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Flora Montana Formosæ

An

Enumeration of the Plants found on Mt. Morrison,
the Central Chain, and Other Mountainous
Regions of Formosa at Altitudes
of 3,000—13,000 ft.

By

B. Hayata, *Rigakuhakushi*.

*Assistant in the Botanical Institute, College of Science,
Imperial University, Tōkyō.*

With 41 plates and 16 woodcuts.

Introduction.

In the year 1905, Professor MATSUMURA and I jointly published an enumeration¹⁾ of plants found in Formosa, comprising about two thousand species of flowering plants, ferns and their allies. At that time, our collections, with the exception of a few sets of plants found on Mt. Morrison, did not extend to elevations of any great altitude. It is, therefore, quite proper to regard it as an enumeration of the flora of the low districts.

On the botany of the montane zone, there exists no special

1) MATSUMURA, J., and HAYATA, B.—Enumeratio Plantarum Formosanarum, in Journ. Sci. Coll., Imp. Univ. Tōkyō, XXII, 702 pages, with 18 plates, 1906.

publication, except a few papers¹⁾ that have appeared in the Tōkyō Botanical Magazine.

In the present work, it is my desire to give some complete information relating to the montane zone of the island. The majority of the collections upon which this work is based, were made by the officers of the Government of Formosa. Some materials were collected by Prof. S. HONDA in 1896, and by Mr. R. TORII in 1900, both from Mt. Morrison.

In November 1905, a botanical excursion was carried out for the first time on the above mountain by Messrs. T. KAWAKAMI, S. NAGASAWA and G. NAKAHARA, and numerous specimens were sent to me for determination by Mr. S. NAGASAWA. In October 1906, Messrs. T. KAWAKAMI and U. MORI made another excursion to the same mountain, and collected quite a number of plants. Another ascent of the same peak was made by Mr. G. NAKAHARA who had equal success. Other mountainous districts of Taitō and the central ranges were botanically explored by Mr. U. MORI in the same year. Some parts of the hill regions of Taihoku, Taichū, Tainan and Kōshūn have been little by little botanized for some years; but the greater part of the island remains as yet unexplored.

All the determinations of the species have been worked out by me; but a few families with which I am not yet thoroughly acquainted are almost entirely omitted in the present paper. The

1) MATSUMURA, J.—On Coniferae of Loo-choo and Formosa, in Tōkyō Bot. Mag. XV. pp. 137-141.

HAYATA, B.—On the Distribution of the Formosan Conifers, in Tōkyō Bot. Mag. XIX. pp. 43-61.

HAYATA, B.—Contributions to the Alpine Flora of Formosa, in Tōkyō Bot. Mag. XX. pp. 14-22, Pl. I.

HAYATA, B.—Contributions to the Flora of Mt. Morrison, in Tōkyō Bot. Mag. XX. pp. 52-58, and pp. 73-75.

work on these families will be specially treated in the near future.

Although the materials here treated are rather limited and further exploration will reveal many new features, the present work will, I hope, throw some light upon the study of the montane flora of the island.

In conclusion, I wish to tender my sincere thanks to Prof. J. MATSUMURA under whose oversight this work has been carried out. Thanks are also due to Messrs. T. KAWAKAMI, S. NAGASAWA and G. NAKAHARA, who all have generously put their important collections at my disposal. Lastly, I desire to express my cordial gratitude to Mr. N. KONISHI whose valuable collections have enabled me to make most interesting discoveries on Coniferæ and Quercineæ. A new species of Coniferæ is named *Cunninghamia Konishii* in recognition of his kindness.

March 14th., 1908.

B. HAYATA,
Botanical Institute,
College of Science,
Tōkyō.

1.) Elements of the Flora of the Montane Zone.

The montane zone treated in the present paper embraces a most extensive area from 3,000 ft. up to 13,000 ft. above sea level,

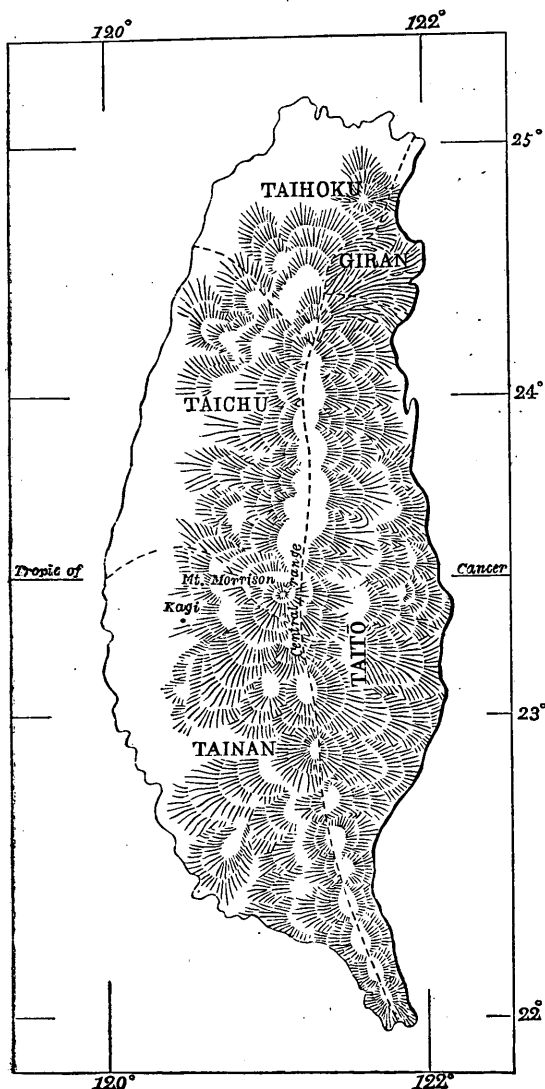


Fig. 1. Sketch-map of Formosa.

----- Prefectural boundaries.

including in its centre Mt. Morrison, the highest peak of the Japanese Empire. This mountain, lying a little within the tropic of Cancer, attains a height of 13,120 ft. It presents various climatal features from tropical through temperate up to those of cold regions, and in winter snow is frequently seen on the summit.

The term flora used in this work includes flowering plants, ferns and their allies. The lower cryptogams are entirely omitted. I have enumerated 392 species belonging to 79 families and 266 genera. Most of the species are northern elements.

It is a very interesting matter to compare this flora with the floras of the neighbouring countries, and to consider their relations. So far as I am aware, no attempt of this kind has yet been made.

In the year 1905, I published a paper¹⁾ "On the Distribution of the Formosan Conifers" in which I pointed out that the flora of the Conifers of Formosa has a far closer relation to that of Japan than to that of China, regardless of geographical proximity. In this paper, I have compared all families of flowering plants in the montane zone, and found that the conclusion I had made from the study of Conifers holds good for the general features of the flora. I shall refer to this matter later on.

Before we go further in the discussion of this interesting subject, it is necessary to consider the elements of the montane flora. A list of plants, therefore, should properly be given here, with indications as to their distribution.

Regarding the remarks as to distribution given in this list, I have referred to the following literature and herbarium.

1) The Malay peninsula and archipelago:

BLUME :—Flora Javæ, 4 vols.

MIQUEL :—Flora van Nederlandsch Indië, 3 vols.

VIDAL :—Revision de Plantes Vasculaires Filipinas.

:—Phanerogamæ Cumingianæ Philippinarum.

MERRILL :—New or Noteworthy Philippine Plants, &c, . . . in
Publications from the Department of the Interior,
Bureau of Government Laboratories.

The Philippine Journal of Science, I. Suppl. Botany.

HOOK. f. :—Flora of British India, 7 vols.

1) HAYATA, B.—On the Distribution of the Formosan Conifers, in *Tōkyō Bot. Mag.* XIX.
pp. 43-61.

TRIMEN :—A Hand Book of the Flora of Ceylon, 5 parts.

2) The Himalayas :—

HOOKE. f. :—Flora of British India, 7 vols.

3) Central and southern China (including Tibet) :—

DIELS :—Die Flora von Central-China, in Engl. Bot. Jahrb. XXIX., pp. 169-657.

„ :—Beiträge zur Flora des Tsin ling shan und andere Zusätze zur Flora von Central-China, in Beiblatt zu den Bot. Jahrb. XXXVI. pp. 1-138.

FRANCHET :—Plantæ Davidianæ ex Sinarum Imperio.

FORBES and HEMSLEY :—Index Floræ Sinensis, 3 vols.

4) Northern China (including Korea, Manchuria, Amurland, and Saghalien) :—

FORBES and HEMSLEY :—Index Floræ Sinensis, 3 vols.

MAXIMOWICZ :—Primitiæ Floræ Amurensis.

SCHMIDT :—Reisen im Amur-lande und auf der Insel Sachalin.

KOMAROV :—Flora Manshuriae, 2 vols.

PALIBIN :—Conspectus Floræ Koreæ.

NAKAI :—Polygonaceæ Koreanæ, in Journ. Sci. Coll. XXIII. Art. 11.

5) Japan :—

FRANCHET et SAVATIER :—Enumeratio Plantarum Japonicarum, 2 vols.

Herbarium of the Botanical Institute, College of Science, Imperial University, Tōkyō.

ITO et MATSUMURA :—Tentamen Floræ Lutchuensis, in Journ. Sci. Coll. XII. pp. 263-541.

MATSUMURA :—Index Plantarum Japonicarum, I. et II.-1.

„ :—Enumeration of selected scientific Names of both native and foreign Plants.

MAKINO :—Observations on the Flora of Japan, 6 Fascicles, (1901-'06).

LIST OF THE ELEMENTS OF THE MONTANE FLORA.

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur)	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Anemone luzoniensis</i> ROLFE..	+	+1)							
<i>Clematis lasiandra</i> MAXIM. var. <i>Nagasawai</i> HAYATA.					type				
<i>Clematis longisepala</i> HAYATA									
<i>Clematis Morii</i> HAYATA									
<i>Clematis tözanensis</i> HAYATA ..	+2)								
<i>Clematis Wightiana</i> WALL.?		+							
<i>Thalictrum Fauriei</i> HAYATA ..									
<i>Trochodendron aralioides</i> SIEB. et ZUCC.					+				
<i>Illicium</i> sp.		+	+		+				
<i>Kadsura japonica</i> LINN			?		+				
<i>Melodorum Oldhami</i> HEMSLE.									
<i>Akebia</i> sp.			+	+	+				
<i>Berberis nepalensis</i> SPRENG..	+	+	+	+	+				
<i>Berberis</i> sp.									
<i>Corydalis</i> sp.		+	+	+	+				
<i>Arabis alpina</i> LINN		+	+	+					Europe
<i>Arabis taraxacifolia</i> ANDERS..		+							
<i>Arabis</i> sp.									
<i>Cardamine reniformis</i> HAYATA									
<i>Cardamine</i> sp.									
<i>Viola japonica</i> LANGSD.			+	+	+				
<i>Viola Kawakamii</i> HAYATA'....									
<i>Viola Nagasawai</i> HAYATA									
<i>Viola tözanensis</i> HAYATA									
<i>Viola</i> sp.....									
<i>Idesia polycarpa</i> MAXIM.....			+		+				
<i>Polygala arcuata</i> HAYATA									

1) *Anemone vitifolia* HAM. 2) *Clematis smilacifolia* WALL.

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<i>Polygala japonica</i> HOUTT.	+	+	+	+	Austr.
<i>Dianthus superbus</i> LINN.	+	+	+	Europe
<i>Dianthus</i> sp.
<i>Silene Fortunei</i> VIS.	+	+
<i>Cucubalus baccifer</i> LINN.	+	+	+	+	+	Europe
<i>Cerastium morrisonense</i> HAYATA.
<i>Cerastium pilosum</i> LEDEB.	+
<i>Stellaria stellato-pilosa</i> HAYATA
<i>Hypericum attenuatum</i> CHOISY.	+	+
<i>Ternstroemia japonica</i> THUNB.	+	+	+
<i>Eurya japonica</i> THUNB.	+	?	+	+
<i>Eurya strigillosa</i> HAYATA
<i>Actinidia callosa</i> LINDL.	+	+	+
<i>Stachyurus præcox</i> SIEB. et ZUCC.	+	+
<i>Schima Noronhæ</i> REINW.	+	Loo- choo.
<i>Thea brachycarpa</i> HAYATA
<i>Thea caudata</i> (WALL.)	+	+
<i>Triumfetta pilosa</i> ROTH.	+	+	Africa
<i>Elæocarpus decipiens</i> HEMSL.	+	Loo- choo.
<i>Geranium Robertianum</i> LINN.	+	+	+	+
<i>Geranium uniflorum</i> HAYATA.
<i>Oxalis Griffithii</i> EDGEW. et HK. f.	+	+
<i>Impatiens uniflora</i> HAYATA...
<i>Benninghausenia albiflora</i> REICHB.	+	+	+	+
<i>Evodia meliæfolia</i> BENTH.	+	+	South
<i>Skimmia japonica</i> THUNB.	+	+	+	+
<i>Murraya exotica</i> LINN.	+	+

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Euonymus echinatus</i> WALL...	+	+	South				
<i>Euonymus trichocarpus</i> HAYATA									
<i>Celastrus articulatus</i> Thunb...	+	+	+				
<i>Rhamnus arguta</i> MAXIM. var. Nakaharai HAYATA	+					
<i>Acer</i> sp.									
<i>Cardiospermum Halicacabum</i> LINN.	+	+	Loo- choo	.....	.....	+	Africa
<i>Rhus intermedia</i> HAYATA		+1)				
<i>Pistacia formosana</i> MATSUMURA	+2)	+2)					
<i>Crotalaria formosana</i> MATSUMURA									
<i>Desmodium parvifolium</i> DC..	+	+	+				
<i>Desmodium polycarpum</i> DC...	+	+	+				
<i>Desmodium pulchellum</i> BENTH.	+	+						
<i>Desmodium sinuatum</i> BLUME.	+	+	+						
<i>Dumasia bicolor</i> HAYATA									
<i>Cajanus indicus</i> SPRENG.	+								
<i>Flemingia strobilifera</i> R. BR. ...	+	+							
<i>Prunus campanulata</i> MAXIM.	+	Loo- choo.				
<i>Prunus Kawakamii</i> HAYATA..	+3)	+3)	+3)				
<i>Spiraea prunifolia</i> SIEB. et ZUCC.	+	+	+				
<i>Spiraea</i> sp.									
<i>Rubus elegans</i> HAYATA									
<i>Rubus corchorifolius</i> LINN. f. var. <i>glaber</i> MATSUMURA	type	.....	type				
<i>Rubus fraxinifolius</i> POIR.	+								
<i>Rubus pectinellus</i> MAXIM.....	+	+				
<i>Rubus pentalobus</i> HAYATA ..									

- 1) *Rhus Toxicodendron* LINN. var. *radicans* ENGL.
3) *Prunus japonica* THUNB.

- 2) *Pistacia chinensis* BUNGE.

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<i>Rubus Rolfei</i> VIDAL, var. <i>lanatus</i> HAYATA	type								
<i>Rubus rosæfolius</i> SM. var. <i>hirsutus</i> HAYATA	type	type	type				
<i>Fragaria</i> sp.....									
<i>Potentilla gelida</i> C. A. MEY..	.....	.....	+	+	+		
<i>Potentilla leuconota</i> DON, var. <i>morrisonicola</i> HAYATA	.....	type	type	type					
<i>Sibbaldia procumbens</i> LINN..	.....	+	+	+	+	.....	.....	+	+
<i>Rosa</i> sp.									
<i>Astilbe chinensis</i> FRANCH. et SAV.	.....	.....	+	+	+		
<i>Astilbe chinensis</i> FRANCH. et SAV. var. <i>longicarpa</i> HAYATA									
<i>Astilbe macroflora</i> HAYATA...									
<i>Chrysosplenium</i> sp.....	.....	+	+	+	+	.....	.....	+
<i>Mitella japonica</i> MIQ.....	.....	.....	.....	.....	+
<i>Parnassia palustris</i> LINN.....	.....	Tibet.	.....	+	+	.....	.....	+	+
<i>Hydrangea chinensis</i> MAXIM ..	.....	.....	+	.....	South.				
<i>Hydrangea glabra</i> HAYATA...									
<i>Hydrangea integra</i> HAYATA...									
<i>Hydrangea Kawakamii</i> HAYATA									
<i>Hydrangea longifolia</i> HAYATA.									
<i>Deutzia scabra</i> THUNB.....	.....	.....	+	.....	+	
<i>Cardiandra formosana</i> HAYATA	.....	.....	+1)	.....	+2)				
<i>Ribes formosanum</i> HAYATA ..									
<i>Sedum morrisonense</i> HAYATA.									
<i>Sedum</i> sp.....	.....	+	+	+	+	.....	.....	+

1) *Cardiandra sinensis* HEMSLEY2) *Cardiandra alternifolia* SIEB. et ZUCC.

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Kalanchoë</i> sp.									
<i>Haloragis micrantha</i> R. Br. ...	+	+	+	+	Austr.
<i>Myriophyllum spicatum</i> LINN.		?	+	+	+	
<i>Eugenia sinensis</i> HEMSL.			+						
<i>Osbeckia aspera</i> BLUME.	+								
<i>Barthea formosana</i> HAYATA ..			+1)						
<i>Sarcopyramis nepalensis</i> WALL.	+	+						
<i>Epilobium alpinum</i> LINN.		+						Europe
<i>Epilobium roseum</i> SCHREB.		+	+	+	+		+	+
<i>Circeæ alpina</i> LINN.		+	+	+	+	+	+	+
<i>Thladiantha formosana</i> HAYATA.			+2)						
<i>Gynostemma pedatum</i> BLUME.	+	+	+	+				
<i>Hydrocotyle javanica</i> THUNB.	+	+	south +				
<i>Hydrocotyle rotundifolia</i> ROXB.	+	+	+	+			Africa
<i>Hydrocotyle setulosa</i> HAYATA.									
<i>Sanicula petagnioides</i> HAYATA.									
<i>Acanthopanax aculeatum</i> SEEM.		+	+	+				
<i>Fatsia multicaarpa</i> HAYATA.					+3)				
<i>Helwingia rusciflora</i> WILLD.			+	+				
<i>Heptapleurum octophyllum</i> BENTH.			+	south				
<i>Heptapleurum racemosum</i> BEDD.	+								
<i>Oreopanax formosana</i> HAYATA.								Tropical America	
<i>Hedera Helix</i> LINN.		+	+	+			Africa
<i>Dendropanax</i> sp.									
<i>Marlea begoniaefolia</i> ROXB.		+	+	+4)				
<i>Aucuba japonica</i> THUNB.		+	+	+	+				
<i>Ophiorrhiza pumila</i> CHAMP.			+						

1) *Barthea chinensis* Hook.2) *Thladiantha nudiflora* HEMSL.3) *Fatsia japonica* DECNE. et PLANCH.4) *Marlea platanifolia* S. et Z.

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Knoxia corymbosa</i> WILLD....	+	+	+	.....	.....	.....	.....	.....	Austr.
<i>Damnacanthus angustifolius</i> HAYATA.									
<i>Damnacanthus indicus</i> GERTN. f.	.....	+	+	.....	+		
<i>Lasianthus formosensis</i> MATSUMURA.									
<i>Pæderia tomentosa</i> BLUME...	+	+	+	.....	+			
<i>Nertera nigricarpa</i> HAYATA...	+1)	.....	+2)	.....	.....	.....	+1)		
<i>Rubia cordifolia</i> LINN .....	+	+	+	.....	+	.....	.....		+
<i>Rubia lanceolata</i> HAYATA									
<i>Galium brachypodium</i> MAXIM. ....	.....	.....	.....	.....	+
<i>Patrinia scabiosæfolia</i> LINK.. ....	.....	.....	+	+	+	.....	.....	+
<i>Patrinia villosa</i> JUSS.....	.....	.....	+	+	+		
<i>Heckia Aschersoniana</i> ENGL. et GREEN.	.....	.....	+				
<i>Scabiosa lacerifolia</i> HAYATA ..									
<i>Ethulia conyzoides</i> LINN.....	+								
<i>Vernonia Andersoni</i> CLARKE.. ....	.....	+	+					
<i>Vernonia cinerea</i> LESS.....	+	?	+						
<i>Adenostemma viscosum</i> FORST	+	.....	+	.....	+	.....	.....	+	+
<i>Ageratum conyzoides</i> LINN... ..	+	.....	+	+	+	.....	.....	+	+
<i>Eupatorium formosanum</i> HAYATA.									
<i>Eupatorium Lindleyanum</i> DC. ....	.....	+	+	+	+	.....	.....	+
<i>Eupatorium Tashiroi</i> HAYATA.									
<i>Solidago Virga-aurea</i> LINN.....	.....	+	+	+	+	+	+	+	+
<i>Myriactis Wightii</i> DC.	+	+	+3)						
<i>Aster baccharoides</i> STEETZ....	.....	.....	+				
<i>Aster scaber</i> THUNB. ....	.....	.....	+	+	+	.....	.....	+
<i>Aster trinervius</i> ROXB.....	.....	+	+	+	+	.....	.....	+
<i>Erigeron morrisonensis</i> HAYATA									

1) *Nertera depressa* BANKS et SOL. 2) *Nertera sinensis* HEMSL.3) *Myriactis nepalensis* LESS.

[illegible]

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<i>Ainsliea macroclinioides</i> HAYATA.									
<i>Ainsliea morrisonicola</i> HAYATA.									
<i>Ainsliea reflexa</i> MERRILL.	+								
<i>Pieris hieracioides</i> LINN.		+	+	+	+				
<i>Lactuca versicolor</i> SCH. BIP.			+	+	+			+	
<i>Pratia begonifolia</i> LINDL.	+	+	+						
<i>Lobelia affinis</i> WALL.	+		+						
<i>Lobelia pyramidalis</i> WALL. ...		+	+						
<i>Wahlenbergia gracilis</i> A. DC.	+		+		south				Austr.
<i>Codonopsis</i> sp.		+	+	+	+			+	
<i>Campanumcea axillaris</i> OLIVER.			+		Lo- choo				
<i>Campanumcea javanica</i> BLUME.	+	+	+		+				
<i>Peracarpa carnosae</i> Hook. f. et THOMS.		+	+		+				
<i>Adenophora verticillata</i> FISCH.			+		+				
<i>Adenophora verticillata</i> FISCH. var. <i>linearis</i> HAYATA									
<i>Adenophora polymorpha</i> LEDEB. var. <i>Lamarckii</i> TRAUTV.			+	+	+			+	
<i>Adenophora polymorpha</i> LEDEB. var. <i>coronopi- folia</i> TRAUTV.									
<i>Vaccinium emarginatum</i> HAYATA.									
<i>Vaccinium Merrillianum</i> HAYATA.									
<i>Gaultheria Cumingiana</i> VIDAL.	+								
<i>Gaultheria Itōana</i> HAYATA.									
<i>Pieris formosa</i> D. DON.		+	+						
<i>Pieris ovalifolia</i> D. DON.		+	+		+				
<i>Rhododendron brachycarpum</i> G. DON.				Man- churia	+				

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet)	Northern China (including east Siberia & Amur)	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
Rhododendron ellipticum MAXIM.	south	.....	Loo- Choo				
Rhododendron Nakaharaei HAYATA.									
Rhododendron Oldhami MAXIM.									
Rhododendron Oldhami MAXIM. var. glandulosum HAYATA.									
Rhododendron pseudo- chrysanthum HAYATA									
Pyrola morrisonensis HAYATA									
Pyrola rotundifolia LINN. var. albiflora MAXIM.	+	+	+	+	+	+
Shortia rotundifolia MAKINO.	south				
Primula sp.					
Lysimachia sikokiana MIQ.	+				
Symplocos confusa BRAND. ...	+					
Symplocos modesta BRAND.					
Symplocos morrisonicola HAYATA					
Symplocos spicata ROXB.....	+	+	+				
Osmanthus sp.					
Osmanthus sp.					
Dischidia formosana MAXIM.					
Logania dentata HAYATA	+	+1)	.....	.....			
Crawfordia fasciculata WALL.	+	+	+				
Gentiana cæspitosa HAYATA					
Gentiana fasciculata HAYATA					
Gentiana flavescens HAYATA..					
Gentiana formosana HAYATA..					
Gentiana humilis STEV.	Tibet	.....				
Gentiana tenuissima HAYATA					
Gentiana scabrida HAYATA					

1) Hemiphragma heterophyllum WALLICH.

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<i>Swertia alata</i> HAYATA.....									
<i>Swertia</i> sp.									
<i>Ellisiophyllum pinnatum</i> MAKINO.		+2)	+3)	+				
<i>Cynoglossum micranthum</i> DESF.	+	+					Africa
<i>Trigonotis formosana</i> HAYATA									
<i>Solanum</i> sp.									
<i>Scrophularia alata</i> A. GRAY, var. <i>duplicato-serrata</i> MIQ. ....			+	.....	+			
<i>Mazus rugosus</i> LOUR.	+	+	+	+	+				
<i>Torenia peduncularis</i> BENTH..	+	.....	+	.....	?		
<i>Bonnaya veronicaefolia</i> SPRENG.	+	.....	+					
<i>Rehmannia Oldhami</i> HEMSL..									
<i>Veronica morrisonicola</i> HAYATA									
<i>Veronica spuria</i> LINN.			+	+	+				Europe
<i>Sopubia formosana</i> HAYATA ..	+4)	+4)	+4)						
<i>Phtheirospermum chinense</i> BUNGE. ....		.....	+	+	+			+
<i>Euphrasia borneensis</i> STAPF..	+								
<i>Euphrasia petiolaris</i> WETTST.		+							
<i>Orobanche caerulea</i> STEPH.		?	+	+	+			+	
<i>Lysionotus pauciflora</i> MAXIM.			+		+				
<i>Rhynchoglossum obliquum</i> BLUME.	+								
<i>Chirita anachorata</i> HANCE.			+						
<i>Conandron ramondioides</i> S. et Z.					+				
<i>Strobilanthes flaccidifolius</i> NEES. ....		+	+	.....	south				
<i>Codonacanthus pauciflorus</i> NEES.		+	+						
<i>Justisia procumbens</i> LINN. ....	+	.....	+	.....	+				Austr.
<i>Rungia parviflora</i> NEES. ....	+	.....	+					

1) *Ellisiophyllum pinnatum* MAKINO. = *Ellisiophyllum reptans* MAXIM.= 2) *Moseleya pinnata* HEMSL. = 3) *Hornemannia pinnata* BENTH. = *Sibthorpia pinnata* BENTH.4) *Sopubia triida* BUCH.-HAM.

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Viscum articulatum</i> BURM....	+	+	+	south				
<i>Viscum orientale</i> WILLD. var. <i>multinerve</i> HAYATA.	+								
<i>Balanophora parvior</i> HAYATA.									
<i>Balanophora spicata</i> HAYATA.									
<i>Buxus sempervirens</i> LINN....	+	+	+	Europe Africa
<i>Glochidion formosanum</i> HAYATA.									
<i>Glochidion zeylanicum</i> A. JUSS.	+								
<i>Aleurites cordata</i> STEUD.....		+	+				
<i>Mercurialis lasiocarpa</i> SIEB. et ZUCC.	+	+	+				
<i>Mallotus cochinchinensis</i> LOUR.	+	+						
<i>Fatoua pilosa</i> GAUD.	+	+	+				
<i>Morus alba</i> LINN.....	+	+	+				
<i>Urtica Thunbergiana</i> SIEB et ZUCC.	+	+				
<i>Girardinia heterophylla</i> DECNE	+	+							
<i>Pilea stipulosa</i> MRO.	+	+	+	Lo- choo				
<i>Pilea Wattersii</i> HANCE.									
<i>Lecanthus Wightii</i> WEDD.	+	+							
<i>Elatostema minutum</i> HAYATA.									
<i>Elatostema sessile</i> FORST. var. <i>cuspidatum</i> WEDD.	+	+	+				
<i>Procris levigata</i> BLUME.	+	+						
<i>Juglans</i> sp.....	+	+	+	+	+	
<i>Engelhardtia spicata</i> BLUME. var. <i>formosana</i> HAYATA.	+	+							
<i>Alnus maritima</i> NUTT. var. <i>formosana</i> BURKILL.	+	+	+	

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Carpinus</i> sp.....		+	+	+	+			+	
<i>Quercus amygdalifolia</i> SKAN...									
<i>Quercus dentata</i> THUNB.			+	+	+				
<i>Quercus formosana</i> SKAN.									
<i>Quercus glauca</i> THUNB.		+	+		+				
<i>Quercus Kawakamii</i> HAYATA...									
<i>Quercus Konishii</i> HAYATA....									
<i>Quercus serrata</i> THUNB.		+	+	+	+				
<i>Quercus Junghuhnii</i> MRO....	+								
<i>Quercus variabilis</i> BLUME....									
<i>Quercus</i> sp.									
<i>Castanopsis indica</i> A. DC.		+							
<i>Castanopsis taiwaniana</i> HAYATA.									
<i>Fagus</i> sp.			+		+			+	
<i>Salix</i> sp.....									
<i>Libocedrus macrolepis</i> BENTH.			+						
<i>Chamaecyparis formosensis</i> MATSUMURA.					+1)				
<i>Chamaecyparis obtusa</i> SIEB. et ZUCC.					+			+2)	
<i>Juniperus formosana</i> HAYATA.		+3)	+3)	+3)					
<i>Juniperus morrisonicola</i> HAYATA.									
<i>Cunninghamia Konishii</i> HAYATA.									
<i>Taiwania cryptomerioides</i> HAYATA.									
<i>Cephalotaxus</i> sp.			+	+	+				
<i>Taxus</i> sp.		+	+	+	+				
<i>Pinus Armandi</i> FRANCH. var. <i>Mastersiana</i> HAYATA.			+						

1) *Chamaecyparis pisifera* S. et Z.2) *Chamaecyparis Lawsonsiana* PÄRL.3) *Juniperus communis* LINN.

Formosa.	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Pinus formosana</i> HAYATA.....	+1)				
<i>Pinus</i> sp.....									
<i>Pinus</i> sp.....									
<i>Picea morrisonicola</i> HAYATA.....				*	*				
<i>Keteleeria Davidiana</i> BEISSN. var. <i>formosana</i> HAYATA.....			+						
<i>Tsuga formosana</i> HAYATA.....					+2)				
<i>Pseudotsuga japonica</i> SHIRAS.....					+				
<i>Abies Mariesii</i> MASTERS, var. <i>Kawakamii</i> HAYATA.....					+				
<i>Peliosanthes courtallensis</i> WIGHT.....		+	+3)						
<i>Smilacina japonica</i> A. GRAY.....			+	+	+				
<i>Tricyrtis lasiocarpa</i> MATSUMURA.....									
<i>Tricyrtis stolonifera</i> MATSUMURA.....									
<i>Metanarthecium foliatum</i> MAXIM.....					+				
<i>Disporum</i> sp.....		+	+	+	+			+	
<i>Polygonatum officinale</i> ALL. var. <i>Maximowiczii</i> MAXIM.....			+	+	+				
<i>Paris lancifolia</i> HAYATA.....									
<i>Aneilema divergens</i> CLARKE.....		+	+						
<i>Cyanotis arachnoides</i> CLARKE.....	+								
<i>Luzula effusa</i> BUCH.....		+	+						
<i>Luzula spicata</i> DC.....		+				+		+	
<i>Juncus effusus</i> LINN.....		+	+	+	+			+	Africa, Austr.
<i>Juncus Maximowiczii</i> BUCH.....					+				
<i>Arisaema</i> sp.....									

1) *Pinus parviflora* S. et Z.2) *Tsuga diversifolia* MAXIM.3) *Peliosanthes Delavayi* FRANCH.* *Picea Glehnii* FR. SCHM.

[illegible]

Formosa.	The Malay pen. & archipelago.	The Himalayas,	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.	Extra Asiatic Old World.
<i>Brachypodium sylvaticum</i> BEAUV.	Philipp. +	+	+	+	+	.....	.....	.....	Europe
<i>Festuca ovina</i> LINN. ....	.....	.....	+	+	+	.....	.....	.....	Europe
<i>Arundinaria niitakayamensis</i> HAYATA.	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Lycopodium clavatum</i> LINN.	+	+	+	+	+	+	.....	.....	.....
<i>Lycopodium complanatum</i> LINN.	.....	.....	.....	.....	.....	.....	.....	.....	.....
var. <i>Chamaecyparissus</i> A. BR.	+	+	+	+	+	.....	.....	.....	.....
<i>Lycopodium obscurum</i> LINN.	.....	.....	.....	Man- churia	+	.....	.....	+	.....
<i>Lycopodium serratum</i> THUNB.	+	+	+	.....	+	.....	.....	.....	.....
<i>Polystichum amabile</i> SM. ....	+	.....	+	.....	south	.....	.....	.....	.....
<i>Polystichum niitakayamensis</i> HAYATA.	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Asplenium laciniatum</i> DON. ...	.....	+	.....	.....	+	.....	.....	.....	.....
<i>Asplenium Trichomanes</i> LINN.	.....	+	+	+	+	+	+	.....	.....
<i>Coniogramme fraxinea</i> FÉE.	+	+	+	Man- churia	+	.....	.....	.....	.....
<i>Plagiogyria glauca</i> METT. var. <i>philippinensis</i> CHRIST.	+	.....	.....	.....	.....	.....	.....	.....	.....
<i>Plagiogyria Matsumureana</i> MARINO.	.....	.....	.....	.....	+	.....	.....	.....	.....
<i>Pteridium aquilinum</i> KUHN. var. <i>lanuginosum</i> BORY.	+	.....	.....	.....	.....	.....	.....	.....	.....
<i>Polypodium lineare</i> THUNB. ...	+	+	+	.....	+	.....	.....	.....	.....
Total number of the species= (including varieties) 392....	* 98 =25%	** 101 =26%	*** 192 =49%	**** 81 =21%	***** 163 =42%	7	5	37 =9.5%	

* Of these species, three are here represented by allied species, *Sopubia trifida*, *Nertera depressa* and *Clematis smilacifolia*.

** One of these species, is represented by an allied species, *Sopubia trifida*.

*** Of these species, ten are here represented by allied species, *Thladiantha nudiflora*, *Myriactis nepalensis*, *Blumea hieracifolia*, *Peliosanthes Delavayi*, *Cephalotaxus Fortunei*, *Barthea chinensis*, *Nertera sinensis*, *Cardiandra sinensis*, *Prunus japonica* and *Pistacia chinensis*.

**** Of these species, two are here represented by allied species, *Pistacia chinensis* and *Prunus japonica*.

***** Of these species, nine are here represented by allied species, *Rhus toxicodendron* var. *radicans*, *Cardiandra alternifolia*, *Fatsia japonica*, *Marlea platanifolia*, *Chamaecyparis pisifera*, *Cephalotaxus pedunculata*, *Taxus cuspidata*, *Pinus parviflora* and *Tsuga diversifolia*.

The following points of importance are taken from the above list.

a) *Arctic Elements.*

Arctic elements are represented by the following species :—

Asplenium Trichomanes LINN.

Circæa alpina LINN.

Solidago Virga-aurea LINN.

Leontopodium R. BR.

Luzula spicata DC.

Deschampsia cæspitosa BEAUV.

Trisetum subspicatum BEAUV.

b) *Antarctic Elements.*

Antarctic elements are represented by the following species :—

Asplenium Trichomanes LINN.

Nertera BANKS.

Deschampsia cæspitosa BEAUV.

Trisetum subspicatum BEAUV.

Solidago Virga-aurea LINN.

c) *Alpine Elements.*

Alpine elements, by which I mean those plants that are found at elevations above 10,000 ft. in Asia or Europe, are represented by the following species :—

Aralis alpina LINN.

Aralis taraxacifolia ANDERS.

Potentilla gelida C. A. MEY.

Potentilla leuconota DON.

Sibbaldia procumbens LINN.

Epilobium alpinum LINN.

Circæa alpina LINN.

Leontopodium R. BR.

Peracarpa carnosus HOOK. f. et THOMS.

Rhododendron brachycarpum G. DON.

Gentiana humilis STEV.

Origanum vulgare LINN.

Stellera Chamæjasme LINN.

Juniperus LINN.

Luzula effusa BUCH.

