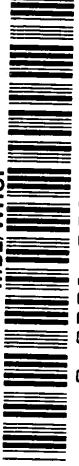


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VOLUME IX.

March 25th, 1920.

臺灣植物圖譜

臺灣植物誌料

第九卷

Icones Plantarum Formosanarum

nec non et

Contributiones ad Floram Formosanam.

or,

Icones of the Plants of Formosa, and Materials for a Flora of the
Island, based on a Study of the Collections of the Botanical
Survey of the Government of Formosa.

By

Bunzō Hayata, *Rigakuhakushi.*

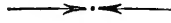
VOLUME IX.

Published by the Bureau of Forestry, Industries,

Government of Formosa,

TAIHOKU.

NOTICE



- I. Dicotyledons—Polypetalous: Ranunculaceæ—Rosaceæ. Published September 10th, 1911.
 - II. 1. Conspectus of the Flora of Formosa, Saxifrageæ—Dipsaceæ.
2. New or Noteworthy Plants of Formosa. Published October 15th, 1912.
 - III. 1. Contributions to the Flora of Formosa, I.
2. On the Systematic Position of *Mitrastemon*, as a Genus representing a special Tribus of the Rafflesiaceæ. Published December 25th, 1913.
 - IV. Contributions to the Flora of Formosa, II. Published November 25th, 1914.
 - V. Contributions to the Flora of Formosa, III. Published November 25th, 1915.
 - VI. Contributions to the Flora of Formosa, IV. Published November 25th, 1916.
 - VII. Contributions to the Flora of Formosa, V. Published March 25th, 1918.
 - VIII. Contributions to the Flora of Formosa, VI. Published March 25th, 1919.
 - IX. Contributions to the Flora of Formosa, VII. Published March 25th, 1920.
 - X. Will be published in September 1920.
-

ICONES PLANTARUM FORMOSANARUM

NEC NON ET

**CONTRIBUTIONES AD FLORAM
FORMOSANAM**

IX.

AUCTORE

Bunzō Hayata

TO HIS EXCELLENCY BARON KENJIRO DEN,

GOVERNOR GENERAL OF FORMOSA.



SIR,

I have the honour to submit to your Excellency the ninth volume of the *Icones Plantarum Formosandarum, nec non et Contributiones ad Floram Formosanam* by BUNZŌ HAYATA, D. Sc.

HIROSHI SHIMOMURA,

CIVIL GOVERNOR OF FORMOSA.

November 1, 1919, Taihoku.

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INTRODUCTION.

The present volume contains studies on species and varieties ranging from the Ranunculaceæ down to the Aroideæ. All the species of Phanerogamous plants are here arranged, as in the preceding volumes, after the system of BENTHAM and HOOKER. Of the species and varieties mentioned in this work, 139 are proposed as new species and 4 are regarded as new varieties of known species. Two new genera *Dolichorigna* and *Pseudosmilax* are proposed as new, while nine genera are mentioned as new to the flora of the island. The latter genera are as follows:—

| | | |
|----------------------|----------------------|------------------|
| <i>Recessia</i> | <i>Anotis</i> | <i>Agynœia</i> |
| <i>Phellodendron</i> | <i>Mimulus</i> | <i>Alchornea</i> |
| <i>Filipendula</i> | <i>Siphonostegia</i> | <i>Orchis</i> |

Thus, up to the present date, the total number of species of the flora, so far as is known, is 3,608 and 78 varieties belonging to 1,185 genera and 169 families.

Finally, I avail myself of this opportunity to tender my hearty thanks to the officials of the Government of Formosa, to whom I am much indebted for help in the collection of material and in the publication of this work.

BUNZŌ HAYATA.

October 1919, Taihoku and Tōkyō.

Contributions to the Flora of Formosa.

VII.

Ranunculaceæ.

Clematis LINN.

Clematis garanbiensis HAYATA sp. nov. Scandens et volubilis. Caulis teres multistriatus glaber. Folia opposita membranacea vel tenuiter chartacea ovata 4 cm. longa $2\frac{1}{2}$ cm. lata apice obtusa sed ad summum breve cuspidato-apiculata basi late rotundata ad extremitatem acuta palmatim 5-nervia utraque pagine plus minus hirsuta, petiolis 3 cm. longis hirsutis. Panicula late cymosa cum pedunculo 9 cm. longa 10 cm. lata hirsuta, bracteis spathulatis 1-3 cm. longis, pedicellis ultimis 2 cm. longis. Sepala 4 lanceolata 13 mm. longa 4 mm. lata apice acuta basi gradatim contracta extus villosa intus glabra. Stamina 6, filamentis glabris filiformibus complanatis 3-10 mm. longis, antheris linearibus $3\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis apice apiculatis basi obtusis. Carpella 6-8, basi fusiformia cum stylis 7 mm. longa dense longeque sericeo-pilosa.

HAB. Garanbi, leg. T. KAWAKAMI, Juli. 1906.

Near *Clematis paniculata* THUNB.; but differs from it in having triangular ovate leaves. This is perhaps identical with a Chinese specimen labelled *C. paniculata* preserved in the herbarium of Kew, which I had an opportunity to look at, when I was there.

Magnoliaceæ.

Illicium LINN.

Illicium arborescens HAYATA (Fig. 1) Ic. Pl. Formos. II. p. 106. Descriptio aucta:—Carpella circ. 12 fere distincta maturitate crasse coriacea fere lignosa $1\frac{1}{2}$ cm. longa horizontaliter patentia. Semina nitida valde complanata 9 mm. longa 5-6 mm. lata.

HAB. Tōzan, Arisan.

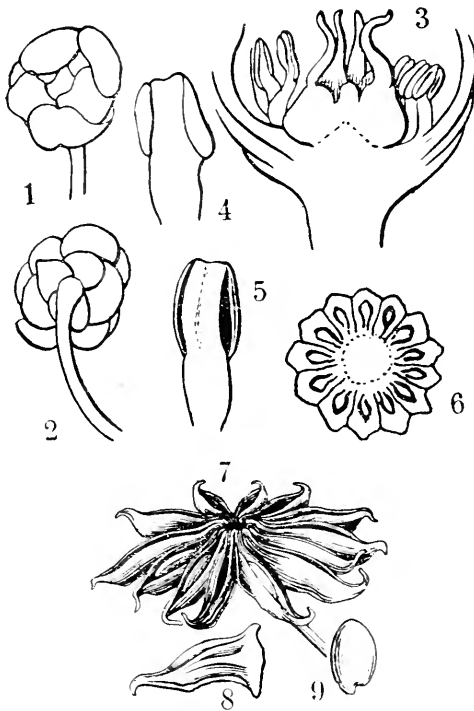


Fig. 1; *Illicium arborescens* HAYATA: 1, 2, flowers; 3, vertical section of the genital part of a flower; 4, 5, a stamen, seen from different sides; 6, cross section of carpels; 7, a fruit; 8, a carpel; 9, a seed.

Stamina circ. 20, filamentis incrassatis 2 mm. longis 1 mm. latis, antheris adnatis oblongis 1½ mm. longis obtusis. Carpella 8 fere distincta 4½ mm. longa latere complanata.

Illicium anisatum L. var. *leucanthum* HAYATA Gen. Ind. p. 2.

HAB. Arisan: Mingetsu, leg. B. HAYATA ad 7000 ped. alt. Aprili. 1916. Near *Illicium anisatum*, but differs from it in the white flowers with larger stamens and less curved carpels.

NOTE: Outer sepals reddish; inner ones white or yellowish white.

***Illicium randaiense* HAYATA sp. nov.** (Fig. 3). Frutex vel arborescens, ramulis fusco-cinerascentibus glabris. Folia versus apicem ramorum approximatin disposita oblongo-ovata vel obovata coriacea vel chartacea 8 cm. longa 3 cm. lata apice breve acuta ad summum obtusa basi acuta vel obtusa integra,

***Illicium leucanthum* HAYATA sp. nov.** (Fig. 2). Frutex vel arborescens, ramulis fusco-cinerascentibus. Folia oblongo-lanceolata 8-10 cm. longa 2½-4 cm. lata apice acuminata basi acuta integra coriacea, petiolis 1 cm. longis. Flores subalbi terminales vel axillares solitarii, bracteis basi floris multiserialiter dispositis, inferioribus brevioribus rotundatis latioribus 2-10 mm. longis alabastrum floris amplexantibus margine ciliolatis, pedicellis 1 cm. longis. Sepala alba 13-15, exteriora plus minus latiora obovato-spathulata 8-9 mm. longa 6 mm. lata margine ciliolata, interiora angustiora linearia 1½ cm. longa 3 mm. lata apice obtusa, intima angustissima linearia 12 mm. longa 2 mm. lata apice acuta.

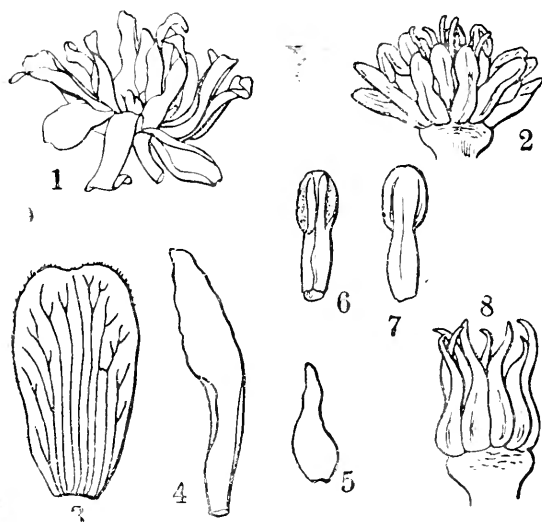


Fig 2; *Illicium leucostomum* HAYATA; 1, a flower; 2, genital portion of a flower; 3, 4, 5, an outer, inner, innermost, segment; 6, 7, a stamen, seen from different sides; 8, carpels.

linearia 12 mm. longa 3 mm. lata, margine ciliolata. Stamina circ. 20, filamentis incrassatis $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis, antheris oblongis 1 mm. longis

petiolis 5-10 mm. longis. Flores axillares solitarii, pedicellis circ. 1 cm. longis, bracteis basi pedicelli multi-seriatim dispositis, inferioribus latioribus rotundatis, superioribus plus minus longioribus, margine ciliolatis apice rotundatis breve vix vel haud apiculatis. Sepala 12-15, exteriora minora latiora late oblonga 8 mm. longa totiusque lata apice rotundata truncata, interiora oblongo-linearia 12 mm. longa 5 mm. lata, intima

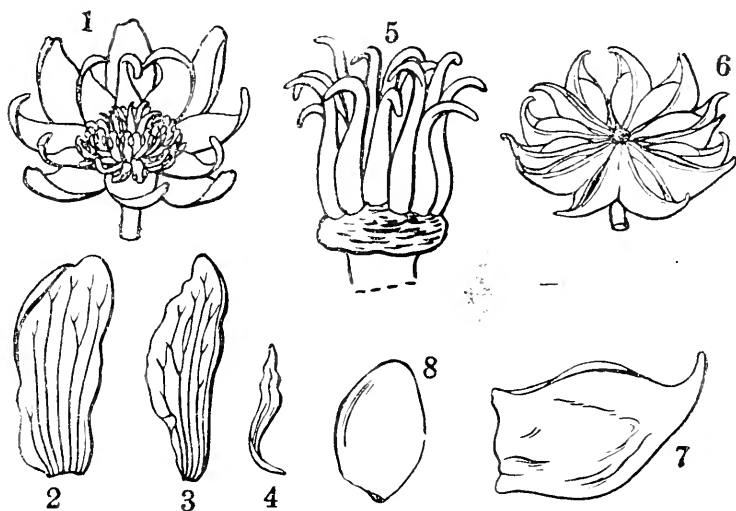


Fig. 3; *Illicium radiense* HAYATA; 1, a flower; 2, 3, 4, an outer; inner, innermost, segment; 5, carpels; 6, a fruit; 7, a follicle; 8, a seed.

$\frac{2}{3}$ mm. latis apice obtusis. Carpella circ. 12, fere distincta basi 1 mm. lata cum stylis 3 mm. longa, maturitate ovata, partibus ovatis 1 cm. longis 8 mm. latis valde complanatis apice caudata, caudis recurvatis.

Illicium anisatum HAYATA Gen. Ind. p. 2 (non LINN.)

HAB. Randaisan, Manapan, leg. B. HAYATA et U. MORI, Aug. 1903.
Near *Illicium Tashiroi* MAXIM.; but differs from it in the free carpels.

Schizandra MICHX.

Schizandra arisanensis HAYATA Ic. Pl. Formos. V. p. 1. Descriptio aucta:—Syncarpium elongatum 10–15 cm. longum; baccis globosis 8 mm. in diametro 2-spermis, seminibus globoso-reniformibus 4 mm. latis $3\frac{1}{2}$ mm. longis muricatis; testa crustacea, albuminibus carnosis.

HAB. Ritōzan, leg. Y. MATSUDA, Aug. 1918, No. 336.

Kadsura JUSS.

Kadsura Matsudai HAYATA sp. nov. Scandentissima, rami et ramuli graciles fusco-purpureo-rubescentes. Folia alterna lanceolata 9–10 cm. longa $2\frac{1}{2}$ cm. lata apice obtusissima basi acuto-obtusa chartacea utraque paginae glabra margine subintegra, petiolis $1\frac{1}{2}$ –2 cm. longis. Flores ♂ axillares solitarii pedunculati, pedunculis $1\frac{1}{2}$ cm. longis glabris. Segmenta 12, exteriora minora triangularia ovata oblonga 1 mm.–5 mm. longa 2–3 mm. lata, interiora majora lineari-oblonga 1 cm. longa $4\frac{1}{2}$ mm. lata apice rotundata basi contracta margine sursum minute ciliolata, intima minora. Fasciculi staminales globosi 7 mm. in diametro, antheris sessilibus se toto connatis, loculis obovatis $\frac{2}{3}$ mm. longis $\frac{1}{2}$ mm. latis. Fl. ♀: ignoti. Syncarpium globosum axillare solitarium, pedunculis $1\frac{1}{2}$ –5 cm. longis glabris; syncarpium 2–3 cm. in diametro, baccis subglobosis 1 cm. longis glabris rubris 2-spermis; seminibus reniformibus $3\frac{1}{2}$ mm. longis $4\frac{1}{2}$ mm. latis plus minus complanatis, albuminibus carnosis.

HAB. Ariko, leg. Y. MATSUDA, Jan. 1917.

Near *Sch. arisanensis* HAY.; but differs from it in the lanceolate and obtuse leaves.

Berberideæ.

Mahonia NUTT.

Mahonia lomariifolia TAKEDA. Contributions to the Knowledge of the Old World Species of the Genus *Mahonia* in Notes from the Royal Botanic Garden, Edinburgh, Vol. VI. p. 231.

Mahonia morrisonensis TAKEDA l. c. p. 239.

Ternstroemiaceæ.

Eurya THUNB.

Eurya leptophylla HAYATA sp. nov. (Fig. 4). Frutex. Rami et ramuli gracillimi apice fulvo-hirsuti. Folia alterna oblonga vel oblongo-lanceolata 3-3½ cm. longa 1-1½ cm. lata apice acuminata vel acuta sed ad summum semper obtusa basi acuta margine crenulato-serrulata utraque pagine subglabra, costa supra impressa subtus elevata, venis venulisque utraque pagine tenuiter elevatis, petiolis 1-2mm. longis tenuiter subulatis. Flores ad axillas fasciculati, pedicellis 2 mm. longis subglabris apice infra calycem bracteolis duabus instructis. Fl. ♂: majores

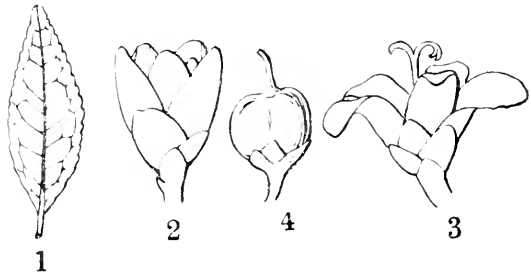


Fig. 4; *Eurya leptophylla* HAYATA; 1, a leaf; 2, a male flower; 3, a female flower; 4, an immature fruit.

quam fl. ♀; sepala rotundata 5 in magnitudine inæqualia, majora 2 mm. in diametro concava glabra basi plus minus connata. Petala 5 rotundato-oblonga 3 mm. longa 2 mm. lata concava apice rotundata subrotato-semiclausa glabra imbricata integra. Stamina 7-8 basi petali affixa, filamentis glabris filiformibus 2-2½ mm. longis, antheris ovato-oblongis 1 mm. longis ½ mm. latis apice apiculatis basi 2-lobatis glabris; rudimentum ovarii nullum. Fl. ♀: quam fl. ♂ minores campanulato-patentes 2½ mm. longi; sepala inæqualia oblonga vel ovata 1-1½ mm. longa dorso plus minus hirsuta apice rotundata vel acuta; petala 5 glabra inæqualia oblongo-linearria vel oblonga 2 mm. longa

$\frac{1}{2}$ –1 mm. lata apice acuta vel obtusa integra vel minute crosa erecto-patentia; staminodia nulla; ovarium ovoideum $\frac{3}{5}$ mm. longum apice ad stylum 1 mm. longum abeums; stylus columniformis glaber apice breve 3-lobatus, lobis plus minus recurvis. Fructus obovoideus 2–2 $\frac{1}{2}$ mm. longus glaber abortu 2-spermus; semina irregulariter oblonga vel rotundata 1–1 $\frac{1}{2}$ mm. longa rubescentia elegante minuteque reticulata.

HAB. Arisan, leg. B. HAYATA et S. SASAKI, Jan. 1912.

Near *Eurya japonica* THUNB.; but differs from it in the much smaller, thinner and acuter leaves.

Eurya Matsudai HAYATA sp. nov. (Fig. 5). Frutex. Rami et ramuli gracillimi subrecti subglabri. Folia alterna chartacea lanceolata vel oblongo-lanceolata 7–8 cm. longa 2–2 $\frac{1}{2}$ cm. lata apice caudato-acuminata basi obtusa margine serrulata utraque pagine glabra, costa supra impressa subtus promi-

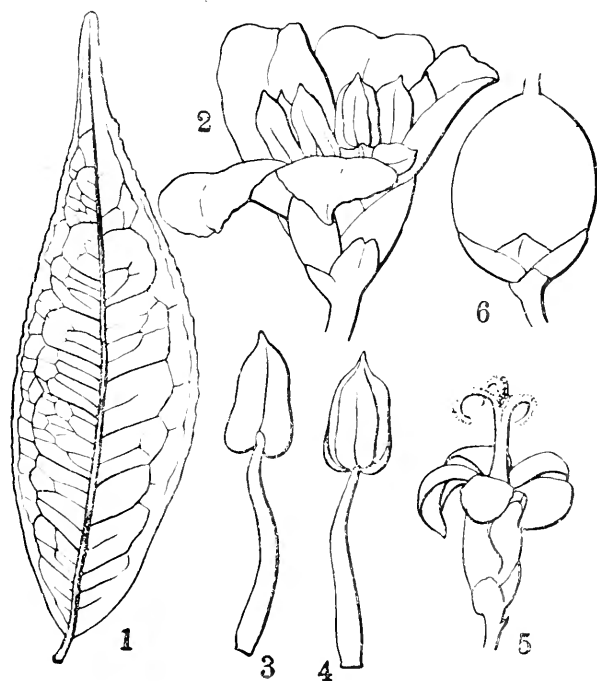


Fig. 5; *Eurya Matsudai* HAYATA; 1, a leaf; 2, a male flower; 3, 4, a stamen, seen from different sides; 5, a female flower; 6, an immature fruit.

nente elevata, venis venulisque utraque pagine tenuiter elevatis, petiolis 2–3 mm. longis glabris. Flores ad axillas foliorum fasciculati, pedicellis 2 mm. longis minute hirsutis apice infra calycem bracteis duabus minutis instructis. Fl. ♂: sepala 4–6, imbricata oblongo-triangularia 1 $\frac{1}{2}$ mm. longa 1 $\frac{1}{2}$ mm. lata apice obtusa breve apiculata intus glabra dorso extus minute villosa margine integra minute ciliolata; petala 5, obovato-oblonga 4 mm. longa 1 $\frac{3}{5}$ mm. lata apice rotundata breve apiculata

basi angustata basi connata glabra; stamina 9-10 basi petali affixa, filamentis glabris filiformibus 2 mm. longis, antheris ovatis 1 mm. longis apice aristato-apiculatis basi truncatis cordatis; ovarii rudimentum nullum. Fl. ♀: minores quam fl. ♂, tubuloso-patentes 3 mm. longi; sepala imbricata inaequalia oblonga vel triangulari-ovata 2 mm. longa; petala 5, lineari-oblonga basi deorsum connata $2\frac{1}{2}$ -3 mm. longa apice acuta margine integra vel minute erosa; ovarium glabrum ovoideum 1 mm. longum $\frac{2}{3}$ mm. latum, stylo $1\frac{1}{2}$ mm. longo columniformi glabro apice 3-fido. Fructus ovoideus 4 mm. longus 3 mm. latus minute muricatus vel sublaevis ∞ -spermus; semina minute numerosi-sima oblonga angulata 1 mm. longa minute reticulata.

HAB. Daibusan, leg. Y. MATSUDA, Nov. 1918. (Fl. et fr.)

Near *Eurya arisimensis* HAY.; but differs from it in having leaves which have finely elevated veinlet on the upper surface.

Camellia LINN.

Camellia theifera (GRIFF.) DYER; COHEN STUART Voorbereidende onderzoekingen ten dienste van de selectie der theeplant p. 107, var. **assamica** (MASTERS). *Thea chinensis* HAYATA Gen. Ind. p. 8. pro parte (non SIMS.)

HAB. Suisha.

Dilleniaceæ.

Actinidia LINDL.

Actinidia gnaphalocarpa HAYATA sp. nov. Frutex scandentissimus; rami glabri, ramulis sursum rubro-fusco-tomentosis. Folia alterna chartacea oblongo-ovata 10-14 cm. longa 6-8 cm. lata apice cuspidato-acuminata basi rotundata margine subintegra vel remote mucronibus instructa supra glabra subtus stellato-tomentosa, costis venis venulisque supra impressis subtus prominente elevatis, petiolis 3-4 cm. longis. Flores ignoti. Cymæ fructiferae axillares, pedunculis 6-7 cm. longis; fructus oblongo-globosus fulvo-tomentosus.

Actinidia Champsoni HAYATA Gen. Ind. p. 47, (non BENTH.)

HAB. Uraisha, Suisha.

Closely allied to *A. Champsoni* BENTH., to which it was formerly referred

by myself and others. But, in comparing it with the latter species which I had an opportunity to collect in Hongkong in the summer, 1917, I have found that they are quite different. The leaves of the Formosan plant are much more tomentose beneath than those of the Hongkong. The transverse veinlets of the former are reddish, while those of the latter are not colored.

Sterculiaceæ.

Reevesia LINDL.

***Reevesia formosana* HAYATA** sp. nov. Arborescens; ramis validibus cinerascentibus. Folia alterna lanceolata vel oblanceolata tenuiter coriacea vel chartacea 7-9 cm. longa $2\frac{1}{2}$ -3 cm. lata apice obtusa basi cuneata margine subintegra utraque pagine subglabra, costis venis venulisque utraque pagine elevatis, petiolis $1\frac{1}{2}$ -2 cm. longis glabris. Flores ignoti. Fructus versus apicem 2-3-dispositi capsulares 5-carpellares lignosi semiglobosi, in sectione longitudinali obcordati $2\frac{1}{2}$ cm. longi totinsque lati profunde 5-sulcati et lobati, septicide et loculicide deliscentes; semina in quoque loculo 2 ab apice loculi pendula obovata 7 mm. longa superposita longe lateque alata, cum alis cultriformia cum alis circ. 2 cm. longa; testa cartilaginea basi et latere ad alam producta; albumen copiosum; embryo magnus toto cavo seminum extensus; cotyledones foliosæ, radícula infera.

HAB. Hiranzan, leg. B. HAYATA et S. SASAKI, Juli. 1912.

Somewhat comparable to *R. thysoides* LINDLE, *R. Wall'chii* BR. and *R. pubescens* MAST.; but differs from them by the leaves which are cuneate or acute at the base. The leaves of the other species are more or less rounded at the base.

Rutaceæ.

Phellodendron RUPR.

***Phellodendron Wilsonii* HAYATA et KANEHIRA** sp. nov. Arbor; ramuli teretes glabri lenticellis minutis conspersi. Folia opposita pinnata in ambitu oblonga cum petiolis 27 cm. longa 15 cm. lata imparipinnata, pinnis 4-5-jugis, jugis a se 4 cm. remotis, pinnis mediis majoribus plus minus obliquis

ovato-oblongis 9 cm. longis 4 cm. latis apice acuminatis basi oblique truncatis margine minute crenulatis vel subintegris chartaceis utraque pagine subglabris, subtus pallidissimis, costis venis venulis supra minus subtus plus elevatis, subtus ad costas dense hirsutis; petiolulis 4 mm. longis; pinna terminali ovato-oblonga, petiolulis 2 cm. longis; rhachibus foliorum hirsutis; petiolis communibus 4 cm. longis. Cymæ fructiferæ terminales 8 cm. longæ totiusque latæ; fructibus globosis in exsiccato nigricantibus 7 mm. longis laccatis 5-coccis, Coccis cartilagineis oblongis complanatis $5\frac{1}{2}$ mm. longis $2\frac{1}{2}$ mm. latis 2-valvatim dehiscentibus 1-spermis. Semina semi-oblonga $4\frac{1}{2}$ mm. longa $2\frac{1}{2}$ mm. lata complanata nigricantia impresso-reticulata.

HAB. Mt. Arisan, leg. R. KANEHIRA et S. SASAKI, Oct. 1918.

Very near *Phellodendron amurense*, but distinguishable from it in having much smaller leaves.

Celastrineæ.

Euonymus LINN.

***Euonymus acutorhombifolia* HAYATA** (Fig. 6) Ic. Pl. Formos. V. p. 56. Descriptio aucta:—Frutex; ramis et ramulis gracilibus tetragonis ad angulos acutis glabris. Folia opposita tenuiter coriacea oblongo-rhomboida $5\frac{1}{2}$ –8 cm. longa 2–3 cm. lata apice acuminata ad summum obtusa basi cuneata margine supra medio serrata utraque pagine glaberrima, costis venis venulisque utraque pagine tenuiter graciliter elevatis, petiolis 2 mm. longis. Capsula 4-carpellaris, carpellis sterilibus rotundatis latere complanatis 1 cm. latis et longis alaformibus, carpellis fertilibus 1-spermis rotundatis 7 mm. longis 5 mm. latis apice rotundatis plus minus complanatis; semina oblonga latere plus minus complanata 7 mm. longa 6 mm. lata apice carunculis (vel arillis) oblongis 5 mm. longis carnosis oblecta; testa membranacea rubra; albumine carnosio copioso; embryo centralis; cotyledones foliosæ cordatæ 4 mm. longæ, radícula $1\frac{1}{2}$ mm. longa.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916; Daibusan, leg. Y. MATSUDA, Jan. 1917, (fructus!).

NOTE: Petals 4, yellowish brown; ovary reddish.

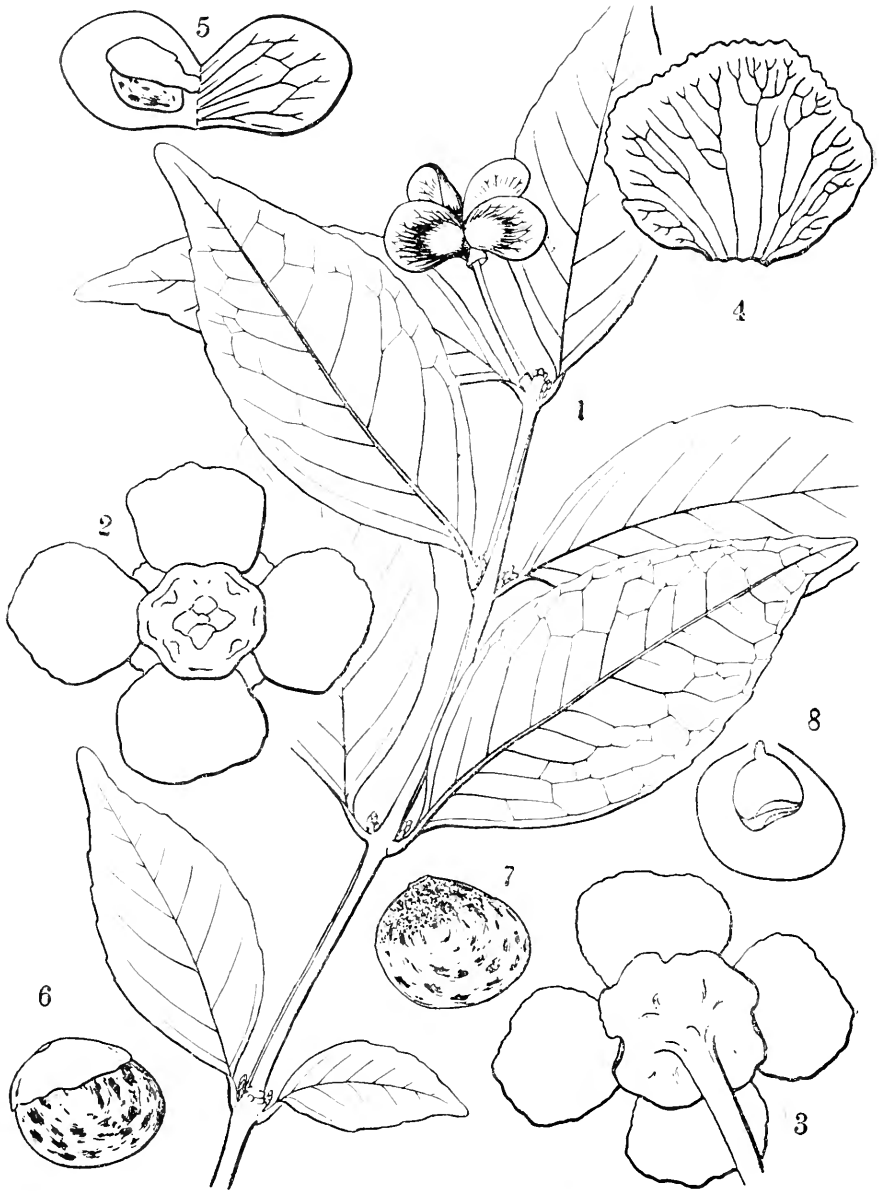


Fig. 6; *Euonymus acutorhombifolia* HAYATA; 1, a branch; 2, a flower; 3, the same, seen from back; 4, a petal; 5, a dehiscent capsule, a seed seen; 6, a seed with an aril; 7, the same, aril taken off; 8, section of the same, embryo seen.

***Euonymus batakensis* HAYATA** sp. nov. (Fig. 7). Frutex, ramis et ramulis rectis, ramulis tetragonis tenuiter vel haud alatis glaberrimis. Folia opposita chartacea vel tenuiter coriacea oblonga obovata vel lanceolata 5-6 cm. longa $2\frac{1}{2}$ -3 cm. lata apice obtusa acuta vel acuminata basi acuta margine crenulato-serrulata utraque glaberrima, costis et venis supra distincte elevatis

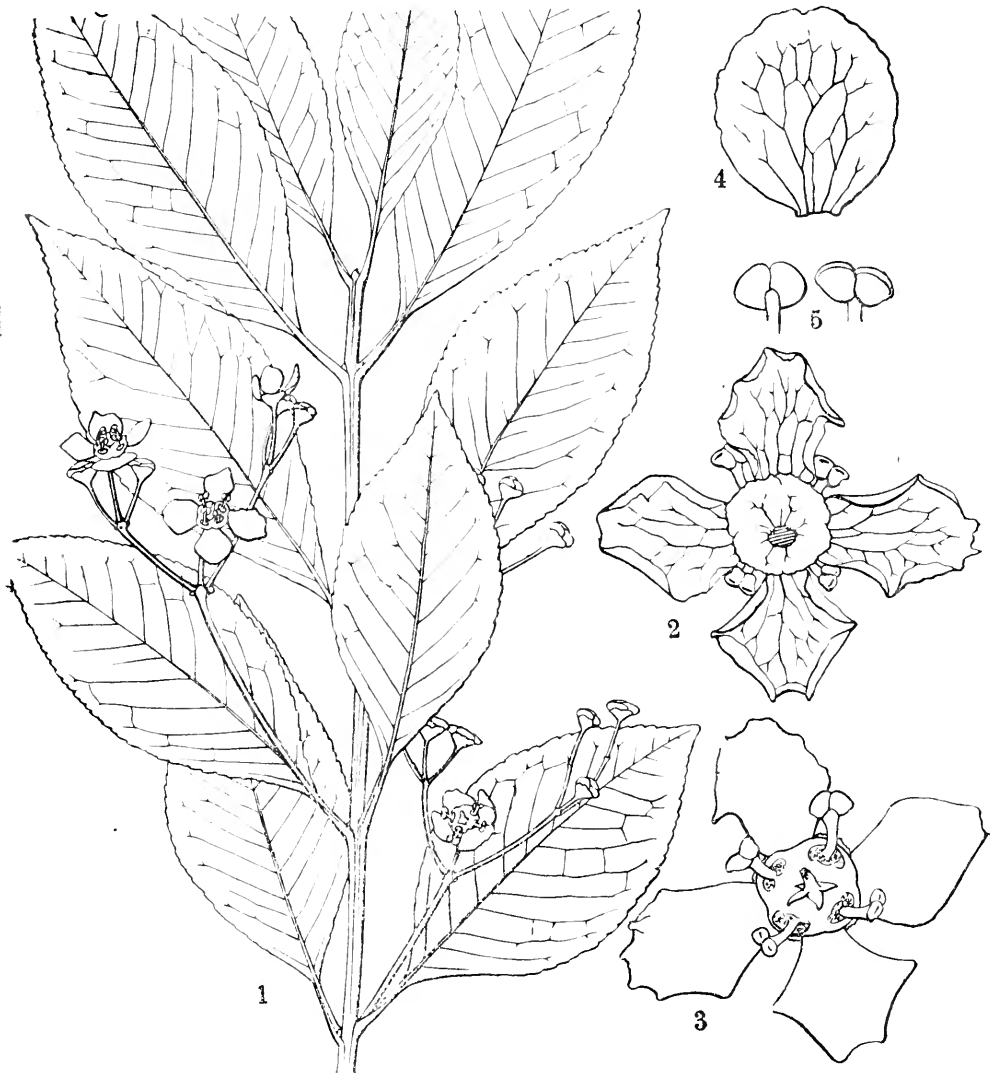


Fig. 7; *Euonymus batakensis* HAYATA; 1, a branch; 2, a flower, seen from back; 3, the same, seen from front; 4, a petal; 5, a stamen, seen from different sides.

gracillimis, petiolis 5-10 mm. longis plus minus alatis. Cymæ axillares longe pedunculatæ, pedunculis 5 cm. longis, ramosæ, pedicellis 1 cm. longis. Calyx rotundatus planus 5 mm. in diametro margine denticulatus 4-lobatus, lobis fere obsolete. Petala 4 rotundato-oblonga 6 mm. longa $5\frac{1}{2}$ mm. lata apice rotundata basi plus minus contracta margine integra vel erosa. Stamina 4 intra discum disposita, filamentis brevibus 2 mm. longis glabris, antheris obreniformibus $1\frac{1}{2}$ mm. latis $\frac{2}{3}$ mm. longis. Discus planus levis. Ovarium tetragono-conicum brevissimum, stylo $1\frac{1}{2}$ mm. longo.

Euonymus Tanaka HAYATA Gen. Ind. p. 14. (pro parte) (non MAXIM.)

HAB. Inter Shingio et Batakan leg. B. HAYATA et S. SASAKI, Aprili. 1917.

This is closely allied to *Euonymus Tanaka* MAXIM.; but differs from it in the much slenderer branches, smaller and thinner leaves, and in the much slenderer axillary cymes. The cymes of the new species are solitary and axillary along the branches from the base to the top of young shoots, while those of *E. Tanaka* are only on the apex and nearly so congested as they would be better described as "quasiterminal."

Euonymus kuraruensis HAYATA sp. nov. (Fig. 8). Frutex ramosissimus, ramulis glabris. Folia opposita oblongo-obovata vel -ovata $4\frac{1}{2}$ cm. longa 3 cm. lata apice obtusa vel obtusissima basi cuneata vel obtusa margine remote serrulata vel crenata coriacea utraque glaberrima, costis supra acute elevatis subtus planis laud vel vix elevatis; petiolis 5 mm. longis; folia minora 3 cm. longa 2 cm. lata. Cymæ axillares vel subterminales longe pedunculatis paucifloratis, pedicellis 2 mm. longis. Calyx glaber planus 4 mm. in diametro 4-partitus, sepalis rotundatis 2 mm. longis $2\frac{1}{2}$ mm. latis apice truncatis vel rotundatis margine integris. Petala 4 rotundata $4\frac{1}{2}$ mm. longa totiusque lata margine integra vel obscure crenulata apice rotundata basi valde contracta margine externe recurvata valde convoluta. Stamina 4, filamentis valde recurvis 3 mm. longis apice subulatis, antheris cordato-rotundatis 1 mm. longis totiusque latis fere 2-partitis apice rotundatis vel emarginatis versatilibus. Ovarium depresso-conicum echinatum, stylo columniformi $2\frac{1}{2}$ mm. longo apice acuto.

HAB. Kuraru, leg. B. HAYATA, Juni. 1912; Raisha, leg. Y. MATSUDA, Juli. 1915.

Near *E. Spraguei* HAY. ; but differs from it in the obovate obtuse leaves with much thicker texture.

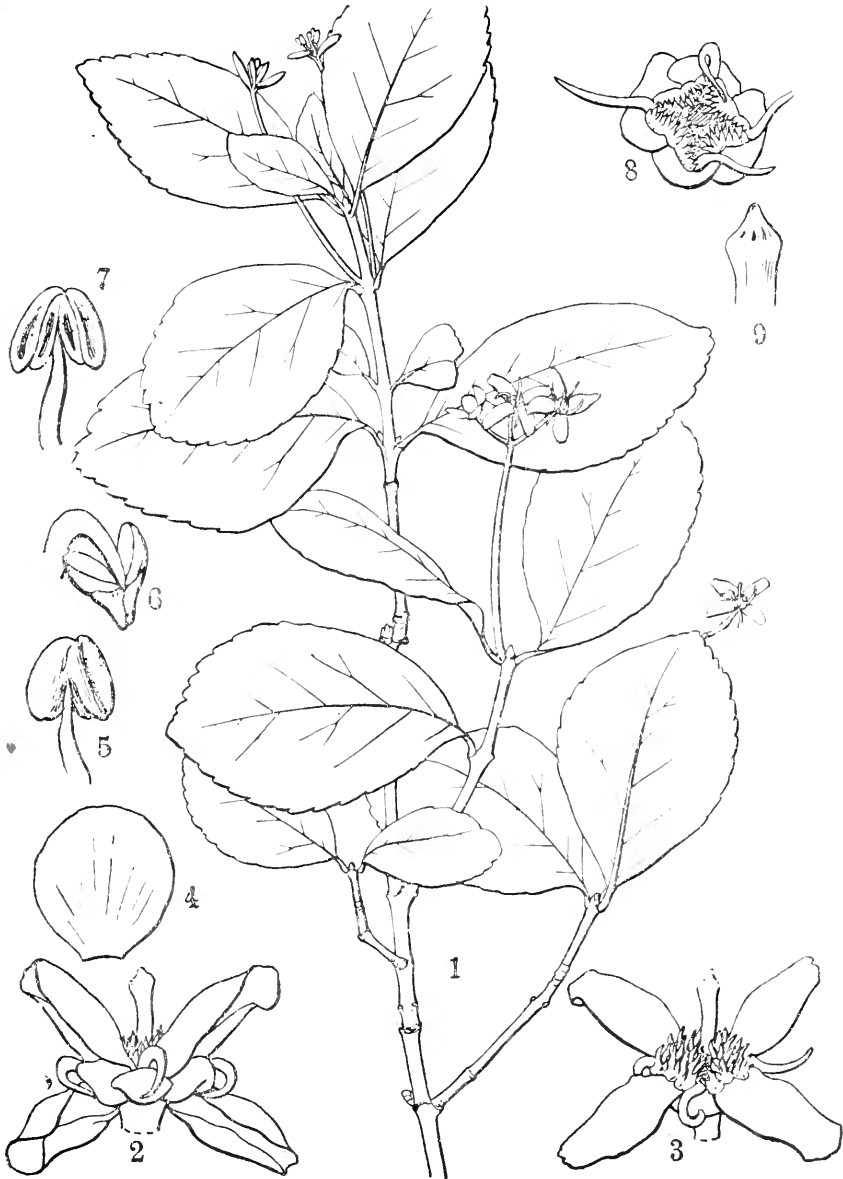


Fig. 8; *Euonymus kurariensis* HAYATA; 1, a branch; 2, 3, flowers; 4, a petal; 5, 6, 7, stamens, seen from different sides; 8, a flower, petals and style taken off; 9, a style.



Fig. 9; *Euomyxus Matsudai* HAYATA; 1, a branch; 2, a flower, petals taken off; 3, a petal; 4, a stamen.

Euonymus Matsudai HAYATA (Fig. 9). Frutex, rami et ramuli graciles glabri tetragoni. Folia opposita chartacea oblongo-lanceolata 10–12 cm. longa $3\frac{1}{2}$ – $4\frac{1}{2}$ cm. lata apice acuminata ad summum obtusa basi triangulari-acuta margine integra utraque pagine glabra supra opacissima subtus subnitida (in exsiccato), venis venulis supra subimpressis subtus elevatis, petiolis 7 mm. longis glabris. Cymæ terminales 1 cm. longæ pauci-floræ, bracteolis duabus lanceolatis serrulatis, pedicellis 3–4 mm. longis. Calyx glaber patens 7 mm. in diametro 4-lobatus, lobis latissimis brevissimis $1\frac{1}{2}$ mm. longis $3\frac{1}{2}$ mm. latis late rotundatis margine minute crenulatis. Petala 4, late obovato-rotundata, 5–6 mm. longa 6 mm. lata apice rotundata basi contracta utraque glabra margine erosa vel lacera. Stamina 4, antheris sessilibus vel brevissime stipitatis obreniformibus $\frac{2}{3}$ mm. longis $1\frac{1}{4}$ mm. latis glabris. Discus subplanus quadrati-formis $3\frac{1}{2}$ mm. in diametro toto cum cupula calycis connatus glaber margine tenuissime 4-lobatus. Ovarium brevissimum tetragono-pyramidale 2 mm. latum $1\frac{1}{2}$ mm. longum.

HAB. Daibuzan, ad 8000 ped. alt. leg. Y. MATSUDA, Mai. 1918.

Differs from all the species of the genus in Formosa, in the leaves which are very dull on the upper side, but rather shining on the under surface, in dried specimens.

Euonymus pellucidifolius HAYATA Ic. Pl. Formos. V. p. 57, t. X.

This is very near to *E. longifolius* CHAMP., which I collected in Hongkong in the summer, 1917. The latter plant has the much longer and narrower leaves.

Celastrus LINN.

Celastrus Hindsii BENTH.; FORBES et H. MSL. Ind. Fl. Sin. I. p. 123; *C. monospermus* BENTH. Fl. Hongk. p. 63; DUNN et TUTCHER Fl. Hongk. et Kwangt. p. 62.

HAB. Daibuzan, leg. Y. MATSUDA.

Identical with the Hongkong plant collected by myself in the summer, 1917.

Celastrus patentiflorus HAYATA sp. nov. (Fig. 10). Scandens, rami rugosissimi lenticellati glabri. Folia primum membranacea alterna obovato-

oblonga 13 cm. longa 6-7 cm. lata apice rotundata sed centrum breve caudata,

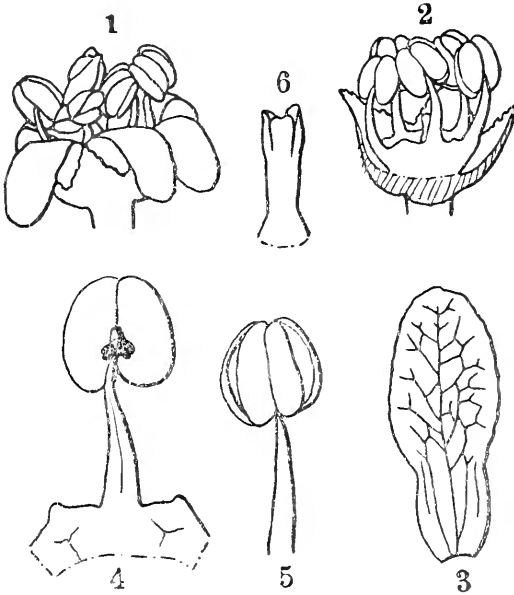


FIG. 10; *Celastrus patentiflorus* HAYATA; 1, a flower; 2, the same, petals taken off; 3, a petal; 4, a stamen on the disc; 5, another stamen seen from a different side; 6, rudimentary ovary.

caudis triangularibus 8-10 mm. longis basi 4-5 mm. latis, basi acuta margine remote serrulata utraque pagine glaberrima, costis venis venulisque utraque pagine minute reticulatis elevatis, petiolis $1\frac{1}{2}$ cm. longis. Racemi paniculati axillares vel laterales 3-4 cm. longi 2-3 cm. lati glabri, pedunculis complanatis glabris, floribus ad apicem ramorum umbellatim dispositis, pedicellis ultimis 5 mm. longis teretibus basi bracteis minutis subulatis fimbriatis 1 mm. longis instructis, pedicellis ad medium articulatis. Calyx late campanulatus $3\frac{1}{2}$ mm. in diametro

2 mm. longus ad medium 5-lobatus, lobis triangulari-oblongis $1\frac{1}{2}$ mm. longis totiusque latis apice obtusissimis minute denticulato-ciliolatis glabris erectis. Petala 5 patentissima reflexo-recurva elongato-oblongo-linearia $4\frac{1}{2}$ -5 mm. longa 2 mm. lata apice obtusissima basi angustata glabra margine minute denticulata. Stamina 5, filamentis incrassatis glaberrimis apice subulatis $2\frac{1}{2}$ mm. longis, antheris cordato-reniformibus $1\frac{1}{4}$ mm. latis 1 mm. longis apice obtusis basi profunde 2-lobatis dorso basi medio glandulis 1-2 fuscentibus punctatis. Discus late cupuliformis 2 mm. in diametro margine erosus staminifer. Ovarium (rudimentum?) columniforme glabrum 2 mm. longum apice 3-lobatum.

HAB. Kihabon, leg. B. HAYATA, Aprili. 1916.

Near *C. Kusanoi* HAY.; but differs from it in having much patent flowers with quite glabrous filaments and in the leaves which are cuneate or acute

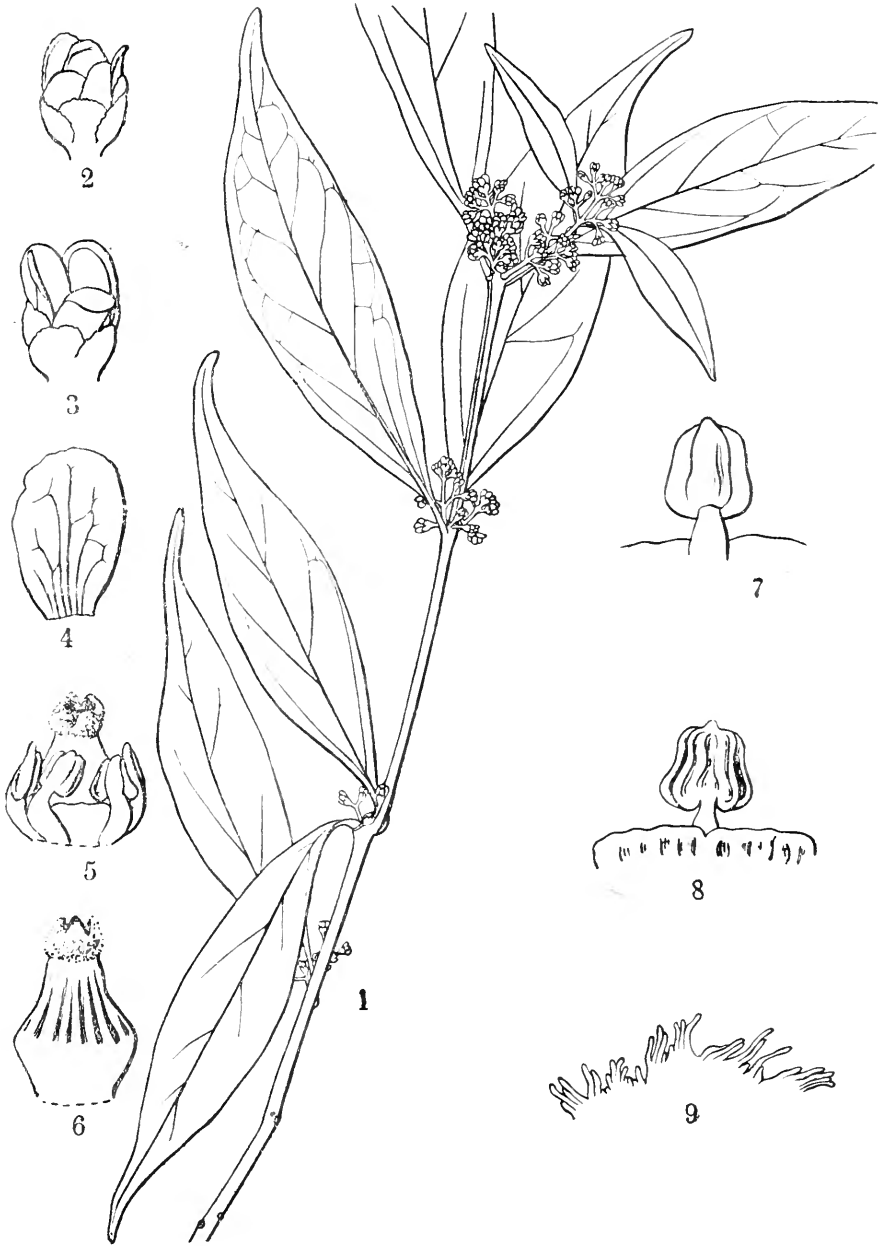


Fig. 11; *Cassine Matsudai* HAYATA; 1, a branch; 2, 3, flowers; 4, a petal; 5, ovary and stamens; 6, ovary; 7, 8, a stamen on a disc, seen from different sides; 9, a marginal portion of a sepal.

at the base. The flowers of *C. Kusanoi* are half-closed, the filaments are slightly and shortly hairy, and the leaves are rather rounded at the base.

NOTE: Leaves dark-green shining above; flowers beautifully pale fresh green; anthers yellow.

Cassine LINN.

