Observations on the Flora of Japan.

(Continued from p. 75.)

By

T. Makino.

*Assistant in Botany, Science College,
Imperial University of Tokyo.*

Cynocrambe japonica Makino in Bot. Mag., Tokyo, VIII. (1894) p. 348; Matsum. Shokubutsu Mei-i (1895) p. 98, n. 1051.

Thelygonum japonicum Okubo et Makino in Bot. Mag., Tokyo, III. (1889) p. 5.

Thelygonum sp. Makino in Bot. Mag., Tokyo, I. (1887) p. 169, tab. 20.

Perennial, monœcious, about 12–29 cm. high; roots fibrous, tufted; rhizome very short, rooting. Stem laxly ramose below; flowering one erect, but the sterile branches at first ascending and then after anthesis declinated at length considerably elongated prostrate and radicant at nodes (the internodes perish in late autumn and the rooting nodes having the new buds so form a new stock), terete, with a pubescent (pubes retrorso-incurved) line at the one side, the middle internodes of the flowering stem usually elongated. Leaves opposite and the pairs remote, petiolate, ovate to narrowly ovate, but ovato-elliptical or ovato-lanceolate in the superior ones and rhombo-oval in the basal ones, short-acuminate at the apex, rounded or obtuse and slightly decurrent to the petiole at the base, entire, ciliated, thinly pubescent above and very thinly so beneath, membranaceous, nigrescent when dried, $\frac{1}{2}$ – $3\frac{1}{2}$ cm. long, $\frac{1}{2}$ –2 cm. broad; veins loose, 2–4 on each side, erect-patent, arcuate upwards; petiole usually shorter than the blade, but longer than in the inferior ones; stipules interpetiolar, shortly connate at the base, amplexicaule, much shorter than the petiole, deltoid or subulato-deltoid, membranaceous, often very sparingly ciliated. Bracts leaf-like, alternate, remotely disposed, petiolate, ovate, ovato-elliptical, but ovato-lanceolate in the superior ones, shortly

acuminate, entire, ciliated, thinly pubescent towards the margin, about 7–17 mm. long; petiole shorter than the blade, stipulate at the base. Male-flowers opposite to the bract, usually geminate or sometimes solitary to a node, deflexo-patent, subsessile (extremely shortly pedicellate), about 8–10 mm. long, trigono-cylindrical with a truncato-obtuse and subrugose apex in bud, glabrous, viridescent; perianth-segments 3, valvate in æstivation, narrowly oblong, obtuse, entire, membranaceous, revolute, delicately about 9–12-nerved. Stamens many (about 19–23), free, as long as the perianth, pendulous, much exposed by the revolution of the perianth-segments, inserted at the base of the perianth; filaments capillary, tubercled in surface under microscope; anther linear, a little longer or shorter than filament, dorsifixed near to the base, about 5 mm. long; pollen white, depressed, concave at both ends, 4–5-subsulcate longitudinally. Female-flower minute, axillary, sessile, with a minute bracteole, very oblique; the lower portion ovary-like, obovate or obovato-oval, compressed, hispidulous; the upper tubular portion continued to the lateral face, different in texture, much smaller, infundibuliform-campanulate, constricted at the base, unequally bilobate, traversed by the style, deciduous. Ovary solitary, obovate, entirely inclosed; style lateral, short; stigma exserted, corniculate, curved, minutely papilloso-scabrous. Nut solitary, closely and entirely inclosed within the perigone; perigone pubescent, obovato-oblong or obovato-elliptical, compressed, erect, herbaceous, thickish, and 3–3½ mm. in length. Flowers in April–May.

Nom. Jap. *Yamato-gusa* (T. Makino).