Luzula spicata DC.

Agrostis Clarkei HOOK. f.

Deschampsia cæspitosa BEAUV.

Deschampsia flexuosa TRIN.

Trisetum subspicatum BEAUV.

Brachypodium sylvaticum BEAUV.

Festuca ovina LINN.

Lycopodium obscurum LINN.

Asplenium Trichomanes LINN.

d) *Tropical American Elements.*

These elements are very few in number, but among them we have *Oreopanax*, a genus of Araliaceæ. The occurrence of this genus, which is all but peculiar to the flora of Tropical America, is exceptionally remarkable. It is perhaps the most anomalous case we meet with in the Formosan flora. This genus is here represented by a large tree, *Oreopanax formosana* HAYATA. As far as I am aware, we have had no representative of this American genus in any other region on the globe. The tree is found in the mountainous districts on the north-western side of the central ranges, and also on Mt. Morrison, both localities having elevations varying from 6,000—8,000 ft. As the plots are quite inaccessible, it does not seem probable that the tree was planted there by human agency.

e) *Malay Elements.*

These elements are rather less numerous. There are in all 98, or 25% of the whole number mentioned in the list. Among them, we have 45 tropical elements or 12% of the whole number. None of these species ascends to an altitude higher than 3,000 ft. An exceptional case is that of the tropical genus, *Heptapleurum*, which is found at an elevation of about 7,000 ft.

f) *North American Elements.*

These elements are comparatively well represented in this flora. As has been seen in the foregoing list, we have as many as 37 species, or 9.5% of the whole number. Of these American representatives, almost no species, except a very few cosmopolitans, extends any farther south than Formosa, not even to

Luzon. It is, therefore, certain that the flora under consideration has a far closer affinity to that of North America than the flora of the Philippines has to that of the new world.

It is very interesting to notice that the montane flora has some genera which are found in North America, North China, and Japan, but nowhere else. They are :—

Mitella (Formosa, Japan, North China, Siberia, and North America).

Chamæcyparis (Formosa, Japan, and North America).

Pseudotsuga (Formosa, Japan, and North America).

g) *Himalayan Elements.*

These elements are here represented by as many as 101 species, or 26% of the whole number. Most of them are found in Japan and also in China.

Those plants which are confined to Formosa, the Himalayas, and China are as follows :—

Arabis alpina LINN.

Thea caudata (WALL.)

Oxalis Griffithii EDGEW.

Desmodium sinuatum BLUME.

Vernonia Andersoni CLARKE.

Pieris formosa D. DON.

Sopubia

Laggera alata SCH. BIP.

Codonacanthus pauciflorus NEES.

Origanum vulgare (also in Europe, America, and Africa)

Stellera Chamæjasme LINN.

Juniperus communis LINN. (represented by *J. formosana* HAYATA.

Peliosanthes courtallensis WIGHT.

Aneilema divergens CLARKE.

Luzula effusa BUCH.

Those plants, which are found in the Himalayas and Formosa, but nowhere else, are :—

Arabis taraxacifolia ANDERS.

Epilobium alpinum LINN. (also in Europe).

Lecanthus Wightii WEDD (also in the Malay Archip.).

Castanopsis indica A. DC.

Luzula spicata DC.

Agrostis Clarkei HOOK. f.

Isachne Clarkei HOOK. f.

h) *Elements of central and southern China (including Tibet).*

This is the class best represented in the flora, comprising as many as 192 species, or 49% of the whole number. Most of them are also found in Japan.

The plants which are confined to this region and Formosa, are as follows :—

<i>Hæckia Aschersoniana</i> ENGL. et GRÆBN.	<i>Salvia scapiformis</i> HANCE.
<i>Senecio monanthus</i> DIELS.	<i>Daphne Championi</i> BENTH.
<i>Petasites tricholobus</i> FRANCH.	<i>Libocedrus macrolepis</i> BENTH.
<i>Gentiana humilis</i> STEV.	<i>Pinus Armandi</i> FRANCH.
	<i>Keteleeria Davidiana</i> BEISSN.

They are in all 9 species, among which we have 2 genera, *Hæckia* and *Keteleeria*, which are found in this region and Formosa, but nowhere else.

Here we see that the strong affinity between the two regions is as clearly shown by the plants of peculiar character as by the number of the elements.

i) *Japanese Elements.*

The Japanese elements are, next to the Chinese, best represented in the flora. They comprise in all 163 species or 42% of the whole number.

The plants, which are known to exist only in Formosa and Japan, are as follows :—

<i>Clematis lasianдра</i> MAXIM.	<i>Lysimachia sikokiana</i> MIQ.
<i>Mitella japonica</i> MIQ.	<i>Conandron ramondiioides</i> S. et Z.
<i>Trochodendron aralioides</i> S. et Z.	<i>Tsuga diversifolia</i> MAXIM.
<i>Fatsia</i>	<i>Pseudotsuga japonica</i> SHIRASAWA.
<i>Galium brachypodium</i> MAXIM.	<i>Abies Mariesii</i> MASTERS.

Chamæcyparis pisifera S. et Z.
 represented by *C. formosensis*
 MATSUM.
Chamæcyparis obtusa S. et Z.
Pinus parviflora S. et Z. (represented
 by *P. formosana* HAYATA.)

Metanarthesium foliatum MAXIM.
Juncus Maximowiczii FR. et SAV.
Plagiogyria Matsumureana MAKINO.

They are in all 16 species, among which we have some genera which are all but peculiar to Japan and Formosa. They are as many as 4 genera :—

<i>Trochodendron</i>	<i>Conandron</i>
<i>Fatsia</i>	<i>Metanarthesium</i> .

The Japanese elements are, on the whole, a little less numerously represented in the Formosan flora than the elements of central and southern China, so far as the figures of the elements are concerned. We see, however, that the number of the plants peculiar to both islands far exceeds the number of those which are confined to the continent and Formosa.

Origanum vulgare LINN., which ranges over high mountains of the northern hemisphere, is wanting in Japan.

Luzula spicata DC., which spreads over the Himalayas, North America and the arctic regions, has not yet been found in Japan.

j) *Elements of northern China (including Manchuria, Saghalien, Amurland, and east Siberia).*

These are the least numerously represented in the flora. They number 81 species or 21% of the whole.

Those plants, which are only found in North China and the island, are as follows :—

Cerastium pilosum LEDEB.

Rhamnus arguta MAXIM. (represented by a variety.)

Here we see that the relation is far less close.

k) *Endemic Elements (excepting varieties.)*

Endemic plants are comparatively numerous as is to be expected in an island. There are as many as 99 species, or 25% of the total number of the plants found in the high elevations. This richness in endemic plants seems to indicate that the island has been entirely separate from neighbouring countries since geological epochs.

However opulent Formosa is in peculiar plants, the figure representing the number of the endemic species is not so large in the case of this island as it is in that of the Philippines.¹⁾ This fact shows that the flora of Formosa is of continental character, while that of the archipelago is insular.

The numbers of the plants of endemic character under each genera are shown in the following list.

<i>Clematis</i>	2	<i>Eurya</i>	1	<i>Astilbe</i>	1
<i>Thalictrum</i>	1	<i>Thea</i>	1	<i>Hydrangea</i>	4
<i>Melodorum</i>	1	<i>Geranium</i>	1	<i>Ribes</i>	1
<i>Cardamine</i>	1	<i>Impatiens</i>	1	<i>Sedum</i>	1
<i>Viola</i>	3	<i>Euonymus</i>	1	<i>Hydrocotyle</i>	1
<i>Polygala</i>	1	<i>Crotalaria</i>	1	<i>Sanicula</i>	1
<i>Cerastium</i>	1	<i>Dumasia</i>	1	<i>Fatsia</i>	1
<i>Stellaria</i>	1	<i>Rubus</i>	2	<i>Oreopanax</i>	1

1) Mr. E. D. MERRILL states that 41% of the total number of the plants found in the Lamao Forest Reserve is endemic to the Philippines....(see Philipp. Journ. Sci. Vol. I. Suppl. p. 9.)

<i>Damnacanthus</i>	1	<i>Symplocos</i>	2	<i>Elatostema</i>	1
<i>Lasianthus</i>	1	<i>Dischidia</i>	1	<i>Quercus</i>	4
<i>Rubia</i>	1	<i>Gentiana</i>	6	<i>Castanopsis</i>	1
<i>Scabiosa</i>	1	<i>Svertia</i>	1	<i>Chamæcyparis</i>	1
<i>Eupatorium</i>	2	<i>Trigonotis</i>	1	<i>Juniperus</i>	1
<i>Erigeron</i>	1	<i>Reimannia</i>	1	<i>Cunninghamia</i>	1
<i>Anaphalis</i>	1	<i>Veronica</i>	1	<i>Taiwania</i>	1
<i>Gnaphalium</i>	1	<i>Mesona</i>	2	<i>Pinus</i>	1
<i>Carpesium</i>	1	<i>Polygonum</i>	3	<i>Tsuga</i>	1
<i>Artemisia</i>	2	<i>Asarum</i>	1	<i>Faris</i>	1
<i>Gynura</i>	1	<i>Peperomia</i>	1	<i>Scirpus</i>	1
<i>Ainsliea</i>	2	<i>Helicia</i>	1	<i>Spodiopogon</i>	2
<i>Vaccinium</i>	2	<i>Loranthus</i>	1	<i>Arundo</i>	1
<i>Gaultheria</i>	1	<i>Balanophora</i>	2	<i>Brachypodium</i>	1
<i>Rhododendron</i>	3	<i>Glochidion</i>	1	<i>Arundinaria</i>	1
<i>Pyrola</i>	1	<i>Pilea</i>	1	<i>Polystichum</i>	1

Among the above species, the most striking plants, with the endemic genus, *Taiwania*, are as follows:—

Fatsia multicarpa HAYATA.

Oreopanax formosana HAYATA.

Damnacanthus angustifolia HAYATA.

Leontopodium microphyllum HAYATA.

Pyrola morrisonicola HAYATA.

Helicia formosana HEMSLEY.

Chamæcyparis formosensis MATSUMURA.

Cunninghamia Konishii HAYATA.

Taiwania cryptomerioides HAYATA.

Pinus formosana HAYATA.

Brachypodium Kawakamii HAYATA.

1) General Character of the Elements.

The general features of the elements are shown in the following table.

Temperate elements	320 = 81 % of the whole number
Tropical elements	45 = 12 % „ „
Arctic, antarctic & alpine elements	27 = 7 % „ „
Total	392 = 100 %

Thus, the flora is, in general, temperate, having as many as 320 species of temperate character, or 81 % of the whole number of the elements.

The total number of the species in the flora is 392, belonging to 79 families and 266 genera.

2) Floristic Relationship between Formosa and Neighbouring Countries.

The numbers of the elements in the regions under comparison are shown in the following table.

Regions	Number of elements	Ratio
The Malaypen. & archip.	98	25 %
The Himalayas	101	26 %
Central & southern China	192	49 %
Northern China	81	21 %
Japan	163	42 %
North America	37	9.5 %
Endemic	99	25 %

As shown in the above table, the island has the strongest affinity to central and southern China and Japan ; next, to the

Himalayas; then, to the Malay peninsula and archipelago, and North China; and lastly, to North America.

As to central and southern China and Japan, the comparative strength of their floristic relationship to Formosa is not to be measured by the number of elements only; the character of the elements must also be taken into account.

So far as the number of the elements is concerned, it appears that the most striking affinity obtains between the island and central and southern China. It is not so, however, when we compare those elements which give the flora its peculiar features. The comparison of this class of elements, which plays so important a part in the study of phytogeography, is worthy of special attention.

As we have already seen, the species the distribution of which is limited to Formosa and Japan are far more numerous than those confined to Formosa and China. We have also observed that the number of the genera, which are found in the islands and nowhere else, is double that of such kinds in Formosa and China.

When we consider these species of peculiar character, we are forced to think that the flora of Formosa has a striking affinity to that of Japan. And it is even more so, when the genera, *Trochodendron*, *Fatsia*, *Conandron*, and *Metanarthesium* are taken into account.

Thus, I am much inclined to conclude that the montane flora of Formosa is nearest to that of Japan, regardless of geographical proximity to China.

A few lines should be here devoted to the cause of this similarity between the islands.¹⁾ It is a very remarkable fact that so many plants of peculiar character are found in both regions.

1) Japan and Formosa.

This fact has led me to think that these plants once ranged over all the continent but became extinct there, while they have still survived in the islands, owing to their insular conditions¹⁾.

This opinion will, however, not satisfactorily explain why the plants, which are found still living in the islands, do not also survive in so sheltered a place as Tein-ling-shan²⁾, where the flora is quite as rich as it is in Japan and Formosa. It is very reasonable to think that in the so called coast provinces of China, the disturbances were so severe as to destroy these inhabitants of peculiar character. But, why in the protected centre of China?

It seems to me that insular conditions are not the only cause of the floristic affinity of the two regions, (Japan and Formosa) and I have wondered if this affinity were not due to a land-mass or mountain chains, which are by some geologists conjectured to have existed between the islands in former ages³⁾."

In my paper "On the Distribution of the Formosan Conifers"³⁾, I referred to the probable derivation of the coniferous flora of Formosa, and came to the conclusion that the floras of Japan and Formosa have been developed in the border regions of the former continent, the extention of which reached from Japan southwards to the Loo-choo islands as far as Formosa; while the flora of central China has been formed in the centre of the continent.

1) I am much impressed by the opinion of Mr. WALLACE who made the following conclusion in his "Island Life" ed-3, p. 404:—"It is clear, therefore, that before Formosa was separated from the mainland the above named animals or their ancestral types must have ranged over the intervening country as far as the Himalayas on the west, Japan on the north, and Borneo or the Philippines on the south; and that after that event occurred the conditions were so materially changed as to lead to the extinction of these species in what are now the coast provinces of China, while they or their modified descendants continued to exist in the dense forests of the Himalayas and the Malay Islands, and in such detached islands as Formosa and Japan."

2) DIELS, L.—Flora von Central-China, in Engl. Bot. Jahrb. XXIX. pp. 169-659.

3) HAYATA, B.—On the Distribution of the Formosan Conifers, in Tōkyō Bot. Mag. XIX. pp. 43-61.

Thus, I divided the Chino-Japanese flora into two florulæ, one is the central florula, the other, the border florula.

Regarding the present subject of the montane flora of the island, I see that my former conclusion will hold equally good of the formation of this flora.

Taking all these cases into account, I have come to the conclusion that the similarity of the floras of Formosa and Japan may have been caused, on the one hand, by the existence formerly of a land-mass between the islands, and, on the other, by the same insular conditions caused by the depression forming the inner seas in more recent geological ages.

3) General Aspect of the Vegetation.

The vegetation of the montane zone of Formosa varies considerably according to the height. As Mt. Morrison presents various climatal features from subtropical through temperate up to cold regions, the vegetation of this mountain will give us a fair idea of the general aspect of the growth in the hill regions of the island.

As I have already mentioned, a botanical excursion was carried out on the mountain by Messrs. T. KAWAKAMI, S. NAGASAWA and G. NAKAHARA, and a report¹⁾ of the journey was published by Mr. T. KAWAKAMI in the Tōkyō Botanical Magazine. As his report is the only publication relating to that mountain, I take the liberty of drawing some descriptions from it.

It was on the 28th of October, 1905, that the party left Kagi, a small town on the north-western foot of the mountain.

1) KAWAKAMI, T.:—Botanical Excursion to Mt. Morrison, in Tōkyō Bot. Mag. XX. pp. 30-36, (Japanese).

Passing over many hilly passes, they found themselves on an elevation of about 2,400 ft., where they saw a beautiful forest of *Dendrocalamus*¹⁾ and *Bambusa*²⁾.

From a height of 3,000 ft. upwards, beautiful arbors of camphor³⁾ and *Quercus*⁴⁾ made a dense forest with a liana formation, and many epiphytes of ferns, orchids and mosses. In this forest, the undergrowth is also beautiful; large tree ferns⁵⁾, graceful stellate ferns⁶⁾, wild *Musa*⁷⁾, *Calamus*⁸⁾, *Alocasia*⁹⁾, all combining to form a glorious example of tropical vegetation.

At the height of 3,700 ft., a pretty herb¹⁰⁾ of the *Urtica* family occurred plentifully, and on it two species¹¹⁾ of *Balanophoraceæ* were found attached to the host.

Further, at the height of 4,200 ft., the trees of various *Querci*¹²⁾ densely covered the plot, while many climbing plants hanging from the top of trees made the forest still more beautiful.

Ascending a little higher, they came to the boundary of the savage districts. In a grassy plot near by, they found an *Adenophora*¹³⁾, wild pinks¹⁴⁾, and violets¹⁵⁾, in full bloom. *Aleurites*¹⁶⁾ and *Idesia*¹⁷⁾ were found in bloom in the village.

Crossing this savage belt, they entered the virgin forest of the western slope. Here at an elevation of 4,500 ft., the camphor

1) *Dendrocalamus latiflorus* MUNRO.

2) *Bambusa Oldhami* MUNRO.

3) *Cinnamomum Camphora* N. et E.

4) *Quercus* & *Castanopsis*.

5) *Alsophila*, *Cibotium*, & *Dicksonia*.

6) *Asplenium Nidus* LINN.

7) *Musa paradisiaca* LINN. subsp. *seminifera* BAKER, var. *formosana* WARB.

8) *Calamus formosanus* BECC. & *Calamus Margaritæ* HANCE.

9) *Alocasia macrorrhiza* SCHOTT.

10) *Pilea Wattersii* HANCE?

11) *Balanophora spicata* HAYATA & *B. parvior* HAYATA.

12) *Quercus Junghuhnii* MIQ., *Q. Kawakamii* HAYATA, and other species of the genus.

13) *Adenophora verticillata* FISCH.

14) *Dianthus superbus* LINN.

15) *Viola japonica* LANGSD.

16) *Aleurites cordata* STEUD.

17) *Idesia polycarpa* MAXIM.

trees¹⁾ and various kinds²⁾ of *Quercus* were so enormously great that the trunks attained a circumference of even 8 ft.

At the height of 6,800 ft., a dark forest of *Chamæcyparis*³⁾ was first met with. The Conifer was here wonderfully large attaining a diameter of even 10 ft. Intermixed with the tall trunks of the five leaved pine⁴⁾, with the gregarious undergrowth of a pretty variety of bamboo, this *Chamæcyparis*⁵⁾ occupies the greatest part of the Conifer regions and constitutes the most peculiar feature of the flora of Formosa. The vegetation of this kind is seen only in the mountainous districts of Japan, though the growth is there far less luxurious. This spot is, it is said, frequently haunted by deer⁶⁾ of the peculiar species of the Formosan fauna.

The climatal features here were temperate. The thermometer indicated 59° F. The familiar *Polygonum*⁷⁾ (near *P. Thunbergii*), *Smilacina*⁸⁾, and *Rhus* were all welcomed as old friends. The red tinted leaves of the *Rhus* twining about the trunk of the pine reminding them of the autumnal scenery of Japan. The season of flowers was past; still there remained a few flowers and some fruits.

From the elevation of about 8,000 ft., a full sight of the peak was clearly obtained. On the north, the immense forest of Mt. Arizan was seen far below the foot. *Tsuga*¹⁰⁾ was here first met with, intermixed with shrubberies of *Pieris*¹¹⁾ and various kinds¹²⁾

1) *Cinnamomum Camphora* N. et E.

2) *Quercus* & *Castanopsis*.

3) *Chamæcyparis obtusa* S. et Z. form. *formosana*.

4) *Pinus Armandi* FRANCH. var. *Mastersiana* HAYATA.

5) *Chamæcyparis obtusa* S. et Z. form. *formosana*.

6) *Cervus tawanus* = Formosan spotted Deer. Allied to *C. Sika* of Japan.

7) *Polygonum biconvexum* HAYATA.

8) *Smilacina japonica* A. GRAY.

9) *Rhus intermedia* HAYATA.

10) *Tsuga formosana* HAYATA.

11) *Pieris formosa* D. DON.

12) *Rhododendron Oldhami* MAXIM. var. *glandulosum* HAYATA.

of *Rhododendron*. Here, *Trochodendron*¹⁾ of a enormous size was found most abundantly.

Further on, there was a grassy hillside with pines scattered here and there. Various plants including Thymelæaceæ²⁾, Rutaceæ³⁾, Rosaceæ⁴⁾, Onagrarieæ⁵⁾, Rubiaceæ⁶⁾, Juncaceæ⁷⁾ and Gramineæ⁸⁾ were also found. A large tree of Juglandaceæ⁹⁾ was met with, and the first example of a deciduous arbor¹⁰⁾ on this elevation of 8,250 ft.

Then, the slope became more and more gentle. At the height of 9,000 ft., a red berried *Vaccinium*¹¹⁾ was found, and a kind of *Sphagnum*, Campanulaceæ¹²⁾ and Orobanchaceæ¹³⁾; also a forest of *Picea*¹⁴⁾, with an undergrowth of Compositæ¹⁵⁾, Rubiaceæ¹⁶⁾, Saxifragaceæ¹⁷⁾, and Geraniaceæ¹⁸⁾. A curious species of *Impatiens*¹⁹⁾, *Mitella*²⁰⁾ and a long-leaved *Rubia*²¹⁾ were just coming into flower. The white *Parnassia*²²⁾ was in full bloom. Nothing could be

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| 1) <i>Trochodendron aralioides</i> SIEB. et ZUCC. | 15) <i>Eupatorium formosanum</i> HAYATA, <i>Solidago</i> |
| 2) <i>Daphne Championi</i> BENTH. & <i>Stellera Chamajasma</i> LINN. | <i>Virga-aurea</i> LINN., <i>Myriactis Wightii</i> DC. |
| 3) <i>Bonninihausenia albiflora</i> REICH., & <i>Skimmia japonica</i> THUNB. | <i>Aster baccharoides</i> STEETZ, <i>Aster scaber</i> |
| 4) <i>Rubus pectinellus</i> MAXIM. | THUNB., & <i>A. trinervius</i> ROXB. <i>Laggera alata</i> |
| 5) <i>Epilobium</i> sp. | SCHULTZ-BIP., <i>Gnaphalium lineare</i> HAYATA, |
| 6) <i>Ophiorrhiza pumila</i> CHAMP., <i>Damnacanthus angustifolia</i> HAYATA, & <i>D. indicus</i> GÆRTN. f. | <i>G. luteo-album</i> LINN., <i>Carpesium acutum</i> |
| 7) <i>Juncus effusus</i> LINN. | HAYATA, <i>Artemisia scoparia</i> WALDST. et KIT. |
| 8) <i>Panicum montanum</i> ROXB., <i>Cymbopogon Nardus</i> RENDLE., <i>Arundinella setosa</i> TRIN., | <i>Petasites tricholobus</i> FRANCH., <i>Senecio monanthus</i> DIELS., <i>Senecio scandens</i> HAM., |
| <i>Calamagrostis arundinacea</i> ROTH. & <i>Mitella sinensis</i> ANDERS. var. <i>formosanus</i> HACK. | <i>Cnicus Wallichii</i> DC., <i>Ainsliea macroclinioides</i> HAYATA, & <i>Picris hieracioides</i> LINN. |
| 9) <i>Juglans</i> sp. | 16) <i>Damnacanthus</i> . |
| 10) <i>Carpinus</i> sp. | 17) <i>Astilbe chinensis</i> FR. et SAV., <i>Astilbe chinensis</i> |
| 11) <i>Vaccinium Merrilliana</i> HAYATA & V. <i>emarginatum</i> HAYATA. | var. <i>longicarpa</i> HAYATA, <i>Chrysosplenium</i> , |
| 12) <i>Peracarpa carnosus</i> H. f. et T. & <i>Adenophora polymorpha</i> LEDEB. | <i>Mitella japonica</i> , MIQ., <i>Hydrangea</i> , <i>Deutzia</i> |
| 13) <i>Orobanche corulescens</i> STEPHN. | <i>Scabra</i> THUNB. & <i>Ribes formosana</i> HAYATA. |
| 14) <i>Picea morrisonicola</i> HAYATA. | 18) <i>Impatiens</i> , <i>Geranium</i> , & <i>Oxalis</i> . |
| | 19) <i>Impatiens uniflorus</i> HAYATA. |
| | 20) <i>Mitella japonica</i> MIQ. |
| | 21) <i>Rubia lanceolata</i> HAYATA. |
| | 22) <i>Parnassia palustris</i> LINN. |

more interesting than to see these flowers of cold regions on this mountain lying within the tropics. A kind of *Fragaria*¹⁾ with a yellow fruit and a beautiful flower²⁾ of Caryophylleæ were seen among the rocks.

At the height of 10,500 ft., the climate was rather cold. The temperature fell at night to 43° F. The frost was very heavy at that season of the year. There a dark forest of *Abies*³⁾, *Tsuga*⁴⁾, and *Chamæcyparis*⁵⁾ was very beautiful.

Passing through this forest, they came to a brook on the banks of which they found two species⁶⁾ of Umbelliferae and a kind of *Primula*⁷⁾. It was here that the beautiful flowers of *Thalictrum*⁸⁾ were found. *Epilobium*⁹⁾ of a very small size was also growing along the brook.

Further on, the coniferous forest gradually gave way to a shrubby formation of *Juniperus*¹⁰⁾, intermixed with dwarf trees of the *Berberis*¹¹⁾ family. The ground was all covered with debris of clay slate fallen from the peak above.

From the height of 12,000 ft. and upwards, the mountain sides were grassy, where *Potentilla*¹²⁾, *Astilbe*¹³⁾, *Lycopodium*¹⁴⁾ and *Adenophora*¹⁵⁾ were growing abundantly. A small swampy plot was found, there were beautiful groups of various flowers of the blue *Scabiosa*¹⁶⁾, yellow *Hypericum*¹⁷⁾ and *Sedum*¹⁸⁾, *Oxalis*¹⁹⁾ of

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|---|---|
| 1) <i>Fragaria</i> sp. | 11) <i>Berberis</i> sp. |
| 2) <i>Cucubalus baccifer</i> LINN. | 12) <i>Potentilla gelida</i> C. A. MEY., <i>P. leuconota</i> |
| 3) <i>Abies Mariesii</i> MAST. var. <i>Kawakamii</i> HAYATA. | DON. var. <i>morrisonicola</i> HAYATA & <i>Sibbaldia procumbens</i> LINN. |
| 4) <i>Tsuga formosana</i> HAYATA. | 13) <i>Astilbe chinensis</i> FR. et SAV. |
| 5) <i>Chamæcyparis formosensis</i> MATSUMURA. | 14) <i>Lycopodium obscurum</i> LINN., <i>L. clavatum</i> |
| 6) <i>Sanicula petagnioides</i> HAYATA & <i>Cnidium</i> sp. | LINN. & <i>L. serratum</i> THUNB. |
| 7) <i>Primula</i> sp. | 15) <i>Adenophora polymorpha</i> LEDEB. |
| 8) <i>Thalictrum Fauriei</i> HAYATA. | 16) <i>Scabiosa lacerifolia</i> HAYATA. |
| 9) <i>Epilobium alpinum</i> LINN. & <i>E. roseum</i> SCHREB. | 17) <i>Hypericum attenuatum</i> CHOISY. |
| 10) <i>Juniperus formosana</i> HAYATA & <i>J. morrisonicola</i> HAYATA. | 18) <i>Sedum morrisonense</i> HAYATA. |
| | 19) <i>Oxalis Griffithii</i> EDGEW. et HOOK. f. |

violet color, red *Epilobium*¹⁾ and snow white *Spiraea*²⁾. The flowering season was over, but still a few flowers remained.

On the top (13,120 ft.) of the peak, the ground is covered with blocks of rocks. The flora is here extremely scanty, and the flowers were all gone. The scene was very desolate. No sound save the humming of an insect broke the profound silence.

Thus ended the trying excursion carried out by Messrs. T. KAWAKAMI, S. NAGASAWA and G. NAKAHARA. It was a journey of more than a week. From this trip, they all brought back very good collections. The report of the botanical tour written by Mr. T. KAWAKAMI must, I infer, have thrown some light upon the study of the vegetation of the island.

Summarizing the description above referred to, the montane zone of the island may be divided into four regions.

1) Broad leaved tree region (*Trochodendron*, *Cinnamomum*, and *Quercus*) from 2,000 ft.—6,000 ft.

2) Coniferous region (*Abies*, *Picea*, *Pinus*, *Taiwania*, *Cunninghamia*, and *Chamaecyparis*) from 6,000 ft. up to 10,000 ft.

3) Shrubbery region (*Juniperus* and *Berberis*) from 10,000 ft. up to 12,000 ft.

4) Grass region (*Leontopodium*, *Potentilla*, *Origanum*, *Sibbaldia*, *Luzula*, *Trisetum*, *Festuca*, *Brachypodium*, and *Lycopodium*) from 12,000 ft. up to 13,100 ft.

1) *Epilobium alpinum* LINN.

2) *Spiraea* sp.

4) Enumeration of the Plants.

Dicotyledones.

Polypetalæ.

Ranunculaceæ.

Anemone LINN.

Anemone luzoniensis ROLFE¹⁾; HAYATA, in Tōkyō Bot. Mag. XX. p. 73.

HAB. Shintiku: Goshōrin, leg. T. KAWAKAMI, Mai. 1906.

DISTRIB. The Philippine islands.

Anemone sp. Herbacea perennis, basi apiceque longe sericeo-pubescens, undique pilis brevioribus adpressis tenuiter oblecta. Folia radicalia magna cum petiolis circ. 30 cm. longa trifoliolata palmatinervia, superne læte viridia subtus glauca; foliola petiolulata, circumscriptione cordato-rotundata, tri- vel multiloba vel profunde incisa, margine inæqualiter inciso-serrata vel duplicato-serrulata, serraturis mucronatis, apice acuta 7–10 cm. longa totidemque lata; foliola terminalia, majuscula valde obliqua, profunde cordata. Caulis 50–60 cm. longus erectus teres. Folia caulina opposita breviter petiolata, petiolis villosis basi vaginatis, patentia trifoliolata, foliolis petiolulatis basi cuneatis

1) After completing this manuscript, I am informed by Mr. E. D. MERRILL of the Bureau of Science, Manila, that when he was in the Kew Herbarium he and Mr. ROLFE compared the Philippine material with the Himalayan specimen, and came to the conclusion that the Luzon plant is not distinctive from *Anemone vitifolia* HAM. The description of *Anemone luzoniensis* ROLFE has never been published. I think that the Formosan plant above mentioned is exactly the same as the Luzon plant, and Mr. MERRILL has the same opinion too. After considering all the above cases, I am much inclined to think that my plant should be referred to *Anemone vitifolia* HAM.

oblongo-lanceolatis, sursum attenuatis sub-3-lobatis, inæqualiter duplicato-serratis. Pedunculi plerumque 2 valde elongati tenues erecti.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, ad 8000 ped. alt., Nov. 1906, (No. 1869).

Very near the preceding species, but possibly different from it. The specimens, however, being in too imperfect a state, are not determinable.

Clematis LINN.

Clematis lasiandra MAXIM. var. **Nagasawai** HAYATA, n. v. Cæulis lignoso-scandens glaber sulcatus. Folia pinnata 3-5-foliolata, cum petiolis 10-15 cm. longa 5-9 cm. lata, foliolis longe petiolulatis simplicibus vel interdum trilobatis ovatis v. ovato-lanceolatis acuminatis inæqualiter argute serratis. Paniculæ axillares paucifloratæ, vel quasiterminales, folio breviores vel longiores, basin pedicelli bracteatae, bracteis trilobatis vel elobatis linearibus minoribus, pedicellis gracilibus flore 2-3-plo longioribus. Flores nutantes, 2 cm. in diametro æquantes et totidem longi. Sepala 4, conniventia apice revoluta, oblonga v. ovato-oblonga obtusa v. emarginata, 23 mm. longa 8 mm. lata, utraque pagine subglabra leviter purpurea, margine velutinoso-tomentosa. Stamina 4-seriata, extima longissima, filamentis planis linearibus 17 mm. longis dorso longe denseque sericeo-pilosis, antheris 2 mm. longis apice non appendiculatis, stamina intima breviora, filamentis 9 mm. longis, antheris 3 mm. longis. Pistilla 8 mm. longa sericeo-plumoso-caudata. Receptaculum fructiferum erectum globosum 4 mm. in diametro æquans pilosum; carpellis sub maturitate numerosis ovato-lanceolatis acuminatis compressis 3 mm. longis marginatis rubescentibus pilosis, longe plumoso-caudatis, caudis $3\frac{1}{2}$ cm. longis.

HAB. in valle Shūkōran, ad 11117 ped. alt., in monte Morrison, leg. S. NAGASAWA, Nov. 1905, (No. 611).

DISTRIB. Type : Kiūshiū, southern part of Japan.

The present variety differs from the type in having many-flowered peduncles; this never has uni-flowered peduncles as the type.

Clematis longisepala HAYATA, sp. nov. Caulis lignoso-scandens glaber striatus. Folia pinnatim 5-foliolata longe petiolata glaberrima, cum petiolis 15–20 cm. longa, petiolis volubilibus striatis, foliolis petiolulatis, petiolulis 1.5–2 cm. longis, oppositis ovato-oblongis apice acutis basi rotundatis integris 3–5-nerviis submembranaceis subtus pallidioribus 5 cm. longis $2\frac{1}{2}$ cm. latis, stipulis connatis ad nodos caulis peltam formantibus. Paniculae axillares, folio subæquilongæ 5–8-floratae. Flores majusculi patentes 6–7 cm. in diametro æquantes, ad basin pedicelli 1-bracteati, bracteis pinnatim 3-sectis 3–4 cm. longis longe stipitatis, segmentis oblongo-lanceolatis, pedicellis 7–10 cm. longis. Sepala 4, lineari-lanceolata 3 cm. longa vel longiora apice obtusa carinato-mucronata, intus subglabra atro-purpurea, extus eburnea velutinoso paralleli-multi-nervia. Petala 0. Stamina multi-seriata (circ. 5-seriata), extima longiora 2 cm. longa, filamentis linearibus sursum leviter crassiusculis ad basin antherarum constrictis deorsum tenuibus dilatis glabris, antheris linearibus 2 mm longis apiculatis, stamina intima sensim breviora 7 mm. longa. Carpella longe sericeo-plumoso-caudata, circ. 1 cm. longa.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2018).

Comes very closely to *Clematis crassifolia* BENTH. Fl. Hongk. p. 7; but differs from that in having leaves of the round base.

Clematis Morii HAYATA, sp. nov. Caulis lignoso-scandens glaber striatus. Folia opposita vel quaternata trifoliolata, cum petiolis circ. 15 cm. longa, petiolis volubilibus, subcoriacea subtus glaucescentia exstipulata, foliolis terminalibus petiolulatis longe caudato-acuminatis deorsum obscure lobatis basi rotundatis margine subintegris vel remote mucronato-serrulatis subtus venis prominentibus supra venis impressis venulis prominentibus 5-nerviis 11 cm. longis $3\frac{1}{2}$ cm. latis, petiolulis 1 cm. longis, foliolis lateralibus multo brevioribus sæpe elobatis caudato-ovatis remote mucronato-serrulatis petiolulatis, petiolulis 3 mm. longis, vel subsessilibus. Flores majusculi cernui semi-clausi, $1\frac{1}{2}$ cm. in diametro æquantes totidem longi, axillares solitarii pedicellati, ad basin pedicelli 2-bracteati, bracteis minutissimis pubescentibus, pedicellis 3 cm. longis pubescentibus. Sepala 4, latiora 1.8 cm. longa 9 mm. lata, ovata mucronato-acuta, intus atro-purpurea, extus velutinoso-pilosa basi leviter cordata venulis parallelis, semi-clausa numquam patentia. Stamina 3–4-seriata, extima longissima, filamentis linearibus planis longe barbatis 13 mm. longis, antheris circ. 2 mm. longis apice emarginatis, stamina intima brevissima, filamentis 7 mm. longis, antheris 3 mm. longis. Carpella circ. 1 cm. longa longe plumoso-caudata.

HAB. in montibus centralibus, ad 10000 ped. alt., leg. U. Mori, Nov. 1906, (No. 1854).