***Cassine Matsudai* HAYATA** sp. nov. (Fig. 11). Frutex; rami et ramuli graciles tetragoni glabri. Folia opposita lanceolata 7-8 cm. longa $1\frac{1}{2}$ - $2\frac{1}{2}$ cm. lata apice acuminata vel caudato-acuminata basi cuneato-acuminata integra costa supra elevata, venis venulis supra laud subtus tenuissime elevatis, utraque pagine glaberrima, petiolis 5 mm. longis. Cymæ $1\frac{1}{2}$ cm. longæ ad axillas dense fasciculatæ glabræ, floribus oppositis, pedicellis ultimis $1\frac{1}{2}$ mm. longis glabris, bracteis crassiusculis triangularibus 1 mm. longis apice acutis margine denticulatis fulvo-marginatis, bracteolis oppositis 2 bractea conformibus. Sepala 5, subæqualia late rotundata 1 mm. longa $1\frac{1}{2}$ mm. lata margine fimbriato-ciliolata fulvo-marginata glabra. Petala 5 oblonga $1\frac{3}{4}$ mm. longa $1\frac{1}{4}$ mm. lata apice rotundata basi laud vel vix contracta glabra. Stamina 5, margine disci affixa, filamentis brevibus $\frac{1}{2}$ mm. longis, antheris rotundatis apiculatis $\frac{1}{2}$ mm. longis. Ovarium conico-ovoideum glabrum $1\frac{1}{2}$ mm. longum $\frac{2}{3}$ mm. latum, stigmata digitiforme 4-partita. Discus annularis lamelliformis 5-lobatus $\frac{1}{2}$ mm. altus.

Otherodendron Matsudai HAYATA, in Herb. Taihoku.

HAB. Buizan, leg. Y. MATSUDA, Jan. 1919.

Near *Cassine micrantha* HAYATA, but differs from it in the much thinner leaves with the lateral veins arranged in a much acuter angle.

Leguminosæ.

Crotalaria DILL.

***Crotalaria akoensis* HAYATA** sp. nov. (Fig. 12). Suffrutex erectus; caulis 10-40 cm. longus in exsiccato fuscens fulvo-hirsutus teres foliatus. Folia alterna simplicia oblonga vel oblongo-lanceolata 2-4 cm. longa 12 mm. lata apice acuta obtusa integra supra in exsiccato fuscissima utraque pagine adpresse hirsuta, petiolis 3 mm. longis fulvo-hirsutis, stipulis nullis? Flores

breve racemosi, racemis terminalibus pauci-floratis, pedicellis 4 mm. longis dense strigoso-hirsutis, bracteolis duabus basi calycis dispositis linearibus 8 mm. longis 1 mm. latis acuminatis. Calyx campanulatus 1 cm. longus 1 cm. latus extus strigoso-fulvo-hirsutus intus glaber supra basin sursum 5-lobatus, lobis lateralibus linearibus 10 mm. longis 2-3 mm. latis acuminatis linearibus vel oblongo-linearibus. Petala 5: vexillum obovato-rotundatum 9 mm. longum 7-8 mm. latum apice emarginatum basi breve unguiculatum prope basin 1-appendiculatum, ungue 1 mm. longo totiusque lato; alæ obovato-oblongæ 7 mm. longæ 3½ mm. latæ apice obtusissimæ basi breve unguiculatæ, unguibus 1½ mm. longis ¾ mm. latis; carinæ elongato-oblongo-triangulares 8 mm. longæ 4 mm. late apice attenuato-rostratæ ad summum obtusæ basi late triangulari acutæ breve unguiculatæ, unguibus 1 mm. longis ¾ mm. latis, ad margine lateris superioris eroso-ciliatæ. Stamina diadelpa, antheris linearibus 1 mm. longis. Ovarium oblongo-lineare 3 mm. longum 1 mm. latum apice declinatum rostratum valde complanatum basi obtusum glabrum, stylo basi subito reflexo-ascendenti, parte ascendenti erecta recta apice et latere interiore dense hirsuta. Legumen cartilagineum obovoideo-ellipsoideum 13 mm. longum 6 mm. latum glabrum sutura superiore delihescens.

HAB. Akōchō: Naihō, leg. Y. MATSUDA, Sept. 1915.

Near *C. ferruginea* GRAH.; but differs from it by the much shorter pods.

Indigofera LINN.

Indigofera formosana MATSUMURA Conspect. Legumin. p. 8.

Indigofera macrostachya HAYATA (non VENT) Gen. Ind. Fl. Formos. p. 20.

Remarkable for the very long racemes.

Indigofera mansuensis HAYATA sp. nov. (Fig. 13). Frutex, rami et ramuli flexuosi fusco-purpurascens tertes. Folia alterna impari-pinnata in ambitu linearia 8-9 cm. longa 2½-3 cm. lata, pinnis lateralibus 6-7-jugis oppositis a se 5-7 mm. remotis ellipticis vel obovato-ellipticis inferioribus

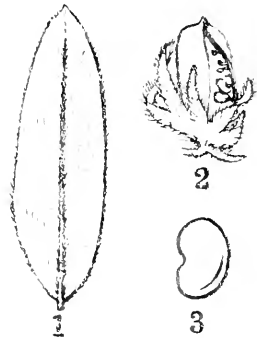


Fig. 12; *Crotalaria alcoxensis* HAYATA; 1, a leaf; 2, a pod with the calyx; 3, a seed.

minoribus superioribus majoribus $1\frac{1}{2}$ cm. longis 5–6 mm. latis apice rotundatis ad centrum summi breve aristatis basi obtusis vel cuneato-obtusis margine

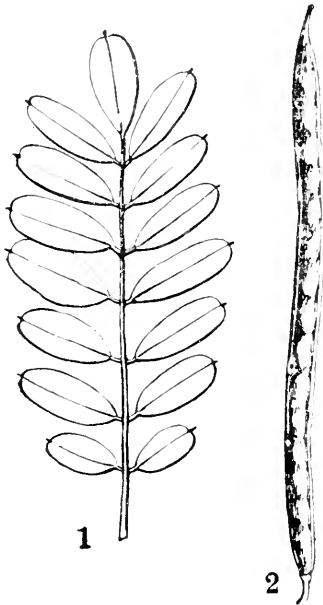


Fig. 13; *Indigofera mansuensis* HAYATA; 1, a leaf; 2, a pod.

integris utraque pagine tenuiter adpresse hirsutis, subtus adpresse glanduloso-punctatis, petiolulis $1\frac{1}{2}$ mm. longis, stipellis subulatis 1 mm. longis, pinna terminali majore $1\frac{1}{2}$ cm. longa 7–8 mm. lata; interjugiis 6–7 mm. longis adpresse hirsutis semi-teretibus supra late sulcatis, petiolis communibus 1 cm. longis, stipulis subulato-triangularibus 2 mm. longis. Flores ignoti. Legumen lineare 6–7 cm. longum 3 mm. latum plus minus complanatum apice longe rostratum utroque latere costulatum facie subplanum adpresse tenuiter hirsutum basi obtusum, pedicellis 4 mm. longis. Semina ignota.

HAB. Akō, Mansu, leg. Y. MATSUDA, Mai. 1916.

Near *Indigofera tinctoria* LINN.; but differs from it in the much longer straight pods.

***Indigofera venulosa* CHAMP. var. *glauca* HAYATA n. v.** Frutex 20–30 cm. longus ramosissimus, ramis et ramulis gracilibus glaucis plus minus flexuosis angulatis. Folia pinnata in ambitu linearia imparipinnata, pinnis lateralibus oppositis 7–jugis subconformibus ovato-oblongis 18 mm. longis 10 mm. latis obtusis ad summum breve aristatis basi obtusis integris supra glabris in exsiccato fuscentibus subtus glaucis adpresse hirsutis, stipellis minutis subulatis $\frac{1}{2}$ mm. longis, rachibus inter jugos 1 cm. longis, petiolis communibus 1 cm. longis, stipulis lineari-lanceolatis 4 mm. longis. Racemi terminales simplices vel axillares 10–15 cm. longi dense floriferi, pedicellis 2 mm. longis. Calyx late campanulatus 2 mm. longus 4 mm. latus tenuiter hirsutus apice 5-lobatus, lobis triangularibus inaequalibus acutis. Petala 5: vexillum ellipticum 12 mm. longum 8 mm. latum apice truncatum plus minus emarginatum basi truncato-triangulari-acutum margine minutissime hirsutum extus minute

hirsutum intus glabrum; alæ lineares 12 mm. longæ $2\frac{1}{2}$ mm. latæ plus minus recurvæ apice obtusæ deorsum plus minus hirsutæ basi acutæ; carinæ cultri-formes 14 mm. longæ 4 mm. latæ apice obtusæ ad marginem et prope marginem hirsutæ basi cuneatæ prope basin e facie exteriori gibboso-appendiculatæ. Stamina diadelphea, antheris ovato-oblongis 1 mm. longis $\frac{2}{3}$ mm. latis apice appendiculatis basi emarginatis apice basi que barbatis. Ovarium lineare 10 mm. longum $\frac{1}{3}$ mm. latum, stylo superne recurvo 3-4 mm. longo glabro apice capiculato. Legumen fusco-purpurascens lineare 5 cm. longum 3-4 mm. latum glabrum latere complanatum. Semina ignota.

HAB. Tochikoan, Daitōsei, Holisha, Ritōzan.

Near the type; but differs from it in having much smaller leaves which are very glaucous on the under side.

Tephrosia PERS.

Tephrosia ionophlebia HAYATA sp. nov. Suffrutex ramosissimus, rami et ramuli pallido-flavescentes tenuiter pubescentes flexnosi foliati. Folia alterna imparipinnata in ambitu lineari-oblonga 6-8 cm. longa $2\frac{1}{2}$ cm. lata, pinnis lateralibus 9-10 jugis oppositis, mediis majoribus obovato-linearibus 18 mm. longis 5 mm. latis apice obtusissimis mucronatis basi gradatim obtuso-cuneatis margine integris supra subglabris subtus dense patente brevique hirsutis, costis venis venulisque purpureo-coloratis, petiolulis 1-2 mm. longis dense hirsutis, stipellis nullis, interjugiis 5 mm. longis, petiolis communibus 13 mm. longis dense hirsutis, stipulis linearibus 5-6 mm. longis 1 mm. latis apice acuminatis extus hirsutis intus glabris. Racemi terminales folio breviores erecti 4-5 cm. longi hirsuti, floribus ad nodos fasciculatim dispositis, fasciculis 5-7-floratis basi bracteatis, bracteis linearibus 5-6 mm. longis hirsutis, bracteolis minutis, pedicellis florum gracilibus 4 mm. longis hirsutis. Calyx campanulatus 3 mm. longus totiusque latus medio sursum 5-lobatus, lobis superioribus usque ad medium connatis, lateralibus cuspidato-triangularibus 2 mm. longis 1 mm. latis apice cuspidatis extus dense intus tenuiter hirsutis. Petala 5: vexillum 8 mm. longum (cum ungue) 8 mm. latum late rotundatum apice emarginatum basi late unguiculatum, ungue obtriangulari 2 mm. longo 2 mm. lato basi acuto, intus glabrum extus hirsutum: alæ late

lineares 7 mm. longæ (unguibus exceptis) 2-3 mm. latæ apice obtuso-truncatæ, basi unguiculatæ, unguibus $2\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis glabræ; carinæ (unguibus exceptis) ovatæ $3\frac{1}{2}$ mm. longæ $2\frac{1}{2}$ mm. latæ apice acutæ basi oblique ad unguem abeuntes, unguibus linearibus 3 mm. longis $\frac{1}{3}$ mm. latis. Stamina diadelpa, tubo superne minute appendiculato, antheris oblongis $\frac{1}{3}$ mm. longis. Ovarium lineare 3 mm. longum $\frac{1}{2}$ mm. latum basi hirsutum sursum glabrum apice ad stylum abeuns, stylo valde latere complanato 3 mm. longo glabro apice punctiformi. Legumen lineare 4 cm. longum 4 mm. latum apice acutum.

HAB. Tōseikaku, Pinan.

Near *Tephrosia purpurea*; but differs from it in the leaves which are purple colored on the under side, and are dispersed with rather spreading hairs. In *T. purpurea*, the leaves are pale on the under surface and are dispersed with very adpressed hairs.

Dumasia DC.

Dumasia bicolor HAYATA (Pl. I.) Fl. Mont. Formos. p. 75. Descriptio aucta:—Legumen supra calycem breve stipitatum, stipite 2 mm. longo, globoso-fusiforme basi apiceque acutum, valvis coriaceis facie minute villosa-hirsutis, 1-2 cm. longum 8 mm. latum 1-2-spermm. Semina globosa $5\frac{1}{2}$ mm. longa $4\frac{1}{2}$ mm. lata nitida primum glauca fuscentia.

HAB. Arisan, leg. B. HAYATA.

Millettia W. et ARN.

Millettia taiwaniana (MATSUM.) (Pl. II.) HAYATA n. n. Descriptio aucta:—Racemi simplices vel paniculati 10-20 cm. longi, fulvo-tomentosi, floribus ad nodos 2-3-fasciculatim dispositis, rachis fasciculorum nodiformi, bractea basi nodi insita triangulari 2 mm. longa $1\frac{1}{2}$ mm. lata apice acuta intus glabra extus hirsuta; bracteolis duabus ad basin calycis insitis $1\frac{1}{2}$ mm. longis ovatis obtusis, pedicellis 4 mm. longis hirsutis. Calyx globoso-campulatus 5-6 mm. longus 7-8 mm. latus extus breve hirsutus crassiusculus intus glaber margine late 5-dentatus. Petala 5: vexillum obovato-oblongum 2 cm. longum $1\frac{1}{2}$ cm. latum apice emarginatum basi breve unguiculatum, ungue 3 mm. longo $1\frac{1}{2}$ mm. lato, prope apicem ad marginem hirsutum cæterum glab-

rum; alæ oblongo-lineares cum ungue 18 mm. longæ 6 mm. latæ apice obtusæ basi longe unguiculatæ, ungue 5-6 mm. longo 1 mm. lato; carinæ obovato-cultriformes cum ungue 2 cm. longæ apice obtusæ basi longe unguiculatæ, unguibus 5 mm. longis 1 mm. latis, sursum prope apicem ad marginem dense hirsutæ. Stamina monadelpha, antheris ovato-oblongis $1\frac{1}{2}$ mm. longis 1 mm. latis apice obtusis basi 2-lobatis. Ovarium 5-6 mm. longum lineare 2 mm. latum dense fulvo-hirsutum apice gradatim ad stylum abeans, stylo 10-12 mm. longo deorsum hirsuto apice oblique truncato stigmatifero.

Millettia pachycarpa HAYATA Gen. Ind. Fl. Formos. p. 21 (non BENTH.)

Pongamia taiwaniana HAYATA Ic. Pl. Formos. III. p. 79.

Derris taiwaniana MATSUM. in Sched. Herb. Tōkyō.

HAB. Shinjō, Kawiran, Toseikaku, Sankakuyū.

Differs from *Millettia pachycarpa* BENTH., in the always 1-seeded ovoid pods.

Desmodium DESV.

Desmodium akoense HAYATA sp. nov. (Fig. 14). Basi suffrutescens haud volubilis. Caulis gracillimus tetragonus tenuiter hirsutus. Folia 3-foliata, foliolo terminali obovato-oblongo vel oblongo vel lanceolato 2-2 $\frac{1}{2}$ cm. longo 1-1 $\frac{1}{2}$ cm. lato integro apice obtusissimo vel rotundato ad centrum minute mucronato basi obtusissimo membranaceo supra subtusque depresso-hirsuto subtus glauco, foliolis lateralibus minoribus, petiolulis 1 $\frac{1}{2}$ mm. longis tomentosis, stipellis 1 mm. longis subulatis, petiolis communibus 1-1 $\frac{1}{2}$ cm. longis hirsutis, stipulis triangulari-lanceolatis 2 mm. longis obliquissimis strigoso-hirsutis. Racemi simplices vel paniculati terminales vel axillares laxè florati, floribus fasciculatis, fasciculis basi 1-bracteatis, bracteis ovato-lanceolatis 2 mm. longis $\frac{1}{2}$ mm. latis strigoso-hirsutis, bracteolis lanceolatis 1 mm. longis, pedicellis 2-3 mm. longis. Calyx late obconico-campanulatus 2 $\frac{1}{2}$ mm. longus a basi sursum 5-lobatus, lobis superioribus fere totoconnatis. Petala 5 : vexillum obtriangu-

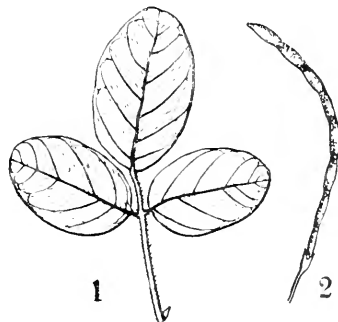


Fig. 14; *Desmodium akoense* HAYATA; 1, a leaf; 2, a pod.

lare 3 mm. longum $3\frac{1}{2}$ mm. latum apice latissimum basi acutum; alæ late lineares $3\frac{1}{2}$ mm. longæ 1 mm. latæ apice obtusissimæ basi breve unguiculatæ, unguibus $\frac{3}{4}$ mm. longis; carinæ longe unguiculatæ, unguibus 2 mm. longis $\frac{1}{4}$ mm. latis, laminis oblique obovatis $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis. Stamina diadelpa, antheris rotundatis. Ovarium lineare $3\frac{1}{2}$ mm. longum $\frac{1}{2}$ mm. latum glabrum, stylo 1 mm. longo recurvo. Legumen lineare gracillimum ad nodos constrictum, internodiis articulatis linearibus 5 mm. longis 2 mm. latis breve strigoso-hirsutis scabris.

HAB. Akō, leg. Y. MATSUDA, No. 95, Aprili. 1915.

Near *D. laxiflorum*; but differs from it in the much smaller leaflets with the rounded or even emarginate tip.

Desmodium Shimadai HAYATA sp. nov. (Fig. 15). Suffrutex, ramis gracillimis teretibus tenuiter hirsutis erectis scandentibus. Folia simplicia lanceolata 10–14 cm. longa $2\frac{1}{2}$ –3 cm. lata apice acuminata ad summum obtusa centro mucronata basi obtusissima truncata vel rotundata integra supra glabra subtus tomentella in exsiccato utraque pallidissima, supra venis venulisque tenuissime subtus prominente elevatis, petiolis 1– $1\frac{1}{2}$ cm. longis hirsutis, stipellis subulato-lanceolatis 4–5 mm. longis, stipulis oblique lineari-lanceolatis 6 mm. longis 1 mm. latis apice acuminatis glabris margine ciliolatis. Racemi terminales simplices rari; paniculati laxissime florati 15–20 cm. longi bracteati, pedicellis 5–10 mm. longis. Calyx late campanulatus 2–3 mm. longus 5–6 mm. latus extus hirsutus nitus glaber medio sursum 5-lobatus, lobis superioribus fere toto connatis, lobis lateralibus lineari-triangularibus $2\frac{1}{2}$ mm. longis basi 1 mm. latis margine ciliatis acuminatis. Petala 5: vexillum obovatum 6–7 mm. longum 4 mm. latum apice obtusissimum basi cuneatum integrum; alæ obovato-lineares $5\frac{1}{2}$ mm. longæ 2 mm. latæ apice obtusissimæ basi breve unguiculatæ, ungue 1 mm. longo; carinæ 7 mm. longæ 2 mm. latæ obtusissimæ basi attenuatæ subunguiculatæ. Stamina diadelpa. Ovarium lineare 5 mm. longum $\frac{1}{2}$ mm. latum breve hirsutum, stylo 1 mm. longo apice acuto. Legumen longe lineare gracillimum 8 cm. longum 2 mm. latum ad nodos constrictum valde complanatum hirsutum, internodiis 1– $1\frac{1}{2}$ cm. longis.

HAB. Sankakuyū, leg. Y. SHIMADA.

Resembles *D. triquetrum* DC. in the leaves on one side, but on the

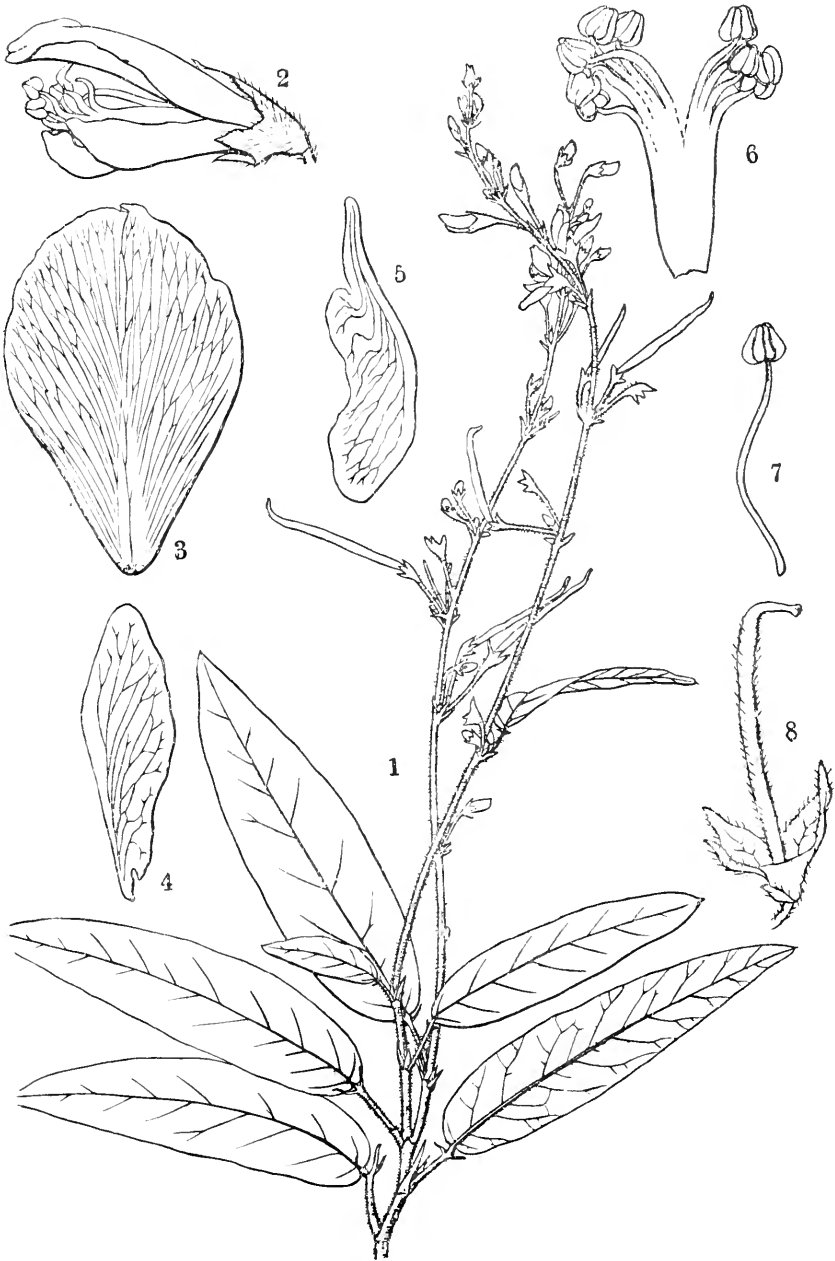


Fig. 15; *Desmodium Shimadai* HAYATA; 1, a branch; 2, a flower; 3, a standard; 4, a wing; 5, a keel; 6, 7, diadelphous stamens; 8, an ovary with the calyx.

other, it is very near to *D. laxiflorum* in the inflorescence, flowers and fruits.

Uraria DESV.

Uraria formosana HAYATA n. n.

Desmodium formosanum HAYATA Mater. Fl. Formos. p. 77; Gen. Ind. Fl. Formos. p. 19.

Uraria latiseptala HAYATA Ic. Pl. Formos. III. p. 70; Gen. Ind. Fl. Formos. p. 22.

HAB. Jicchori, Raisha.

Uraria yaeyamensis HAYATA sp. nov. Frutescens circ. 50 cm. alta. Caulis teres tenuiter pubescens. Folia alterna simplicia ovato-rotundata 3 cm.-6 cm. longa 2½-4½ cm. lata apice perfecte rotundata ad centrum aristis minutis mucronata basi late truncato-cordata vel tenuiter cordata margine integra supra minus subtus plus pubescentia, costis venis subtus distincte elevatis, petiolis 1½-2½ cm. longis tenuiter pubescentibus apice stipellis duabus subulato-linearibus 3-4 mm. longis instructis, stipulis cuspidato-triangularibus 7 mm. longis 3 mm. latis apice cuspidatis tenuiter pubescentibus. Spicæ terminales cylindricæ 5-6 cm. longæ 1½-2 cm. latæ apice acutæ, densissime florifere, bracteis imbricatis ovato-rotundatis apice longè cuspidatis cum cuspidibus 9 mm. longis 6 mm. latis extus dense hirsutis intus glabris, pedicellis 3 mm. longis dense hirsutis. Calyx obconico-campanulatus usque ad medium 5-lobatus extus hirsutus, lobis superioribus elongato-triangularibus 1½ mm. longis 1 mm. latis apice acuminatis margine ciliatis, lobis lateralibus longè setiformibus 5 mm. longis teretibus longè setuloso-hirsutis, lobo infimo lobis lateralibus conformi. Petala 5: vexillum ovato-rotundatum, ungue obtriangulari-cuneiformi 1½ mm. longo, lamina 3 mm. longa 3½ mm. lata late ovato-rotundata integra; alæ cultriformes, ungue lineari 1 mm. longo, laminis oblongo-cultriformibus 3½ mm. longis 1½ mm. latis apice late truncatis basi latere superiore truncatis latere inferiore acutis; carinæ spathulato-cultriformes 5 mm. longæ 1½ mm. latæ apice obtusissimæ basi longè attenuatæ. Stamina diadelpa, filamentis fere connatis, partibus liberis ½ mm. longis, antheris oblongis ½ mm. longis ¼ mm. latis. Ovarium lineare 1½ mm. longum, stylo 4 mm. longo glabro filiformi sursum crassiusculo, stigmatibus terminali.

HAB. Yaeyama, leg. Kanashiro, Juli. 1912.

Perhaps identical with *U. lagopoides* DC.; but differs from it by the nearly equally elongated lower calyx lobes and in the leaves with nearly cordate base.

Glycine LINN.

Glycine pescadrensis HAYATA sp. nov. Humilis scandentissima. Caulis teres adpresse hirsutus, pilis reflexis. Folia 3-foliata, foliolo terminali oblongo vel lanceolato 1½-2 cm. longo 6-8 mm. lato apice obtusissimo basi obtusissimo supra subglabro subtus adpresse hirsuto, foliolis lateralibus paullo minoribus, petiolulis 1 mm. longis, stipellis 1 mm. longis subulatis, petiolis communibus 1½-2 cm. longis adpresse hirsutis, stipulis subulato-lanceolatis 2½ mm. longis. Racemi axillares simplices 6 cm. longi laxè florati, pedicellis 2 mm. longis

bracteis lanceolatis 2 mm. longis hirsutis, bracteolis duabus basi floris dispositis linearibus $1\frac{1}{2}$ mm. longis. Calyx tubuloso-campanulatus 4 mm. longus 3 mm. latus modio sursum 5-lobatus, lobis superioribus fere toto connatis lateralibus et infimis lineari-triangularibus 2 mm. longis cuspidiformibus extus hirsutis intus glabris. Petala 5: vexillum (ungue excepto) late rotundatum 5 mm. longum 6 mm. latum apice emarginatum basi late rotundatum integrum, ungue 2 mm. longo $\frac{2}{3}$ mm. lato; alæ (unguibus exceptis) obovato-lineares $4\frac{1}{2}$ mm. longæ $2\frac{1}{2}$ mm. late apice rotundatæ basi latere superiore appendiculatæ, unguibus 3 mm. longis $\frac{1}{2}$ mm. latis; carinæ (unguibus exceptis) obovatæ 3 mm. longæ 2 mm. late basi 1-appendiculatæ, unguibus linearibus $3\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis. Stamina monadelphæ, antheris ellipticis $\frac{1}{2}$ mm. longis. Ovarium basi breve stipitatum 4 mm. longum $\frac{2}{3}$ mm. latum dense adpresse hirsutum, stylo $1\frac{1}{2}$ mm. longo apice capitulato. Legumen lineare 2 cm. longum 4 mm. latum.

HAB. Bökotô, leg. T. KAWAKAMI, Mai. 1909.

Near *G. clandestina* WENDL.; but differs from it in the very obtuse and mucronate leaflets.

Glycine subonensis HAYATA sp. nov. (Fig. 16). Scandentissima volubilis; caulis teres adpresse fulvo-hirsutus, pilis reflexis, remote foliatus. Folia chartacea 3-foliolata, foliolo terminali lineari-lanceolato $4\frac{1}{2}$ –5 cm. longo 1– $1\frac{1}{2}$ cm. lato apice obtusissimo ad centrum mucronato basi late cuneato vel obtuso integro subtrinervio, nervis lateralibus gracillimis, nervis venulisque supra et subtus tenuissime elevatis, pagine supra tenuissime adpresseque subtus densissime adpresseque hirsuta, foliolis lateralibus paullo minoribus basi latioribus obliquis obtusissimis vel subrotundatis, petiolulis 2 mm. longis dense villosis, stipellis subulatis 1 mm. longis, petiolis communibus 2– $2\frac{1}{2}$ cm. longis reflexo-pilosis, stipulis lanceolato-subulatis hirsutis $2\frac{1}{2}$ mm. longis. Racemi 8–10 cm. longi axillares simplices, floribus ad nodos simplicibus vel fasciculatis, bracteis ovato-lanceolatis extus hirsutis intus glabris, pedicellis 1 mm. longis hirsutis. Calyx basi bracteolis duabus ovato-lanceolatis $1\frac{1}{2}$ mm. longis instructus; calyx campanulatus 3 mm. longus $2\frac{1}{2}$ mm. latus extus hirsutus a medio 5-lobatus, lobis oblongo-triangularibus $1\frac{1}{2}$ mm. longis 1 mm. latis acuminatis, superioribus longioribus plus minus connatis, extus hirsutis intus glabris. Petala 5:



Fig. 16; *Glycine subonensis* HAYATA; 1, the plant; 2, a flower; 3, a standard; 4, a wing; 5, a keel; 6, monadelphous stamens; 7, ovary; 8, a seed.

vexillum obovato-oblongum 4 mm. longum 3 mm. latum apice emarginatum basi unguiculatum, ungue 1 mm. longo $\frac{2}{3}$ mm. lato; alæ cultriformes 4 mm. longæ 1 mm. late apice obtusæ basi unguiculatæ, unguibus $1\frac{1}{2}$ mm. longis $\frac{1}{4}$ mm. latis margine lateribus superioribus hirsutæ; carinæ obovato-spathulatæ $3\frac{1}{2}$ mm. late apice obtusæ valde concavæ basi unguiculatæ, unguibus $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis. Stamina monadelphia, antheris ovato-cordatis $\frac{1}{3}$ mm. longis apice acutis basi cordatis. Ovarium lineare 2 mm. longum glabrum sursum prope apicem dense hirsutum $\frac{1}{2}$ mm. latum, stylo brevissimo $\frac{1}{4}$ mm. longo glabro, stigmate capitato 2-lobato. Legumen lineare 5 mm. longum 3-4 mm. latum adpresse hirsutum plus minus falcatum recurvum valde complanatum apice subito recurvum. Semina oblonga $3\frac{1}{2}$ mm. longa 2 mm. lata glabra.

HAB. Subonsha, leg. Y. MATSUDA.

Glycine tabacina BENTH.; FORBES et HEMSL. Ind. Fl. Sin. I. p. 189;

HAYATA Gen. Ind. Fl. Formos. p. 20.

Glycine tomentosa HAYATA in Gen. Ind. Fl. Formos. p. 20. (non BENTH.)

HAB. Byōritsu, Pinan, Shintiku.

Glycine tomentella HAYATA sp. nov. Scandentissima; caulis teres gracilis reflexo-fulvo-tomentosus remote foliatus. Folia 3-foliata, foliolo terminali majore elliptica 3- $3\frac{1}{2}$ cm. longo 15-18 mm. lato apice obtusissimo vel rotundato ad centrum mucronato basi obtusissimo integro, venis subtus elevatis, utraque pagine tenuiter tomentoso, foliolis lateralibus minoribus 2 cm. longis 13 mm. latis apice obtusissimis basi rotundatis subæqualibus, petiolulis 2 mm. longis tomentosis, stipellis subulatis 1 mm. longis, petiolis communibus 2- $2\frac{1}{2}$ cm. longis tomentosis, stipulis lanceolato-triangularibus $2\frac{1}{2}$ mm. longis hirsutis. Racemi axillares gracillimi folia multo superantes 8-16 cm. longi, partibus floriferis 2-4 cm. longis, rhachibus gracilibus hirsutis, bracteis minutis lanceolatis hirsutis, pedicellis 1 mm. longis hirsutis solitariis. Calyx tubuloso-campulatus basi bracteolis duabus minutis instructus $3\frac{1}{2}$ mm. longus 2 mm. latus a medio 5-lobatus, lobis superioribus ad medium connatis, lobis lateralibus lanceolato-triangularibus 2 mm. longis $\frac{2}{3}$ mm. latis apice acuminatis vel subulato-acuminatis intus glabris extus dense hirsutis. Petala 5: vexillum late rotundatum, lamina $4\frac{1}{2}$ mm. longa 6 mm. lata apice emarginata, basi unguiculatum, ungue 2 mm. longo cuneiformi; alæ obovato-cultriformes cum ungui-

bus $1\frac{1}{2}$ mm. longis linearibus 6 mm. longæ 2 mm. latæ apice late truncatæ obtusissimæ basi latere superiore appendiculatæ; carinæ obovato-cultriformes cum unguibus 2 mm. longis linearibus $4\frac{1}{2}$ mm. longæ apice obtusissimæ basi latere superiore 1-appendiculatæ. Stamina monadelphæ, antheris ovato-oblongis. Ovarium lineare 2-3 mm. longum $\frac{1}{3}$ mm. latum subglabrum sursum dense longeque hirsutum, stylo 1 mm. longo apice capitato. Legumen rectum complanatum 2 cm. longum 4 mm. latum breve reflexo-hirsutum. Semina irregulariter subglobosa $1\frac{1}{4}$ mm. longa glabra.

HAB. Tainan, Takao, Akao.

Near *G. tomentosa* BENTH., but differs from it in the smaller obovate leaves.

Galactia P. BR.

Galactia lanceolata HAYATA sp. nov. (Fig. 17). Scandentissima vel volubilis; caulis teres gracillimus subglaber. Folia alterna 3-foliolata, foliolo terminali lanceolato apice obtusissimo basi obtusissimo vel rotundato-obtuso integro utroque latere tenuissime hirsuto subtus venulis minute reticulato chartaceo, foliolis lateralibus terminali conformibus paulo minoribus, petiolulis

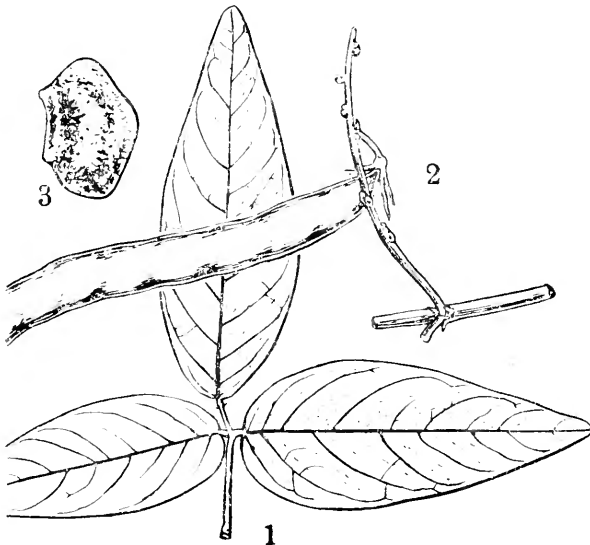


Fig. 17; *Galactia lanceolata* HAYATA; 1, a leaf; 2, a ped; 3, a seed.

2 mm. longis hirsutis, stipellis subulato-triangularibus 1 mm. longis, petiolis communibus 1- $1\frac{1}{2}$ cm. longis, stipulis lanceolato-subulatis $2\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis acuminatis extus hirsutis intus glabris. Flores ignoti. Legumen lineare 7 cm. longum 6-7 mm. latum valde complanatum subglabrum apice oblique acutum basi oblique obtusum, valvis cartilagineis, 10-spermum. Se-

mina oblonga $5\frac{1}{2}$ mm. longa 4 mm. lata plus minus complanata glabra.

HAB. Suubonsha, leg. Y. MATSUDA, Jan. 1916.

Near *G. formosana*; but differs from it in the lanceolate leaflets.

Pueraria DC.

Pueraria phaseoloides BENTH.; HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Akō: Naihō, leg. Y. MATSUDA, No. 631.

Phaseolus LINN.

Phaseolus Mungo LINN.; HAYATA Gen. Ind. p. 21. (Fig. 18). Scandentissima; caulis gracillimus reflexo-pilosus plus minus sulcatus remote foliatus. Folia alterna 3-foliolata, foliolo terminali ovato-rhomboides 9 cm. longo $5\frac{1}{2}$ cm. lato apice acuto basi late cuneato margine integro vel plus minus sinuato membranaceo utraque pagine hirsuto vel glabro, foliolis lateralibus aequilongis valde obliquis basi late rotundatis 3-nerviis, petiolulis 3 mm. longis hirsutis, stipellis ovato-lanceolatis 5 mm. longis apice subulato-acuminatis glabris, petiolis communibus 6–10 cm. longis reflexo-hirsutis, stipulis oblongis 8 mm. longis 3 mm. latis integris apice acuminatis basi auriculatis peltatim affixis extus hirsutis intus glabris. Racemi 2–3-floriferi longe pedunculati, pedunculis 5–6 cm. longis reflexo-hirsutis, rachibus racemi 2–3 mm. longis, rachibus fasciculorum plus minus nodiformibus, pedicellis florum 2–3 mm. longis. Calyx obconico-campanulatus $3\frac{1}{2}$ mm. longus 4–5 mm. latus glaber margine ciliolatus apice 5-lobatus, lobis superioribus fere toto connatis apice rotundatis, lobis cæteribus triangularibus 2 mm. longis totiusque latis apice obtusis margine ciliolatis intus hirsutis. Petala 5: vexillum latissime rotundatum 22 mm. latum 10 mm. longum apice emarginatum basi late brevique unguiculatum utroque latere unguis minute appendiculatum; alæ oblique obovatæ valde concavæ 12–15 mm. longæ 10 mm. latæ apice rotundatæ basi recurvæ unguiculatæ, unguibus 2 mm. longis latere superiore 1-appendiculatæ; carinæ circulari-falcato-

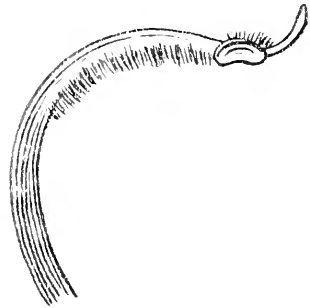


Fig. 18; a style of *Phaseolus Mungo* LINN.

lunulatae 5 mm. latae apice truncatae basi unguiculatae, unguibus 3 mm. longis 1 mm. latis. Stamina diadelpa, antheris ovatis $\frac{1}{2}$ mm. longis. Ovarium lineare 6 mm. longum $\frac{2}{3}$ mm. latum hirsutum complanatum, stylo $1\frac{1}{2}$ cm. longo spiritaliter recurvo sursum latere interiore hirsuto, stigmatate laterali, partibus supra stigma 1-2 mm. longis subulatis. Legumen lineare 6-7 cm. longum 4 mm. latum minute hirsutum scaberrimum.

Vigna reflexopilosa HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Kelung, Ako, Kwarenko, Suisha.

NOTE: Standard pale-yellow, more or less purple on the back.

Phaseolus heterophyllus HAYATA sp. nov. Scandentissima gracilis, caulis teres reflexo-pilosus. Folia alterna 3-foliolata, foliolo terminali ovato-rhomboideo usque ad lanceolato 2 cm. longo $1\frac{1}{2}$ cm. lato apice triangulari-acuto basi late triangulari-acuto vel obtuso integro membranaceo 3-nervio utraque pagine tenuissime hirsuto, foliolis lateralibus obliquis terminali conformibus, petiolulis 1-2 mm. longis hirsutis, petiolis communibus $2\frac{1}{2}$ cm. longis, stipellis lanceolatis $2\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis apice cuspidato-acuminatis, stipulis oblongis $3\frac{1}{2}$ mm. longis $1\frac{1}{4}$ mm. latis apice obtusis basi rotundatis supra medium peltatim affixis margine ciliatis. Racemi axillares solitarii longe pedunculati apice 2-3-floriferi, pedunculis 7-8 cm. longis reflexo-pilosis, pedicellis 1 mm. longis hirsutis apice bracteolis duabus instructis, bracteolis lanceolatis acuminatis hirsutis 4 mm. longis 1 mm. latis margine ciliatis. Calyx obconico-campanulatus $3\frac{1}{2}$ mm. longus 3 mm. latus glaber apice 5-lobatus, lobis superioribus toto connatis apice obtusissimis, lobis lateralibus late brevique triangularibus 1 mm. longis $1\frac{1}{2}$ mm. latis, lobo infimo longe triangulari $1\frac{1}{2}$ mm. longo 1 mm. lato, lobis totis margine ciliatis. Petala 5: vexillum late rotundatum 1 cm. longum $1\frac{1}{2}$ cm. latum apice emarginatum basi leviter cordatum brevissime unguiculatum, ungue 1 mm. longo, utroque latere unguis appendiculatum; alae obovatae unguiculatae cum unguibus 9 mm. longae 5-6 mm. latae apice basi cuneatae breve unguiculatae latere superiore appendiculatae; carinae circulari-falcato-lunulatae 9 mm. longae 3-4 mm. latae apice truncatae intus sursum plus minus hirsutae basi cuneato-unguiculatae, unguibus 2 mm. longis. Stamina diadelpa, tubo filamentorum rubro-striato, antheris oblongo-ovatis $\frac{2}{3}$ mm. longis $\frac{1}{2}$ mm. latis apice obtusis basi cordatis. Discus multilobatus, lobis digitiformibus. Ova-

rium lineare 5 mm. longum $\frac{1}{3}$ mm. latum tenuiter hirsutum, stylo 2 cm. longo spiraliter recurvo sursum latere uno reflexo-hirsuto, stigmatate latere apicis styli insito apice appendiculato, appendice subulato $\frac{1}{2}$ mm. longo. Legumen lineare 4-5 cm. longum 2-2 $\frac{1}{2}$ mm. latum plus minus complanatum scabriusculum; semina.....

Phaseolus trilobus HAYATA Gen. Ind. Fl. Formos. p. 21, (non AIT.)

HAB. Kelung, Töyen, Kwarenkö, Suö, Hikaku, Taitö. Shizangan, Tamsui. Remarkable for its small and heteromorphous leaflets.

Phaseolus rotundifolius HAYATA sp. nov. Scandentissima humilis basi suffrutescens; caulis subrepens teres retrorsum hirsutus. Folia alterna 3-foliolata, foliolo terminali ovato-rotundato 13 mm. longo 11 mm. lato apice late truncato-rotundato basi late cuneato vel obtuso 3-nervio integro apice haud vel vix mucronato supra subtusque tenuissime hirsuto margine ciliolato, foliolis lateralibus terminali conformibus sed minoribus, petiolulis 1 $\frac{1}{2}$ mm. longis hirsutis, stipellis oblongis apice longe cuspidatis 2 mm. longis $\frac{2}{3}$ mm. latis, petiolis 2 cm. longis triquetris reflexo-hirsutis, stipulis ovato-oblongis 3 mm. longis 1 $\frac{1}{2}$ mm. latis hirsutis ad medium affixis. Racemi apice 1-2-florati, pedunculis 4 cm. longis glabris, pedicellis hirsutis 1-2 mm. longis, bracteolis duabus basi floris dispositis hirsutis. Calyx campanulatus 3 mm. longus 4 mm. latus glaber margine ciliolatus 5-lobatus, lobis superioribus fere connatis apice rotundato-obtusis, lobis lateralibus late triangularibus 1 mm. longis 1 $\frac{1}{2}$ mm. latis obtusis margine ciliolatis. Petala 5: vexillum late rotundatum 1 cm. latum 7 mm. longum apice emarginatum basi breve unguiculatum utroque appendiculatum margine integrum; alae obovatæ 7-8 mm. longæ 6 mm. latæ apice rotundatæ basi recurvæ cuneatæ unguiculatæ latere superiore appendiculatæ, unguibus 1 $\frac{1}{2}$ mm. longis; carinæ falcato-lunulatæ (ungue excepto) 9 mm. longæ 3 mm. latæ apice truncatæ, ungue lineari 2 mm. longo $\frac{1}{2}$ mm. lato plus minus tortuoso. Stamina diadelpa, antheris oblongis $\frac{1}{2}$ mm. longis $\frac{1}{3}$ mm. latis. Ovarium lineare latere complanatum 5 mm. longum $\frac{1}{2}$ mm. latum tenuiter hirsutum, stylo latere plus minus complanato lineari-filiformi apice subulato infra apicem a loco 1 mm. ab apice distante usque ad locum 2-3 mm. longum barbato, cæterum glabro. Discus digitiformis. Legumen lineare subteres 3 $\frac{1}{2}$ cm. longum 3-4 mm. latum apice acutum basi

obtusum subglabrum.

Phaseolus trilobus AIT.; BAKER in HOOK f. Fl. Brit. Ind. II. p. 201;
WIGHT Ic. t. 94.

Vigna stipulata HAYATA Gen. Ind. Fl. Formos. p. 22.

HAB. Dakusui, Tainan.

Vigna SAY.

Vigna acuminata HAYATA sp. nov. Caulis scandentissimus volubilis teres pilosus, pilis retrorsis. Folia alterna 3-foliata, foliolis fere conformibus, terminali lanceolato 6-7 cm. longo 1½ cm. lato apice acuminato ad summum breve aristato basi cuneato-acuto margine integro supra minus subtus plus hirsuto, lateralibus basi plus minus obliquis, petiolulis 2 mm. longis hirsutis, stipellis oblongo-triangularibus 1-2 mm. longis hirsutis, petiolis 3-4 cm. longis reflexo hirsutis, stipulis oblongo-triangularibus 3 mm. longis hirsutis. Racemi axillares-longissime pedunculati, pedunculis 25 cm. longis glaberrimis erectis rectis vel recurvis ascendentibus, partibus floriferis 2-3 cm. longis, pedicellis 2 mm. longis hirsutis. Calyx late campanulatus 8 mm. latus 5 mm. longus 5-lobatus, lobis superioribus fere toto connatis obtusissimis, lobis lateralibus late triangularibus 2 mm. longis totiusque latis obtusis margine ciliolatis extus glabris intus pubescentibus, lobo infimo elongato-triangularibus 3 mm. longis acuminatis. Petala 5: vexillum late rotundatum 13 mm. longum 18 mm. latum apice emarginatum basi cordatum basi breve unguiculatum utroque latere basis breve appendiculatum extus glabrum intus basi minute hirsutum basi apice unguis transversum carinatum; alæ cuneato-obovate 15 mm. longæ 6-7 mm. late apice rotundate basi gradatim cuneate latere superiore prope basin 1-appendiculate; carinæ oblique semi-triangulares 13 mm. longæ 10 mm. late apice obtusæ basi breve unguiculate, ungue 3 mm. longo. Stamina diadelphæ, antheris ovato-oblongis. Ovarium lineare 10 mm. longum 1 mm. latum dense hirsutum latere complanatum, stylo 1½ cm. longo medio reflexo-tortuoso sursum latere uno hirsuto, stigmate laterali. Legumen lineare dense hirsutum.

HAB. Taihoku, Sōzan, Taitō.

Near *V. luteola*; but differs from it in the hirsute lanceolate leaflets.

Dolichovigna HAYATA n. g.

Dolichovigna formosana HAYATA sp. nov. (Pl. III.) Scandentissima volubilis; caulis gracilis teres 1 mm. in sectione fulvo-villosus remote foliatus sursum versus apicem cirriformis. Folia alterna remote disposita trifoliata, foliolo terminali rhomboideo-ovato-oblongo 8 cm. longo 4 cm. lato apice attenuato obtuso basi rotundato margine subintegro utraque pagine tenuiter villosa, venis venulis subtus distincte elevatis, subtrinervio, foliolis lateralibus terminali conformibus oppositis basi valde obliquis, petiolulis 3 mm. longis stipellis minutis 1 mm. longis subulatis, petiolis communibus 3-4 cm. longis villosis, stipulis minutis elongato-triangularibus 2 mm. longis. Racemi axillares cum pedunculis 7-8 cm. longi, pedunculis 2 cm. longis, dense villosi, floribus geminatim fasciculatis approximatin dispositis, fasciculorum rachis globosa $1\frac{1}{2}$ mm. in diametro basi bracteis minutis triangularibus singulis hirsutis $\frac{1}{2}$ mm. longis instructa, pedicellis ultimis $2\frac{1}{2}$ mm. longis fulvo-tomentosis, bracteis duabus utraque latere basis floris dispositis 1 mm. longis ovato-triangularibus hirsutis. Calyx campanulatus 6 mm. longus fulvo-hirsutus obliquus usque ad medium 5-lobatus, lobis elongato-triangularibus 4 mm. longis 3 mm. latis apice acuminatis intus brevis villosis, lobis superioribus toto connatis. Petala 5: vexillum late ovato-rotundatum 12 mm. longum 15 mm. latum apice leviter emarginatum basi tenuiter cordatum breve unguiculatum; alae quadrangulariformes 6-7 mm. longae 3 mm. laevae basi longe unguiculatae, unguibus 3 mm. longis $\frac{1}{2}$ mm. latis, utroque latere appendiculatae, appendiculis 1-1 $\frac{1}{2}$ mm. longis interiore recurvis; carinae falcato-recurvae basi longe unguiculatae, laminae 10 mm. longae 5 mm. laevae apice attenuatae superiore recurvae basi latere superiore plus minus late appendiculatae, unguibus linearibus 7 mm. longis $\frac{2}{3}$ mm. longis. Stamina 10 diadelphea, filamentis connatis glabris, antheris ellipticis 1 mm. longis $\frac{1}{2}$ mm. latis utroque emarginatis. Ovarium hirsutum 10 mm. longum 1 mm. latum latere complanatum apice gradatum attenuatum falcato-recurvum, stylo 7-8 mm. longo infra apicem loco ab apice 1 mm. distantia fasciculo pilorum instructo, stigmate truncato. Legumen lineare teres plus minus complanatum dense ferrugineo-villosum 7-8 cm. longum 7 mm. latum apice acutum breve rostratum intus septatum. Semina

cylindrica 4-5 mm. longa 3 mm. lata utroque truncata nitida fusco-purpurascens.

HAB. Kiūkyokudō, leg. Y. MATSUDA; Takao; Tainan; Bantan, (Ako).

The present new genus is undoubtedly referable to the tribe *Phaseoleæ*, as defined by BAKER, BENTHAM and HOOKER, and TAUBERT. As the style has a hair-tuft just below the stigma on the inner side, it should be assigned to the subtribe *Euphaseoleæ*. It is near to *Dolichos* in the terminal stigma; but differs from it in having a hair-tuft just below the stigma on the inner side, in the tumid nodes of the racemes which are exactly like those of *Galactia* and *Pueraria*, and in having nearly terete pods with septas inside. It is comparable to some extents to *Phaseolus*, *Vigna*, *Pueraria*, *Cunavalia* and *Galactia* in this point or that; from *Phaseolus*, it differs in the not spirally recurved keel, in the terminal stigma with hair-tuft on one side below it, and in the tumid nodes of the racemes; from *Vigna*, in the terminal stigma and in the tumid nodes of the racemes; from *Pueraria*, *Cunavalia* and *Galactia*, in the hair-tuft below the stigma.