Hab. Prov. TOSA: Nanokawa (T. Makino!; K. Watanabe!), Ikegawa (K. Watanabe!), Ishigami-ga-tō in Mt. Torigata (T. Makino!), Mt. Kurotaki (T. Yoshinaga!); Prov. HITACHI: Mt. Tsukuba (T. Makino!); Prov. AWA [Bōshū]; Mt. Kiyosumi (T. Makino!); Prov. SURUGA: Mt. Fuji (T. Makino!); Prov. SAGAMI: Mt. Ōyama (J. Matsumura and S. Matsuda!); Prov. HIGO: Mt. Azami (H. Nakagawa!); Prov. ŌMI: Mt. Ibuki (T. Makino!).

This species has a close resemblance to *Oldenlandia hirsuta*

Cynocrambe japonica Makino.

Linn. fil. (= *Hedyotis stipulata* R. Br.) of *Rubiaceæ* not only in the size and form but even in its offensive smell. It was first discovered and collected by me on the mountain in Nanokawa in the province of Tosa in Shikoku, in November 1884.

EXPLANATION OF FIGURE.—1, *Flowering stem*, nat. size. 2, *Part of flowering stem, with male and female (a) flowers*, mag. 3, *Female flower*, mag.

Urtica dioica Linn. Sp. Pl. p. 984.

var. *sikokiana* Makino, var. nov.

Diœcious, attaining about 13 decim. in height. Stem erect, but often ascending at the base, very slender, tetragonous, very sparingly pilose with patent hairs. Leaves opposite, petiolate, lanceolate but linear-lanceolate in the superior ones, attenuatedly long-acuminate, subcordato-truncate or rounded-truncate at the base, but obtuse in the superior ones, coarsely argutely dentate with deltoid teeth, glabrous but extremely thinly pilose on nerves beneath, thin in texture, often nigrescent when dried, attaining about 13 cm. long, 4 cm. wide, but about 6–8 mm. wide in the angustate ones; petiole angustate, thinly patent-pilose, attaining $2\frac{1}{2}$ cm. long; stipules linear, acuminate, attaining 9 mm. long. Peduncles exceeding the petiole but shorter than the blade, loose, slender, thinly pilose, very laxly with short branches, rather laxly floriferous. Male-flowers very shortly pedicellave, about $2\frac{1}{2}$ mm. across; perianth-segments elliptical, obtuse, concave, thinly membranaceous. Stamens 4, exserted, nearly twice as long as the perianth-segments; filament subulato-filiform; anther rounded. Rudimentary ovary ob-ovoid-globose. Female-flowers sessile, minute; perianth-segments greenish, hispidulous in fruit, the outer 2 smaller and elliptical, the inner 2 oval and about 1 mm. long in fruit. Nut oval, compressed, smooth, stramineous, 1 mm. long; stigma minute.

Nom. Jap. *Nagaba-irakusa* (nov.).

Hab. Prov. TOSA: Mt. Tebako (*T. Makino!*; *R. Yatabe!*);

Prov. IYO : Mt. Ishidzuchi (*R. Yatabe*!; *H. Yamamoto*!);
Prov. AWA : Mt. Tsurugi-san (*D. Nikai*!).

This variety comes near to *Urtica dioica* Linn. var. *angustifolia* Ledeb., but the stem more slender, leaves narrower and thinner, inflorescence laxer, and flower and fruit smaller.

***Pellionia minima* Makino, sp. nov.**

A dioecious perennial herb, dark-green; stem gracile, prostrato-creeping, radiant below, loosely ramose, leafy branches about 2–15 cm. long, minutely subretroscopically hispidulo-pubescent, dark-purplish. Leaves alternate, distichous, patent, very shortly petiolate, elliptical to oval-elliptical, obtuse, very obliquely obtuso-subcordate often peltate at the base, crenate with several teeth, glabrous, but pubescent on the midrib and veins beneath, hardly or obviously dispersed with gracile and linear cystoliths towards the margin above, 3–15 mm. long, 2–9 mm. broad, evergreen; veins few and very loose, 2–4 on each side; petiole minutely subretroscopically hispidulo-pubescent, 1–1½ mm. long; stipules linear-subulate, very acuminate, somewhat exceeding the petiole. Male-flower unknown. Female cyme axillary, depressed-capituliform with the very shortly pedicellate dense subnumerous flowers, on peduncles of 1–2½ mm. long, about 4–5 mm. across in fruit; involucre bracts subulato-lanceolate, thin. Perianth-segments 5, unequal, subulate, long coriaceous with a linear-subulate appendage in the back under the apex, 1½–2½ mm. long including the appendage in fruit. Staminodes oblong-lanceolate, thin, inflexed above the middle, much shorter than the perianth, acutish at the apex. Nut sessile, prominently tuberculate, ellipsoid, about 1 mm. long.