Comes near to *Clematis barbellata* EDGEW., and still more to *Clematis lasiandra* MAXIM.; but differs from them in having silky pubescent sepals and subentire leaflets.

Clematis tozanensis HAYATA, sp. nov. Caulis lignoso-scandens glaber striatus. Folia majuscula pinnatim 5–3-foliolata longe petiolata glaberrima, cum petiolis circ. 20 cm. longa totidem

lata, petiolis striatis volubilibus, foliolis oblongo-ovatis vel cordato-ovatis, basi cordatis vel truncatis 8 cm. longis 6 cm. latis palmatim 9-7-nerviis apice obtusis integerrimis leviter repandis submembranaceis vel crassiusculis, petiolulis 2-3 cm. longis valde volubilibus, stipulis latis connatis ad nodos caulis peltam formantibus. Paniculæ axillares pauci-floratae folio sub-æquilongæ. Flores majusculi patentes 6 cm. in diametro æquantes, ad basin pedicelli 1-bracteati, bracteis majusculis foliaceis simplicibus stipitatis ellipticis apice acutis. Sepala 4, angusta $3\frac{1}{2}$ cm. longa 8 mm. lata acuta vel obtusa intus glabra atro-purpurea, extus eburnea velutinoso-pubescentia multi-striata patentes. Stamina multi-seriata, extrema longissima filamentis 2 cm. longis dilatis linearibus tenuibus antheris linearibus 2 mm. longis apiculatis, stamina intima brevissima filamentis 2 mm. longis antheris 3 mm. longis longiuscule apiculatis. Carpella longe sericeo-plumoso-caudata, circ. 9 mm. longa.

HAB. in Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

Comes closely to *Clematis smilacifolia* WALL., and still more to the preceding species. The present species differs from them in the shape of the bracts and stipules. In this new *Clematis*, the filaments of the stamens of the outer-most series are the longest, while the anthers of the same series are the shortest.

Clematis Wightiana WALL. ? ; HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 5 ; WIGHT, Ic. Pl. Ind. or. t. 935.

HAB. Taitō : Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906.

This *Clematis* is very like *C. Wightiana* WALL. ; but, owing to the imperfectness of the specimen, the determination is rather conjectural.

Clematis sp.

We have one more species belonging to this genus from Rakurakusha ; but the specimen is very imperfect.

Thalictrum LINN.

Thalictrum Fauriei HAYATA¹⁾, in MATSUMURA et HAYATA, Enumeration Plantarum Formosanarum, in Journ. Sci. Coll. Imp. Univ. Tōkyō, XXII. p. 7.

HAB. in monte Morrison, leg. T. KAWAKAMI, 1906.

As the specimen is imperfect, the determination is rather conjectural.

Magnoliaceæ.***Trochodendron*** SIEB. et ZUCC.

Trochodendron aralioides SIEB. et ZUCC. Fl. Jap. I. p. 83, tt. 39 et 40 ; MIQ. Prol. Fl. Jap. p. 146 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 19 ; HENRY, List Pl. Formos. p. 16 ; MATSUM. in Tōkyō Bot. Mag. XII. p. 54 ; MATSUM. et HAYATA, Enum. Pl. Formos. in Journ. Sci. Coll. XXII. p. 11.

HAB. Suizan, ad 7702 ped. alt., in montibus Morrison, leg. S. NAGASAWA, Oct. 1905, (No. 648) ; Arizan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906 ; in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1710).

DISTRIB. Japan and the Loo-choo islands.

The plant spreads over from the main-island of Japan through Kiūshiū to the Loo-choo islands as south as Formosa. It grows the most luxuriously in this region of the island, forming

1) In the year 1905, the present *Thalictrum* of Formosa was described by myself as a new species. The publication, however, in which my new plant is appeared had not been issued until August, 1906. In the same year, another new species from Japan was described by M. LÉVEILLÉ under the same name. As it is not desirable to maintain one and the same name for two different plants, Prof. J. MATSUMURA advisably proposes to change the name of the Formosan species to *Thalictrum Urbaini* MATSUMURA.

a pure forest on the boundary between the Conifer and broad leaved tree regions. The trunk is here so large as to attain a diameter of even 15 ft.

Illicium LINN.

In this genus, *I. anisatum* LINN.¹⁾ has been the only species recorded from Formosa. We have another plant from the high elevations of the island. The specimens, however, are all wanting of flowers, so that accurate identification is impossible.

Illicium sp. Folia versus apicem ramorum plerumque approximata opposita vel sub-verticillata petiolata, petiolis $1\frac{1}{2}$ cm. longis, superne sulcatis subtus convexis crassis, laminis oblongis oblongo-ellipticis vel obovatis utrinque attenuatis vel apice cuspidato-acuminatis integris coriaceis, superne nitidis et læte viridibus subtus pallidioribus, 10–12 cm. longis 3–4 cm. latis, nervo medio crasso leviter prominulo, venis lateralibus evanidis. Pedunculi circ. 4 cm. longi. Carpella plerumque 13, libera, stylo brevior extrorsum recurvato. Semina oblonga compressa 9 mm. longa 6 mm. lata.

HAB. in montibus centralibus, ad 8000 ped., alt., leg. U. MORI, Nov. 1906, (No. 1918); in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 2028); Tōzan et Arisan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

The carpels are, in most cases, thirteen, in which respect, it resembles very much *I. Tashiroi* MAXIM.²⁾

Kadsura JUSS.

Kadsura japonica LINN.; DC. Prodr. I. p. 83; Miq. Prol. Fl. Jap.

1) MATSUM. et HAYATA, Enum. Pl. Formos. p. 9.

2) S. MATSUDA, in Tōkyō Bot. Mag. XXI. p. 243.

p. 255; FRANCH. et SAV. Enum. Pl. Jap. I. p. 18; HENRY, List Pl. Formos. p. 16; ITÔ et MATSUM. Tent. Fl. Lutch. in Journ. Sci. Coll. XII. p. 285; MATSUM. in Tōkyō Bot. Mag. XV. p. 85; MATSUM. et HAYATA, Enum. Pl. Formos. p. 12.

Kadsura chinensis HANCE, in BENTH. Fl. Hongk. p. 8; FORBES et HEMSL. Ind. Fl. Sin. I. p. 25.

Uvaria japonica LINN. Sp. Pl. ed-2, p. 756; THUNB. Fl. Jap. p. 237. HAB. Kagi: Kishirēi, leg. T. KAWAKAMI et U. MORI, Oct. 1906. DISTRIB. Japan and China.

The plant is found commonly in the low districts. But sometimes it ascends to the hilly regions in the prefecture of Kagi.

Anonaceæ.

Melodorum DUN.

Melodorum Oldhami HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. I. p. 27; HENRY, List Pl. Formos. p. 16; MATSUM. in Tōkyō Bot. Mag. XV. p. 86; MATSUM. et HAYATA, Enum. Pl. Formos. p. 13.

HAB. Nanto: Kashinokiyama, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. An endemic plant.

Berberideæ.

Akebia DECNE.

In this genus, *Akebia longeracemosa* MATSUM. has been the only species recorded from Formosa. On the high elevations, we have another, probably new, species. The specimen is, however, in too imperfect a state for exact determination.

Akebia sp. Folia trifoliolata subcoriacea, petiolis circ. 2 cm. longis, foliolis petiolulatis, terminalibus longioribus lanceolatis obtusis basi truncatis 4 cm. longis 1.3 cm. latis, petiolulis $\frac{1}{2}$ cm.

longis, lateralibus pauce minoribus breviter petiolulatis, venis et venulis utraque pagine valde prominentibus.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2288).

DISTRIB. A genus confined to Japan and China.

Near *A. longeracemosa* MATSUM., but differs from it in having trifoliolate leaves.

Berberis LINN.

Berberis nepalensis SPRENG. has been the only species recorded from the island. Two more species are found in the hilly districts.

Berberis nepalensis SPRENG.; HANCE, "in Journ. Bot. (1882) p. 2"; HOOK. f. Fl. Brit. Ind. I. p. 109; FORBES et HEMSL. Ind. Fl. Sin. I. p. 31; MATSUM. in Tōkyō Bot. Mag. XII. p. 54; MATSUM. et HAYATA, Enum. Pl. Formos. p. 18.

Mahonia nepaulensis DC. Prodr. I. p. 109; DIELS, Fl. Centr. China, in ENGL. Bot. Jahrb. XXIX. p. 338.

Berberis Bealei FORTUNE, Bot. Mag. t. 4852.

Ilex japonica THUNB. Fl. Jap. p. 79, et Ic. Pl. Jap. t. 12.

HAB. Ganzan, in montibus Morrison, ad 8012 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 567); Arizan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 177 et 1870).

DISTRIB. Khasia, central China, Japan and the Philippine islands. Mr. E. D. MERRILL remarks that this Formosan form is just the same as the Luzon one.

***Berberis* sp.** Frutex erectus ramosissimus, ramulis spinis ternatis. Folia fasciculata coriacea ovata spathulatave apice rotundata aristato-mucronata vel obtusa margine remote spinuloso-dentata basi cuneata sessilia vel breve petiolata, 1.5 cm. longa 7

mm. lata. Baccæ 3-fasciculatæ globoso-ellipsoidales, utrinque obtusæ rubræ, 9 mm. longæ 3-spermæ, stigmatibus parvis sessilibus, seminibus lunaribus 4 mm. longis, pedunculis $1\frac{1}{2}$ cm. longis.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 595); in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2289 et 2297).

The leaves and fruits of this plant are beautifully tinted by the autumnal coloration.

Berberis sp. Frutex erectus ramosissimus, ramulis angulatis sulcatis, spinis ternatis 2–3 cm. longis. Folia fasciculata coriacea obovata oblanceolata vel lanceolata acuta basi cuneata subsessilia remote spinuloso-dentata 5–3 cm. longa 2–1 c.m. lata, venis supra impressis subtus prominulis, venulis utraque pagine prominentibus, subtus pallidiora. Baccæ 5–10-fasciculatæ nigricantes oblongo-ovulares 7 mm. longæ, utrinque obtusæ, 2–3-spermæ seminibus lunaribus curvis 5 mm. longis pedunculis 1 cm. longis.

HAB. Seizan, in montibus Morrison, ad 11579 ped. alt., leg. S. NAGASAWA, Nov. 1906, (No. 712); in monte Morrison ad 12000 ped. alt., (No. 2133); ad 9000 ped. alt., in eodem monte, (No. 1941), leg. T. KAWAKAMI, Oct. 1906; Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

The plant is very near *B. barandana* VIDAL.

Papaveraceæ.

Corydalis DC.

In this genus, two species have hitherto been known from the island. We have another species from the hilly regions,

which is quite different from the others. The specimens are, however, in too imperfect a state either for determination or description.

Corydalis sp.

HAB. Taitō: Daironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2170 et 2183).

Cruciferæ.

Arabis LINN.

In the lowland flora we have had nothing of *Arabis*. On the high elevations, there are found three species belonging to the genus.

Arabis alpina LINN. Sp. Pl. ed-2. p. 928; DC. Prodr. I. p. 142; HOOK. f. et THOMS. in Journ. Linn. Soc. V. p. 141; HOOK. f. et ANDERS. in HOOK. f. Fl. Brit. Ind. I. p. 135; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 359; LEDEB. Fl. Ross. I. p. 117; HOOK. et ARN. Bot. Beech. Voy. p. 112; WAGNER, Deut. Fl. ed-3, p. 290; THOMÉ, Fl. Deut. Ost. u. Schw. II. p. 175.

Arabis albida STEV.; DC. Prodr. I. p. 142.

Arabis pterosperma EDGEW. in Tran. Linn. Soc. XX. p. 33.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 223).

DISTRIB. Asia, from Altai westward to Europe; east Himalaya, central China northward to east Siberia.

My specimen does not quite agree with the description of *A. alpina* LINN. It seems to me that the plant differs a little from the type in its individual character only. The leaves of the present form are subentire, while those of the type are more or less dentate.

Arabis taraxacifolia ANDERS.; HOOK. f. et ANDERS. in HOOK. f. Fl. Brit. Ind. I. p. 136.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 680); eodem loco, leg. T. KAWAKAMI et G. NAKAHARA, Nov. 1905; in monte Morrison, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 1864).

DISTRIB. Punjab, the Himalayas.

My specimen is quite agreeable with the description of the species above referred, written in Hook. f. Fl. Brit. Ind. I. p. 136, and also very like the European *A. arenosa* Scop. Although I have not yet seen an Indian specimen, I think that the plant should be referred to this species. The specimen bearing No. 680 is of a rather elongated form and of prostrate habit. This form has much more runners and more remote leaves than the type.

Arabis sp. Caulis stellato-tomentosus, 14–15 cm. longus, basi 2–3 foliolatus ramosus. Folia radicalia longe petiolata, petiolis 2 cm. longis, laminis obovatis apice rotundatis integris basi cuneatis et remote serratis, utrinque stellato-tomentosis, 9 mm. longis 4 mm. latis. Siliquæ lineares 2 cm. longæ.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2234).

As the specimens are wanting of flowers, they are not specifically determinable.

Cardamine LINN.

Of this genus, two species have been recorded from the island. We have two more species from the high elevations of Mt. Morrison.

Cardamine reniformis HAYATA, sp. nov. Caulis humilis tenuis 8–9 cm. longus erectus glaber. Folia radicalia longe petiolata, petiolis circ. 5 cm. longis basi leviter dilatis, laminis rotundato-

reniformibus apice obtusis basi reniformibus repandis palmatim-6-7-nerviis, 4 cm. longis totidem latis utraque pagine subglabris pauce ciliolatis. Folia caulina breve petiolata radicali similia. Scapi pauciflorati. Flores parvi, 3 mm. longi pedicellati. Sepala 4, oblongo-elliptica, utrinque obtusa, $2\frac{1}{2}$ mm. longa. Petala spathulata 2 mm. longa. Stamina 6, $2\frac{1}{2}$ mm. longa. Ovarium cylindraceum 2 mm. longum, stylo brevi, stigmate globoso. Siliquæ lineares 2 cm. longæ $\frac{1}{2}$ mm. latæ, seminibus oblongis compressis $\frac{1}{2}$ mm. longis.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1982).

The present species differs from the other species of this genus in having reniform leaves. The leaves are somewhat like *C. asarifolia* LINN., in which species they are never cordate or reniform.

Cardamine sp. Caulis glaber 10-15 cm. longus. Folia radicalia 15 cm. longa 2 cm. lata bi-pinnata longe petiolata, pinnis lateralibus breve petiolulatis, pinnulis partis superioris sessilibus majoribus lobatis, lobis rotundatis. Folia caulina multo minora.

HAB. in monte Morrison, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2252).

As the specimens are sterile, the accurate identification is impossible.

Violaceæ.

Viola LINN.

Six species belonging to this genus are known from the low districts. In the mountainous regions, we have five species, among which two are new.

Viola japonica LANGSD.; DC. Prodr. I. p. 295; MIQ. Prol. Fl. Jap. p. 86; MAXIM. in Mém. Biol. IX. (1877) p. 724; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 42, et II. p. 287; FORBES et HEMSL. Ind. Fl. Sin. I. p. 53; HENRY, List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 207; PALIBIN, Conspect. Fl. Koreæ, I. p. 32; MATSUM. et HAYATA, Enum. Pl. Formos. p. 29.

Viola japonica var. *pekinensis* MAXIM. "Bull. Soc. Nat. Mosc. (1879) p. 4."

Viola kamtschatica var. *pekinensis* REGEL, Pl. Rad. I. p. 230.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 774); eodem loco, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1759); in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2011).

DISTRIB. Northern and central China, and Japan.

The same as the Japanese form.

Viola Kawakamii HAYATA, sp. nov. Herba acaulis. Folia longe petiolata stipulata, petiolis gracilibus 10–15 cm. longis, laminis hastato-cordatis acuminatis vel obtusis crenulatis ad sinus crenæ pilosis ceterum glabris, subtus glauco-violascentibus circ. 3 cm. longis 2 cm. latis, stipulis laciniatis ad petiolum parce adnatis. Flores patentes 1.5 cm. in diametro æquantes, longe pedunculati, pedunculis petiolo æquilongis, bracteis 2 subulatis remote sitis, 5 mm. longis. Sepala subæqualia obtuso-acuminata 4 mm. longa 1 mm. lata, basi ultra insertionem $\frac{1}{2}$ mm. producta glabra. Petala superiora et lateralia subæqualia ovato-cuneata apice emarginata, 12 mm. longa 5 mm. lata, inferius majus 15 mm. longum 9 mm. latum apice valde emarginatum vel leviter 2-lobatum basi longe calcaratum, calcare 6 mm. longo leviter curvo. Antheræ subsessiles, connectivo complanato apice in membranam 1 mm. longam producto; stamina 2 inferiora dorso basi calcarata, calcare 3 mm.

longo. Stylus fere rectus, stigmatē terminali. Capsula ignota.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, (No. 649); in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 2010).

Very near *V. formosana* HAYATA, but differs from it in having more elongate leaves.

Viola Nagasawai MAKINO et HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 30.

HAB. in monte Morrison, leg. G. NAKAHARA, Oct. 1906.

Viola tozanensis HAYATA, sp. nov. Herba acaulis. Folia longe petiolata stipulata, petiolis 4 cm. longis, laminis late cordatis rotundatis crenulatis setoso-pubescentibus subtus glaucis violascentibus, circ. 2 cm. longis totidem latis, stipulis laciniatis ad petiolum parce adnatis. Flores patentes reflexi $1\frac{1}{2}$ cm. in diametro æquantes longe pedunculati, pedunculis petiolo æquilongis, bracteis 2 subulatis oppositis 5 mm longis. Sepala sub-æquilonga obtuso-acuminata 4 mm. longa 1 mm. lata basi ultra insertionem 1 mm. producta glabra. Petala superiora et lateralia subæqualia ovato-cuneata apice truncata 10 mm. longa 5 mm. lata, inferius majus 18 mm. longum 8 mm. latum apice valde emarginatum basi longe calcaratum, calcare 4 mm. longo leviter curvo. Antheræ subsessiles, connectivo complanato apice in membranam 1 mm. longam producto; stamina 2 inferiora dorso basi calcarata, calcare 3 mm. longo. Stylus fere rectus, stigmatē sub-terminali. Capsula ignota.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

This *Viola* is found attaching on the large trunk of a tree. The flower is patent and of a whitish purple colour.

Viola sp.

HAB. Tōzan et Arizan, in montibus Morrison, leg. G. NAKAHARA.
No flower, indeterminable.

Bixineæ

Idesia MAXIM.

Idesia polycarpa MAXIM. in Mém. Biol. VI. p. 9; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 45; Bot. Mag. t. 6794; HENRY, List Pl. Formos. p. 18; MATSUM. in Tōkyō Bot. Mag. XII. p. 67; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 478; MATSUM. et HAYATA, Enum. Pl. Formos. p. 32.

HAB. Taitō: Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2165); Kagi: Burakukansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1756).

DISTRIB. Central China and Japan.

Polygaleæ

Polygala LINN.

Polygala arcuata HAYATA, sp. nov. (Pl. I.). Tota, præter ramulos novos tenuiter pubescentes, glaberrima, caule lignescente plerumque simplici. Folia petiolata, laminis membranaceis crassiusculis elliptico-lanceolatis acuminatis integris 10 cm. longis 3 cm. latis basi in petiolum 1 cm. longum cuneatum attenuatis supra opacis subtus glaucescentibus, venis transversis primariis utrinque circ. 4–5 arcuatis prope marginem anastomosantibus. Racemi caulis apicem versus axillares vel terminales 5–6 cm. longi densiuscule multiflorati folium haud superantes. Flores lutei pedicellis brevibus 2 mm. longis. Sépala 5, exteriora 3, interiora 2, decidua, supremum exteriorum sepalorum globosum majusculum

rotundatum saccatum 3 mm. longum, 2 inferiora exteriorum sepalorum late rotundata basi obliqua $1\frac{1}{2}$ mm. longa; 2 interiora petaloidea oblique oblonga $5\frac{1}{2}$ mm. longa. Petala alte coalita, lateralia arte imbricata 7 mm. longa apice rotundata, carina breviter cucullata dorso longe cristata incrassata bisaccata. Ovarium glabrum breviter stipitatum, disco late annulari. Stylus apice dilatus, infra stigma appendiculatus. Capsula 5 mm. lata 4 mm. longa, membranacea compressa obreniformis v. late orbiculata emarginata ad margines loculicide dehiscens. Semina ovoidea 2 mm. longa, pendula pilosa strophiolata, strophiolis in utroque latere 1.2 mm. longis.

HAB. Taichū : Kashigatani, leg. G. NAKAHARA, Feb. 1907.

Somewhat resembles *P. Wattersii* HANCE, in Journ. Bot. (1881) p. 209; but differs from it in having obreniform fruits, much smaller flowers, divided crests, and in many other points.

Polygala japonica HOUTT.; DC. Prodr. I. p. 324; BAKER et S. MOORE, in Journ. Linn. Soc. XVII. p. 379; FRANCHET, Pl. David. p. 45; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 45; HENRY, List Pl. Formos. p. 18; ITÔ et MATSUM. Tent. Fl. Lutch. p. 311; PALIBIN, Conspect. Fl. Koreæ, I. p. 37; MATSUM. et HAYATA, Enum. Pl. Formos. p. 34.

Polygala sibirica LINN. Sp. Pl. ed-2, p. 987; DC. Prodr. I. p. 324; A. W. BENN. in Journ. Bot. (1878) p. 277; HANCE, in "Journ. Bot. (1882) p. 257"; FORBES et HEMSL. Ind. Fl. Sin. I. p. 61.

HAB. in monte Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. From Siberia to Japan and India, and occurs also in Australia.

Caryophyllæ.

Dianthus LINN.

Dianthus superbus LINN. Sp. Pl. ed-2, p. 589; DC. Prodr. I. p. 365; HANCE, in Journ. Bot. (1883) p. 296; FRANCHET, Pl. David. p. 46; LEDEB.

Fl. Ross. I. p. 533; MAXIM. Prim. Fl. Amur. p. 52; REGEL, Pl. Radd. I. p. 288; MIQ. Prol. Fl. Jap. p. 9; SCHMIDT, Reis. in Amur. p. 116; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 46; ENGL. in ENGL. Bot. Jahrb. VI. p. 57; FORBES et HEMSL. Ind. Fl. Sin. I. p. 64; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 316; PALIBIN, Conspect. Fl. Koreae, I. p. 39; MATSUM. et HAYATA, Enum. Pl. Formos. p. 35.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., (No. 700); Suizan, in isdem montibus, ad 7702 ped. alt., (No. 664); in monte Morrison, ad 9000 ped. alt., (Nos. 2040 et 1895); in montibus centralibus, ad 7000 ped. alt., (No. 1861); Taitō : Tairon-kōsha, (Nos. 1883 et 1950); Toroku : Gunkei; leg. T. KAWAKAMI et U. MORI, Nov. 1906; Nanto : Hinokiyama, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Europe to Mongolia; China throughout, Saghalien and Japan.

Dianthus sp.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2259).

This differs from *D. superbus* LINN. in having elongate bracts, and especially two inferior ones.

Silene LINN.

Silene Fortunei Vis. in Linnæa, XXIV. p. 181, et XXXVI. p. 688; FRANCHET, Pl. David. p. 47; FORBES et HEMSL. Ind. Fl. Sin. I. p. 65; HENRY, List Pl. Formos. p. 19; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 318; Bot. Mag. t. 7649; MATSUM. et HAYATA, Enum. Pl. Formos. p. 35.

HAB. in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 1917).

DISTRIB. Central and southern China.

The present plant found in the high regions is very like the

specimen (No. 20, A. TASHIRO) collected on the sea shore. Excepting that the flowers of the former is almost as half as those of the latter; I can find no distinction whatever between the two. My specimen should, therefore, be regarded as a form of the shore plant.

Cucubalus LINN.

Cucubalus baccifer LINN. Sp. Pl. ed-2, p. 591; DC. Prodr. I. p. 367; LEDEB. Fl. Ross. I. p. 332; MAXIM. Prim. Fl. Amur. p. 56; REGEL, Fl. Radd. p. 333; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 48; KOMAROV, Fl. Manshuriæ, II. p. 205; WAGNER, Deut. Fl. ed-3, p. 244; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb. XXIX. p. 319; THOMÉ, Fl. Deut. Öst. u. Schw. II. p. 98.

HAB. in monte Morrison, ad 13000 ped. alt., et ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2253 et 1984); Rakurakusha, leg. G. NAKAHARA, Aug. 1905, (No. 454).

DISTRIB. The Himalayas, China throughout, eastward to Japan as far as North America; westward to Europe.

Cerastium LINN.

We have hitherto had no species belonging to this genus from Formosa. The following *Cerastium* is the first recorded from the island.

Cerastium morrisonense HAYATA, sp. nov. Herbæ diffusæ v. cæspitosæ, glanduloso-pubescentes demum glabræ. Folia plerumque remota interdum approximata lineari-lanceolata vel spathulato-acuminata basi interdum attenuata dilata semi-amplexicaulia apice calloso-acuta vel aristato-acuta 1–2 cm. longa 2–2½ mm. lata. Cymæ terminales, nunc uni-floræ, nunc tri-floræ, bracteatae, bracteis scariosis, pedicellis 2–1½ cm. longis glanduloso-pubescentibus. Sepala 5, lanceolata 7½ mm. longa margine scariosa extus glan-

duloso-pubescentia intus glabra. Petala 5, oblanceolata 13 mm. longa apice 2-lobata, lobis oblongis obtusis 6 mm. longis, basi angusta. Stamina 10, filamentis petalo 2-plo brevioribus ad basin filamentorum sepalis oppositorum 2-glanduliferis. Ovarium ovoideum 2 mm. longum 1-loculare ∞ ovulatum. Styli 5, sepalis oppositi ovario longiores 3 mm. longi. Capsula cylindracea 7 mm. longa $2\frac{1}{2}$ mm. lata erecta apice in dentes 10 dehiscens, dentibus obtusis truncatis. Semina subreniformi-globosa, 1 mm. longa a latere plus minus compressa dorso granulata.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (Nos. 681 et 619); in montis Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2127 et 2261).

The plant comes nearest to *C. grandiflorum* WALD. et KIT., but differs from it in having lanceolate leaves and smaller flowers.

Cerastium pilosum LEDEB. in "Mém. Acad. Pétersb. V. p. 539," "Fl. Alt. II. p. 173"; Fl. Ross. I. p. 398, et "Ic. Pl. Fl. Ross. t. 351"; FORBES et HEMSLEIGH. Ind. Fl. Sin. I. p. 67.

HAB. in monte Morrison, ad 13000 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 626).

DISTRIB. Ural eastward to North China, Manchuria and Korea.

In the imperfectness of the specimen, the determination is rather conjectural.

Stellaria LINN.

Two species belonging to this genus have been known from Formosa. We have here a more plant from the hilly regions.

Stellaria stellato-pilosa HAYATA, sp. nov. (Pl. II). Herbæ diffusæ ramosæ laxè adscendentes in totum præter caulem densissime

stellato-pilosæ. Folia sessilia ovato-lanceolata basi cordata apice aristato-acuminata 12 mm. longa 3 mm. lata rarius ovato-cordata, supra pilis stellatis subtus pilis longioribus dense tectis, costis prominentibus. Flores 3-4, in cymas terminales v. rarius axillares dispositi pedicellati, pedicellis circ. 1 cm. longis, basi pedicelli bracteati, bracteis 2 oppositis ovato-lanceolatis. Sepala 5, lanceolata extus dense stellato-pilosa demum glabra $3\frac{1}{2}$ mm. longa 1 mm. lata. Petala profunde 2-fida, lobis lanceolatis obtusis sepalo longioribus. Stamina 10; discus inter stamina in glandulas prominentes plus minus expansus. Ovarium 1-loculare, pauci-ovulatum. Styli 3. Capsula oblongo-ovoidea, 4 mm. longa in 3 valvas dehiscens, valvis 2-fidis. Semina globoso-reniformia a latere compressa, 1 mm. in diametro æquantia granulata v. muricata.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 622); in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2258).

Near *Stellaria saxatilis* BUCH.-HAM.; but differs from it in having lanceolate leaves and entirely separate sepals.

Hypericineæ.

Hypericum LINN.

Among this genus, eight species were previously recorded from the island. A more species is found in the high regions.

Hypericum attenuatum CHOISY, in DC. Prodr. I. p. 548; HANCE, in Journ. Bot. (1874) p. 259, (1878) p. 104, et (1885) p. 321; MAXIM. in Mém. Biol. XI. p. 166; FRANCHET, Pl. David. p. 56; FORBES et HEMSL. Ind. Fl. Sin. I. p. 72.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 754); in monte Morrison, ad 12000

ped. alt., (No. 2260); et ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1800).

DISTRIB. Baical eastward to central and northern China.

Ternstroemiaceæ.

Ternstroemia LINN.

Ternstroemia japonica THUNB. in Trans. Linn. Soc. II. p. 335; SIEB. et ZUCC. Fl. Jap. p. 148, t. 80; BENTH. Fl. Hongk. p. 27; DYER, in HOOK. f. Fl. Brit. Ind. I. p. 280; MIQ. Prol. Fl. Jap. p. 202; ENGL. in ENGL. Bot. Jahrb. VI. p. 60; FORBES et HEMSL. Ind. Fl. Sin. I. p. 75; HENRY, List Pl. Formos. p. 19; ITÔ et MATSUM. Tent. Fl. Lutch. p. 324; MATSUM. et HAYATA, Enum. Pl. Formos. p. 45.

Cleyera japonica THUNB. Fl. Jap. p. 224.

Cleyera fragrans et *Cleyera dubia* CHAMP. in Trans. Linn. Soc. XXI. p. 115.

Taonabo japonica SZYSZ. in ENGL. et PRANTL. Nat. Pf.-fam. III. 6. p. 188.

HAB. Nantō: Mushazan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1141).

DISTRIB. South China and Japan. Western peninsula of India to Ceylon, and Khasia mountains to Sumatra and the Philippine islands.

Eurya THUNB.

Eurya japonica THUNB. Fl. Jap. p. 191, t. 25; DC. Prodr. I. p. 525; BENTH. Fl. Hongk. p. 28; DYER, in HOOK. f. Fl. Brit. Ind. I. p. 284; HOOK. et ARN. Bot. Beech. Voy. p. 260; BLUME, Mus. Bot. Lugd.-Bat. II. p. 105; MIQ. Prol. Fl. Jap. p. 202; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 57; FORBES et HEMSL. Ind. Fl. Sin. I. p. 77; HENRY, List Pl. Formos. p. 19; DIELS, Fl. Centr. Chiu. p. 474; PALIBIN, Conspect. Fl. Koreæ, I. p. 46; MATSUM. et HAYATA, Enum. Pl. Formos. p. 46.

HAB. in monte centrali, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 1866); inter Arizan et Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 8000 ped. alt., (No. 1788), et ad 10000 ped. alt., (No. 2121), leg. T. KAWAKAMI et U. MORI, Oct. 1906; eodem loco, ad 11000 ped. alt., (No. 623), Ganzan, in montibus Morrison, ad 9041 ped. alt., (No. 623), leg. S. NAGASAWA, Nov. 1905; Rinkihō, ad 4500 ped. alt., leg. N. KONISHI, Feb. 1904; Taitō: Inikufuku, et Iryokukakusha, (No. 1840), leg. T. KAWAKAMI et U. MORI, Dec. 1906.

DISTRIB. The Malay archipelago, southern and central China, and Japan.

The same as the Luzon form.

Eurya strigillosa HAYATA, sp. nov. Ramuli graciles strigillosi primum sericeo-villosi. Folia disticha approximata sessilia coriacea oblongo-acuminata vel lanceolata 10 cm. longa $2\frac{1}{2}$ cm. lata basi rotundata sæpiusque leviter inæqualia apice acuminata margine præter basin serrulata, serrulis acutis, supra glabra nitida subtus strigillosa, costis prominentibus, venis utraque inconspicuis. Flores ♂ breve pedicellati, pedicellis 1 mm. longis vel longioribus, ad axillas foliorum 2–3 congesti, patentes 8 mm. in diametro æquantes. Sepala 5–6, valde inæqualia late rotundata $1\frac{1}{2}$ mm. longa totidem lata extus pilosula. Petala plerumque 5, obovato-oblonga 4 mm. longa $2\frac{1}{2}$ mm. lata glabra basi leviter connata. Stamina circ. 15, glabra petalo breviora, filamentis planis $2\frac{1}{2}$ mm. longis, antheris undulatis filamento duplo vel triplo brevioribus. Ovarii rudimentum brevissimum conicum apice barbatum. Flores ♀ ignoti.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2023).

The plant is very like *E. distichophylla* HEMSLEY; but differs

from it in having serrulate leaves and larger flowers which attain a diameter of even 8 mm.

Actinidia LINDL.

Actinidia callosa LINDL.; WALP. Ann. I. p. 15; DYER, in HOOK. f. Fl. Brit. Ind. I. p. 286; FORBES et HEMSL. Ind. Fl. Sin. I. p. 78; HENRY, List Pl. Formos. p. 20; DIELS, Fl. Centr. Chin. p. 470; MATSUM. et HAYATA, Enum. Pl. Formos. p. 47.

HAB. Kagi: in monte Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. Himalaya, central China to Japan.

Stachyurus SIEB. et ZUCC.

Stachyurus præcox SIEB. et ZUCC. Fl. Jap. I. p. 43, t. 18; MIQ. Prol. Fl. Jap. p. 204; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 59; FORBES et HEMSL. Ind. Fl. Sin. I. p. 79; MATSUM. et HAYATA, Enum. Pl. Formos. p. 48.

Stachyurus himalaicus HOOK. f. et THOMS. in HOOK. f. Fl. Brit. Ind. I. p. 288; DIELS, Fl. Centr. Chin. p. 475.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 1873 et 1810); Kōshūn: Naibun, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. The Himalaya's through central China to Japan.

This is somewhat different from what we have in Japan. The plant should, I think, be regarded as a form of the Japanese species.

Schima REINW.

Schima Noronhæ REINW.; MIQ. Fl. Ind. Bat. I.-2, p. 492; BENTH. Fl. Hongk. p. 29; MAXIM. Mém. Biol. XII. p. 426; FORBES et HEMSL. Ind.

Fl. Sin. I. p. 80; HENRY, List Pl. Formos. p. 20; MATSUM. in Tōkyō Bot. Mag. XII. p. 63; ITŌ et MATSUM. Tent. Fl. Lutch. p. 328; MATSUM. et HAYATA, Enum. Pl. Formos. p. 49:

Gordonia javanica HOOK. f. Bot. Mag. t. 4539.

HAB. in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1711).

DISTRIB. The eastern frontier of India; from Cochinchina through the Malay archipelago, and South China to the Loo-choo islands.

Thea LINN.

Thea brevistyla HAYATA, sp. nov. (Pl. III.). Ramuli graciles primum pubescentes demum glabri. Folia breve petiolata, petiolis 5 mm. longis semi-teretibus supra sulcatis pubescentibus, laminis elliptico-oblongis 4–5 cm. longis 2 cm. latis basi apiceque acutis vel obtusis margine crenulatis leviter repandis basin versus sæpissime integris utraque pagine glabris, costis prominulis venis impressis coriaceis. Flores ad axillas foliorum semper solitarii sessiles patentes 3 cm. in diametro æquantes. Sepala decidua 4–5 valde inæqualia 2-seriata late ovata obtusa vel mucronata 6–8 mm. longa totidem lata extus medio pilosiuscula. Petala 5 alba obovato-cuneata apice sinuato-emarginata vel 2-lobata circ. 1½ cm. longa 1 cm. lata. Stamina circ. 30, 2-seriata, exteriora longiora, filamentis plerumque petalis duplo brevioribus basi connatis. Ovarium globosum sericeo-pilosum 1½ mm. longum. Styli 4, brevissimi basi connati apice recurvi 1 mm. longi. Fructus ignotus.

HAB. Arizan et Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

Thea caudata (WALL.).

Camellia caudata WALL. "Pl. As. Rar. III. p. 36"; DYER, in HOOK. f. Fl. Brit. Ind. I. p. 293.

