Observations on the Flora of Japan.

(Continued from p. .)

By

T. Makino.

Epipogum S. G. Gmel. Fl. Sibir. I. (1747) p. 11, tab. 2, fig. 2.

ANALYTICAL KEY TO THE ALL KNOWN SPECIES.

- 1 { Rhizome branching; labellum superior, bi-auriculate.....*E. aphyllum* Sw.
Rhizome tuberous; labellum inferior, entire.....2.
- 2 { Sepals and petals narrowly ovate; spur as long as the labellum;
clinandrium truncate and deeply concave.*E. japonicum* Makino.
Sepals narrowly lanceolate and petals oblong-lanceolate; spur
shorter than the labellum; clinandrium saccato-fornicate.*E. nutans* Reichb. f.

Epipogum aphyllum Sw.; Makino in Bot. Mag., Tokyo, XVI.
(1902) p. 175.

Nom. Jap. *Torakichi-ran*.

Hab. Japan.

Distrib. Temperate regions of Europe and Asia.

Epipogum japonicum Makino in Bot. Mag., Tokyo, XVIII. (1904)
p. 131.

Nom. Jap. *Aoki-ran*.

Hab. Japan.

Endemic.

Epipogum nutans (Blume) Reichb. fil. Orchid. Zolling. in Bonplan-
dia, V. (1857) p. 36; Lindl. in Journ. Linn. Soc. I. (1857) p. 177;
Benth. Fl. Austral. VI. (1873) p. 308; Hook. fil. Fl. Brit. Ind. VI. p.
124 (1890).

Galera nutans Blume, Bijdr. p. 415, tab. 3 (1825), Mus. Bot. Lugd.-

Batav. II. p. 187, n. 457 (1856), et Orchid. Archip. Ind. et Jap. (1858) p. 139, tab. 52, fig. 3, et 54 E; Lindl. Gen. et Sp. Orchid. p. 500 (1840).

Limodorum roseum Don, Prodr. Fl. Nepal. (1825) p. 30.

Ceratopsis rosea Lindl. Gen. et Sp. Orchid. p. 384 (1840).

Galera rosea Blume, Mus. Bot. Lugd.-Batav. II. p. 183, n. 458 (1856), et Orchid. Archip. Ind. et Jap. (1858) p. 139, in nota.

Epipogon roseum Lindl. in Journ. Linn. Soc. I. (1857) p. 177.

Podanthera pallida Wight, Ic. Pl. Ind. Orient. V. (1852) 1, p. 22, tab. 1759; Blume, Orchid. Archip. Ind. et Jap. (1858) p. 139, in nota.

Rhizome tuberous, ellipsoid, subterranean. Scape simple, ascending from the rhizome at the base, erect, slender, 24–56 cm. long and 8–27-flowered (in my specimens); sheaths about 5–6, short, apart, very thin, scarious. Raceme narrow, laxly or subdensely flowered, erect, 6–25 cm. long (in my specimens); bracts longer than pedicels, very thin, scarious, ovato-lanceolate, tapering. Flowers nutant, shortly pedicellate; pedicel arcuate or hamato-arcuate, shorter than the ovary. Perianth connivent, very thin, acuminate, 3-nerved; sepals narrowly lanceolate, about 8–10 mm. long; petals scarcely shorter, oblong-lanceolate. Labellum inferior, about as long as sepals, sessile, broadly ovate, deeply concave, entire, several-nerved; disk with 2 cristato-glandular ridges along the centre; spur straight, oblong, retuso-emarginate at the end, much shorter than the labellum, about 4 mm. long. Column short; clinandrium fornicate, membranaceous; anther large, carnose, laterally compressed, 2-celled in front, truncate and shallowly 2-canaliculate dorsally. Pollinia 2, each with a filiform strap. Ovary ellipsoid, about 6 mm. long. Capsule ellipsoid, about 8 mm. long, terminating with the marcescent perianth. Seeds very minute, ellipsoid to obovoid-oblong; testa very loose, translucent, elegantly reticulated; nucellus in centre, minute, ellipsoid.

Nom. Jap. *Tashiro-ran* (nov.)