Dolichovigna rhombifolia HAYATA sp. nov. Scandentissima volubilis; caulis teres gracilis dense villosus remote foliatus versus apicem efoliatus cirriformis. Folia alterna 3-foliata, foliolo terminali rhomboideo-ovato-rotundato $3\frac{1}{2}$ cm. longo 3 cm. lato apice triangulari-acuto ad summum aristato basi late truncato vel rotundato margine integro supra subtusque tenuiter pubescenti, venis venulis subtus distincte elevatis, foliolis lateralibus minoribus basi valde obliquis, petiolulis 2-3 mm. longis hirsutis, stipellis subulatis 1 mm. longis, petiolis communibus 2-3 cm. longis villosis, stipulis elongato-triangularibus 2 mm. longis hirsutis. Racemi breves 3-5 mm. longi pauciflorati, axillares, rhachi fasciculorum nodiformi, pedicellis 1-2 mm. longis hirsutis, bracteolis duabus basi floris dispositis triangularibus hirsutis 1 mm. longis. Calyx oblique campanulatus hirsutus 4 mm. longus totiusque latus 5-lobatus, lobis superioribus connatis obtusis, lateralibus late triangularibus 2 mm. longis $1\frac{1}{2}$ mm. latis obtusis hirsutis; lobo infimo elongato-triangulari 3 mm. longo apice obtuso extus hirsuto intus villoso. Petala 5: vexillum late reniformi-cordatum 1 cm. longum $1\frac{1}{2}$ cm. latum apice emarginatum basi cordatum, ungue 2 mm. longo; alæ quadrangulariformes 6 mm. longæ 3 mm. latæ, ungui-

bus linearibus 3 mm. longis $\frac{1}{2}$ mm. latis, laminæ basi utroque appendiculate lineares; carinæ falcato-lunulate, laminæ 1 cm. longæ 4 mm. latæ apicè obtusæ; unguibus 8 mm. longis $\frac{1}{2}$ mm. latæ linearibus. Ovarium lineare 9 mm. longum $1\frac{1}{2}$ mm. latum fulvo-hirsutum latere complanatum, stylo filiformi 10 mm. longo glabro, infera apicem loco 1 mm. ab apice distante fasciculo pilorum instructo, apice truncato stigmatoso.

HAB. Karapin, leg. S. SASAKI, Dec. 1911.

Near *Dolichovigna formosana* HAY.; but differs from it in the much smaller rhomboid leaflets.

Dolichos LINN.

Dolichos Lablab LINN. var. **dolichocarpa** HAYATA n. v. Legumen lineari-cultriforme 7–9 cm. longum 12–15 mm. latum latere complanatum apicè acuminatum, acumine rostrato, rostro deorsum recurvo.

HAB. Taihoku et Tôyen, cult.; differs from the type by the much longer pods with recurved beaks.

Cæsalpinia LINN.

Cæsalpinia Sappan LINN.; BAKER. in HOOK. f. Fl. Brit. Ind. II. p. 255; DUNN et TUTCHER Fl. Kwangt. and Hongk. p. 89.

HAB. Tôkô, leg. T. SÔMA, 1915.

Cæsalpinia sepiaria ROXB.; BAKER in HOOK. f. Fl. Brit. Ind. II. p. 255; DUNN et TUTCHER Fl. Kwangt. and Hongk. p. 89.

HAB. Gaogau, leg. Y. SHIMADA, Juni. 1918.

Albizzia DURAZZ.

Albizzia longepedunculata HAYATA sp. nov. Rami fuscentes leviter pubescentes verrucoso-lenticellati. Folia pubescentia bi-paripinnata in ambitu rotundata cum petiolis 15 cm. longa 4–6 juga, pinnis pinnatis superioribus longioribus oppositis in ambitu linearibus 10 cm. longis 3–4 cm. latis, pinnulis 6–9-jugis oppositis sessilibus superioribus majoribus oblongo-linearibus 27 mm. longis 8–9 mm. latis apicè obtusissimis basi valde oblique truncatis integris utroque tenuissime hirsutis, petiolulis pinnarum 1 cm. longis

basi incrassatis, petiolis communibus 4-5 cm. longis medio 1-glandulatis, glandulis oblongis adnatis. Flores capitulati, capitulis axillaribus simplicibus longe pedunculatis, pedunculis 4 cm. longis brevis villosis, floribus brevis pedicellatis, pedicellis 2-3 mm. longis hirsutis. Calyx tubuloso-campanulatus 2 mm. longus $1\frac{1}{2}$ mm. latus tenuiter hirsutus intus glaber. Corolla elongato-tubuloso-campanulata 6-7 mm. longa 3 mm. lata extus hirsuta intus glabra supra medium sursum 5-lobata, lobis elongato-oblongis 3 mm. longis 1 mm. latis apice acutis vel obtusis. Stamina ∞ basi monadelphia cum tubo filamentorum 3 cm. longa, antheris reniformibus $\frac{1}{4}$ mm. longis $\frac{3}{8}$ mm. latis. Ovarium fusiforme 3 mm. longum $\frac{1}{2}$ mm. latum glabrum, stylo filiformi glabro. Legumen lineare 10 cm. longum 2 cm. latum apice obtusum basi ad stipitem 1 cm. longum attenuatum valde complanatum glabrum.

Albizia Lebbek, HAYATA Gen. Ind. p. 17, (non BENTH.).

HAB. Byōritsu: Taiko, leg. B. HAYATA et U. MORI, Juli. 1918.

Near *A. Lebbek* BENTH.; but differs from it by the axillary nearly solitary long-pedunculate heads with much smaller flowers.

Rosaceæ.

Spiræa LINN.

Spiræa tarokoensis HAYATA sp. nov. Frutex; rami et ramuli graciles glabri fusco-purpurascens. Folia alterna chartacea ea ramuli annotini majora rhomboideo-obovata $2\frac{1}{2}$ cm. longa 2 cm. lata apice obtusissima basi late cuneata vel obtusa margine grosse cuneata ad apicem crenarum apiculata vel paucè serrata supra glabra subtus pallidissima ad venas venulasque tenuiter hirsuta, ea ramulorum hornotiorum minora $1\frac{1}{2}$ cm. longa 8 mm. lata, petiolis 3-5 mm. longis hirsutis. Flores quasi-umbellati, umbellis ad apicem ramulorum hornotiorum hirsutis terminaliter sitis 15-20-floratis, pedicellis 1 cm. longis gracillimis. Calyx glaber rotato-obconicus, cupula $1\frac{1}{2}$ mm. in diametro extus glabra intus hirsuta, lobis 5 triangularibus 1 mm. longis totiusque latis margine erosis apice acutis extus glabris intus hirsutis. Petala 5 late rotundata 2 mm. longa 3 mm. lata apice emarginata basi rotundata subito contracta utraque glabra. Stamina circ. 20, ad marginem cupule 1-seriatim disposita, filamentis glabris

2 mm. longis, antheris reniformibus $\frac{1}{4}$ mm. longis glabris; staminodia (vel glandulæ) circ. 10, antheriformibus sessilibus oblongis $\frac{1}{4}$ mm. longis. Carpella 5 ad centrum cupulæ calycis disposita; ovariis semi-ovatis hirsutis, stylis glabris 1-1 $\frac{1}{2}$ mm. longis.

HAB. Taroko, leg. B. HAYATA et S. SASAKI, Aprili. 1917.

Near *Spiraea nipponica* MAXIM.; but differs from it in the much shorter racemes nearly contracted to umbels, and in the leaves which are more or less serrate.

Photinia LINDL.

Photinia ardisiifolia HAYATA Gen. Ind. Fl. Formos. p. 23.

Closely resembles *Photinia prunifolia* LINDL., collected in Hongkong by myself; but distinguishable from it in the much longer leaves with no distinct reticulation of veinlets on the under side.

Filipendula LINN.

Filipendula kiraishiensis HAYATA sp. nov. (Fig. 19). Perennis; rhizoma repens lignosum. Caulis subtetragonus glaber purpureo-rubescens basi et secus longitudinem foliifer. Folia pinnata, basilaria in ambitu obovato-spathulata cum petiolis 10 cm. longa 3 $\frac{1}{2}$ cm. lata basi attenuata imparipinnata, pinna terminali in ambitu pentagona 3 cm. longa 3 $\frac{1}{2}$ cm. lata 5-lobata, lobis basilaribus minoribus, lobo terminali majore, apice caudato-cuspidatis margine argute duplicato-serrulatis supra glabris subtus ad costas et venasque hirsutis, costis venisque supra impressis subtus elevatis, reticulis venularum utraque pagine impressis; pinnis lateralibus 3-4 jugis, superioribus majoribus 1 $\frac{1}{2}$ cm. longis, inferioribus minoribus, infimis ad auriculas minutas reductis, petiolis glabris 2 $\frac{1}{2}$ cm. longis basi utroque latere stipulis adnatis instructis, stipulis membranaceis 1 cm. longis acuminatis; foliis caulinis minoribus, superioribus sessilibus. Flores cymosi, cymis terminalibus, ramulis divaricatis tenuiter hirsutis, pedicellis 5-10 mm. longis. Calyx glaber, cupula obconico-plana glabra, lobis 5 triangulari-oblongis glabris 1 mm. latis 1 $\frac{1}{2}$ mm. longis apice obtusis. Petala oblongo-rotundata 3 $\frac{1}{2}$ mm. longa 2 $\frac{1}{2}$ mm. lata apice rotundata basi valde contracta breve unguiculata, unguibus $\frac{1}{4}$ mm. longis totiusque latis



Fig. 19; *Filipouli kiraihiensis* HAYATA; 1, the plant; 2, a flower; 3, a petal; 4, a stamen; 5, calyx with carpels; 6, a carpel.

glabris. Stamina circ. 10 ad marginem calycis cupulæ inserta, filamentis filiformibus 3 mm. longis glabris, antheris reniformibus $\frac{1}{2}$ mm. longis utrinque emarginatis. Carpella circ. 10 semioblonga 1 mm. longa glabra latere valde complanata, stylo ab apice ovarii oriundo 1 mm. longo glabro, stigmatibus terminalibus.

HAB. Kiraisli, ad 10,000 ped. alt., leg. S. ŌHASHI, Aug. 1918.

Near *F. multijuga* MAX.; but differs from it in the much smaller leaves.

Cucurbitaceæ.

Thladiantha BUNGE.

Thladiantha formosana HAYATA Fl. Mont. Formos. p. 100; Gen. Ind. Fl. Formos. p. 31. Descriptio aucta: Fructus baccatus globosus $3\frac{1}{2}$ mm. longus totiusque latus setuloso-hirsutus ∞ -spermius. Semina ovata 5 mm. longa $3\frac{1}{2}$ mm. lata apice obtusa basi rotundata dorso complanata; testa crustacea.

HAB. Holisha, leg. T. KAWAKAMI, Dec. 1913.

Caprifoliaceæ.

Sambucus TOURN.

Sambucus formosana NAKAI in Bot. Mag. (Tōkyō) XXXI. p. 211

Sambucus javanica HAYATA Gen. Ind. p. 34, (non BLUME).

Viburnum LINN.

Viburnum Matsudai HAYATA sp. nov. (Fig. 20). Frutex, ramuli validiusculi rugosissimi deorsum glabri sursum dense villosi. Folia ad apicem ramulorum hornotinorum dua oppositam disposita chartacea ovato-oblonga 4–5 cm. longa 15–22 mm. lata apice caudato-acuminata basi obtusissima vel rotundata margine argute serrata, serris triangularibus rectis ascendentibus acutis, supra minus subtus plus dense villosa, costis et venis supra impressis subtus elevatis, venis lateralibus rectis haud vel raris furcatis ad apicem serrarum attingentibus, petiolis villosis brevissimis 2–3 mm. longis, stipulis minutis hirsutis subulatis ad basin petiolorum adnatis, glandulis singulis utroque latere basis foliorum subtus dispositis punctiformibus. Fructus cymosi, cymis

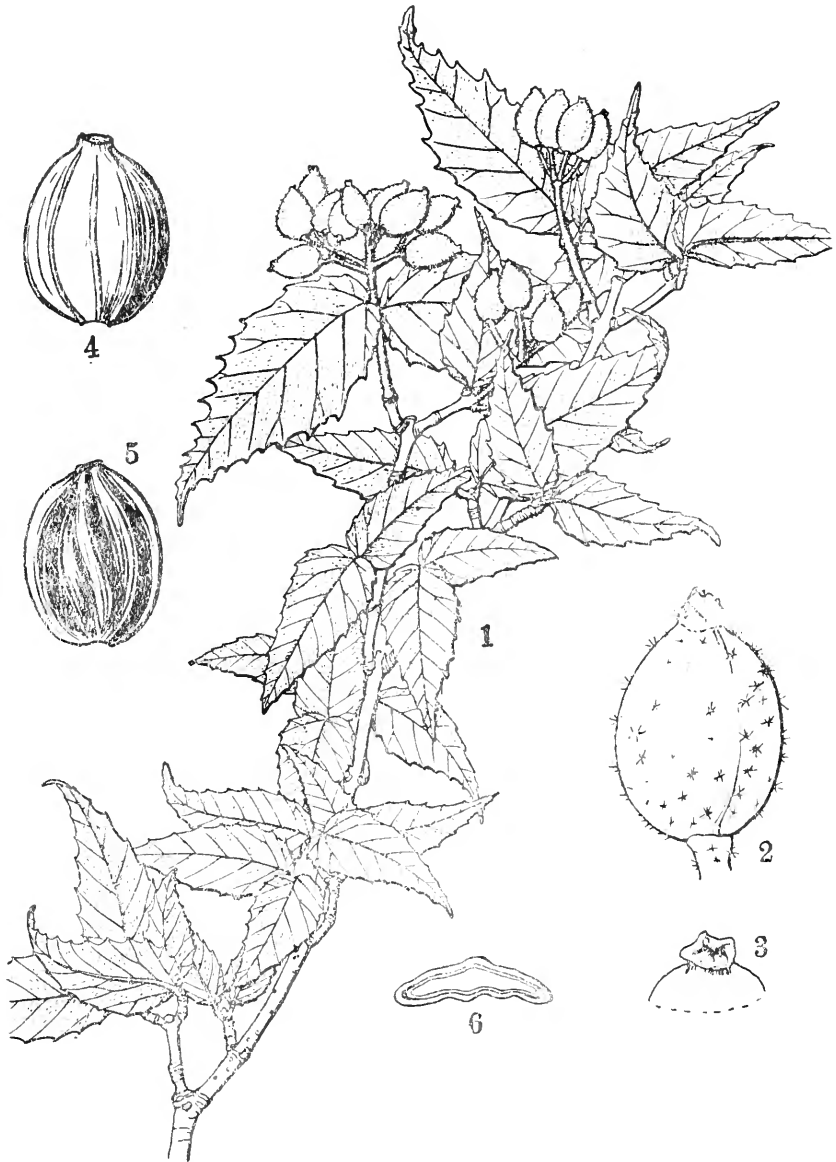


Fig. 20; *Viburnum Matsubui* HAYATA; 1, a branch; 2, a drupe; 3, apical portion of the same; 4, 5, a pyrene, seen from different sides; 6, cross section of the same.

ad apicem ramulorum propriorum terminalibus; drupæ oblongæ 6 mm. longæ 4 mm. latæ stellato-hirsutæ; pyrenis oblongis dorso complanatis facie concavis vel planis dorso convexis.

HAB. Rarazan, leg. Y. MATSUDA, Juli. 1918.

Near *Viburnum crosun* THUNB.; but differs from it in the villose leaves with a long tail at the apex.

Viburnum melanophyllum HAYATA Ic. Pl. Formos. IV. p. 13, t. II. Descriptio aucta:—Frutex, ramis valde divaricatis. Folia adulta opposita chartacea ovato-cordata 8 cm. longa 6 cm. lata apice acuta vel breve cuspidato-acuta basi leviter cordata margine serrulata supra in exsiccato fusco-fulvescentia subtus pallidissima utraque pagine subglabra ad nervos venasque pubescentia. Flores fere albi sed dorso plus minus rubescentes. Cymæ fructiferae ad apicem ramulorum terminales umbellatim dispositæ. Drupa ellipsoidea in exsiccato sicca 6 mm. longa 4½ mm. lata plus minus complanata apice stylo conico et calycis lobis coronata glabra nigricans 1-ocularis, endocarpio cartilagineo, 1-sperma; semina elliptica 6 mm. longa 3½ mm. lata apice apiculata basi obtusa facie profunde sulcata, testa membranacea rubescenti, albumine carnoso ruminanti.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917; Rarazan, leg. Y. MATSUDA, 1918.

Viburnum morrisonense HAYATA (Fig. 21) Mater. Fl. Formos. p. 133. Descriptio aucta:—Frutex. Cymæ ad apicem ramulorum lateralium terminales 3-4-aggregate 3-4 cm. longæ 5 cm. latæ umbelliformes, pedicellis ultimis 3-5 mm. longis stellato-hirsutis. Calyx stellato-hirtellus, tubo (cum ovario) 1 mm. longo ¾ mm. lato, lobis 5 ovato-rotundatis triangularibus ½ mm. longis apice acutis vel rotundatis plus minus ciliolatis. Corolla rotata alba glabra 5 mm. in diametro 5-lobata, lobis rotundatis 2 mm. longis totiusque latis apice rotundatis basi contractis margine minute erosis glabris. Stamina 5, tubo corollæ affixa, filamentis liberis 2-3 mm. longis glabris, antheris oblongo-rotundatis ¾ mm. longis apice emarginatis basi tenuiter lobatis. Stylus conicus cum stigmate 1 mm. longus, stigmate 2-3-sulcato.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.



Fig. 21; *Viburnum morri-owense* HAYATA; 1, a branch; 2, a flower; 3, corolla, expanded; 4, a portion of the margin of the same corolla; 5, 6, a stamen, seen from different sides; 7, ovary; 8, a hair of the ovary; 9, a pyrene; 10, cross section of the same.

Viburnum taihasense HAYATA sp. nov. (Fig. 22). Frutex; rami et ramuli glabri subrecti fusco-purpurascens. Folia ad apicem ramulorum lornotinorum opposita duo disposita membranacea vel tenuiter chartacea oblongo-ovata 6 cm. longa $3\frac{1}{2}$ cm. lata apice subito cuspidato-acuminata basi rotundata obtusa vel tenuiter cordata margine argute serrata supra subglabra subtus pallida ad venas venulasque tenuiter hirsuta, venis venulisque supra impressis subtus elevatis, petiolis $1\frac{1}{2}$ cm. longis hirsutis, stipulis subnullis. Cymæ terminales 2-3 cm. longæ totiusque latæ subglabræ vel tenuiter hirsutæ ternatim ramosæ, bracteolis linearibus 2 mm. longis $\frac{1}{2}$ mm. latis hirsutis, pedicellis ultimis 1-2 mm. longis cum ovario articulatis. Calyx-tubus (cum ovario) obconico-cylindricus $1\frac{1}{2}$ mm. longus, lobis 5 oblongis subglabris $\frac{3}{4}$ mm. longis $\frac{1}{2}$ mm. latis margine ciliolatis. Corolla subrotata 4-5 mm. in diametro, tubo 1 mm. longa 2 mm. lato extus plus minus hirsuto intus glabro, lobis 5 late rotundatis 1 mm. longis $1\frac{1}{2}$ mm. latis. Stamina 5 basi corollæ affixa, filamentis 2 mm. longis glabris, antheris oblongo-rotundatis $\frac{3}{4}$ mm. longis glabris. Stylus conicus glaber 1 mm. longus apice 2-3-lobulatus.

HAB. Taihasenzan, ad 10,000 ped. alt., leg. T. ITÔ, Jun. 1915.

Near *Viburnum Wrightii* MIQ., but differs from it in the much more hirsute calyx-tube.

Viburnum villosifolium HAYATA sp. nov. Frutex, ramis et ramulis rectis fusco-purpurascens versus apicem tenuiter villosis. Folia opposita lanceolata $2\frac{1}{2}$ -3 cm. longa 12-15 mm. lata apice gradatim acuminata basi obtusa margine argute serrulata utraque pagine dense stellato-villosa pinnivena, petiolis 1-2 mm. longis, stipulis caduceissimis linearibus 1-2 mm. longis castaneis pubescentibus. Cymæ terminales 2 cm. longæ totiusque latæ dense villosæ, bracteis linearibus pilosis 3-5 mm. longis $\frac{3}{4}$ mm. latis apice obtusis, pedicellis 1-1 $\frac{1}{2}$ mm. longis dense stellato-villosis. Calyx-tubus obovoideus plus minus complanatus $1\frac{1}{2}$ mm. longus dense villosus, limbo alte 5-lobato, lobis oblongo-linearibus $1\frac{1}{2}$ mm. longis $\frac{3}{4}$ mm. latis apice obtusissimis vel truncatis extus sparse hirsutis intus glabris margine ciliolatis. Corolla rotata, tubo $\frac{1}{2}$ mm. longo, extus sparse hirsuta vel glabra, limbo 5-lobato, lobis rotundatis $1\frac{1}{2}$ mm. longis totiusque latis apice rotundatis basi plus minus contractis margine erosis subintegris. Stamina 5 e basi corollæ oriunda, filamentis 1 mm.

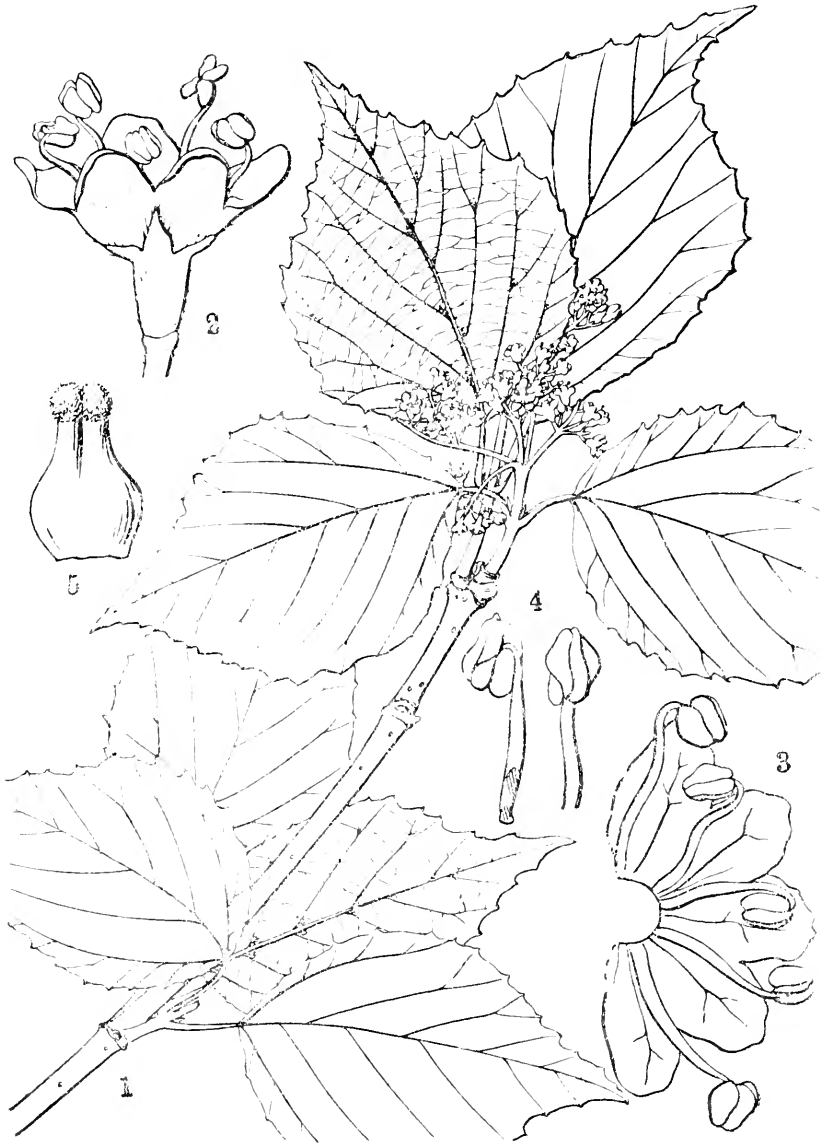


Fig. 22; *Vinum taihasense* HAYATA; 1, a branch; 2, a flower; 3, corolla, expanded; 4, a stamen, seen from different sides; 5, a style.

longis, antheris reniformibus $\frac{1}{2}$ mm. latis. Stylus basi conicus apice columnaris $\frac{1}{2}$ mm. longus apice truncatus.

HAB. Routabunzan, leg. U. MONT, Aprili. 1910.

Near *Viburnum luzonicum* ROLFE; but differs from it in the much longer linear bracts.

Lonicera LINN.

Lonicera japonica THUNB. var. **sempervillosa** HAYATA n. v. Frutex scandentissimus, ramis ramulis teretibus molle villosis. Folia opposita tenuiter chartacea ovato-oblonga $4\frac{1}{2}$ –6 mm. longa $2\frac{1}{2}$ – $3\frac{1}{2}$ cm. lata apice obtusissima ad summum breve apiculato-acuta basi truncato-rotundata vel tenuiter cordata, margine integra supra tenuiter hirsuta subtus dense villosa-velutinosa margine ciliolata, petiolis 8 mm.–10 mm. longis villosis. Flores versus apicem ramulorum axillares solitarii vel geminati, pedicellis 3–5 mm. longis villosis apice flores geminata gerentibus, floribus sessilibus basi bractea singula bracteolis duabus instructis, bracteis foliis conformibus minoribus, bracteolis oblongis 2 mm. longis apice obtusissimis dense villosis. Calycis tubus (cum ovario) obconico-ellipticus 2 mm. longus totiusque latus basi sparse hirsutus fere glaber, limbo alte 5-lobato, lobis elongato-triangularibus $1\frac{1}{2}$ mm. longis longe hirsutis. Corolla tubuloso-campanulata extus hirsuta 4–5 cm. longa, tubo 2 mm. lato, limbo 2-labiato, labio superiore late cuneiformi 3 cm. longo $1\frac{1}{2}$ cm. lato apice truncato basi angustato apice ad medium 4-lobato, lobis spatulato-linearibus 18 mm. longis 4 mm. latis apice obtusissimis, intus (supra) sparse hirsuto extus (infra) dense hirsuto, labio inferiore lineari $2\frac{3}{4}$ cm. longo 3–4 mm. lato apice obtusissimo extus dense hirsuto intus sparse hirsuto; corollæ tubus intus dense hirsutus. Stamina 5 fauce corollæ affixa, filamentis filiformibus $2\frac{1}{2}$ cm. longis glabris, antheris linearibus $2\frac{1}{2}$ mm. longis. Stylus filiformis glaber exsertus $4\frac{1}{2}$ cm. longus, stigmate pulviniformi 2-lobato.

Lonicera japonica HAYATA Gen. Ind. p. 34, (non THUNB.).

HAB. Shintiku, Taihoku, Kelung.

Near *Lonicera japonica* THUNB.; but differs from it in the leaves which are always thinly hairy above, but densely villose beneath. *L. japonica* has nearly glabrous leaves.

Lonicera oiwakensis HAYATA Ic. Pl. Formos. VI. p. 24.

NOTE: Flowers always in pair; calyx green; corolla white, but slightly pink towards the apex; anthers white; styles white, stigma green.

Lonicera rubropunctata HAYATA sp. nov. Frutex scandentissimus, ramis teretibus pilosis, pilis patentissimis, vel villosis. Folia opposita ovato-oblonga 7 cm. longa $3\frac{1}{2}$ cm. lata apice acuminata ad summum breve aristata basi rotundata vel truncata margine integra supra glabra subtus villosa et rubropunctata tenuiter chartacea, petiolis 5–10 mm. longis villosis. Cymæ axillares vel ad apicem ramulorum terminales, pedicellis 5 mm. longis hirsutis apice flores geminatim gerentibus, bracteis sub flore sessili singulis subulato-lanceolatis 4 mm. longis longe hirsutis intus glabris, bracteolis duabus utroque latere floris dispositis rotundatis utraque pagine glabris margine longè ciliatis $1\frac{1}{3}$ mm. in diametro. Calycis tubus (cum ovario) oblongus 2 mm. longus $1\frac{1}{2}$ mm. latus glaber, limbo 1 mm. longo 6-partito, partibus cuspidato-triangularibus margine longe setuloso-ciliatis. Corolla extus tenuiter hirsuta tubuloso-campanulata, tubo 2 cm. longo 2 mm. lato limbo 2-labiato, labio superiore cuneiformi 18 mm. longo 7 mm. lato apice truncato basi attenuato extus sparse hirsuto intus deorsum hirsuto sursum glabro, labio inferiore lineari 18 mm. longo $1\frac{1}{2}$ mm. lato apice obtusissimo extus sparse hirsuto intus deorsum hirsuto; corollæ tubus intus dense hirsutus. Stamina 5 faucē corollæ affixa, filamentis 2 cm. longis filiformibus glabris, antheris linearibus 4 mm. longis $\frac{1}{2}$ mm. latis. Stylus filiformis 5 cm. longus glaber apice plus minus dilatatus stignate peltato.

HAB. Heirinbi, Giochi, Suisha, leg. B. HAYATA, April. 1916.

Near *L. macrantha* DC, but differs from it in the leaves which are minutely glandular-dotted beneath.

Lonicera shintenensis HAYATA sp. nov. Scandentissima, ramis teretibus tenuiter villosis. Folia opposita ovato-oblonga tenuiter chartacea 6 cm. longa 3 cm. lata apice acuta vel aristato-acuta basi rotundata margine integra supra glabra subtus dense brevique villosa, petiolis dense villosis, stipulis nullis. Cymæ axillares cum pedunculis 2 cm. longis 3 cm. longæ 2 cm. latæ brevique villosæ, bracteis (basi pedicelli) subulato-linearibus dense hirsutis 5 mm. longis basi plus minus dilatatis. Flores ad apicem pedicellorum geminatim dispositi sessiles basi bracteis cuspidato-triangularibus $1\frac{1}{2}$ mm. longis extus hirsutis intus glabris singulis instructi, bracteolis duabus utroque latere floris dispositis rotundatis $\frac{2}{3}$ mm. in diametro utraque pagine glabris margine ciliolatis. Calyx-

tubus (cum ovario) obconico-globosus 1 mm. longus glaber, limbo 1 mm. longo usque ad medium 5-lobato, lobis cuspidato-triangularibus circ. 1 mm. longis extus sparse hirsutis intus glabris margine ciliatis. Corolla 12 mm. longa tubuloso-campanulata extus retrorse vel patente hirsuta, tubo circ. 1 mm. lato, limbo 2-labiato, labio inferiore lineari 5 mm. longo 1 mm. lato apice obtusissimo extus hirsuto intus secus medium hirsuto, labio superiore elongato-obtriangulari 7 mm. longo 4 mm. lato extus hirsuto intus deorsum hirsuto sursum glabro 4-lobato, lobis oblongis 2 mm. longis obtusis, tubo corollæ intus dense hirsuto. Stamina 5, fance tubi corollæ affixa, filamentis incrassatis 2-4 mm. longis glabris, antheris versatilibus dorso medio affixis linearibus $3\frac{1}{2}$ mm. longis 1 mm. latis utraque extremitate obtusis vel emarginatis. Stylus glaber 12 mm. longus apice plus minus dilatatus truncatus.

HAB. Shinten, leg. B. HAYATA, Mai. 1916.

Near *L. japonica* and *L. affinis*; but readily distinguishable from it in having much smaller flowers.

Rubiaceæ.

Uncaria SCHREB.

Uncaria formosana HAYATA n. n.

Ouroparia formosana HAYATA in MATSUM. et HAYATA Enum. Pl. Formos. p. 183, t. XIV.-B.

Nauclea formosana MATSUM. in Tokyo Bot. Mag. XIV. p. 127.

Uncaria Kawakamii HAYATA Mater. Fl. Formos. p. 140. Descriptio aucta:—Fructus ad apicem pedunculi capitatum aggregatum clavato-fusififormes $1\frac{1}{2}$ cm. longi 2 mm. lati hirsuti circ. 10-striati 2-loculares ∞ -spermi stipitati, stipitibus 7 mm. longis hirsutis; semina minuta globosa $\frac{1}{4}$ mm. in diametro minute reticulata ad utramque extremitatem arillis linearibus alaeformibus 1 mm. longis instructa.

HAB. Kōtōshō, leg. T. KAWAKAMI et SASAKI, Juli. 1912.

Uncaria uraiensis HAYATA sp. nov. Frutex scandens, rami et ramuli subtetragoni facie late sulcati minute lenticellati plus minus hirsuti. Folia opposita chartacea vel tenuiter coriacea elliptica 12 cm. longa $6\frac{1}{2}$ cm. lata

apice subito acuminata basi rotundata supra glabra subtus tenuiter hirsuta margine integra, venis supra impressis subtus elevatis, petiolis 8-10 mm. longis. Capitulum florum axillare solitarium pedunculatum, pedunculo 4-5 cm. longo hirsuto medio bracteis duabus oppositis instructo, capitulis globosis 5 cm. in diametro, receptaculo paleaceo dense hirsuto, paleis linearibus. Flores sessiles. Calyx obconico-cylindricus dense villosu-hirsutus 9 mm. longus 3 mm. latus apice 5-lobatus, lobis dense hirsutis elongato-triangularibus 2 mm. longis $1\frac{1}{2}$ mm. latis. Corolla hypocrateriformis, tubo tubuliformi circ. 1 cm. longo tenuiter hirsuto, limbo patenti 6-7 mm. in diametro 5-lobato, lobis obovato-oblongis 3 mm. longis $1\frac{1}{4}$ mm. latis apice obtusis intus glabris extus hirsutis. Stamina 5, antheris sessilibus 2 mm. longis apice obtusis basi 2-lobatis, vel stipitibus brevissimis instructis. Stylus longe exsertus 2 cm. longus glaber. erectus rectus apice stigmatate claviformi $3\frac{1}{2}$ mm. longo 1 mm. lato instructus Ovarium cylindricum 3 mm. longum cum tubo calycis connatum. Fructus capitatum fasciculati, capitulis $4\frac{1}{2}$ cm. in diametro; capsula sessilis obovoidea 1 cm. longa 5 mm. lata apice obtusissima basi attenuata septiceidalis 2-cocca ∞ -sperma; seminibus oblongis $\frac{1}{2}$ mm. longis muricatis ad utramque extremitatem arillis aleformibus linearibus $1\frac{1}{2}$ mm. longis instructis, arilla alba 2-fida, alba haud fida.

HAB. Uraisha, leg. T. SŌMA et Y. SHIMADA, Aprili. 1915.

Ourouparia uraiensis HAYATA in Herb. Taihoku.

HAB. Urai, Remogan.

Near *Uncaria Kuwakamii* HAY.; but quite different from it in having much shorter obovoid capsules.

Nauclea LINN.

Nauclea truncata HAYATA Materials for a Flora of Formosa p. 139. Descriptio aucta:—Frutex; folia obovata 20-40 cm. longa 15-20 cm. lata apice rotundata breve cuspidato-acuta ad summum obtusa basi late cuneata ad extremitatem obtusissima subsessilia. Capitulum fructus globosum 3- $3\frac{1}{2}$ cm. in diametro; capsula obconico-cylindrica 1 cm. longa apice 3 mm. lata 2-valvatum loculicidalis; seminibus ∞ , cum alis linearibus 3 mm. longis $\frac{1}{4}$ mm. latis.

HAB. Inter Busegan et Seisui, leg. B. HAYATA et S. SASAKI, Mai. 1917.

Nauclea taiwaniana HAYATA Materials for a Flora of Formosa p. 140.

Descriptio aucta:—Capitulum floris globosum 2 cm. in diametro axillare vel breve recemosum, racemis terminalibus. Receptaculum globosum dense hirsutum bracteolis vel paleis minutis trabeculiformibus apice clavatis hirsutis 1 mm. longis instructum. Calyx sessilis obconico-cylindricus 2 mm. longus apice 1 mm. latus dense hirsutus, limbo 5-partito, partibus obovatis $\frac{2}{3}$ mm. longis $\frac{1}{4}$ mm. latis apice obtusis dense hirsuto-tomentosis. Corolla longe tubulosa 6 mm. longa sursum latior apice 2 mm. lata extus brevissime hirsuta apice 5-lobata, lobis triangularibus obtusis 1 mm. longis vel latis, tubo intus glabro. Stamina 5, limbo corollæ affixa, antheris subsessilibus lanceolatis $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis apice acutis introrsis basi 2-lobatis. Stylus longe exsertus glaber medio incrassatus apice clavatus. Ovarium inferum.

HAB. Kōshūn: Kaukao.

Cephalanthus LINN.

Cephalanthus glabrifolius HAYATA sp. nov. Frutex? ramuli glabri rubescentes. Folia opposita chartacea oblonga 13 cm. longa 6 cm. lata apice cuspidato-acuta basi rotundata margine subintegra utraque pagine glabra, petiolis $1\frac{1}{2}$ –2 cm. longis, stipulis interpetiolaribus late triangularibus. Capitulum florum globosum 4–5 cm. in diametro axillare vel terminale solitarium longe pedunculatum, pedunculis 6–7 cm. longis glabris patentibus. Receptaculum capituli florum globosum dense hirsutum paleaceum, paleis (bracteolis) lineari-clavatis 3 mm. longis apice incrassatis hirsutis. Calyx sessilis obconico-tubulosus 3 mm. longus $1\frac{1}{2}$ mm. latus sursum dense villosus apice 4-dentatus, dentibus brevissimis obtusissimis villosis. Corolla elongato-tubulosa 8 mm. longa glabra basi angustissima sursum latior apice 4-lobata, lobis obovato-rotundatis $1\frac{1}{2}$ mm. longis $1\frac{1}{4}$ mm. latis apice obtusissimis basi plus minus contractis extas glabris intus tenuiter hirsutis, glandulis nigris minutis singulis inter lobos dispositis; tubo corollæ extus glabro intus hirsuto. Stamina 4 ad faucem corollæ affixa sessilia, antheris lineari-sagittatis $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis apice acuto-obtusis basi sagittatis. Stylus longe filiformis glaber apice clavato-globoso-dilatatus.

Cephalanthus naucleoides (HAYATA) Gen. Ind. p. 34, (pro parte, non DC.).

HAB. Koteisho.

Differs from *C. naucleoides* DC. in having quite glabrous leaves; and from *C. ratoensis*, in the corolla which is hirsute inside and in the glabrous leaves.

Cephalanthus ratoensis HAYATA sp. nov. Frutex, ramuli teretes rubescentes tenuissime hirsuti. Folia opposita chartacea oblonga vel ovato-oblonga apice acuta basi rotundata vel truncata 8 cm. longa $3\frac{1}{2}$ cm. lata supra subglabra subtus tenuiter villosa margine integra, petiolis 8 mm. longis tenuiter hirsutis, stipulis interpetiolaribus late triangularibus apice cuspidatis 3 mm. longis. Capitulum florum globosum 3 cm. in diametro axillare solitarium vel terminale, pedunculo divaricato $2\frac{1}{2}$ cm. longo. Receptaculum globosum dense hirsutum, paleis (bracteolis) lineari-clavatis dense hirsutis $1\frac{1}{2}$ mm. longis. Calyx sessilis obconicus 3 mm. longus 2 mm. latus deorsum glaber sursum tenuiter villosus apice 4-lobatus, lobis late triangularibus 1 mm. latis $\frac{1}{4}$ mm. longis intus dense villosis. Corolla 7 mm. longa tubulosa apice 2 mm. lata extus glabra apice 4-lobata, lobis oblongo-rotundatis $1\frac{1}{2}$ mm. longis 1 mm. latis apice rotundatis basi haud contractis; corolla intus tenuiter barbata vel subglabra. Stamina 4, infra sinus inter lobos corollæ disposita sessilia, antheris oblongo-linearibus 1 mm. longis apice obtusis basi sagittatis. Glandula inter sinus lobi corollæ dispositæ nigris. Stylus filiformis longe exsertus glaber 8 mm. longus apice clavatus.

Cephalanthus naucleoides HAYATA (non DC.) in Gen. Ind. p. 34, (pro parte).

HAB. Giranchō: Ratō.

Differs from *C. glabrifolia* in the leaves which are tomentose beneath, and in the corolla which is nearly glabrous inside.

Adina SALISB.

Adina racemosa MIQ.; HAYATA Gen. Ind. p. 34.

HAB. Giranchō: Tōō, leg. S. NAKAI; Arisan, leg. G. NAKAHARA.

Flowers being too young, the determination is rather conjectural.

Dentella FORST.

Dentella Matsudai HAYATA sp. nov. Herba diffusa ramosissima repens. Caulis tetragonus subglaber. Folia opposita spatulata vel oblanceolata 5-6 mm. longa $1\frac{1}{2}$ mm. lata apice obtusa vel opposita basi attenuata ad petiolum abeuntia integra utraque pagine glabra vel setuloso-hirsuta, petiolis subnullis, stipulis interpetiolaribus triangularibus 1 mm. longis totiusque latis glabris. Flores axillares vel terminales solitarii sessiles. Calyx obconico-tubulosus $2\frac{1}{2}$ mm. longus $1\frac{1}{2}$ mm. latus apice 5-lobatus basi setulis apice glanduliferis dense obtectus sursum subglaber, lobis longe triangularibus 1 mm. longis $\frac{1}{3}$ mm. latis acuminatis margine setulosis. Corolla obconico-campanulata 5 mm. longa $2\frac{1}{2}$ mm. lata glabra apice 5-lobata, lobis triangularibus 1 mm. longis totiusque latis apice acutis, tubo corollæ extus glabro intus tenuiter hirsuto. Stamina 5, infra medium tubi affixa, filamentis filiformibus 1 mm. longis, antheris linearibus $\frac{1}{2}$ mm. longis. Stylus minutus columnaris $1\frac{1}{2}$ mm. longus medio sursum 2-lobatus, lobis erectis 1 mm. longis glabris. Ovarium inferum globosum 1 mm. in diametro 2-loculare, loculis ∞ -ovulatis. Fructus capsulares globosi $2\frac{1}{2}$ mm. in diametro dense glanduloso-setulosi apice tubo calycis coronati. Semina numerosa globoso-angularia $\frac{1}{4}$ mm. diametro, testis minute reticulatis.

HAB. Ako, leg. Y. MATSUDA, Aprili. 1913.

Near *Dentella repens* FORST; but differs from it in having much smaller leaves and densely barbate fruits.

Hedyotis LINN.

Hedyotis kuraruensis HAYATA sp. nov. Herba subfruticosa 30-40 cm. alta; caulis tetragonus glaber ad faciem sulcatus. Folia opposita herbacea membranacea in vivo crassiuscula oblonga vel oblongo-ovata apice acuta vel acuminata basi rotundata vel truncata ad extremitatem subito ad petiolum abeuntia margine integra utraque pagine subglabra vel tenuissime hirsuta, petiolis 8 mm. longis adpresse hirsutis, stipulis interpetiolaribus late triangularibus hirsutis 2 mm. longis cuspidatis. Flores ad axillas foliorum densissime fasciculati sessiles, bracteis minutis linearibus 2-3 mm. longis utroque latere

basis lobis triangularibus instructis inter flores intermixtis ciliolatis. Calyx obconico-campanulatus 5 mm. longus 4 mm. latus tenuiter hirsutus, tubo $1\frac{1}{2}$ mm. longo, limbo 5-lobato, lobis late linearibus 3 mm. longis 1 mm. latis intus glabris extus tenuiter hirsutis. Corolla campanulata extus glabra 4 mm. longa apice prope medium sursum 4-lobata, lobis oblongo-linearibus 2 mm. longis $\frac{3}{4}$ mm. latis apice obtusis dorso setuloso-hirsutis intus glabris basi haud contractis, corollæ tubo intus hirsuto. Stamina 4, filamentis intra tubum corollæ exsertis $\frac{1}{4}$ mm. longis, antheris linearibus 1 mm. longis vel $1\frac{1}{2}$ mm. latis apice obtusis. Stylus columniformis apice 2-lobatus, lobis oblongis stigmatosis.

HAB. KURURU, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *Hedyotis auricularia* W. et ARN. (BENTH. Fl. Hongk. p. 150); but differs from it in having much thinner leaves with very slender, not at all prominent, nerves underneath.

Anotis DC.

Anotis formosana HAYATA sp. nov. Herba basi procumbens sursum ascendens 10-20 cm. longa; glabra gracilis. Folia opposita ovata vel ovato-oblonga chartacea vel membranacea $1-1\frac{1}{2}$ cm. longa 12 mm. lata apice acuta basi obtusa vel rotundata integra supra hirsuta subtus ad venas tenuiter hirsuta, petiolis 2-3 mm. longis, stipulis late triangularibus 3 mm. longis 2 mm. latis laceratis membranaceis. Flores versus apicem caulis cymose dispositi, bracteis digitiformibus laceratis $1-1\frac{1}{2}$ mm. longis. Calyx obconico-campanulatus $2\frac{1}{2}$ mm. longus glaber 2 mm. latus 4-lobatus, lobis oblongo-ovatis $1\frac{1}{2}$ mm. longis $\frac{3}{4}$ mm. latis apice obtusis glabris. Corolla campanulata 4 mm. longa 3 mm. lata glabra 4-lobata, lobis oblongo-triangularibus $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis apice obtusis. Stamina 4 sessilia, antheris linearibus $1\frac{1}{2}$ longis $\frac{1}{4}$ mm. latis. Stylus glaber filiformis 4 mm. longus apice breviter 2-lobatus.

HAB. Bonbonzan, Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.

NOTE: Leaves green dull, above; corolla white, lobes 3-4; calyx green.

Oldenlandia LINN.

Oldenlandia diffusa ROXB.; HOOK. f. Fl. Brit. Ind. III. p. 65; FORBES

et HEMSL. Ind. Fl. Sin. I. p. 377; MATSUMURA Ind. Pl. Jap. II.-2, p. 592.
 HAB. Suisha, Shinjō, Kelung.
 New to the flora of Formosa.

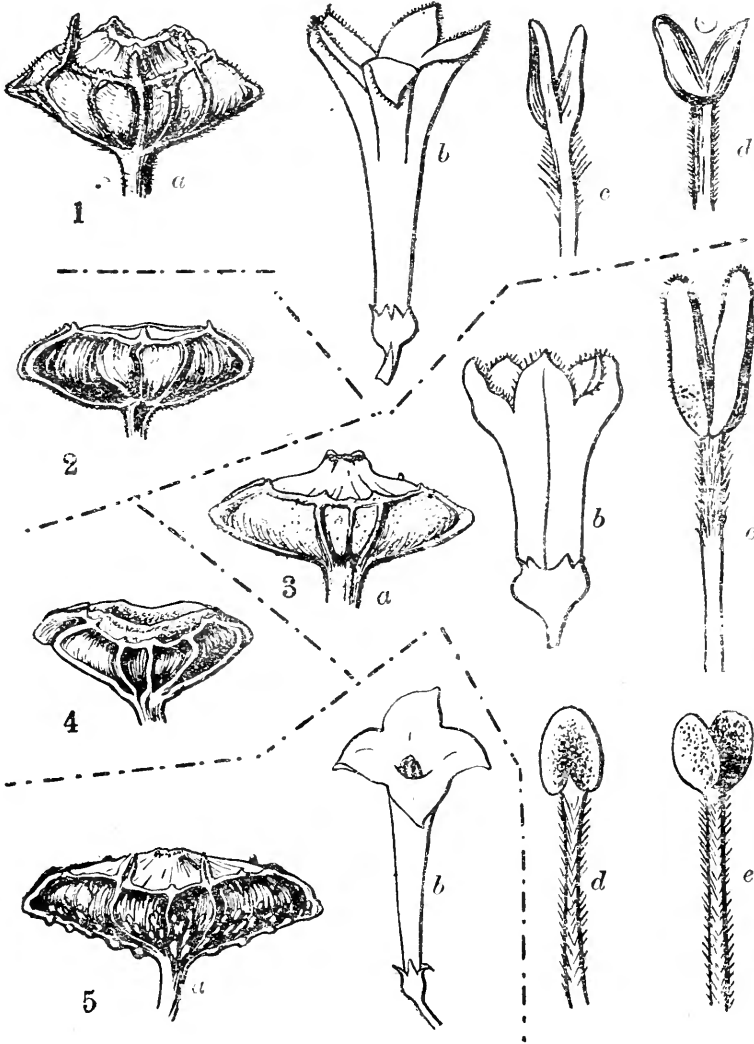


Fig. 23; *Ophiorrhiza* spp.; 1, *O. dimorphantha* HAY.; a, a fruit; b, a flower; c, the stigma of a male flower; d, the stigma of a female flower; 2, *O. inflata* MAXIM.; 3, *O. monticola* HAY.; a, a fruit; b, a flower; c, the stigma of a male flower; d, a stigma of a female flower; e, the same, seen from front; 4, *O. parviflora* HAY.; 5, *O. stenophylla* HAY.; a, a fruit; b, a flower.

Ophiorrhiza LINN.

Ophiorrhiza dimorphantha HAYATA (Fig. 23-1) Gen. Ind. p. 36.

HAB. Daitonzan, Agioku, Kelung.

NOTE: Corolla hirsute inside, lobes 5, tube broader; ovary smooth, but hirsute.

Ophiorrhiza inflata MAXIM. (Fig. 23-2) Mélang. Biol. XII. p. 729; MATSUM. Ind. Pl. Jap. II.-2, p. 593.

HAB. Ōchōbi; Urai; Agioku; Shinjō; Taiko; Yeyama.

NOTE: Flowers white glabrous. New to the flora of Formosa.

Ophiorrhiza monticola HAYATA (Fig. 23-3) Gen. Ind. p. 36.

HAB. Arisan, ad 2,500 m. alt.

Ophiorrhiza parviflora HAYATA (Fig. 23-4) Gen. Ind. p. 36.

HAB. Kwashōtō; Kōtōshō; Teraso; Kusukusu.

NOTE: Flowers white.

Ophiorrhiza stenophylla HAYATA (Fig. 23-5) Gen. Ind. p. 36.

HAB. Sōseikyaku; Tōgō et Kamiyodani; Urai; Raga; Agioku, leg. B.

HAYATA.

NOTE: Corolla white, lobes 4-5, tube very slender, glabrous within; ovary mucronate glabrous.

Mussaenda LINN.