HAB. Taitō : Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2157).

DISTRIB. Himalaya, Khasia mountains, and South China.

Although I have seen no specimen of the Indian plant, my plant is, I think, quite referable to this species.

Tiliaceæ.

Triumfetta LINN.

Triumfetta pilosa ROTH ; DC. Prodr. I. p. 506 ; BENTH. Fl. Hongk. p. 41 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 93 ; HENRY, List Pl. Formos. p. 23 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 63.

HAB. Sanchōki, leg. S. NAGASAWA, Nov. 1905, (No. 726).

DISTRIB. Tropical Asia and Africa ; South China.

Elæocarpus LINN.

Elæocarpus decipiens HEMSL. Ind. Fl. Sin. I. p. 94 ; HENRY, List Pl. Formos. p. 24 ; ITÔ et MATSUM. Tent Fl. Lutch. p. 349 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 65.

HAB. Biōritsu : Sensuikō, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1101).

DISTRIB. South China and the Loo-choo islands.

Geraniaceæ.

Geranium LINN.

Geranium Robertianum LINN. ; DC. Prodr. I. p. 644 ; MAXIM. Mém. Biol. X. p. 613 ; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 307. (var. *glabrum*) ;

HOOK. f. Fl. Brit. Ind. I. p. 432; DIELS, Fl. Centr. Chin. p. 419; LEDEB. "Fl. Alt. III. p. 233"; THOMÉ, Fl. Deut. Öst. u. Schw. III. p. 201; WAGNER, Deut. Fl. ed-3, p. 431.

HAB. Taitō : Bunshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2152).

DISTRIB. Southern part of Japan, China throughout, and westward to Europe.

This exactly agrees with the Japanese form.

Geranium uniflorum HAYATA, sp. nov. Caulis 1-2 ped. altus erecto-patens glaber superne pilosus, ramis articulato-nodosus. Folia longe petiolata piloso-pubescentia, petiolis 2-4 cm. longis, laminis ambitu late orbicularibus vel pentagonis 5-7 cm. in diametro æquantibus profunde 5-partitis, segmentis acuminatis, pinnatifidis inciso-serratis, stipulis oblongis abrupte acuminatis 1 cm. longis extus pilosiusculis. Flores axillares vel subterminales longe pedunculati uniflori 2-bracteati, pedunculis 5-6 cm. longis pubescentibus, bracteis subulatis oppositis circ. 1 cm. longis. Sepala 5, elliptica 12 mm. longa 5 mm. lata extus distincte 5-nervia ad nervos pilosula apice aristato-acuta intus glabra. Petala 5, obovata cuneata integra 2 cm. longa vel longiora apice rotundata emarginata basi supra unguem ciliata. Glandulæ 5. Stamina 10, 2-seriata, filamentis basi dilatis brevissime ciliatis antheris oblongis deciduis. Ovarium pilosum. Capsulæ lobi oblongi pilosi 5 mm. longi $2\frac{1}{2}$ mm. lati, caudis 14 mm. longis.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 684); in eodem monte, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2254).

This new plant is somewhat like *G. pratense* LINN. in its foliage and flowers; but greatly differs from it in having uni-

flowered peduncles. The flowers of the present species are always solitary as is the case with *G. sanguineum* LINN. and *G. sibiricum* LINN.

***Oxalis* LINN.**

In this genus, *Oxalis corniculata* LINN. has been the only species recorded from the island. We have here another species found in the montane zone.

Oxalis Griffithii EDGEW. et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 436; S. MOORE, in Journ. Bot. (1875) p. 230; FORBES. et HEMS. Ind. Fl. Sin. I. p. 99; DIELS, Fl. Centr. Chin. p. 420.

HAB. Suizan, in montibus Morrison, ad 7700 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 654); in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1792); Arizân, in isdem montibus, leg. G. NAKAHARA, Nov. 1906.

DISTRIB. Eastern Himalaya and the Khasia mountains; also in central China.

***Impatiens* LINN.**

Impatiens uniflora HAYATA, sp. nov. Herbæ erectæ circ. 30 cm. altæ paucè ramosæ sursum flexuosæ, caulibus (exsiccatis) stramineis præter apicem glabris. Folia versus apicem caulis approximata breviter petiolata, laminis oblongis ellipticis vel lanceolato-ellipticis circ. 8 cm. longis $2\frac{1}{2}$ cm. latis apice caudato-acuminatis basi cuneatis in petiolum attenuatis margine serratis, serraturis setosis incurvis. Flores majusculi rosei terminales vel ex axillis superioribus, pedunculis gracilibus circ. 4 cm. longis 1-floris (rarius 2-) nudis medio bracteola minuta incurva instructis. Sepala 3 : 2 lateralia oblique ovata acuminata integra 6 mm. longa $2\frac{1}{2}$ mm. lata, posticum longe saccatum apice ad orem acutum, ore $1\frac{1}{2}$ cm. in

diametro, basi subito calcar breve incurvum apice incrassatum ac bilobum abeuns, a basi usque ad apicem calcaris $3\frac{1}{2}$ cm. longum. Petala : vexillum alis duplo brevius late subreniforme medio dorso cristatum in cornu recurvum maculosum attenuatum; alæ ambitu ellipticæ $2\frac{1}{3}$ cm. longæ latere superiore 2-lobatæ, lobo basilari exteriori lato, lobo apicali longiore oblongo. Stamina 5, filamentis inæqualibus brevioribus circ. 4 mm. longis complanatis medio appendiculatis, antheris ovatis apiculatis circa pistillum coherentibus, loculis introrsum dehiscentibus. Ovarium oblongum 4 mm. longum, stigma sessile 5-dentatum. Capsula elongata 2 cm. longa 5-valvata, valvis elastice dissilientibus, columna persistente. Semina longe elliptica vix longiora quam 2 mm., testa glabra sub microscopium minute papillosa.

HAB. Tozan et Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 1724).

Rutaceæ.

Bœnninghausenia REICHB.

Bœnninghausenia albiflora REICHB. "Conspect. Reg. Veg. p. 197"; HOOK. f. Fl. Brit. Ind. I. p. 486; HANCE, in Journ. Bot. (1874) p. 259; FRANCHET, Pl. David. p. 66; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 71; MIQ. Prol. Fl. Jap. p. 209; ENGL. in ENGL. et PRANT. Nat. Pfl.-fam. III.-4, p. 130; FORBES et HEMSL. Ind. Fl. Sin. I. p. 102; DIELS, Fl. Centr. Chin. p. 423; HAYATA, in Tōkyō Bot. Mag. XX. p. 52.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1738 et 1772).

DISTRIB. Himalaya to Japan and China; recently found in Luzon.

Evodia FORST.

Evodia meliaefolia BENTH. Fl. Hongk. p. 58; HOOK. f. Fl. Brit. Ind. I. p. 490; FORBES et HEMSL. Ind. Fl. Sin. I p. 104; HENRY, List Pl. Formos. p. 24; DIELS, Fl. Centr. Chin. p. 423; MATSUM. et HAYATA, Enum. Pl. Formos. p. 70.

Megabotrya meliaefolia HANCE, in WALP. Ann. II. p. 259.

Evodia glauca MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 23.

HAB. Taitō : Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2177).

DISTRIB. South China and southern part of Japan.

Skimmia THUNB.

Skimmia japonica THUNB. Fl. Jap. pp. 4 et 62; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 311; DC. Prodr. II. p. 18; ITō et MATSUM. Tent. Fl. Lutch. p. 357; DIELS, Fl. Centr. Chin. p. 424; HAYATA, in Tōkyō Bot. Mag. XX. p. 56; MERRILL, in Philipp. Journ. Sci. I. Supp. Bot. p. 201.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2060 et 2059); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. Himalaya, central China and Japan throughout; recently found in the Philippine islands.

Murraya LINN.

Murraya exotica LINN.; DC. Prodr. I. p. 537; BENTH. Fl. Hongk. p. 56; FORBES et HEMSL. Ind. Fl. Sin. I. p. 159; HOOK. et ARN. Bot. Beech. Voy. p. 260; WIGHT, Ic. Pl. Ind. or. t. 96; BENTH. Fl. Austral. I. p. 369; OLIV. in Journ. Linn. Soc. V. Supp.-2, p. 28; HOOK. f. Fl. Brit. Ind. I. p. 502; MAXIM. in Mél. Biol. XII. p. 429; MATSUM. et HAYATA, Enum. Pl. Formos. p. 74.

HAB. Taitō : Kōshūsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1837).

DISTRIB. Widely spread in tropical Asia and Polynesia.

Ilicineæ.

There are three species belonging to this family ; the specimens are all very imperfect and therefore they are not determinable.

Celastrineæ.

Euonymus LINN.

In this genus, we had previously four species from the lowland. Two more species are found in the montane zone.

Euonymus echinatus WALL. ; LAWSON, in HOOK. f. Fl. Brit. Ind. I. p. 610 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 119 ; ITÔ et MATSUM. Tent. Fl. Lutch. p. 371.

HAB. in monte Morrison, ad 7000 ped. alt., (No. 1721) ; in eodem monte, ad 9000 ped. alt., (No. 2004), leg. T. KAWAKAMI et U. MORI, Nov. 1906 ; Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906 ; Nantō : Mushazan, leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1122).

DISTRIB. The Himalayas, central China and the Loo-choo islands.

Euonymus trichocarpus HAYATA, sp. nov. Ramuli trichotome divaricati sub-tetragoni glabri. Folia opposita petiolata, petiolis circ. 1 cm. longis semi-teretibus, laminis oblongo-ellipticis 6-7 cm. longis 4 cm. latis apice obtusis vel acutis basi rotundatis vel obtusis rarius leviter angustis margine serrulatis, serrulis obtusis, venis utraque prominulis. Cymæ (ad ramulos terminales) laterales oppositæ paucifloræ. Flores ignoti. Capsula depresso-globosa 6-7 mm. in diametro æquans breve echinulata, echinulis 1 mm. longis.

HAB. in monte Morrison, 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1791).

This new plant resembles *E. echinatus* WALL.; but differs from it in having very short and densely covering spines on the fruit.

Celastrus LINN.

Celastrus articulatus THUNB. Fl. Jap. p. 97; DC. Prodr. II. p. 7; MAXIM. in Mém. Biol. XI. p. 200; FRANCHET, Pl. David. p. 70; MIQ. Prol. Fl. Jap. p. 17; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 80; SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 149; A. GRAY, Bot. Jap. p. 384; FORBES et HEMSL. Ind. Fl. Sin. I. p. 122; HENRY, List Pl. Formos. p. 27; DIELS, Fl. Centr. Chin. p. 446; PALIBIN, Conspect. Fl. Koreæ, I. p. 54; MATSUM. et HAYATA, Enum. Pl. Formos. p. 84.

HAB. Taitō: Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2178).

DISTRIB. Central and northern China, and Japan northward to Saghalien.

Rhamneæ.

Rhamnus LINN.

Rhamnus arguta MAXIM. var. ***Nakaharai*** HAYATA, n. v. Rami glaberrimi, subalterne divaricati. Folia rotundato-ovata basi rotundata vel acuta apice acuminata vel cuspidata 7 cm. longa $3\frac{1}{2}$ cm. lata margine præter basin apicemque crenulato-serrata, serraturis setaceo-acuminatis recurvatis, venis utrinque 5–6 omnibus angulo acuto emergentibus leviter arcuatis, membranacea, petiolis circ. 1 cm. longis. Flores ♂ ignoti. Flores ♀ in axillis foliorum inferiorum circ. 5–6 fasciculati, fasciculis paulo supra-axillaribus cum ramulo connatis interdum 5–6 mm. supra axillam quasi insertis, pedicellis tenuibus petiolum paulo superantibus 1 cm. longis apice incrassa-

tis in tubum calycis turbinatum gradatim abeuntibus. Calycis lobi tubum triplo superantes circ. 3 mm. longi lanceolati apice callosi trinervi. Rudimenta petalorum staminaque filiformia minutissima $\frac{1}{2}$ mm. longa. Ovarium globosum 1 mm. longum e tubo exsertum in stylum cylindraceum 2 mm. longum attenuatum, stylo apice 3-4 fido, ramis $1\frac{1}{2}$ mm. longis stigmatosis recurvato-patentibus. Fructus ignotus.

HAB. Taichū: Binōshō, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Type: North China.

The present variety differs from the type in having slender flowers and longer styles, and especially in the supra-axillary inflorescence.

Sapindaceæ.

Acer LINN.

Three species belonging to this genus have been known hitherto from the low districts. We have here more four species, all confined to the high regions. The specimens are all in too imperfect a state for exact determination.

Acer sp. (aff. *A. micrantho* S. et Z.). Ramuli glabri. Folia ambitu orbicularia 7 cm. in diametro æquantia palmatim 7-loba, lobis lanceolatis acuminatis, duplicato-dentatis, lobo terminali 5 cm. longo $1\frac{1}{2}$ cm. lato, lobis infimis brevioribus $2\frac{1}{2}$ cm. longis, petiolis 2 cm. longis.

HAB. Taitō: Bataiankei, in monte Lagalan, ad 5000 ped. alt., leg. N. KONISHI, Juni. 1902.

Acer sp. (aff. *A. crataegifolio* S. et Z.). Ramuli glabri, atropurpurei. Folia ovato-cordata 5-nervia, 8 cm. longa 5 cm. lata leviter 3-loba,

lobis inconspicuis obtusissimis, margine præter apicem duplicato-serrata, apice acuminata vel cuspidata, cuspidibus serrulatis, petiolis circ. 3 cm. longis.

HAB. in monte Morrison.

Acer sp. (aff. *A. rufnervi* S. et Z.). Ramuli palliduli exsiccato nigricantes. Folia ambitu cordata octagona leviter 5-loba, lobis brevissimis cuspidatis, cuspidibus terminalibus angustis linearibus, lateralibus latioribus serrulatis, infimis brevissimis, basi cordata, margine præter cuspidem duplicato-serrata, 9–10 cm. longa 7 cm. lata coriacea longe petiolata, petiolis 6–7 cm. longis.

NOM. INDIG.: *Lankas-lain* = *Acer foliis magnis*.

HAB. Taitō: Bataiankei, ad 7600 ped. alt., leg. N. KONISHI, Juni. 1902, (No. A. 11); in monte Morrison, ad 7500 ped. alt., (No. 1874); ad 6000 ped. alt., (No. 1798), leg. T. KAWAKAMI et U. MORI, Nov. 1906; Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

Acer sp. (aff. *A. picto* THUNB.). Ramuli palliduli glabri. Folia ambitu late orbicularia 7 cm. longa 10 cm. lata palmatim 5-loba basi cordata, lobis triangularibus cuspidatis 3–3½ cm. longis 2 cm. latis vel latioribus, margine serrulatis, serraturis acutis, venis subtus pilosiusculis demum glabris. Cymæ terminales. Flores ignoti. Carpella elliptico-oblonga lenticularia 4 mm. longa, alis dimidiato-obovatis divaricantibus cum carpello 2–2½ cm. longis.

HAB. Chōsōkei, leg. G. NAKAHARA, Juli. 1905, (No. 161); Shintiku, in rivulos Taitō, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1426); Taitō: Taironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1842).

Cardiospermum LINN.

Cardiospermum Halicacabum LINN. Sp. Pl. ed-2, p. 525; DC. Prodr. I. p. 601; BENTH. Fl. Hongk. p. 46, et Fl. Austral. I. p. 453; HANCE, in Journ. Bot. (1878) p. 226; Bot. Mag. t. 1049; HIERN, in HOOK. f. Fl. Brit. Ind. I. p. 670; FORBES et HEMSL. Ind. Fl. Sin. I. p. 138; HENRY, List. Pl. Formos. p. 28; DIELS, Fl. Cent. Chin. p. 450; MATSUM. et HAYATA, Enum. Pl. Formos. p. 94.

Cardiospermum microcarpum H. B. K.; HANCE, in Journ. Linn. Soc. XIII. p. 101, et in Journ. Bot. (1878) p. 226; DC. Prodr. I. p. 601.

HAB. Toroku, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 176).

DISTRIB. Common in the warm regions of Asia, Africa, and America, and also in Australia.

Anacardiaceæ.

Rhus LINN.

Rhus intermedia HAYATA, sp. nov. radicans vel volubilis. Folia trifoliolata cum petiolis circ. 30 cm. longa longe petiolata, petiolis 9–10 cm. longis puberulis foliolo terminali æquilongis, foliolis lateralibus oblongis acutis basi rotundatis obliquis 13 cm. longis breviter petiolulatis, petiolulis 3 mm. longis, foliolis terminalibus longe petiolulatis, petiolulis 3 cm. longis, laminis oblôngo-ovatis apice acutis vel breviter acuminatis 15 cm. longis $7\frac{1}{2}$ cm. latis, integris, subtus imprimis costis et nervis pilosis demum glabris. Drupæ late globosæ compressæ breve apiculatæ 5 cm. latæ, totidem longæ viridi-flavescentes pilis setaceis brevioribus dense obtectæ.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2024).

The present plant is in every respect very like *Rhus Toxicodendron* LINN., but differs from it in having densely bristled fruits. At first sight, this new species appears to be referable to *Trichocarpæ*, on account of its bristled exocarpium. Studying the plant carefully, I have found that it should be referred to *Venenatæ* by reason of the mesocarpium and general characters of the fruit. The plant may better be placed between the two sections.

***Pistacia* LINN.**

***Pistacia formosana* MATSUMURA**, in Tōkyō Bot. Mag. XV. p. 40; MATSUM. et HAYATA, Enum. Pl. Formos. p. 99, t. 9.

HAB. in montibus Akō, leg. N. KONISHI, Oct. 1903, (No. A. 5.).

DISTRIB. An allied species *P. chinensis* BUNGE is found in central and northern China.

Leguminosæ.

***Crotalaria* LINN.**

***Crotalaria formosana* MATSUMURA**, in ITō et MATSUM. in Tent. Fl. Lutch. p. 395; MATSUM. et HAYATA, Enum. Pl. Formos. p. 103.

HAB. Tappansha, leg. T. KAWAKAMI et U. Mori, Oct. 1906, (No. 1760).

Closely resembles *C. linifolia* LINN.; probably a form of it.

***Desmodium* DESV.**

***Desmodium parvifolium* DC.**; ITō et MATSUM. l. c. p. 418; MATSUM. et HAYATA, Enum. Pl. Formos. p. 107.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 669); in monte Morrison, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1916).

DISTRIB. Widely distributed in India, Malay, and through central and southern China eastward to Japan.

Desmodium polycarpum DC. ; ITÔ et MATSUM. l. c. p. 416 ; MATSUM. et HAYATA, l. c. p. 107.

HAB. Sanchōki, ad 3000 ped. alt., Oct. 1905, (No. 728), et Tōhoshia, Nov. 1905, (No. 709), leg. S. NAGASAWA.

DISTRIB. Tropical Asia, Polynesia, through southern China to Japan.

Desmodium pulchellum BENTH. ; ITÔ et MATSUM. l. c. p. 412 ; MATSUM. et HAYATA, l. c. p. 107.

HAB. Kagi : Shukukōshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1976).

DISTRIB. Tropical Asia and the Philippine islands.

Desmodium sinuatum BLUME ; ITÔ et MATSUM. l. c. p. 416 ; MATSUM. et HAYATA, l. c. p. 108.

HAB. Kagi : Shukukōshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1746).

DISTRIB. Tropical Asia and southern China.

Dumasia DC.

Dumasia bicolor HAYATA, sp. nov. Herbæ volubiles in totum pubescentes. Folia bicoloria pubescentia pinnatim 3-foliolata 12 cm. lata 18 cm. longa longe petiolata, petiolis basi crassiusculis 9 cm. longis foliolo terminali subæquilongis, foliolis lateralibus brevissime petiolulatis, petiolulis 3 mm. longis, laminis rotundato-ovatis basi truncatis vel acutis apice rotundatis minutissime aristato-mucronatis 3-nerviis, foliolis terminalibus iis lateralibus conformibus longe petiolulatis, petiolulis $2\frac{1}{2}$ cm. longis, laminis ovatis

basi acutis majoribus $6\frac{1}{2}$ cm. longis $4\frac{1}{2}$ cm. latis, stipulis setaceis, stipellis filiformibus minutis; interdum folia superiora simplicia. Flores in racemos circ. 10 cm. longos axillares dispositi, bracteis parvis angustis, bracteolis minutis. Calycis tubus cylindraceus, 9 mm. longus basi postice gibberosus, ore valde oblique truncato antice acuto. Vexillum obovatum apice emarginatum 14 mm. longum 7 mm. latum late unguiculatum, lamina unguem subæquanti supra medium postice inflexa basin angusta ad unguem abeunti et auriculata. Alæ longe unguiculatæ 14 mm. longæ, laminis oblongis, unguibus linearibus laminam duplo superantibus, carina adhærentes. Carina alis brevior obtusa. Stamen vexillare liberum, cætera connata. Anthæræ uniformes. Ovarium villosum substipitatum, stipite 1 mm. longo; stylus supra ovarium filiformis erectus supra medium dilatus, superne inflexus subulatus imberbis, stigmate terminali. Legumen sessile villosum semper monospermum.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 667); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

The present plant is, in all respects, like *D. villosa* DC. But, in this new species, the seed is always one in each pod and the standard has distinct spurs on both sides of the lamina. In these respects, I think the plant is specifically separable from *D. villosa* DC. The leaves of the specimen, upon which the above description is based, are of a thinly hairy form. Here is another form with villose leaves which are much smaller than the leaves of the other form. The villose form seems to be a young stage of the other.

Cajanus DC.

Cajanus indicus SPRENG.; ITÔ et MATSUM. l. c. p. 431; MATSUM. et HAYATA, l. c. p. 113.

HAB. Tōhosha, ad 2930 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 708).

DISTRIB. All over the tropics.

Flemingia ROXB.

Flemingia strobilifera R. BR.; ITÔ et MATSUM. l. c. p. 432; MATSUM. et HAYATA, l. c. p. 113.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 782).

DISTRIB. The Himalayas, Ceylon, east Bengal, Burma, Malacca, Malay, and the Philippine islands.

There is a little doubt about identifying my plant with the above species. In the present plant, the flowers in each bract are too few. In *F. strobilifera* R. BR., the flowers are arranged in a raceme or a short spike within a large bract, while in my plant the flowers are not so numerous as to form either raceme or spike.

Rosaceæ.

Prunus LINN.

Prunus campanulata MAXIM. in Mél. Biol. XI. p. 698; FORBES et HEMSL. Ind. Fl. Sin. I. p. 218; ITÔ et MATSUM. Tent. Fl. Lutch. p. 446; MATSUM. et HAYATA, Enum. Pl. Formos. p. 117.

HAB. Taichū: Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. South China: Fokien; the Loo-choo islands.

Prunus Kawakamii HAYATA, sp. nov. Frutex, ramis novellis virgatis cortice cinereo-fusco glabro vestitis. Folia hysternantha

annua alterna (novella) brevissime petiolata, petiolis 4 mm. longis semi-teretibus glabris, laminis basi acutis ovato-oblongis apice acutis margine glanduloso-serrulatis utraque pagine glabris, stipulis lanceolatis glanduloso-ciliolatis. Flores 5–6 fasciculati pedunculati, pedunculis 7 mm. longis teretibus glabris. Calyx hypogynus persistens; tubus breviter campanulatus glaber, intus disco adnato suffultus; lobis 5 ovatis 3 mm. longis obtusis glanduloso-ciliatis horizontaliter patentibus. Petala calycis fauci affixa, ex ungue breve cuneato-obovata, apice rotundata integerrima radiatim venosa tenera glabra horizontaliter patentia $6\frac{1}{2}$ mm. longa 4 mm. lata. Stamina calycis fauci affixa longe exserta petalo vix longiora. Ovarium superum, ovoideum cum stylo 6 mm. longum, stigmate capitato-peltato.

HAB. Toroku: Kanōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1904).

DISTRIB. An allied species *P. japonica* THUNB. occurs in Japan and China.

Closely resembles *P. japonica* THUNB.; but differs from it in having peltately capitate stigmas, longer stamens and smaller petals.

Spiræa LINN.

Spiræa prunifolia SIEB. et ZUCC. fl. simplicis; MATSUM. et HAYATA, Enum. Pl. Formos. p. 119.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1795); Nantō: Hinokiyama, leg. G. NAKAHARA, Feb. 1907; Toroku: Kūreikiyaku, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1902).

DISTRIB. China throughout, Japan and Korea.

***Spiræa* sp.** Suffrutices nani glabri. Folia alterna subsessilia

ovata apice obtusa basi acuta vel cuneata $1\frac{1}{2}$ cm. longa medio sursum denticulata basin versus integra, venis supra impressis subtus prominentibus. Fructus in cymas racemosas terminales dispositi. Carpella 2 mm. longa breve rostrata.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2233 et 2296).

***Rubus* LINN.**

***Rubus corchorifolius* LINN. f. var. *glaber* MATSUM.** in Tōkyō Bot. Mag. XV. p. 157; MATSUM. et HAYATA, Enum. Pl. Formos. p. 120.

HAB. Taichū: Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Type: Japan and China.

***Rubus elegans* HAYATA**, (Pl. IV.), in Tōkyō Bot. Mag. XX. p. 74. Caulis humilis herbaceus basi suffruticosus simpliusculus suberectus 1-rarius 2-florus. Folia in totum subradicalia ambitu oblonga vel oblongo-lanceolata cum petiolis 6–7 cm. longa 2 cm. lata, petiolis 15 cm. longis, pinnata 13–15-foliolata, foliolis obovatis 1–1.5 cm. longis $\frac{1}{2}$ cm. latis, terminalibus interdum tri-lobatis, serratis, serris acutis, ad petiolum et costas pinnarum aculeolata, stipulis adnatis subulatis linearibus circ. 1 cm. longis. Flores majusculi, pedunculati, pedunculis 5–6 cm. longis, 1-bracteati, bracteis minutis acutis 2 mm. longis. Flores patentes 22 mm. in diametro æquantes. Calycis lobi ovato-triangulares aculeato-acuminati 8 mm. longi extus pubescentes. Petala late ovata 9 mm. longa apice obtusissima, basi brevissime unguiculata. Stamina numerosa, filamentis planis glabris. Capitulum fructiferum ovato-globosum 1 cm. longum vel longius. Receptaculum ovato-globosum.

HAB. Ganzan, ad 9141 ped. alt., in montibus Morrison, leg. S. NAGASAWA, Oct. 1905, (No. 691); in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1956).

As the original description is drawn from an imperfect specimen, I have taken the liberty of repeating the description of this plant, basing the above account upon the most perfect materials.

Rubus fraxinifolius POIR. ; MIQ. Fl. Ind. Bat. I. p. 376 ; HOOK. f. Fl. Brit. Ind. II. p. 342 ; MAXIM. in Mém. Biol. VIII. p. 391 ; MATSUM. in Tōkyō Bot. Mag. XVI. p. 4 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 121.

HAB. Tōhosha, ad 2930 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 605).

DISTRIB. Java and the Philippine islands. The occurrence of this *Rubus* in India is a little doubtful.

Rubus pectinellus MAXIM. in Mém. Biol. VIII. p. 374 ; FRANCH. et SAYAT. Enum. Pl. Jap. I. p. 122 ; HAYATA, in Tōkyō Bot. Mag. XX. p. 55.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906 ; in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1799).

DISTRIB. Southern part of Japan, and also recently found in Luzon.

Rubus pentalobus HAYATA, sp. nov. Suffrutex scandens in totum villosa-tomentosa. Folia longe petiolata tomentosa-villosa, petiolis 5–10 cm. longis, laminis ambitu cordato-rotundatis 5–7 cm. in diametro æquantibus læviter 5-lobis apice rotundatis basi cordatis, lobis rotundatis irregulariter denticulatis palmatim 5–7 nerviis supra pilosiusculis subtus villosa-tomentosis pallidioribus, venis subtus prominentibus, stipulis laciniatis 13 mm. longis. Flores axillares solitarii vel gemini pedunculati, pedunculis 1 cm. longis, 2–3 bracteolatis, bracteolis minutis laciniatis. Calycis lobi ovati apice laciniati tomentosi 1 cm. longi. Achænia drupacea.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI

et U. MORI, Oct. 1906, (Nos. 2123 et 2265); Biōritsu: Hakkeirin, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1096).

The present *Rubus* is near *R. pectinellus* MAXIM.; but differs from it in having unarmed sepals and five lobed leaves. The leaves are much more tomentose, and somewhat tuberculate on the upper surface.

Rubus Rolfei VIDAL var. **lanatus** HAYATA, n. v. Suffrutices erecti dense lanati demum glabri. Folia 5- rarius 3-loba, ambitu cordato-orbicularia 3-5 cm. in diametro æquantia, lobis rotundatis vel obtusis irregulariter denticulatis, utraque pagine dense lanata supra demum glabra intra venulas prominente tuberculata subtus dense albo- vel ferrugineo-lanata, petiolis 2-3 cm. longis, stipulis ovatis laceratis 12 mm. longis. Flores ad apicem ramulorum 2-3 fasciculati vel subaxillares, ad basin calycis 2-3 bracteati, bracteis majusculis truncatis laceratis 9 mm. longis totidem latis submembranaceis. Calyx turbinatus $1\frac{1}{2}$ cm. longus, lobis ovatis 9 mm. longis acuminatis extus villosis intus pubescentibus crassis. Fructus ignotus.

HAB. Seizan, in montibus Morrison, leg. S. NAGASAWA, Nov. 1905, (No. 574); in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2263).

The present variety differs from the type in having more densely woolly leaves and much larger flowers.

DISTRIB. type: the Philippine islands.

Rubus rosæfolius SM. var. **hirsutus** HAYATA, n. v. Ramuli aculeati pilosi, pilis validiusculis, aculeis parvis falcatis acuminatis. Folia ambitu ovato-acuminata hirsuta cum petiolis 5-6 cm. longa 5-foliolata, foliolis lateralibus subsessilibus vel breve petiolulatis oblongo-ellipticis 1 cm. longis vel longioribus dentatis, dentibus acutis,

foliolis terminalibus petiolulatis, petiolulis 5 mm. longis, laminis ovato-lanceolatis duplicato-dentatis, dentibus acuminatis, petiolis et costis aculeatis, stipulis subulatis ciliolatis. Flores terminales vel laterales sæpe solitarii, pedunculati. Calycis lobi ovato-triangulares longe caudati, caudis linearibus 6 mm. longis, extus pubescentes. Petala ovata 11 mm. longa 8 mm. lata apice rotundata basi acuta. Stamina numerosa, filamentis planis. Fructus ignotus.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2264).

The present variety differs from the type in having hirsute leaves and in all respects is much smaller than the type.

DISTRIB. Type: common in the warmer parts of India, China and Japan.

Fragaria LINN.

Fragaria sp. Caulis brevis validiusculus longe stoloniferus. Folia in totum radicalia longe petiolata, petiolis 3–4 cm. longis tomentosis, trifoliolata, foliolis lateralibus rotundatis 13 mm. longis 11 mm. latis apice truncatis basi valde obliquis inferne rotundatis superne acutis et integris, foliolis terminalibus late obovatis 15 mm. longis 14 mm. latis apice rotundatis vel truncatis basi acutis præter basin dentatis, subsessilibus subtus sericeo-pilosis supra pilosiusculis, dentibus rotundato-acutis, venis supra plicato-impressis subtus prominentibus, stipulis membranaceis ad basin petiolorum connatis 11 mm. longis 4 mm. latis aristato-acutis extus pilosis. Pedunculi uniflori tenues piloso-tomentosi 1½ cm–2 cm. longi.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2236); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

Mr. T. KAWAKAMI tells me that the fruit of this *Fragaria* is very delicious.

Potentilla LINN.

Potentilla gelida C. A. MEY.; LEDEB. Fl. Ross. II. p. 59; Hook. f. Fl. Brit. Ind. II. p. 357; DIELS, Fl. Tin ling shan, in ENGL. Bot. Jahrb. XXXVI. Beibl. p. 56; HAYATA, in Tōkyō Bot. Mag. XX. p. 73.

Potentilla grandiflora LINN.; WAGNER, Deut. Fl. ed-3, p. 359; THOMÉ, Fl. Deut. Öst. u. Schw. III. p. 70.

HAB. in monte Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 683).

DISTRIB. Extends to Europe, North India, central China, Japan, East Siberia, and the Kurile and Aleutian islands.

The species seems to vary over a very wide range, and especially so in the size of flowers.

Potentilla leuconota DON, "Prodr. p. 230"; Hook. f. Fl. Brit. Ind. II. p. 352; DIELS, Fl. Centr. Chin. p. 403.

var. **morrisonicola** HAYATA, n. v. (Pl. V).

Potentilla leuconota HAYATA, in Tōkyō Bot. Mag. XX. p. 74.

Caulis sericeo-pilosus erectus circ. 15 cm. longus. Folia subradicalia pinnata in ambitu oblanceolata obtusa 10 cm. longa circ. 19-foliolata, foliolis sessilibus obovatis obtusis 1 cm. longis argute dentatis supra pilosiusculis subtus sericeo-pilosis, petiolis appresse pilosis, stipulis majusculis scariosis circ. 3 cm. longis ad basin petiolorum adnatis integris. Folia caulina radicali conformia sed multo minora, pauca sæpe ad medium caulis 1-2. Flores ad apicem caulis 9-8 fasciculati subumbellati 1-2-bracteati, pedicellis 1 cm. longis. Flores patentes 8 mm. in diametro æquantes, bracteolis angustis integris. Calycis lobi ovati acuti sericei. Petala late ob-

ovata, basi leviter angusta, apice rotundata. Stamina 10 (—20?). Achænia circ. 15 glabra.

HAB. in monte Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 732); in eodem loco, T. KAWAKAMI et G. NAKAHARA.

DISTRIB. The type is rather of the alpine character, being found in high mountains of Asia such as the Himalayas, and those of Borneo and west central China.

In my former paper above cited, I referred this Formosan species to *Potentilla leuconota* DON. After studying more carefully, I found that there is a little difference between this and that. It is not, however, without hesitation, that I have described it as a new variety. The present plant differs from the type mainly in the absence of whorled leaves at the base of an umbel.

Sibbaldia LINN.

Sibbaldia procumbens LINN. Sp. Pl. ed-2, p. 406; DIELS, Fl. Centr. Chin. p. 404, et Fl. Tsin ling shan, in ENGL. Bot. Jahrb. XXXVI. Beibl. p. 56; THOMÉ, Fl. Deut. Öst. u. Schw. III. p. 60; ASCHERSON et GRÆBN. Syn. Mitt. Fl. VI.-1, p. 661; WAGNER, Deut. Fl. ed-3, p. 361; HAYATA, in Tōkyō Bot. Mag. XX. p. 58; MAKINO, in Tōkyō Bot. Mag. XV. p. 98.

Potentilla Sibbaldi HALLER f. in "Ser. Mus. Helvet. I. p. 51"; HOOK. f. Fl. Brit. Ind. II. p. 345.

Sibbaldia cuneata KUNZE, in Linnæa, XX. p. 59; EDGEW. in Journ. Linn. Soc. XX. p. 44.

HAB. ad verticem montis Morrison, 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 757); in eodem loco, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2256).

DISTRIB. This plant having had a wide range in the glacial period is now found here and there in the polar and alpine regions of Europe and Asia.

Rosa LINN.

Rosa sp. Suffrutices spinosissimi, aculeis albidis rectis subulatis, ramis patentibus gracilibus. Folia pinnata 7–11-foliolata glabra ambitu elliptica cum petiolis 5 cm. longa $2\frac{1}{2}$ cm. lata, petiolis gracilibus minutissime aculeolatis, foliolis subsessilibus firmis late obovatis vel subrotundatis 13 cm. longis 7 mm. latis medio denticulatis apicem versus dentatis, dentibus acutis, stipulis petiolo adnatis apice liberis acutis glabris glanduloso-serrulatis, serrulis argutis. Flores secus ramulos quasi racemosi, e gemmis solitarii breviter pedunculati, pedunculis $1\frac{1}{2}$ cm. longis apice in calycis tubo abeuntibus. Calycis tubi post anthesin pyriformes 8 mm. longi apice constricti basi attenuati, lobis integris lanceolatis longe acuminatis intus lanato-pubescentibus extus parce pubescentibus marginibus parcissime glandulosis. Petala ignota. Carpella 4–5 trigona 5 mm. longa apice hirsuta, stylis persistentibus.