Hab. Prov. HIZEN in Kiusiu: Shiroyama in Isahaya (*Zentaro Tashiro*! July 5, 1906).

New to the Flora of Japan.

Distrib. British India, Java, Australia, and West Africa.

Pyrus (*Malus*) **spectabilis** Ait. Hort. Kew. 'ed. 1, II. p. 175,' et ed. 2, III. p. 208; Willd. Sp. Pl. II. p. 1018; DC. Prodr. II. p. 635; Bot. Mag. tab. 267; Sieb. et Zucc. in Abhandl. Akad. Muench. IV. 2, p. 131;

Miq. Prol. Fl. Jap. p. 228; C. Koch, Dendrol. I. p. 209, et in Ann. Mus. Bot. Lugd.-Batav. I. p. 248; Franch. et Sav. Enum. Pl. Jap. I. p. 138. II. p. 349; Maxim. in Mém. Biol. IX. p. 166; Franch. Pl. David. p. 119; Forbes et Hemsl. in Journ. Linn. Soc. XXIII. p. 258; Diels in Engler's Bot. Jahrb. XXIX. p. 387; Palib. Consp. Fl. Kor. I. p. 75; Komar. Fl. Manshur. II. p. 478.

Malus spectabilis Desf. 'Arb. II. p. 141'; Decne. in Nouv. Archiv. du Mus. X. p. 154.

Malus floribunda Sieb. ex Van Houtte, Fl. de Serres, XV. p. 161, tab. 1585.

Pyrus floribunda Lindl. 'Bot. Reg. tab. 1006.'

Pyrus sinensis Dum. 'Cours, ed. 2, V. p. 429.'

Malus Kaido Hort. ex C. Koch, Dendrol. I. p. 210.

Malus Toringo Hort. ex C. Koch, Dendrol. I. p. 210.

Pyrus baccata Thunb. Fl. Jap. p. 207; Sieb. Syn. Pl. Oecon. Jap. p. 66, n. 351, non Linn.

Pome small, 7-10 mm. across, subdepressed-globose, smooth, glabrous, depressed-rounded at both ends, with a rounded scar of falling calyx-lobes at the top, reddish-yellow when matured, few-seeded, long-pedicellate; carpel thin but cartilaginous; pulp soft; pedicel about 3-4½ cm. long, slender, glabrous, hard. Seed small, obovoid or obovoid-oval, smooth, about 3½-4 mm. long.

Nom. Jap. *Kaidō*.

Hab. Prov. CHIKUZEN: Fukuoka, cult. (*T. Makino*! Sept. 1, 1906, fructiferous).

Cucumis Melo Linn. var. **Conomon** (Thunb.) Makino.

forma a. albus Makino.

Cucumis Conomon Thunb. Fl. Jap. (1784) p. 324.

Cucumis Melo var. *Conomon* Makino in Bot. Mag., Tokyo, XVI. (1902) p. 16.

Cucumis Conomon b. *Siro-uri* Sieb. Syn. Pl. Oecon. Jap. p. 41.

Pepo pale green.

Nom. Jap. *Shiro-uri*, *Asa-uri*.

Hab. Japan, cultivated.

forma b viridis Makino.

Cucumis Conomon a. Tsuke-uri et c. Ao-uri Sieb. Syn. Pl. Oecon. Jap. p. 41.

Pepo oblong to oblong-cylindrical, depressed-obtuse with a slightly concave centre at the apex, concavo-obtuse at the base, dark green, marked with 10 deep-green longitudinal lines, about 28–35 cm. or more long, 10–12 cm. or more across; pulp thick, firm, greenish towards the rind and white internally, not sweet.

Nom. Jap. *Ao-uri*, *Tsuke-uri*. *Maru-dzuke*.

Hab. Japan, cultivated.

forma c. variegatus Makino.

Pepo similar to the preceding in form and size, alternate with pale and green longitudinally.

Nom. Jap. *Shima-uri*.

Hab. Japan, cultivated, rare.

This is probably an intermediate form by the hybridization of *a. albus* and *b. viridis*.