Nom. Jap. *Sanshō-sō*, *Hai-midzu*.

Icon. Inuma's *Somoku-Dzusetsu*, XX. n. 17.

Hab. Japan.

This is very closely allied to *Pellionia brevifolia* Benth. of Hongkong; judging from the Bentham's description the difference between them is very scarce. It differs from *P. ra-*

dicans Wedd. in which the leaves are much larger and more attenuated at the apex. The male plant is yet unknown.

Pilea Hamaoi Makino in Bot. Mag., Tokyo, X. (1896) p. 364.

A monœcious annual, 6–30 cm. in height. Stems divided from the ascending rooting base and often branched below, obtusely tetragonous, glabrous, succulent, smooth, shining, fleshy, greenish-pellucid; internodes elongated. Leaves opposite, long-petiolate, subrhomboid-ovate, obtuse, broadly cuneate towards the base, crenate, triplinerved and veiny, green above, paler beneath, very sparingly piloso-pubescent above or glabrous, distributed with gracile and linear cystoliths, thin, 1–4 cm. long, $\frac{2}{3}$ –3 cm. wide; petiole gracile, shorter than the blade, $\frac{1}{2}$ –2 cm. long; stipule small, oval, rounded at the apex, entire, hyalino-membranaceous, persistent. Cyme dense, axillary, shorter or longer than the petiole, sessile, mixed with male and female clusters; peduncle ramose, secundly flowered; bracts deltoid-ovate, obtuse or acutish, hyaline; bracteoles minute, subulate, hyaline. Male-flowers minute, pedicellate, about 1mm. long. Perianth-segments 2, hyalino-membranaceous, rotundate, concave, rounded at the apex. Stamens 2, scarcely exerted; filament subulato-filiform. Female-flowers shortly but stoutly pedicellate. Perianth-segments 3, hyaline towards the margin, 2 of them much larger than the other one, the larger ones scarcely unequal, ascending-erect, recurved above, ovato-elliptical or oblong, acute at apex and mucronate under it, concave, green and manifestly carinate dorsally, about 3mm. long in fruit, the smaller one ovato-lanceolate, acuminate. Staminodes 3, much shorter than the perianth-segments, obovate to oblong, obtuse, inflexed in or above the middle. Ovary narrowly ovate, compressed, smooth, spotted, shorter than the larger 2 perianth-segments; stigma minute, penicillate. Nut sessile, ovate, shortly attenuated towards the apex, compressed, smooth, mottled with brown, slightly shorter than the persistent perianth-segments, $1\frac{2}{3}$ –2mm. long.

Nom. Jap. *Midzu*.

Icon. Inuma's *Somoku-Dzusetsu*, XX. n. 12.

Hab. Prov. MUSASHI: Nakano near Tokyo (*T. Makino*!), Shimura (*T. Makino*!); Prov. SHIMOTSUKE: Nikko (*K. Sawata*! herb. Sc. Coll. Imp. Univ. Tokyo; *T. Makino*!); Prov. YAMASHIRO: Mt. Hiei (*T. Takahashi*!); Prov. OSHIMA: Fukushima (*Y. Kudō*!).