HAB. in monte Morrison, leg. S. NAGASAWA, Nov. 1905, (Nos. 572 et 618); eodem loco, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2293).

The present *Rosa* is very like *R. xanthina* LINDL. and *R. Willmottiae* HEMSL. in Bot. Mag. t. 8186; but the serrature of the leaves of this plant is far too acute for those species. My specimen has the spines arranged in opposite position as *R. Willmottiae*.

Rosa sp.

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

Saxifragaceæ.

Astilbe HAM.

No species belonging to this genus has been recorded hitherto

from the island. The following two species and variety are the first recorded from Formosa, and come from the hilly regions.

Astilbe chinensis FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 144 (var. *japonica*); FRANCHET, Pl. David. p. 121 (var. *Davidi*); FORBES et HEMSL. Ind. Fl. Sin I. p. 265; DIELS, Fl. Centr. Chin. p. 363.

Hoteia chinensis MAXIM. Prim. Fl. Amur. p. 120; WALP. Ann. VII. p. 889.

Astilbe odontophylla MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 96.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 636).

DISTRIB. Amurland, Japan, and central and northern China.

There is a little doubt about this being *A. chinensis* FR. et SAV.

Astilbe chinensis FRANCH. et SAV. var. **longicarpa** HAYATA, n. v. Herba circ. 1 m. alta vel altior erecta; caulibus glabris. Folia radicalia ignota. Folia caulina longe petiolata ternato-bipinnata, foliolis lateralibus ovatis terminalibus acuminato-ovatis duplicato serratis, serris acuminatis, petiolulatis. Racemi 30 cm. longi basi 12 cm. lati pyramidales, racemulis deorsum pedunculatis sursum subsessilibus. Flores brevissime pedicellati basi calycis bracteolati. Calyces $1\frac{1}{2}$ mm. longi, lobis ovatis truncatis. Petala spathulato-obovata vix 1 mm. longa apice minute apiculata margine integra diffusa. Stamina 10 multo exserta, petalum duplo superantia. Carpella 2, distincta. Fructus cylindraceo-ovoidei breve rostrati cum rostris 4 mm. longi.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1743); in monte Morrison, ad 8500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1990).

Very like the type; but the fruits of this variety are much longer than those of the type.

Astilbe macroflora HAYATA, sp. nov. Herba circ. 30 cm. alta,

erecta basi squamis membranaceis fuscis late ovatis acuminatis numerosis obvallata, rhizomate crasso fibris numerosissimis oblecto, caulibus petiolisque pilis fuscis parce vestitis. Folia radicalia et caulina ternato-bipinnata, petiolis lamina subæqualibus ad ramificationes parce longe pilosis, foliolis ovatis vel oblongis basi cordatis rarius leviter 3-lobatis 3 cm. longis $2\frac{1}{2}$ cm. latis supra parcissime pilis scabris vestitis subtus ad costas pilosiusculis biserratis, serraturis primariis majusculis patulis breviter acuminatis secundariis minutis seta brevi terminatis, foliolis terminalibus longe, eis lateralibus brevissime petiolulatis, stipulis membranaceis ovatis acuminatis fuscis erectis. Racemi folio florali minuto instructi 10 cm. longi basi 5 cm. lati pyramidales, rachibus fusco-hirtis, bracteis stipula conformibus erectis. Flores versus apicem racemulorum subpedunculorum dense congesti, breviter pedicellati. Calyx $3\frac{1}{2}$ mm. longus campanulatus lutescens, lobis ovatis obtusis 3 mm. longis trinerviis crassiusculis tubo multo longioribus. Petala spathulata 4 mm. longa 1 mm. lata valde exserta margine minute ciliato-serrata, utraque latere 2-3 serris, diffusa. Stamina 10 disco calycis inserta. Carpella 2, distincta. Fructus breviter rostrati cum rostro 5 mm. longi, rostris carpello æquilongis. Semina scobiformia oblique fusiformia 1 mm. longa.

HAB. in monte Morrison, leg. G. NAKAHARA (?), Oct. 1906.

Remarkable for the large form of flowers and the capitate racemes.

Chrysosplenium LINN.

Chrysosplenium sp. Herbæ humiles piloso-pubescentēs. Folia membranacea longe petiolata, petiolis $1\frac{1}{2}$ cm. longis lamina vix longioribus planis subalatis pilosis basi dilatis, laminis late ovatis vel orbicularibus $1\frac{1}{2}$ cm. longis apice rotundatis basi abrupte acutis vel

truncatis brevissime attenuatis in petiolum abeuntibus margine crenatis, crenis emarginatis apice callis crassatis minutis suffultis, supra pilosiusculis, pilis subsetaceis, subtus subglabris. Flores ignoti.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1993).

This is the only *Chrysosplenium* found in the island and must be a very interesting one. In the imperfectness of the specimen, the specific determination is impossible.

Mitella LINN.

Mitella japonica MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. pp. 96 et 201, et Prol. Fl. Jap. pp. 260 et 365; FRANCH. et SAV. Enum. Pl. Jap. I. p. 147, excl. syn. (non MAXIM.); MAKINO, in Icon. Fl. Jap. Imp. Uni. Tōkyō, I.-2, p. 7, tt. IV. et V.; HAYATA, in Tōkyō Bot. Mag. XX. p. 54.

HAB. in monte Morrison, ad 8000 ped. alt., (No. 2035), et eodem loco, ad 12000 ped. alt., (No. 2131), leg. T. KAWAKAMI et U. MORI, Oct. 1906; Tōzan, in monte Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. In Japan; very common in the valleys of the lowland hills. The distribution of the genus *Mitella* is rather limited, being found only in North America, Manchuria, East Siberia, Japan and Formosa.

The Morrison specimens are of a form having rather more divaricate and fimbriate petals and less tuberculate seeds. A more diverged form of this species was found in Japan by Mr. T. MAKINO who described it in Tōkyō Bot. Mag. XIX. p. 17 as a new variety *integripetala*. Another species *M. acerina* MAKINO was found also in Japan.

Parnassia LINN.

Parnassia palustris LINN. Sp. Pl. ed-2, p. 391; DC. Prodr. I. p. 320; MAXIM. Ind. Fl. Pek. in Prim. Fl. Amur. p. 469; Hook. f. Fl. Brit.

Ind. II. p. 401; DRUDE, in Linnæa, XXXIX. p. 307; FORBES et HEMSL. Ind. Fl. Sin. I. p. 272; HAYATA, in Tōkyō Bot. Mag. XX. p. 19.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905; in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2209).

DISTRIB. West Asia to Europe, and eastward to Japan; but not yet found in central China.

Hydrangea LINN.

Hydrangea chinensis MAXIM. Revis. Hydrang. As. or. p. 7; HANCE, in Journ. Bot. (1878) p. 11; FORBES et HEMSL. Ind. Fl. Sin. I. p. 273; HENRY, List Pl. Formos. p. 41; Itō et MATSUM. Tent. Fl. Lutch. p. 461; MATSUM. et HAYATA, Enum. Pl. Formos. p. 131.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2073); Taitō: Bushiseki, leg. T. KAWAKAMI et U. MORI, (No. 2185); Toroku: Nānshikiyakumansha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1906).

DISTRIB. The Loo-choo islands and south central China.

Hydrangea glabra HAYATA, sp. nov. (Pl. VI.). Frutices ad truncos scandentes, ramis glaberrimis cortice cinereo-fusco tectis. Folia oblonga petiolata, petiolis lamina 3-plo brevioribus, laminis oblongis 11 cm. longis 7 cm. latis apice acutis basi obtusis vel acutis margine serratis, serraturis acutis, utraque pagine glaberrimis. Cymæ corymbosæ ternato-ramosæ, rhachibus tomentosis demum glabris. Flores exteriores steriles, sepalis 4 petaloideis late obovatis nervosis basi breve cuneatis apice rotundatis vel truncatis interdum emarginatis 15 mm. longis 17 mm. latis. Flores interiores fertiles. Capsula depresso-globosa apice truncata latere leviter compressa. Semina oblonga plana ala angusta cincta.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI; Nov. 1906, (No. 1787).

This new plant is near *H. involucrata* SIEB.; but differs from it in having quite glabrous leaves and more expanded cymes; from *H. Kawakamii*, this differs in having entire sepals of radial flowers and broad wings of seeds.

Hydrangea integra HAYATA, sp. nov. (Pl. VII). Frutices ad truncos scandentes, ramis subglabris cortice fusco-rubro tectis. Folia petiolata oblongo-elliptica 22 cm. longa 8 cm. lata acuta vel cuspidato-acuta basi obtusa vel angusta integra utraque pagine glabra, laminis petiolum 3-plo superantibus, petiolis ferrugineo-rubris. Cymæ corymbosæ umbellato-fasciculatæ terminales 14 cm. longæ 15 cm. in diametro æquantes, rhachibus tomento subfloccoso dense tectis. Flores exteriores steriles, sepalis 2 petaloideis late rotundatis valde nervosis, altero minore $1\frac{1}{2}$ cm. lato altero majore 2 cm. lato. Capsula hemispherica latere compressa 3–4 mm. lata, calycis limbis obscuris, stylis persistentibus apice recurvis. Semina fusiformia longitudinaliter striata.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1723).

Somewhat resembles *H. integrifolia*, but easily distinguished in having narrowed base of the leaves.

Hydrangea Kawakamii HAYATA, sp. nov. (Pl. VIII). Frutices ad truncos scandentes, ramis tomentoso-pubescentibus demum subglabris, cortice cinereo-fuscente tectis. Folia tomentoso-hirsuta petiolata, petiolis lamina 3-plo brevioribus, laminis oblongo-ovatis circ. 14 cm. longis 7 cm. latis apice acuminatis basi acutis vel rotundatis margine irregulariter subbiserratis, serris aristato-acutis,

supra pilis scaberrimis sparse subtus dense tectis. Cymæ corymbosæ umbellato-fasciculatæ terminales circ. 12 cm. longæ 14 cm. in diametro æquantes, rhachibus tomentosis. Flores exteriores steriles, sepalis 4 petaloideis nervosis fere orbicularibus 2 cm. longis totidem latis utraque latere præter basin apicemque serratis, serris acutis; interiores fertiles. Capsula hemispherica apice leviter constricta 10-costata, calycis lobis persistentibus acuminatis, stylis persistentibus valde divaricatis apice leviter recurvis. Semina fusiformia utrinque producta longitudinaliter striata intra strias transversum reticulata.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1875).

Somewhat near *H. involucrata* SIEB.; but differs from that in its scandent habit, and in having serrate sepals of the radial flowers.

Hydrangea longifolia HAYATA, sp. nov. Frutices erecti? ramis tomentosis, cortice cinereo-fusco tectis. Folia breve petiolata, petiolis lamina 10-plo brevioribus, laminis oblongo-lanceolatis acuminatis basi obtusis circ. 20 cm. longis 4½ cm. latis margine remote serrulatis, serraturis acuminatis, supra scabro-pilosis subtus ad costas tomentosis. Cymæ corymbosæ umbellato-fasciculatæ terminales circ. 9 cm. longæ 14 cm. latæ, rhachibus tomentulosi. Flores exteriores steriles, sepalis petaloideis utraque pagine tomentulosi late orbicularibus nervosis apice rotundatis basi brevissime contractis 17 mm. longis totidem latis. Capsula hemispherica tomentulosa latere leviter compressa, stylis persistentibus apice recurvis. Semina fusiformia utrinque producta.

HAB. Taitō: Torokusha, leg. T. KAWAKAMI et G. NAKAHARA, Januar. 1906, (No. 690).

Somewhat resembles *H. Kawakamii* HAYATA; but differs from it

in having long lanceolate leaves, hairy capsules and entire hairy sepals of marginal flowers.

Deutzia THUNB.

Deutzia scabra THUNB. Fl. Jap. p. 185; DC. Prodr. IV. p. 17; MAXIM. Revis. Hydrang. As. or. p. 24; MIQ. Prol. Fl. Jap. p. 263; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 155; HANCE, in Journ. Bot. (1878) p. 11; S. MOORE, in Journ. Bot. (1878) p. 138; Bot. Mag. t. 38; FORBES et HEMSL. Ind. Fl. Sin. I. p. 276; HENRY, List Pl. Formos. p. 41; ITÔ et MATSUM. Tent. Fl. Lutch. p. 463; DIELS, Fl. Centr. Chin. p. 372; MATSUM. et HAYATA, Enum. Pl. Formos. p. 132.

Deutzia crenata SIEB. et ZUCC. Fl. Jap. p. 19, t. 6; MAXIM. Revis. Hydrang. As. or. pp. 22. et 45.

Deutzia crenata δ *taiwanensis* MAXIM. l. c.

HAB. in monte Morrison, ad 11000 ped. alt., (No. 2287); ad 9000 ped. alt., (No. 1701), et ad 7500 ped., alt., (No. 1703), in montibus centralibus, (No. 2198), leg. T. KAWAKAMI et U. MORI, Nov. 1906.

DISTRIB. Common in Japan and central China.

It is a little doubtful whether my plant is referable to this species. In the imperfectness of the specimens, the determination is rather conjectural.

Cardiandra SIEB. et ZUCC.

Cardiandra sinensis HEMSL. in Gard. Chronic. Feb. 7, 1902, p. 81.

Cardiandra formosana HAYATA, in Tōkyō Bot. Mag. XX. p. 54; MATSUM. et HAYATA, Enum. Pl. Formos. p. 132.

HAB. Taitō: Tōkeizan, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2201); Kagi: Kōden, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1735).

DISTRIB. Central China: Kiangsi.

In the year 1902, Mr. W. B. HEMSLEY described a new species

of *Cardiandra* from Central China in the foot note of the Gardener's Chronicle above cited. Unfortunately, owing to an error on my part, the description had been carelessly overlooked by myself when I studied the *Cardiandra* from Formosa. I found afterward that my plant is entirely referable to the species described by the above authority. *C. formosana* HAYATA should, therefore, be rendered to a synonym of *C. sinensis* HEMSL.

***Ribes* LINN.**

***Ribes formosanum* HAYATA**, (Pl. IX.), in Tōkyō Bot. Mag. XX. p. 56. Frutices, ramulis angularibus spinis infra-axillaribus ternatis validis patentibus. Folia simplicia vernatione plicata late rotundata basi truncata vel cordata $2\frac{1}{2}$ cm. longa 5–6-lobata, lobis obtusis grosse paucè serratis, petiolata, petiolis paucè glanduloso-setosis laminam æquantibus. Flores subsolitarii, pedicellis 1 cm. longis basi bracteatis medio articulatis 2–4 bracteolatis. Calycis tubus ovoideus ovario adnatus, lobis 5 subpatentibus 1 cm. longis oblongo-ovatis apice rotundatis petalum 3-plò superantibus. Petala 5 calycis fauce inserta oblonga parva squamiformia inclusa 4 mm. longa. Stamina 5, 4 mm. longa, antheris oblongis. Ovarium inferum 1-loculare, ovulis numerosis, placentis 2, parietalibus; styli 2 distincti basi leviter connati, stigmatibus simplicibus. Baccæ globosæ roseæ pulposæ 18 mm. in diametro æquantes, sepalis persistentibus. Semina subangulata, testa extus gelatinosa intus crustacea 3 mm. longa leviter compressa minute reticulata.

HAB. Tōhokei, ad 5907 ped. alt., in montibus Morrison, leg. S. NAGASAWA, Nov. 1905, (No. 592); in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. Mori, Nov. 1906, (Nos. 2141 et 2132).

As the original description is drawn from an imperfect specimen, I have taken the liberty of repeating the description

of the plant, basing the above account upon the most perfect material.

Crassulaceæ.

Sedum LINN.

Sedum morrisonense HAYATA, sp. nov. Perennis? erecta humilis circ. 8 cm. alta a basi ramosa glabra, caulibus solitariis interdum subsurculigeris. Folia approximata dense disposita adpresse imbricata crassa carnosâ oblongo-lanceolata apice obtusa basi obtusissima ultra insertionem $\frac{1}{2}$ mm. producta 6 mm. longa $1\frac{1}{2}$ mm. lata vel latiora. Cymæ trifidæ plurifloræ bracteatae, bracteis folio conformibus flore brevioribus; floribus ad ramos cymarum sessilibus, parvis 7 mm. longis campanulatis. Sepala oblongo-linearâ obtusa petalum $\frac{1}{2}$ æquantia crassiuscula. Petala oblongo-acuta apice obtuse brevis carinata $6\frac{1}{2}$ mm. longa; stamina episepala petalum æquantia, epipetala paulo breviora, antheris oblongis; squamis hypogynis minutis late quadratis. Folliculi membranacei basi breviter connati erecto-patuli oblongi in stylos 2-plo breviores attenuati cum stylis 6 mm. longi, stigmatibus punctiformibus. Semina oblonga obscure striata, striis minutissime muriculatis.

HAB. ad summam montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 566); eodem loco, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2281); in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1892).

The present plant comes near *S. Roborowskii* MAXIM.; but differs from it in having smaller calcarate leaves and larger sessile flowers.

Sedum sp.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2019).

No fruit, indeterminable.

Kalanchoë ADANS.**Kalanchoë** sp.

HAB. in monte Morrison ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1881); Kagi : Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1779).

No flower, indeterminable.

Haloragææ.

Haloragis FORST.

Haloragis micrantha R. BR. ; BENTH. Fl. Austral. II. p. 482 ; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 430 ; HANCE, in Journ. Bot. (1870) p. 276 ; SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 133 ; MIQ. Prol. Fl. Jap. p. 264 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 164 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 292 ; ITÔ et MATSUM. Ten. Fl. Lutch. p. 471 ; DIELS, Fl. Centr. Chin. p. 486 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 138.

Gonocarpus micranthus THUNB. Fl. Jap. p. 69 t. 15 ; DC. Prodr. III. p. 66.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 638).

DISTRIB. India, Malay, Australia, New zealand ; China throughout, and Japan.

Myriophyllum LINN.

Myriophyllum spicatum LINN. Sp. Pl. ed.-2, p. 1409 ; DC. Prodr. III. p. 68 ; LEDEB. Fl. Ross. II. p. 119 ; MAXIM. Ind. Fl. Pekin. in Prim. Fl.

Amur. p. 471; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 433; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 165; FORBES et HEMSL. Ind. Fl. Sin. I. p. 293; ITÔ et MATSUM. Tent. Fl. Lutch. p. 471; MATSUM. et HAYATA, Enum. Pl. Formos. p. 138.

HAB. Kagi: Rokuryōshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1974).

DISTRIB. Generally spread over the cool and temperate regions of the northern hemisphere.

Myrtaceæ.

Eugenia LINN.

Eugenia sinensis HEMSL.? in FORBES et HEMSL. Ind. Fl. Sin. I. p. 298; HENRY, List Pl. Formos. p. 43; MATSUM. in Tōkyō Bot. Mag. XII. p. 64; ITÔ et MATSUM. Tent. Fl. Lutch. p. 481; DIELS, Fl. Centr. Chin. p. 484; MATSUM. et HAYATA, Enum. Pl. Formos. p. 143.

Eugenia Grijsii HANCE, in Journ. Bot. (1871) p. 5, et (1879) p. 10.

Eugenia pyxophylla HANCE, in Journ. Bot. (1871) p. 6.

Syzygium buxifolium HOOK. et ARN. Bot. Beech. Voy. p. 187; WALP. Ann. II. p. 180; BENTH. Fl. Hongk. p. 118.

HAB. Nantō: Shojidaizan, leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1158).

DISTRIB. South central China.

Sp. Hab. Kōshūn: Maribasha leg. T. KAWAKAMI, Juli. 1906, (No. 1631).

Under this family, I have a very interesting plant which it is difficult for me to determine even its genus. The specimen in my hands is only a male and therefore it remains as yet undetermined.

Melastomaceæ.

Osbeckia LINN.

Osbeckia aspera BLUME; WIGHT, Ic. Pl. Ind. or. t. 377; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 519; COGN. in DC. Monogr. Phanerog. VII. p. 315; MATSUM. et HAYATA, Enum. Pl. Formos. p. 146.

Melastoma asperum LINN.; DC. Prodr. III. p. 145.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1923).

DISTRIB. Deccan peninsula and Ceylon.

Barthea HOOK. f.

Barthea formosana HAYATA, sp. nov. (Pl. X.). Frutex scandens? ramosus, ramis gracillimis glaberrimis v. partibus novellis sub microscopio glanduloso-lepidotis. Folia breve petiolata, petiolis lamina 10-plo brevioribus laminis subcoriaceis (novellis membranaceis) oblongis circ. 10 cm. longis 3 cm. latis apice oblique caudato-acuminatis, caudis linearibus, basi acutis æqualibus margine subintegris vel remote obscure serrulatis 3-5-nerviis supra sub lente minute sparce setulosis subtus pallidioribus venis prominentibus sub microscopio minute densiuscule lepidotis. Flores ad apicem ramorum terminales 1-3-congesti majusculi patentes 3 cm. in diametro æquantes breve pedicellati, pedicellis 3-4 mm. longis minutissime lepidotis. Calycis tubus glaberrimus obpyramidalis-campanulatus 9 mm. longus 4-quetrus, limbus dilatus 4 lobus, lobis brevibus triangularibus apice setoso-carinato-acuminatis. Petala 4, ampla oblique obovata 18 mm. longa 16 mm. lata apice rotundato-apiculata glaberrima margine sub lente ciliato-serrulata. Stamina 8, valde inæqualia; antheræ majores lineari-elongatæ obtusæ 1-porosæ incurvæ, connectivis basi antice longe

2-setosis (setis bi-fidis) postice in calcaria crassa ascendentia productis; antheræ minores breves oblongæ recurvæ, connectivis basi antice 2-setosis (setis simplicibus) postice breve calcaratis. Ovarium calyci adherens (inter ipsum et calycem longitudinaliter 4-canaliculatum) 4-loculare vertice leviter productum; stylus filiformis declinatus ovarium 2-plo superans, stigmatibus punctiformi. Capsula oblongo-globosa sub-tetragona basi in stipitem abrupte attenuata 7 mm. longa 5 mm. lata 4-valvata. Semina cuneiformia latere compressa, cum alis vix 2 mm. longa, alis sub-cultriformibus.

HAB. Suihenkiaku? leg. T. KAWAKAMI et G. NAKAHARA, Jan. 1906, (No. 41); Nantō: Mushazan, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1148).

Closely resembles *Barthea chinensis* Hook. f.; but differs from it in having no glandular crown over the ovary and in having subentire leaves.

DISTRIB. The only congener *B. chinensis* Hook. f. occurs in Hongkong.

Sarcopyramis WALL.

***Sarcopyramis nepalensis* WALL.** "Tent. Fl. Nep. t. 23"; CLARKE, in Hook. f. Fl. Brit. Ind. II. p. 541; FORBES et HEMSLEY, Ind. Fl. Sin. I. p. 302; COGN. in DC. Monogr. Phanerog. VII. p. 517.

Sarcopyramis lanceolata WALL.; KURZ, in Journ. Bot. (1873) p. 193; HANCE, in Journ. Bot. (1878) p. 107.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., (No. 652); et Ganzan, in isdem montibus, ad 9141 ped. alt., Oct. 1905. (No. 637); Taitō: Tōkeizan, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1913).

DISTRIB. India and Malay:

Onagrarieæ.

Epilobium LINN.

Epilobium alpinum LINN.; DC. Prodr. III. p. 41; HOOK. f. Fl. Brit. Ind. II. p. 586; WAGNER, Deut. Fl. ed.-3, p. 480.

HAB. in monte Morrison, ad 11000 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 610); eodem loco, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2118, 2276 et 1893).

DISTRIB. The Himalayas and alpine regions of Europe.

Epilobium roseum SCHREB.; DC. Prodr. III. p. 41; MAXIM. Ind. Fl. Pek. in Prim. Fl. Amur. p. 471; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 584; FORBES et HEMSL. Ind. Fl. Sin. I. p. 308.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, (No. 699); in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2067); Nantō: Mushazan, 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, (No. 1130); Taitō: Daironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2175).

DISTRIB. Broadly speaking, this species extends from Europe eastward to eastern Asia and North-West America. But not yet found in Japan.

Circæa LINN.

Circæa alpina LINN. Sp. Pl. ed.-2, p. 12; DC. Prodr. III. p. 63; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 589; FRANCHET, Pl. David. p. 134; FORBES et HEMSL. Ind. Fl. Sin. I. p. 310; DIELS, Fl. Centr. Chin. p. 485.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2030).

DISTRIB. Generally spread in the north temperate regions.

Cucurbitaceæ.

Thladiantha BUNGE.

Thladiantha formosana HAYATA, sp. nov. (Pl. XI.). Herbæ scandentes vel volubiles, ramulis floriferis graciliusculis sulcatis pilosis, pilis longis, cirrhis 2-partitis. Folia longe petiolata, petiolis lamina æquilongis vel brevioribus pilosis, laminis crassiusculis membranaceis angularibus rotundato-cordatis vel ovato-cordatis 10 cm. longis 7 cm. latis acute acuminatis margine minute remoteque denticulatis supra scabridis subtus villosopubescentibus. Flores ♂ puberuli racemosi, racemis longis petiolo 2–3-plo longioribus, bracteis parvis cito deciduis. Calycis tubus brevis late campanulatus, lobis ovato-lanceolatis 5 mm. longis. Petala patentia ovato-lanceolata 11 mm. longa. Stamina 5 æqualia, antheris 1-locularibus rectis, filamentis liberis. Ovarii rudimentum globosum. Appendicula brevis petaloidea obtusa discum centrale horizontaliter tegens.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. An allied species, *T. nudiflora* HEMSL., occurs in central China.

Very much resembles *T. nudiflora* HEMSL.; but differs from it in having peduncled racemes, and smaller flowers which are as half as those of the allied species.

Gynostemma BLUME.

Gynostemma pedatum BLUME; WALP. Rep. I. p. 98; MIQ. Fl. Ind. Bat. I.-1, p. 683; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 633; COGN. in DC. Monogr. Phanerog. III. p. 913; FRANCHET, Pl. David. I. p. 136; FORBES et HEMSL. Ind. Fl. Sin. I. p. 320; ITÔ et MATSUM. Tent. Fl. Lutch. p. 519; DIELS, Fl. Centr. Chin. p. 604; HAYATA, in Tōkyō Bot. Mag. XX. p. 53.

Gynostemma cissoides BENTH. et HOOK. f. Gen. Pl. I. p. 839; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 176.

Enkylia trigyna GRIFFITH. ; Miq. Prol. Fl. Jap. pp. 15 et 142.

Pestalozzia pedata ZOLL. et MOR. ; WALP. Ann. I. p. 316.

Zanonia cissoides WALL. ; WALP. Rep. II. p. 194.

Zanonia pedata MIQ. Fl. Ind. Bat. I.-1, p. 683.

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906 ; in eodem monte, ad 6000 ped. alt., (No. 2001), et ad 6500 ped. alt., (No. 2049), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. India, Malay archipelago, central and eastern China, Japan and the Loo-choo islands.

Begoniaceæ.

The three species of Begoniaceæ. The specimens are all imperfect and can not be satisfactorily determined.

Umbelliferæ.

Hydrocotyle LINN.

Hydrocotyle javanica THUNB. "Dissertatio p. 415, t. 3"; DC. Prodr. IV. p. 67 ; MIQ. Fl. Ind. Bat. I.-1, p. 734 ; HANCE, in Journ. Bot. (1883) p. 321 ; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 667 ; MAXIM. in Mém. Biol. XII. p. 246 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 325 ; HEMSL. et COLL. in Journ. Linn. Soc. XXVIII. p. 61 ; HENRY, List Pl. Formos. p. 47 ; ITÔ et MATSUM. Tent. Fl. Lutch. p. 260 ; DIELS, Fl. Centr. Chin. p. 490 ; YABE, Revis. Umbell. Jap. p. 10 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 170.

Hydrocotyle nepalensis HOOK. ; DC. Prodr. IV. p. 65 ; MIQ. Fl. Ind. Bat. I.-1, p. 735 (var.) ; MIQ. Prol. Fl. Jap. p. 243 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 178.

Hydrocotyle polycephala WIGHT et ARN. ; WIGHT, Ic. Pl. Ind. or. t. 1003.

Hydrocotyle zeylanica DC. Prodr. IV. p. 67 ; MIQ. Fl. Ind. Bat. I.-1, p. 734.

Hydrocotyle lirta R. BR. var. *acutiloba* F. MUELL. in BENTH. Fl. Austr. III. p. 340.

HAB. Tappansha, ad 3139 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 719) ; Tōzan, in montibus Morrison, leg. G. NAKAHARA, Dec. 1906.

DISTRIB. South China and Japan. Tropical Asia to eastern Africa and Australia.

Hydrocotyle rotundifolia ROXB. Fl. Ind. II. p. 88 ; DC. Prodr. IV. p. 64 ; WIGHT, Ic. Pl. Ind. or. t. 564 ; BENTH. Fl. Hongk. p. 134 ; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 668 ; MAXIM. in Mém. Biol. XII. p. 461 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 825 ; HENRY, List. Pl. Formos. p. 47 ; ITÔ et MATSUM. Tent. Fl. Lutch. p. 259 ; DIELS, Fl. Centr. Chin. p. 491 ; YABE, Revis. Umbell. Jap. p. 12 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 171.

Hydrocotyle nitidula RICH. ; DC. Prodr. IV. p. 66 ; MIQ. Prol. Fl. Jap. p. 243.

Hydrocotyle Sibthorpioides LAM. ; DC. Prodr. IV. p. 66 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 178.

Hydrocotyle puncticulata MIQ. Fl. Ind. Bat. I.-1, p. 733.

Hydrocotyle Zollingeri MOLKENB. ; MIQ. Fl. Ind. Bat. I.-1, p. 733.

Hydrocotyle tenella DON, in DC. Prodr. IV. p. 64.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., Oct. 1905.

DISTRIB. Asia and Africa.

Hydrocotyle setulosa HAYATA, sp. nov. Herba perennis, prostrata ad nodos radicans. Caules prostrati, ramis innovationibus erectis pilosis. Folia longe petiolata, petiolis circ. 2 cm. longis

piloso-puberulis, pilis descendentibus, laminis reniformi-cordatis 10 mm. longis 13 mm. latis 7-lobis, lobis obtusis late rotundatis rarius contiguis leviter marginatis crenatis, crenis acutis, supra setulosis subtus piloso-setosis, setis longiusculis; stipulis late rotundatis integris vel bilobis membranaceis. Pedunculi 2-3 cm. longi piloso-pubescentes, pilis descendentibus. Umbellæ simplices multiflores, floribus breve pedicellatis, pedicellis 1 mm. longis, dense capitatis. Fructus late cordato-orbiculati compressi utrinque costati 1 mm. longi $1\frac{1}{2}$ mm. lati.

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

Somewhat resembles *H. Wilfordi* MAXIM., but differs from it in the fruits and setulose leaves.

Sanicula LINN.

Sanicula petagnioides HAYATA, sp. nov. (Pl. XII.). Herbæ perennes humiles glaberrimæ. Caules erecti circ. 12 cm. alti pauciramosi. Folia radicalia longe petiolata, petiolis gracilibus 6 cm. (rarius 12 cm.) longis glabris basi dilatatis, laminis ambitu late pentagonis 2-2½ cm. in diametro æquantibus 5-partitis, segmentis 2-3-lobatis rhomboideis basi cuneatis aristato-serratis albo-lamelligeris breve petiolulatis. Folia caulina sessilia folis radicalibus conformia 3-5-partita, segmentis cuneato-lanceolatis. Umbellæ compositæ ad apicem caulis 2-3, vel axillares solitariae, longe pedunculatæ, pedunculis 3 cm. longis, 5-7-radiatæ 6 mm. longæ, 10 mm. in diametro æquantes, bracteis paucis setaceo-dentiformibus vel subfoliaceis minutis. Umbellulæ minores 2½ mm. longæ 3 mm. in diametro æquantes basi bracteolatæ, bracteolis 5-6 minutissimis setaceo-dentiformibus, 5-6-floræ, floribus exterioribus masculinis (=sterilibus) longe pedicellatis, centralibus unifloris perfectis ferti-

libus. Flores ♂: minutissimi circ. $\frac{2}{3}$ mm. in diametro æquantes longe pedicellati, pedicellis $1\frac{1}{2}$ mm. longis; calycis lobis prominulis setaceo-dentiformibus; petalis albis ovatis apice obtuse acutis inflexis; staminibus 5, filamentis petalo duplo longioribus; ovarii rudimentis convexis. Flores ♀: sessiles minuti, florem ♂ in magnitudine 3-plo superantes 2 mm. longi; calycis tubis ellipsoidalibus echinatis, lobis suberectis prominente setaceis; petalis staminibusque iis fl. ♂ conformibus; stylis suberectis leviter recurvis. Fructus obovato-orbiculares $1\frac{2}{3}$ mm. lati valde compressi multicostati secus costam echinati, calycis lobis persistentibus erectis, stylis persistentibus valde reflexis.

HAB. in monte Morrison, ad 7500 ped. alt., (No. 2026), et ad 8000 ped. alt., (No. 1988), leg. T. KAWAKAMI et U. MORI, Oct. 1906; Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

The present plant comes very near *S. satsumana* MAXIM.; but differs from it in having 5-parted leaves, less spined fruits, smaller flowers, and in the presence of cauline leaves; and still more in the structure of the fruits. As seen in the section of the fruit (Pl. XII.), this plant differs greatly from the congener in the position of vittæ. The vittæ in my species are very few, while in the other they are as many as eight. An allied genus, *Petagnia* Guss., has no vitta in its fruits, in which respect the present plant is the nearest to it.

The five species of the distinct Umbelliferae. In the absence of the mature fruits, the genera can not be determined with certainty.

Araliaceæ.

Acanthopanax DCNE et PL.

Acanthopanax aculeatum SEEM. in Journ. Bot. (1867) p. 238; HANCE,

in Journ. Linn. Soc. XIII. p. 105; FRANCH. Pl. David. p. 146; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 726; FORBES et HEMSLE. Ind. Fl. Sin. I. p. 339; HENRY, List Pl. Formos. p. 47; DIELS, Fl. Centr. Chin. p. 489; MATSUM. et HAYATA, Enum. Pl. Formos. p. 176.

Panax aculeatum AIT. Hort. Kew. ed-2, V. p. 482; DC. Prodr. IV. p. 252.

Panax Loureirianum DC. Prodr. IV. p. 252.

Zanthoxylum trifoliatum LINN. Sp. Pl. ed-2, p. 1455.

Plectronia chinensis LOUR. Fl. Cochinch. ed-WILLD. p. 201.

HAB. Tappansha, leg. S. NAGASAWA, Oct. 1905, (No. 717); in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2022).

DISTRIB. Eastern India, central China, and Japan.

Fatsia DCNE et PL.

Fatsia polycarpa HAYATA, sp. nov. (Pl. XIII.). Arbor? Ramuli primum valde fulvo-lanati, pilis longiusculis, demum subglabri. Folia (novella fulvo-lanate demum glabra) ampla longe petiolata, petiolis in longitudine laminam æquantibus vel brevioribus basi valde dilatis ciliatis, stipulis intra petiolum parum prominulis, laminis ambitu late orbicularibus 15–30 cm. in diametro æquantibus profunde ad $\frac{2}{3}$ partem laminæ palmatim 7-fidis inter lobos valde sinuatis, lobis oblongo-obovatis apice caudato-acuminatis basi attenuatis margine præter acumen partes basilares et sinuatas dentato-serratis, serraturis mucronato-acuminatis ascendentibus, palmatim 7-nerviis, subtus nervis prominentibus, pallidioribus. Umbellæ paniculatæ. Paniculæ terminales 30–40 cm. longæ dense fulvo-lanatæ, ramis infimis 14 cm. longis umbellis pedunculatis remote instructis; pedunculi umbellarum 1– $\frac{1}{2}$ cm. longi umbellam in longitudine æquantes; bracteæ ad basin umbellarum ovatæ 1– $\frac{1}{2}$ cm. longæ.

membranaceæ caducissimæ dense lanatæ; bracteolæ minutissimæ lineares. Umbellæ circ. 20-floræ in alabastro globosæ 1 cm. in diametro æquantes indumento lanato obtectæ; umbellæ demum patentes $1\frac{1}{2}$ cm. longæ $2\frac{1}{2}$ cm. in diametro æquantes. Flores patentes longe pedicellati, pedicellis 1 cm. longis gracilibus flore continuis sed basi pedunculo articulatis, majusculi 7 mm. in diametro æquantes. Calycis tubus brevis leviter sulcatus, margine vix prominulo. Petala 5 membranacea valvata revoluta longe triangularia apice mucronato acuta $3\frac{1}{2}$ mm. longa basi vix latiora quam 2 mm. Stamina 5, filamentis filiformibus petalo longioribus horizontaliter patentibus reflexis, antheris oblongis. Discus convexus margine integer. Ovarium 10-loculare, loculis 1-ovulatis. Styli 10 a basi distincti brevissimi $\frac{1}{2}$ mm. longi, stigmatibus terminalibus parvis.