These fruits (*forma a*, *b*, and *c.*) are usually preserved in “*Sake-nokasu*” to make a kind of pickles called “*Naradzuke*,” a refreshment used in Japan after dinner.

Falcata comosa O. Kuntze **var. japonica** (Oliv.) Makino.

Falcata japonica Komar. Fl. Manshur. II. p. 630.

Amphicarpæa Edgeworthii var. *japonica* Oliv. in Journ. Linn. Soc. IX. (1867) p. 164; Franch. et Sav. Enum. Pl. Jap. I. p. 107; Maxim. Fl. As. Or. Fragm. p. 9, et in Mém. Biol. IX. p. 69; Forbes et Hemsl. in Journ. Linn. Soc. XXIII. p. 188; Batchel. et Miyabe in Trans. Asiat. Soc. Jap. XXI. p. 217; Diels in Engler's Bot. Jahrb. XXIX. p. 417.

Shuteria trisperma Miq. in Ann. Mus. Bot. Lugd.-Bat. III. (1867) p. 51, et Prol. Fl. Jap. p. 239.

Glycine monoica Thunb. Fl. Jap. p. 283, non Linn.

Glycine javanica Thunb. in Trans. Linn. Soc. II. p. 340, non Linn.

Subterranean legume; globose ellipsoid-globose or falcato-elliptical, compressed laterally, 1–2-seeded, 6–16 mm. long, with a persistent calyx at the base; carpel thin, densely covered with minute hairs, pale purpurascenscent; seed rounded to oval, with a thin purpurascenscent-maculated coat.

Nom. Jap. *Yabu-mame*, *Gin-mame*.

Hab. Japan, common.

Both from aerial (normal) and subterranean (cleistogamous) flowers fruits are richly yielded but of different forms of legumes. The subterranean legumes are used by Ainu of Hokkaidō (formerly Ezo) as a food called by the name *Aha*, according to Dr. Prof. K. Miyabe.

Ruta subtripinnata Miq. Prol. Fl. Jap. p. 209; Franch. et Sav. Enum. Pl. Jap. I. p. 71. = ***Ruta chalepensis*** Linn. Mant. I. p. 69, **var. β . bracteosa** Halácsy, Consp. Fl. Græc. I. (1901) p. 312.

Ruta bracteosa DC. Prodr. I. p. 710; Koch, Syn. Fl. Germ. et Helv. ed. 3, p. 125; Spreng. Syst. Veg. II. p. 320; Nyman, Syl. Fl. Europ. p. 219; Reichb. Fl. Germ. Excurs. p. 766.

? *Ruta graveolens* Hoffm. et Schult. Noms Indig. Pl. Jap. in Journ. Asiat. (1852) p. 327, et nouv. ed. p. 53.

Glaucous-green. Stem minutely punctate. Leaves shortly petiolate or subsessile, bi- or subtripinnatisected, width about $\frac{1}{2}$ of the length; pinnæ decrescent in size above and below, the lowest ones more or less stipule-form; leaflets linear-oblong, cuneate or cuneato-obtuse and subunequal at the base, obtuse or acutish at the apex. Corymb divaricate; bracts and bracteoles ovato-cordate or lato-ovate. Flowers about $1\frac{2}{3}$ cm. across; pedicel glabrous. Sepals triangular, acute. Petals yellow, abruptly unguiculate, fimbriate. Stamens as long as the petal; anther oblong, yellow. Style short. Capsule about 5 mm. long, globose, 4-lobed above, punctate; lobes erect.

Nom. Jap. *Henrūda*.

Hab. Prov. MUSASHI: Tokyo, cult. (*T. Makino*!).

This was formerly introduced into our country and is now occasionally found under cultivation.

