\frac{3}{4}$ mm. wide; interior lobes very minute and depressed, or obscure, or none; tube straight, shortly cylindrical, abruptly slightly enlarged at the apex which continued to the limb, gradually somewhat enlarged towards the base which is continued to the ovary, membranaceous, longitudinally 6-nerved, about 3– $3\frac{1}{2}$ mm. long, $1\frac{1}{2}$ –2 mm. across; wings shorter than the floral body, membranaceous, entire-margined, cuneate, obliquely subtruncate and narrowly adnate to the back of the exterior lobes of the limb at the apex, gradually narrowed and decurrent to the pedicel, $1\frac{3}{4}$ –3 mm. broad. Stamens 3, inserted in a short distance under the throat, opposite to the interior lobes of perianth, slightly lower than the stigmas, sessile; anther-cells disconnected and remote by a transverse stout connective, transversely ellipsoid, separating the inside into 2 loculaments by a vertical dissepiment, transversely dehiscent; connective horizontal, thick, somewhat broader than the anther-cells towards the middle, with a small conical process on the upper side, prominent on the middle of the front face and adherent to the style-arms. Style included, erect, springing from the obtuse top of the ovary, stout, terete, smooth, 3-nerved, very shortly 3-fid into 3 erect-patent arms at the top; stigmas 3, terminal, large, 1 mm. across, transversely subglobose-ellipsoid, broadly marginate with a lunato-semiorbiculate dilated appendage externally, very deeply hollow with a small short and broad lid (which is smaller than dimensions of the mouth) from the inner margin in the elliptical mouth, which open outwards. Ovary inferior, a little longer than the perianth-tube, narrowly 3-alate by the decurrence of the wings, oval to oblong-ellipsoid, 3-celled with very thinly membranaceous dissepiments, about 3–5 mm. long, 2–3 mm. across; ovules very numerous, minute,

fusiform, about $\frac{3}{5}$ – $\frac{1}{2}$ mm. long, attached to the 2-parted prominent axile placentas with a funiculus. Capsule crowned by the marcescent perianth, oval to ellipsoid, 2–3 mm. across, with membranaceous carpels, irregularly transversely ruptured. Seeds very numerous, minute, yellow but ferruginous towards the top, fusiform, $\frac{1}{3}$ – $\frac{1}{2}$ mm. long; testa loose at the apex, subreticulato-striate; embryo ellipsoid to narrowly oblong.

Nom. Jap. *Shiro-shakudyô* (nov.).

Hab. Prov. YAMASHIRO: Kamigamo (T. MAKINO!; S. AGÔ!); Prov. ISE: Yamada (T. MAKINO!); Prov. HIZEN: Isahaya (Z. TASHIRO! Dec. 3, 1911.); Prov. KII: Mt. Nachi (K. MINAKATA! herb. Sc. Coll. Imp. Univ. Tokyo, 1903).

(*To be continued.*)