Mussaenda albiflora HAYATA sp. nov. Frutex scandens, ramis et ramulis teretibus hirsutis. Folia opposita oblonga 4-5 cm. longa 3-3½ cm. lata apice acuminata basi obtusa vel acuta margine integra chartacea utraque pagine tenuissime hirsuta, petiolis 3-4 mm. longis tenuiter hirsutis, stipulis interstipularibus dense hirsutis 2-partitis, partibus subulato-triangularibus 4-5 mm. longis apice subulatis glabris basi dense hirsutis. Cymæ terminales dense floriferæ hirsutæ, bracteis triangulari-linearibus 5 mm. longis hirsutis acuminatis. Flores fere sessiles. Calyx tubiformis cum lobis 6-7 mm. longus 2 mm. latus, tubo 1-2 mm. longo, limbo 5-partito, partibus linearibus erectis subulatis 4-6 mm. longis basi 1 mm. latis extus hirsutis intus glabris. Corolla tubulosa 13-15 mm. longa extus hirsuta, tubo 1 cm. longo 2 mm. lato, limbo

5-lobato, lobis ovatis 3 mm. longis 2 mm. latis apice acuminatis basi contractis integris extus hirsutis intus glabris, limbo fauce densissime albo-barbato, tubo deorsum intus glabro. Stamina 5 fauce tubi affixa, filamentis filiformibus ad tubum affixis, antheris linearibus 2 mm. longis $\frac{1}{4}$ mm. latis apice obtusis. Stylus glaber 5 mm. longus apice 2-lobatus, lobis $1\frac{1}{2}$ mm. longis.

HAB. Suisha, leg. B. HAYATA, Mai. 1912.

Near *M. pubescens*, but differs from it in having much shorter anthers and in the nearly sessile flowers. The species is, so far, only found in this region of the island.

Chomelia LENN.

Chomelia gracilipes HAYATA sp. nov. Frutex; rami et ramuli gracillimi glabri, cortice plus minus soluto. Folia opposita membranacea vel tenuiter chartacea obovata vel oblonga 9-13 cm. longa $3\frac{1}{2}$ cm.- $4\frac{1}{2}$ cm. lata apice caudato-acuminata basi cuneata margine integra supra glabra subtus tenuissime hirsuta vel glabra, petiolis 1- $1\frac{1}{2}$ cm. longis adpresse hirsutis, stipulis interpetiolaribus triangularibus 2 mm. longis glabris. Cymæ terminales gracillimæ 5-6 cm. longæ 10 cm. latæ a basi ternatim ramosæ hirsutæ, bracteis minutis linearibus 2 mm. longis hirsutis, pedicellis gracillimis tenuiter hirsutis bracteolis minutis 1-2 instructis. Calyx tubulosus $2\frac{1}{2}$ mm. longus $1\frac{1}{2}$ mm. latus apice 5-dentatus, dentibus late triangularibus $\frac{1}{2}$ mm. longis et latis margine erosis, intus inter dentes glandulis instructus cæterum glaber. Corolla hypocateriformis glabra, tubo 6 mm. longo $1\frac{1}{2}$ mm. lato extus glabro intus hirsuto, limbo 5-partito, paribus spathulato-linearibus 1 cm. longis 3 mm. latis apice obtusissimis utraque pagine glabris intus basi barbatis ad faucem barbatis. Stamina 5, filamentis $1\frac{1}{2}$ mm. longis ad sinus inter lobos corollæ affixis glabris, antheris linearibus 1 cm. longis $\frac{2}{3}$ mm. latis apice obtusis. Stylus 2 cm. longus basi hirsutus sursum glaber incrassatus ad apicem brevissime 2-lobatus, lobis minutis $\frac{1}{2}$ mm. longis stigmatosis. Ovarium inferum cum tubo calycis connatum 2-loculare, loculis 5-6-ovulatis.

HAB. Akō: Raisha, leg. Y. MATSUDA, No. 1054.

Near *Chomelia attenuata* (HOOK. f.); but differs from it in the very much slender cymes with larger flowers.

Chomelia kotoensis HAYATA sp. nov. Arborescens? rami validiusculi. Folia opposita oblongo-obovata 17–22 cm. longa 9–11 cm. lata apice breve cuspidato-acuta basi cuneata margine integra in exsiccato membranacea vel tenuiter coriacea utraque pagine glabra, petiolis 1–2 cm. longis, petiolis interpetiolaribus basi se connatis tubum brevissimum formantibus apice triangularibus 3–5 mm. longis. Cymæ terminales 10 cm. longæ 15 cm. latæ a basi ramosæ, ramis divaricatissimis glabris, bracteis linearibus 2–3 mm. longis. Flores ignoti. Fructus globosus 1 cm. in diametro glaber. Semina ignota.

HAB. Kōtōshō, leg. K. MIYAKE.

Differs from *C. corymbosa* in having much looser corymbs and in the very much larger obovate leaves.

Chomelia lancifolia HAYATA sp. nov. Frutex, rami et ramuli graciles plus minus pubescentes. Folia opposita tenuiter coriacea lanceolata vel oblanceolata 9–10 cm. longa 2–2½ cm. lata apice acuminata basi attenuata margine subintegra utraque pagine glabra, costa supra impressa subtus elevata, venis lateralibus tenuissimis subtus tenuissime elevatis, petiolis 5–6 mm. longis, stipulis interpetiolaribus triangularibus cuspidatis. Cymæ terminales glabræ plus minus pubescentes 6 cm. longæ 10 cm. latæ a basi ternatim ramosæ, bracteis minutis lineari-lanceolatis, pedicellis gracilibus 10 mm. longis adpresse pubescentibus, bracteolis duabus ovatis instructis. Calyx urceolato-tubulosus 3 mm. longus 2 mm. latus apice 5-dentatus, dentibus late triangularibus 1 mm. latis ½ mm. longis margine plus minus hirsutis. Corolla hypocrateriformis, tubo 5 mm. longo 1 mm. lato, limbo 5-partito, partibus patentissimis recurvis spatulato-linearibus 11 mm. longis 3 mm. latis apice obtusissimis basi attenuatis, utraque pagine glabris, tubo corollæ extus glabro intus barbato ad faucem hirsuto. Stamina 5 ad sinus inter lobos corollæ affixa, filamentis brevibus 2 mm. longis glabris, antheris linearibus 10–11 mm. longis apice obtusis basi 2-lobatis. Stylus 1½ cm. longus supra usque ad medium hirsutus apice 2-lobatus vel haud lobatus.

HAB. Hiiranzan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *Chomelia attenuata* (HOOK. f.); but distinguishable from it in the pubescent pedicels and peduncles with much larger flowers.

Randia LINN.

Randia sinensis ROEM.; BENTH. Fl. Hongkong. p. 155; HEMSL. Ind. Fl. Sin. I. p. 382; HAYATA Gen. Ind. p. 36.

HAB. Inter Rōnō et Kōsenpo, leg. B. HAYATA, Aprili. 1917.

Randia suishænsis HAYATA sp. nov. Frutex vel arborescens. Folia lanceolata vel oblanceolata tenuiter coriacea opposita 8–10 cm. longa $2\frac{1}{2}$ – $3\frac{1}{2}$ cm. lata apice acuminata basi attenuata margine integra utraque glabra supra nitida, costis venisque supra minus subtus plus elevatis, petiolis 1 cm. longis, stipulis triangulari-cuspidatis 3–4 mm. longis interpetiolaribus. Cymæ versus apicem approximatin paniculatim dispositæ, 3 cm. longæ bracteis oppositis triangulari-cuspidatis $2\frac{1}{2}$ mm. longis 2 mm. latis coriaceis, pedicellis brevibus hirsutis ad basin calycis articulatis. Calyx glaberrimus tubiformis 4 mm. longus $2\frac{1}{2}$ mm. latus apice 5-lobatus, lobis triangularibus 1 mm. longis totiusque latis apice acutissimis glabris. Corolla subrotata glabra, tubo 3 mm. longo 2 mm. lato intus glabro, limbo 5-partito, partibus linearibus 9 mm. longis $2\frac{1}{2}$ –3 mm. latis apice acutis basi haud vel plus minus contractis integris utraque pagine glabris sed intus versus basin ad faucem dense hirsutis. Stamina 5 ad faucem tubi corollæ affixa, filamentis brevissimis 1 mm. longis, antheris linearibus $7\frac{1}{2}$ mm. longis 1 mm. latis apice acuminatis basi obtusis brevissime 2-lobatis. Stylus columnaris 12 mm. longus glaber incrassatus sursum stigmatosus 5-sulcatus. Fructus ovoideo-globosus 6 mm. longus 5 mm. latus 2-ocularis polyspermus, seminibus liberis ad placentas aggregatis subtriangularibus 2 mm. longis latere complanatis, albuminibus carnosis.

Randia densiflora HAYATA (pro parte) Gen. Ind. p. 36 (non BENTH.).

HAB. Suisha, leg. B. HAYATA, Aprili. 1916.

Differs from *R. densiflora* in the corolla which is quite glabrous outside; and from *R. acutidens* in the much shorter corolla-tubes and in the longer corolla-lobes.

Diplospora DC.

Diplospora? *buisanensis* HAYATA sp. nov. (Fig. 24). Frutex; rami et ramuli validiusculi, cortice gradatim soluto rubro-purpurascenti. Folia opposita

elongato-oblonga vel lanceolata 6-7 cm. longa 2 cm. lata apice acuminata basi attenuata margine integra tenuiter coriacea utraque pagine glabra, petiolis 3-5 mm. longis, stipulis interpetiolaribus late triangularibus coriaceis 3-4 mm.



Fig 24; *Diprosopa? buisanensis* HAYATA; 1, a branch; 2, a flower; 3, corolla of the same flower, expanded; 4, a stamen, seen from different sides; 5, ovary.

longis. Flores ad cicatrices foliorum lateribus ramulorum fasciculatim breve cymosim dispositi, cymis $1\frac{1}{2}$ cm. longis tenuiter hirsutis, bracteis oppositis se comatis brevissimis, pedicellis 3 mm. longis. Calyx campanulatus tenuiter hirsutus 2 mm. longus totiusque latus ore circ. integer vel leviter 4-dentatus. Discus pulviniformis supra ovarium dispositus. Corolla campanulata 8 mm. longa extus glabra intus plus minus hirsuta, tubo 3 mm. longo basi 2 mm. lato, 4-lobata, lobis oblongis 6 mm. longis $3\frac{1}{2}$ mm. latis apice acutis obtusis integris basi laud vel vix contractis. Stamina 4 ad basin loborum corollæ alternatim disposita; filamentis validiusculis brevibus $1\frac{1}{2}$ mm. longis complanatis tenuiter hirsutis, antheris oblongo-linearibus 3 mm. longis $1\frac{1}{2}$ mm. latis apice obtusis basi 2-lobatis. Stylus glaber columniformis 4 mm. longus apice 3-lobatus, lobis linearibus. Ovarium inferum 2-loculare, loculis ∞ -ovulatis.

HAB. Buizan, leg. Y. MATSUDA, Aug. 1918.

Ixora LINN.

Ixora graciliflora HAYATA sp. nov. Frutex; rami et ramuli cinerascens rugosi. Folia opposita obovato-elliptica chartacea $6\frac{1}{2}$ cm. longa 2 cm. lata apice obtusa basi obtusissima vel truncata margine integra utraque glabra, costa supra impressa subtus elevata, venis utraque pagine gracilibus tenuiter elevatis, venis lateralibus rectis, petiolis subnullis vel brevissimis, stipulis interpetiolaribus subulato-triangularibus 3 mm. longis 1 mm. latis glabris. Panicula cymosa singulis terminalis, pedunculo 2 cm. longo, pedicellis brevissimis subglabris, bracteolis minutis. Calyx tubulosus $1\frac{1}{2}$ mm. longus totiusque latus ad orem 4-dentatus subglaber. Corolla hypocrateriformis subglabra, tubo gracili $2\frac{1}{2}$ cm. longo 1 mm. in diametro erecto subglabro, limbo patenti 4-partito, partibus oblongis 7 mm. longis $3\frac{1}{2}$ mm. latis apice obtusissimis basi plus minus contractis margine minute hirsutis vel laud hirsutis. Stamina 4 ad faucem tubi corollæ affixa subsessilia, antheris linearibus 4 mm. longis $\frac{2}{3}$ mm. latis apice acutis basi ad medium 2-partitis. Stylus glaber filiformis tubo corollæ æquilongus apice 2-lobatus, lobis plus minus dilatatis linearibus 3 mm. longis $\frac{1}{2}$ mm. latis.

HAB. Kwashôtô, leg. T SÔMA, Juli. 1913.

Near *I. chinensis*, but differs from it in the much smaller leaves and

much slenderer flowers with much narrower lobes.

Psychotria LINN.

Psychotria? *kotoensis* HAYATA sp. nov. Frutex; rami pallido-cenescentes glabri cicatricibus foliorum 3-4 mm. in diametro notati. Folia opposita chartaceo-membranacea oblonga 10-15 cm. longa 4½-6 cm. lata apice acuta basi embeato-attenuata margine integra utraque pagine glabra, costis venis utraque pagine tenuissime elevatis, petiolis 3-6 cm. longis, stipulis ignotis. Flores ignoti. Fructus ad apicem caulis aggregati pedicellati, pedicellis 4-5 mm. longis. Bacca oblongo-globosa 1 cm. longa 8 mm. lata apice rotundata 2-cocca.

HAB. Kōtōshō, leg. K. MIYAKE, Nov. 1899.

Lasianthus JACK.

Lasianthus hiiranensis HAYATA sp. nov. Frutex; rami et ramuli graciles in exsiccato nigricantes hirsuti vel subglabrati. Folia opposita tenuiter coriacea vel chartacea oblonga vel oblongo-obovata 8-9 cm. longa 4-4½ cm. lata apice subito acuta ad summum aristulata basi obtusissima vel rotundata margine repanda vel subintegra supra glabra subtus hirsuta, petiolis 5 mm. longis hirsutis, stipulis interpetiolaribus subulato-triangularibus 7 mm. longis dense hirsutis. Flores ignoti. Fructus ad axillas foliorum fasciculati hirsuti in exsiccato nigricantes 4-5-cocci. Semina ignota.

HAB. Hiiranzan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Psychotria macrophylla HAYATA sp. nov. Suffrutex scandentissimus prostratus sed ad nodos haud radicantes; rami teretes 4-5 mm. in diametro gaberrimi. Folia opposita chartacea vel tenuiter coriacea obovata 8-10 cm. longa apice triangulari-obtusa vel breve cuspidato-obtusa basi longe attenuata margine integra utraque pagine glabra, costa supra impressa subtus elevata, venis gracilibus utraque elevatis, petiolis 3 mm. longis. Fructus cymosi, cymis terminalibus, bracteis et bracteis instructis, bacis oblongo-globosis 5 mm. longis 4 mm. latis tenuiter 10-sulcatis, exocarpiis tenuibus, endocarpiis crustaceis, 2-cocciis.

HAB. Bonin: Chichijima, leg. H. HATTORI, 1905.

As the plant bears an aspect remarkably different from that of *P. serpens*, it should be better regarded as a distinct species. The leaves of the new plant are very much larger than those of *P. serpens*, and the branches of the former are scandent and prostrate, but not rooting as is the case with the latter species. I have examined all the specimens of *P. serpens* from Japan, Formosa and Hongkong; but none does ever seem to approach to the Bonin plant in the shape of the leaves and in the habit.

Near *Lasianthus formosensis* MATSUM., but differs from it in having leaves with round base, and in the much longer hirsute stipules.

Lasianthus microstachys HAYATA sp. nov. Frutex; rami et ramuli gracillimi subglabri. Folia opposita chartacea vel tenuiter coriacea oblonga 7–10 cm. longa 3 cm. lata apice cuspidato-acuminata basi cuneata vel acuta margine integra supra glabra subtus ad costas venas dense hirsuta, costis venisque supra tenuiter impressis subtus prominente distincteque elevatis, petiolis 3–4 mm. longis hirsutis, stipulis subnullis ad pilos densos reductis. Cymæ paucifloratæ breviter pedunculatæ vel subsessiles, axillares 5 mm. longæ vel brevissimæ. Calyx urceolato-campanulatus $3\frac{1}{2}$ mm. longus 3 mm. latus, tubo $1\frac{1}{2}$ mm. longo totiusque lato paucè hirsuto cum ovario connato, limbo campanulato extus hirsuto intus glabro a medio sursum 5-lobato, lobis linearisubulatis $1\frac{1}{2}$ mm. longis basi dilatatis hirsutis. Corolla ignota. Fructus lato globosus 4 mm. latus 3 mm. longus 5-lobatus 5-coecus, exocarpiis carnosis, endocarpiis (testis cocci) crustaceis semi-oblongis $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis. Semina ignota.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916.

Near *Lasianthus micranthus* HOOK. f. (in Fl. Brit. Ind. III. p. 190); but distinguishable from it in having much smaller leaves with cuneate base.

Lasianthus parvifolius HAYATA sp. nov. Frutex; rami et ramuli graciles vel tenuiter hirsuti subtetragoni. Folia opposita tenuiter coriacea vel chartacea 5 cm. longa $2\frac{1}{2}$ cm. lata apice caudato-acuminata basi acuta vel obtusa integra supra glabra subtus tenuiter hirsuta, petiolis 8 mm. longis hirsutis, stipulis interpetiolaribus 1–2 mm. longis triangularibus hirsutis acutis. Flores ad axillas foliorum fasciculati subsessiles, bracteolis minutis triangularibus hirsutis. Calyx obovatus 3 mm. longus totiusque latus hirsutus, limbo 5-lobato, lobis triangularibus 1 mm. longis totiusque latis acutissimis hirsutis intus glabris. Corolla tubiformis 1 cm. longa 3 mm. latus exta hirsuta apice 5-lobata, lobis oblongis 3 mm. longis 2 mm. latis apice acutis basi haud contractis extus tenuiter hirsutis intus barbatis, tubo intus dense barbato. Stamina 5 subsessilia, antheris linearibus $1\frac{1}{2}$ mm. longis $\frac{1}{4}$ mm. latis apice obtusis. Discus pulviniformis supra ovarium inferum insitus. Stylus columniformis glaber 3 mm. longus apice incrassatus tenuiter 5-lobatus.

HAB. Arisan: Inter Taroyen et Funkiko, leg. B. HAYATA, Jan. 1912.

Near *Lasiunthus formosensis*, but differs from it in having much smaller leaves and glabrous branches.

Pæderia LINN.

Pæderia uraiensis HAYATA sp. nov. Scandens et volubilis; caules et rami teretes fulvo-tomentosi. Folia opposita membranacea vel chartacea ovata oblonga vel lanceolata apice acuminata basi obtusa vel cordata 7-15 cm. longa 2½-10 cm. lata minute eroso-serrulata vel subintegra supra tenuiter subtus dense villosa, petiolis 3-6 cm. longis. Flores paniculati, paniculis axillaribus vel terminalibus 10-12 cm. longis tenuiter villosis, pedicellis hirsutis nullis vel 3-4 mm. longis, bracteolis elongato-triangularibus 2 mm. longis ⅔ mm. latis apice 2-lobatis, lobis acutis. Calyx campanulatus 2 mm. longus totiusque latus, limbo 5-lobato, lobis triangularibus 1 mm. longis ⅔ mm. latis apice acutis. Corolla tubuloso-campanulata 6-7 mm. longa 3-4 mm. lata intus hirsuta apice 5-lobata, lobis triangularibus 1 mm. longis 1½ mm. latis apice acutis. Stamina 5 tubo corollæ ad altitudines inæquales affixa, filamentis glabris ½ mm. longis, antheris linearibus 2½ mm. longis ¼ mm. latis. Stylus basi singularis, parte singulari 1 mm. longa, a basi sursum 2-partitus, partibus 4-5 mm. longis filiformibus hirsutis stigmatosis.

HAB. Tōyenchō: Uraisha, leg. S. SASAKI, Nov. 1908.

Near *P. villosa* HAY.; but distinguishable from it in the much smaller flowers and more densely villose leaves.

Pæderia villosa HAYATA sp. nov. Scandens et volubilis; caules et rami teretes glabri. Folia opposita ovata vel oblongo-cordata 6-10 cm. longa 3-6 cm. lata apice caudato-acuminata basi rotundata vel plus minus cordata margine eroso-serrulata chartacea supra tenuiter subtus dense villosa, venis costisque supra minus subtus plus elevatis gracilibus, petiolis 3 cm. longis glabris. Flores laxè paniculati, paniculis terminalibus 30-40 cm. longis subglabris, pedicellis brevibus vel nullis. Calyx campanulatus 2 mm. longus glaber totiusque latus, limbo 5-lobato, lobis triangularibus 1 mm. latis ½ mm. longis obtusis. Corolla tubulosa 8-9 mm. longa 2½ mm. lata apice 5-lobata, lobis triangularibus 1 mm. longis obtusis, tubo intus hirsuto basi fasciulis

pilorum instructo. Stamina 5 tubo corollæ affixa, filamentis brevibus, antheris linearibus $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis. Stylus 7-8 mm. longus glaber alte 2-fidus. Discus obconicus apicem ovarii obtectus.

HAB. Chûho, leg. Y. SHIMADA, Sept. 1915.

Near *P. tomentosa*; but differs from it in having leaves which are very scabrous above and densely villose beneath.

Galium LINN.

Galium trifidum MICHX.; MAXIM. Mélang. Biol. IX. p. 260; MATSUM. Ind. Pl. Jap. II.-2, p. 588.

HAB. Laco Suisha, leg. B. HAYATA, Aprili. 1916.

Exactly identical with the Japanese species. Fruits glabrous; corollalobes 3, white. New to the flora of Formosa.

Damnacanthus GÆRTN.

Damnacanthus Tashiroi HAYATA sp. nov. Frutex scandentissimus; rami et ramuli graciles glabri. Folia opposita crasse coriacea oblonga oblongo-obovata 6-7 cm. longa $2\frac{1}{2}$ -3 cm. lata apice acutissima basi cuneato-attenuata margine integra utraque pagine glabra supra nitida subtus pallida, costa supra impressa subtus elevata, venis supra haud vel vix elevatis subtus non visis divaricatis rectis, petiolis 1 cm. longis glabris, stipulis ignotis. Flores ignoti. Fructus ad axillas foliorum solitariter vel fasciculatim dispositi, pedicellis 5 mm. longis. Baccæ depresso-globosæ 4 mm. longæ 5 mm. lata apice dentibus calycis coronatæ 4-sperma, seminibus ovoideis 3-4 mm. longis.

HAB. Looch'oo, leg. Y. TASHIRO, Mart. 1887.

Ericaceæ.

Rhododendron LINN.

Rhododendron formosanum HEMSL. in Kew Bulletin 1895, p. 183, n. 200.

"Ramulis floriferis cito glabrescentibus crassis cinereis, foliis confertis distincte petiolatis primum lanato-tomentosis cito glabrescentibus crassis coriaceis suberectis anguste oblanceolatis elongatis obtusissimis deorsum longe attenuatis margine incrassatis supra subnitidis minute reticulatis, costa angustissima impressa subtus cinereis costa elevata, petiolo subterete angustissime canaliculato, cataphyllis arcte imbricatis inferioribus coriaceis brevibus rotundatis ciliolatis superioribus laxis elongatis tenuibus mollibus ferrugineo-pulverulentis, floribus mediocribus racemosis racemis terminalibus vel pseudoterminalibus 7-10 floris, pedicellis longis, calyce ferrugineo puberulo brevissimo obscure late lobato, corolla intus extusque glabra breviter lateque lobata, lobo postico emarginato, staminibus 10 inclusis, filamentis infra medium incrassatis hirsutis,

ovario farfuato 5-lobulari, stylo glabro crasso stamina superanti, capsula ignota.

"Habitat.—Formosa: South Cape. A. HENRY, 1976.

"Folia 3-6 poll. longa, maxima 1 poll. lata, petioli 6-12 lin. longi. Flores circiter 1½ poll. longi et diametro. Pedicelli 1½ poll. longi. Stylus circiter 1½ poll. longus."

HAB. Sōtēzan, Randaizan, Shinsuiye, Yeg'riyama; Risekizan; Mushazan, Goshizan, Shojodaisan.

Rhododendron nankotaisanense HAYATA sp. nov. Frutex; rami validiusculi, cortice cinerascenti; ramulis sursum tenuiter floccoso-tomentellis. Folia lanceolata 9 cm. longa 2½ cm. lata apice acuta ad summum apiculata basi obtusa integra utraque pagine glabra, costa supra impressa subtus elevata, venis lateralibus supra haud visis subtus gracillime elevatis visis, petiolis 2 cm. longis supra sulcatis. Flores corymbosi, corymbis terminalibus solitariis cum floribus 5 cm. longis totiusque latis, pedicellis 2 cm. longis glabris. Calyx cupuliformis margine 5-lobatus, lobis brevissimis late triangularibus obtusis glabris. Corolla obconico-infundibuliformis 2½ cm. longa totiusque lata glabra apice 5-lobata, lobis rotundatis latioribus 12 mm. longis 15 mm. latis apice rotundatis apice emarginatis, inaequalibus 3 majoribus, 2 minoribus, glabra. Stamina 10 infra ovarium in disco inserta, filamentis inaequalibus 1-3 cm. longis glabris, antheris obovatis 3½ mm. longis 2 mm. latis apice truncatis 2-porosis basi obtusis plus minus emarginatis. Ovarium cylindricum 4 mm. longum 2 mm. latum glabrum 5-sulcatum, stylo filiformi 2½ cm. longo glabro apice plus minus clavato-dilato stigmatoso.

HAB. Nankotaisan, Aprili, 1917, leg. S. SASAKI, No. 57, (typus!).

Near *Rhododendron Mori* HAYATA, but differs from it in the quite glabrous ovary.

Diapensiaceæ.

Shortia TORR. et GR.

Shortia transalpina HAYATA (Fig. 25) Ic. Pl. Formos. III. p. 146. Descriptio aucta:—Bractee 2-3 basi floris dispositae oblongo-triangulares 2-3 mm. longae basi cordatae. Sepala 5 valde imbricata oblongo-triangularia 5 mm. longa 3 mm. lata apice obtusa glabra. Corolla campanulata glabra 5-6 mm. longa alte 5-lobata, lobis obovatis 5 mm. longis 2½-3 mm. latis apice obtusis versus apicem crenato-lobulatis, crenis obtusis paucis. Stamina

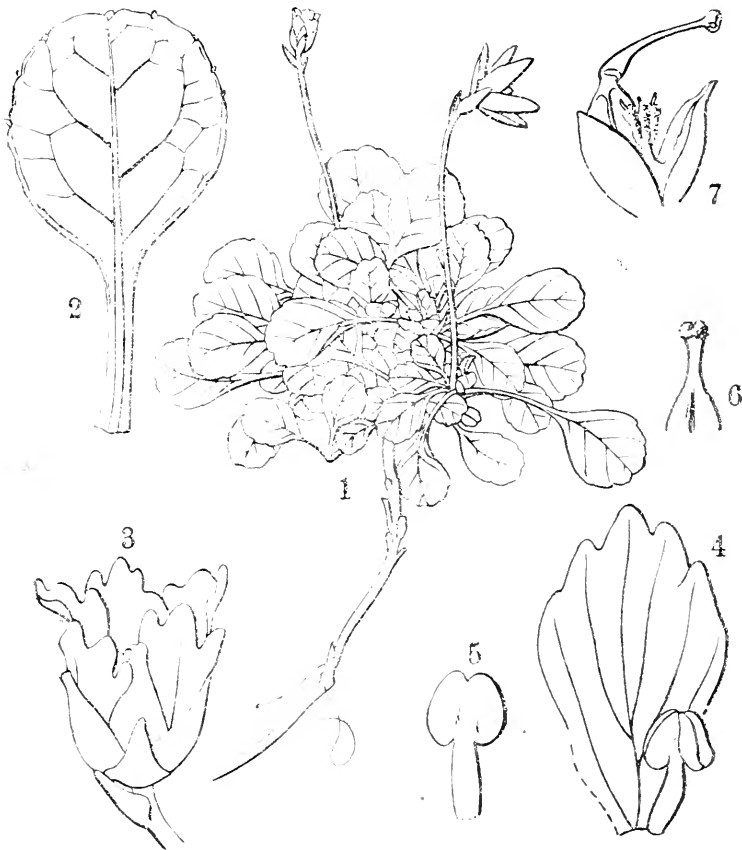


Fig. 25; *Shortia transalpina* HAYATA; 1, the plant; 2, a leaf; 3, a flower; 4, a corolla-lobe; 5, a stamen; 6, ovary; 7, a capsule.

5 lobis corollæ alterna, filamentis glabris toto cum tubo corollæ connata, antheris cordatis 1 mm. longis apice retusis basi cordatis. Ovarium superius conico-globosum glabrum 1 mm. longum, stylo columnari $1\frac{1}{2}$ mm. longo glabro apice stigmatoso.

HAB. Daibuzan, leg. Y. MATSUDA, Nov. 1918.

Styraceæ.

Alniphyllum MATSUM.

Alniphyllum Fauriei PERKINS in ENGL. Pfl.-reich, Styrac. p. 93;

HAYATA Gen. Ind. p. 45.

HAB. Ōchōbi, leg. B. HAYATA, Mai. 1916, Shinjō, Heirinbi, leg. B.

HAYATA.

Styrax LINN.

Styrax kotoense HAYATA Gen. Ind. Fl. Formos. p. 45. Frutex; ramuli cinereo-rubrescentes flexnosi glabri. Folia alterna tenuiter coriacea vel chartacea ovato-oblonga 10–12 cm. longa 5–7 cm. lata apice caudato-acuminata vel acuta basi obliqua vel rotundata margine subintegra utraque pagine subglabra, costis venisque supra planis subtus prominente elevatis, venulis reticulatis utraque pagine elevatis, petiolis 1 cm. longis glabris. Fructus versus apicem ramorum axillares vel ad ramulos proprios dispositi, pedicellis circ. 2 cm. longis versus apicem incrassatis, calycibus accrescentibus late campanulatis glabris 9–10 mm. in diametro 5-lobatis, lobis late triangularibus; Capsulis ovoideis apiculatis 1 cm. longis, pericarpis crasso-coriaceis cinerascensibus, 1-spermis; seminibus oblongis 1 cm. longis profunde 5-sulcatis, testis crustaceis fulvescentibus; albuminibus carnosis.

HAB. Kōtōshō, leg. T. KAWAKAMI et S. SASAKI; ibidem, leg. Y. TASHIRO, No. 14.

Symplocos LINN.

Symplocos japonica A. DC.; BRAND. in ENGL. Pfl.-reich, Symplococ. p. 31.

Symplocos lucida SIEB. et ZUCC. Fl. Jap. p. 55. t. 24; MATSUM. Ind Pl. Jap. II.-2, p. 487.

HAB. Nōkōzan, ad 8,000 ped. alt., leg. R. KANEHIRA et S. SASAKI, Mart. 1918.

Symplocos kiraishiensis HAYATA sp. nov. (Pl. IV.) Frutex, rami et ramuli fuscentes tenuiter griseo-hirsuti recti. Folia minora lanceolata 4 cm. longa 10–12 mm. lata vel oblonga latiora apice acuminatissima plus minus falcata basi acuta vel cuneata integerrima utraque pagine glabra, costa supra elevata subtus plana, venis venulis utraque pagine tenuiter elevatis, coriacea, petiolis 3 mm. longis. Racemi axillares solitarii 1½ cm. longi, pedicellis 2 mm. longis basi 1-bracteatis, bracteis triangularibus 2 mm. longis 1½ mm. latis.

acutis extus hirsutis, bracteolis basi floris oppositam dispositis elongato-triangularibus $1\frac{1}{2}$ mm. longis crassiusculis. Calycis tubus (cum ovario) obconicus $1\frac{1}{2}$ mm. longus paucè hirsutus totiusque latus, limbus campanulatus 3 mm. longus totiusque latus extus paucè hirsutus a medio sursum 5-lobatus, lobis oblongis apice obtusis margine ciliolatis 2 mm. longis $1\frac{1}{2}$ mm. latis. Corolla campanulata 5 mm. longa totiusque lata, tubo 1 mm. longo, limbo 5-partito, lobis oblongis 3-4 mm. longis apice obtusissimis integris basi haud vel vix contractis. Stamina ∞ , filamentis usque ad medium connatis 4-6 mm. longis glabris, antheris reniformibus $\frac{2}{3}$ mm. longis fere bipartitis glabris. Ovarium inferius apice impressum hirsutum, stylo 4-5 mm. longo glabro, stigmate plus minus incrassato. Fructus ad racemos solitarii ellipsoidei $1\frac{1}{2}$ cm. longi 7 mm. lati, pericarpis incrassatis crustaceis 1 mm. crassis, 3-loculares; loculo uno fertili 2-spermo.

HAB. Kiraishi ad 12,000 ped. alt.; leg. Y. SHIMADA, Mart. 1918.

Near *S. morrisonicola* HAY.; but differs from it in the much thicker leaves with entire margin and in the much larger calyx.

Symplocos Somai HAYATA sp. nov. Frutex. Rami et ramuli fusco-purpurascens, lenticellis minutis. Folia alterna coriacea oblonga vel ovato-oblonga 5 cm. longa 23 mm. lata apice caudata vel acuta ad summum obtusa basi acuta cuneata margine integra utraque glabra, costa supra impressa subtus elevata, venis venulis utraque pagine tenuissime elevatis gracillimis, petiolis 3-6 mm. longis angustissime alatis. Racemi terminales vel axillares 3-4 cm. longi hirsuti triquetri, pedicellis hirsutis 4 mm. longis, bracteis caducissimis ignotis. Calyx tubuloso-campanulatus, tubo (cum ovario connato) $1\frac{1}{4}$ mm. longo 1 mm. lato, lobis 5 oblongo-triangularibus $1\frac{1}{2}$ mm. longis 1 mm. latis apice obtusis utraque glabris. Petala 5 oblonga $5\frac{1}{2}$ mm. longa $2\frac{1}{2}$ -3 mm. lata apice obtusa vel rotundata basi haud vel vix contracta glabra basi se connata. Stamina ∞ , filamentis filiformibus glabris, antheris reniformibus $\frac{1}{2}$ mm. latis utraque emarginatis glabris. Stylus columnaris glaber 5 mm. longus rectus apice truncatus plus minus dilatatus stigmatosus; discus annularis basi styli insitus minute lobulatus.

HAB. Tōyenchō: Daikwaikei, leg. T. SŌMA, Dec. 1915; Jokirin, leg. S. SASAKI, Mart. 1916.

Near *S. liukiensis* MATSUM., but differs from it in having much thicker leaves with much elevated veins above.

Symplocos sozanensis HAYATA sp. nov. Frutex, rami et ramuli glabri graciles fuscentes. Folia alterna tenuiter coriacea oblongo-lanceolata vel lanceolata 4-5 cm. longa $1\frac{1}{2}$ -2 cm. lata apice caudato-acuminata basi acuta margine minute remoteque serrulata vel subintegra utraque pagine glabra, costa supra impressa subtus elevata, venis venulisque reticulatis utraque pagine tenuissime elevatis, petiolis 6 mm. longis angustissime alatis glabris. Flores ignoti. Racemi fructiferi axillares $1\frac{1}{2}$ cm. longi solitarii, fructibus ovoideo-rucceolatis 7 mm. longis glabris 5 mm. latis.

HAB. Sōzan, leg. Y. SHIMADA, Juli. 1918.

Near *S. okinawensis* MATSUM., but differs from it in having leaves with costas impressed above. In *S. okinawensis*, the costas of the leaves are elevated above.

Oleaceæ.

Jasminum LINN.

Jasminum Shimadai HAYATA sp. nov. (Pl. V. et Fig. 26). Frutex scandentissimus. Ramuli graciles glabri, medulla cava. Folia opposita vel subalterna tenuiter coriacea glabra cruciforme 3-foliolata, foliolis oblongis vel

ovato-oblongis 8-9 cm. longis 5-6 cm. latis apice rotundatis versus summum cuspidatis basi rotundatis margine integris, costa supra impressa subtus elevata, venis gracillimis utraque pagine obscuris tenuissime elevatis, supra nitidis subtus pallidissimis, petiolulo terminali longiore 3-4 cm. longo, petiolulis lateralibus brevioribus 2-3 cm. longis gracilibus glabris, petiolis communibus 3 cm. longis glabris. Panicule corymbosæ terminales 10-15 cm. longæ 10

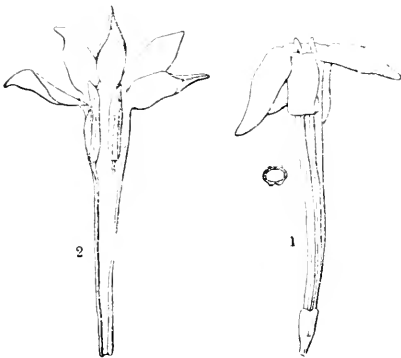


Fig. 26; *Jasminum Shimadai* HAYATA; 1, a flower; 2, corolla of the same flower, expanded.

cm. latæ, ramis oppositis divaricatis, bracteis subulatis basi dilatis 4-5 mm. longis, bracteis superioribus minutis triangularibus 1 mm. longis plus minus hirsutis. Calyx subsessilis cylindricus 2-2½ mm. longus 2 mm. latus glaber vel tenuissime hirtellus apice ore truncatus haud lobatus. Corolla glabra hypocrateriformis, tubo gracili 2-2½ cm. longo 1½ mm. lato, limbo 4-5-partito, partibus lanceolatis 1 cm. longis 4 mm. latis apice acuminatis basi vix vel haud contractis integris apice plus minus convolutis. Stamina 2 tubo corollæ affixa inclusa, filamentorum partibus liberis brevioribus 2-3 mm. longis glabris, antheris linearibus 5 mm. longis 1 mm. latis apice acuminatis basi truncatis, loculis 2 latere dehiscentibus. Ovarium breve cylindricum 1 mm. longum glabrum apice truncatum impressum, stylo erecto recto glabro filiformi 3-4 mm. longo incluso apice 2-lobato. Fructus (immature) 2-loculares, loculis globosis valde divaricatis 3-4 mm. in diametro, connectivo inter loculos latiusculo.

HAB. Gaogan, leg. S. SHIMADA, Juli. 1918.

Somewhat resembles *Jasminum paniculatum* ROXB.; but differs from it by the much larger rounded leaflets.

Osmanthus LOUR.

Osmanthus bibracteatus HAYATA sp. nov. (Fig. 27). Frutex; ramuli validiusculi glabri cinerascetes angulati, cortice fesso plus minus soluto. Folia opposita crasse coriacea oblongo-lanceolata 7-8 cm. longa 2½-3 cm. lata apice acuminata basi obtusa margine integerrima utraque pagine glaberrima, costa supra minus subtus plus elevata, venis gracillimis subtus tenuiter elevatis petiolis 1 cm. longis. Fasciculi florum 4-7-florati axillares solitarii basi 2-bracteati, bracteis oppositis se connatis triangularibus 4 mm. longis totiusque latis extus hirsutis intus glabris apice acutis, pedicellis glabris 1½ cm. longis gracilibus. Calyx glaber late campanulatus 1½ mm. longus 2½ mm. latus 4-lobatus, lobis semi-rotundatis 1 mm. longis 1½ mm. latis apice truncato-rotundatis basi haud contractis margine minute erosis vel integris. Corolla late campanulata glabra 4-5 mm. longa 5-6 mm. lata 4-lobata, lobis rotundato-oblongis 4 mm. longis 3 mm. latis apice obtusis basi plus minus contractis glabris. Stamina 2, filamentis 1 mm. longis glabris, antheris ovato-oblongis

2½ mm. longis 1½ mm. latis apice breve apiculatis basi leviter cordatis glabris. Ovarium glabrum globosum 1 mm. latum minus longum, stylo columniformi 1½ mm. longo, stigmate clavato-globoso medio tenuiter sulcato.

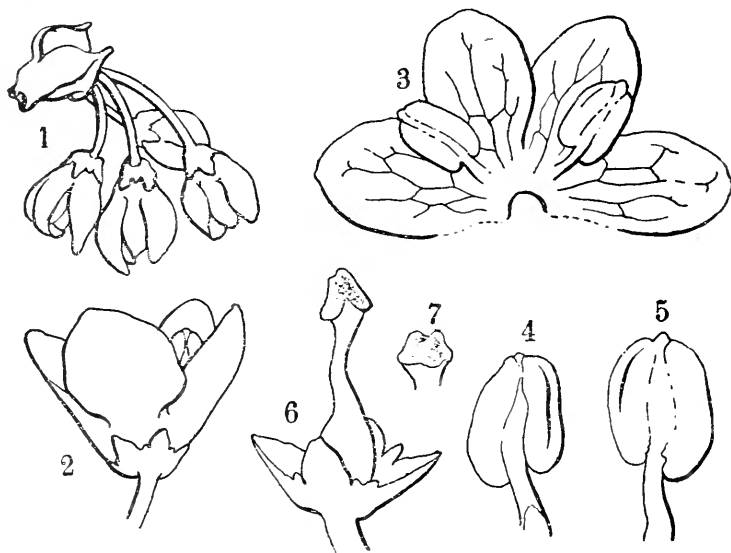


Fig. 27; *Osmanthus bibracteata* HAYATA; 1, a flower-cluster; 2, a flower; 3, corolla; 4, 5, a stamen, seen from different sides; 6, an ovary; 7, a stigma.

HAB. Mt. Daibu, leg. Y. MATSUDA, Nov. 1918.

Near *Osmanthus integrifolius* HAY., but differs from it in the much longer leaves and in the large bivalvate bracts at the base of the flower-clusters.

***Osmanthus daibuensis* HAYATA** sp. nov. (Fig. 28). Frutex; ramuli gracillimi recti cinerei longitudinaliter rugosi lenticellis minutis elevatis conpersi. Folia lanceolata opposita tenuiter coriacea 8-10 cm. longa 1½-2 cm. lata apice caudato-acuminatissima basi cuneata margine integra plus minus undulata, costa supra plana vel impressa subtus elevata, venis supra planis subtus elevatis gracillimis. Flores ad axillas foliorum fasciculati, fasciculis 5-6-floratis basi bracteatis, bracteis triangularibus basi se connatis fasciculum amplectantibus, pedicellis 1 cm. longis glabris. Calyx tetragono-obpyramidalis 1 mm. longus totiusque latus 4-lobatus, lobis late rotundatis ¾ mm. latis ½ mm. longis apice rotundatis. Corolla obconico-campanulata 3 mm. longa totiusque lata 4-lobata, lobis late oblongis 2 mm. longis totiusque latis apice



Fig. 28; *Osmanthus daibuensis* HAYATA; 1, a branch; 2, a leaf; 3, a flower; 4, corolla, expanded; 5, 6, a stamen, seen from different sides; 7, rudimentary ovary in calyx.

rotundatis glabris basi haud contractis. Stamina 2 tubo corollæ affixa, filamentis glabris, antheris rotundato-oblongis $1\frac{1}{2}$ mm. longis 1 mm. latis apice

apiculatis basi profunde cordatis glabris. Rudimentum ovarii minutum ovoideum $1\frac{1}{2}$ mm. longum.

HAB. Mt. Daibu, leg. Y. MATSUDA, Nov. 1918.

Closely resembles *Osmanthus lanceolatus* HAY.; but distinguishable from it in the more acuminate leaves with lateral veins arranged in a much acuter angle.

Osmanthus gamostromus HAYATA sp. nov. (Fig. 29). Frutex vel arborescens, ramulis cinerascentibus. Folia opposita oblango-vel ovato-lanceolata 10 cm. longa 3-3 $\frac{1}{2}$ cm. lata apice acuminatissima basi obtusa acuta vel

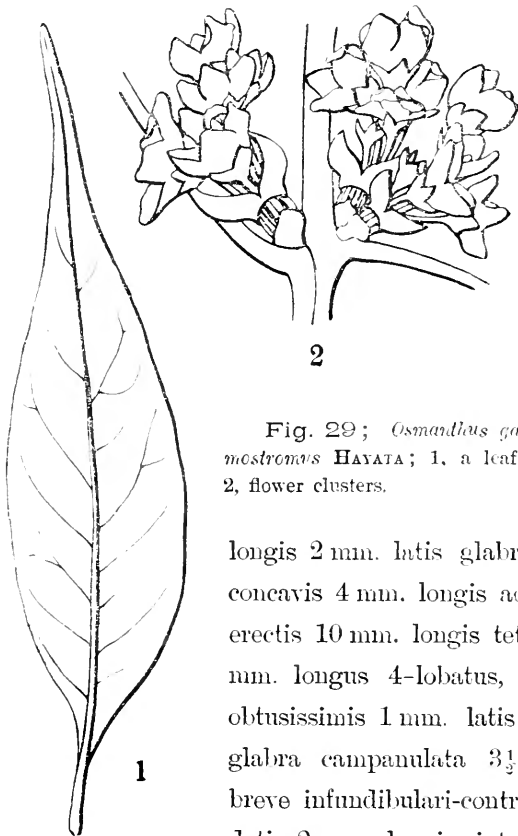


Fig. 29; *Osmanthus gamostromus* HAYATA; 1, a leaf; 2, flower clusters.

cuneata integra vel plus minus crispata vel plana glaberrima chartacea vel chartaceo-coriacea, costis supra impressis subtus elevatis, petiolis 1 cm. longis. Flores ad axillas foliorum umbellatim fasciculati, fasciculis 5-6-floratis ad axillas foliorum singulis vel geminatis basi bracteis 4 instructis, bracteis basi per paria se connatis, inferioribus brevissimis triangularibus latissimis 1 mm. longis 2 mm. latis glabris, superioribus basi se connatis concavis 4 mm. longis acutis late ovatis, pedicellis glabris erectis 10 mm. longis tetragonis. Calyx campanulatus $1\frac{1}{2}$ mm. longus 4-lobatus, lobis oblango-rotundatis glabris obtusissimis 1 mm. latis totiusque longis integris. Corolla glabra campanulata $3\frac{1}{2}$ mm. longa totiusque lata basi breve infundibulari-contracta medio 4-lobata, lobis rotundatis 2 mm. longis integris apice plus minus retusis vel rotundatis. Stamina 2, antheris oblango-rotundatis breve apiculatis.

HAB. Arisan, leg. B. HAYATA, Jan. 1912.

Near *Osmanthus lanceolatus* HAY., but distinguishable from it in having

much broader leaves, in the much acuter sepals and especially in the bracteoles which are connate by pairs at the base.

Osmanthus Matsudai HAYATA sp. nov. (Fig. 30). Frutex; rami graciles glabri. Folia opposita coriacea lanceolata 7-8 cm. longa 2-2½ cm. lata apice acuminata basi acuta ad petiolum abeuntia integerrima, costa supra impressa subtus elevata venis

venulis obscuris, utraque pagine glaberrima, petiolis 1 cm. longis anguste alatis. Cymæ brevissimæ contractæ 1 cm. longæ axillares solitariae dense bracteate, bracteis basis cymæ minoribus superioribus majoribus rotundato-ovatis glabris margine ciliolatis 4 mm. longis 2½ mm. latis apice acutis dorso plus minus carinatis, carinis supra apicem productis. Calyx glaber obconicus 1½ mm. longus 1⅓ mm. latus 4-lobatus, lobis

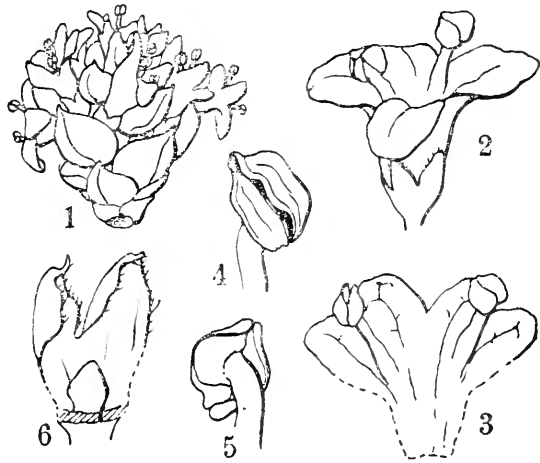


Fig 30; *Osmanthus Matsudai* HAYATA; 1, a flower-cluster; 2, a male flower; 3, corolla, expanded; 4, 5, a stamen, seen from different sides; 6, rudimentary ovary.

rotundato-oblongis margine ciliolatis. Corolla tubuloso-campulata 4 mm. longa 3 mm. lata 4-lobata, lobis rotundatis 1½ mm. longis margine ciliolatis glabris. Stamina 2 versus apicem tubi corollæ affixa, filamentis glabris 2 mm. longis, antheris rotundatis ⅔ mm. in diametro apice acutis basi 2-lobatis. Ovarium ovoideum glabrum ½ mm. longum apice stigmatē sessili coronatum.

HAB. Mt. Buisan, leg. Y. MATSUDA, Juli. 1918.

Somewhat near *O. integrifolius* HAY., but differs from it in the much longer leaves and in the flower-clusters with almost erect pedicels.

Loganiaceæ.

Gardneria WALL.

Gardneria hongkongensis HAYATA sp. nov. Frutex scandentissimus subvolubilis, ramis et ramulis villo-viridibus glabris. Folia tenuiter coriacea lanceolata vel oblonga 8-9 cm. longa

2½-3 cm. lata apice cæta basi acuta obtusa vel rotundata vel cuneata margine inægra in exsiccato supra nitida utraque glabra, cætis venis venis.que supra plus minus elevatis subtus prominente graciliterque elevatis, petiolis 8 mm. longis glabris. Cymæ pauci floratæ axillares vel terminales 3-4 cm. longæ ternatim ramosæ, bracteis cuspidato-triangularibus 1½ mm. longis, pedicellis ulimis glabris 1 cm. longis. Sepala 5 late rotundata 1 mm. longa 1½ mm. lata apice rotundata margine minute ciliolata. Corolla rotata, tubo subnullo, profunde 5-lobata, lobis linearibus 7 mm. longis 1¾-2 mm. latis apice acutis basi haud vel vix contractis conduplicato-valvatis vel valvatis facie interiore late sulcatis glabris. Stamina 5 lobis corollæ alterna ad basin loborum affixa subsessilia ovato-oblonga 3 mm. longa 1 mm. lata apice apiculata basi 2-lobata, connectivis crasisimis. Ovarium ovoideo-globosum 1 mm. longum glabrum apice ad stylum abeans, stylis 5 mm. longo glabro.

HAB. Hongkong: Happy valley, leg B. HAYATA, Juni. 1917.

Near *Gardneria multiflora* MAKINO; but differs from it in the leaves with very prominent veins and veinlets underneath, and in the glabrous connectives

As I was informed by Mr. DUNN, this interesting plant had first been discovered in Hongkong in 1916, a year before I collected the same species in the same island. It is very so close to the Japanese species *G. multiflora* that it was assumed to be identical with the latter. After coming back home, I have compared the plant with the type of *G. multiflora* and found that the Hongkong plant is a little different from the Japanese in the leaves which are very obtuse or round at the base, and have very prominent veins and veinlets underneath. In *G. multiflora*, the leaves are very cuneate at the base and have very slender scarcely prominent veins and veinlets underneath. The leaves of the new species are quite lustrous and iridescent dark green above, very pale beneath.

In referring this plant to *Gardneria*, I have followed REHDER (Fl. Wilsoniana 564) and have retained the genus in the older and wider sense, as the character on which RAICHSKI relied to separate *Pseudogardneria* from *Gardneria* is not constant; for *G. lanceolata*, as pointed out by REHDER, has the flowers just intermediate between the two genera.

Convolvulaceæ.

Erycibe ROXB.

Erycibe acutifolia HAYATA sp. nov.

Erycibe obtusifolia HAYATA (non BENTH.) Ic. Pl. Formos. II. p. 122; Gen. Ind. p. 50.

The Formosan plant was formerly identified with the Hongkong plant; but the former is slightly different from the latter in having much acuter leaves.