***Festuca japonica* Makino sp. nov.**

Perennial; densely caespitose, attaining about 7 decim. in height; rhizome shortly repent or ascending, gracile; roots fibrous, fine and dense. Leaves very angustately linear, acuminate, about 1–3 mm. wide, green, minutely scabrous on margin, striate and subconvolute when dry, glabrous beneath, puberulent on nerves above, several-nerved, flaccid; the basal ones dense, much shorter than the culm, about 7–20 cm. long; cauline ones few (2–3), very loose, not long, with a long narrow glabrous striate sheath which is longer than the blade; ligule very short and truncate. Culms

numerous, slender, terete, weak, glabrous, smooth, often more or less geniculate at nodes; internodes elongate, longer than sheaths; nodes somewhat contracted, brown when dry. Panicle erect, shorter than the culm, about 4–14 cm. long, pyramidal, very loose, effuse; rachis slender, often scabrous above; branches binate but sometimes simple in the superior ones, patent or somewhat reflexed, capillary, subscabrous, loosely ramose into few to several pedicels above, but the superior ones usually simple, green. Spikelets very laxly disposed, long-pedicellate, 5 mm. long, viridescent, glabrous, 3-flowered (but the upper flower incomplete), not aristate; rachilla short, subscabrous below; pedicels capillary, spinuloso-scabrous or subscabrous, longer or much so than the spikelets, green, clavato-incrassate at the top. Empty glumes 2, approximate, ovato-lanceolate, obtuse, thinly membranaceous, hyaline towards the entire margin and viridescent towards the centre, rounded in back; the lower one $\frac{1}{2}$ as long as the upper one, 1-nerved; the upper one 2–2 $\frac{1}{3}$ mm. long, sub-3-nerved. Flower narrowly lanceolate, acuminate, 3 $\frac{2}{3}$ –4 mm. long. Flowering glume ovate, subacute, boat-shaped with a rounded back, hyaline towards the margin, sub-5-nerved (the 3-nerves stronger). Palea scarcely shorter than the flowering glume, lanceolate, bifid with acute lobes and a close sinus, 2-carinate, thinly membranaceous, without any vein between carinae which are green and scabrous above. Lodicules 2, subulato-ovate. Stamens 3; filament filiform; anther linear-oblong, bifid on both ends, about 1 $\frac{1}{2}$ mm. long, yellow. Ovary linear-obovate, pubescent towards the top; styles 2, plumose. Grain included, angustato-oblong, pubescent at the top, about 2 $\frac{2}{3}$ mm. long.

Nom. Jap. *Yama-toboshigara* (T. Makino), *Kogome-nukabo* (H. Takeda).

Hab. Prov. TOSA: Okunanokawa (*K. Watanabe*! May 20, 1888); Prov. HIDA: Takayama (*S. Matsuda*! 1896?); Prov. SHIMOTSUKE: Near Sandyū-no-yamanokami in Nikkō (*J. Matsumura* and *Y. Yabe*! June 12, 1901); Takinoo and Hotokeiwa in Nikkō (*H. Takeda*! June 27, 1905).

Diplazium Okudairai Makino sp. nov.

Rhizome repent. Stipe loosely placed on the rhizome, long and slender, shorter than the frond, about 19–21 cm. long, very thinly scaly above, nigro-castaneous and more densely scaly towards the base; scales subulato-lanceolate or narrowly subulato-lanceolate, acuminate, entire, very closely areolate, fusco-castaneous, attaining about 5 mm. long. Frond lato-lanceolate or ovato-lanceolate, acuminate, truncate at the base, about 25–29 cm. long, 14–16 cm.

broad, simply pinnate, flaccid in texture; rachis slender, green and glabrous in front, virido-nigrescent and very thinly scaly dorsally, narrowly winged above; pinnæ about 13-14 on each side, usually alternate, spreading, more or less apart or nearly closely placed above, very shortly petiolate but sessile and confluent to the rachis-wings above, lanceolate and somewhat falcate, obliquely lato-cuneate at the base having a margin parallel to rachis, auriculate with a short-ovate rounded-tipped lobe at the upper base and the auricle depressed in the superior ones, coarsely crenate on both margins and the teeth irregularly few-several-denticulate, membranaceous, green, glabrous above, thinly dispersed with minute scales beneath, the lower pinnæ attaining about $9\frac{1}{2}$ cm. long, nearly 2 cm. broad; midrib slender; veins delicate, erect-patent, flexuous; veinlets delicate, pinnately arranged, not close, simple, but often furcate in those of the auricle. Sori adnate to the upper basal veinlet and sometimes also having a short one adnate to the next veinlet, 1 to several to an auricle, principal ones in one row on each side, slightly nearer to the midrib than the margin, erect-patent, moderately apart, linear, arcuate, attaining 10 mm. long, mixed with diplazoid ones; indusium thinly membranaceous, entire.