This species comes near to American *Pilea pumila* A. Gray, but the latter has the smaller female perianth, smaller nut, thinner and larger leaves, stouter stem, 4-parted male perianth and 4 stamens. It also seems to me to be closely allied to *P. mongolica* Wedd. in DC. Prodr. XVI. 1, p. 135, which I have not been acquainted. I have dedicated this species to Baron A. Hamao, Director of the Tokyo Imperial University.

***Pilea viridissima* Makino, sp. nov.**

Pilea pumila Maxim. in Mél. Biol. IX. p. 631 (1876); Franch. et Sav. Enum. Pl. Jap. II. (1879) p. 492; Makino in Bot. Mag., Tokyo, X. (1896) p. 364, non A. Gray.

Pilea petiolaris Franch et Sav. l. c. I. p. 438, quoad pl. circa Yokoska lectam, non Bl.

A monœcious annual, about 18–70 cm. high. Stem erect, but the base often shortly decumbent and rooting, often with short or long branches, succulent, glabrous, smooth, the inferior internodes elongate and more or less swollen. Leaves petiolate, ovate, broad-ovate, or subrhomboid-ovate, caudato-acuminate with an obtuse or acutish tip in the superior ones but shortly obtuso-acuminate in the inferior ones, broadly cuneate or cuneate-obtuse and entire towards the base, coarsely dentate with subincumbent-deltoid acute or acutish or subobtuse tipped teeth, thinly membranaceous when dried, green and very sparingly pilose or glabrous above, slightly paler and very thinly pilose beneath, dispersed with linear and gracile cystoliths on both surfaces, triplinerved, with patulous veins, 1–8½ cm. long, ½–7 cm. wide; petiole slender, 1–10 cm. long, glabrous; stipules small, ovate or ovato-oval, rounded-obtuse

or truncato-rounded at apex, entire or subcrenate towards the apex, hyalino-membranaceous, persistent. Cyme condensed, axillary, sessile, usually shorter than the petiole, extended horizontally and more or less reflexedly, secundly flowered, mixed with male and female clusters; peduncle ramose, flexuous; bracts minute, oblong-subulate or deltoid-subulate, obtuse or acute, hyaline; bracteoles smaller than bracts, ovato-subulate or deltoid-ovate, hyaline. Male-flowers minute, nearly 1mm. long, shortly pedicellate, the flower-bud obovato-globose; perianth-segments 2, obovato-orbicular, concave, membranaceous, virid-mucronate under the apex. Female-flower green, minute, about $\frac{2}{3}$ mm. long, sessile or very shortly pedicellate; perianth-segments 3, subequal, erect-patent, broad-linear, subcucullate, very minutely cuspidate at the apex, carinate dorsally, attaining $1\frac{2}{3}$ mm. long and subulato-linear in fruit; staminodes 3, shorter than the perianth-segments, obovate or elliptical, obtuse, inflexed above the middle. Ovary elliptical-oblong, smooth, shorter than the perianth; stigma sessile, penicillate. Nut ovate, compressed, sessile, $1\frac{1}{2}$ mm. long, hardly longer or shorter than the perianth, smooth, sparingly spotted.

Nom. Jap. *Ao-midzu* (*T. Makino.*).

Hab. Japan (*T. Makino*!).

Common. This species is very closely allied to *Pilea pumila* A. Gray, to which the former was identified by Maximowicz, but it is a different species. In *P. pumila* A Gray the perianth-segments of the male-flower are 4, stamens 4, cyme laxer and leaves crenato-dentate with ovato-deltoid teeth (the upper margin curved), and this is not yet found in Japan.

***Morus tiliæfolia* Makino, nom. nov.**

Morus rubra var. *japonica* Makino in Bot. Mag., Tokyo, XIX. (1905) p. 134.

Morus nigra Matsum. in Bot. Mag., Tokyo, XVI. (1902) p. 18, non Linn.

Nom. Jap. *No-guwa*, *Yama-guwa*, *Ke-guwa*.