Scrophularineæ.

Ambulia LAM.

Ambulia stipitata HAYATA sp. nov. Herba aquatica; caulis pauciramosus glaber. Folia opposita verticillata glabra superiora a basi multi-

laciniata in ambitu obovata 1-2 cm. longa 1 cm. lata, laciniis linearibus vel filiformibus $\frac{1}{3}$ - $\frac{1}{2}$ mm latis 2-3-fidis vel lobatis, lobis linearibus apice acutis. Flores axillares solitarii, pedicellis $2\frac{1}{2}$ mm. longis erectis rectis. Calyx cylindrico-campanulatus 4 mm. longus 2 mm. latus glaber 5-costatus, costis distinctis vel obscuris, apice 5-lobatus, lobis lineari-triangularibus $1\frac{1}{2}$ mm. longis apice acutis. Corolla cylindrico-campanulata 10-12 mm. longa 7 mm. lata extus glabra, limbo 2-labiato, labio superiore majore late rotundato 4 mm. longo 5 mm. lato basi plus minus contracto, intus barbato, labio inferiore 8 mm. lato 3 mm. longo, lobo medio rotundato minore 3 mm. longo totiusque lato, lobis lateralibus latioribus 3 mm. longis 4 mm. latis late rotundatis apice truncato-rotundatis; corollæ tubus intus barbatus. Stamina 4 didynama inclusa, filamentis glabris, antheris disjunctis ω -formibus 2-ocularibus, oculis a se distinctis. Ovarium conico-ovatum $1\frac{1}{2}$ mm. longum $\frac{3}{4}$ mm. latum glabrum, stylo 6 mm. longo. Capsula oblongo-elliptica 4 mm. longa $2\frac{1}{2}$ mm. lata plus minus complanata apice retusa medio sulcata 2-ocularis loculicide dehiscens. Semina ellipsoidea $\frac{1}{2}$ mm. longa, testa levi nigricanti.

Limnophila stipitata HAYATA, in Herb. Taihoku.

HAB. Hōzan: Keishūshō, leg. Y. TASHIRO, Feb. 1914.

Near *L. sessiliflora*, but distinguishable from it in the stipitate capsules and nearly rounded seeds.

Lindernia ALL.

Lindernia stellariifolia HAYATA sp. nov. Herba diffusa; caulis a basi ramosissimus; ramis hirsutis acute tetragonis. Folia ovato-rhomboida vel ovata sessilia opposita 1 cm. longa 7 mm. lata apice triangulari-acuta basi truncata lata margine integra chartacea vel membranacea utraque hirsuta. Flores axillares versus apicem cymosim dispositi, pedicellis 5 mm. longis, bracteis linearibus minutis. Calyx 5-partitus, partibus linearibus 3 mm. longis extus pauce hirsutis margine minute serrulatis. Corolla cylindrico-campanulata 5 mm. longa, limbo 2-labiata, labio superiore erecto 2 mm. longo $1\frac{1}{2}$ mm. lato oblongo apice retuso, labio inferiore $2\frac{1}{2}$ mm. longo totiusque lato 3-lobato, lobo medio obovato-rotundato 2 mm. longo $1\frac{1}{2}$ mm. lato apice rotundato, lobis lateralibus $1\frac{1}{2}$ mm. longis totiusque latis. Stamina 4 didynama

ad faucem corollæ affixa, filamentis anterioribus inflexis basi appendiculatis, antheris per paria confluentibus, loculis divaricatis basi acutis glabris. Discus antice semi-cupuliformis. Ovarium ovoideum 1 mm. longum glabrum, stylo 4 mm. longo apice plus minus dilatato 2-lobato. Capsula globosa 3 mm. longa glabra 2-valvata. Semina oblonga $\frac{1}{3}$ mm. longa minute tuberculata.

Vandellia stellariifolia HAYATA.

HAB. Kuraru, Taihoku, Akō, Tamsui.

Near *Vandellia scabra* BENTH.; but distinguishable from it in the much smaller leaves.

Lindernia cruciformis HAYATA sp. nov. Herba diffusa 10 cm. longa a basi ramosa; caulis hirsutus. Folia opposita obovata vel obovato-spathulata vel ovata cum petiolis 4 cm. longa 2 cm. lata apice obtusissima basi subito emeato-attenuata margine crenato-serrata, serris obtusissimis, membranacea utraque pagine parce hirsuta subsessilia. Cymæ terminales 1-2 cm. longæ totiusque latæ paucifloratæ vel axillares glabræ, pedicellis oppositis 5-8 mm. longis divaricatis glabris basi bracteis singulis instructis, bracteis triangularibus minutis $\frac{1}{2}$ mm. longis. Calyx parce hirsutus alte 5-partitus, partibus linearibus erectis rectis acuminatis 2-2 $\frac{1}{2}$ mm. longis. Corolla late cylindrica 5-5 $\frac{1}{2}$ mm. longa glabra, limbo 2-lobiato, labio superiore brevior subrotundato 1 $\frac{1}{2}$ mm. longo et lato erecto apice rotundato, labio inferiore longiore latiore 2 mm. longo 3 mm. lato 3-lobato, lobo medio rotundato 1 mm. longo et totiusque lato, lobis lateralibus conformibus rotundatis. Stamina 4 didynama ad faucem corollæ affixa, antheris per paria confluentibus 2-ocularibus, loculis divaricatis oblongis $\frac{1}{2}$ mm. longis, filamentis anterioribus basi appendiculatis glabris. Discus antice semi-cupuliformis. Ovarium glabrum conico-ovoidem 1 mm. longum, stylo 3 mm. longo glabro apice plus minus dilatato. Capsula oblongo-rotundata apice acuta 2-2 $\frac{1}{2}$ mm. longa glabra 2-valvata. Semina numerosissima alba oblonga $\frac{1}{2}$ mm. longa minutissime tuberculata.

Vandellia cruciformis HAYATA.

HAB. Kuraru, Akō.

Near *V. hirsuta* HAMILT.; but differs from it in the leaves with a emeate base.

Mimulus LINN.

Mimulus formosana HAYATA sp. nov. Herba gracillima diffusa glabra; caulis circ. 10 cm. longus. Folia opposita glabra ovata vel oblonga membranacea 13 mm. longa 10 mm. lata apice obtusa vel acuta basi obtusa margine remote tenuiter serrata, petiolis 5-8 mm. longis. Flores terminales solitarii, pedunculis 5-8 mm. longis glabris. Calyx obconico-campanulatus 6-7 mm. longus glaber 5-carinatus ad carinas scaberrimus apice 5-dentatus, dentibus minutis 1 mm. longis a se 2 mm. remotis, partibus marginis inter dentes denticulatis. Corolla flava campanulata 11 mm. longa 5 mm. lata, limbo 5-lobato, lobis subæqualibus late rotundatis $2\frac{1}{2}$ mm. longis $3\frac{1}{2}$ mm. latis. Corolla latere inferiore prope faucem 2-striata secus strias glanduloso-hirsuta. Stamina 4 subæquilonga vel plus minus didynama, antheris reniformibus 2-locularibus, filamentis glabris. Ovarium fusiforme 3 mm. longum $\frac{3}{4}$ mm. latum, stylo columniformi 4 mm. longo apice dilato 2-labiato.

HAB. Taiheizan, leg. B. HAYATA, Mai. 1917.

Near *M. nepalensis* var. *japonica* MIQ.; but differs from it in having much smaller flowers with less hairy corolla.

Siphonostegia BENTH.

Siphonostegia chinensis BENTH.; FORBES et HEMSL. Ind. Fl. Sin. II. p. 202; MATSUMURA Ind. Pl. Jap. II.-2, p. 569.

HAB. Kagi.

The genus is new to the flora of Formosa.

Bonnaya LINK. et OTTO.

Bonnaya aristato-serrata HAYATA sp. nov. Annua; caulis a basi diffuse ramosus glaber. Folia opposita oblonga vel obovato-oblonga 2 cm. longa 6-8 mm. lata membranacea apice obtusissima basi obtusa vel truncata sessilia margine aristato-serrulata, serrulis acutissimis triangularibus ascendentibus ad apicem arista 1 mm. longa instructis, utraque glaberrima. Cymæ terminales paucifloratae, floribus oppositis, pedicellis 2 mm. longis, bracteis lanceolatis linearibus 3 mm. longis acuminatis. Calyx cylindrico-campanulatus 4 mm.

longus alte 5-lobatus, lobis erectis linearibus 3 mm. longis acuminatissimis margine minute ciliolatis. Corolla tubuloso-campanulata 6 mm. longa a medio sursum 2-labiata, labio superiore lineari 2 mm. longo $\frac{2}{3}$ mm. lato apice obtuso erecto glabro, labio inferiore latissimo $2\frac{1}{2}$ mm. longo patenti glabro $2\frac{1}{2}$ mm. longo 3-lobato, lobis lateralibus oblongis, lobo medio oblongo $1\frac{1}{2}$ mm. longo. Stamina perfecta 2 postica, loculis antheræ divaricatis, loculo superiore minore, inferiore majore; staminodia 2 antica fauce corollæ affixa. Ovarium fusiforme $1\frac{1}{2}$ mm. longum glabrum, stylo glabro $3\frac{1}{2}$ mm. longo apice plus minus dilatato. Capsula cylindrica 1 cm. longa $1\frac{1}{2}$ mm. lata 2-valvata.

Ilysanthes aristato-serrata HAYATA.

HAB. Kagi, leg. T. SŌMA, Sept. 1913.

Near *Bonnaya brachyata* LINK. et OTTO; but differs from it in the aristate serrature of the leaves and in the much smaller leaves and flowers.

Torenia LINN.

Torenia hokutensis HAYATA sp. nov. Herba a basi ramosissima, ramis diffusis tetragonis hirsutis. Folia opposita rotundato-rhomboidæa 2 cm. longa $1\frac{1}{2}$ cm. lata apice triangulari-acuta basi triangulari-cuneata margine serrata plus minus hirsuta sessilia vel brevissime petiolata. Flores axillares solitarii oppositi versus apicem caulis racemosim dispositi, bracteis minutis linearibus 4-5 mm. longis, pedicellis 5 mm. longis. Calyx cylindrico-campanulatus tenuiter hirsutus 5-partitus, partibus linearibus acuminatis dorso alatis, alis $\frac{1}{4}$ mm. latis. Corolla cylindrico-campanulata 1 cm. longa glabra flava 2-labiata, labio superiore erecto emarginato; labio inferiore majore patenti 3-lobato. Stamina 4 perfecta, 2-postica inclusa, filamentis brevioribus 1 mm. longis glabris, 2-antica ad faucem affixa, filamentis longioribus exsertis 5 mm. longis, antheris per paria se confluentibus 2-ocularibus, loculis divaricatis. Discus basi ovarii insitus brevissimus annuliformis plus minus lobulatus. Ovarium cylindricum 2 mm. longum glabrum acutum, stylo 7 mm. longo glabro apice plus minus dilatato. Capsula cylindrica apice obtusa 7 mm. longa 2 mm. lata glabra 2-valvata septicide dehiscens. Semina ellipsoidea $\frac{1}{3}$ mm. longa minute reticulata ovoidea.

Torenia Fordii HAYATA Gen. Ind. Fl. Formos. p. 53, (non HOOK. f.).

HAB. Hokuto, Goshizan, Nantō.

Near *T. Fordii* HOOK. f., but differs from it in the much elongated racemes.

Torenia nantoensis HAYATA sp. nov. Herba diffusa villosa-hirsuta, caulis 30–40 cm. longus ramosus hirsutus. Folia opposita triangulari-ovata vel ovato-oblonga 2 cm. longa $1\frac{1}{2}$ cm. lata apice triangulari-acuta basi truncata margine serrata, serris triangularibus, utraque pagine villosa, petiolis 1 cm. longis hirsutis. Flores cymosi, cymis longe ramosis, ramis valde divaricatis, pedunculis longis. Calyx hirsutus cylindricus plus minus recurvus 9 mm. longus 5-costulatus 2-labiatus, labiis acutis integris. Corolla cylindrico-campulata $1\frac{1}{2}$ cm. longa 2-labiata, labio superiore 5 mm. longo 4 mm. lato obovato apice emarginato, labio inferiore majore patenti 3-lobato, lobo medio obovato 6 mm. longo 5 mm. lato apice rotundato, lobis lateralibus minoribus $2\frac{1}{2}$ mm. longis $3\frac{1}{2}$ mm. latis; corolla intus prope basin hirsuta, lobis lateralibus intus latere exteriori plus minus hirsutis, cæterum glabra. Stamina 4 didynamia, 2-postica inclusa, filamentis $1\frac{1}{2}$ mm. longis, antheris 2-ocularibus, loculis divaricatis alatis; 2-antica exserta, filamentis 7 mm. longis basi appendiculatis. Discus cupuliformis. Ovarium cylindricum 3 mm. longum 1 mm. latum, stylo 9–10 mm. longo glabro apice dilatato 2-lobato, lobis ovatis obtusis margine ciliolatis. Capsula cylindrica apice obtusa 9 mm. longa 2–3 mm. lata 2-valvata. Semina globosa $\frac{1}{4}$ mm. in diametro, leviter fuscentia.

HAB. Nantō, leg. Y. SHIMADA, Nov. 1917.

Near *Torenia hirtella* HOOK. f.; but differs from it in the minutely villose leaves.

Veronica LINN.

Veronica polita FR ; MATSUMURA Ind. Pl. Jap. II.-2, p. 572.

HAB. Shiringai, leg. T. SŌMA, Feb. 1915.

Acanthaceæ.

Hygrophila R. BR.

Hygrophila pogonocalyx HAYATA sp. nov. Herba annua erecta; caulis tetragonus, internodiis subglabris, ad nodos densissime hirsutus. Folia

opposita chartacea lineari-lanceolata 9 cm. longa 12 mm. lata apice obtusa basi late attenuata sessilia margine subintegra utraque pagine scaberriima brevis hirsuta. Flores sessiles ad nodos glomeratim dispositi multi-bracteati, bracteis ovatis vel lanceolatis $1\frac{1}{2}$ cm. longis 4-6 mm. latis apice caudato-acuminatis extus strigosis intus glabris. Calyx subcylindricus $1\frac{1}{2}$ cm. longus usque ad medium 5-fidus, lobis subæqualibus linearibus acuminatis. Corolla tubuloso-ampliata $2\frac{1}{2}$ cm. longa 5 mm. lata, limbo 2-labiato, labio superiore erecto 1 cm. longo apice breviter 2-lobato, labio inferiore plus minus patenti apice 3-lobato, lobis æquiformibus, lobo medio oblongo 3 mm. longo 2 mm. lato apice obtuso; corolla intus barbata. Stamina 4 didynama, antheris oblongis 3 mm. longis $1\frac{1}{2}$ mm. latis apice obtusissimis basi sagittatim 2-lobatis glabris. Stylus glaber. Discus pulviniformis. Ovarium conico-cylindricum $2\frac{1}{2}$ mm. longum 1 mm. latum glabrum.

HAB. Toroku, leg. Y. SHIMADA, Juni. 1917.

Near *Hygrophila salicifolia* NEES., but differs from it in the much more barbate bracts, and in the very scabrous hirsute leaves.

Strobilanthes BLUME.

Strobilanthes lasiocalyx HAYATA sp. nov. Herba basi suffrutescens glabra; caulis basi procumbens sursum ascendens, parte ascendenti 30-40 cm. longa subtetragona. Folia opposita oblongo-lanceolata cum petiolis 10 cm. longa $2\frac{1}{2}$ cm. lata apice acuminatissima basi attenuata margine tenuiter serrulata membranacea vel chartacea utraque glabra, petiolis $\frac{1}{2}$ cm. longis. Flores cymosi sessiles, cymis 2-3-floratis pedunculatis axillaribus vel terminalibus, bracteis caducissimis lineari-ovatis $1\frac{1}{2}$ cm. longis 3-4 mm. latis apice caudato-acuminatis dorso 1-carinatis; (bracteolis nullis?). Calyx altè 5-partitus segmentis linearibus $1\frac{1}{2}$ cm. longis 1 mm. latis hirsutis. Corolla extus parce hirsuta tubuloso-campulata 3 cm. longa 1 cm. lata, limbo 5-lobato, lobis late rotundatis 6 mm. latis 3-4 mm. longis fere conformibus apice emarginatis. Stamina 4 didynama, antheris late triangulari-cordatis 2-ocularibus 1 mm. longis $1\frac{1}{2}$ mm. latis apice late triangulari-obtusis. Stylus glaber. Ovarium ovoideo-cylindricum $1\frac{1}{2}$ mm. longum apice hirsutum.

HAB. Shinten, leg. U. FAURIE, Januario 1914.

Near *Strobilanthes formosanus* MOORE; but differs from it in having glabrous leaves and in the lanceolate acuminate bracts. The leaves of *S. formosanus* are hirsute, and the bracts of the same species are ovate and nearly obtuse.

Strobilanthes longespicatus HAYATA sp. nov. Caulis erectus 4 ped. altus ramosus, ramis subtetragonis glabris. Folia oblonga vel oblongo-lanceolata 13 cm. longa 4½ cm. lata apice acuta basi cuneato-attenuata margine obscure remoteque serrulata chartacea utraque glabra, venis venulisque utraque pagine elevatis, petiolis 2-3 cm. longis. Flores quasi-spicati, spicis axillaribus vel terminalibus 10-15 cm. longis; flores ad nodos spicæ oppositi sessiles bracteis singulis bracteolis duabus instructi; bracteis lineari-lanceolatis 1½ cm. longis 5 mm. latis apice attenuatis ad summum obtusis basi truncatis laud contractis chartaceis concavis ad rhachin adpressis glabris; bracteolis lineari-lanceolatis minoribus 2½ mm. longis 1½ mm. latis apice acuminatis basi obtusis glabris margine hirsutis intus glabris erectis ad calycem adpressis. Calyx erectus (tubus brevissimus 2 mm. longus) fere 5-partitus, segmentis erectis linearibus æqualibus 13 mm. longis 2-3 mm. latis apice acuminatis margine hirsutis intus extusque glabris dorso 1-costatis, costis plus minus carinatis. Corolla cylindrica 5 cm. longa fauce 1½ cm. lata basi subito contracta ad tubum 1 cm. longum 3 mm. latum abeunt extus glabra recta laud vel vix recurva; limbus subpatens 5-lobatus, lobis subæqualibus triangulari-rotundatis 8 mm. longis totiusque latis apice obtusis retusis. Corolla extus glabra intus deorsum tenuissime barbata. Stamina didynama, filamentis cum tubo corollæ alte connatis hirsutis, partibus liberis 2-10 mm. longis, posterioribus brevioribus 2 mm. longis, anterioribus longioribus 10 mm. longis, antheris 2-locularibus oblongis apice truncatis basi alte 2-lobatis, lobis obtusis glabris, loculis parallelis. Stylus filiformis 3 cm. longus hirsutus apice plus minus incrassatus recurvus, lobo postico obsoleto. Ovarium cylindrico-oblongum apice pauce hirsutum. Capsula linearis glabra 17 mm. longa 4 mm. lata. Semina 4 oblongo-rotundata 3 mm. longa valde complanata hirsuta, retinaculis acutis.

HAB. Taitō: Harōye, leg. KOBAYASHI, Oct. 1907, No. 6011.

Remarkable for the very long erect spikes with acuminate persistent bracts.

Strobilanthes prionophyllus HAYATA sp. nov. Herba, ramis rectis subtetragonis glabris. Folia ovato-oblonga 5-6 cm. longa $2\frac{1}{2}$ -3 cm. lata apice longe acuminata basi subito acuta ad extremitatem longe attenuata ad petiolulum abeuntia margine serrata, serris ascendentibus valde recurvis, membranacea utraque pagine subglabra, petiolis 4 cm. longis; folia variabilissima superiora multo minora. Flores terminales vel axillares solitarii vel geminati, bracteis singulis bracteolis duabus instructi, bracteis minutis linearibus 3 mm. longis 1 mm. latis concavis glabris; bracteolis linearibus apice obtusis glabris 6 mm. longis 1 mm. latis. Calyx glaber rectus alte 2-labiatus, labio posteriore 3-fido, labio anteriore 2-fido, lobis vel segmentis 7-10 mm. longis linearibus 1 mm. latis dorso 1-costatis glabris. Corolla tubuloso-campanulata 3 cm. longa fauce $1\frac{1}{2}$ cm. lata extus glabra; limbus 5-lobatus, lobis subæqualibus late rotundatis 7 mm. latis 5 mm. longis; corolla extus glabra intus subglabra. Stamina didynama, antheris oblongo-linearibus 3 mm. longis 1 mm. latis apice obtusissimis basi 2-lobatis, lobis obtusis glabris, filamentis plus minus hirsutis. Stylus recurvus glaber. Discus cylindricus 1 mm. longus infra ovarium insidens. Ovarium ellipsoideum 2 mm. longum glabrum 1 mm. latum.

HAB. Taitō: Inikufukusha, leg. U. MORI, Dec. 1899, No. 2150.

Near *S. flexicaulis* HAY.; but distinguishable from it in the very sharply serrate leaves.

Strobilanthes rankanensis HAYATA sp. nov. Caulis tenuissimus basi procumbens ad nodos radices emittens, partibus ascendentibus 15 cm. longis gracillimis. Folia opposita ovato-rhomboidea $1\frac{1}{2}$ cm. longa 8 mm. lata apice triangulari-acuta vel obtusa basi subito acuta margine paucè obscureque serrata utraque pagine subglabra vel paucissime hirsuta herbacea, petiolis 5 mm. longis hirsutis. Flores axillares solitarii vel quasi-terminales subsessiles, bracteis nullis, bracteolis duabus instructi; bracteolis linearibus 5 mm. longis $\frac{3}{4}$ mm. latis obtusis plus minus hirsutis. Calyx 2-partitus 7-8 mm. longus, parte superiore 3-fida, parte inferiore 2-fida; lobis linearibus glabris vel paucè hirsutis margine ciliolatis. Corolla sursum campanulata basi tubulosa $2\frac{1}{2}$ cm. longa $1\frac{1}{2}$ cm. lata extus glabra, limbo 5-lobato, lobis subæqualibus triangulari-rotundatis glabris. Stamina 4 didynama, antheris oblongo-linearibus. Discus columniformis 1 mm. longus $\frac{1}{3}$ mm. latus infra ovarium insitus. Ovarium

cylindrico-ellipsoidea glabrum $1\frac{1}{2}$ mm. longum $\frac{1}{3}$ mm. latum; stylus filiformis 2 cm. longus glaber. Capsula 2-valvata 12 mm. longa 4-sperma, retinaculis acutis; semina oblonga $2\frac{3}{4}$ mm. longa $1\frac{1}{4}$ mm. lata adpresso-hirsuta valde complanata.

HAB. Rankanzan, ad 4,600 ped. alt., leg. B. HAYATA, Mai. 1916.

Near *S. javicaulis* HAY.; but differs from it in the very much smaller leaves.

Strobilanthes Tashiroi HAYATA sp. nov. Herba; caulis basi repens ad nodos radicans sursum ascendens, parte ascendenti 25-30 cm. longa, tetragonus subglaber. Folia opposita oblongo-lanceolata vel lanceolata 8-9 cm. longa 3 cm. lata apice acuminata basi subito vel gradatim ad petiolum abeuntia margine obscure et tenuiter serrulata vel subintegra utraque pagine subglabra subtus ad venas tenuiter hirsuta membranacea. Flores racemosi, racemis paucifloratis terminalibus, pedicellis 1-2 mm. longis, bracteis singulis bracteolis duabus instructi, bracteis lineari-spathulatis 13 mm. longis; bracteolis linearibus calycem in longitudine æquantibus 1 cm. longis $1\frac{1}{2}$ mm. latis obtusis hirsutis. Calyx 2-partitus, parte superiore 3-fida, parte inferiore 2-fida, segmentis 13 mm. longis paucè hirsutis. Corolla campanulata 2 cm. longa, limbo 5-lobato. Stamina didynama, filamentis hirsutis. Stylo glabro. Discus 1 mm. longus infra ovarium insitus; ovarium obovoideo-cylindricum glabrum $2\frac{1}{2}$ mm. longum. Capsula 13 mm. longa glabra 4-sperma, retinaculis linearibus 3 mm. longis acuminatis; semina valde complanata $2\frac{1}{2}$ mm. longa brevissime hirsuta $1\frac{1}{3}$ mm. lata.

HAB. Loo-choo: Okinawajima, leg. Y. TASHIRO, Mart. 1887.

Somewhat resembles *S. formosanus* MOORE; but differs from it in the total absence of the bracts in the much narrower linear calyx-lobes and in the much thinner smaller leaves.

Rungia NEES.

Rungia chinensis BENTH. Fl. Hongk. p. 266; DUNN et TUTCHER Fl. Hongk. et Kwangt. p. 200.

HAB. Raisha, leg. U. FAURIE, Mart. 1914, No. 725.

New to the flora of Formosa.

Dicliptera JUSS.

Dicliptera uraiensis HAYATA sp. nov. Herba basi suffrutescens; caulis ramosissimus, ramis gracilibus tenuiter hirsutis. Folia opposita membranacea lanceolata 7 cm. longa $1\frac{1}{2}$ cm. lata apice acuminata ad summum obtusa basi obtusa margine obscure crenata vel undulata utraque pagine tenuiter hirsuta, petiolis $\frac{1}{2}$ cm. longis. Flores quasi-cymosi, cymis terminalibus; bracteæ oppositæ lanceolatæ apice obtusæ basi rotundatæ 10-12 mm. longæ 4 mm. latæ intus glabræ extus hirsutæ margine ciliolatæ flores sessiles 2-4 includentes;

bracteolis triangulari-lanceolatis 2 mm. longis margine ciliolatis. Calyx cylindricus 4 mm. longus paucè ciliolatus alte 5-fidus, lobis linearibus ciliolatis acuminatis. Corollæ tubus $1\frac{1}{2}$ cm. longus 1 mm. latus extus glaber; limbo extus hirsuto 2-labiato, labiis æquiformibus extus hirsutis intus glabris margine ciliolatis obovatis vel oblongis 8 mm. longis 3-5 mm. latis apice rotundatis obscure brevissime 2-3-lobatis. Stamina 2 labio breviora, filamentis retrorse hirsutis, antheris 2-ocularibus discretis, loculo altero superiore, altero inferiore affixo, lineari 1- $1\frac{1}{2}$ mm. longo glabro. Stylus filiformis apice 2-lobatus. Ovarium cylindricum $1\frac{1}{2}$ mm. longum glabrum.

HAB. Uraisha, leg. S. SASAKI.

Near *D. japonica*; but differs from it in the much narrower leaves and in the lanceolate bracts.

Labiatae.

Ocimum LINN.

Ocimum Tashiroi HAYATA Ic. Pl. Formos. VIII. p. 109. Caulis tetragonus erectus, ramulis gracilibus pubescentibus. Folia inferiora non vix superiora ovata 3 cm. longa 2 cm. lata apice triangulari-acuminata basi subito triangulare acuta ad extremitatem ad petiolum attenuata margine præter acumen acute serrata, serris triangularibus haud vel vix recurvis utraque pagine subglabra membranacea, petiolis 2 cm. longis. Racemi terminales vel versus apicem ramorum paniculatim dispositi 5-6 cm. longi; floribus ad nodos racemi fasciculatim dispositis, fasciulis 3-4 floratis alternis 1-bracteatis, bracteis ovatis 1 mm. longis totiusque latis apice digitatim serratis hirsutis; pedicellis 1 mm. longis hirsutis. Calyx plus minus declinatus tubuloso-campiculatus $1\frac{1}{2}$ mm. longus 1 mm. latus patento-hirsutus et dense glanduloso-punctatus, lobo postico magno subrotundato apice acuto $\frac{2}{3}$ mm. longo, lobis lateralibus linearibus circ. 1 mm. longis margine ciliatis, lobis anticis linearibus longissimis 1 mm. longis ciliolatis; calyx intus glaber. Corollæ tubus 2 mm. longus calyce æquilongus glaber $\frac{2}{3}$ mm. latus; limbus 2-labiatus, labio postico 3-lobato, lobo postico dorso hirsuto rotundato, lobis lateralibus conformibus, labio antico oblongo 1 mm. longo obtuso glabro. Stamina didynamia filamentis longioribus $\frac{2}{3}$ mm. longis, antheris confluentibus 1-ocularibus.

Discus in glandulam 1 ovario breviorum tumens. Stylus ρ -formiter recurvus glaber apice 2-lobatus. Nuculæ obovoideæ glabræ.

HAB. Holisha, leg. Y. TASHIRO, Mart. 1896 (No. 9, A.).

Proteaceæ.

Helicia LOUR.

Helicia hainanensis HAYATA sp. nov. Arborescens; rami et ramuli glabri, lenticellis nullis. Folia alterna sed approximata quasi-verticillatimque disposita chartacea vel tenuiter coriacea ovato-oblanccolata vel oblanceolata 12-17 cm. longa 5-7 cm. lata apice caudato-acuta ad summum obtusa et ad centrum apiculata basi cuneato-attenuata ad extremitatem obtusissima, margine remotissime serrulata utraque pagine glabra, costis venis venulisque utraque pagine elevatis grosse reticulatis, sessilia. Racemi terminales vel axillares simplices haud ramosi cum pedunculis 2 cm. longis 15-20 cm. longi cum floribus 4 cm. lati glabri, pedicellis glabris 3 mm. longis divaricatis. Segmenta calycis 4 linearia spiraliter recurvata $1\frac{1}{2}$ cm. longa $\frac{1}{2}$ mm. lata apice plus minus dilatata, partibus dilatatis $3\frac{1}{2}$ mm. longis $1\frac{1}{4}$ mm. latis apice acutis, glabra. Stamina 4 sessilia, antheris glabris lineari-oblongis 3 mm. longis $\frac{3}{8}$ mm. latis apice crasse apiculatis basi obtusis; glandulæ 5 cum segmentis calycis alternæ rotundatæ $\frac{2}{3}$ longæ totiusque late glabræ crassiusculæ. Ovarium oblongo-ovoideum 1 mm. longum breve stipitatum apice attenuatum, stylo filiformi recto glabro apice clavato-incrassato stigmatoso.

HAB. Hainan, leg. S. KONISHI, Juli. 1909.

Near *Helicia robusta* WALL. (HOOK. f. Fl. Brit. Ind. V. p. 191); but differs from it in the smaller and thinner leaves.

Elæagnaceæ.

Elæagnus LINN.

Elæagnus buisanensis HAYATA sp. nov. (Fig. 31-I.) Frutex. Rami et ramuli fusco-purpurascens. Folia oblongo-obovata vel -ovata vel oblanceolata tenuiter coriacea 5 cm. longa 18-20 mm. lata apice acuta vel subito acuminata basi acuta vel obtusa margine integra supra glabra subtus densiuscule lepidota, lepidibus $\frac{1}{4}$ mm. in diametro fusco-rubrescentibus. Fl. \uparrow : ignoti. Fl. \uparrow : Ovarium cum calycis tubo lineari-ellipsoideum 6 mm. longum $2\frac{1}{2}$ mm. latum dense lepidotum; limbo obconico-tubuloso 9 mm. longo 5 mm. lato apice 4-lobato, lobis triangularibus $2\frac{1}{2}$ mm. longis totiusque latis apice acutis extus dense lepidotis intus hirsutis. Stamina 4, antheris sessilibus.

HAB. Buisan, leg. S. SASAKI, Mart. 1910.

Near *E. glabra* THUNB., but differs from it in the much smaller oblong leaves.

Elæagnus convexolepidota HAYATA sp. nov. (Fig. 31-II.) Frutex, rami et ramuli fulvo-cinerascentes. Folia ad ramulos brevissimos hornotinos dense disposita decidua chartacea obovata vel oblonga 2-3 cm. longa 12-15 mm. lata apice acuta vel rotundata basi acuta vel obtusa margine integra supra fusco-nigricantia pauca stellato-hirsuta subtus densissime argenteo-lepidota, petiolis 3-4 mm. longis. Flores ad axillas foliorum hornotinorum 2-3-glomerati, pedicellis 3-4 mm. longis. Calycis tubus supra constrictionem obconico-campanulatus 4-5 mm. longus 2-3 mm. latus, limbo 4-lobato, lobis triangularibus $2\frac{1}{2}$ mm. longis totiusque latis apice acutis.

HAB. Musha: Oiwake, ad 7,500 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *E. Odhami*, but differs from it in the convex scales on the under surface of the leaves.

Elæagnus daibuensis HAYATA sp. nov. (Fig. 31-V.) Frutex. Folia oblonga vel oblongo-ovata coriacea 8 cm. longa $3\frac{1}{2}$ cm. lata apice acuta vel acuminata basi obtusa vel rotundata margine integra supra pauca subtus dense lepidota, petiolis 1-1 $\frac{1}{2}$ cm. longis. Flores quasi-umbellati, umbellis 3-4-floratis, pedicellis 1-2 mm. longis. Calyx supra constrictionem 7 mm. longus, tubo 3-4 mm. longo $2\frac{1}{2}$ mm. lato, limbo 4-lobato, lobis triangularibus 2 mm. longis totiusque latis apice acutis.

HAB. Daibusan, leg. S. NAKAI, Dec. 1912.

Near *Elæagnus rotundata*, but distinguishable from it in the much more adpressed scales on the under surface of the leaves.

Elæagnus erosifolia HAYATA sp. nov. (Fig. 31-IV.) Frutex, rami et ramuli dense lepidoti fuscentes. Folia oblongo-lanceolata vel lanceolata 7 cm. longa $2\frac{1}{2}$ cm. lata apice triangulari-acuta basi obtusa margine erosa tenuiter coriacea supra glabra subtus densissime lepidota, lepidibus fulvo-rubrescentibus, venis lateralibus supra haud elevatis subtus leviter elevatis gracillimis, petiolis 1 cm. longis. Flores quasi-umbellati, umbellis axillaribus 8-10-floratis, pedicellis 3 mm. longis gracilibus. Calycis supra constrictionem limbus 8-9 mm. longus apice 4-lobatus, lobis oblongo-triangularibus $3\frac{1}{2}$ mm. longis $2\frac{1}{2}$ mm. latis apice acutis intus hirsutis. Stamina 4.

HAB. Shatōzan, Ōkaseki.

Near *Elæagnus glabra* THUNB.; but differs from it in the leaves which

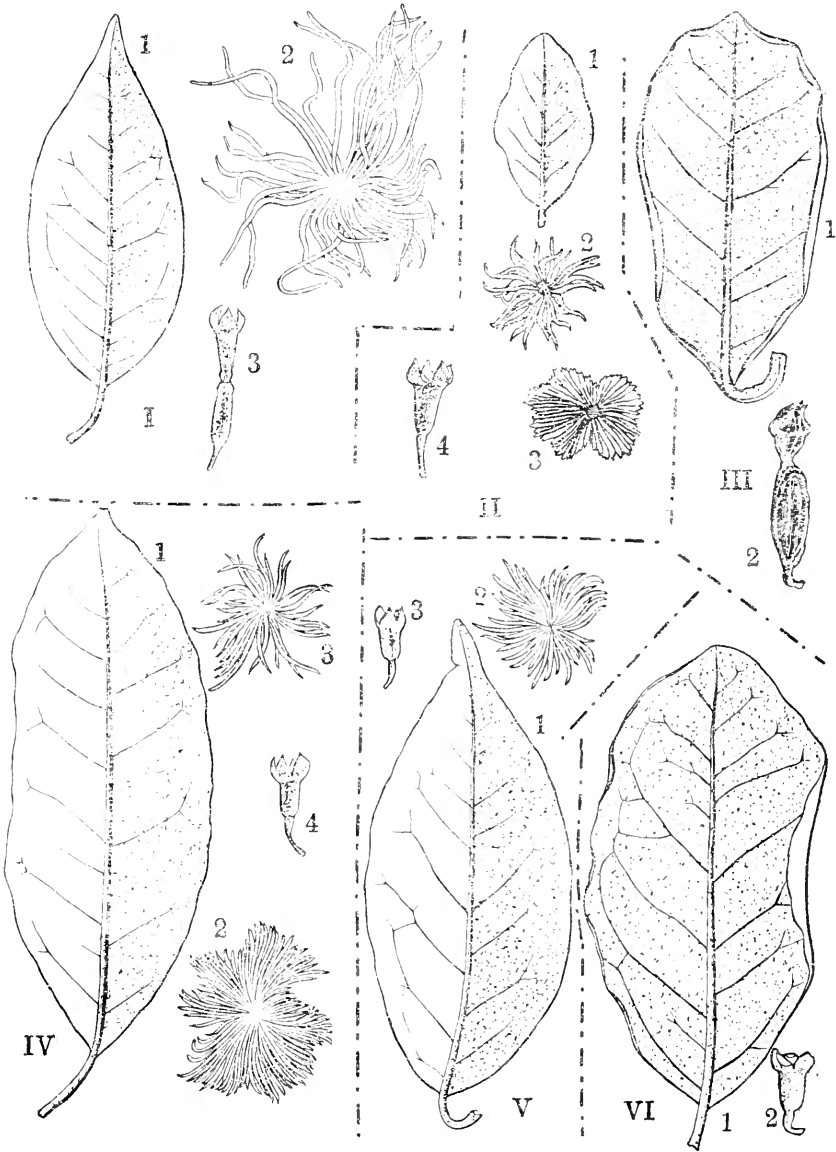


Fig. 31; I, *Eleagnus buisanensis* HAYATA; 1, a leaf; 2, a hair on the under surface of a leaf; 3, a flower. II, *Eleagnus convexolepibota* HAYATA; 1, a leaf; 2, a hair on the upper surface of a leaf; 3, a hair on the lower surface of a leaf; 4, a flower. III, *Eleagnus kotoensis* HAYATA; 1, a leaf; 2, a flower. IV, *Eleagnus erosifolia* HAYATA; 1, a leaf; 2, a colored hair on the under surface of a leaf; 3, a colorless hair on the same leaf; 4, a flower. V, *Eleagnus daiyuensis* HAYATA; 1, a leaf; 2, a hair on the under surface of a leaf; 3, a flower. VI, *Eleagnus formosana* NAKAI; 1, a leaf; 2, a flower.

are crenate on the margin.

Elæagnus grandifolia HAYATA sp. nov. Frutex scandentissimus, ramuli fulvo-cinerascentes. Folia magna tenuiter coriacea ovato-oblonga vel oblongo-lanceolata 18 cm. longa $7\frac{1}{2}$ cm. lata apice subito acuta vel acuminata basi obtusa rotundata vel tenuiter cordata margine subintegra, petiolis 5–10 mm. longis. Calycis tubus supra constrictionem 9 mm. longus extus dense lepidotus apice 4-lobatus, lobis oblongo-triangularibus 3 mm. longis acutis.

HAB. Taiheizan: Kamiyodani, Mai. 1917, leg. B. HAYATA.

Remarkable for its very large leaves.

Elæagnus kotoensis HAYATA (Fig. 31-III.) Frutex; rami validiusculi. Folia alterna coriacea obovato-oblonga vel oblonga $5\frac{1}{2}$ – $6\frac{1}{2}$ cm. longa $2\frac{1}{2}$ – $3\frac{1}{2}$ cm. lata apice obtusissima basi obtusa margine integerrima deorsum recurva supra glabra minute remoteque punctata subtus densissime lepidota, petiolis $1\frac{1}{2}$ cm. longis. Fl. ♂: ignoti. Fl. ♀: calycis tubus apice constrictus; limbus obconico-campanulatus 8 mm. longus utraque pagine dense depresso-hirsutus, pilis stellatis, medio sursum 4-lobatus, lobis $3\frac{1}{2}$ mm. longis $2\frac{1}{2}$ mm. latis apice acutis. Stamina 4 basi loborum cum lobis alternatim disposita subsessilia, antheris oblongo-linearibus $1\frac{1}{2}$ mm. longis $\frac{2}{3}$ mm. latis apice emarginatis; lobi calycis utraque pagine dense hirsuti; sed tubo limbi calycis extus hirsuto intus glabro.

HAB. Kōtōshō, leg. Y. KIKUCHI, Dec. 1909.

Near *E. pungens* BL.; but differs from it in the very much depressed scales on the under surface of the leaves.

Elæagnus longidrupa HAYATA sp. nov. (Fig. 32-I.) Frutex scandentissimus, ramis et ramulis longissimis rectis. Folia tenuiter coriacea vel chartacea lineari-lanceolata vel lanceolata apice acuminata basi acuta vel cuneata margine subintegra supra glabra subtus densiuscule lepidota, petiolis 1 cm. longis. Calycis tubus supra constrictionem 4 mm. longus, limbo 4-lobato, lobis oblongo-triangularibus 4 mm. longis $1\frac{1}{2}$ –2 mm. latis apice acutis. Drupa cylindrico-elliptica $1\frac{1}{2}$ cm. longa 5 mm. lata lepidota.

HAB. Arisan: Funkiko et Heishana, leg. B. HAYATA, Mart. 1914.

Near *E. morrisonensis* HAY., but distinguishable from it in the much longer lanceolate leaves with always acute base.

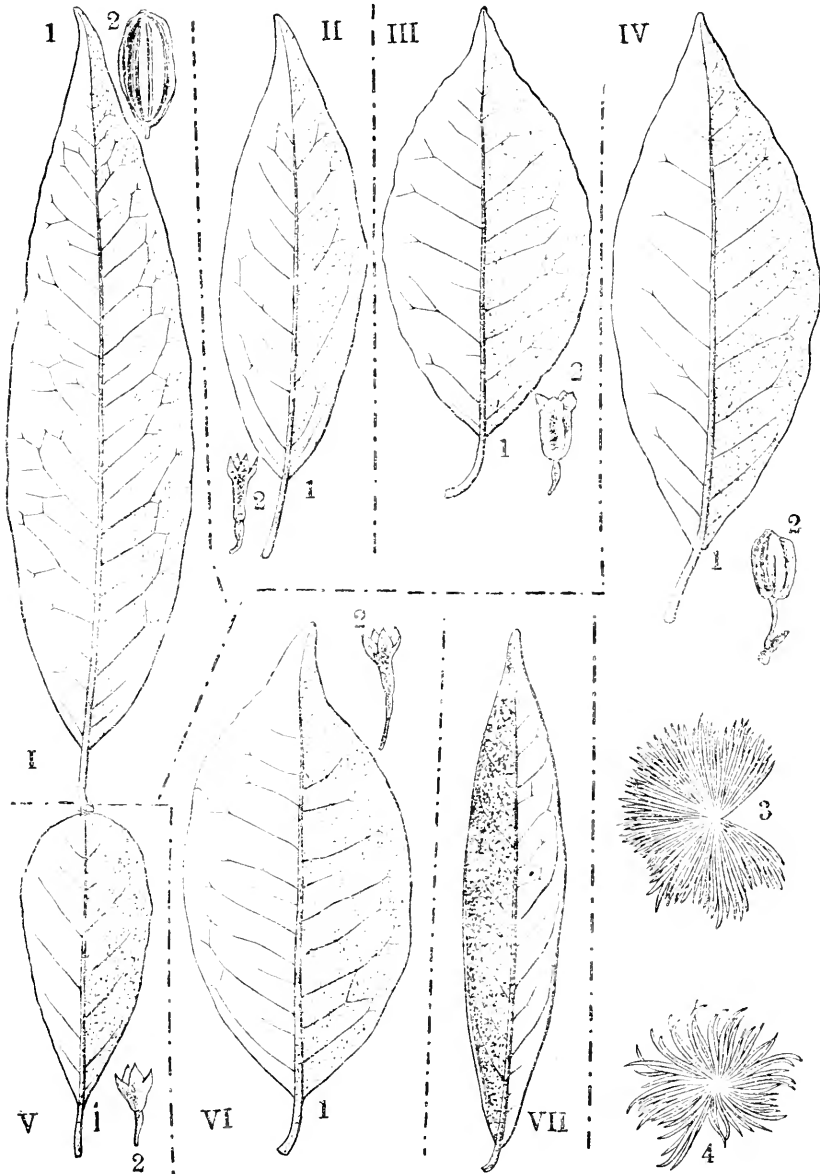


Fig. 32; I, *E. longidruqa* HAY.; 1, a leaf; 2, a drupe. II, *E. norrisouensis* HAY.; 1, a leaf; 2, a flower. III, *E. Thunbergii*; 1, a leaf; 2, a flower. IV., *E. oiwakensis* HAY.; 1, a leaf; 2, a drupe; 3, a colored hair on the under surface of a leaf; 4, a colorless hair on the same surface. V., *E. Oldhami* HEMSL.; 1, a leaf; 2, a flower. VI, *E. paucilepidota* HAY.; 1, a leaf; 2, a flower. VII, *E. nokoensis* HAY.

Elæagnus nokoensis HAYATA sp. nov. (Fig. 32-VII.) Frutex. Rami et ramuli densissime lepidoti. Folia oblanceolata vel lineari-oblanceolata 9 cm. longa 2 cm. lata apice subito acuminata basi obtusissima margine subintegra supra glabra, venis nervisque supra distincte elevatis subtus haud distinctis, pagine densissime lepidota, lepidibus albicantibus, petiolis 7 mm. longis. Fructus ellipsoideo-ovoidens 1 cm. longus, pedicellis 1 cm. longis.

HAB. Nōkōzan, leg. R. KANEHIRA et S. SASAKI, Mai. 1916, (No. 56).

Near *E. morrisonensis* HAY., but differs from it in the oblanceolate leaves with elevated veins on the upper surface.

Elæagnus oiwakensis HAYATA sp. nov. (Fig. 32-IV.) Frutex. Rami fuscentes minute hirsuti. Folia oblonga vel oblongo-lanceolata 7-8 cm. longa 3-3½ cm. lata apice acuminata vel acuta basi obtusa margine subintegra supra glabra subtus densissime lepidota, (folia hornotina subtus fulvo-rubescientia); petiolis 1-1½ cm. longis. Flores quasi-umbellati, umbellis 3-4-floratis. Calyx supra constrictionem 8 mm. longus, tubo 5 mm. longo, limbo 4-lobato, lobis triangularibus 2½ mm. longis totiusque latis apice acutis extus lepidotis intus hirsutis.

HAB. Gōkwanzan: Oiwake, ad 7,000 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *E. morrisonensis* HAY., but differs from it in the brownish red scales on the under surface of the young leaves.

Elæagnus paucilepidota HAYATA sp. nov. (Fig. 32-VI.) Frutex. Rami glabri. Folia elliptica oblonga vel obovato-oblonga 7-9 cm. longa 4-5 cm. lata apice acuta basi obtusa margine subintegra tenuiter coriacea supra glabra subtus densiuscule lepidota, lepidibus rotundatis haud superpositis haud imbricatis dispositis, venis lateralibus gracillimis, petiolis 1-1½ cm. longis. Fl. quasi-umbellati, umbellis axillaribus 5-6-floratis, pedicellis 5 mm. longis. Calycis tubus cum parte ovarifera 6 mm. longus apice dilutus 4-lobatus, lobis triangulari-oblongis 3 mm. longis 2½ mm. latis apice acutis extus dense lepidotis intus dense hirsutis. Stamina 4, antheris sessilibus.

HAB. Shintiku: Goshizan, leg. T. KAWAKAMI, Dec. 1905.

Near *E. glabra* THUNB.; but differs from it in the obovate or oblong leaves with a few scattered scales on the under surface.

Euphorbiaceæ.

Securinega COMM.

Securinega fluggeoides MUELL. ARG.; HAYATA Gen. Ind. p. 68.

HAB. Kōtōshō; Taito.

Agynelia VENT.

Agynelia bacciformis A. JUSS.; HOOK. f. Fl. Brit. Ind. V. p. 285;

WIGHT Ic. Pl. t. 1893.

Phyllanthus bacciformis LINN.; BENTH. Fl. Hongk. p. 310.

HAB. Anping, leg. T. SŌMA, Oct. 1914.

New to the flora of Formosa.

Phyllanthus LINN.

Phyllanthus oligospermus HAYATA sp. nov. Frutex. Rami graciles, ramulis glabris gracillimis rubro-purpurascensibus toto foliatis. Folia oblonga vel elliptica 2-3 cm. longa 10-13 mm. lata apice obtusissima ad centrum summi breve minuteque cuspidata basi cuneata tenuiter chartacea basi cuneata acuta margine integra utraque glabra subtus pallida plus minus glauca, petiolis 2 mm. longis. Flores monœcii 4-5 ad axillas foliorum congesti. Fl. ♂, pedicellis gracilibus 4 mm. longis stipitatis. Sepala 5-4 oblonga vel obovata exteriora concava interiora plana 2 mm. longa 1½ mm. lata apice obtusa vel rotundata glabra. Stamina 5-3 ad centrum floris congesta, filamentis liberis glabris 1½ mm. longis, antheris reniformibus apice basique marginatis. Rudimentum ovarii 0. Discus minutus lobatus vel ad nullum reductus. Fl. ♀: pedicelli validi 3 mm. longi glabri. Sepala 5-6 oblongo-lanceolata 2½ mm. longa 2 mm. lata apice subito cuspidata basi obtusa margine sursum integra vel erosa. Ovarium ovideum 1½ mm. longum 1¼ mm. latum glabrum apice ad stylum albeum; styli parte basilari haud fida ¾ mm. longa, parte superiore 3-fido, ramis patentissimis 2 mm. longis gracillimis recurvis. Bacca globosa 8 mm. in diametro 4-sperma. Semina quadrantiformia 3 mm. longa 2½ mm. lata.

HAB. Taikokan, leg. Y. SHIMADA; Sankakuyū, leg. T. SŌMA.

Near *P. reticulata*, but differs from it in the much larger flowers.

Phyllanthus takaensis HAYATA sp. nov. Frutex. Rami graciles, ramulis gracillimis toto foliiferis. Folia oblonga obovata oblongo-lanceolata $1\frac{1}{2}$ –2 cm. longa 7–8 mm. lata apice obtusissima basi cuneata vel obtusa margine integra utraque glabra tenuiter chartacea subtus pallidissima, petiolis 1–2 mm. longis, stipulis triangulari-lanceolatis 1 mm. longis. Flores ad axillas foliorum 5–10–congesti, pedicellis gracillimis 8–10 mm. longis glabris. Fl. ♂: sepala 5 inæqualia, exteriora oblonga 2 mm. longa $1\frac{1}{4}$ mm. lata apice rotundata basi haud contracta concava glabra; stamina 5 fere connata. Fl. ♀ ignoti.

HAB. Takao: Ape's Hill, leg. B. HAYATA, Aprili. 1917.

Near *Phyllanthus reticulatus* POIR., but differs from it in the much smaller leaves.

Glochidion FORST.

Glochidion Arnottianum MUELL. ARG. in *Linnaea* XXXII. p. 60; FORBES et HEMSLE. *Ind. Fl. Sin.* II. p. 424.

Glochidion hirsutum HAYATA *Gen. Ind. Fl. Formos.* p. 67. (non MUELL. ARG.)

HAB. Suisha, Taihoku.

NOTE: Fruits pale green or slightly purple; seeds scarlet, shining; male flowers pale-green.