HAB. in monte Morrison, ad 8500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1868).

DISTRIB. The only congeners we have at present are *F. japonica* DCNE. et PL. and *F. papyrifera* BENTH. et Hook. f. The former occurs in Japan, and the latter, in Formosa.

The present species is a very interesting addition to the Formosan flora. The plant is by far the most remarkable species in having 10-celled ovaries in which respect it appears to be referable to *Trevesia* VIS. All other characters of the plant, however, quite agree with *Fatsia* DCNE. et PL. I think, therefore, it will be better to refer the new plant to this genus, and at the same time to extend the limit of the generic character.

Helwingia WILLD.

Helwingia rusciflora WILLD. Sp. Pl. IV. p. 716; SIEB. et ZUCC. Fl. Jap. I. p. 164, t. 86; FORBES et HEMSL. Ind. Fl. Sin. I. p. 341; DIELS, Fl. Centr. Chin. p. 505.

Helvingia japonica DIETR.; DC. Prodr. XVI.-2, p. 680; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 195.

Osyris japonica THUNB. Fl. Jap. p. 31, et Ic. Pl. dec. III. t. 1.

DISTRIB. Japan and central China.

Heptapleurum GÄRTN.

Heptapleurum octophyllum BENTH. in BENTH. et HOOK. f. Gen. Pl. I. p. 942; HANCE, in Journ. Linn. Soc. XIII. p. 105; FORBES et HEMSLE. Ind. Fl. Sin. I. p. 342; HENRY, List Pl. Formos. p. 48; MATSUM. et HAYATA, Enum. Pl. Formos. p. 178.

Aralia octophylla LOUR. Fl. Cochinch. ed.-WILLD. p. 233; DC. Prodr. IV. p. 258.

Paratropia cantoniensis HOOK. et ARN. Bot. Beech. Voy. p. 189; WALP. Rep. IV. p. 433; BENTH. Fl. Hongk. p. 136.

Agalma octophyllum SEEM. in Journ. Bot. (1864) p. 298.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 1899 et 1879).

DISTRIB. South China and the Loo-choo islands.

The plant grows usually in the low regions and sometimes ascends to such an elevation almost ten thousand feet high.

Heptapleurum racemosum BEDD. Fl. Sylv. t. 214; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 729; HAYATA, in Tōkyō Bot. Mag. XX. p. 53.

Hedera racemosa WIGHT, Ic. Pl. Ind. or. t. 1015.

Agalma racemosum SEEM. "Rev. Heder. p. 24."

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Arizan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1709).

DISTRIB. The present plant grows in the mountainous districts

of southern India such as Nilghiries at elevations of 3000–5000 ft., and also in Ceylon at altitudes of 3000–5000 ft., (after BEDDOME); but not found in Himalaya. It is very remarkable case that such a southern element is found in the high regions of Formosa. No species belonging to this genus has yet been known from central China.

Oreopanax DCNE. et PL.

Oreopanax formosana HAYATA, sp. nov. (Pl. XIV). Arbor? Rami cinereo-stellato-tomentosi et adpresse pilosi. Folia ampla longe petiolata, petiolis primum adpresse stellato-pilosis demum subglabris lamina 1–2-plo longioribus basi dilatis, stipulis parum prominulis acutis ad basin petiolorum connatis, laminis ambitu late orbicularibus 20 cm. longis 23 cm. latis vel minoribus basi late truncatis vel cordato-truncatis margine obsolete 3–5-lobatis vel grosse irregulariter dentatis, dentibus acutis inter dentes sinuatis, 5–7-nerviis, supra subglabris venis impressis, subtus pilis stellatis et simplicibus dense obtectis venis et venulis prominentibus. Florum capitula corymboso-paniculata. Paniculae terminales 15 cm. longae petiolum æquantes 13 cm. latæ, pilis stellatis et simplicibus dense obtectæ, ramis alternis angulo obtuso divaricantibus, capitulis florum pedunculatis remote instructis, et ad apicem ramorum capitulis ternatis; bractea basi pedunculorum late ovata 4 mm. longae; bracteolae florum squamelliformes crassiusculæ sub singulo flore 3-næ, 1 subtendente majore late ovata 3 mm. longa, 2 lateralibus minoribus oppositis, pilis longis dense tectis et barbis validis nigris sparce insertis. Capitula florum subglobosa 6–7 mm. in diametro æquantia, circ. 15-flora, pedunculis capitulum 2-plo superantibus. Flores omnio villosi intra bracteas arcte sessiles in alabastro subturbinati $2\frac{1}{2}$ mm. longi. Calycis margo

obsolete dentatus. Petala 5 valvata intus glabra ovato-triangularia $1\frac{1}{2}$ mm. longa vel longiora caducissima. Stamina 5, filamentis brevissimis, antheris oblongis; discus explanatus. Ovarium 2-loculare, loculis 1-ovulatis, stylis 2 brevibus distinctis erectis, stigmatibus terminalibus. Fructus late globosi $4\frac{1}{2}$ mm. longi 5 mm. lati læves abortu 1-spermi compressiusculi tomentulosi drupacei, stylis persistentibus valde recurvis. Semina ovoidea subtriquetra 4 mm. longa, albuminibus ruminatis. Embryo hilo proximus minutus.

HAB. Taitō: Bataiankei, ad 6000 ped. alt., leg. N. KONISHI, Juni. 1902, (No. 34, A); Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 1871 et 1709); Taitō: in monte Iryokukaku, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1914).

In "BENTH. et Hook. f. Gen. Pl. I. p. 939", it is stated that the ovary of the genus *Oreopanax* is 5-celled. But, in "ENGL. und PRANTL, Nat. Pfl.-fam. III.-8, p. 39", the generic character of this genus is a little broadened in such an extent that the ovary is sometimes 2-celled and the flower is usually hermaphrodite. Accepting the latter statement, the present plant which has two celled-ovaries should be referred to *Oreopanax*, on account of capitate and sessile flowers, ruminant albumens, simple leaves, and the existence of three bracts under each flower. The style of this plant is exceptionally short. The occurrence of this genus in the island is very remarkable. So far as I am aware, we have had no representative of this American genus in any other region on the globe.

Hedera LINN.

Hedera Helix LINN. Sp. Pl. ed-2. p. 292; DC. Prodr. IV. p. 261; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 739; "HANCE, in Journ. Bot. (1882) p. 6"; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 194; FORBES et HEMSL. Ind. Fl. Sin. I. p. 343; DIELS, Fl. Centr. Chin. p. 487.

Hedera colchica KOCH; SEEM. in Journ. Bot. (1864) p. 307.

Hedera rhombea SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 94.

HAB. Kagi: Tappansha, (No. 1907), in monte Morrison, ad 6000 ped. alt., (No. 2017), et ad 8000 ped. alt., (No. 1889), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. Western Europe and North Africa eastward to Japan.

Dendropanax DCNE.

Dendropanax sp. Rami glabri cortice cineraceo-flavo tectis. Folia longe petiolata, petiolis lamina 1-2-plo longioribus, basi dilatis stipulis fere obsoletis, laminis profunde 3-lobatis in circumscriptione obtriangularibus 9 cm. longis totidem latis basi abrupte cuneatis apice trilobis, lobis lateralibus terminali conformibus ascendentibus lanceolato-acuminatis, 3-nerviis utraque pagine inter reticula punctatis, interdum laminis simplicibus oblongo-ellipticis cuspidato-acuminatis basi cuneatis. Umbellæ ad apicem ramulorum solitariæ paucifloræ breve pedunculatæ, pedunculis 7 mm. longis, pedicellatæ, pedicellis 8 mm. longis. Flores ignoti. Fructus globosi 4 mm. in diametro æquantes multisulcati.

HAB. in monte Morrison, ad 6000 ped. alt., (No. 2056), et in eodem monte, ad 7000 ped. alt., (No. 2041), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

The specimens are wanting of flowers and it is rather questionable whether this belongs to *Dendropanax*.

Cornaceæ.

Marlea ROXB.

Marlea begoniæfolia ROXB. Fl. Ind. ed.-CAREY, II. p. 261; DC. Prodr. IV. p. 267; BENTH. Fl. Hongk. p. 183; HOOK. et ARN. Bot. Beech. Voy. p. 187; CLARKE, in HOOK. f. Fl. Brit. Ind. II. p. 743; FORBES et HEMSL. Ind. Fl. Sin. I. p. 344.

Stylidium chinense LOUR. Fl. Cochinch. ed.-WILLD. p. 273.

HAB. Kagi: Murōensha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1750).

DISTRIB. India, Malay, south central China and Japan.

Aucuba LINN.

Aucuba japonica THUNB. Fl. Jap. pp. 4 et 64, tt. 12 et 13; WILLD. Sp. Pl. IV. p. 328; Bot. Mag. tt. 1197 et 5512; DC. Prodr. IV. p. 274; MIQ. Prol. Fl. Jap. p. 92; FRANCH. et SAVAT. Enum. Pl. Jap. p. 197; HENRY, List. Pl. Formos. p. 48; FORBES et HEMSL. Ind. Fl. Sin. I. p. 346; ITÔ et MATSUM. Tent. Fl. Lutch. p. 541; DIELS, Fl. Centr. Chin. p. 507; PALIBIN, Conspect. Fl. Koreæ, I. p. 102; HAYATA, in Tōkyō Bot. Mag. XX. p. 55.

Aucuba himalaica HOOK. f. Fl. Brit. Ind. II. p. 747.

Aucuba chinensis BENTH. Fl. Hongk. p. 138.

HAB. in monte Morrison.

DISTRIB. From middle Himalaya through central China to Japan and the Korean archipelago.

In my specimen, the flowers are much larger, and the leaves are narrower, oblanceolate, and with more diverging veinlets. I think the plant may be regarded as a form of the Japanese species.

Dicotyledones

Gamopetalæ

Caprifoliaceæ.

Lonicera LINN.*Lonicera* sp.

HAB. in monte Morrison, (No. 1816).

The four species of *Viburnum*; but not yet determined.

Rubiaceæ.

Ophiorrhiza LINN.

Ophiorrhiza pumila CHAMP.; BENTH. Fl. Hongk. p. 147; WALP. Ann. V. p. 117; FORBES et HEMSL. Ind. Fl. Sin. I. p. 378; HENRY, List Pl. Formos. p. 50; MATSUM. in Tōkyō Bot. Mag. XIV. p. 147; MATSUM. et HAYATA, Enum. Pl. Formos. p. 187.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 580); in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1713); Tōzan et Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Taitō: Busshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2182).

DISTRIB. South China.

Knoxia LINN.

Knoxia corymbosa WILLD. Sp. Pl. I. p. 582; BENTH. Fl. Hongk. p. 164; HOOK. f. Fl. Brit. Ind. III. p. 128; WIGHT, Ic. Pl. Ind. or. t. 128;

WILLD. Sp. Pl. I. p. 582; MIQ. Fl. Ind. Bat. II. p. 330; FORBES et HEMSL. Ind. Fl. Sin. I. p. 384; MATSUM. in Tōkyō Bot. Mag. XVI. p. 13; MATSUM. et HAYATA, Enum. Pl. Formos. p. 189.

Spermacoce teres ROXB. Fl. Ind. ed.-CAREY, I. p. 367.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1945).

DISTRIB. Malay, North Australia, and South China.

Damnacanthus GÆRTN.

Damnacanthus angustifolius HAYATA, sp. nov. (Pl. XV.). Frutices glaberrimi dichotome ramosissimi, ramulis cinereo-fulvis niten-
tibus 4-gonis. Folia opposita brevissime petiolata lanceolata vel lanceolato-linearia 13 cm. longa 1½ cm. lata basi acuta apice acumi-
nata margine integra vel remote minuteque denticulata subtus pallidiora, venis utrinque prominulis, venulis fere transversum divergentibus, stipulis interpetiolaribus multi-dividis minute digita-
liformibus. Flores parvi in axillis 5-6 fasciculatim vel umbellatim dispositi, pedicellis gracilibus 2-3 mm. longis. Calycis tubus obovoideus 1 mm. longus limbum in longitudine æquans, limbo campanulato 4-lobo, lobis triangularibus persistentibus. Corolla cylindrico-campanulata 5 mm. longa, tuto fauceque piloso, limbo 4 lobo, lobis valvatis ovato-triangularibus tubo 3-plo brevioribus minute apiculatis. Stamina 4, lobis corollæ alterna fere libera, filamentis longiusculis, antheris oblongis obtusis dorso connectivo lato affixis. Discus pulvinatus. Ovarium 4-loculare loculis 1-ovulatis, ovulis in loculis solitariis ab apice loculi pendulis am-
phitropis, stylo filiformi, stigmatibus clavellato 4-fido, ramis latiusculis erecto-patentibus. Drupæ rubræ late globosæ 6 mm. in diametro æquantes 4-pyrenæ, pyrenis dorso rotundatis subtrigonis cartilagineis 1-spermis. Semina subtrigona, testa tenuissima, albumine

corneo; embryo parvus, cotydonibus subplanis crassis, radícula brevi infra.

HAB. in Suizan, in montibus Morrison, ad 7703 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 784); Tōzan et Arizan, in isdem montibus, leg. G. NAKAHARA, Dec. 1906; in monte Morrison, ad 6500 ped. alt., (No. 1794), ad 7500 ped. alt., (No. 2055), et ad 9000 ped. alt., (No. 1926), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

This new species is very remarkable for very small flowers and very narrow leaves.

Damnacanthus indicus GÆRTN. f. "Fruct. III. p. 18, t. 182"; DC. Prodr. IV. p. 473; S. MOORE, in Journ. Bot. (1875) p. 231; HOOK. f. Fl. Brit. Ind. III. p. 158; MAXIM. in Mém. Biol. XI. p. 795; FORBES et HEMSL. Ind. Fl. Sin. I. p. 386.

HAB. Suizan, in montibus Morrison, leg. S. NAGASAWA, Oct. 1905, (No. 658); in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1704); Nantō: Hinokiyama, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Eastern India, central China, the Loo-choo islands, and Japan.

It is stated by Mr. W. B. HEMSLEY that *D. macrophyllus* SIEB. is a form of *D. indicus* GÆRTN. f., as he has very many transitional stages between the two species. Mr. T. MAKINO refers also to this interesting species in the Tōkyō Botanical Magazine, XVIII. pp. 12–14, where he mentions that the above two species and *D. major* SIEB. et ZUCC. do not show any specific distinction and they should be regarded as one and the same species accordingly. He also proposes to make many varieties, α , β , γ , and δ , including various forms. To my opinion, however, the plants do not seem to vary from one to another. At present, I am much inclined to regard the

former two as specifically distinct species. The preceding new plant bears much resemblance to *D. macrophyllus* SIEB. from which it differs in having much smaller flowers and more narrowed leaves.

***Lasianthus* JACK.**

Lasianthus formosensis MATSUM. in Tōkyō Bot. Mag. XV. p. 17; MATSUM. et HAYATA, Enum. Pl. Formos. p. 195, t. XV. A.

HAB. Taitō: Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2159).

***Pæderia* LINN.**

Pæderia tomentosa BLUME; DC. Prodr. IV. p. 471; HOOK. f. Fl. Brit. Ind. III. p. 197; MAXIM. in Mém. Biol. XI. p. 798; MIQ. Fl. Ind. Bat. II. p. 258; FORBES et HEMSL. Ind. Fl. Sin. I. p. 389; MATSUM. in Tōkyō Bot. Mag. XV. p. 38; DIELS, Fl. Centr. Chin. p. 582; PALIBIN, Conspect. Fl. Koreæ, I. p. 106; MATSUM. et HAYATA, Enum. Pl. Formos. p. 197.

Pæderia foetida THUNB. Fl. Jap. p. 106; HOOK. et ARN. Bot. Beech. Voy. p. 194; BENTH. Fl. Hongk. p. 162; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 210; HANCE, in Journ. Bot. (1874) p. 261.

Pæderia chinensis HANCE, in Journ. Bot. (1878) p. 228, et (1879) p. 12; FRANCHET, Pl. David. p. 155.

HAB. Taitō: Daironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2163).

DISTRIB. Eastern India, Malay peninsula and archipelago, China, and Japan.

***Nertera* BANKS et SOL.**

Nertera nigricarpa HAYATA, sp. nov. Herbæ parvæ glaberrimæ exsiccatæ nigricantes, caulibus repentibus ad nodos radican- tibus, internodiis 1-3 cm. longis, ramulis depressis. Folia petiolata, petiolis laminam in longitudine superantibus, laminis late ovatis vel ovato-reniformibus obtusis minute mucronatis basi abrupte

attenuatis ad petiolum abeuntibus margine integerrimis 5 mm. latis 4 mm. longis, stipulis interfoliaceis validiusculis triangularibus vel late cuspidatis. Flores quasiterminales sessiles solitarii $2\frac{1}{2}$ mm. longi. Calycis tubus ovoideus, limbo integro annulato. Corolla tubulata 4-loba, lobis integerrimis margine sub microscopio minute cristatis. Stamina 4, filamentis disco insertis, antheris late ovatis brevissime apiculatis. Ovarium 2-loculare, stylis 2 elongatis suberectis intus cristato-stigmatosis. Drupæ nigricantes globosæ $4\frac{1}{2}$ mm. in diametro æquantes carnosæ dicoccae (rariusmono coccae), calycis limbo annulari coronatæ, coccis coriaceis ovatis intus plano-concavis extus convexis 1-spermis. Semina ovata plano-convexa circ. 2 mm. longa intus leviter sulcata.

HAB. Tōzan, in montibus Morrison, Oct. 1906; in monte Morrison, leg. S. NAGASAWA, Nov, 1905.

DISTRIB. According to Mr. E. D. MERRILL, an allied Australian species *N. depressa* BANKS et SOL. occurs in the Philippine islands.

Very much like *N. depressa* BANKS et SOL.; but differs from it in having entire lobes of corolla, black colored berries, and cristate stigmas. The occurrence of this Australian genus is very remarkable.

Rubia LINN.

Rubia cordifolia LINN.; DC. Prodr. IV. p. 588; FRANCHET, Pl. David. p. 155; MAXIM. Mém. Biol. IX. p. 266; HOOK. f. Fl. Brit. Ind. III. p. 202; MIQ. Fl. Ind. Bat. II. p. 337; FORBES et HEMSL. Ind. Fl. Sin. I. p. 393; DIELS, Fl. Centr. Chin. p. 583; MATSUM. in Tōkyō Bot. Mag. XV. p. 39; PALIBIN, Conspect. Fl. Koreæ, I. p. 106; MATSUM. et HAYATA, Enum. Pl. Formos. p. 199.

HAB. Toroku: Tōhozan, Nov. 1905, (No. 1827), et in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2058).

DISTRIB. Japan to central China and Dahuria; mountains of India southward to Ceylon and Malacca; tropical Africa.

Rubia lanceolata HAYATA, sp. nov. Herbæ minute aculeolatæ, caulibus elongatis 4-gonis. Folia 4-natim verticillata longe petiolata, petiolis lamina in longitudine 1-2-plo longioribus minute uncinato-aculeolatis, laminis lanceolatis ovato-lanceolatis vel lineari-lanceolatis apice acuminatis basi rotundatis vel leviter cordatis 9 cm. longis 1 cm. latis supra ad nervos hispidulis subtus ad nervos et margines uncinato-asperis trinerviis. Flores minuti in cymas paniculatas circ. 20 cm. longas axillares et terminales dispositi, bracteis angusto-lanceolatis 4-natim verticillatis. Flores ignoti. Fructus didymi 5 mm. lati 3 mm. longi.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 687); in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1715 et 1989?).

Closely resembles *R. cordifolia* LINN.; but differs from it in having lanceolate and trinerved leaves; from *R. Schumanniana* E. PRITZEL, this differs in having minutely aculeolate stems and uncinately asperous petioles.

Galium LINN.

Galium brachypodium MAXIM. in Mém. Biol. IX. p. 260.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1805).

DISTRIB. Northern part of Japan.

A more species of *Galium*; not yet determined.

Valerianeæ.

Patrinia JUSS.

Patrinia scabiosæfolia FISCH.; DC. Prodr. IV. p. 624; LEDEB. Fl. Ross. II. p. 427; HANCE, in Journ. Bot. (1870) p. 225, et (1883) p. 322; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 216; FRANCHET, Pl. David. p. 158; FORBES et HEMSL. Ind. Fl. Sin. I. p. 397.

Patrinia parviflora SIEB. et ZUCC. Fl. Jap. Fam. Nat. n. 678; MIQ. in ANN. Mus. Bot. Lugd.-Bat. III. p. 115.

HAB. Nantō: Mushazan, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1162).

DISTRIB. Japan through China westward to Dahuria.

Patrinia villosa JUSS.; DC. Prodr. IV. p. 624; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 216; FORBES et HEMSL. Ind. Fl. Sin. I. p. 398; HENRY, List Pl. Formos. p. 51; DIELS, Fl. Centr. Chin. p. 597; PALIBIN, Conspect. Fl. Koreæ, I. p. 108.

Patrinia ovata BUNGE; FRANCHET, Pl. David. p. 157.

Valeriana villosa, THUNB. Fl. Jap. p. 32, t. 6.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., Oct. 1905, (No. 672); Toroku: Tôhokey, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1905).

DISTRIB. Japan and China.

Hæckia ENGL. et GRÆBN.

Hæckia Aschersoniana ENGL. et GRÆBN. in DIELS, Fl. Centr. Chin. p. 598; HAYATA, in Tôkyô Bot. Mag. XX. p. 57.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 635); in monte Morrison, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2272).

DISTRIB. Central China. This monotypic genus is found in central China and Formosa, but nowhere else.

Dipsacæ.

Scabiosa LINN.

Scabiosa (Sect. *Sclerostemma*) **lacerifolia** HAYATA, (Pl. XVI.), in Tōkyō Bot. Mag. XX. p. 16. Herbæ perennes pubescentes vel glabriusculæ, caulibus validiusculis 10–20 cm. altis pauci-ramosis. Folia sessilia semi-amplexicaulia linearia oblanceolata obsolete pinnatisecta vel lacerata, segmentis irregulariter serratis, radicalia circ. 12 cm. longa 5–6 mm. lata, caulina opposita breviora minora 4–5 cm. longa apice acuta basi longe attenuata sensim dilata. Capitula terminalia depressa 3.5–4 cm. in diametro æquantia longe pedunculata, pedunculis 5–6 cm. longis vel longioribus. Involucri bracteæ 3-seriatæ herbacæ liberæ sublanceolatae plerumque 1-florem gerentes extimæ 15 mm. longæ interiores minores; receptaculi paleæ spathulatae 5 mm. longæ. Involucellum 4-costatum 8-foveolatum apice 4-lobatum, lobis obtusis. Calycis limbus in 5 setas radiato-patentes diversus. Flores radiantes involucrum fere excedentes; corollæ 18 mm. longæ, limbis 5-fidis 2-labiatis. Stamina 4, omnia perfecta. Stylus filiformis. Achænium involucello basi adnatum calycis limbo persistente coronatum obovoideum 3 mm. longum; setæ breves 1 mm. longæ.

HAB. in monte Morrison, ad 13094 ped. alt., leg. S. NAGASAWA; in montibus centralibus, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1852).

As the original description is based upon an imperfect specimen, I have taken the liberty of repeating the description of the plant, basing the above diagnosis upon a most perfect specimen.

DISTRIB. The present genus is mainly distributed in Europe, West Asia, and Africa. In East Asia, four species are found in the alpine regions of the Himalayas, one species in North China, and also one in Japan. No species has ever been known from either central or southern China.

Compositæ.

Ethulia LINN.

Ethulia conyzoides LINN. DC. Prodr. V. p. 12; CLARKE, Comp. Ind. p. 1; HOOK. f. Fl. Brit. Ind. III. p. 226.

Ethulia ramosa ROXB. Fl. Ind. ed.-CAREY, p. 413.

Ethulia gracilis DELILE; DC. Prodr. V. p. 12.

Ethulia angustifolia BOJER; DC. Prodr. V. p. 12.

HAB. Tikusan, ad 150 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 763).

DISTRIB. Tropical Africa and Asia. The Philippine islands and Java.

The present plant does certainly not belong to the mountain flora of the island. As the species is new to the Formosan flora, I have taken this occasion to mention it.

Vernonia SCHREB.

Vernonia Andersoni CLARKE, Comp. Ind. p. 26; HOOK. f. Fl. Brit. Ind. III. p. 241; FORBES. et HEMSL. Ind. Fl. Sin. I. p. 400; HENRY, List Pl. Formos. p. 51; HAYATA, Compos. Formos. p. 4; MATSUM. et HAYATA, Enum. Pl. Formos. p. 201.

HAB. Taichū : Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. South China; Assam, Burma, and Tenasserim.

Vernonia cinerea LESS. in Linnæa, IV. p. 291 et VI. p. 673; DC. Prodr. V. p. 24; MIQ. Fl. Ind. Bat. II. p. 11; BENTH. Fl. Hongk. p. 169;

GRISEBACH, Fl. Brit. W. Ind. Isl. p. 353; BENTH. Fl. Austral. III. p. 459; CLARKE, Comp. Ind. p. 20; OLIVER, Fl. Tropic. Afric. p. 275; HOOK. f. Fl. Brit. Ind. III. p. 233; FORBES et HEMSL. Ind. Fl. Sin. I. p. 401; DIELS, Fl. Centr. Chin. p. 608; HAYATA, Comp. Formos. p. 5; MATSUM. et HAYATA, Enum. Pl. Formos. p. 201.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. Tropical Asia, Africa and Australia.

Adenostemma FORST.

Adenostemma viscosum FORST; LESS. Synop. Comp. p. 156; DC. Prodr. V. p. 111; SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 181; BENTH. Fl. Hongk. p. 171, et Fl. Austral. III. p. 462; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 219; CLARKE, Comp. Ind. p. 28; OLIVER, Fl. Tropic. Afric. p. 299; FRANCHET, Pl. David. p. 159; MIQ. Fl. Ind. Bat. II. p. 23; HOOK. f. Fl. Brit. Ind. III. p. 242; FORBES et HEMSL. Ind. Fl. Sin. I. p. 403; DIELS, Fl. Centr. Chin. p. 608; HAYATA, Comp. Formos. p. 7; MATSUM. et HAYATA, Enum. Pl. Formos. p. 202.

Spilanthes tinctorius LOUR. Fl. Cochinch. ed-WILLD. p. 590.

HAB. Toroku: Washa, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 1825).

DISTRIB. South China; Tropical Asia, Africa, America, and Australia.

Ageratum LINN.

Ageratum conyzoides LINN. Sp. Pl. ed-2, p. 1175; LESS. Synop. Comp. p. 155; DC. Prodr. V. p. 108; MIQ. Fl. Ind. Bat. II. p. 23; BENTH. Fl. Hongk. p. 171; SONDER, Fl. Capens. III. p. 57; BENTH. Fl. Austr. III. p. 462; GRISEBACH, Fl. Brit. W. Ind. Isl. p. 356; SEEMANN, Fl. Vit. p. 140; CLARKE, Comp. Ind. p. 30; OLIVER, Fl. Tropic. Afric. III. p. 300; HEMSL. Voy. Chall. Bot. I. p. 40, et in Biol. Centr.-Americ. II. p. 81; HOOK. f. Fl. Brit. Ind. III. p. 243; FORBES et HEMSL. Ind. Fl. Sin. I. p. 403; HENRY,

List Pl. Formos. p. 51; HAYATA, Comp. Formos. p. 7; MATSUM. et HAYATA, Enum. Pl. Formos. p. 202.

HAB. Taitō: Bökusekikaku, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1831).

DISTRIB. Generally spread over all the warm regions, though often existing only as a colonist. Perhaps, an American origin.

Eupatorium LINN.

Eupatorium formosanum HAYATA, sp. nov. Herbæ basi suffrutescens præter inflorescentiam subsimplices villosopubescentes. Folia opposita tri-partita, segmentis lateralibus subsessilibus lanceolatis basi obliquis vel latere inferiore ad petiolum decurrentibus segmentis terminalibus lanceolatis breve petiolulatis iis lateralibus longioribus, apice acuminata basi acuta serrulata supra scabra subtus pallidiora pubescentia ad costas venulasque villosa, petiolis villosopubescentibus segmento terminali 2-plo brevioribus. Capitulum parvum 7 mm. longum corymbosum 4–5-florum. Involucrum oblongo-campanulatum, bracteis 3-seriatis imbricatis scariosis, intimis oblongo-angustis 5 mm. longis, exterioribus gradatim minoribus, extimis parvissimis ovatis $1\frac{1}{2}$ mm. longis. Receptaculum parvum convexum foveolatum. Corollæ tubulatæ 4 mm. longæ, tubis tenuibus limbis parum ampliatis tubo 2-plo brevioribus breviter 5-dentatis, dentibus triangularibus marginatis. Antheræ appendiculatæ basi obtusæ integræ. Styli basi disco dentato annulari coronati, ramis elongatis obtusis. Achænia 5-angulata apice truncata basi attenuata 2 mm. longa; pappi setæ 1-seriatæ rigidulæ scabræ $3\frac{1}{2}$ mm. longæ.

HAB. in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1961); Arizan in montibus Morrison, leg.

G. NAKAHARA, Nov. 1906; in montibus centralibus, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1898).

The present plant comes near *E. chinensis* LINN.; and resembles especially its variety, *tripartitum* of MIQUEL; but differs from them in having distinctly triparted leaves and hairy stems and leaves.

Eupatorium Lindleyanum DC. Prodr. V. p. 180; BENTH. Fl. Hongk. p. 172, et Fl. Austr. III. p. 462; FORBES et HEMSL. Ind. Fl. Sin. I. p. 404; HENRY, List Pl. Formos. p. 52; DIELS, Fl. Centr. Chin. p. 608; HAYATA, Comp. Formos. p. 9; MATSUM. et HAYATA, Enum. Pl. Formos. p. 203.

HAB. Kagi: Shakkōshō, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1978); Goryō, ad 350 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 760).

DISTRIB. China, Manchuria and Japan.

Eupatorium Tashiroi HAYATA, Compos. Formos. p. 9; MATSUM. et HAYATA, Enum. Pl. Formos. p. 203.

HAB. Kōshun: Naibun, leg. G. NAKAHARA, Feb. 1907.

Solidago LINN.

Solidago Virga-aurea LINN.; THUNB. Fl. Jap. p. 317; WILLD. Sp. Pl. p. 2065; LESS. Synop. Comp. p. 163; DC. Prodr. V. p. 338; BENTH. Fl. Hongk. p. 179; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 228; CLARKE, Comp. Ind. p. 35; HOOK. f. Fl. Brit. Ind. III. p. 245; FORBES et HEMSL. Ind. Fl. Sin. I. p. 406; HENRY, List Pl. Formos. p. 52; HAYATA, Comp. Formos. p. 10; MATSUM. et HAYATA, Enum. Pl. Formos. p. 203.

Solidago cantoniensis et *S. decurrens* LOUR. Fl. Cochinch. ed-WILLD. p. 612; DC. Prodr. V. pp. 341-342.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 662); in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2146); Nantō: Musha-

zan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1132); in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2208 et 2207).

DISTRIB. Cosmopolitan; North America to Japan, westward to temperate Asia and Europe.

Myriactis LESS.

Myriactis Wightii DC. Prodr. V. p. 308; WIGHT, Ic. Pl. Ind. or. t. 1091; CLARKE, Comp. Ind. p. 38; HOOK. f. Fl. Brit. Ind. III. p. 247; TREMEN, Fl. Ceyl. III. p. 15.

Myriactis javanica DC. Prodr. V. p. 308; CLARKE, Comp. Ind. p. 38.

HAB. Suizan, ad 7702 ped. alt., in montibus Morrison, Oct. 1905, (No. 657), eodem loco, ad 11579 ped., alt., (No. 620), et Tōzan, in isdem montibus, leg. G. NAGASAWA, Oct. 1906; in isdem montibus, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1790), Taitō: Daironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1844).

DISTRIB. The Nilghiry Mountains: at an altitude of 8000 ft.; Ceylon: the central province, at elevations of 5–8000 ft.

According to Sir. J. D. Hooker, this species is very variable. He states that three species belonging to this genus mentioned in "The Flora of British India" are all similar. Accepting his statement, the Formosan plant may be referred to this species.

Aster LINN.

Aster baccharoides STEETZ; BENTH. Fl. Hongk. p. 75; FORBES et HEMSL. Ind. Fl. Sin. p. 409; HENRY, List Pl. Formos. p. 52; DIELS, Fl. Centr. Chin. p. 610; HAYATA, Comp. Formos. p. 13; MATSUM. et HAYATA, Enum. Pl. Formos. p. 204.

HAB. in monte Morrison, ad 8000 ped. alt., Oct. 1906, (No. 1959), et in montibus centralibus, ad 10000 ped. alt., leg. T. KAWA-

KAMI et U. MORI, Nov. 1906, (No. 2206); Nantō : Nankōkei, leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1174).

DISTRIB. South central China.

Aster scaber THUNB. Fl. Jap. p. 316; FORBES et HEMSL. Ind. Fl. Sin. I. p. 415; DIELS, Fl. Centr. Chin. p. 611.

Biotia discolor MAXIM. in Prim. Fl. Amur. p. 146.

Doellingeria scabra NEES; DC. Prodr. V. p. 263; MIQ. in Ann. Mus. Bot. Lugd.-Bat. II. p. 169.

HAB. in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1850).

DISTRIB. China, Manchuria eastward to Japan as far as North America.

Aster trinervius ROXB. Fl. Ind. ed.-CAREY, p. 433; BENTH. Fl. Hongk. p. 174; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 222; HOOK. f. Fl. Brit. Ind. III. p. 252; FRANCHET, Pl. David. p. 161; MAXIM. in ENGL. Bot. Jahrb. VI. p. 68; FORBES et HEMSL. Ind. Fl. Sin. I. p. 416; HENRY, List Pl. Formos. p. 52; HAYATA, Comp. Formos. p. 13; MATSUM. et HAYATA, Enum. Pl. Formos. p. 204.

Diplopappus asperimus DC. Prodr. V. p. 277 (fide HEMSL.).

Aster ageratoides TURCZ; MAXIM. Prim. Fl. Amur. p. 144.

HAB. Ganzan, in monte Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 695); in monte Morrison, ad 7000 ped. alt., (Nos. 1876 et 1960), et ad 8000 ped. alt., (No. 1958), leg. T. KAWAKAMI et U. MORI; Suizan in montibus Morrison, ad 7702 ped. alt., (No. 559), Oct. 1905; Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 715); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Tōhosha, ad 2930 ped. alt., (Nos. 607 et 606) Nov. 1905, leg. S. NAGASAWA; Nantō : Hinokiyama leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Japan to Manchuria, westward to the mountains of northern India.

This species is, so far as I am aware, exceptionally variable, and many apparently different specimens in my hands are mentioned under a single name.

Erigeron LINN.