Hab. Prov. NAGATO, BITCHŪ, Кп.

Similar to *Morus rubra* Linn. of North-America, but the stigmatic arms are different.

***Polygonum nipponense* Makino, nom. nov.**

Polygonum hastato-sagittatum var. β . *latifolium* Makino
in Bot. Mag., Tokyo, XVII. (1903) p. 120.

Polygonum muricatum var. Maxim. in litt.

Nom. Jap. *Yanone-gusa*.

Hab. Japan.

forma albiflorum Makino.

Flowers white. Others as in the type.

Hab. Japan.

***Sageretia theezans* (Linn.) Prongn.** in Ann. Sc. Nat. 1 sér. X. (1827) p. 36; Hook. et Arn. Bot. Beech. Voy. p. 178; Brand. For. Fl. p. 95; Kurz, For. Fl. Brit. Burm. I. p. 267; Benth. Fl. Hongk. p. 68; Maxim. Rhamn. Or-As. in Mém. Acad. Sc. Pétersb. 7 sér. X. n. 11 (1866) p. 30, et in Act. Hort. Petrop. XI. p. 100; Laws. in Hook. fil. Fl. Brit. Ind. I. p. 641; Hance in Journ. Linn. Soc. XIII. p. 115; Forbes et Hemsl. in Journ. Linn. Soc. XXIII. p. 131; Matsum. in Bot. Mag., Tokyo, XII. (1898) p. 12; Henry, List Pl. Formos. p. 27; Ito et Matsum. Tent. Fl. Lutch. I. p. 377; Palib. Consp. Fl. Kor. I. p. 55; Matsum. et Hayata, Enum. Pl. Formos. p. 88; Nakai, Fl. Kor. I. p. 127.

Phamnus theezans Linn. Mant. p. 207; Willd. Sp. Pl. I. p. 1094; Schult. Syst. Veg. V. p. 281; DC. Prodr. II. p. 26.

Rhamnus Thea Osbeck. It. p. 232.

Nom. Jap. *Kuro-ige*.

Hab. Prov. HIZEN in Kiusiu: Isl. Fukaye (*Z. Tashiro*!; *T. Makino*!).

New to the Flora of Kiusiu.

Eupatorium sachalinense (Fr. Schmidt) Makino, nom. nov.

Eupatorium japonicum var. *sachalinensis* Fr. Schm. Reis. im Amur. u. Ins. Sachal. (1868) p. 145; Franch. et Sav. Enum. Pl. Jap. I. p. 219; Matsum. Cat. Pl. Herb. Coll. Sc. Imp. Univ. Tokyo (1886) p. 95.

Nom. Jap. *Yotsuba-hiyodoribana*.

Hab. Japan, central and northern, mountains.

Eupatorium japonicum Thunb. Fl. Jap. (1784) p. 308.
forma aureo-reticulatum Makino.

Leaves yellow-reticulated.

Nom. Jap. *Kimon-hiyodoribana* (nov.).

Hab. Japan (*T. Makino*!).

var. dissectum Makino.

Stem ramose. Leaves short-petiolate, trisected, irregularly and incisely pinnati-parted or fid with acute lacinæ.

Nom. Jap. *Kikuba-hiyodoribana* (nov.).

Hab. Prov. HIZEN: Mt. Tara (*T. Makino*! August 1907).

Pleurogyne carinthiaca (Wulf.) Griseb. Gen. et Sp. Gentian. (1839) p. 310; DC. Prodr. IX. p. 122; Peterm. Deutschl. Fl. (1849) p. 381, tab. 60, fig. 471; Ledeb. Fl. Ross. III. p. 71; A. Gray, Syn. Fl. N. Am. II. 1, p. 124 (*var. pusilla*); Gilg in Engl. et Prantl, Nat. Pfl.-Fam. IV. 2, p. 87, fig. 38 A-E; Britt. et Br. Ill. Fl. N. Un. St. et Can. II. p. 619, fig. 2883.