Glochidion chademenosocarpum HAYATA sp. nov. Frutex; ramuli gracillimi glabri. Folia alterna subdistiche disposita chartacea oblonga vel obovata 5–8 cm. longa $2\frac{1}{2}$ –4 cm. lata apice obtusissima basi oblique acuta margine integerrima utraque pagine glaberrima sessilia vel brevissime petiolata, petiolis 2–3 mm. longis, stipulis cuspidato-triangularibus $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis glabris crassiusculis. Flores ♂ et ♀ intermixti ad axillas densissime glomeratim dispositi. Fl. ♂: pedicellis gracillimis 1 cm. longis tenuiter hirsutis; sepala 6, exteriora majora obovata $2\frac{1}{2}$ mm. longa $1\frac{1}{2}$ mm. lata apice obtusissima basi cuneata glabra, interiora angustiora $2\frac{1}{2}$ mm. longa 1 mm. lata; stamina 3 toto connata, appendicibus liberis, antheris linearibus. Fl. ♀ perfecte sessiles; sepala 6 subæqualia extus glabra intus tenuiter hirsuta basi erecta medio sursum extrorse patentia oblanceolata $1\frac{1}{2}$ mm. longa $\frac{1}{2}$ mm. lata apice obtusa

basi cuneata; ovarium depresso-globosum $\frac{1}{2}$ mm. longum 1 mm. latum, stylo cum stigmate 1 mm. longo columniformi $\frac{2}{3}$ mm. crasso apice circ. 8-sulcato.

HAB. Inter Ronō et Kōsenpo, leg. B. HAYATA, Oct. 1917.

Near *G. Fortunei*, but differs from it in the much densely clustered and perfectly sessile female flowers.

Glochidion eriocarpum CHAMP.; BENTH. Fl. Hongk. p. 314; FORBES et HEMSL. Ind. Fl. Sin. II p. 424.

HAB. Tuisshū: Daitonpo; Giochi; Suiteiryō.

Glochidion Fortunei HANCE; HAYATA Gen. Ind. p. 66.

HAB. Ape's Hill, leg. B. HAYATA, Aprili. 1917.

NOTE: Flowers pale yellow; fruits violet-red; seeds orange-red.

Glochidion hongkongense MUELL. ARG.; HAYATA Gen. Ind. p. 67.

Glochidion zeylanicum HAYATA Gen. Ind. p. 67. (non A. JUSS.)

HAB. Suisha, Kelung, Taitō, Liukiu.

NOTE: Male flowers pale yellow; fruits pale green; seeds scarlet-red, shining.

Glochidion hypoleucum HAYATA sp. nov. Frutex; rami et ramuli graciles recti plus minus hirsuti. Folia alterna subdistiche disposita oblonga vel elongato-elliptica $4\frac{1}{2}$ - $6\frac{1}{2}$ cm. longa 2 - $2\frac{1}{2}$ cm. lata apice obtusa basi obtusissima vel rotundata margine integra basi plus minus obliqua vel aequalia supra glabra subtus tenuissime hirsuta chartacea subtus pallidissima, petiolis 3 mm. longis. Flores ad axillas glomeratim siti, fl. ♂ et ♀ intermixti. Fl. ♂ pedicellati, pedicellis gracillimis 6 mm. longis tenuiter hirsutis; sepalia 6, exteriora majora oblonga 3 mm. longa 2 mm. lata apice obtusissima crassiuscula glabra, interiora minora $2\frac{1}{2}$ mm. longa $1\frac{1}{2}$ mm. lata; stamina 3 toto connata sessilia, appendicibus liberis acutis, cum appendicibus $1\frac{1}{2}$ mm. longa, antheris 1 mm. longis elongato-ovatis. Fl. ♀: sessiles vel breve pedicellati, pedicellis 1-2 mm. longis erectis hirsutis; sepalia 6 vel 3, inæqualia hirsuta, majora obovata 1 mm. longa; ovarium hirsutum cum stigmate obconico-cylindricum 2 mm. longum, stigmate validissimo incrassato $1\frac{1}{2}$ mm. longo 1 mm. lato basi hirsuto sursum glabro apice 3-lobato.

Glochidion bicolor HAYATA Gen. Ind. Fl. Formos. 67. (non MUELL. ARG.)

HAB. Holisha: Giochi, leg. B. HAYATA, Aprili. 1916.

Near *G. sinicum* HOOK. et ARN., but differs from it in the much longer obconical stigmata.

Glochidion kotoense HAYATA sp. nov. Frutex; rami et ramuli graciles erecti recti glabri. Folia alterna tenuiter coriacea ovato-oblonga vel oblonga valde obliqua 10 cm. longa $3\frac{1}{2}$ –4 cm. lata apice acuminata vel cuspidato-acuminata ad summum obtusa et apiculata basi obliquissima, latere superiore acuta latere inferiore rotundata, margine integra utraque pagine glabra, petiolis 5 mm. longis glabris. Capsula depresso-globosa valde depressa 7 mm. in diametro 4 mm. longa glabra leviter lobata.

HAB. Kōtōshō.

Near *G. fagifolium*, but differs from it in the much more oblique and acuminate leaves.

Glochidion kusukusense HAYATA sp. nov. Frutex; ramuli graciles erecti recti glabri. Folia alterna chartacea lanceolata 4– $6\frac{1}{2}$ cm. longa $1\frac{1}{2}$ –2 cm. lata apice acuminata ad summum breve apiculata basi acuta plus minus obliqua margine integra utraque glabra, petiolis 5 mm. longis. Flores ♂ ad axillas foliorum glomeratim dispositi, pedicellis gracillimis 5 mm. longis glabris; sepala 6 inæqualia, exteriora majora oblonga $1\frac{1}{2}$ mm. longa 1 mm. lata apice acuta glabra, interiora minora; stamina 3 toto connata apiculata $\frac{2}{3}$ mm. longa.

HAB. Kusukusu, leg. B. HAYATA et S. SASAKI, Juli. 1912.

Near *Glochidion Wrightii* BENTH.; but differs from it in the not very oblique leaves and in the much longer pedicels of male flowers.

Glochidion sphærostigmum HAYATA sp. nov. Frutex; rami et ramuli graciles plus minus hirsuti. Folia alterna subdistiche disposita ovata vel ovato-lanceolata chartaceo-coriacea plus minus obliqua 9–10 cm. longa 3– $3\frac{1}{2}$ cm. lata apice acuminata basi oblique acuta vel rotundata margine integra utraque pagine glabra, petiolis 5 mm. longis tenuiter alatis. Flores ♀ ad axillas glomeratim vel umbellatim dispositi, pedunculis umbellæ 4 mm. longis glabris, pedicellis florum 4 mm. longis rectis glabris; sepala 6 subglabra inæqualia, exteriora majora triangulari-rotundata 1 mm. longa totiusque lata apice acuta, interiora oblonga acuta 1 mm. longa $\frac{1}{2}$ mm. lata. Ovarium globosum hirsutum $1\frac{1}{2}$ mm. longum totiusque latum, stigmate sessili depresso

tenuiter 5-6-lobato brevissimo. Fructus depresso-globosus valde depressus 6-8 mm. latus 3-4 mm. longus subglaber.

HAB. Shintiku : Shinpo : Suisha ; (typus !) Kankaukei, Hokuto.

Near *Glochidion hongkongense* ; but differs from it in the much acuminate leaves with acute base, and in the hirsute ovaries.

Glochidion suishænse HAYATA sp. nov. Frutex ; ramuli graciles glabri. Folia alterna subdistiche disposita tenuiter coriacea $4\frac{1}{2}$ - $8\frac{1}{2}$ cm. longa 3- $4\frac{1}{2}$ cm. lata ovata obovata vel oblonga apice obtusa vel acuta basi cuneata vel obtusa vel rotundata integra utraque pagine glabra, petiolis 3 mm. longis. Flores ad axillas glomeratim dispositi, fl. ♂ et ♀ intermixti. Fl. ♂ : pedicellis glabris gracilibus ; sepala 6 inæqualia obovato-cuneata, exteriora majora 3 mm. longa $1\frac{1}{2}$ mm. lata apice obtusissima basi cuneata glabra, interiora minora $2\frac{1}{2}$ mm. longa basi cuneata 1 mm. lata apice obtusissima ; stamina 3 toto connata apice breve apiculata. Fl. ♀ : breve pedicellati, pedicellis 1- $1\frac{1}{2}$ mm. longis glabris ; sepala 6, exteriora majora oblonga 2 mm. longa $1\frac{1}{2}$ mm. lata apice obtusa obscure denticulata vel integra glabra, interiora minora angustiora glabra 2 mm. longa $\frac{2}{3}$ mm. lata margine minute ciliolata denticulata vel integra. Ovarium depresso-globosum glabrum 1 mm. latum $\frac{2}{3}$ mm. longum, stylo obconico-cylindrico 2 mm. longo glabro apice clavato-truncato multi-lobulato. Fructus depresso-globosus $1\frac{1}{2}$ cm. in diametro 8 mm. latus profunde 6-sulcatus glaber. Semina rubra.

HAB. Suisha ; Hakku, Hōgō.

Near *G. Fortunei* HANCE ; but distinguishable from it in the much larger oblong leaves, and in the much larger capsules.

NOTE : Leaves fresh green shining above, costa and veins elevated above ; male flower pale green-yellow ; capsules greenish more or less purple, seeds red.

Antidesma LINN.

Antidesma acutisepalum HAYATA sp. nov. Frutex ; rami et ramuli graciles lenticellis minutis notati tenuiter hirsuti recti. Folia lanceolata 9 cm. longa 2 cm. lata apice acuminatissima basi obtusa margine integra utraque pagine glabra, sed subtus ad costas tenuissime hirsuta chartacea vel tenuiter

coriacea, petiolis 5 mm. longis tenuiter hirsutis, stipulis lineari-lanceolatis hirsutis $2\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis acuminatis recurvis. Flores dioecii spicati; spicis breve hirsutis 2-3 cm. longis, floribus pedicellatis basi 1-bracteatis, bracteis lanceolatis acuminatis glabris 1 mm. longis. Sepala 4-5 lanceolato-ovata glabra. Stamina 4. Rudimentum ovarii minutum glabrum.

HAB. Giyochi, leg. B. HAYATA, Aprili. 1916.

Near *A. japonicum*; but distinguishable from it in the much acuter sepals and in the presence of rudimental ovaries.

Antidesma hiiranense HAYATA sp. nov. Frutex; rami et ramuli graciles. Folia obovata vel oblongo-obovata 4-5 cm. longa 2 cm. lata apice plus minus cuspidata ad summum obtusa basi cuneata margine integra utraque glabra sed subtus ad costas plus minus hirsuta tenuiter coriacea, petiolis 3 mm. longis hirsutis, stipulis caducissimis ignotis. Flores dioecii; spicæ fl. ♂ terminales vel rarius axillares plus minus ramosæ vel simplices. Fl. ♂ pedicellati, pedicellis basi 1-bracteatis, bracteis ovatis 1 mm. longis laceratis vel 3-fidis margine subciliatis. Sepala 4. Stamina 4. Flores ♀ spicati, spicis terminalibus simplicibus, floribus ignotis.

HAB. Hiiranzan, leg. B. HAYATA et S. SASAKI, Juni. 1912.

Near *A. japonicum*, but differs from it in the much thicker leaves which are obovate, shortly caudate and obtuse at the apex.

Antidesma rotundisepalum HAYATA sp. nov. Frutex; rami et ramuli minute hirsuti validi plus minus cinerascens lenticellis minutis notati. Folia oblonga vel ovato-oblonga $6\frac{1}{2}$ - $7\frac{1}{2}$ cm. longa $3\frac{1}{2}$ cm. lata apice acuminata vel triangulari-acuta ad summum obtusa ad centrum breve apiculata basi obtusa margine integra tenuiter chartacea, venis venulisque utraque pagine distincte elevatis, utraque pagine glabra sed subtus ad costas minute hirsuta, petiolis 3-4 mm. longis minute hirsutis, stipulis lineari-lanceolatis 5 mm. longis $1\frac{1}{2}$ mm. latis hirsutis. Flores dioecii spicati, spicis terminalibus vel quasiterminalibus solitariis vel geminatis; spicis fl. ♂ simplicibus vel paucè ramosis gracillimis suberectis 7-8 cm. longis hirsutis, sessilibus; floribus pedicellatis, pedicellis hirsutis 1 mm. longis basi bracteis singulis instructis, bracteis oblongo-lanceolatis 1 mm. longis hirsutis. Fl. ♂: sepala 4 rotundato-ovata $\frac{2}{3}$ mm. lata $\frac{1}{2}$ mm. longa extus hirsuta apice triangulari-acuta; stamina 4, filamentis glabris

$\frac{2}{3}$ mm. longis distinctis, antheris 2-ocularibus divaricatis, loculis globosis, connectivis reniformibus glabris. Rudimentum ovarii minutum. Discus magnus pulviniformis incrassatus lobulatus inter stamina expansus. Spicæ fl. ♀ terminales rectæ erectæ solitariae subsimplices minute hirsutæ, floribus pedicellatis, pedicellis 1 mm. longis basi 1-bracteatis, bracteis 1 mm. longis hirsutis $\frac{1}{2}$ mm. latis. Fl. ♀: sepala 5 inæqualia, exteriora elongato-triangularia glabra $\frac{2}{3}$ mm. longa $\frac{1}{2}$ mm. lata apice acuto-obtusa basi haud contracta intus basi pectinato-hirsuta. Ovarium glabrum oblique ovoideum 1 mm. longum $\frac{2}{3}$ mm. latum, stigmate 3-fido, lobis patentissimis $\frac{1}{4}$ mm. longis. Achænium oblique lentiforme biconvexum 2-4 mm. longum 3 mm. latum apice rostratum facie muricatum.

HAB. Kōshūn: Taiselseki, leg. B. HAYATA, Juni. 1912.

Near *A. japonicum*, but differs from it in the rounded lobes of the calyx of the male flowers.

Mallotus LOUR.

Mallotus ricinoides MUELL. ARG.; HEMSL. Ind. Fl. Sin. II. p. 442.

HAB. Hainan, leg. S. KONISHI, Juni. 1909. No. 82.

Macaranga THOUARS.

Macaranga Henricorum HEMSL. Ind. Fl. Sin. II. p. 442.

HAB. Hainan, leg. S. KONISHI.

Acalypha LINN.

Acalypha kotoensis HAYATA sp. nov. Suffrutescens. Ramuli apice plus minus hirsuti versus apicem foliiferi. Folia longe petiolata cordata 11 cm. longa $7\frac{1}{2}$ cm. lata apice cuspidato-acuminata basi cordata margine serrulata, serrulis ascendentibus obtusis, 5-7 nervia tenuiter chartacea supra plus minus scabra subtus plus minus hirsuta, petiolis 8-10 cm. longis adpresse hirsutis, stipulis lineari-lanceolatis 12 mm. longis $1\frac{1}{2}$ mm. latis hirsutis. Fl. dioecii. F. ♀: dense spicati; spicis ad axillas foliorum superiorum insitis solitariis 5-6 cm. longis, floribus sessilibus 1-bracteatis bracteis late reniformibus 4-5 mm. latis 3 mm. longis margine dentatis extus hirsutis intus glabris. Sepala 3-4 inæqualia rhombica $\frac{2}{3}$ mm. longa margine ciliolata intus glabra extus hirsuta

apice acutis. Capsula 3-coeca, coccis $1\frac{1}{2}$ mm. longis 1 mm. latis hirsutis. Semina oblique ovoidea lævia $1\frac{1}{4}$ mm. longa $\frac{2}{3}$ mm. lata.

HAB. Kōtōshō, leg. MIYAKE, Sept. 1899.

Near *A. akoensis* HAY.; but differs from it in the much smaller bracts.

Acalypha longe-acuminata HAYATA sp. nov. Frutex; ramuli erecti recti, pilis patentibus, conspersi sulcati. Folia longe petiolata ovata vel ovato-cordata 15-20 cm. longa 8-12 cm. lata apice caudato-acuminata basi tenuiter cordata tenuiter chartacea margine serrulata, serrulis obtusis vel breve apiculatis ascendentibus, 5-nervia utraque pagine tenuiter hirsuta, petiolis 5-10 cm. longis gracillimis patento-hirsutis, stipulis linearibus 12 mm. longis 2-3 mm. latis acuminatis extus villosis intus glabris. Flores monoecii spicati, spicis fl. ♂ gracillimis axillaribus 20 cm. longis suberectis, rhachibus dense villosis, floribus breve pedicellatis, pedicellis $\frac{1}{4}$ mm. longis, bracteis minutis $\frac{1}{4}$ mm. longis hirsutis; floribus densissime congesto-spicatis. Fl. ♂: sepala 4 triangulari-oblonga $\frac{1}{4}$ mm. longa totiusque lata apice acuta extus pauca hirsuta intus glabra; stamina 8, filamentibus basi connatis, antheris vermiformibus $\frac{1}{4}$ mm. longis, connectivis apiculatis. Spicæ fl. ♀ longissimæ axillares solitariae erectæ rectæ 20 cm. longæ, pedunculis 4-5 cm. longis, stipitate villosæ, floribus dense spicatum insitis sessilibus 1-bracteatis, bracteis reniformibus 7 mm. latis 4-5 mm. longis longe dentatis, dentibus triangularibus acuminatis 1-2 mm. longis, extus hirsutis intus glabris. Fl. ♀: sepala 3 ovato-oblonga 1 mm. longa extus hirsuta intus glabra. Capsula 3-coeca, coccis $1\frac{1}{2}$ mm. longis 1 mm. latis dense villosis. Semina ovoidea lævia.

HAB. Akō: Naiho, leg. T. SŌMA, Sept. 1915.

Remarkable for the very long male and female spikes.

Acalypha Matsudai HAYATA sp. nov. Suffrutex. Rami graciles rubropurpurascens scandentes plus minus hirsuti lenticellis minutis linearibus notati. Folia oblongo-lanceolata 5-8 cm. longa $1\frac{1}{2}$ -3 cm. lata apice acuminata ad summum obtusa ad centrum apiculata basi obtusa vel obtusissima vel rotundata margine serrulata utraque pagine subglabra membranacea vel tenuiter chartacea 3-nervia, petiolis 1-2 cm. longis gracillimis hirsutis. Flores monoecii spicati, floribus superioribus masculinis, flore infimo uno femineo; spicis axillaribus, gracillimis 3-4 cm. longis erectis. Flores ♂ secus rhachin

spicæ glomeratim siti, ad nodos 5-6 aggregati breve pedicellati, pedicellis $\frac{1}{2}$ mm. longis, basi bracteis minutis hirsutis ovatis $\frac{1}{8}$ mm. longis. Sepala 4 valvata oblonga apice acuta $\frac{1}{3}$ mm. longa subglabra. Stamina 8, filamentis basi connatis glabris $\frac{1}{3}$ mm. longis, antheris vermiformibus connectivis apiculatis. Fl. ♀: ad basin spicæ solitariter siti bracteis singulis instructi. Capsula 3-coeca, coccis oblongis $2\frac{1}{2}$ mm. longis dorso hirsutis. Semina lævia complanato-ovoidea $1\frac{1}{2}$ mm. longa 1 mm. lata apice breve rostrata.

HAB. Banchoryō, Raisha, leg. Y. MATSUDA, Juni. 1916.

Somewhat resemble *A. Dalzellii* HOOK. f. (in Fl. Brit. Ind. V. p. 414); but differs from it in the denticulate bracts with very much longer male spikes.

Aleurites FORST.

Aleurites triloba FORST; HEMSL. Ind. Fl. Sin. II. p. 434.

Aleurites moluccana WILLD.; MUELL. ARG. in DC. Prodr. XV.-2, p. 723.

HAB. Banchōryō, cult.

Claoxylon A. JUSS.

Claoxylon kotense HAYATA sp. nov. Frutex. Rami validi teretes exsiccato cinerascens cicatricibus foliorum approximativè notati glabri. Folia versus apicem foliorum approximativè alternativè disposita herbacea oblonga vel oblongo-lanceolata 18-20 cm. longa 7-8 cm. lata apice acuta vel acuminata ad summum obtusa basi obtusa margine serrata, serris remotis obtusis brevibus, supra scabriuscula, petiolis 5-6 cm. longis. Flores dioeci spicati, spicis axillaribus solitariis. Fl. ♂: racemoso-spicati, spicis 6-7 cm. longis, floribus ad nodos spicæ aggregativè dispositis pedicellatis, pedicellis 3 mm. longis; sepala 3 rarius 4 oblonga $2\frac{1}{2}$ mm. longa 2 mm. lata apice obtusa glabra; Stamina ∞, filamentis liberis 1-2 mm. longis, antheris Y-formibus, glandulis inter stamina multis bracteoliformibus $\frac{1}{2}$ mm. longis laceratis. Capsula 3-coeca, coccis 4 mm. longis. Semina subglobosa 3 mm. longa apice apiculata basi rotundata facie impresso-reticulata, testa crustacea nigricanti.

Claoxylon rubescens HAYATA Gen. Ind. Fl. Formos. p. 65, (non MIQ.)

HAB. Kōtōshō, typus!; Kōshūn.

Near *C. indicum*; but differs from it in the quite glabrous leaves and racemes.

Claoxylon indicum HASSK.: HOOK. f. Fl. Brit. Ind. V. p. 410.

HAB. Hainan, leg. Z. KATSUMADA, Juli. 1908.

Alchornea Sw.

Alchornea kelungensis HAYATA sp. nov. Frutex; rami validi glabri fusco-purpurascens. Folia alterna triangulari-cordata triangulari-rotundata vel cordata 9–12 cm. longa 8–12 cm. lata apice breve cuspidato-acuta basi rotundata vel cordata margine remote serrulata, serrulis a se 5 mm. distantibus, distincte 3-nervia, nervis a se 30°–40° egressis, chartacea vel tenuiter coriacea basi glandulis 5 notata, glandulis rotundatis 1 mm. in diametro rubescentibus, pagine supra glabra subtus tenuiter hirsuta, petiolis 3–5 cm. longis tenuiter hirsutis, stipulis caducissimis cuspidiformibus 4–5 mm. longis. Flores monoecii spicati, spicis unisexualibus vel bi-sexualibus terminalibus 7–10 cm. longis tenuiter hirsutis. Fl. ♂ ad nodos spicarum glomerati, glomerulis bracteis singulis instructis circ. 10-floratis, bracteis triangulari-cuspidatis 2 mm. longis dorso hirsutis margine ciliolatis, bracteolis inter flores ♂ multo insitis lanceolatis 1 mm. longis ciliatis, floribus pedicellatis, pedicellis 1–2 mm. longis; sepala 4–5 oblonga 2½ mm. longa 1½ mm. lata apice obtusa glabra; stamina 8–10, filamentis glabris basi dilatatis connatis patentibus, antheris cordatis 1 mm. longis apice haud vel vix apiculatis. Fl. ♀: ad nodos spicæ solitarii, bracteis singulis triangulari-cuspidiformibus 3 mm. longis 2½ mm. latis apice cuspidatis ciliatis extus hirsutis, bracteolis duabus minutis ciliatis instructi, pedicellis incrassatis 1 mm. longis glabris; sepala 5 triangulari-cuspidiformia 2½ mm. longa 2 mm. lata apice cundato-acuminata margine ciliolata basi plus minus cordata; ovarium depresso-globosum 2 mm. in diametro tenuiter hirsutum, stylis 3 basi connatis patentissimis divaricatissimis. Capsula depresso-globosa 1 cm. lata 8 mm. longa glabra tenuiter 3-sulcata. Semina complanato-obovoidea apice subtruncata basi obtusa vel truncata facie cinerascens ver. rucosa 7 mm. longa.

HAB. Kelung, leg. Y. SHIMADA, Juli. 1918.

Near *A. trevioides* BENTH.; but distinguishable from it in the much

shorter styles, broader sepals and less hairy capsules. The genus is new to the flora of Formosa.

Alchornea loochocensis HAYATA sp. nov.

Alchornea trevioides HAYATA Rev. Euph. Bux. Jap. in Journ. Coll. Sci. XX-3, p. 47, (non MUELL. ARG.)

HAB. Loo-choo: Kumejima.

Euphorbia LINN.

Euphorbia formosana HAYATA Gen. Ind. Fl. Formos. p. 66.

Euphorbia orientalis HAYATA Gen. Ind. Fl. Formos. p. 66, (non LINN.).

Euphorbia garanbiensis HAYATA sp. nov. Perennis; rhizoma incrassatum; caulis diffusus a basi ramosissimus, ramis humifusis 10-15 cm. longis glabris. Folia opposita oblique rotundato-ovata 8 mm. longa totiusque lata apice obtusissima basi valde oblique cordata margine integra vel obscure serrulata nervoso-marginata, textura crassiuscula, subsessilia, vel petiolis 1 mm. longis, stipulis interpetiolaribus cuspidiformibus $\frac{1}{2}$ mm. longis. Cyma axillaris. Involucrum semiglobosum 1 mm. longum 2 mm. latum glabrum, glandulis 4 late rotundatis 1 mm. latis, appendiculis reniformibus $1\frac{1}{2}$ mm. latis integris, pedunculis 5 mm. longis; bracteolis intra involucrum linearibus laceratis $\frac{1}{2}$ mm. longis. Fl. ♂: anthera didynama, connectivis haud productis. Fl. ♀: ovarium glabrum leve, stylis 3 apice fuscatis lobatis.

HAB. Garanbi, leg. B. HAYATA, Juni. 1912.

Near *E. sanguinea* STEUD.; but differs from it in the presence of petaloid appendages of glands.

Euphorbia liukiensis HAYATA sp. nov. Perennis; caulis humifusus, ramis diffusis glabris. Folia opposita elliptica 6-7 mm. longa 4 mm. lata apice obtusissima vel rotundata basi oblique cordata margine subintegra versus apicem obscure serrulata, textura tenuiter incrassata, utraque glabra, petiolis 1 mm. longis, stipulis interpetiolaribus digitatim fissis brevissimis. Cyma axillaris. Involucrum obconicum 1 mm. longum totiusque latum glabrum; glandulis 4, appendiculis integris $\frac{1}{2}$ mm. latis; lobis involucri triangularibus laceratis; bracteolis intra involucrum linearibus laceratis. Capsula 3-coeca, coccis semi-ovatis $1\frac{1}{2}$ mm. longis $\frac{2}{3}$ mm. latis levibus. Semina levia 1 mm. longa angulato-ovoidea.

HAB. Yonakuni, leg. Y. SHIMADA, Oct. 1917.

Near *Euphorbia sanguinea* STEUD.; but differs from it in the presence of the appendage of glands.

Euphorbia Peplus LINN.; DUNN et TUTCHER, Fl. Kwantung et Hongk. p. 232.

HAB. Tamsui.

Euphorbia Tashiroi HAYATA sp. nov. Caulis humifusus a basi ramosus, ramis 20-30 cm. longis tenuiter hirsutis. Folia opposita elliptica 13 mm. longa 7 mm. lata apice obtusissima basi oblique truncata vel tenuiter cordata margine obscure serrulata supra glabra subtus hirsuta, textura herbacea, petiolis 1-2 mm. longis hirsutis, stipulis interpetiolaribus 2-fidis, segmentis cuspidato-triangularibus $\frac{1}{4}$ mm. longis laceratis. Cyma axillaris 7 mm. longa hirsuta. Involucrum obconicum $\frac{1}{2}$ cm. longum glabrum, glandulis 4, appendicibus integris. Capsula tricoeca, coccis hirsutis oblique ovoideo-oblongis $1\frac{1}{4}$ mm. longis. Semina angulato-ovoidea apice obtuso-acuta basi truncata levia fusca minus quam 1 mm. longa.

Euphorbia hypericifolia HAYATA Gen. Ind. Fl. Formos. p. 66, (non LINN.).

Euphorbia humifusa HAYATA Gen. Ind. Fl. Formos. p. 66, (non WILLD.).

HAB. Tarimukoi, leg. Y. TASHIRO, Aprili. 1895; Akō, leg. Y. SHIMADA, Mai. 1915.

Near *E. hypericifolia* LINN.; but distinguishable from it in having hirsute capsules.

Urticaceæ.

Zelkova SPACH.

Zelkova formosana HAYATA sp. nov. (Fig. 33-1, 2.) Arbor; ramuli fusco-purpurascens glabri. Folia in magnitudine variabilissima alterna chartacea vel tenuiter coriacea lanceolata 2-10 cm. longa 1-3 $\frac{1}{2}$ cm. lata apice obtusa vel acuminata basi obtusa vel obtusissima margine serrata supra tenuissime hirsuta subtus subglabra, venis lateralibus parallelis rectis ad apicem serrarum attingentibus, petiolis 2-8 mm. longis. Flores ignoti. Achrenia 3 mm. longa totiusque lata reticulato-rugulosa utroque latere prominente carinata.

Zelkova acuminata HAYATA Gen. Ind. p. 71, (non PLANCH.)

HAB. Fukkishō, Biōritsu-Taiko.

Resembles closely *Z. acuminata*, but distinguishable from it in the less prominent edges of the achenes.

Zelkova tarokoensis HAYATA sp. nov. (Fig. 33-3, 4.) Arbor; ramuli

glabri fusco-purpurascens gracillimi. Folia ovato-oblonga vel oblonga chartacea 2-3 cm. longa 10-13 mm. lata apice obtusa basi obtusissima rotundata margine serrata vel serrulata utraque glabra, petiolis 2-3 mm. longis glabris.

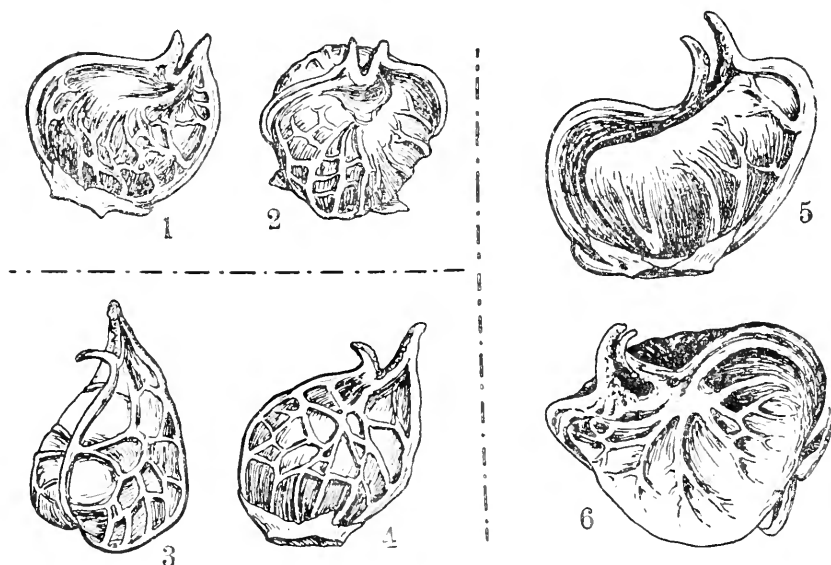


Fig. 33; 1-2, *Zelkova formosana* HAYATA; 3-4, *Z. tarokoensis* HAYATA; 5-6, *Z. acuminata* PLANCH. Achenes, seen from different sides.

Flores ignoti. Achenia solitaria axillaria obliqua 3 mm. longa ruguloso-reticulata stigmatibus 2-fidis terminata utroque latere carinata basi latere uno profunde sulcata circ. 2-lobata.

HAB. Uchitaroko, leg. Y. MATSUDA.

Near *Z. acuminata*, but differs from it in the much smaller leaves and in the achenes which are 2-lobed on one side.

Morus LINN.

Morus acidosa GRIFFITH Not. Pl. Asia. IV. (1854) p. 388; KOIDZUMI Sōzoku-shokubutsu-kō, p. 34, t. 4.

Morus alba HAYATA Gen. Ind. p. 70, (non LINN.)

HAB. Arisan, Keitao, Suisha.

Cupuliferæ.

Lithocarpus BLUME.

Lithocarpus Nakaii HAYATA sp. nov. (Fig. 34). Arborescens. Ramuli



Fig. 34; *Lithocarpus Nakaii* HAYATA; 1, a branch; 2, fruits.

glauco-fuscentes vel cinerascetes. Folia chartacea vel tenuiter coriacea oblongo-lanceolata vel oblanceolata 10-12 cm. longa 2-3½ cm. lata apice subito caudato-acuminata, acuminibus 1½ cm. longis 3 mm. latis ad summum obtusis,



Fig. 35; *Lithocarpus Matsulii* HAYATA; 1, a branch; 2, a cup; 3, a portion of the cup; 4, a gland; 5, the same, seen from above.

basi cuneato-attenuata margine integra, costis venis supra haud vel vix elevatis subtus prominente distincte elevatis, venis lateralibus gracillimis distinctis, petiolis 1-1½ cm. longis tenuissime alatis. Fructus spicatum dispositi. Cupulae subplanæ plus minus concavæ 1½ cm. in diametro depresso-brevis-simo-villosæ, cicatricibus centralibus prominente elevatis 7 mm. in diametro. Glandes castaneæ depresso-globosæ 16 mm. in diametro 13 mm. longæ apice plus minus depressæ.

HAB. Dainan-ō, leg. S. NAKAI.

Near *L. nantoensis* HAY., but differs from it in the leaves which have prominently elevated costas and veins on the under side. In *L. nantoensis* the costas and veins of the leaves are not at all elevated on the under surface.

Lithocarpus Matsudai HAYATA sp. nov. (Fig. 35.) Arbor; ramuli graciles lenticellis minutis dense conspersi. Folia alterna coriacea elongato-oblonga 7-10 cm. longa 3-4 cm. lata apice acuta summo obtusa basi acuta ad petiolum abeuntia margine integerrima, costa supra subtusque prominente elevata, venis gracillimis, utraque pagine glabra, petiolis 1½ cm. longis. Fructus spicatum dense dispositi et aggregati sessiles. Cupulae plano-obconicæ 12 mm. in diametro 5 mm. longa extus dense squamatæ, squamis adpressis minutis late triangularibus; glans globoso-trigono-pyramidalis 18 mm. longa 15 mm. lata glabra apice breve apiculata pallido-fulvescens.

HAB. Arikō-Banchi, leg. Y. MATSUDA, Mart. 1917.

Near *L. subreticulata* HAY., but differs from it in the much broader leaves and in the cups which are beset with triangular scales, but not ringed.

Coniferæ.

Abies Kawakamii (HAYATA) T. ITÔ Encyclopædia Japonica II. p. 167; HAYATA Gen. Ind. p. 74.

Orchideæ.

Dendrobium Sw.

Dendrobium albviride HAYATA sp. nov. (Fig. 36). Caulis erectus 25 cm. longus, internodiis claviformibus 3-4 cm. longis sursum 8 mm. latis.

multi-sulcatis vaginâ foliorum usque ad medium obtectis in exsiccato flavescens. Folia oblongo-lanceolata coriacea 5-8 cm. longa $1\frac{1}{2}$ -2 cm. lata apice obtusissima ad apicem inæqualiter 2-lobulata basi gradatim ad vaginas attenuata 9-10-nervia glabra integra, vaginis 2 cm. longis cylindricis. Flores quasi-axillares quasi-solitarii, pedicellis (cum ovariis) 2-3 cm. longis basi bracteis instructis. Flores albi $4\frac{1}{2}$ cm. in diametro, columna cum pede viridi. Sepalum posticum lineari-oblongum $2\frac{1}{2}$ cm. longum 8 mm. latum apice obtusissimum glabrum basi plus minus contractum integrum, lateralia valde obliqua basi cum pede columnæ connata

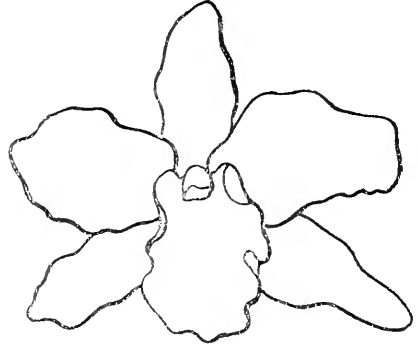


Fig. 36; *Dendrobium alboviride* HAYATA.

mentum 8 mm. formantia. Petala oblonga $2\frac{1}{2}$ cm. longa 17 mm. lata apice rotundata basi plus minus contracta. Labellum obovato-oblongum $2\frac{1}{2}$ cm. longum $1\frac{1}{2}$ cm. latum apice rotundatum basi subito unguiculatum, ungue 3-4 mm. longo 3 mm. lato, supra pagine dense hirsutum. Columna brevissima 3 mm. longa, pede 9 mm. longo cum sepalis mentum formanti.

HAB. Kappazan, leg. B. HAYATA et S. SASAKI, Juli. 1917.

Near *Dendrobium Linawianum*, but differs from it in having white flowers.

Bulbophyllum THOU.

Bulbophyllum Somai HAYATA sp. nov. (Fig. 37). Epiphytica; caulis repens gracillimus teres 1 mm. in diametro sectionis glaber remote foliatus. Folia crassissima oblonga 13 mm. longa 6-7 mm. lata apice obtusa basi obtusa vel acuta, petiolis 2 mm. longis. Flores axillares solitarii longe pedunculati, pedunculis 3-4 cm. longis, bracteis 2-3 vaginiformibus apice acutis hyalinis fariosis. Sepala æquiformia lineari-lanceolata; posticum 18 mm. longum 3 mm. latum apice acuminatum basi plus minus dilatatum glabrum; lateralia æquiformia basi dilata cum pede columnæ connata mentum 2-3 mm. longum formantia. Petala ovato-oblonga 3 mm. longa 2 mm. lata apice acuta. Labellum ovato-oblongum 4 mm. longum $2\frac{1}{2}$ mm. latum apice obtusum basi

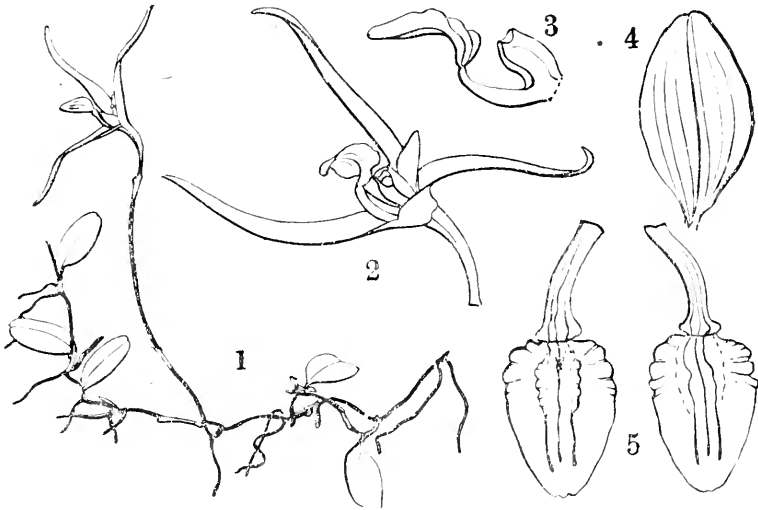


Fig. 37; *Bulbophyllum Sonai* HAYATA; 1, the plant; 2, a flower; 3, column. foot and lip; 4, a petal; 5, a lip, with a columal foot, seen from different sides.

cum pede columnæ longe producto articulatam integrum supra basin subito plicato-reflexum paralleliter 3-nerviis, discis 2-linearibus medio labelli dispositis. Columna 1 mm. longa basi alata, pede longissimo ultra mentum longe producto.

HAB. Uraisha, leg. T. SŌMA, Juli. 1916.

Near *Bulbophyllum Drymoglossum* MAXIM.; but distinguishable from it in the much longer and narrower sepals.

Eria LINDE.

Eria Matsudai HAYATA sp. nov. Epiphytica. Pseudobulbi oblongi 1½ cm. longi recurvi approximativè connexi. Caulis e basi pseudobulbi (annotini) oriundus 1½ cm. longus squamis obtectus apice 2-foliatus. Folia lanceolata vel oblanceolata 8 cm. longa 18 mm. lata apice acuta basi attenuata sessilia integra crassiuscula in exsiccato membranacea glabra ex apice caulis geminatim criunda. Racemi ex apice caulis oriundi pedunculati, pedunculis 2-3 cm. longis tenuiter floccoso-hirsutis, 2-4-florati, bracteis ovatis 5 mm. longis 2½ mm. latis apice acutis sessilibus glabris, pedicellis 6-7 mm. longis, ovariis

obconico-cylindricis 6 mm. longis fulvo-hirsutis. Sepalum lineari-oblongum 9 mm. longum 2 mm. latum apice obtusum; lateralia triangulari-lineari-oblonga falcata 8 mm. longa basi dilata 5 mm. lata pede columnæ connata mentum $4\frac{1}{2}$ mm. longum formantia. Petala linearia 8 mm. longa $1\frac{1}{2}$ mm. lata apice obtusa. Labellum cum ungue 8-9 mm. longum; lamina in ambitu obtriangularis 6 mm. lata 3-lobata, lobis lateralibus linearibus $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis apice obtusis, lobo centrali rotundato 3 mm. longo totiusque lato apice obtuso basi contracto, discis duobus versus basin laminae usque ad medium unguis extensis linearibus. Columna 3 mm. longa columniformis, pede $4\frac{1}{2}$ mm. longo.

HAB. RARAZU, leg. Y. MATSUDA, Juli. 1918.

Near *Eria arisanensis* HAY.; but distinguishable from it in having much thinner and larger leaves and in the longer unguiculate base of the lips.

Calanthe R. BR.

Calanthe Takeoi HAYATA sp. nov. Terrestis; caulis erectus 20-30 cm. longus basi vaginatus versus apicem foliatus glaber. Folia in exsiccato membranacea lanceolata 30-40 cm. longa 5 cm. lata apice acuminatissima basi attenuata ad vaginam absentia integra utraque pagine glabra. Caulis florifer e basi caulis foliiferi oriundus erectus 25 cm. longus simplex glaber teres cum floribus 25 cm. longus apice flores 4-5 racemosim gerens, bracteis ovato-lanceolatis 8-10 mm. longis acutis, pedicellis cum ovaris 2- $2\frac{1}{2}$ cm. longis glabris. Sepala aequalia lanceolata apice obtusa 3 cm. longa 8 mm. lata basi laud vel vix contracta glabra. Petala oblanceolata 3 cm. longa 8 mm. lata apice obtusa basi angustata glabra. Labelli unguis cum basi columnæ connatus tubum latum formans; lamina rotundata $2\frac{1}{2}$ cm. in diametro apice late truncata emarginata basi contracta versus apicem tenuissime 3-lobata margine plicato-undulata, discis secus medium labelli 2-striatim dispositis, unguibus basi calcaratis, calcaribus obconicis 8-9 mm. longis basi subito breve caudatis recurvatis. Columna 15 mm. longa validiuscula facie anteriore hirta.

HAB. Tōyenchō: Urai, leg. TAKEO ITŌ, Oct. 1917.

Near *C. Kawakamii* HAY.; but differs from it in having much smaller

flowers with much shorter spurs.

Calanthe forsythiiflora HAYATA Ic. Pl. Formos. IV. p. 67. Descriptio aucta: Fructus longe racemosi, racemis 30 cm. longis, pedicellis $1\frac{1}{2}$ cm. longis gracilibus glabris deorsum recurvis descendentibus. Capsula pendula ovoidea vel obovoidea 12 mm. longa 6-7 mm. lata glabra elevato-striata.

HAB. Uraisha, leg. Y. SHIMADA, Aprili. 1918.

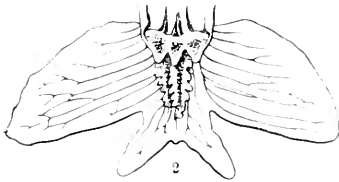


Fig. 38; *Calanthe Matsudai* HAYATA; 1, a flower; 2, a lip.

Calanthe Matsudai HAYATA sp. nov. (Fig. 38 et 39). Herba, radicibus incrassatis. Caulis scapiformis 100 cm. longus erectus simplex teres tenuissime pubescens sursum ad racemum abeans efoliatus. Folia omnia fasciculata ex apice pseudobulbi oriunda linearia 60 cm. longa 1 cm. lata apice acuminata glabra membranacea. Racemi 25 cm. longi dense florati, bracteis linearibus post anthesin auctis 1-3 cm. longis acuminatis, pedicellis 4 mm. longis tenuiter hirsutis, ovaris clavato-cylindricis 8-9 cm. longis.

Sepala reflexa oblongo-obovata 8 mm. longa $3\frac{1}{2}$ mm. lata apice acuta basi plus minus contracta 3-nervia glabra. Petala spathulato-linearia 8 mm. longa $1\frac{1}{2}$ mm. lata apice obtusissima basi attenuata 3-nervia glabra. Labellum in ambitu late triangulare 12 mm. latum 6-7 mm. longum, lobis lateralibus valde divaricatis oblongis 5-6 mm. longis 3 mm. latis apice obtusis basi latere exteriori lobulo instructis, lobo terminali in ambitu obtriangulati 4 mm. longo medio sursum divaricatum 2-lobato, lobis linearibus divaricatis 4 mm. longis 1 mm. latis apice obtusis. Discus cristaeformis ad basin medii labelli dispositus 3-seriatus lobulatus, lobulis lamellatis. Columna valida 2 mm. longa basi longe calcarata, calcar 1 cm. longo 1 mm. lato.

HAB. Rarazan, leg. Y. MATSUDA, Juli. 1918.

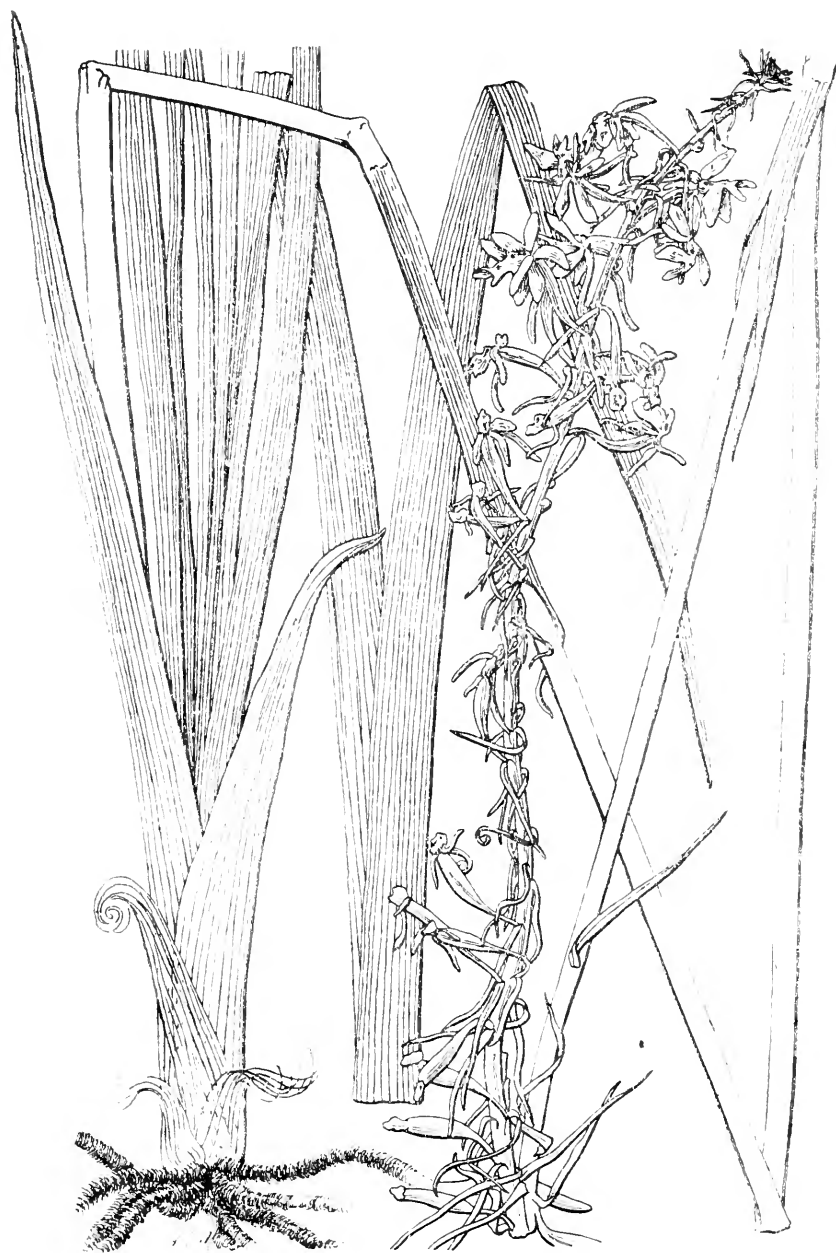


Fig. 39; *Cilanthe Matsudai* HAYATA.

Somewhat near *C. gracilis*, but greatly different from it in having much smaller flowers, narrower sepals and in the much longer narrower bracts.

Vanilla Sw.

Vanilla ronçensis HAYATA sp. nov. Scandens; caulis flexuosus glaber. Folia coriacea alterna obovato-oblonga 20 cm. longa 7 cm. lata apice subito acuta basi obtusissima integra utraque pagine glabra, nervis venis venulis utraque pagina elevatis, petiolis 1½ cm. longis. Flores quasi-axillares solitarii vel racemosi, pedicellis cum ovario 3-4 cm. longis. Petala sepalaque basi connata haud patentia. Perianthium in ambitu campanulatum. Sepala aequalia oblanceolata 4 cm. longa 1 cm. lata apice acuto-obtusa basi longe attenuata. Petala quam sepalis angustiora 4 cm. longa 8 mm. lata apice obtusa basi angustiora. Labellum 3½ cm. longum basi cum columna connatum et columnam toto amplectans, in explicato obtriangulare apice truncatum ad centrum lobulo uno instructum apice medio cristatum, cristis 2-seriatim dispositis, discis linearibus secus medianam 2-seriatim dispositis, medio fasciculis pilorum duobus instructum, pilis fere connatis 7 mm. longis rectis, latere margine plumum integrum, apice margine crispatum caeterum glabrum. Columna elongata fere 3 cm. longa in labello inclusa glabra.

HAB. Inter Rōnō et Kōsenpo, leg. B. HAYATA, Aprili. 1917.

Near *Vanilla Somai*, but differs from it in having two bundles of hairs on the hypochil of the lips.

Galeola Lour.