Nom. Jap. *Iyo-kujaku* (nov.).

Hab. Prov. Iyo: Mt. Iwaya in Kamiukena-gōri (*K. Okudaira*! Oct. 28, 1905).

This fern comes very near to *Diplazium Wichuræ* Metten., but the frond is flaccid and much thinner; pinnæ fewer and broader; sori larger and compound. It grows in very shady places associated with *Diplazium javanicum* Makino (= *Allantodia javanica* Bedd. = *Asplenium javanicum* Bl.) and *Nephrodium viridescens* Baker, in above-cited locality.

***Arcterica nana* (Maxim.) Makino.**

Andromeda nana Maxim. in Bull. Acad. Pétersb. XVIII. p. 47 (1872), et in Mém. Biol. VIII. p. 615 (1872); Franch. et Sav. Enum. Pl. Jap. I. p. 284, et II. p. 526; H. de Boiss. in Bull. Herb. Boiss. V. (1897) p. 912.

Pieris nana Makino in Bot. Mag., Tokyo, VIII. (1894) p. 213, et XVIII. (1904) p. 18; Yabe et Endo, Pl. Shimushu Isl. in Bot. Mag., Tokyo, XVIII. (1904) p. 190.

Lyonia nana Makino MSS.

Cassiope oxygocoides A. Gray in Proc. Am. Acad. XX. (1885) p. 300.

Arcterica oxycoccoides Coville in Bot. Gaz. XXXVII. (1904) p. 299, fig. 1, et 2, a; Yabe in Bot. Mag., Tokyo, XVIII. (1904) p. 204.

Nom. Jap. *Hama-zakura*, *Komeba-tsugazakura*.

Hab. Japan, middle and northern.

Distrib. Bering Island, and Kamchatka.

***Marlea platanifolia* Sieb. et Zucc.**

***a. typica* Makino.**

Marlea platanifolia Sieb. et Zucc. in Abhandl. Akad. Münch. IV. 2, p. 134, n. 95; Miq. Prol. Fl. Jap. p. 91.

Marlea platanifolia Franch. et Sav. Enum. Pl. Jap. I. p. 195, ex parte.

Leaves broadly cordate at the base, permanently 5-3-palmatilobed; lobes ovate to oblong, attenuately acuminate, often attenuated towards the base, entire; sinuses not close, rounded at the bottom.

Nom. Jap. *Momidzi-urinoki* (nov.).

Hab. Prov. BUZEN: Mt. Iwagadake (*R. Yatabe* and *J. Matsumura*! herb. Sc. Coll. Imp. Univ. Tokyo, July 17, 1882); Prov. CHIKUZEN: Mt. Kosho (*K. Nagano*! herb. ibid.), Mt. Hikosan (*T. Makino*! Aug. 1906); Prov. SUŌ: Miyano-mura (*D. Nikai*! herb. ibid. July 2, 1892).

This is found in Kiusiu and western parts of Honsiu of Japan.

***β. macrophylla* (Sieb. et Zucc.) Makino.**

Marlea macrophylla Sieb. et Zucc. in Abhandl. Akad. Münch. IV. 2, p. 134, n. 96.

Marlea platanifolia Franch. et Sav. Enum. Pl. Jap. I. p. 195, ex parte.

Marlea platanifolia var. *trilobata* Miq. Prol. Fl. Jap. p. 91.

Leaves cordate or sometimes rounded at the base, shallowly 3-lobed above, sometimes not lobed; lobes broadly deltoid, cuspidato-acuminate, the midlobe slightly larger and lateral ones divergent; sinuses very broad, rounded or obtuso-rounded at the bottom.

Nom. Jap. *Uri-no-ki*.

Hab. Japan, widely distributed.

The difference of the characters of leaves is fixed and constant, hence the species should be divided into two varieties as above.

(*To be continued.*)