Swertia carinthiaca Wulf. in Jacq. Misc. II. (1781) p. 53, tab. 6; Poir. Encycl. Meth. Bot. VII. p. 493.

Gentiana carinthiaca Froel. Gent. Diss. p. 103; Willd. Sp. Pl. I. p. 1350; Schult. Syst. Veg. VI. p. 173; Cham. et Schlecht. in Linnæa, I. p. 189.

Lomatogonium carinthiacum A. Braun in Flora, XIII. (1830) p. 221; Reichb. Fl. Germ. Exc. (1830-32) p. 421; Koch, Syn. Fl. Germ. et Helv. ed. 3, p. 422.

Biennial, pygmy, glabrous, about $3\frac{1}{2}$ –9cm. in height in my specimens ; roots slender, white, with short branches. Stem gracile, filiform, erect, subfastigiately branched or simple, very narrowly and glabrously 4-alato-angulate, glabrous, the upper internode elongate, much longer than the leaves. Leaves several, opposite (the pairs about 3–5), approximate in the basal ones, oblong, subspathulato-oblong, obovate or ovate, obtuse or acutish, cuneately attenuated below and shortly petiolate, but nearly sessile in the superior ones, entire, about 4–13mm. long, $1\frac{1}{2}$ – $3\frac{1}{2}$ m. wide, 5-sub-7-nerved, with reticulated veins above, green. Flowers pedicellate, solitary, ebracteate, 7mm. long, cœruleous ; peduncle simple, strict, glabrously angustately 4-alato-angulate, longer than the flower. Calyx deeply 4-parted, herbaceous, green, shorter than the corolla, persistent ; segments elliptical, oblong-elliptical, obovato-oblong, oblanceolate or broad-ovate, acutish or obtuse at apex, cuneately attenuated at base, entire, 3-nerved, with reticulated veins above, about 4–7mm. long. Corolla very deeply 4-parted, persistent ; tube very short ; segments elliptical, shortly attenuated with an obtuse tip, entire, thin, very loosely 5-nerved, distantly 2-appendiculate at the base, the appendages adpressed and tubularly adnate to the corolla at the base, laciniate or sublaciniate above or simple. Stamens 4, inserted at the throat, shorter than one-half of the corolla-segments ; filament subulato-linear ; anther oblong-elliptical to rotund, bifid at the base. Ovary ovato-lanceolate, compressed, sessile, no style, shorter than the corolla ; stigma sessile ; ovules subnumerous, rotund or obovato-rotund. Capsule slightly exserted from or equal to the persistent corolla, lanceolate, attenuated towards the both ends, smooth, distinctly margined, about 8–10mm. long ; carpels thin, recurved at the apex when dehiscent ; seeds minute, ellipsoid or oblong, smooth, yellowish-nigrescent, about $\frac{2}{3}$ mm. long.

Nom. Jap. *Hime-semhuri* (nov.).

Hab. Prov. SHINANO : Alpine region on Mt. Yatsugatake (S. Hara ! Sept. 15, 1908).

This genus is new to the Flora of Japan.

Pedicularis verticillata Linn. Sp. Pl. p. 608; Willd. Sp. Pl. III. p. 214, excl. var. β .; Pers. Syn. Pl. II. p. 153, excl. var. β .; Gærtn. Fruct. I. p. 246, tab. 53, fig. 5; Spreng. Syst. Veg. II. p. 781; Cham. et Schlecht. in Linnæa, II. p. 582; Hook. et Arn. Bot. Beech. Voy. p. 128; Hook. Fl. Bor.-Am. II. p. 107; Reichb. Fl. Germ. Excurs. p. 361; Nyman, Syl. Fl. Eur. p. 129; Bunge in Ledeb. Fl. Ross. III. p. 270; Benth. in DC. Prodr. X. p. 563; Walp. Rep. III. p. 411; Regel et Til. Fl. Ajan. p. 114; Koch, Syn. Fl. Germ. et Helv. ed. 3, p. 471; Fr. Schm. Reis. im Amur. u. Ins. Sachal. p. 58; A. Gray, Syn. Fl. N. Am. II. 1, p. 305; Hook. fil. Fl. Brit. Ind. IV. p. 309; Maxim. in Mém. Biol. X. p. 95, excl. varr., et XII. p. 891, tab. 4, fig. 123; Herd. Pl. Radd. IV. 4, p. 81; Forbes et Hemsl. in Journ. Linn. Soc. XXVI. p. 219; Ito, Hakubutsukwaishi, I. p. 74.