Erigeron morrisonensis HAYATA, sp. nov. Herbæ perennes parvæ, caulibus hirsutis subsimplicibus circ. 10 cm. altis erectis. Folia radicalia longe spathulata cum petiolis 6 cm. longa 5 mm. lata apice rotundata vel brevissime apiculata basi longe attenuata in petiolum 3 cm. longum abeuntia, caulina alterna sessilia angusta breviora. Capitula mediocria 13 mm. in diametro æquantia, solitaria heterogama, floribus radialibus ♀, disci ♂, omnibus fertilibus. Involucrum late campanulatum, bracteis sub-3-seriatis angustis linearibus circ. 6 mm. longis apice coloratis margine scariosis numerosis parum inæqualibus extus pilosissimis. Receptaculum convexum nudum. Corollæ ♀ ligulatæ angustissimæ tubis limbo vix brevioribus; ♂ tubulatæ 4 mm. longæ, tubis pilosiusculis, limbis parum ampliatis 4-dentatis. Antheræ basi obscure sagittatæ. Styli fl. ♂ rami complanati, appendicibus triangularibus. Achænia compressa angusta 2 mm. longa pilosa, margine nervio, facie enervia; pappi setæ tenues 1-seriatæ scabriusculæ rufo-albæ 3 mm. longæ.

HAB. in summam montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905; in eodem loco, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2247).

Near *E. Thunbergi* GRAY; but distinguished by the spathulate linear leaves and small ray florets.

Blumea DC.

Blumea chinensis DC. Prodr. V. p. 444; BENTH. Fl. Hongk. p. 177; Hook. f. Fl. Brit. Ind. III. p. 268; FORBES et HEMSL. Ind. Fl. Sin. I. p. 420; HENRY, List Pl. Formos. p. 53; HAYATA, Comp. Formos. p. 30; MATSUM. et HAYATA, Enum. Pl. Formos. p. 209.

Conyza chinensis LINN. Sp. Pl. ed.-2, p. 1208; MIQ. Fl. Ind. Bat. II. p. 52.

HAB. Washakei, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1823); Kagi: Shitōsha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1979).

DISTRIB. South China, eastern India, and Java.

Laggera SCH.-BIP.

Laggera alata SCH.-BIP.; CLARKE, Comp. Ind. p. 91; Hook. f. Fl. Brit. Ind. III. p. 271; FORBES et HEMSL. Ind. Fl. Sin. I. p. 422; MATSUM. et HAYATA, Enum. Pl. Formos. p. 210.

Blumea alata DC. Prodr. V. p. 448; BENTH. Fl. Hongk. p. 177; WIGHT, Ic. Pl. Ind. or. t. 1101.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2114).

DISTRIB. Generally found in tropical Asia, Africa, and Madagascar; South China.

It is rather an anomalous case that we have such a tropical species in the high regions of Formosa.

Leontopodium BR.

Leontopodium microphyllum HAYATA, sp. nov. (Pl. XVII). Herbæ suffruticosæ perennes cæspitosæ lanatæ, caulibus ascendentibus erectisve simplicibus 5-6 cm. altis. Folia radicalia caulinis conformia spathulato-angusta integerrima 1 cm. longa 2 mm. lata, supra laxè subtus dense lanata. Capitula parvula 3 mm. longa

ad apicem caulis in cymas densas foliis floralibus quasi involucretas 4-5-conferta; foliis floralibus 5-6 in cyma quisque, horizontaliter patentibus dense lanatis linearibus acuminatis 1 cm. longis; fl. ♀ fertilibus in ambitu paucis; fl. ♂ sterilibus in disco paucis. Involucrum campanulatum, bracteis circ. 2-seriatis imbricatis scariosis, intimis angusto-acutis apice lanatis circ. 3 mm. longis, extimis latioribus dorso lanatis. Receptaculum convexum fere epaleaceum foveolatum. Corollæ ♀ filiformes truncatæ; ♂ regulares 2 mm. longæ tubulosæ, limbis ampliatis subcampanulatis apice 5-fidis paucè pilosis. Antheræ basi sagittatæ, auriculis tenuissime caudato-appendiculatis. Stylus breviter 2-fidus, ramis obtusis. Achænia parva oblonga subteretia ecostata glabra; pappi setæ 1-seriatæ tenues breviter valdeque barbellatæ basi subconnatæ.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 246).

Very distinct species having very small leaves.

Anaphalis DC.

Anaphalis margaritacea BENTH. et Hook. f. Gen. Pl. II. p. 303; CLARKE, Comp. Ind. p. 103; MAXIM. in Mém. Biol. XI. p. 235; FORBES et HEMSLEY, Ind. Fl. Sin. I. p. 425.

Antennaria margaritacea R. BR.; DC. Prodr. VI. p. 270; LEDEB. Fl. Ross. II. p. 613.

Gnaphalium margaritaceum LINN. Sp. Pl. ed-2, p. 1198; FRANCH. et SAVAT. Enum. Fl. Jap. I. p. 242.

var. **angustifolia** (FRANCH. et SAVAT.).

Gnaphalium margaritaceum LINN. var. *angustifolium* FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 242.

Antennaria japonica MIQ. Prol. Fl. Jap. p. 110.

forma **nana**. Humiles circ. 5 cm. altæ, caulibus simplicibus.

Folia parvissima oblonga vel oblongo-linearia 6 mm. longa 1 mm.—
1½ mm. lata apice crassiusculo-apiculata lanata.

HAB. in monte Morrison, ad 10000 ped. alt.

forma **morrisonicola**. Altiores 10–15 cm. altæ, caulibus simplicibus. Folia parviora oblongo-lanceolata vel oblongo-linearia circ.
2½ cm. longa 3 mm. lata aristato-apiculata vel obtusa supra glabra
subtus lanata.

HAB. In monte Morrison, ad 5000 ped. alt., leg. R. TORII, 1899; Giyokusan, ad 10634 ped. alt., (No. 711), et Ganzan, ad 9141 ped. alt., (No. 705), in montibus Morrison, leg. S. NAGASAWA, Nov. 1905; Tōzan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 8000 ped. alt., (No. 1797), et ad 10000 ped. alt., (No. 2277), leg. T. KAWAKAMI, et U. MORI, Oct. 1906; in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1848); Nantō : Hinokiyama, leg. G. NAKAHARA, Feb. 1907; Mushasan, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1128).

There is a little doubt about identifying the all above plants with *A. margaritacea* var. *angustifolia*. The plant represented by var. *angustifolia* is exceptionally variable. I have examined a considerable number of various forms of this variety collected in Japan and Formosa, and found that they show no specific distinction though they seem apparently different.

DISTRIB. Type : Japan and China northward to Amurland and Kamtchatka; also in North America and naturalized in Europe.

Anaphalis Nagasawai HAYATA, (Pl. XVIII.), in Tōkyō Bot. Mag. XX. p. 15. Herbæ perennes erectæ lanatæ stoloniferæ 4 cm.—5 cm. altæ tenuiusculæ, radicibus lignescentibus. Folia alterna integerrima decurrentia obovato-spathulata apice rotundata vel obtusa

1 cm.—1½ cm. longa 3 mm.—5 mm. lata lanata. Capitula majuscula ad apicem caulis subsimplicis solitaria 1.5 cm.—2 cm. in diametro æquantia heterogama; floribus ♀ fertilibus in ambitu ∞-seriatis, ♂ in disco sterilibus numerosis. Involucrum late campanulatum, bracteis radiantibus niveis ∞-seriatis imbricatis scariosis, intimis oblongo-lanceolatis 7 mm. longis 1 mm. latis, interioribus oblongis petaloideis patentibus 10 mm. longis 3 mm. latis, exterioribus brevioribus, extimis ovatis dorso lanatis 8 mm. longis 3 mm. latis. Receptaculum convexum epaleaceum. Corollæ fl. ♀ filiformes, 4-dentatæ apice glanduloso-pilosæ; fl. ♂ tubulosæ, limbo ampliato subcampanulato apice 5-fido minuto papilloso-marginato. Antheræ apice appendiculatæ, appendicibus obtusis, basi sagittatæ caudatæ. Styli fl. ♀ filiformes minute 2-lobi; fl. ♂ apice breve 2-lobi, ramis truncatis. Achænia oblonga minutissime hirtello-papillosa subteretia 1 mm. longa ½ mm. in sectione æquantia; pappi setæ tenues 1-seriatæ scabræ liberæ caducæ 6 mm. longæ.

HAB. in monte Morrison, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, (Nos. 2126 et 2239).

In general appearance, this species resembles very much *G. nitakayamense* HAYATA. The difference by which the genera, *Gnaphalium* and *Anaphalis*, are separated from each other is indeed a very slight one. The separation lies on the point whether the disc flowers are sterile or not. So far as my knowledge extends, this does not seem to be a fixed character. I am, therefore, much inclined to think that the separation of *Anaphalis* from *Gnaphalium* is rather artificial.

Gnaphalium. LINN.

Gnaphalium hypoleucum DC. Prodr. VI. p. 222; Hook. f. Fl. Brit.

Ind. III. p. 288; WIGHT, Ic. Pl. Ind. or. t. 1114; FORBES et HEMSL. Ind. Fl. Sin. I. p. 426.

Gnaphalium amoyense HANCE, in Journ. Bot. (1868) p. 174, et (1878) p. 108; BENTH. Fl. Hongk. p. 187.

HAB. Ganzan, ad 9141 ped. alt., in montibus Morrison, Oct. 1905, (No. 630), in monte Morrison, ad 11000 ped. alt., (No. 2077), et ad 12000 ped. alt., (No. 2234); leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. South China and Japan; and also in the mountains of India and Abyssinia.

Gnaphalium lineare HAYATA, sp. nov. (Pl. XIX.). Herbæ graciles sericeo-lanatæ. Caules erecti tenuissimi simplices 20 cm. alti foliis caulinis remote instructi. Folia radicalia sessilia linearia 7 cm. longa $1\frac{1}{2}$ mm. lata apice obtusa basi decurrentia, caulina radicali conformia alterna breviora basi semi-amplexicaulia exsiccato revoluta supra subglabra subtus sericeo-lanata. Capitula ad apicem caulis in cymas densas foliis floralibus quasi involucretas circ. 10 conferta. Cyma capitulorum depresso-globosa $2\frac{1}{2}$ cm. in diametro æquans, foliis floralibus 5-10, 2-seriatis linearibus circ. 1 cm. longis $1\frac{1}{2}$ mm. latis apice obtusis basin versus dilatis intus subglabris extus plus minus lanatis. Involucrum ovoideum 4 mm. longum 2 mm. latum, bracteis 2-3-seriatis scariosis apice fuscis, interioribus spathulatis integris vel paucè laceratis 4 mm. longis $\frac{2}{3}$ mm. latis, exterioribus brevioribus latioribus obovatis dorso lanatis. Receptaculum leviter concavum minute muricatum. Fl. ♀ in ambitu ∞-seriati; corollæ filiformes 3 mm. longæ apice breviter 2-3-fidæ; styli rami elongati recurvi. Fl. ♂ in disco paucissimi 1-4, tubulosi tenues, limbo parum ampliato 5-dentato, dentibus triangularibus marginatis; antheræ basi sagittatæ, auriculis sæpe paucifidis tenuiter caudato-appendiculatis; styli

rami subteretes apice subcapitati. Achænia oblonga $\frac{1}{2}$ mm. longa teretiuscula ecostata minute paucisque glanduloso-tuberculata, pappi setis 1-seriatis tenuibus caducis scariosis 3 mm. longis.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1995).

Near *G. japonicum* THUNB.; but easily distinguished from it by the linear leaves; from *G. collinum* LABILL., by the compound heads; from *G. Thomsoni* Hook. f., by the not papillose achenes and smaller clusters of the heads; and from *G. uliginosum* LINN., by the extremely narrow leaves.

Gnaphalium luteo-album LINN. Sp. Pl. ed-2, p. 1196; LESS. Synop. Comp. p. 331; DC. Prodr. VI. p. 230; MIQ. Fl. Ind. Bat. II. p. 91; BENTH. Fl. Austr. III. p. 653; SONDER, Fl. Capens. III. p. 262; CLARKE, Comp. Ind. p. 114; HEMSLEIGH, Biol. Centr.-Americ. II. p. 139; Hook. f. Fl. Brit. Ind. III. p. 288; HENRY, List Pl. Formos. p. 53; HAYATA, Comp. Formos. p. 32; MATSUM. et HAYATA, Enum. Pl. Formos. p. 210.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1980 et 2044); Nantō: Mushasan, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1133).

DISTRIB. Himalaya, mountains of Java and Australia.

Gnaphalium niitakayamense HAYATA, in Tōkyō Bot. Mag. XX. p. 14. Herbæ perennes erectæ dense lanatæ 6–7 cm. altæ validiusculæ. Folia alterna integerrima sessilia oblanceolata vel spathulato-obovata 1–1½ cm. longa 5 mm. lata. Capitula parva obovoidea 1 cm.–1½ cm. in diametro æquantia ad apicem caulis 2–3 conferta vel solitaria, floribus in ambitu ♀ ∞-serratis, ♂ paucioribus, omnibus fertilibus. Involucrum obovoideo-campanulatum, bracteis 4–5 seriatis scariosis albis, extimis dorso lanatis, intimis linearibus, interioribus

oblongis 8 mm. longis. Receptaculum planum foveolatum. Corollæ ♀ filiformes, minute 4-dentatæ; ♂ regulares tubulosæ tenues, limbo parum ampliato. 5-fido. Antheræ apice appendiculatæ basi sagittatæ, auriculis caudato-appendiculatis. Styli fl. ♂ rami subteretes apice subcapitati. Achænia oblongo-obovoidea teretiuscula ecostata glabra minute papillosa $\frac{7}{8}$ mm. in sectione æquantia; pappi setæ 1-seriatæ tenues caducissimæ 4 mm. longæ.

HAB. in monte Morrison, ad 13000 ped. alt., (Nos. 2241, 2244 et 2128), et in montibus centralibus, ad 11000 ped. alt., (No. 1853), leg. T. KAWAKAMI et U. MORI, Nov. 1906.

The present plant is remarkable in having general appearance of *Anaphalis*. As the disc flowers are all fertile; however, this should be referred to *Gnaphalium*.

Carpesium LINN.

Carpesium acutum HAYATA, sp. nov. Herbæ rigidæ basi suffrutescens erectæ ramosæ puberulæ vel tomentosæ 2–3-ped. altæ. Folia alterna ovata vel lanceolata cum petiolis 7 cm. longa apice acuminata basi acuta vel rotundata abrupte attenuata ad petiolum 2 cm. longum abeuntia, vel superiora lanceolata sessilia, margine obscure dentata, dentibus mucronatis, supra pubescentia subtus tomentoso-hirsuta pallidiuscula. Capitula mediocria 8 mm. longa 10 mm. in diametro æquantia cernua ad axillas foliorum longe pedunculata, floribus in ambitu ♀ ∞-seriatis discique ♂ fertilibus. Involucrum campanulato-semiorbiculatum, bracteis sub-4-seriatis, interioribus angustis 4 mm. longis obtusis vel acutis scariosis, extimis 5–6 foliaceis lanceolatis dentatis $2\frac{1}{2}$ cm. longis. Receptaculum planum muricatum. Corollæ fl. ♀ breve tubulosæ $1\frac{1}{2}$ mm. longæ 5-dentatæ; fl. ♂ longiores 3 mm. longæ achænium æquantes, limbo paulo latiore 5-dentato. Antheræ apice appendiculatæ

rotundato-truncatæ basi sagittatæ, auriculis caudis setaceo-sub-ramosis appendiculatis. Styli fl. ♂ rami latiores complanati apice rotundati. Achænia elongata teretia circ. 4 mm. longa 10-striata apice in rostrum glanduloso-punctatum longum vel breve contracta, annulo obscuro coronata; pappus 0.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 694); Arizan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906; in eodem monte, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1991); Toroku: Washa, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1937).

Remarkable for the acute foliose bracts of involucre.

Siegesbeckia LINN.

Siegesbeckia orientalis LINN. Sp. Pl. ed.-2, p. 1269; ROXB. Fl. Ind. ed.-CAREY, III. p. 439; LOUR. Fl. Cochinch. ed.-WILLD. p. 616; DC. Prodr. V. p. 495; SIEB. et ZUCC. Fl. Jap. Fam. Nat. p. 185; MIQ. Fl. Ind. Bat. II. p. 67; BENTH. Fl. Hongk. p. 182, et Fl. Austr. III. p. 535; SONDER, Fl. Capens. III. p. 132; SEEMANN, Fl. Vit. p. 142; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 231; CLARKE, Comp. Ind. p. 133; OLIVER, Fl. Tropic. Afric. III. p. 372; HOOK. f. Fl. Brit. Ind. III. p. 304; FRANCHET, Pl. David. p. 164; FORBES et HEMSL. Ind. Fl. Sin. I. p. 433; HENRY, List Pl. Formos. p. 54; DIELS, Fl. Centr. Chin. p. 615; HAYATA, Comp. Formos. p. 17; MATSUM. et HAYATA, Enum. Pl. Formos. p. 205.

HAB. Toroku: Kureikiaku, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1818).

DISTRIB. Ccsmopolitan in the warm and temperate regions.

Spilanthes LINN.

Spilanthes Acmella LINN.; THUNB. Fl. Jap. p. 321; DC. Prodr. V. p. 623; MIQ. Fl. Ind. Bat. II. p. 79; CLARKE, Comp. Ind. p. 138; OLIVER, Fl. Tropic. Afric. III. p. 384; HOOK. f. Fl. Brit. Ind. III. p. 307; HENRY,

List Pl. Formos. p. 54; HAYATA, Comp. Formos. p. 20; MATSUM. et HAYATA, Enum. Pl. Formos. p. 205.

HAB. Kōdenshō: ad 2623 ped. alt., leg. S. NAGASAWA, Oct. 1905; Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1761).

DISTRIB. India throughout, and extends to all warm countries.

Chrysanthemum LINN.

Chrysanthemum indicum LINN. Sp. Pl. ed.-2, p. 1253; THUNB. Fl. Jap. p. 320; FORBES et HEMSL. Ind. Fl. Sin. I. p. 437; DIELS, Fl. Centr. Chin. p. 617.

Pyrethrum indicum CASS.; MAXIM. in Mél. Biol. VIII. p. 516.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 734); in monte Morrison, ad 7500 ped. alt., Oct. 1906, (No. 1814), et in montibus centralibus, Nov. 1906, (No. 1885), leg. T. KAWAKAMI et U. MORI; Toroku: Tōhozan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1828).

DISTRIB. China and Japan.

The Formosan plant appears at first sight to be different from the Japanese species. But, after comparing various forms of the plants from both regions, I have found that they do not show any specific distinction, and thought it better to regard them as the same species.

Artemisia LINN.

Artemisia japonica THUNB. Fl. Jap. p. 310; DC. Prodr. VI. p. 100; BENTH. Fl. Hongk. p. 186; FRANCHET, Pl. David. p. 168; MAXIM. in Mél. Biol. VIII. p. 526, (varietates *japonica* et *desertorum*); FORBES et HEMSL. Ind. Fl. Sin. I. p. 443.

Artemisia parviflora BUCH. ex ROXB. Fl. Ind. ed.-CAREY, III. p. 420; Hook. f. Fl. Brit. Ind. III. p. 322.

Artemisia cuneifolia DC. Prodr. VI. p. 126.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 786); Kagi: Kōdenshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1740); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. Japan and China; westward to North India, from Kashmir to Khasia, Pulney mountains in the Madras Peninsula (after HEMSL.); also in North America.

Artemisia niitakayamensis HAYATA, (Pl. XX.), in Tōkyō Bot. Mag. XX. p. 16. Herbæ perennes basi suffruticosæ hirsutæ odoratæ multicaules, caulibus simplicibus 10 cm.—16 cm. altis. Folia alterna ambitu obovata 2 cm. longa 1 cm. lata basi longe angusta decurrentia semi-amplexicaulia bipinnatisecta, segmentis utrinque 2–3 obovatis 2–3 lobatis, lobis ovato-acutis. Capitula majuscula 1 cm. in diametro æquantia erecta rarius cernua racemosa longe pedicellata, pedicellis 2 cm. longis. Involucrum late campanulatum, bracteis 3-seriatis margine scariosis, intimis 5 mm. longis spathulatis, interioribus oblongis margine denticulatis, exterioribus gradatim minoribus ovato-acutis. Receptaculum semi-orbiculatum sparce pilosum. Fl. ♀ in ambitu 1-seriati fertiles; corollæ tenues tubulosæ apice breviter 4-fidæ. Fl. ♂ fertiles; corollæ teretes limbis parum ampliatis basi limbi constrictis apice 5-fidis. Antheræ apice appendiculatæ basi obtusæ. Styli rami apice truncati dilati penicillati. Achænia obovoidea compressa 2 mm. longa 1 mm. in sectione æquantia leviter incurva apice truncata facie dorsali sæpe ecostata ventrali prominente 4-costata.

HAB. in monte Morrison, ad 13000 ped. alt., (Nos. 2282 et 2130.), et in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2195).

As the original description is drawn from an imperfect

specimen, I have repeated the description basing it upon a most perfect specimen.

Artemisia oligocarpa HAYATA, sp. nov. (Pl. XXI.). Herbæ perennes basi suffruticosæ. Caules erectæ glabrescentes 15 cm.—30 cm. alti. Folia radicalia caulino conformia ambitu obovata basi longe attenuata 3 cm. longa 1 cm.—1½ cm. lata bipinnatisecta, segmentis linearibus 3–5-lobis vel -sectis, lobis linearibus apice obtusis vel acutis, primum pubescentia demum glabra. Capitula parviora 4 mm. in diametro æquantia erecta racemosa vel paniculata pedicellata, pedicellis ½ cm.—1 cm. longis. Involucrum late campanulatum, bracteis 2-seriatis margine scariosis obovatis apice rotundatis basi constrictis 3 mm. longis 2 mm. latis. Receptaculum semiorbiculatum 1½ mm. in diametro æquans nudum. Flores ♀ in ambitu 1-seriati 15–20, fertiles; corollæ breve tubulosæ 1 mm. longæ apice 2–3-fidæ; styli rami elongati recurvati. Fl. ♂ steriles; numerosi; corollæ tubuloso-campanulatæ 2½ mm. longæ, limbis longe ampliatis tubum in longitudine æquantibus apice 5-fidis, lobis triangularibus acutis marginatis; antheræ apice appendiculatæ apiculatæ cuspidato-acuminatæ, basi leviter brevissime caudatæ; stylus indivisus apice peltato-dilatatus minute et longiuscule papillosus. Achænia oblique obovoidea obscure reticulato-striata 1½ mm. longa.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2280 et 2140).

The present plant is somewhat near *A. salsoloides* WILLD.; but differs from it in having narrowly pinnatisected leaves. As stated by BENTHAM, in the *Genera Plantarum* Vol. II. p. 551, the anthers of the genus *Artemisia* are wanting of any tail. Nevertheless, I have observed in this species that there is in almost all

cases a very small tail at the base of anthers. Moreover, the group to which this plant belongs is far different from other groups in having flowers, which are perfect and sterile, and even more different in having simple peltate stigmata. Upon considering the above cases, I am much inclined to raise this group to a genus separated from *Artemisia*.

Artemisia scoparia WALDST. et KIT.; DC. Prodr. VI. p. 99; MAXIM. in Mém. Biol. VIII. p. 523; FRANCHET, Pl. David. p. 167; HOOK. f. Fl. Brit. Ind. III. p. 323; FORBES et HEMSL. Ind. Fl. Sin. I. p. 445.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905. (No. 631); Tōzan, in montibus Morrison, leg. G. NAKAHARA (Nov. 1906); in monte Morrison, ad 11000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2043).

DISTRIB. Japan and China, northward to Kamtchatka and North America; westward to North India and extends to central Europe.

Petasites GÆRTN.

Petasites tricholobus FRANCHET, Pl. David. p. 173; DIELS, Fl. Centr. Chin. p. 618; FORBES et HEMSL. Ind. Fl. Sin. I. p. 447.

HAB. in monte Morrison, ad 8000 ped. alt., (Nos. 1880 et 2078), et in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906.

DISTRIB. Central China.

Gynura CASS.

Gynura flava HAYATA, sp. nov. Herbæ sparce hirtellæ vel subglabræ. Caules validiusculi sulcati pauci-ramosi 2–3 ped. alti. Folia alterna in ambitu oblonga vel oblongo-ovata 18 cm. longa 6 cm. lata grosse irregulariter dentata vel infra medium profunde dissecta, lobis argute dentatis, apice acuta basi angusta in petiolum

2 cm. longum sensim attenuata, auriculis basin petioli distinctis oblongis dentatis, utraque paginæ sparce hirtella ad costas et venulas hirsuta subtus pallidiora. Capitula mediocria $1\frac{1}{2}$ cm. longa ad apicem ramorum corymbosa, pedicellis 1 cm.—2 cm. longis hirsutis, bracteis ad basin pedicelli linearibus 1 cm. longis, homogama, floribus omnibus ♂ fertilibus. Involucrum campanulatum, bracteis 1-seriatis angustis æqualibus 11 mm. longis 2 mm. latis margine scariosis plus minus cohærentibus, additis nonnullis exterioribus parvis linearibus 5 mm. longis ciliolatis. Receptaculum planum foveolatum. Corollæ flavæ tenuiter tubulosæ 13 mm. longæ, limbis parum ampliatis tubo in longitudine 2-plo brevioribus apice breviter 5-fidis, lobis oblongo-triangularibus. Antheræ subexsertæ, elongatæ $2\frac{1}{2}$ mm. longæ basi integræ. Styli exserti cum ramis 17 mm. longi, ramis elongatis erecto-patentibus 5 mm. longis in appendices longas tereti-subulatas hirtellas desinentibus. Achænia glabra angusta 10-striata; pappi setis copiosis tenuibus 10 mm. longis albis.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 562); in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2012); Toroku: Gunkei, leg. T. KAWAKAMI et U. MORI, Nov. 1906; (No. 1951).

Senecio LINN.

Senecio monanthus DIELS, Fl. Centr. Chin. p. 621.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2133); eodem loco, et G. NAKAHARA, Nov. 1905.

DISTRIB. Central China.

Senecio scandens HAM.; Hook. f. Fl. Brit. Ind. III. p. 352; FORBES et HEMSL. Ind. Fl. Sin. I. p. 457; DIELS, Fl. Centr. Chin. p. 620.

Senecio campylodes DC. Prodr. VI. p. 370;

Senecio stipulatus WALL.; DC. Prodr. VI. p. 370.

Senecio Wightianus DC.; WIGHT, Ic. Pl. Ind. or. t. 1136.

Senecio chinensis DC. Prodr. VI. p. 363; BENTH. Fl. Hongk. p. 190;
MAXIM. in Mél. Biol. VIII. p. 16.

Senecio intermedius WIGHT, Ic. Pl. Ind. or. t. 1135.

Cineraria repanda LOUR. Fl. Cochinch. ed-WILLD. p. 613.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906;
in monte Morrison, ad 8000 ped. alt., (No. 1877), et ad 7000 ped.
alt., (No. 2081), leg. T. KAWAKAMI et U. MORI, Nov. 1906; Toroku:
Hōōsan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1927);
Tōhōsha, leg. S. NAGASAWA, Nov. 1905, (No. 608).

DISTRIB. South China and southern part of Japan; north and
south India, and Ceylon.

Echinops LINN.

Echinops dahuricus FISCH.; DC. Prodr. VI. p. 523; FRANCHET, Pl.
David. p. 176; HENRY, List Pl. Formos. p. 55; FORBES et HEMSL. Ind. Fl.
Sin. I. p. 459; HAYATA, Comp. Formos. p. 33; MATSUM. et HAYATA, Enum.
Pl. Formos. p. 221.

Echinops Gmelini LEDEB. Fl. Ross. II. p. 653; MAXIM. Prim. Fl. Amur.
p. 167.

Echinops sphærocephalus MIQ. in Ann. Mus. Bot. Lugd.-Bat. II. p. 182;
FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 253.

HAB. Taitō: Bokusekikaku, leg. T. KAWAKAMI et U. MORI, Dec.
1906, (No. 1832); Arōkonsha, leg. T. KAWAKAMI et U. MORI, Oct.
1906, (No. 1741).

DISTRIB. Siberia to Japan and China.

Cnicus LINN.

Cnicus Wallichii DC. Prodr. VI. p. 643; HOOK. f. Fl. Brit. Ind. III.
p. 363.

Cirsium Wallichii DC.; DIELS, Fl. Centr. Chin. p. 627.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., Oct. 1905, (No. 778), in monte Morrison, ad 12000 ped. alt., (No. 2245), et in eodem monte, ad 10000 ped. alt., (No. 2279), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. South China to the Philippine islands, and Himalaya.

Saussurea DC.

Saussurea japonica DC. in Prodr. VI. p. 536; BENTH. Fl. Hongk. p. 167; MAXIM. in Mém. Biol. IX. p. 337; HANCE, in Journ. Linn. Soc. XIII. p. 108; FRANCHET, Pl. David. p. 181; FORBES et HEMSLEY, Ind. Fl. Sin. I. p. 464; DIELS, Fl. Centr. Chin. p. 627.

var. ***longicephala*** HAYATA, n. v. Capitula longiuscula ovoidea, squamis involucri apice appendicula petaloidea rotundata instructis.

HAB. loco non indicato.

DISTRIB. Type: China, Japan, and Manchuria to North America.

The type of *Saussurea japonica* DC. has a globose head, while the present variety has a oblong head. Besides, the bracts of the involucre of the variety which are crowned with a petaloidal appendage, are slightly different from those of the type.*

***Saussurea* sp.**

HAB. Taitō: Bushisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2158).

Ainsliea DC.

Ainsliea macroclinidioides HAYATA, sp. nov. (Pl. XXII.). Herbæ

* After completing this manuscript, I have had the opportunity of examining a Chinese specimen named *S. japonica* DC. collected by Dr. HENRY. The specimen is exactly the same as the Formosan one, and is certainly not the type of *S. japonica* DC.

perennes basi suffruticosæ pilosiusculæ elatiores 60 cm. altæ. Folia alterna ad medium caulis conferta pilosiuscula longe petiolata, petiolis lamina 3-plo brevioribus 4 cm. longis, laminis ovatis vel ovato-lanceolatis circ. 9 cm. longis $3\frac{1}{2}$ cm. latis acuminatis basi rotundatis truncatis vel cordatis margine remote aristato-serrulatis albo-lamelligeris 3-nerviis subglabris ad costas breve pilosiusculis, subtus pallidioribus. Capitula angusta mediocria 2 cm. longa 2-3-flora secus caulem subspicata. Involucrum angustum circ. 1 cm. longum, bracteis 3-4-seriatis valde inæqualibus unicostatis rigidis scariosis intimis oblanceolatis acutis 1 cm. longis 2 mm. latis, exterioribus gradatim brevioribus, extimis brevissimis late ovatis $1\frac{1}{2}$ mm. longis. Receptaculum parvum nudum. Flores normales ignoti. Flores cleistogami: corollæ tubulosæ pappi setis 2-plo breviores, apice 5-fidæ; antheræ basi longe sagittatæ, auriculis in caudas longas 2-fidas productis; styli rami obtusi basi incrassati. Achænia oblongo-obovoidæ subcompressa 7 mm. longa apice contracta 10-costata pilosa, stipitibus parvis persistentibus; pappi setæ 1-seriatæ plumosæ 8 mm. longæ rufo-albæ.

HAB. Suizan, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 665); Kagi: Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1971).

Remarkable for the fascicled leaves at the middle of the stem just like those of *Macroclinidium robustum* MAXIM.

***Ainsliæa morrisonicola* HAYATA, n. n. (Pl. XXIII).**

Ainsliæa elegans HAYATA, (non HEMSL.) in Tōkyō Bot. Mag. XX. p. 14. Herbæ laxæ pilosæ, caulibus erectis 5-6 cm. altis simplicibus aphyllis. Folia omnia radicalia oblanceolata 15 mm.-20 mm. longa 8 mm. lata apice apiculato-acuta basi subito angusta ad petiolum attenuata vel basi rotundata margine remote ciliato-

aristata, petiolis 10 mm. longis basi dilatis. Capitula 3-4-flora secus caulem spicata sessilia demum pendula. Involucrum angustum 3-4 mm. longum, bracteis 3-seriatis rigidis subpaleaceis aristato-acutis, interioribus elongatis, exterioribus gradatim brevioribus, intimis longissimis $\frac{1}{2}$ cm. longis. Receptaculum nudum. Flores normales ignoti. Flores cleistogami: corollæ tubulosæ pappi setis breviores circ. 4 mm. longæ, apice leviter 5-fidæ clausæ; antheræ basi sagittatæ, auriculis in caudas longas productis; styli basi dilati, ramis angustis, complanatis apice rotundatis. Achænia obovoideo-oblonga subteretia 5 mm. longa 1 mm. in sectione æquantia 10-costata apice truncata glabra; pappi setæ 1-seriatæ plumosæ $5\frac{1}{2}$ mm. longæ rufo-albæ.

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 628); Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

The plant is originally named *Ainsliæa elegans*, which name is, however, found afterward in the Chinese plants. As it is not desirable to maintain one and the same name for two different plants, I have taken this occasion to change the name of the Formosan plant to a new name, *A. morrisonicola* HAYATA.

Ainsliæa reflexa MERRILL. in Philipp. Journ. Sci. I. Suppl. Bot. p. 242.

HAB. Nantō: Mushazan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1138); Hinokiyama, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. The Philippine islands.

Picris LINN.

Picris hieracioides LINN. Sp. Pl. ed.-2. p. 1115; DC. Prodr. VII. p.

128 ; HOOK. f. Fl. Brit. Ind. III. p. 393 ; FRANCHET, Pl. David. p. 185 ; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 474.

Pieris japonica THUNB. Fl. Jap. p. 299 ; DC. Prodr. VII. p. 130.

HAB. in monte Morrison, ad 10000 ped. alt., Nov. 1906, (No. 2294), et in montibus centralibus, ad 10000 ped. alt., Dec. 1906, (No. 2204), leg. T. KAWAKAMI et U. MORI.

DISTRIB. Japan and central China ; eastward to America and western Europe ; northward to Kamtchatka ; also in Australia and New Zealand.

Lactuca LINN.

Lactuca versicolor SCH.-BIP. ; MAXIM. in Mém. Biol. IX. p. 362 ; BAKER et MOORE, in Journ. Linn. Soc. XVII. p. 383 ; FRANCHET, Pl. David. p. 188 ; FORBES et HEMSLEY. Ind. Fl. Sin. I. p. 485 ; DIELS, Fl. Centr. Chin. p. 631 ; HAYATA, Comp. Formos. p. 39 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 212.

Ixeris versicolor DC. Prodr. VII. p. 151 ; BENTH. Fl. Hongk. p. 193 ; MIQ. in Ann. Mus. Bot. Lugd.-Bat. II. p. 191 ; LEDEB. Fl. Ross. II. p. 817.

Prenanthes chinensis THUNB. Fl. Jap. p. 301.

Youngia chinensis DC. Prodr. VII. p. 194.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 775) ; Taitō : Daironkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2220).

DISTRIB. Japan and China northward to Dahuria ; also in North America.

Campanulaceæ

Pratia GAUD.

Pratia begonifolia LINDL. ; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p.

422; FORBES et HEMSL. Ind. Fl. Sin. II. p. 2; HENRY, List Pl. Formos. p. 56; DIELS, Fl. Centr. Chin. p. 607; MATSUM. et HAYATA, Enum. Pl. Formos. p. 213.

Piddingtonia Nummularia DC. Prodr. VII. p. 341; BENTH. Fl. Hongk. p. 196.

Lobelia Horsfieldiana MIQ. Fl. Ind. Bat. II. p. 577.

HAB. Kōdenshō, ad 2623 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 742).

DISTRIB. South China, Malay, and eastern India.

Lobelia LINN.

Lobelia affinis WALL. in DC. Prodr. VII. p. 360; BENTH. Fl. Hongk. p. 197, (in nota sub *L. trigona*); CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 424; HANCE in Journ. Linn. Soc. XIII. p. 109; FORBES et HEMSL. Ind. Fl. Sin. II. p. 2.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1983).

DISTRIB. Widely diffused in India, Ceylon, and Malay; South China.