Galeola Matsudai HAYATA sp. nov. Terrestis aphylla; caulis circ. 100 cm. longus erectus teres glaber, squamis alternatim remote dispositis oblongis 3-4 cm. longis 1-2 cm. latis acutis glabris; caulis simplex apice flores racemosim gerens. Racemi 18 cm. longi fulvo-floccosi vel glabrati, bracteis oblongis 1-2 cm. longis, pedicellis cum ovarii cylindricis 1-1½ cm. longis. Sepala aequalia oblonga 18 mm. longa 7-8 mm. lata apice acuto-obtusa basi plus minus contracta extus fulvo-floccosa intus glabra patentia. Petala oblongo-lanceolata 1½ cm. longa 6 mm. lata glabra apice acuto-obtusa basi plus minus contracta integra. Labellum rotundatum 1½ cm. in diametro valde

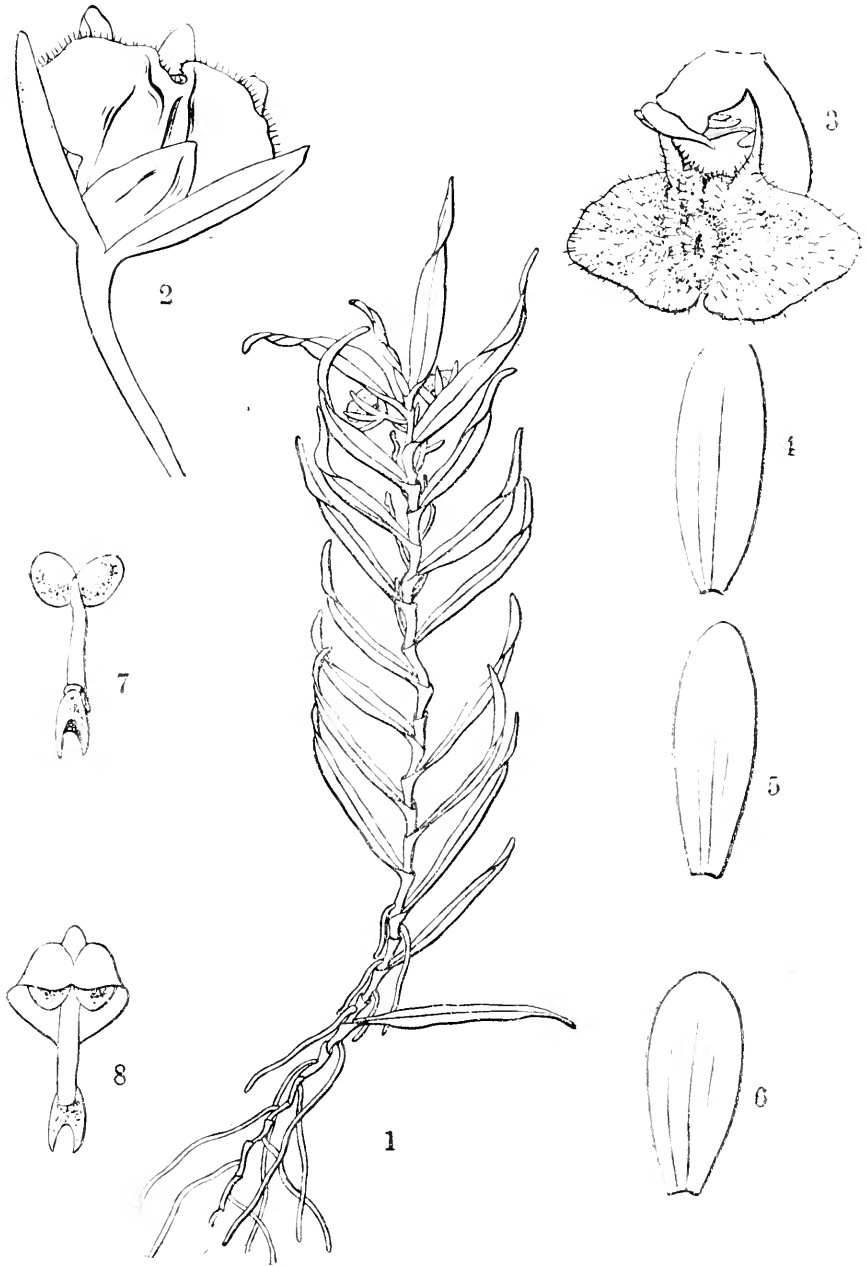


Fig. 40; *Gastrochilus Matsudai* HAYATA; 1, the plant; 2, a flower, seen from below; 3, a lip and column; 4, a dorsal sepal; 5, a lateral sepal; 6, a petal; 7, pollinia on a caudicle; 8, the same, with an operculum.

concauum margine eroso-fimbriatum apice obtusissimum basi contractum sessile basi columnæ adnatum pagine supra dense cristato-pilosum subtus glabrum. Columna 7 mm. longa; operculum floccoso-hirsutum.

HAB. Akôchô: Paiwan, Juni. 1917.

Near *Galcola Lindleyana* REICH. f. (KING. t. 352); but differs from it in having much more hirsute lips.

Gastrochilus DOX.

Gastrochilus Matsudai HAYATA sp. nov. (Fig. 40). Epiphytica ad substratum toto adpresse prostrata glabra. Folia alterna distiche disposita lineari-lanceolata 3 cm. longa $3\frac{1}{2}$ mm. lata apice obtusa glabra costa, supra impressa subtus elevata, crassiuscula basi laud vel vix contracta cum vaginis articulata, vaginis 3 mm. longis glabris. Racemi oppositifolii vel quasi-axillares 2 cm. longi 3-4-florati, pedicellis divaricatis cum ovariis 4-5 mm. longis glabris. Flores 8-9 mm. in diametro. Sepalum posticum obovatum valde concavum 5-6 mm. longum 3 mm. latum apice obtusissimum basi laud vel vix contractum, lateralia oblonga fere conformia. Petala obovato-oblonga 5 mm. longa valde concava glabra. Labellum in ambitu triangulare, lamina 6-7 mm. lata apice rotundata medio apicis retusa pagine supra toto barbata, disco calloso medio labelli insito; labellum basi calcaratum, calcare triangularem 3 mm. longo ad orem 2 mm. lato. Columna brevissima 1 mm. longa.

HAB. Mt. Daibusan, Nov. 1918, leg. Y. MATSUDA.

Near *Gastrochilus fuscopunctatus* HAY., but distinguishable from it in the much narrower sepals and petals and in the much broader epichilus of the lips.

Anætochilus BLUME.

Anætochilus koshunensis HAYATA Ic. Pl. Formos. IV. p. 105.

HAB. Daibusan, leg. Y. MATSUDA, Nov. 1918.

Orchis LINN.

Orchis kiraishiensis HAYATA sp. nov. (Fig. 41). Herba humilis. Caulis simplex 15 cm. longus basi vaginis 1-2 instructus glaber erectus medio alternatim 2-foliatus apice racemosim 2-3-floratus. Folia lineari-lanceolata

4-5 cm. longa 8 mm. lata apice acuta vel acuminata integra glabra basi haud attenuata ad vaginas abeuntia, vaginis glabris cylindricis $1\frac{1}{2}$ cm. longis. Flores albo-rosacei patentes $2\frac{1}{2}$ cm. in diametro, pedicellis brevibus cum ovariis fusiformibus 1 cm. longis. Sepalum posticum 8 mm. longum 3 mm. latum



Fig. 41; *Orchis kiraishiensis* HAYATA; 1, the plant; 2, a flower, sepals and petals taken off; 3, a lip; 4, a dorsal sepal; 5, a lateral sepal; 6, a petal.

oblongum apice acutum basi plus minus contractum; lateralia obliqua ovato-oblonga falcata 8-9 mm. longa $3\frac{1}{2}$ mm. lata apice obtusa dorso apice minuto cornuta glabra. Petala glabra minora ovato-oblonga 6 mm. longa 3 mm. lata apice obtusa basi latere anteriore subauriculata latere posteriore basi acuta. Labellum basi longe calcaratum, lamina in ambitu obtriangularis 13 mm. longa 15 mm. lata apice leviter 3-lobata, lobo centrali 5 mm. longo totiusque lato apice truncato medio sinuato ad centrum sinus lobulo uno triangulari breve aristato instructo, calcare 9 mm. longo ad orem triangulari-dilato 3 mm. lato. Columna 3 mm. longa erecta plus minus posteriore recurva.

HAB. Kiraisizau, ad 10,000 ped. alt., leg. S. OHASHI, Aug. 1918.

Near *O. pauciflora* FISCH.; but differs from it in having sessile lips. The genus is new to the flora of Formosa.

Scitamineæ.

Alpinia LINN.

Alpinia agiokuensis HAYATA sp. nov. Rhizoma repens squamis rotundato-ovatis dense obtectum, squamis $1\frac{1}{2}$ cm. longis latioribus quam longis rhizomatem amplectantibus. Caulis cum inflorescentia 100-80 cm. longus dense brevique villosus erectus basi squamis 3-4 obtectus, squamis 3-15 cm. longis extus dense villosis intus glabris. Folia 2-3, ligulis 2-lobatis villosis 2-3 mm. longis, petiolis 3 cm. longis, lamina oblongo-lanceolata 38 cm. longa 6 cm. lata apice acuminata supra parce subtus dense villosa apice cuspidato-acuminata basi longe attenuata. Spicæ terminales solitariae 10 cm. longæ, pedumculo 7-8 cm. longo villosis basi bractea singula instructo, bractea linearilanceolata 5-15 cm. longa 1-2 $\frac{1}{2}$ cm. lata apice cauda lineari 2-3 cm. longa instructa extus villosa intus glabra. Flores fere sessiles extus tenuiter villosi basi bracteolis minutis oblongis obtusis villosis instructi; ovarium villosum obovoideum 2 mm. longum; calyx cylindricus 11 mm. longus 5 mm. latus extus tenuiter villosus apice 3-lobatus; corollæ tubus cum calyce æquilongus 11 mm. longus medio 2 mm. apice 3 mm. latus extus intusque parce hirsutus, lobis 3 æqualibus spatulatis valde concavis extus villosis intus glabris apice rotundatis; labellum extus glabrum intus hirsutum

sessile obovatum 9 mm. longum apice breve 2-lobatum, lobis minutis se
divaricatis, margine deorsum integrum sursum denticulatum, basi utroque
latere staminodiis instructum, staminodiis lineari-lanceolatis 6 mm. longis 1 mm.
latis glabris; stamen ultra tubum corollæ 15 mm. exsertum; filamentum ultra
tubum corollæ 8 mm. longo glabro, anthera 6 mm. longa secus medium plicata
stylum amplectanti, connectivo latiore in explicato 3 mm. lato; stylo glabro,
stigmatum terminali infundibuli-formi 1 mm. lato margine pectinato-ciliolato.

HAB. Agioku, leg. B. HAYATA, Mai. 1916, ad. 1,200 ped. alt.

Near *A. japonica*, but differs from it in having a little smaller flower
with no distinct macuration on the lips, and in the presence of a large bract
at the base of the spikes.

NOTE: Calyx and corolla reddish towards the tip; anthers white.

Alpinia densespicata HAYATA sp. nov. Folia superiora fere sessilia
vel breve petiolata lanceolata 60-70 cm. longa 10 cm. lata apice acuminata
basi attenuata ad marginem hirsuta utraque pagine glabra, ligulis 2-lobatis
apice dense hirsutis. Spicæ rachis florifera 15 cm. longa fulvo-sericeo-villosa
densissime florifera; bracteis late obovatis 15 mm. longis 13 mm. latis apice
obtusissimis rotundatis; ovarium subglobosum 3 mm. longum 2 mm. latum
dense tomentosum; calyx cylindrico-campanulatus 12 mm. longus 5 mm. latus
irregulariter 2-3-dentatus uno latere plus minus fissus vel haud fissus margine
basi extusque plus minus hirsutus; petala 3 basi ad 1 cm. altitudinem con-
nata 2½ cm. longa dorsale, latius 1½ cm. latum margine ciliolatum apice lato
rotundatum, lateralia angustiora; labellum late ovato-rhomboidum sessile 1½
cm. longum totiusque latum margine eroso-denticulatum; anthera 8-9 mm.
longa 4 mm. lata apice 2-lobata; stylo sursum hirsuto; stigmatum infundibuli-
formi margine extusque dense hirsuto.

HAB. Shichiseitonzan, leg. S. SASAKI, Mart. 1910.

Near *A. macrocephala*; but differs from it in the total absence of the
bracts in the fruiting spikes.

Alpinia dolichocephala HAYATA sp. nov. Folia superiora lanceolata
sessilia 70-90 cm. longa 10-12 cm. lata apice subito et abrupte caudata, caudis
brevibus circ. 1 cm. longis, basi subito attenuata margine brevissime hirsuta
utraque pagine glabra, ligulis elobatis vel 2-lobatis obtusis extus villosis.

Spicæ rhachis florifera 15 cm. longa fulvo-sericeo-villosa dense florifera; bracteis 3 cm. longis subconchiformibus in explicato $2\frac{1}{2}$ cm. latis apice subrotundatis ad medium arista hirsuta una 1-2 mm. longa instructis margine et basi hirsutis; floribus sessilibus; ovarium subglobosum 2 mm. longum totiusque latum dense villosum; calyx subcylindricus 2 cm. longus 8 mm. latus uno latere a basi usque ad 5 mm. altitudinem fissus apice obtusissimus mucronatus extus brevissime hirsutus intus glaber; petala 3 a basi usque ad 1 cm. altitudinem connata; dorsale latius 2- $2\frac{1}{2}$ cm. latum valde concavum erectum cuculliforme glabrum sursum margine hirsutum apice rotundatum ad centrum breve mucronatum; lateralia angustiora 8 mm. lata apice rotundata valde concava; labellum late rhomboideum 4 cm. longum totiusque latum sessile apice triangulare obtusum ad summum 2-lobatum margine eroso-denticulatum basi ad faucem glabrum haud hirsutum albicans, versus medium purpureo-striatum; staminodia 0; stamen erectum vel plus minus arcuatum, filamentum glabrum; anthera linearis 1 cm. longa, connectivo dorso carinato apice breve 2-lobato; stylus glaber; stigmate plus minus hirsuto. Spica fructifera 20-30 cm. longa dense fructifera, fructibus globosis $1\frac{1}{2}$ cm. in diametro brevissime hirsutis, seminibus tetrahedriformibus 4 mm. longis arillis membranaceis albis obtectis.

HAB. Inter Rônô et Kosenpo, leg. B. HAYATA, Aprili. 1915.

Near *Alpinia macrocephala* HAY.; but distinguishable from it in the much longer spikes and in the total absence of the bracts in the fruiting spikes.

Alpinia Elwesii Bot. Mag. t. 8,651.

Alpinia Galanga WILLD.; HAYATA Gen. Ind. p. 82.

HAB. Taihoku (cult.), leg. S. SAWADA, Juli. 1914.

Alpinia hokutensis HAYATA sp. nov. Caulis $1\frac{1}{2}$ mm. altus. Folia superiora lanceolata circ. 50 cm. longa 7-8 cm. lata apice gradatim acuminata basi attenuata margine hirsuta utraque pagine glabra, ligulis apice rotundatis elobatis ciliolatis. Spicæ erectæ vel inclinatæ, partibus floriferis 15-20 cm. longis laxè floratis glabratiss, pedicellis subglabris 1 cm. longis; bracteis conchiformibus glabris $1\frac{1}{2}$ cm. longis apice obtusissimis alabastrum floris amplectantibus; ovarium globosum 2 mm. longum $1\frac{1}{2}$ mm. latum brevissime hirsutum; calyx cylindricus 1 cm. longus glaber apice 3-5-dentatus. Petala

3, 2 cm. longa basi usque ad 1 cm. altitudinem connata glabra; dorsale latius 1 cm. latum apice rotundatum valde concavum; lateralia 7 mm. lata apice rotundata; labellum late ovato-rotundatum 18 mm. longum totiusque latum apice rotundatum margine crispato-crenulatum glabrum flavum medio rubescens basi ad faucem tenuiter hirsutum; stamen arcuatum, parte libera filamentum 1 cm. longa; anthera 5 mm. longa; connectivo latiore in explicato 3 mm. lato crassiusculo breve hirsuto-plicato apice externe reflexo 2-3-denticulato; stylus glaber, stigmatate infundibuliformi plus minus hirsuto.

HAB. Shichiseitonzan, leg. Y. SHIMADA, ad 300 ped. alt.; Hokuto, leg. Y. SHIMADA, Mai. 1917, (typus!).

Near *Alpinia Schumanniana* VAL.; but differs from it in the much smaller flowers with distinct staminodes.

Alpinia Kawakamii HAYATA Ic. Pl. Formos. V. p. 222; Gen. Ind. p. 82.

HAB. Sōseikyaku, leg. B. HAYATA, Mai. 1916.

NOTE: Leaves very dark green above, villose beneath; flower-buds light pink.

Alpinia kelungensis HAYATA Ic. Pl. Formos. V. p. 216, Fig. 76-C, Gen. Ind. p. 82.

HAB. Kelung, Heirinbi, Agioku, Ōchōbi.

NOTE: 2-3 m. tall; leaves dark green, shining above; pedicels reddish; ovary green; fruits scarlet.

Alpinia kushakuensis HAYATA sp. nov. Folia superiora lanceolata circ. 50 cm. longa 10 cm. lata apice subito acuminata basi attenuata breve petiolata vel sessilia utroque pagine glabra sed ad marginem brevissime villosa, ligulis 8 mm. longis extus brevissime villosis intus glabris 2-lobatis, lobis obtusissimis. Spicæ densiuscule florigeræ 15 cm. longæ; rhachis 15 cm. longa dense villosa, floribus subsessilibus vel breve pedicellatis. Ovarium dense villosum cylindrico-obovoideum 1 cm. longum 5 mm. latum; bracteis conchiformibus 2½-3 cm. longis apice 2-3-dentatis in explicato 2½ cm. latis glabris apice et margine plus minus hirsutis; calyx obconico-cylindricus 2 cm. longus extus basi hirsutus ab apice usque ad medium fissus apice obtusissimus; petala 3-4-5 cm. longa a basi usque ad 1 cm. altitudinem connata; dorsale latius obovato-spathulatum 1½ cm. latum apice plus minus hirsutum; lateralia

angustiora; labellum basi cum petalo connatum, parte libera (lamina) ovato-rhomboidæa 4-4½ cm. longa 3 cm. lata apice longe caudata, cauda 1 cm. longa, margine subintegra apice ad summum obtusa haud lobata utraque pagine glabra medio carinata margine flava versus medium rubescente margine eroso-denticulata basi intus densissime tomentosa, utroque latere staminodio lineari 4-5 mm. longo instructa. Stamen erectum vel recurvum 4 cm. longum a basi usque ad 1½ cm. cum petalis labelloque connatum; anthera late lineari 1½ cm. longa 7 mm. lata, connectivo incrassato brevissime villosa apice 2-lobata; stylo 4-5 cm. longo glabro, stigmate infundibuliformi hirsuto.

HAB. Kussliaku, leg. B. HAYATA, Mai. 1916.

Near *A. uraiensis* HAY.; but differs from it in the much smaller flowers with much narrower anthers.

Alpinia macrocephala HAYATA Ic. Pl. Formos. V. p. 222; Gen. Ind. p. 82.

HAB. Arisan: Inter Keitao et Goshōrin, leg. B. HAYATA, ad 4,000-6,000 ped. alt., April. 1916; inter Funkiko, Karapin et Taroyen.

Very remarkable in the presence of large bracts embracing the fruits in the basal portions of the spikes.

Alpinia mediomaculata HAYATA sp. nov. Caulis 1-2 m. altus. Folia superiora sessilia lanceolata 46 cm. longa 7 cm. lata apice acuminata basi acuta utraque glabra margine parce hirsuta, ligulis 2-lobatis extus hirsutis intus glabris. Spicæ rhachis florifera 10-15 cm. longa fulvo-villosa dense florigera, floribus sessilibus vel brevissime pedicellatis; bracteis obovatis 2 cm. longis 1 cm. latis basin alabastri floris amplectantibus apice obtusis plus minus hirsutis vel glabris; floribus sessilibus; ovarium obconico-cylindricum 3 mm. longum 2 mm. latum breve tomentosum; calyx obconico-cylindricus 12 mm. longus 5 mm. latus basi extus plus minus hirsutus suturam glaber apice 2-3-lobatus ad marginem loborum ciliolatus uno latere ab apice usque ad medium fissus; petala 3; 4 cm. longa a basi usque ad 1 cm. altitudinem connata; dorsale latius 1½ cm. latum apice obtusissimum margine hirsutum; lateralia angustiora 7 mm. lata; labellum late ovato-rhomboidæum sessile 2½-3 cm. longum 3 cm. latum apice breve 2-lobatum margine sursum eroso-denticulatum deorsum integrum ad basin circum tubum dense hirsutum versus marginem

subalbum medio rubrum. Stamen: flamenti parte libera 6-7 mm. longa complanata brevissime hirsuta; anthera linearis 11 mm. longa 4 mm. lata apice 2-lobata; stylus 2½ cm. longus glaber, stigmatibus infundibuliformi hirsuto. Spica fructifera 25 cm. longa, fructibus globosis 13 mm. longis tenuiter hirsutis, seminibus tetrahedriformibus 3½ mm. longis.

HAB. Inter Rahao et Tomroku, leg. B. HAYATA, Mai. 1916.

Near *Alpinia macrocephala* HAY.; but separable from it in total absence of bracts in the fruiting spikes; also near *A. densespicata*, but differs from it in the quite smooth (not costulate) fruits.

NOTE: Plant 1-2 m. tall; bracts and sepals pink or white; fruits orange-scarlet.

Alpinia Shimadai HAYATA Ic. Pl. Formos. V. p. 219. Descriptio aucta:—Spica fructifera circ. 10 cm. longa 3-4 cm. lata, fructibus globosis 13 mm. in diametro minute hirsutis plus minus costulatis; calycibus persistentibus, bracteis evanescentibus.

HAB. Chikushizan; Nankō, Dainan-ō, Soseikyaku, Shakkō.

Alpinia speciosa K. SCHUMANN; HAYATA Ic. Pl. Formos. V. p. 227; Gen. Ind. p. 82.

HAB. Shōkei, Busegan, Seisui, leg. B. HAYATA, Mai. 1917.

NOTE: Plant 2-3 m. tall; spikes somewhat nodding; lip yellow at the margin, red towards the center.

Alpinia suishaensis HAYATA sp. nov.

Alpinia sp. HAYATA Ic. Pl. Formos. V. p. 217.

HAB. Suisha, Holisha, Musha.

Differs from *A. kelungensis*, in the much narrower leaves and in the labellum with two lobes at the apex.

NOTE: Fruits scarlet-red; much smaller than those of *A. kelungensis*.

Alpinia tonrokuensis HAYATA sp. nov. Caulis 2-3 m. altus. Folia superiora subsessilia, ligulis 2-lobatis 8 mm. longis extus villosis intus glabris obtusis, laminis lanceolatis 55 cm. longis 10 cm. latis apice subito acuminatis ad caudam linearem 2 cm. longam 2 mm. latam abeuntibus margine integerrimis ad marginem hirsutis utraque pagine glabris basi acutis. Spicæ erectæ cylindricæ dense floriferæ 20-25 cm. longæ, floribus fere sessilibus; rachis

dense fulvo-villosa; bracteis conchiformibus chartaceo-membranaceis 3 mm. longis in explicato 3 cm. latis apice subrotundatis plus minus mucronatis; floribus sessilibus; ovarium 3 mm. longum totiusque latum dense villosotomentosum; calyx 2 cm. longus extus deorsum plus minus hirsutus sursum glaber cylindrico-obconicus intus glaber apice obtusissimus latere uno ad medium fissus; petala 3 obovata 4-5 cm. longa basi attenuata a basi usque ad 1 cm. altitudinem connata apice obtusissima 13 mm. lata; labellum basi cum petali tubo connatum, parte libera ovato-rhomboida 3-4 cm. longa $2\frac{1}{2}$ cm. lata apice cuneato-triangulari acuta ad summum breve 2-lobata margine subintegra utraque glabra basi latissime acuta margine flava versus medium centalem rubescenti, basi ad faucem dense hirsuta staminodiis minutis utroque latere instructa; stamen erectum vel recurvum, anthera linearis $1\frac{1}{2}$ mm. longa utroque latere alato; connectivo membranaceo latiore in explicato 6 mm. lato apice obtuso 2-lobato hirsuto, intus medio 2-loculifero; stylo subglabro vel plus minus hirsuto, stigmate infundibuliformi hirsuto.

HAB. Kussaku, leg. B. HAYATA, Mai. 1916.

Near *A. formosana* SCHUM.; but differs from it in the densely tomentose ovary and in the labellum nearly cuspidate at the apex; also very near *Alpinia kussakuensis*; but distinguishable from it by the lips which are shortly 2-lobed at the tip, in the thinner hirsute connectives, and in the smaller anthers.

NOTE: Plant 2-3 m. tall; bracts and sepals pink; corolla white; lip yellow at the margin, but yellow-red towards the center; anthers narrower than those of *Alpinia uraiensis* HAY.

Alpinia uraiensis HAYATA Ic. Pl. Formos. V. p. 224; Gen. Ind. p. 82.

HAB. Urai, Tonroku, Kaukaukei, Suisha.

NOTE: Bracts reddish-purple at the tip; calyx nearly white; lip yellow, reddish at the center; anthers very thick; fruits light scarlet.

Liliaceæ.

Pseudosmilax HAYATA g. n.

Flores dioecii. Fl. ♂: perianthium gamophyllum apice brevissime 3-

lobatum. Stamina 9 fere distincta. Flores ♀ ignoti. Herba scandentissima, foliis cirrhiferis. Species duæ in Formosa incolæ.

Just intermediate between *Smilax* and *Heterosmilax*. The new genus resembles *Smilax* in having nearly distinct stamens; but differs from the latter in the gamophyllous perianth. It is also allied to *Heterosmilax* in the gamophyllous perianth, but distinguishable from the latter in the nearly distinct stamens which amount as many as nine.

Pseudosmilax seisuiensis HAYATA sp. nov. (Pl. VI.) Caulis teres scandentissimus glaberrimus stramineus (in exsiccato). Folia alterna chartacea vel tenuiter coriacea ovata 7-11 cm. longa 4-7 cm. lata apice triangulari-acuta ad summum brevissime apiculata basi late truncata cordata vel rotundata margine integra 5-nervia, nervis ad apicem convergentibus, venulis reticulatis, nervis venis venulisque utraque pagine distincte elevatis, petiolis 1-3 cm. longis prope basin utroque latere cirrhiferis, cirrhis filiformibus circ. 10 cm. longis volubilibus. Flores umbellati, umbellis 50-60-floratis longe pedunculatis, pedunculis 5 cm. longis complanatis, pedicellis $1\frac{1}{2}$ -2 cm. longis glabris basi bracteolis minutis digitiformibus instructis. Perianthium glabrum obovodeum vel oblongum gamophyllum 3 mm. longum 2 mm. latum apice ore minute 3-lobatum. Stamina 9 fere distincta fere contracta, filamentis 1 mm. longis, antheris linearibus $1\frac{1}{2}$ mm. longis $\frac{1}{3}$ mm. latis apice acuminatis apiculatis adnatis introrsum dehiscentibus. Rudimentum ovarii nullum. Flores ♀ ignoti.

HAB. Inter Seisui et Gūukutsu, leg. B. HAYATA et S. SASAKI, Mai, 1917.

Near *Heterosmilax* in the gamophyllous perianth; but differs from it in having as many as nine stamens with nearly distinct filaments, and much longer linear anthers. In *Heterosmilax*, stamens are usually three, and have nearly connate filaments and very much shorter reniformed anthers.

Pseudosmilax hogoensis HAYATA sp. nov. Caulis scandentissimus trigonus 6-7 mm. in diametro sectionis glaber. Folia alterna adulta magna ovato-cordata 25 cm. longa 18 cm. lata apice acuta basi cordata 5-nervia, folia juvenia ovato-oblonga 18 cm. longa 8 cm. lata apice acuminata basi rotundata obtusa chartacea vel membranacea margine integra, petiolis 3 cm. longis prope basin utroque latere cirrhiferis, cirrhis 2-5 cm. longis volubilibus. Flores umbellati, umbellis 40-50-floratis longe pedunculatis, pedunculis 6 cm. longis

valde complanatis, pedicellis 1 cm. longis basi bracteis et bracteolis minutis instructis. Perianthium obovoideum vel oblongum 3 mm. longum 2 mm. latum apice brevissime 3-lobatum. Stamina 9 fere distincta, filamentis 1 mm. longis, antheris linearibus $1\frac{1}{2}$ mm. longis $\frac{1}{2}$ mm. latis apice obtusis adnatis. Ovarium nullum. Fl. ♀ ignotus.

HAB. Hôgô, ad 4,000 ped. alt. leg. B. HAYATA, Aprili. 1916.

Near *Pseudosmitax seisuiensis* HAY.; but distinguishable from it in the much more elongate leaves of thinner texture.

Smitax LINN.

Key to species.

- | | |
|---|---|
| 1. Stem erect; leaves small | 2. |
| Stem scandent or climbing | 4. |
| 2. Petiole base vaginate without tendrils | <i>S. tenuissima.</i> |
| Petiole base not vaginate, tendrils more or less distinct | 3. |
| 3. Tendrils short or nearly none | <i>S. gracillima.</i> |
| Tendrils long | <i>S. randaiensis.</i> |
| 4. Stem armed and very much scabrous or warty | <i>S. trachyclada.</i> |
| Stem armed or unarmed, but neither scabrous nor warty | 5. |
| 5. Stem conspicuously armed | 6. |
| Stem not or slightly armed | 9. |
| 6. Stem densely beset with long soft spines | <i>S. horridiramula.</i> |
| Stem remotely beset with short stiff spines | 7. |
| 7. Leaves herbaceous | <i>S. formosana.</i> |
| Leaves coriaceous | 8. |
| 8. Leaves linear | <i>S. elongato-reticulata.</i> |
| Leaves oblong | <i>S. elongato-umbellata.</i> |
| 9. Adult leaves herbaceous | 10. |
| Adult leaves chartaceous or coriaceous | 11. |
| 10. Leaves ovato-lanceolate or linear | <i>S. herbacea</i> var. <i>daibuiensis.</i> |
| Leaves cordately rounded | <i>S. ovato-rotunda.</i> |
| 11. Petiole base auricled | <i>S. prolifera.</i> |
| Petiole base not auricled | 12. |

12. Leaves nervo-marginate *S. nervo-marginata*.
 Leaves not nerved at the margin 13.
13. Leaves lanceolate or ovate-lanceolate 14.
 Leaves ovate or ovate-rounded 15.
14. Peduncles very short or nearly sessile, leaves 3-nerved *S. glabra*.
 Peduncles long .. *S. lanceifolia*, *S. liukiensis*, *S. takaoensis*, *S. arisanensis*.
15. Leaves larger 16.
 Leaves smaller 17.
16. Petiole base longer and distinctly winged; leaf base acute.. *S. taihiensis*.
 Petiole base shorter and nearly wingless; leaf base rounded *S. stenopetala*.
17. Quite unarmed *S. plunipetiolata*.
 More or less armed *S. China*.

Smilax arisanensis HAYATA (Fig. 42, 1-6) Mater. Fl. Formos. p. 356.

Descriptio aucta: Fl. umbellati; perianthii segmenta 6, exteriora majora oblonga 4 mm. longa $1\frac{1}{2}$ mm. lata, interiora minora oblongo-linearia $3\frac{1}{2}$ mm. longa 1 mm. lata apice obtusa; stamina 6, filamentis $1\frac{1}{2}$ mm. longis, antheris oblongo-rotundatis $\frac{1}{3}$ - $\frac{1}{2}$ mm. longis.

HAB. Arisan.

Smilax elongato-reticulata HAYATA (Fig. 43, 7-14) Mater. Fl. Formos. p. 357. Descriptio aucta: Flores $\frac{1}{3}$ umbellati, pedicellis 7 mm. longis; rhachis umbellarum elongata 2 mm. longa $\frac{2}{3}$ mm. lata, bracteis minutis oblongis $\frac{1}{2}$ mm. longis obtusis; pedunculi umbellarum 1 cm. longi solitarii axillares. Perianthii segmenta 6, exteriora oblonga $4\frac{1}{2}$ mm. longa 2 mm. lata apice obtusa, interiora lineari-spathulata 4 mm. longa 1 mm. lata apice obtusa. Stamina 6, filamentis basi usque ad 1 mm. cum segmentis perianthii connatis, partibus liberis $1\frac{1}{2}$ mm. longis, antheris oblongo-ovatis 1 mm. longis apice acutis. Ovarii rudimentum 0. Bacca late globosa nigricans 7 mm. longa totiusque lata 2-3-sperma. Semina purpureo-rubescensia levissima 4 mm. longa $3\frac{1}{2}$ mm. lata oblongo-globosa plano-convexa.

HAB. Tatsutaka, Oiwaake, ad 7,500 ped. alt., leg. B. HAYATA, Aprili. 1916.

NOTE: Fruits dark purple glaucous; perianth pale green; ovary green; anthers pale yellow.

Smilax formosana HAYATA sp. nov. (Fig. 43, 1-6). *Smilax Sieboldii*

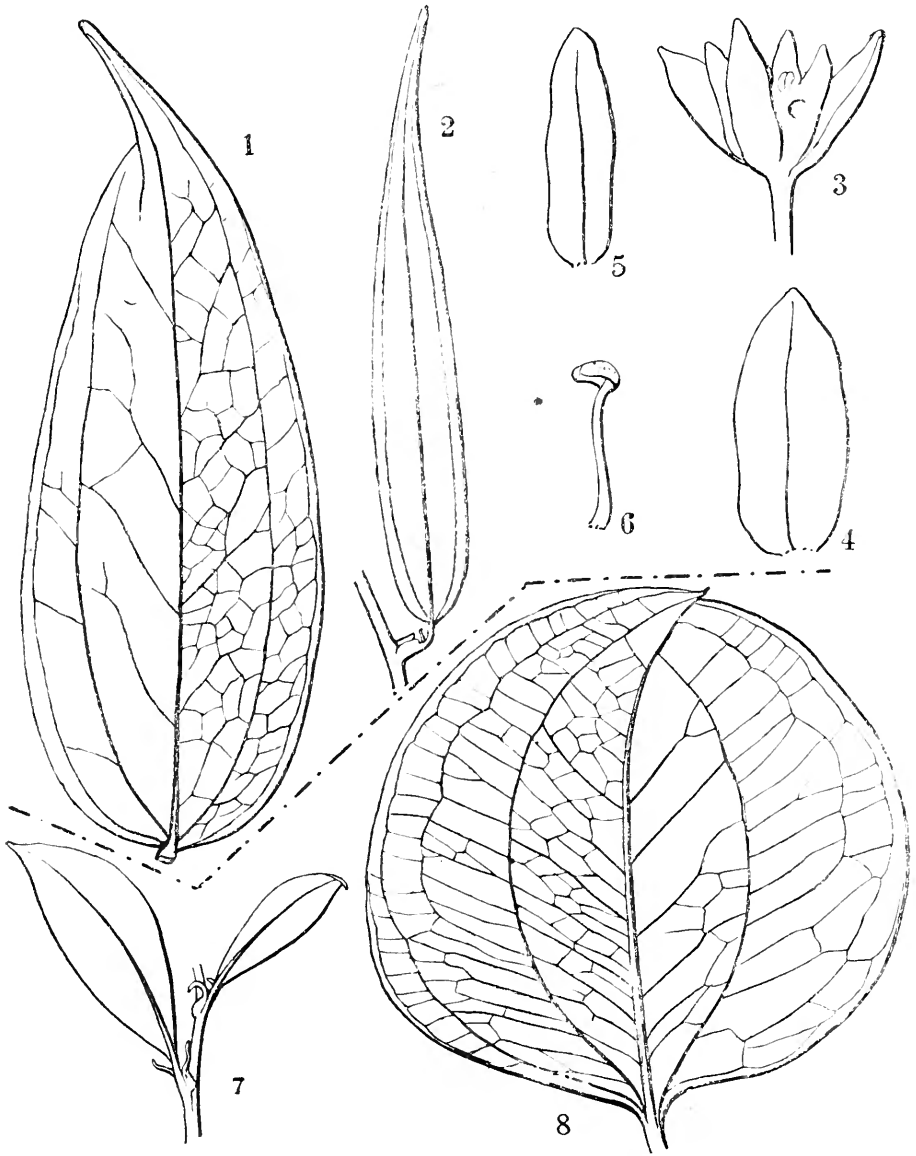


FIG. 42; 1-6, *Smilax arisanensis* HAYATA; 1, 2, different forms of leaves; 3, a male flower; 4, an outer segment; 5, an inner segment; 6, a stamen; 7-8, *Smilax China* LINN.; 7-8, young and adult leaves.

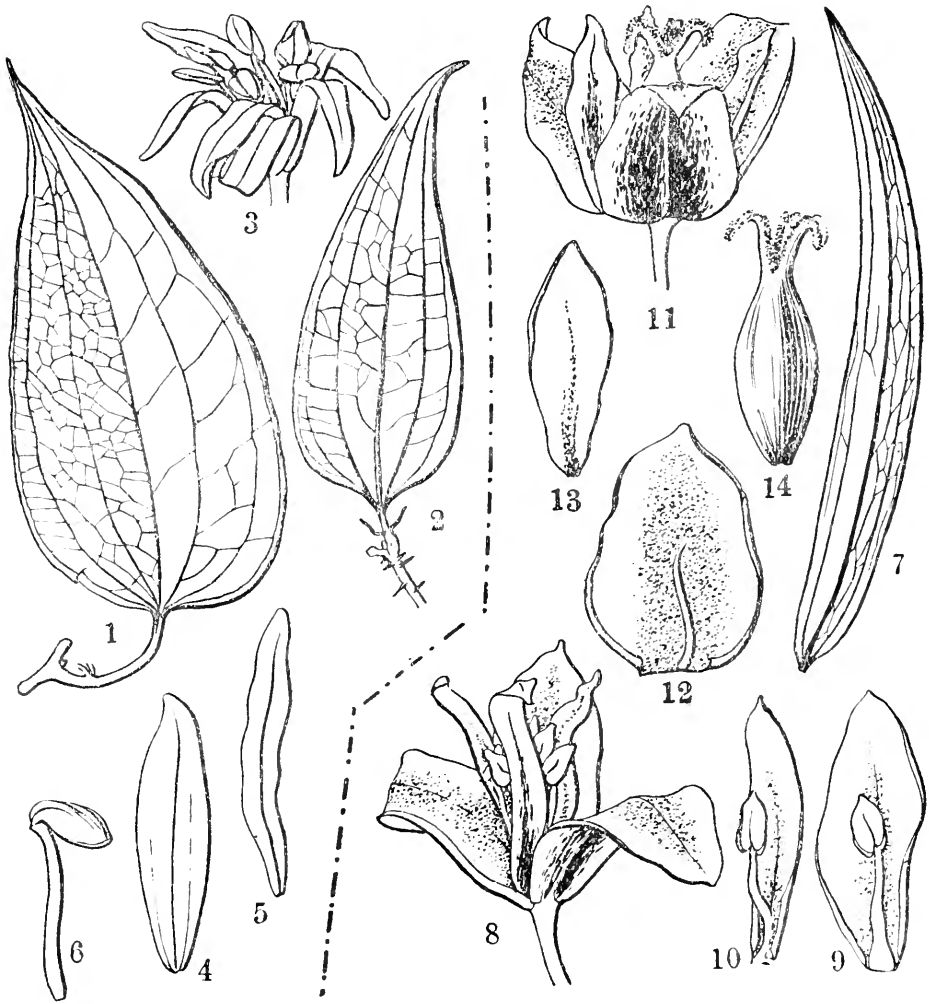


Fig. 43; 1-6, *Smilax formosana* HAYATA; 1, 2, different forms of leaves; 3, a male flower; 4, an outer segment; 5, an inner segment; 6, a stamen; 7-14, *Smilax elnjato-reticulata* HAYATA; 7, a leaf; 8, a male flower; 9, an outer segment of the same flower; 10, an inner segment of the same; 11, a female flower; 12, an outer segment of the same flower; 13, an inner segment of the same; 14, an ovary.

MIQ. var. *formosana* HAYATA Mater. Fl. Formos. p. 363. Descriptio aucta: Pedunculi axillares solitarii apice flores umbellatim gerentes 2-2½ cm. longi apice rotundato-planii haud bracteati, pedicellis 7 mm. longis. Perianthii segmenta 6, exteriora 3 oblongo-lineararia 4½ mm. longa 1½ mm. lata apice obtusa,

interiora linearia 1 mm. lata apice obtusa. Stamina 6, filamentis 2-2½ mm. longis, antheris obovato-oblongis 1½ mm. longis. Rudimentum ovarii 0.

Smilax elongato-umbellata HAYATA (Fig. 44) Mater. Fl. Formos. p.

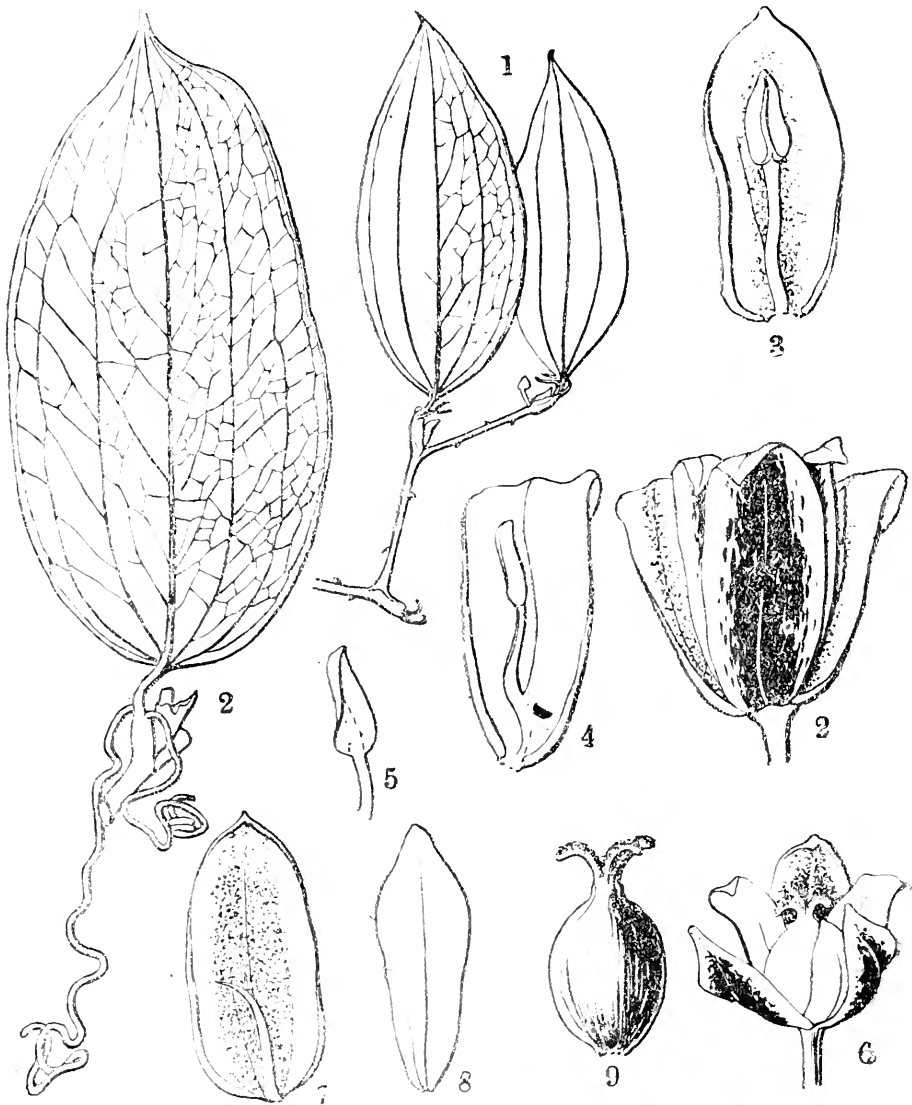


Fig. 44; *Smilax elongato-umbellata* HAYATA; 1, 2, young and adult leaves; 2, a male flower; 3, 4, segments of the same flower; 5, a stamen; 6, a female flower; 7, an outer segment of the female one; 8, an inner segment of the same; 9, an ovary.

358. Descriptio aucta: Folia adulta oblonga 9 cm. longa 4½ cm. lata apice breve acuta vel subito acuminata basi rotundata margine integra coriacea 5-nervia, petiolis 1½ cm. longis a basi usque ad 1 cm. dilatatis late alatis, utroque latere cirrhiferis, cirrhis 7-8 cm. longis. Flores ♀ umbellati, pedicellis 6-7 mm. longis basi bracteatis, bracteis triangulari-lanceolatis 1 mm. longis acuminatis. Perianthii segmenta 6, exteriora majora ovato-oblonga 3 mm. longa 2 mm. lata apice obtusissima margine anguste plicata, interiora oblongo-linearia 3 mm. longa 1 mm. lata apice obtusa. Staminodia linearia cum segmentis partim connata. Ovarium conico-ovoideum 1½ mm. longum 1 mm. latum apice obtusum, stigmate sessili 3-partito, partibus linearibus ½ mm. longis deorsum recurvis.

HAB. Hakku, ad 4,000 ped. alt., leg. B. HAYATA, Aprili. 1916; Musha, leg. S. FUJII.

NOTE: Perianth-segments reddish, ovary pale green.

Smilax gracillima HAYATA (Fig. 45, 2-3) Mater. Fl. Formos. p. 357; Gen. Ind. p. 85.

Smilax herbacea LINN. var. **daibuensis** HAYATA n. v. (Fig. 45, -4). Scandentissima glabra. Folia alterna membranacea vel chartacea ovato-lanceolata vel lanceolata 10-16 cm. longa 2½-6½ cm. lata apice subito acuminata vel caudata ad summum aristis brevibus instructa basi rotunda truncata vel tenuiter cordata margine crenulato-erosa, costis nervis venulisque supra tenuissime subtus prominente elevatis, 5-7-nervia pellucida, petiolis 1-3 cm. longis prope basin utroque latere cirrhiferis, cirrhis filiformibus 5-7 cm. longis. Flores umbellati, umbellis longe pedunculatis, pedunculis axillaribus 8-10 cm. longis haud vel vix complanatis, pedicellis 2 cm. longis, bracteis scariosis oblongo-triangularibus 1½ mm. longis ⅓ mm. latis; apice pedunculi globoso 2½ mm. in diametro. Perianthii segmenta 6, exteriora majora 9 mm. longa 1½ mm. lata, interiora angustiora linearia 1 mm. lata apice obtusa. Stamina 6, filamentis linearibus 5 mm. longis, antheris linearibus 2½ mm. longis ½ mm. latis apice acutis vel obtusis. Rudimentum ovarii 0.

HAB. Daibusan, leg. MATSUDA (No. 264).

Differs from the type in having ovately lanceolate leaves.

Smilax horridiramula HAYATA sp. nov. (Fig. 46). Scandens; caulis

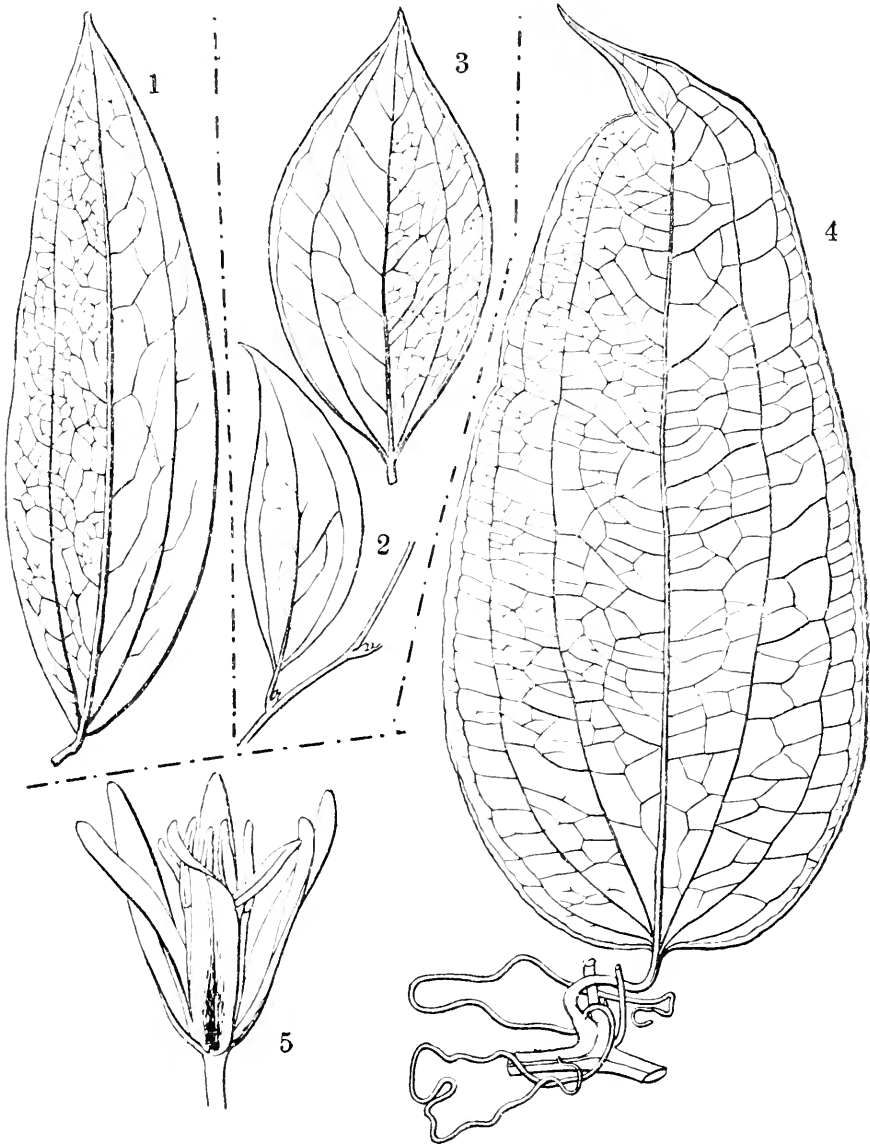


Fig. 45; 1, a leaf of *Smilax glabra* ROXB.; 2, 3, different forms of leaves of *Smilax gracillima* HAYATA; 4, a leaf of *Smilax herbacea* var. *daibuensis* HAYATA; 5, a flower of the same variety.

teres flexuosus dense spinulosus, spinulis patentissimis gracillimis tenuibus 5 mm. longis, ramosissimus. Folia alterna oblonga vel oblongo-ovata 5½ cm.

longa 3-3½ cm. lata apice obtusissima ad summum breve cuspidata basi rotundata chartacea margine integra 5-nerviã utraque pagine glabra, nervis supra minus subtus plus prominente elevatis venis venulisque utraque pagine

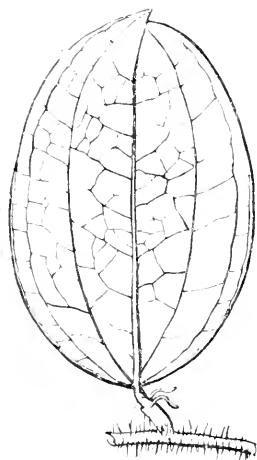


Fig. 46; *Smilax horridiramula* HAYATA.

tenuissime elevatis, petiolis 1 cm. longis sursum angustis deorsum dilatis, partibus angustis 2 mm. longis, partibus dilatis 7-8 mm. longis alatis apice cirrhiferis, cirrhis brevissimis 2-3 mm. longis. Flores umbellati, umbellis ad axillas foliorum infimorum ramulorum lateralium solitariis, pedunculis 3 cm. longis complanatis aculeatis. Ramuli laterales basi squamis 2 instructi, squamis oblongo-triangularibus 1-1½ cm longis apice acutis crassiusculis. Fructus globosus 6 mm. in diametro 2-spermus. Semina purpureo-rubescencia oblonga 3 mm. longa 2½ mm. lata apice truncata plano-convexa.

HAB. Akô : Kasagiama ; Paiwan ; Takao, leg. Y. MATSUDA.

Near *Smilax ferox* WALL. ; but differs from it in the branches and branchlets which are densely covered with rather slender long spines.