Pedicularis Stevenii Bunge in Ledeb. Fl. Alt. II. p. 427; Less. in Linnæa, IX. p. 154, 157.

Pedicularis amœna Yabe, Enum. Pl. Alp. Mont. Shirouma in Bot. Mag., Tokyo, XVII. (1903) p. 25; Miyoshi et Makino, Alp. Pl. Jap. I. p. 31, tab. 16, fig. 92, non Adams.

Biennial?, low, 4–17cm. high, simple or cæspitose; root perpendicular, conical or subfusiform-conical, branched towards the end, nigrescent; neck scaly; scales deltoid to subulate, acute or acutish, entire, thickly membranaceous, erect, blackish. Stem erect in the central one, but ascendingly erect in the surrounded ones which are the branches divided at the base, 1–8, terete-subtetragonous, strict, 4- or rarely 5-serial-pilose with retrorsely incurved subadpressed several-celled white hairs, the middle internodes long. Leaves not many, 4–3- or rarely 5-verticillate, erect-patent, shortly petioled, but long-petiolate in the basal ones, deeply pinnatiparted with patent or erect-patent pinnæ and narrow or broad sinuses (the bottom obtuse), oblong, narrowly oblong, ovato-elliptical, or ovato-lanceolate, obtuse but with an acute tip at the apex, thinly pilose with patent several-celled white hairs on both surfaces, thickish in texture, green, about 8–30 mm. long, 4–15 mm. broad; pinnæ simply or subduplicately pinnatifid-dentate with acute deltoid

or ovato-deltoid teeth, oblong or elliptical, obtuse but with an acute tip; midrib prominent beneath, but in recent impressed above as are the veins; petiole pilose with incurved hairs. Raceme erect, densely flowered, usually capitate, sometimes interrupted, or rarely branched below, bracteate, $1\frac{1}{3}$ –7 cm. long; rachis straight, erect, pilose with incurved several-celled white hairs; bracts 4–3- or rarely 5-verticillate, shorter than the flowers but the lowest ones sometimes exceeding them and usually patent, thinly pilose, acute, green, the lower ones foliiform, shortly petiolate, elliptical-ovate, pinnatifid with pinnatifid-dentate oblong or elliptical erect-patent several lobes on each side, the superior ones gradually smaller, few-pinnatifid on each side, gradually cuneate towards the base. Flowers purple, shortly pedicellate, 4–3-verticillate, about 14–18 mm. long; pedicel erect, glabrous, about $1\frac{1}{2}$ –2 mm. long. Calyx about 5–7 mm. long in flower but more or less enlarged and about $7\frac{1}{2}$ –9 mm. long in fruit, oval-globose, inflated, tinged with purple, slightly oblique and rounded at the base, oblique and very shortly 3- or sub-5- or 5-toothed at the coarctate mouth, spreadingly pilose on veins and densely ciliated with several-celled white hairs, hyalino-membranaceous, with 11 or 13 green vertical veins without transverse veinlets but slightly reticulated towards the margin of the teeth; teeth abbreviate and very short, erect, entire, very obtuse, the dorsal one ovato-deltoid or deltoid, the lateral ones often connate or hardly 2-toothed or sometimes normally bifid into ovato-deltoid teeth, very hardly shorter or slightly longer than the dorsal one, the lower teeth often shorter, the sinuses with obtuse bottom, the lowest sinus larger and deeper. Corolla much exerted, ascendingly patent, glabrous but minutely papillose in the tube internally; tube glabrous externally, attenuated towards the base, geniculato-inflexed with a nearly right angle above the erect base under the mouth of the calyx, the upper portion above the angle ascending and infundibuliformly enlarged; limb shorter than the tube, ringent, the galea obliquely erect, oblong and scarcely arcuate forwards in folded condition, truncate at the apex, subcucullate, erostrate and somewhat angulate in front, entire, shorter than the lower

lip; the lower lip horizontally expanded, 3-lobed with the not broad sinuses (obtuse at the bottom), 10–13 mm. broad, the lateral lobes broader and broadly rounded, retuso-subemarginate at the apex; the midlobe longer and smaller, obovato-orbiculate, about $3\frac{1}{2}$ –5 mm. broad. Stamens included in the interior of the galea, the anterior longer 2 reaching the top of the galea; filament filiform, patently pilose above on one side in those of the anterior ones; anther rotund-obcordate, bifid at the base with acute tip of the cells, glabrous, one pair distant from the other. Style filiform, glabrous, strongly curved at the upper portion along the superior inner side of the galea and the apex a little projecting; stigma truncato-subcapitate. Ovary included, ovoid, compressed, angulate at the base in front, glabrous, $1\frac{1}{2}$ mm. long. Capsule patent, slightly exserted, sessile, somewhat oblique, attenuated above, ovato-lanceolate, cuspidato-acute at the top with the base of the style, smooth, about 9–10 mm. long; carpel not thick. Seeds several, oblong-fusiform, smooth, 3 mm. long.

Nom. Jap. *Takane-shiogama* (nov.).

Hab. PROV. SHINANO: Mt. Shirouma (*Y. Yabe*!; *T. Uchiyama*!; *B. Iyoki*!; *T. Makino*!), Mt. Yatsugatake (*T. Makino*!).

New to the Flora of the main land of Japan, but KURILE Islands, or CHISHIMA, of Hokkaido, was formerly reported by Maximowicz as one of the localities of this species. It differs from *P. amœna* Adams. in which the pinnae and calyx-teeth are narrower.

Forma albiflora (= *P. verticillata* var. *fl. albis* Herd. l. c. p. 83) rarely occurs there.

Iris Kämpferi Sieb.

α. **spontanea** Makino.

Iris lævigata Regel, Gartenfl. (1864) p. 198, tab. 442, et Tent. Fl. Ussur. n. 489; Bot. Mag. (1874) tab. 6132, non Fisch. et Mey.

Iris lævigata β . *Kämpferi* Maxim. in Mél. Biol. X. p. 712 (1880).

Colour of the flowers does not vary being always reddish-purple.

Nom. Jap. *No-hanashōbu* (nov.).

Hab. Japan, central and northern, fields and mountains, wild.

β . **hortensis** (Maxim.) Makino.

Iris lævigata γ . *hortensis* Maxim. in Mél. Biol. X. p. 712.

Iris Kämpferi Sieb. in Lemaire, Ill. Hortic. V. (1858) tab. 157.

Nom. Jap. *Hana-shōbu*.

Hab. Japan, cultivated.

There are many horticultural forms; colour, form and size of the flowers are very various. The petals are frequently found to approach the sepals in form.

Iris lævigata Fisch. et Mey. is certainly a different species from *I. Kämpferi* Sieb., bearing a native name of *Kakitsubata* in Japan, where it is found in garden and in wild. *I. albopurpurea* Baker is a garden variety of *I. lævigata* Fisch. et Mey., and its vulgar name is *Washi-no-o*; this has been reduced by Mr. H. Takeda to the latter under the name of *I. lævigata* Fisch. et Mey. var. *albopurpurea* (Baker) Takeda.

(To be Continued.)