Smilax ovato-rotunda HAYATA sp. nov. (Fig. 48-2). Scandentissima ; caulis teres lævis. Folia alterna ovato-rotunda membranacea vel tenuiter coriacea 8-9 cm. longa 6-7 cm. lata apice subito acuta basi rotundata vel tenuiter cordata margine integra 5-7-nerviã, nervis venisque supra minus subtus plus elevatis, utraque pagine glabra, petiolis 1-2 cm. longis prope basin cirrhiferis, cirrhis filiformibus. Pedunculæ 2 cm. longæ valde complanatae fructus 5-7 umbellatim gerentes, pedicellis 2-2½ cm. longis ; apice pedunculi globoso, bracteis triangularibus 1 mm. longis. Bacca globosa 7-8 mm. in diametro glabra 1-3-sperma. Semina rubescencia globosa vel semi-globosa vel triquetro-globosa 4 mm. longa.

Smilax Oldhami HAYATA Gen. Ind. p. 86, (non MIQ.)

HAB. Arisan : Inter Heishana et Jūjūro, leg. B. HAYATA, Aprili. 1912.

Near *S. Oldhami* ; but differs from it in the long scandent branches of much robust habit.

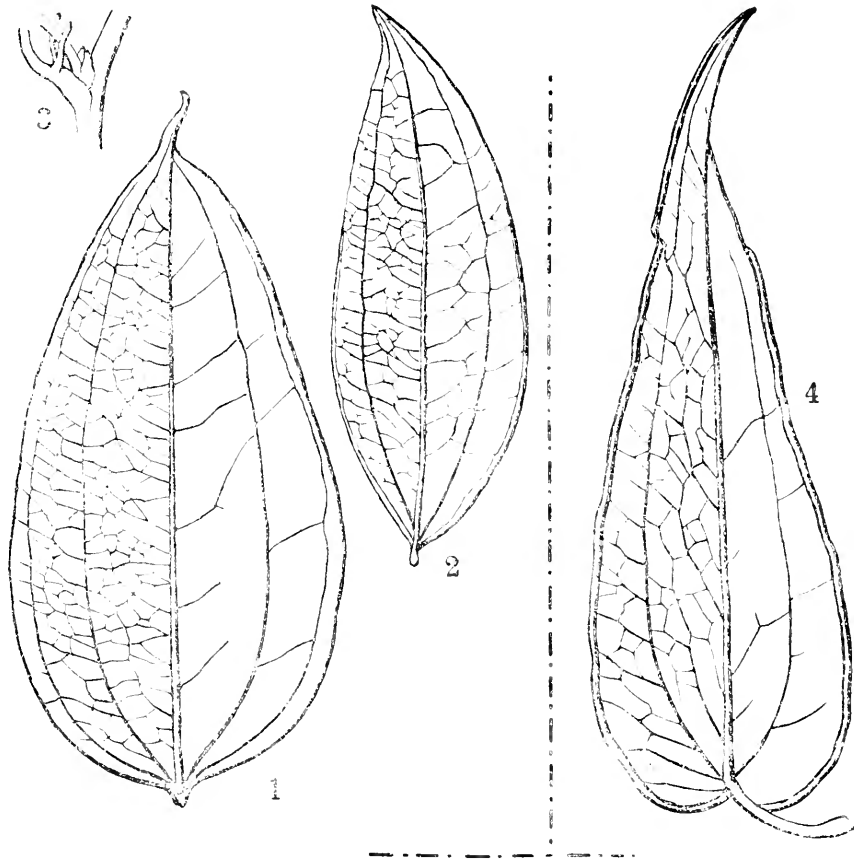


Fig. 47; 1-3. *Smilax lanceifolia* Roxb.; 1, 2, different forms of the leaves; 3, stipules; 4, a leaf of *Smilax nervomarginata* HAYATA.

***Smilax taiheiensis* HAYATA** sp. nov. Scandentissima. Folia coriacea oblongo-rotundata 10 cm. longa 7 cm. lata apice cuspidato-acuta basi subito acuta ad petiolum abeuntia margine integra 5-nervia, nervis venisque utraque pagine distincte elevatis, utraque pagine glabra, petiolis 2-1½ cm. longis angustissime alatis basi dilatis, partibus dilatis 1-1½ cm. longis alatis apice cirriferis. Flores umbellati, pedunculis axillaribus 2½ cm. longis complanatis, pedicellis 5 mm. longis, bracteis late triangularibus 1 mm. longis. Perianthii segmenta 6, exteriora majora oblonga 4 mm. longa 2 mm. lata apice acuta; interiora 3½ mm. longa 1½ mm. lata apice obtusa. Staminodia 6

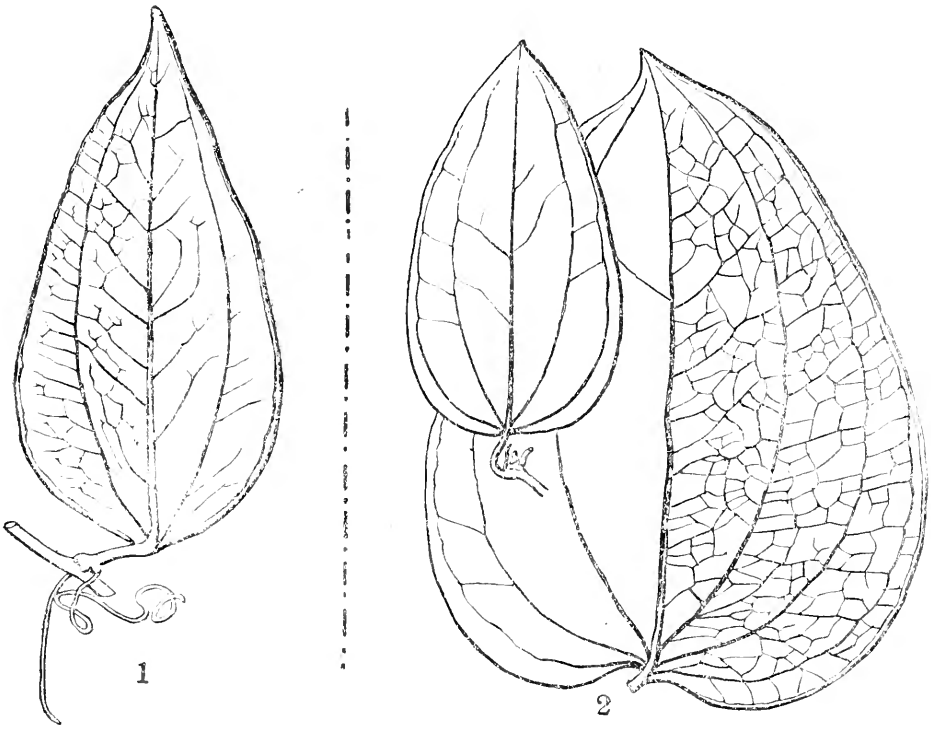


FIG. 48; 1, *Smilax linkiensis* HAYATA; 2, *Smilax ovato-rotunda* HAYATA.

linearia $1\frac{1}{2}$ mm. longa. Ovarium ovoideum 2 mm. longum $1\frac{1}{2}$ mm. latum, stigmate sessili 3-partito, partibus linearibus valde deorsum recurvis $1\frac{1}{2}$ mm. longis.

HAB. Taiheizan, leg. B. HAYATA et S. SASAKI, Mai. 1917.

Near *S. stenopetala*, but differs from it in the broad winged petioles, in the leaf-blades with much acuter base, and in the simply umbellate flowers. In *S. stenopetala*, umbels are arranged in a cyme.

Smilax takaensis HAYATA sp. nov. Scandentissima; caulis teres scaberulus. Folia alterna elongato-oblongo-ovata chartacea 8-9 cm. longa 3-3½ cm. lata apice obtusa ad summum breve acuta vel breve caudato-acuta basi obtusa rotundata margine subintegra glabra 5-nervia, nervis venisque utraque pagine tenuissime elevatis, petiolis 1-2 cm. longis prope basin cirriferis, cirrhis filiformibus 5-7 cm. longis. Pedunculæ axillares 5 cm. longæ apice flores

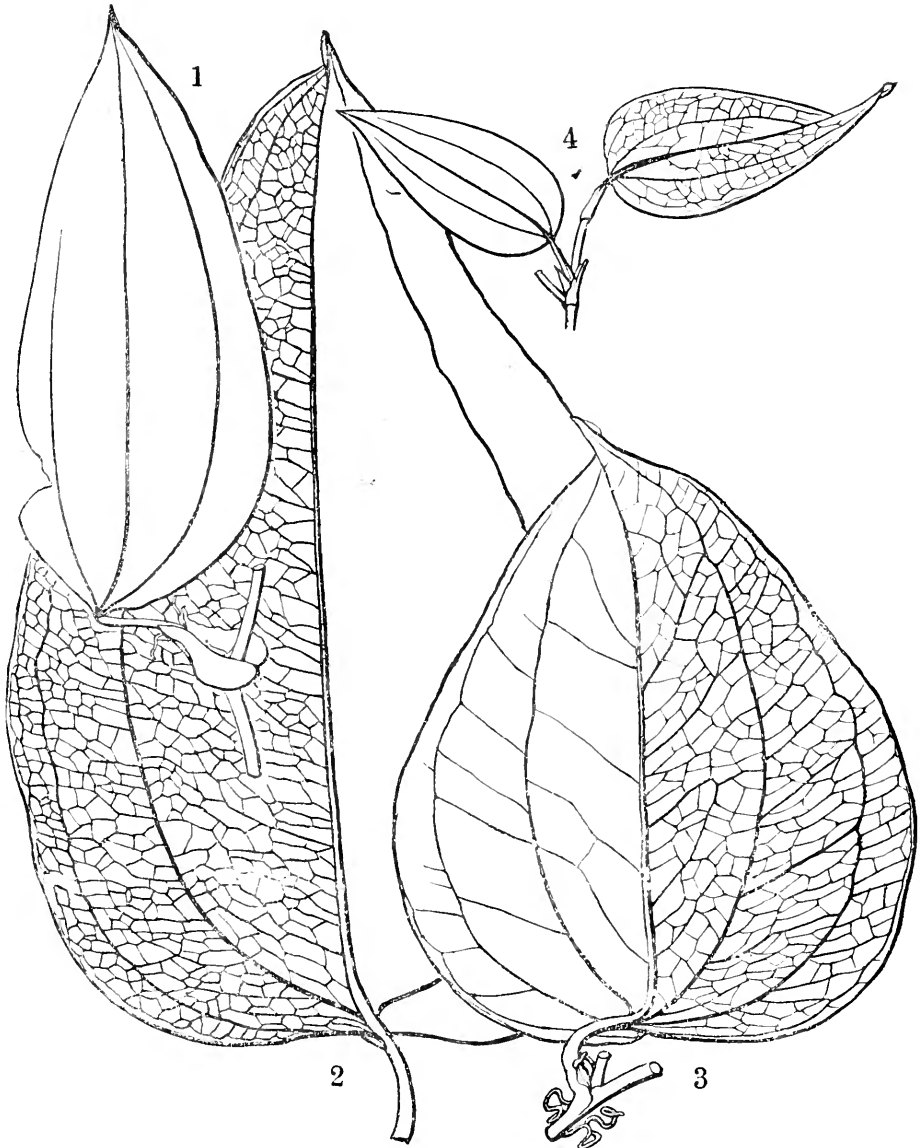


Fig. 49; 1, 2, different forms of *Smilax prolifera* ROXB.; 3, *Smilax planipedunculata* HAYATA; 4, *Smilax randaiensis* HAYATA.

umbellatim gerentes, pedicellis $2\frac{1}{2}$ cm. longis, basi bracteis triangularibus instructis; apice pedunculi globoso. Bacca globosa. Semina rubescentia.

HAB. Takao, leg. U. FAURIE, Januario, 1914, No. 302.

Near *S. glabra* ROXB.; but differs from it in the much longer peduncles and pedicels.

***Smilax tenuissima* HAYATA** sp. nov. (Fig. 50,-2.) Caulis erectus vel scandens ramosissimus, ramis ramulisque teretibus glabris lævibus ad locum ramificationis vaginis foliorum persistentibus obtectis gracilibus ascendentibus. Folia alterna oblongo-ovata 3 cm. longa 10-12 mm. lata apice obtusa ad summum breve aristata basi obtusa margine integra 3-nervia, costis venisque utraque pagine tenuissime elevatis, petiolis 1 cm. longis haud cirrhiferis basi dilatatis vaginiformibus caulem amplectantibus. Pedunculae axillares $1\frac{1}{2}$ cm. longæ fructus 2-3 umbellatim gerentes, pedicellis 5 mm. longis basi bracteatis, bracteis ovato-linearibus 3 mm. longis $\frac{1}{2}$ mm. latis acuminatis. Bacca lato globosa 5 mm. lata 4 mm. longa. Semina

HAB. Mt. Morrison, ad 7,000 ped. alt., leg. S. SASAKI, Oct. 1919.

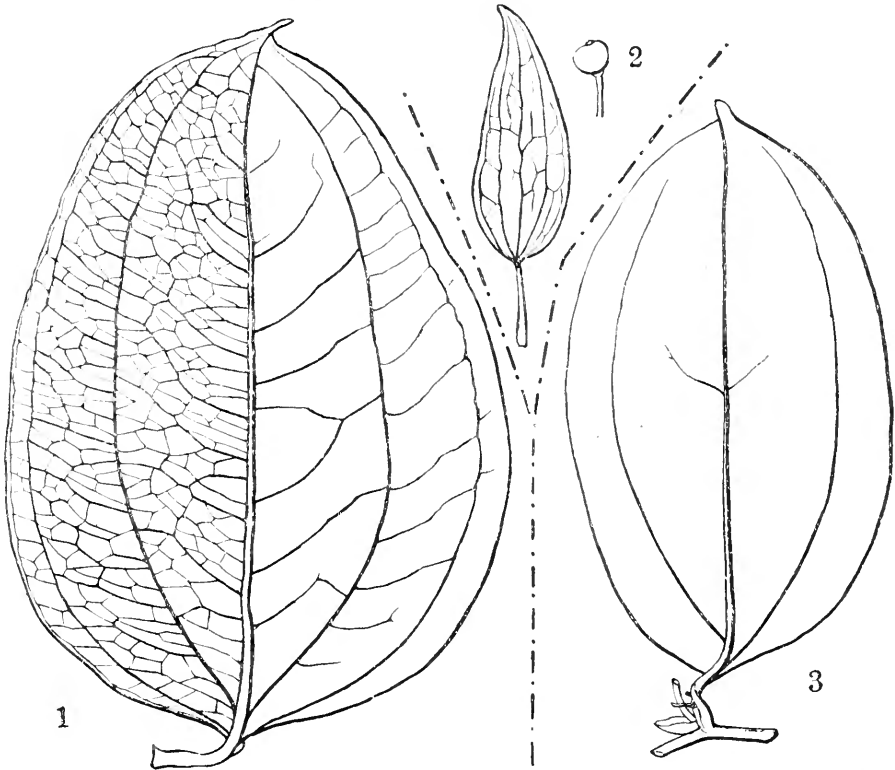


FIG. 50; 1, *Smilax stenopetala* A. GR.; 2, *Smilax tenuissima* HAYATA; 3, *Smilax trachyclada* HAYATA.

Near *S. gracillima* HAYATA; but differs from it in the vaginate leaf base.

Smilax trachyclada HAYATA sp. nov. (Fig. 50,-3.) Scandentissima; aculeatus scaberrimus, aculeis triangularibus 2-3 mm. longis, ramosissimus. Folia oblongo-ovata 8-10 cm. longa 5-6 cm. lata obtusissima fere rotundata ad summum breve apiculata, apiculis 3 mm. longis, basi rotundata margine integra chartacea 5-nervia, nervis venulis supra minus subtus plus elevatis, petiolis 1-1½ cm. longis basi dilatis, partibus dilatis 5 mm. longis apice cirrhiferis, cirrhis brevioribus 5 mm. longis. Cymæ axillares solitariae, pedunculis 2 cm. longis dichotome et cymose ramosis, ramis divaricatis apice flores 20-30 umbellatim gerentibus, pedicellis 7 mm. longis. Perianthii segmenta 6, exteriora linearia 6 mm. longa 1½ mm. lata apice obtusa, interiora angustiora linearia 6 mm. longa ¾ mm. lata apice obtusa. Stamina 6, filamentis filiformibus 7 mm. longis, antheris oblongo-linearibus 1½ mm. longis apice obtusissimis.

HAB. Arisan, ad 2,500 m. alt., leg. B. HAYATA, typus; Mt. Chōran; Bangari; Tōseikaku.

Near *S. stenoptala*; but differs from it in the very much scabrous verrucose branchlets.

Heterosmilax KUNTH.

Heterosmilax raishaensis HAYATA sp. nov. (Fig. 51.) Suffruticosa, scandentissima; caules et rami graciles angulato-teretes multi-sulcati muricato-rugosi. Folia alterna membranaceo-chartacea vel membranacea ovato-oblonga 12 cm. longa 5½ cm. lata apice acuminata basi rotundata ad extremitatem basilarem acuta integra utraque pagine glabra 5-7-nervia, petiolis 2-3 cm. longis basi dilatis, partibus dilatis 7 mm. longis apice utroque latere cirrhiferis, cirrhis filiformibus 5-10 cm. longis. Flores umbellatim dispositi, umbellis 20-40 floratis longe pedunculatis, pedunculis 5-6 cm. longis complanatis apice globose dilatis bracteis bracteolisque florum dense obtectis, bracteis ovatis 1½ mm. longis castaneis, pedicellis florum gracilibus 2½ cm. longis glabris. Perianthium gamophyllum clavato-cylindricum 5 mm. longum 2 mm. latum glabrum apice clausum 3-dentatum, dentibus obtusis minutis ½ mm. latis ¼ mm. longis. Stamina 3, filamentis valde complanatis 2½ mm. longis ¼ mm. latis glabris basi usque ad medium connatis, antheris rotundatis ½ mm. in diametro



FIG. 51; *Heterosmitax raishuensis* HAYATA; 1, a branch; 2, a flower; 3, the same, in vertical section; 4, 5, a stamen, seen from different sides.

apice apiculatis.

HAB. Raisha, leg. Y. MATSUDA.

Near *Heterosmitax arisanensis* HAY., but differs from it in the much more

slender pedicels and in the leaves which are rounded at the base and at the same time always acutely attenuate to the petioles. In *H. arisanensis* the leaves are cordate or rounded at the base but not attenuate to the petioles.

Polygonatum ADANS.

Polygonatum arisanense HAYATA sp. nov. Caulis glaber altissimus circ. 100 cm. longus a medio sursum foliatus. Folia alterna lanceolata inferiora majora 20 cm. longa $4\frac{1}{2}$ cm. lata apice acuminata basi obtusa ad petiolum 2-3 mm. longum contracta integra membranacea utraque glaberrima subtus plus minus glauca. Flores 2-4 umbellatim dispositi, umbellis axillaribus, pedunculis 1-2 cm. longis gracilibus nutantibus, pedicellis $1\frac{1}{2}$ cm. longis apice ad locos infra calycem 1 mm. distantes articulatis. Perianthium cylindricum 2 cm. longum 6 mm. latum glabrum apice 6-lobatum, lobis triangularibus 5 mm. longis $3\frac{1}{2}$ mm. latis apice acutis basi haud contractis. Stamina 6 medio perianthii affixa, filamentis 5 mm. longis, antheris elongato-oblongis 2 mm. longis 1 mm. latis apice apiculatis basi plus minus 2-lobatis. Ovarium ellipsoideum $5\frac{1}{2}$ mm. longum 3 mm. latum glabrum, stylo filiformi 13 mm. longo glabro, stigmate truncato plus minus dilato.

HAB. Arisan: Kōdenshō, leg. S. SASAKI, Mai. 1913; Bunkiko, ad 1,500 m. alt.

Near *Polygonatum officinale*, but differs from it in having much longer and thinner leaves.

Polygonatum officinale ALL. var. ***formosanum*** HAYATA n. v. Caulis glaber 80-100 cm. longus ad medio sursum foliatus. Folia alterna elongato-oblonga inferiora majora circ. 10 cm. longa 4 cm. lata apice acuta ad summum obtusa ad petiolum 3-5 mm. longum contracta integra chartacea. Flores 2-4-umbellatim dispositi, umbellis axillaribus solitariis, pedunculis $1\frac{1}{2}$ cm. longis, pedicellis $1\frac{1}{2}$ cm. longis, infra apicem articulatis. Perianthium cylindrico-campanulatum 2 cm. longum 8 mm. latum apice 6-lobatum, lobis late triangulari-rotundatis 6 mm. longis 5 mm. latis apice obtusissimis basi plus minus contractis glabris. Stamina 6 ad medium tubi perianthii affixa, filamentis 6 mm. longis glabris, antheris oblongo-linearibus 3 mm. longis 1 mm. latis apice obtusis basi rotundatis. Ovarium ovoideo-fusiforme 5 mm. longum 2 mm. latum

glabrum, stylo 12 mm. longo filiformi, stigmatē punctiformi.

HAB. Shiehseizan, Tikushizan, Taitonzan.

Polygonatum officinale ALL. var. *Maximowiczii* HAYATA Gen. Ind. p. 85, (non FR. et SAV.)

Differs from *P. officinale* var. *Maximowiczii* FR. et SAV. in having much smaller leaves.

Smilacina DESV.

Smilacina formosana HAYATA sp. nov. Rhizoma repens. Caulis erectus 20–30 cm. longus simplex teres sursum plus minus recurvus sursum tenuiter hirsutus deorsum glaber. Folia secus caulem a medio sursum alternatim disposita ovato-oblonga vel oblonga 10 cm. longa 4–5 cm. lata apice acuta vel acuminata ad summum obtusa basi obtusa ad petiolium contracta supra subglabra vel tenuiter hirsuta subtus glabra, petiolis nullis vel usque ad $1\frac{1}{2}$ cm. longis 3–4 mm. latis. Panicula terminalis solitaria 5 cm. longa 4 cm. lata breve hirsuta, pedunculis 4 cm. longis, pedicellis 2 mm. longis hirsutis, bracteis triangularibus 1 mm. longis. Segmenta perianthii 6 patentia basi plus minus connata obovato-lineariter vel oblonga 3 mm. longa $1\frac{1}{2}$ mm. lata apice obtusa basi plus minus contracta glabra. Stamina 6, filamentis basi cum segmentis perianthii connatis $1\frac{1}{2}$ mm. longis, antheris cordato-reniformibus $\frac{1}{2}$ mm. longis. Ovarium ovoideum $1\frac{1}{2}$ mm. longum totiusque latum glabrum tenuiter 3-lobatum, stylo $\frac{1}{2}$ mm. longo apice stigmatoso, stigmatē 3-lobato. Bacca in exsiccato rubescens, rotundata 3-lobata 6 mm. in diametro 3-sperma.

Smilacina japonica HAYATA Gen. Ind. p. 85, (non A. GR.)

HAB. Mt. Morrison, Mt. Arisan, Mt. Gökwanzan.

Near *S. japonica*, but differs from it in the rounded anthers and in the shortly hirsute inflorescence.

Paris LINN.

Paris arisanensis HAYATA sp. nov. Rhizoma crassum repens teres 1 cm. in diametro; caulis erectus basi squamis 2–3 vaginiformibus instructus ex apice rhizomatis oriundus solitarius rectus 30–40 cm. longus glaberrimus apice foliis verticillatis instructus teres. Folia ad apicem caulis verticillatim 8 disposita

lanceolata vel oblanceolata apice acuminata basi obtusa attenuata integra membranacea, petiolis 5 mm. longis. Flores solitarii terminales, pedunculis erectis rectis 7 cm. longis. Sepala 4-5-6 lanceolata 4-4½ cm. longa 5-10 mm. lata apice acuminata basi obtusa vel emeata margine integra herbacea membranacea. Petala 4-5-6, lineari-filiformia 5½ cm. longa ½-¾ mm. lata sepalo longiora patentia. Stamina 8-12, filamentis glabris 4-5 mm. longis filiformibus, antheris linearibus 7 mm. longis ½ mm. latis 2-locularibus apiculatis adnatis. Ovarium pentagono-globosum plus minus depressum 5 mm. longum 7 mm. latum, stylo 5-partito, partibus linearibus 4 mm. longis.

Paris polyphylla HAYATA Gen. Ind. P. 85, (non SMITH.)

HAB. Ushōkō, leg. B. HAYATA, April. 1916, (typus!); Inter Heishama et Ninandaira, leg. B. HAYATA, Mart. 1912.

Near *Paris polyphylla*, but distinguishable from it in the much thinner and narrower leaves and in the much longer linear petals.

NOTE: Sepals green; petals yellowish green; ovary reddish at the top.

Metanarthecium MAXIM.

Metanarthecium formosanum HAYATA sp. nov. Perennis. Folia omnia radicalia lineari-lanceolata 13-15 cm. longa 9 mm. lata apice acuminata basi gradatim angustata glabra integra membranacea. Scapi 20-50 cm. longi erecti recti e centro fasciculi foliorum radicalium oriundi apice spiciformes, partibus spiciformibus viscosis 3-5 cm. longis, bracteis linearibus 5-10 mm. longis 1 mm. latis apice obtusis, pedicellis brevissimis 1-½ mm. longis. Calyx tubuloso-campulatus 4 mm. longus 3 mm. latus basi latere superiore gibbosus glaber apice 6-lobatus, lobis oblongo-triangularibus 1½ mm. longis 1 mm. latis apice obtusis basi laevibus vel vix contractis; calycis tubus usque ad medium cum ovario connatus. Stamina 6 ore tubi calycis affixa, filamentis brevissimis, antheris subsessilibus ovato-oblongis ½ mm. longis. Ovarium glabrum sensu inferioribus, parte libera trigono-conicum 1 mm. longum apice acuta ad stylum ½ mm. longum abeanti, stylo triquetro apice 3-lobato.

Alciris formosana HAYATA.

Metanarthecium foliatum HAYATA Fl. Mont. Formos. p. 226, (non MAXIM.)

HAB. In Monte Morrison: Monte Rauluisan.

Near *M. foliatum* MAXIM.; but differs from it in having much narrower leaves. In examining the flowers of *Metanarthecium* und *Aletris*, I have found no distinction between the two genera regarding the generic characters, as pointed out by Mr. Y. KUDŌ some years ago.

Aspidistra KER.

Aspidistra attenuata HAYATA (Fig. 52) Ic. Pl. Formos. II. p. 145.

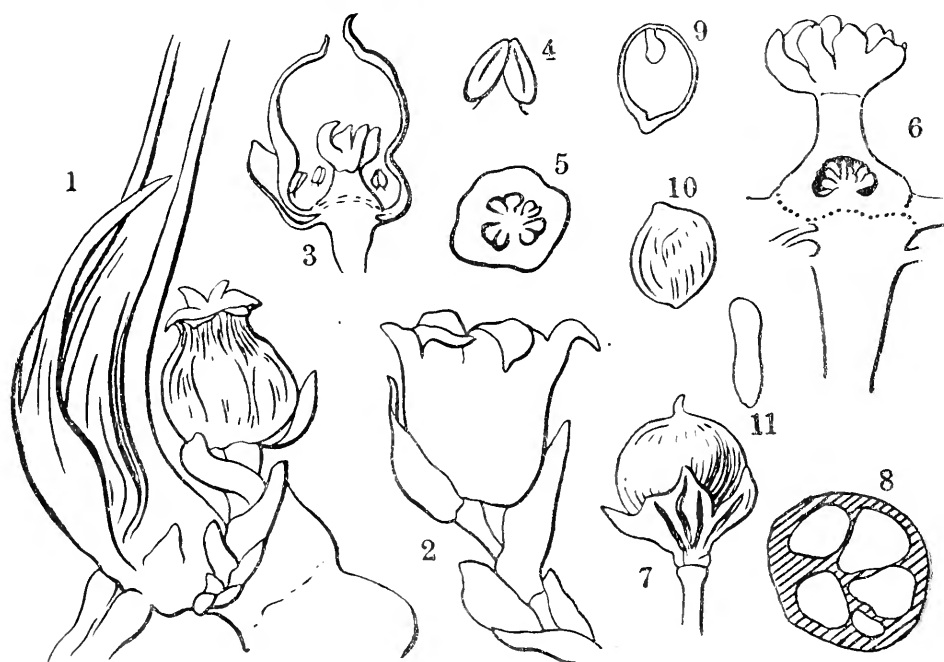


Fig. 52; *Aspidistra attenuata* HAYATA; 1, basal portion of the plant; 2, a flower; 3, the same, in vertical section; 4, a stamen; 5, cross-section of an ovary; 6, vertical section of a pistil; 7, a fruit; 8, cross section of a fruit; 9, a seed; 10, vertical section of the same, embryo seen; 11, an embryo.

Aspidistra daibuensis HAYATA sp. nov. Rhizoma repens squamis dense obtectum. Folia secus rhizoma disposita lanceolata 45 cm. longa $6\frac{1}{2}$ cm. lata apice acuminata vel acuta basi gradatim attenuata chartacea, petiolis 10 cm. longis. Flores secus rhizomata solitariter dispositi, pedunculis 2-3 cm. longis, bracteis 4-5 instructis, bracteis ovalis scariosis apice obtusis vel emarginatis. Perianthium urceolato-campanulatum 2 cm. longum a medio sursum 8-lobatum, lobis anguste triangularibus 1 cm. longis basi 5 mm. longis acuminatis cras-

siusculis intus medio 2-carinatis, carinis 2 mm. latis crassiusculis. Stamina 8, antheris sessilibus tuto perianthii toto adnatis ovatis $2\frac{1}{2}$ mm. longis $1\frac{1}{2}$ mm. latis apice acutis. Ovaria stigmataque ignota.

HAB. Daibusan, leg. Y. MATSUDA, Jan. 1917.

Near *Aspidistra mushaensis* HAYATA, but differs from it in the distinctly carinate lobes of the perianth of the much thicker texture.

Aspidistra mushaensis HAYATA sp. nov. Rhizoma repens teres 6 mm. in diametro rhizomatis squamis obtectum. Folia secus rhizomata disposita lineari-oblongata 40 cm. longa 5 cm. lata apice acuta vel acuminata, petiolis 20 cm. longis. Flores rhizomate oriundi solitarii, pedunculis 2 cm. longis basi bracteatis, bracteis scariosis ovato-triangularibus apice acutis vel obtusis multi-seriatim dispositis basin floris amplectantibus. Perianthium albo-roseum late campanulato-bracteatis, latum 1 cm. longum 2 cm. latum medio sursum lobatum, lobis 8 triangularilanceolatis 7-8 mm. longis basi 3 mm. latis acuminatis margine duplicato-plicatis intus secus longitudinem carinatis, intus glabrum. Stamina 8, antheris sessilibus ovatis 2 mm. longis $1\frac{1}{2}$ mm. latis. Ovarium cylindricum 3 mm. longum 2 mm. latum apice ad stigma expansum, stigmatate peltato 6 mm. in diametro valde alteque plicato undulato.

HAB. Musha, ad 3,000 ped. alt., leg. B. HAYATA, Aprili. 1916.

Near *Aspidistra attenuata* HAY.; but distinguishable from it in the much smaller flowers and leaves and especially in the campanulate perianth.

Lilium LINN.

Lilium speciosum THUNB.; HAYATA Gen. Ind. p. 85.

Lilium Konishii HAYATA Gen. Ind. p. 85.

Heloniopsis A. GR.

Heloniopsis acutifolia HAYATA sp. nov. (Fig. 53). Rhizoma crassum suberectum. Folia omnia radicalia oblanceolata 10 cm. longa $1\frac{1}{2}$ -2 cm. lata apice acuta ad summum aristis minutis instructa basi longe attenuata usque ad 4 mm. latitudinem abeuntia integra membranacea. Scapi circ. 15 cm. longi erecti recti basi foliis minoribus sursum squamis instructi apice flores 3-5 umbellatim gerentes, pedicellis $1\frac{1}{2}$ cm. longis. Segmenta perianthii 6 lineari-

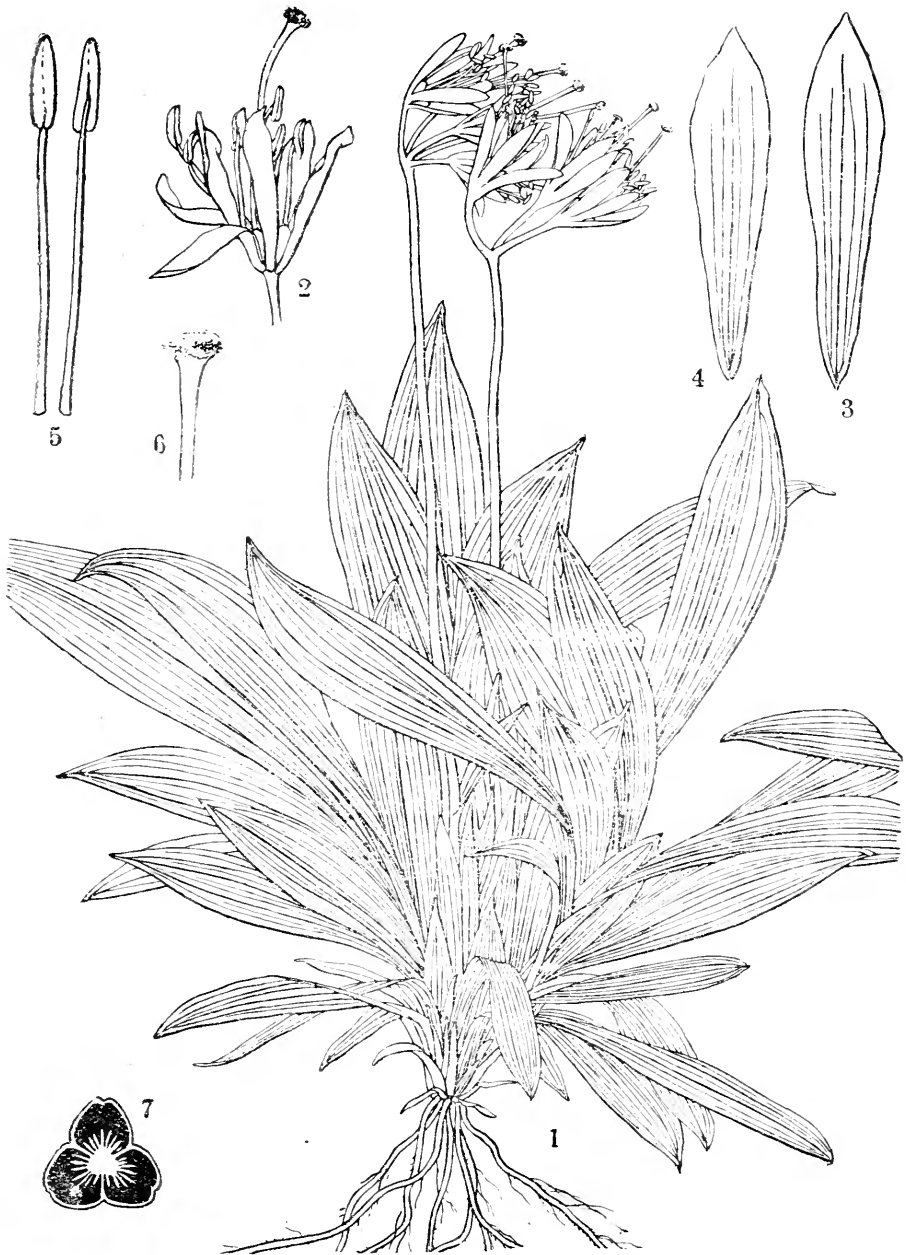


Fig. 53; *Heloniopsis acutifolia* HAYATA; 1, the plant; 2, a flower; 3, 4, segments of the perianth; 5, a stamen, seen from different sides; 6, an apical portion of the style; 7, cross-section of an ovary.

lanceolato-spathulata 12 mm. longa 4 mm. lata apice obtusissima basi attenuata. Stamina 6 basi segmentorum affixa, filamentis 1 cm. longis filiformibus glabris, antheris linearibus 3 mm. longis 1 mm. latis apice obtusis basi alte 2-lobatis. Ovarium triangulari-obconicum vel obcordatum 6 mm. longum totiusque latum, stylo 15 mm. longo apice capitato peltato rotundato $1\frac{1}{2}$ mm. in diametro.

HAB. Bonbonzan, leg. B. HAYATA et S. SASAKI, Mai. 1917.

Near *Heloniopsis umbellata*, but differs from it in the leaves which are triangularly acute and in the much longer anthers.

Aroideæ.

Arisæma MART.

Arisæma quinquefoliola HAYATA sp. nov. (Pl. VII). Caulis cum spadice 40-50 cm. longus basi vaginatus glaber 2-foliatus. Folia dua alterna cum spadice æquilonga pedatim 5-foliolata, foliolo terminali ovato-lanceolato 11-14 cm. longo 3-3 $\frac{1}{2}$ cm. lato apice acuto subito longe caulato ad summum arista instructo basi acuto obtuso margine subintegro vel eroso glabro tenuiter membranaceo, petiolulo centrali 2 $\frac{1}{2}$ cm. longo glabro, foliolis lateralibus plus minus minoribus conformibus basi plus minus obliquis, petiolulis brevioribus; petiolis communibus 10-12 cm. longis glabris basi auriculis vaginarum instructis. Spatha cylindrica 8 cm. longa 13 mm. lata glabra, lamina oblonga apice triangulari-acuta vel acuminata medio subito refracto-recurva. Spadix gracilis 7 cm. longus basi deorsum staminifer, partibus staminiferis 2 $\frac{1}{2}$ cm. longis; partibus superioribus gracillimis glabris apice breve penicillatis. Stamina secus partem inferiorem spadicis conspersa, filamentis $\frac{1}{2}$ mm. longis; loculis antherarum 3-7 secus filamentum spicatum dispositis vel ad apicem filamentorum aggregatis.

HAB. Akō, Kuwarusu, leg. Y. MATSUDA, Jan. 1918; Daibusan, Jan. 1916.

Remarkable for its pedately 5-foliolate leaves.

Arisæma ringens THUNB. (Fig. 54); HAYATA Gen. Ind. p. 88.
 HAB. Kelung, B. HAYATA, Mart. 1916.

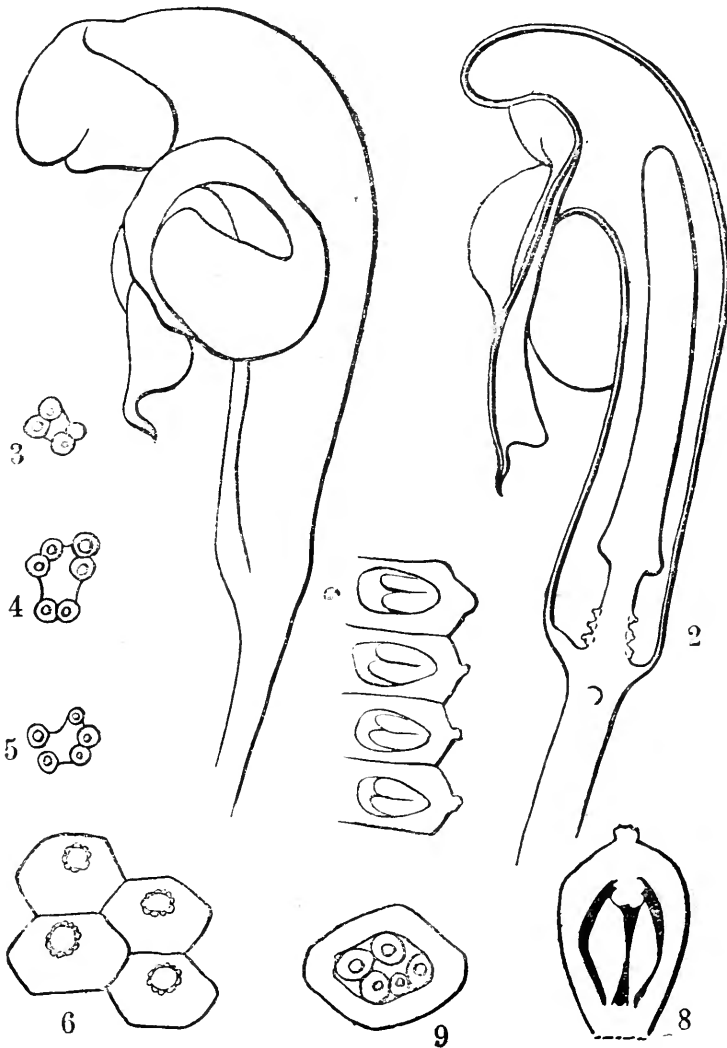


Fig. 54; *Arisæma ringens* THUNB.; 1, a spathe; 2, vertical section of the same; 3, 4, 5, stamens; 6, ovaries; 7, vertical section of the same ovaries; 8, vertical section of an ovary; 9, cross-section of the same.

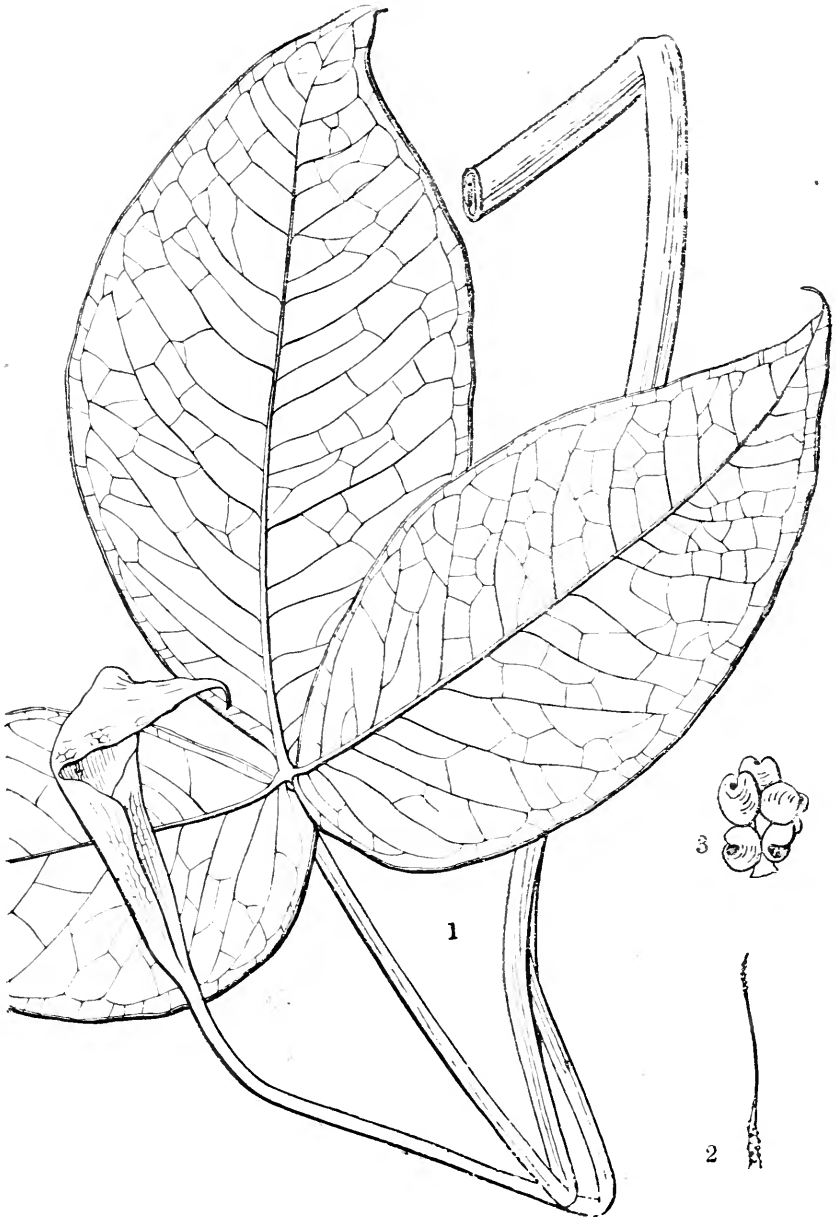


Fig. 55; *Arisaema Matsudai* HAYATA; 1, the plant; 2, a male spadix; 3, a stamen.

Arisæma Matsudai HAYATA sp. nov. (Fig. 55). Caulis cum spadice 35–40 cm. longus glaber erectus 1-foliatus. Folia cum spatha æquilonga longe petiolata 3-foliolata, foliolis tenuiter membranaceis, foliolo terminali ovato-oblongo 13 cm. longo 5–6 cm. lato apice acuto ad summum aristato basi acuto vel obtuso margine integro pinninervio, venulis minute reticulatis, subsessili, foliolis lateralibus cum terminali conformibus sed basi obliquis plus minus rotundatis sessilibus, petiolis 10–15 cm. longis deorsum ad vaginam abeuntibus; folia toto glaberrima. Spatha cylindrica cum lamina 7–8 cm. longa, partibus cylindricis 3 cm. longis 1 cm. latis, laminis medio subito refracto-recurvis 3 cm. longis $1\frac{1}{2}$ cm. latis apice aristato-acuminatis toto glabris. Spadix ♂ gracilis 4 cm. longus basi staminifer, partibus staminiferis $1\frac{1}{2}$ cm. longis, (staminibus 2-ocularibus, oculis globosis) partibus superioribus filiformibus $2\frac{1}{2}$ cm. longis aculeis mollis obtusis instructis.

HAB. Kuwarusu, leg. Y. MATSUDA, Aprili. 1917, (T. 645).

Near *A. grapsospathæ* HAY.; but, differs from it in the nearly sessile leaflets.

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O ders in CAPITALS; *genera* in condensed; *species* in romans; *synonyms and species incidentally mentioned in italics.*

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ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE I.

Explanation of Plate I.

Dumasia bicolor HAYATA.

- Fig. 1. The plant.
2. A flower.
3. A wing.
4. A keel.
5. A folded portion of the same keel.
6. Stamens.
7. A deliiscing pod.
8, 9. A seed, seen from different sides.



ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE II.

Explanation of Plate II.

Millettia taiwaniana (MATSUM.)

- Fig. 1. A branch.
2. A standard.
3. A wing.
4. A keel.
5. Diadelphous stamens.
6. Ovary.
7. A pod.



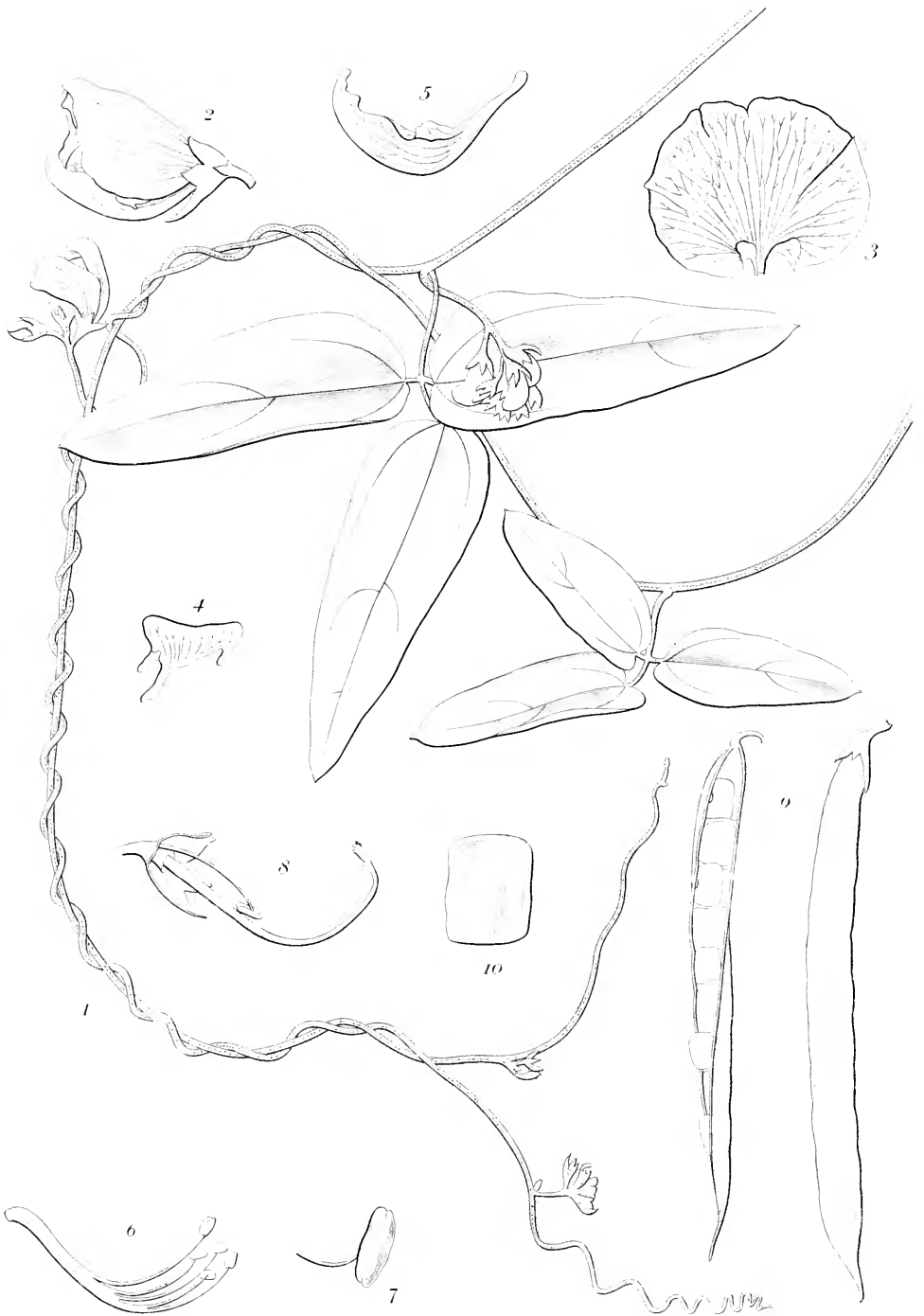
ICONES PLANTARUM FORMOSANARUM.
IX.

PLATE III.

Explanation of Plate III.

Dolichorhiza formosana HAYATA.

- Fig. 1. A branch.
2. A flower.
3. A standard.
4. A wing.
5. A portion of staminal bundle.
6. An anther.
7. Ovary with stamen and calyx.
8. Pods.
9. A seed.



ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE IV.

Explanation of Plate IV.

Symplocos kiraiishiensis HAYATA.

- Fig. 1. A branch.
2. A flower.
3. Corolla with a portion of a staminal bundle.
4. A stamen, seen from different sides.
5. Ovary and style.
6. Apical portion of the ovary and basal portion of the style.
7. A branchlet with a fruit.
8. Cross section of a drupe.



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IX.

PLATE V.

Explanation of Plate V.

Jasminum Shimadai HAYATA.

- Fig. 1. The plant.
2. A corolla-lobe.
3, 4. A stamen, seen from different sides.
5. Ovary and style.
6. Vertical section of the basal portion of the same.



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IX.

PLATE VI.

Explanation of Plate VI.

Pseudosmilax seisaiensis HAYATA.

- Fig. 1. The plant.
2. A flower.
3. Vertical section of the same.
4. Stamens.
5. A stamen, seen from different sides.



ICONES PLANTARUM FORMOSANARUM.

IX.

PLATE VII.

Explanation of Plate VII.

Arisama quinquefolia HAYATA.

- Fig. 1. The plant.
2. A male spadix.
3. A stamen.
4. A female spadix.
5. An ovary.



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