Lobelia pyramidalis WALL.; DC. Prodr. VII. p. 381; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 426; Bot. Mag. t. 2387; FORBES et HEMSL. Ind. Fl. Sin. II. p. 3.

Lobelia Davidi FRANCHET, Pl. David. p. 191.

HAB. Taitō: Bunshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1911).

DISTRIB. Mountains of North and East India, and Burma; South China.

Wahlenbergia SCHRAD.

Wahlenbergia gracilis A. DC. "Monogr. Camp. p. 142." et Prodr.

VII. p. 433; BENTH. Fl. Austral. IV. p. 137; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 429; FRANCHET, Pl. David. p. 192; HENRY, List Pl. Formos. p. 56; FORBES et HEMSL. Ind. Fl. Sin. II. p. 4; MATSUM. in Tōkyō Bot Mag. XIV. p. 58; DIELS, Fl. Centr. Chin. p. 606; MATSUM. et HAYATA, Enum. Pl. Formos. p. 215.

Wahlenbergia agrestis A. DC. Prodr. VII. p. 434; BENTH. Fl. Hongk. p. 197.

Wahlenbergia marginata A. DC. Prodr. VII. p. 433; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 277.

Wahlenbergia deliscens A. DC., *W. Sieberi* A. DC., *W. lavandulæfolia* A. DC. et *W. quadrifida* A. DC., ex CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 429.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 729); in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2063).

DISTRIB. South China and southern part of Japan; India throughout; Australia, and also found in New Zealand and South Africa.

Codonopsis WALL.

Codonopsis sp. nov. ?

HAB. in monte Morrison, leg. T. KAWAKAMI et G. NAKAHARA, Nov. 1905.

Remarkable for small leaves and seeds.

Campanumcea BL.

Campanumcea axillaris OLIV. in HOOK. Ic. Plant. XVIII. t. 1775; FORBES et HEMSL. Ind. Fl. Sin. II. p. 7.

Codonopsis truncata WALL. DC. Prodr. VII. p. 423.

Cyclocodon truncatus HOOK. f. et THOMS. in Journ. Linn. Soc. II. p. 18.

HAB. Kagi: Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906,

(No. 1780); Taitō: Bunshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2162).

DISTRIB. The Loo-choo islands, westward to central and southern China, and Burma.

Campanumcea javanica BLUME; DC. Prodr. VII. p. 423; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 435; FORBES et HEMSL. Ind. Fl. Sin. II. p. 8.

Codonopsis cordata HOOK. f. Bot. Mag. t. 5372.

Campanumcea japonica MAXIM. in Mém. Biol. VI. p. 268.

HAB. Taitō: Rokurō, leg. G. NAKAHARA, Jan. 1906, (No. 752).

DISTRIB. Frequently found in Japan and central China; also in mountains of East Burma and Java.

Peracarpa HOOK. f. et THOMS.

Peracarpa carnososa HOOK. f. et THOMS. in Journ. Linn. Soc. II. p. 26; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 437.

Peracarpa circæoides H. FEER, in ENGL. Bot. Jahrb. XII. p. 621.

Campanula carnososa WALL. "in ROXB. Fl. Ind. II. p. 102"; DC. Prodr. VII. p. 474.

Campanula circæoides F. SCHMIDT. Reis. in Amur. pp. 154 et 222, t. III. fig. 14-19; MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. pp. 195 et 204; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 278; FORBES et HEMSL. Ind. Fl. Sin. II. p. 9.

HAB. in monte Morrison, leg. T. KAWAKAMI, 1905; Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

DISTRIB. Japan, Manchuria, Saghalien; westward to central China as far as Himalaya.

Upon considering the various forms of this species, I am much inclined to think that the Indian *Peracarpa* is quite identical with the Japanese one, and in this Mr. T. MAKINO concurs.

Adenophora FISCH.

* ***Adenophora verticillata*** FISCH. ; DC. Prodr. VII. p. 492 ; HERDER, Pl. Radd. IV.-1, p. 28 ; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 422 ; HANCE, in Journ. Bot. (1885), p. 325 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 14.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., Oct. 1905, (No. 650).

DISTRIB. Type : Japan and China ; Manchuria to Dahuria.

var. ***linearis*** HAYATA, v. n. Folia opposita vel 4-natim verticillata linearia 6 cm. longa 2 mm. lata subglabra integra.

HAB. Nantō : Mushasan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1131).

Adenophora polymorpha LEDEB. var. ***Lamarckii*** TRAUTV. ; HERDER, Pl. Radd. IV.-1, p. 27.

HAB. in monte Morrison, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2266).

Adenophora polymorpha LEDEB. var. ***coronopifolia*** TRAUTV. ; HERDER, Pl. Radd. IV.-1, p. 27.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 733) ; in montibus Morrison, ad 8000–10000 ped. alt., leg. T. KAWAKAMI et U. MORI, (Nos. 2290, 1942, 1943, et 2290.)

DISTRIB. Type : China, Japan, and North America.

* It seems to me that the plant is extremely variable, although I am not sure about the habit of this plant in Formosa, as I have never stayed so long in the island as to study the living state of the plant. As I have observed in Japan, the range of the variation of this plant is very wide. In ordinary condition, the leaves are disposed in whorls, but on the branches shooting out from a stump after the stem is cut they are arranged alternately. Mr. T. MAKINO also refers to this point in Tōkyō Bot. Mag. XX. p. 39, where he expresses his opinion that *A. verticillata* FISCH. γ. *alternifolia* FRANCH. et SAVAT. is nothing but a sport of the type.

Vacciniaceæ.

Vaccinium LINN.

Vaccinium emarginatum HAYATA, sp. nov. Frutices ramosi cortice cinereo vestiti, ramulis glabris in exsiccato rufescentibus. Folia oblonga vel oblongo-obovata circ. 5 cm. longa 2 cm. lata margine integerrima revoluta apice emarginata basi sensim attenuata crasse coriacea nitida pallida subtus pallidiora breve petiolata, petiolis 4 mm. longis. Flores in racemos breves axillares folio 2-plo breviores fasciculatim dispositi, bracteis 2 subulatis. Calycis tubus globosus, limbo 5-loba, lobis longe triangularibus. Corollæ ignotæ. Baccæ oblongo-globosæ 8 mm. longæ 10-loculares, loculis polyspermis. Semina minuta ovoidea $1\frac{1}{2}$ mm. longa 1 mm. lata compressa angulata testa coriacea reticulata.

HAB. Tōzan, in monte Morrison, leg. G. NAKAHARA, Oct. 1906; eodem loco, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1947); Nantō: Mushasan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (Nos. 71461, 1178 et 1143); Taitō: Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2166).

Vaccinium Merrillianum HAYATA, sp. nov. (Pl. XXIV.). Frutices ramosissimi, ramulis ad innovationem squamatis rufescentibus hispidio-tomentosis. Folia parvula approximata obovata circ. 8 mm. longa 5 mm. lata apice rotundata emarginata basi cuneata breve petiolata, petiolis 1 mm.–2 mm. longis, integerrima margine albo-lamelligera supra nitida in exsiccato profunde rugosa subtus lævia pallidiora crasse coriacea. Flores in racemos terminales dispositi. Calycis lobi 5, lobis late triangularibus. Baccæ globosæ, circ. 1 cm. in diametro æquantes 10-loculares, loculis oligospermis. Semina

minuta obovoidea compressa testa coriacea minute reticulata $1\frac{1}{2}$ mm. longa 1 mm. lata.

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 573); Tōzan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in eodem monte, ad 10000 ped. alt., (No. 2286), et ad 6000 ped. alt., (No. 1730), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

Ericaceæ.

Gaultheria LINN.

Gaultheria Cumingiana VIDAL, Phanerog. Cuming. p. 184, et Rev. Pl. Vascul. Filip. p. 170; HAYATA, in Tōkyō Bot. Mag. XX. p. 72.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 738); in eodem monte, ad 7500 ped. alt., (No. 1714), et ad 9000 ped. alt., (No. 1554), leg. T. KAWAKAMI et U. MORI, Nov. 1906.

DISTRIB. The Philippine islands.

Gaultheria Itōana HAYATA, (Pl. XXV.), in Tōkyō Bot. Mag. XX. p. 74. *Gaultheria repens* HAYATA, in Tōkyō Bot. Mag. XX. p. 18. Suffrutices decumbentes v. erecti 10-15 cm. alti sparce pubescentes. Folia coriacea brevissime petiolata oblonga 1 cm. longa 3 mm. lata utrinque acuta serrulata, supra glabra venis impressis subtus minute setulosa venis prominentibus. Flores parvi in racemos terminales dispositi cernui rosei? Recemi 2 cm. longi, pedicellis 6 mm.—7 mm. longis apicem versus glanduloso-ciliatis bracteatis bracteolatisque, bracteolis ovatis 2-3 mm. longis acutis marginibus scariosis alternis persistentibus. Calyx 5-partitus 2 mm. longus, lobis acutis. Corolla

lata globosa urceolata .6 mm. in diámetro æquans 4 mm. longa apicē 5-loba, lobis brevissimis 0.5 mm. longis erectis recurvis. Stamina 10 basi tubi corollæ adherentia inclusa, filamentis glabris supra basin dilatis quam anthera longioribus, antheris 2-ocularibus, loculis in tubos recurvos apice furcatos productis. Discus non conspicuus. Ovarum 5-loculare 5-lobum leviter pubescens, stylo columnari 4 mm. longo apice truncato. Calyx fructifer accrescens persistens carnosus depresso-globosus 6 mm.—7 mm. in diametro æquans. Capsulæ sparce pubescentes intra calycem inclusæ, loculicide 5-valvatæ polyspermæ. Semina minuta 0.5 mm. longa obtuse angulata, testis crustaceis minute reticulatis.

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 625); Tōzan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, ad 12000 ped. alt., Oct. 1906, (No. 2134), ad 9000 ped. alt., (No. 1727), et in montibus centralibus, Nov. 1906, (No. 1887), leg. T. KAWAKAMI et U. MORI.

As the original description is based on an imperfect specimen, it would not be superfluous if I have repeated the description, basing it upon the most perfect material.

Pieris DON.

Pieris formosa D. DON.; DC. Prodr. VII. p. 599; CLARKE, in HOOK. f. Fl. Brit Ind. III. p. 461; WIGHT, Ic. Pl. Ind. or. t. 1200; FORBES et HEMSL. Ind. Fl. Sin. II. p. 16; MATSUM. in Tōkyō Bot. Mag. XIV. p. 59; MATSUM. et HAYATA, Enum. Pl. Formos. p. 219.

HAB. Suizan, in monte Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 735); in eodem monte, ad 10000 ped. alt., (Nos. 1890, 2136 et 2068), leg. T. KAWAKAMI et U. MORI, Nov. 1906; Taitō: Daironsan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No.

2184); Nantō : Mushazan, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1145).

DISTRIB. South China; North and East India.

Pieris ovalifolia D. DON.; DC. Prodr. VII. p. 599; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 460; FORBES et HEMSL. Ind. Fl. Sin. II. p. 17; DIELS, Fl. Centr. Chin. p. 515; MATSUM. et HAYATA, Enum. Pl. Formos. p. 219.

Andromeda ovalifolia WALL.; MAXIM. in Mém. Biol. VIII. p. 620; WIGHT, Ic. Pl. Ind. or. t. 1199.

Andromeda elliptica SIEB. et ZUCC. Fl. Jap. Fam. Nat. n. 433.

HAB. Nantō : Shojōdaizan, ad 6000 ped alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1124).

DISTRIB. Japan and China; common in North India, extending from Kashmir to the Khasia mountains and Burma.

Rhododendron LINN.

Rhododendron brachycarpum G. DON.; DC. Prodr. VII. p. 723; A. GRAY, Bot. Jap. p. 400; MAXIM. Rhod. As. or. p. 22.

HAB. in monte Morrison? leg. T. KAWAKAMI? 1907.

DISTRIB. Manchuria and Japan.

Rhododendron ellipticum MAXIM. in Mém. Biol. XII. p. 742; FORBES et HEMSL. Ind. Fl. Sin. II. p. 22; TASHIRO, in Tōkyō Bot. Mag. III. p. 201; MAKINO, in Tōkyō Bot. Mag. XVIII. p. 47, et Icones Floræ Japonic. I.-3, p. 15, t. 9.

HAB. Akō, ad 8000 ped. alt., leg. T. KAWAKAMI? 1907; Biōritsu : Bahoizan, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1112).

DISTRIB. South China and the Loo-choo islands.

The specimens here mentioned have not so long a bract as the Loo-choo plant which is excellently figured by MR. T. MAKINO in the Icones above cited.

Rhododendron Nakaharai HAYATA, sp. nov.

Rhododendron serpyllifolium HAYATA, in Tōkyō Bot. Mag. XX. p. 72.

Frutices humiles ramosi, ramis divaricantibus cinereo-fuscis novellis badio-strigosis. Folia in apices ramulorum conferta obovata vel oblonga 1 cm. longa 5 mm. lata apiculata basi attenuata breve petiolata supra adpresse strigosa subtus ad costas et margines dense longeque strigosa. Flores ad apices ramulorum lateralium brevissimorum 2-3-nati, pedunculis 7 mm. longis strigosis basi squamis ovatis apiculatis circumvallatis. Sepala obovata spathulata 4 mm. longa extus et margine longe strigoso-ciliata. Corolla campanulata $2\frac{1}{2}$ cm. longa 5-fida, lobis obovatis apice rotundatis tubo brevioribus. Stamina 10, corollam superantia, filamentis $2\frac{1}{2}$ cm. longis infra medium pilosiusculis, antheris obovoideis apice truncatis 2-porosis. Ovarium longe et dense setosum. Capsula ignota.

HAB. Monte Shichiri, leg. G. NAKAHARA, Juli. 1905.

In my paper above cited, I make an error of identifying the present plant with *R. serpyllifolium* MIQ. In sterile specimens, the two come so closely that it is difficult to distinguish one from the other. On comparing flowers, I have found that both plants entirely differ from each other. The new species differs from the other in having much larger flowers, long hairy sepals, and in the number of stamens.

Rhododendron Oldhami MAXIM. Rhod. As. or. p. 34; FORBES et HEMSLEY, Ind. Fl. Sin. II. p. 28; HENRY, List Pl. Formos. p. 57; MATSUM. et HAYATA, Enum. Pl. Formos. p. 218.

HAB. Toroku : Kasōgi, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1821).

DISTRIB. An endemic plant.

Rhododendron Oldhami MAXIM. var. **glandulosum** HAYATA n. v.

Rami in totum pilis longis mollissimis atque pubibus teneribus brevioribus glandulosis. badio-villosi. Folia crasse membranacea breve petiolata oblonga vel ovato-oblonga utrinque acuta apice mucrone longiusculo glanduloso apiculata obscure 7–8-nervia. Flores ad apices ramorum 3–4-nati basi squamis circumvallati 4-bracteati, bracteis lanceolatis vel ovatis 5 mm. longis pilosis vel glabris, pedunculis corollam $\frac{1}{2}$ æquantibus glanduloso-villosis. Calyx 5-partitus, lobis lanceolatis longissime acuminatis 5 mm.–15 mm. longis. Corolla campanulato-infundibuliformis 4 cm. longa, tubo lobum in longitudine æquante. Stamina 10, corollam subæquantia, filamentis basin versus pubescentibus, antheris oblongis apice truncatis 2-porosis. Ovarium glanduloso-setosum.

H₄ Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA? Oct. 1905, (No. 668); in monte Morrison, ad 8000 ped. alt., (No. 2219), ad 9000 ped. alt., Oct. 1906, (No. 1807), et in montibus centralibus, ad 10000 ped. alt., Nov. 1906, (No. 1860), leg. T. KAWAKAMI et U. MORI.

The present plant is very like *R. Oldhami* MAXIM. The veins of leaves and the proportion of sepals to peduncles are the principal points in which the new variety is separated from the type.

***Rhododendron pseudo-chrysanthum* HAYATA, sp. nov. (Pl. XXVI.).**

Frutices humiles dichotome ramosi, cortice cinereo obtecti. Folia in tertium annum persistentia oblonga crasse apiculata basi attenuata 6 cm. longa 2 cm. lata glabra rigide coriacea, supra costis et venulis reticulatis profunde impressis, subtus ad costas prominentes floccoso-tomentosa cæterum glabra, margine integerrima leviter revoluta, petiolis 5–7 mm. longis. Gemma florifera terminalis strobiliformis, squamis multiseriatis imbricatis, exterioribus sensim brevioribus late ovatis apiculatis, interioribus sensim

angustis, intimis linearibus. Flores ad apices ramorum corymbosi, pedunculis glanduloso-tomentosis circ. 2 cm. longis florem in longitudine æquantibus. Calycis lobi acuti. Corolla rotato-campanulata, lobis rotundatis leviter emarginatis. Stamina 10, antheris oblongis apice truncatis, filamentis inæqualibus basi leviter dilatis pubescentibus. Ovarium ovoideum 5-loculare 5-sulcatum pubescens, stylo corollam vix superanti basi glanduloso-piloso declinato, stigmate capitato 5-lobo. Capsula oblonga 1 cm. longa vel longiora lignosa 5-locularis apice septicide dehiscens. Semina scobiformia $1\frac{1}{2}$ mm. longa, nucleis parvis oblongis, testis reticulatis utrinque in appendiculam laceram productis.

HAB. in monte Morrison, ad 13000 ped. alt., (Nos. 2144 et 2240), leg. T. KAWAKAMI et U. MORI, Nov. 1906; Nantō: Mushazan, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1144).

Near *R. chrysanthum* PALL; but differs from it in having conspicuously 5-lobed calyces and apiculate leaves.

Pyrola LINN.

Pyrola morrisonensis HAYATA, n. n.

Pyrola elliptica NUTT. var. *morrisonensis* HAYATA, in Tōkyō Bot. Mag. XX. p. 18.

Folia late ovata 2 cm. longa totidem lata apice obtusa vel acuta basi truncata vel rotundata coriacea glanduloso-serrulata longe petiolata, petiolis 3-5 cm. longis supra impresso-reticulata subtus prominente venosa glaberrima. Racemi 15 cm. longi. Flores ignoti. Capsula depresso-globosa cernua 5-6 mm. in diametro æquans. Semina minutissima $\frac{1}{4}$ mm. longa angusta reticulata.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2273); in montibus centralibus ad

10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1896).

The present plant is originally described by myself as a variety of *P. elliptica* NUTT. On examining carefully the leaves with impressed veins and most minute seeds, I have thought it better to regard the plant as specifically distinct from that species.

Pyrola rotundifolia LINN. Sp. Pl. ed-2, p. 567 ; DC. Prodr. VII. p. 772 ; MAXIM. Mém. Biol. VIII. p. 622 ; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 475 ; HANCE, in Journ. Bot. (1878) p. 109 ; FRANCHET, Pl. David. p. 197 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 33.

HAB. in monte Morrison, leg. T. KAWAKAMI, Oct. 1906.

DISTRIB. In the temperate and cold regions all around the North Hemisphere. Japan and China.

Diapensiaceæ.

Shortia TORR. et GR.

Shortia rotundifolia (MAXIM.) MAKINO, in Tōkyō Bot. Mag. XV. p. 149.

Schizocodon rotundifolius MAXIM. in Mém. Biol. XII. p. 743 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 34.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2283) ; Nantō : Mushasan, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1150) ; Shintiku : Karesan, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1422).

DISTRIB. The Loo-choo islands.

It is no matter of dispute that the plant should be referred to *Shortia*, as stated by Mr. T. MAKINO.

Primulaceæ.

Primula LINN.

Primula sp. Herbæ annuæ. Folia radicalia spathulata circ. 13 cm. longa $2\frac{1}{2}$ cm. lata apice rotundata ad medium deorsum sensim attenuata basi leviter dilata sursum argute denticulata deorsum subintegra. Scapi elongati 30 cm. longi. Flores in verticillos 2-3 superpositos dispositi, bracteis linearibus, pedicellis 3 cm. longis. Capsula obconica 7 mm. longa.

HAB. in monte Morrison.

This very interesting, if not new, rare *Primula* is the only species found in the island. The plant resembles very much *P. Cockburniana* HEMSL. (in Gard. Chronic. May 27, 1905, p. 331 Fig. 137) in having two or three whorls of flowers towards the top of the scape.

Lysimachia LINN.

Systemachia sikokiana MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 121, et Prol. Fl. Jap. p. 285; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 302; MATSUM. in Tōkyō Bot. Mag. XIV. p. 84; ENGL. Bot. Jahrb. VI. p. 64; FORBES et HEMSL. Ind. Fl. Sin. II. p. 57; MATSUM. et HAYATA, Enum. Pl. Formos. p. 223.

HAB. Taitō: Tōkeisha, leg. T. KAWAKAMI et U. MORI, Dec. 1905, (No. 1929).

DISTRIB. Japan.

Myrsineæ.

There is three distinct species belonging to *Ardisia* and two species to *Mæsa*; but they are not yet determined.

Styraceæ.

Symplocos LINN.

Symplocos confusa BRAND. in ENGL. Pfl-reich, IV.-242, Symploc. p. 88.

HAB. in monte Morrison, ad 7000 ped. alt., Oct. 1906, (No. 2006), et ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1785).

DISTRIB. The Philippine islands.

The above cited description of Mr. BRAND is not very clear and even wanting of any account about fruits. It is, therefore, most desirable to give some additional account about this plant.

Frutices? ramulis pubescentibus badio-fuscis. Folia ad apices ramorum approximata alterna breve petiolata ovata vel oblonga utrinque obtusa vel apice obtuse acuminata 7 cm. longa 3 cm. lata margine integra rarius obscure crenata supra costis impressis venulis obscuris, subtus prominentibus petiolis circ. 5 mm. longis intus basi hirtellis. Flores ad axillas foliorum ramulorum superiorum solitarii vel 2-3 racemoso-fasciculati breve pedicellati, bracteis minutis. Calyx per anthesin campanulatus basi pedicellum abeuns pubescens 3 mm. longus obscure 5-lobus, lobis latis truncatis. Corolla cylindraceo-campanulata 1 cm. longa 5-loba, lobis patentibus oblongis apice rotundatis crassiusculis. Stamina numerosa ∞ -seriata corollæ tubo adnata, exterioribus longioribus filamentis complanatis apice abrupte angustis fere usque ad medium in tubum coalitis, antheris brevibus facie dorsoque minute papillosis, loculis parallelis longitudinaliter dehiscentibus. Ovarium apice pilosum semi-inferius 2-loculare, loculis 2-ovulatis, ovulis pendulis ex angulo superiore,

stylo filiformi pilosissimo, stigmate capitato. Fructus (immaturi ?) carnosi cylindracei apice truncati.

Symplocos modesta BRAND, in ENGL. Pfl.-reich, IV. 242. Symploc. p. 66.

Symplocos myrtacea HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. II. p. 73; MATSUM. et HAYATA, Enum. Pl. Formos. p. 230.

HAB. Taitō : Iryokukakusha, Dec. 1906, (No. 2151), in monte Morrison, ad 6500 ped. et ad 7000 ped. alt., (Nos. 2020 et 1712), leg. T. KAWAKAMI et U. MORI, Oct. 1906; Arizan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

DISTRIB. An. endemic plant.

As the original description of Mr. BRAND seems to have been drawn from an imperfect specimen, a complete account relating to flowers is much desirable. The following description is, therefore, may properly be added here.

Frutices arborescentes glaberrimi, ramulis gracillimis. Folia chartacea oblonga longe cuspidato-acuminata vel abrupte ad acumen $2\frac{1}{2}$ cm. longum attenuata 7 cm. longa 2 cm. lata basi cuneata, supra costis impressis venulis leviter prominentibus, subtus costis et venulis prominentibus. Racemi ad axillas foliorum inferiorum ramulorum novellorum solitarii laxiflori vel densiflori folio breviores gracillimi. Flores longe pedicellati, pedicellis 1-2 cm. longis basi pedicelli 2-bracteatis, bracteis parvis ciliatis triangularibus costatis. Calyx longe campanulatus glaber viridis 3 mm. longus, lobis 5 rotundatis margine ciliatis. Corolla patens $5\frac{1}{2}$ mm. longa, tubo brevissimo, 5-loba, lobis ovatis apice rotundatis margine obscure ciliolatis imbricatis. Stamina numerosa ∞ -seriata, exterioribus longioribus corollam excedentibus, ad basin corollæ adnata basi connata, filamentis subcomplanatis. Ovarium inferius 3-loculare, loculis 2-ovulatis, stylo filiformi, stigmate truncato. Fructus ignoti.

Symplocos morrisonicola HAYATA, sp. nov. (Pl. XXVII). Frutices ramosi, ramis pubescentibus cinereo-fuscis, ramulis novellis badio-villosis. Folia parviora alterna coriacea breve petiolata ovata vel oblonga $3\frac{1}{2}$ cm. longa $1\frac{1}{2}$ cm. lata apice aristato-acuta vel abrupte acuminata basi acuta vel rotundata margine obscure serrulata vel subintegra supra nitida venis et venulis prominentibus subtus obscure venosa, petiolis brevissimis 2 mm. longis. Racemi pauciflori axillares folio 2-plo brevioribus pubescentes, bracteis ovatis parvis $\frac{1}{2}$ mm. longis. Calyx campanulatus 2 mm. longus, tubo ovario adnato, limbo 5-lobato, lobis imbricatis latis subtruncatis extus et margine pubescentibus. Corolla campanulata 5 mm. longa 5-loba, lobis ovatis apice rotundatis imbricatis. Stamina circ. 20, sub-2-seriata ad basin corollæ adnata exterioribus longioribus, filamentis complanatis basi connatis corollam excedentibus, antheris brevibus, loculis parallelis longitudinaliter dehiscentibus. Ovarium inferius 3-loculare, loculis 2-ovulatis, ovulis pendulis ex angulo superiore, stylo filiformi, stigmate capitato obscure 3-lobato. Fructus ignoti.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 737); Tōzan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1702),

Near *S. modesta* BRAND; but differs from it in having shorter racemes, subentire leaves and pubescent branchlets.

Symplocos spicata ROXB. Fl. Ind. ed.-CAREY, II. p. 541; A. DC. Prodr. VIII. p. 254; BENTH. Fl. Hongk. p. 212; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p. 573; FORBES. et HEMSL. Ind. Fl. Sin. II. p. 75; HENRY, List Pl. Formos. p. 58; MATSUM. in Tōkyō Bot. Mag. XV. p. 77; DIELS, Fl. Centr. Chin. p. 528; MATSUM. et HAYATA, Enum. Pl. Formos. p. 231.

Lodhra spicata MIERS, in Journ. LINN. Soc. XVII. p. 298.

HAB. Taichū : Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Japan, south central China, and North and East India.

Oleaceæ.

Osmanthus LOUR.

Osmanthus sp. nov.? Folia alterna rigide coriacea lanceolata 10 cm. longa $2\frac{1}{2}$ cm. lata longe acuminata basi acuta petiolata, petiolis 1 cm. longis. Flores ad axillas foliorum circ. 20-fasciculati, fasciculis squamis 2-3 ovatis acutis coriaceis 5 mm. longis instructis, pedicellis 1 cm. longis. Calyx brevis late 4-lobus. Corolla subcampanulata 4 mm. longa 4 loba, lobis $2\frac{1}{2}$ mm. longis late ovatis subclausis. Stamina 2 ad medium tubi corollæ affixa, antheris suborbicularibus, connectivis latis apiculatis. Ovarium conicum, stylo ovario longiore, stigmate peltato crasso 2-lobo. Fructus ignoti.

HAB. Tōzan, in monte Morrison, leg. G. NAKAHARA, Oct. 1906.

Osmanthus sp. nov.? Folia alterna oblonga 5 cm. longa 2 cm. lata apice aristato-acuta basi obtusa rigide coriacea supra (exsiccato) reticulato-rugosa subtus obscure venosa, petiolata, petiolis 1 cm. longis. Flores ad axillas foliorum circ. 10 fasciculati, fasciculis squamis 2-3 late ovatis minutis 1 mm. longis instructis, pedicellis 1 cm. longis. Calyx brevis 1 mm. longus 4 lobus, lobis late ovatis. Corolla late campanulata 4 mm. longa, tubo brevissimo, limbo 4 lobo lobis late ovatis obtusis. Stamina 2 supra basin corollæ affixa, filamentis brevibus, antheris oblongis apiculatis. Ovarium conicum, stylo brevi, stigmate conico 2-lobo. Fructus ignoti.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2003).

Asclepiadeæ.

Dischidia R. BR.

Dischidia formosana MAXIM. in Mém. Biol. IX. p. 822; FORBES et HEMSLEY. Ind. Fl. Sin. II. p. 116; MATSUM. et HAYATA, Enum. Pl. Formos. p. 240.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 581).

DISTRIB. An endemic plant.

Loganiaceæ.

Logania R. BR.

Logania dentata HAYATA, n. n. (Pl. XXVIII.).

Nertera dentata ELMER, in Leaflet Philipp. Bot. I.—1, p. 15.

Herbæ humiles repentes in totum hispidae, ramis ad nodos ascendentibus 7-8 cm. longis superiore proliferis. Corpora ad axillas foliorum solitaria squamis teretibus glabris crassiusculis ∞ -seriatis instructa 3-4 mm. longa stipitata, stipitibus $\frac{1}{2}$ cm.-1 cm. longis. Folia opposita petiolata late ovata vel orbicularia circ. 10 mm. longa 13 mm. lata apice obtusa basi rotundata truncata margine serrata, serraturis crassiuscule mucronatis, supra setuloso-hispida subtus sparce hispida, petiolis lamina 2-plo brevioribus 6 mm. longis, internodiis circ. 1 cm. longis, stipulis 0. Flores parvissimi 3 mm. longi axillares solitarii breve pedicellati, pedicellis 1 mm. longis glabris. Calyx 3 mm. longus 4-partitus, segmentis lanceolatis extus glabris, intus et margine sericeo-setulosis crassiusculis. Corollæ tubus urceolatus, limbo 4-lobo, lobis patentibus rotundatis.

Stamina 4 infra faucem tubi affixa, filamentis brevibus, antheris oblongis. Ovarium globosum 2-lobum stylum subæquans 2-loculare, loculis ∞ -ovulatis. Capsula globosa 6 mm. in diametro æquans rubra 4 valvis dehiscens. Semina numerosa ovoidea $\frac{1}{2}$ mm. longa lævia minute reticulata.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 639); in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 8000 ped. alt., Oct. 1906, (No. 1803), et in montibus centralibus, ad 10000 ped. alt., Nov. 1906, (No. 1847), leg. T. KAWAKAMI et U. MORI.

It is not without hesitation that I have identified the present plant with ELMER's *Nertera dentata*, transferring it to the genus *Logania*. There is a little doubt about this being similar to Mr. ELMER's. In his diagnosis, the fruits are described as follows: "berries shining vermilion red, 2 lin. in diameter; globose, frequently with a short persistent style" But, in my specimens, they are decidedly capsules, 5 mm. in diameter, opening with two valves, each valve being afterward divided into two. After considering his description and my specimens, I have wondered if he had not made an error of regarding the fruits as "berries." Mr. E. D. MERRILL affirmed me that my plant is exactly the same as the Philippine plant. In superficial observation, it appears very much to be a rubiaceous plant as Mr. ELMER writes in his paper. Nevertheless, the plant has superior ovaries, by which character it should not be regarded as belonging to Rubiaceæ, but must be referred to Loganiaceæ. This species is greatly different from any other species of *Logania* known to us, and it is perhaps the smallest of all the plants belonging to this genus. The plant agrees with the generic characters of *Logania* in its floral structure, inflorescence and habit, and it is somewhat like the

Australian *L. pusilla* R. BR. It also bears some resemblance to *Polypræmum* LINN., but differs from the latter in the absence of glands and in having entirely superior ovaries. This new *Logania* is very remarkable in its prostrate habit and in having strikingly deformed flowers. The occurrence of this Australian genus in Formosa and the Philippines is exceptionally interesting. So far as I am aware, no representative of this genus has ever been known from any other regions on the North Hemisphere.*

Gentianaceæ.

Crawfordia WALL.

Crawfordia fasciculata WALL.; DC. Prodr. IX. p. 120; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 107; S. MOORE, in Journ. Bot. (1875) p. 231; Bot. Mag. t. 4838; FORBES et HEMSLE. Ind. Fl. Sin. II. p. 122; HENRY, List Pl. Formos. p. 61; DIELS, Fl. Centr. Chin. p. 538; MATSUM. et HAYATA, Enum. Pl. Formos. p. 243.

Crawfordia japonica SIEB. et ZUCC. Fl. Jap. Fam. Nat. II. p. 36, n. 546; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 324; MAXIM. in Mém. Biol. IX. p. 399; S. MOORE, in Journ. Bot. (1880), p. 4.

Golowninia japonica MAXIM. "in Bull. Acad. Imp. Sc. Pétersb. IV. p. 251."

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 660).

DISTRIB. Japan, China, and the mountains of North East India.

*. After completing this manuscript, I am informed by Mr. E. D. MERRILL who have just returned to Manila from his trip, that he thinks the Philippine plant *Nertera dentata* ELMER to be referable to *Hemiphragma heterophyllum* WALL. of the Himalayas. The Formosan species in my hands does, however, not agree with the description of that genus. In *Hemiphragma*, the corolla is 5-lobed, and stamens are affixed to the base of the tube, while in my plant, corolla is 4-lobed and stamens are affixed to the middle of the tube. Accordingly, the Formosan plant is, I think, not identical with the Himalayan species, though the latter may be the same as the Philippine one. It remains still questionable whether the Formosan plant should be referred to *Logania* or *Hemiphragma*.

Gentiana LINN.

Gentiana (§ *Chondrophylla*) **cæspitosa** HAYATA, sp. nov. Herbæ humillimæ perennes rigidiusculæ glabræ cæspitosæ, caulibus ascendentibus 4 cm. altis simplicibus multifoliatis. Folia approximata opposita plicata leviter recurva prominente costata ovata 5 mm. longa $2\frac{1}{2}$ mm. lata aristato-acuta basi truncata, vaginis interpetiolaribus 1 mm. longis hyalinis, crasse cartilagineæ margine albo-lamellata apicem versus obscure basin argute denticulata. Flores terminales solitarii 17 mm. longi. Calyx campanulato-tubuliformis 7 mm. longus 5-lobus, lobis 3 mm. longis angustis acutis crassiusculis, sinibus inter lobos acutis. Corolla tubulosa campanulata 17 mm. longa 5-loba, lobis 3 mm. longis late ovatis, sinibus inter lobos plicatis, appendiculatis triangularibus. Stamina 5 inclusa, filamentis ad medium adnatis. Capsulæ compresso-obovatæ 6 mm. longæ ad suturas 2-valvis dehiscentes, valvis margine denticulatis, stipitibus longis capsulam in longitudine 2-plo superantibus, stylis persistentibus 2-fidis 2 mm. longis spiraliter recurvis. Semina oblonga angulata 1 mm. longa longitudinaliter reticulata.

HAB. in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2242).

Very near *G. micans* CLARKE (in Hook. f. Fl. Brit. Ind. IV. p. 112); but differs from it in having undivided folds of corollas.

Gentiana (§ *Pneumonanthe*) **fasciculata** HAYATA, sp. nov. Herbæ humiles glabræ, caulibus repentibus apice ascendentibus gracilibus 8–10 cm. longis, foliis basin versus remote apicem versus approximate dispositis. Folia caulina remota opposita sessilia uninervia lanceolato-linearibus obtusa 1.5 cm.–2 cm. longa 3 mm. lata vaginis interpetiolaribus 3 mm. longis; folia floralia ad basin fasciculi florum

conferta folio caulino conformia sed 3-plo majora. Flores terminales sessiles erecti 5-fasciculati ebracteati. Calyx tubuliformis 12 mm. longus 5-lobatus, lobis linearibus 3 mm. longis, sinibus latis truncatis. Corolla campanulato-tubuliformis 2.5 cm. longa, fauce tubi nuda 5-loba, lobis patentibus contortis rotundato-acutis, sinibus plicatis, appendiculis 0. Stamina 5 tubo corollæ affixa inclusa; antheris linearibus, connectivis apiculatis. Ovarium stipitatum 1-loculare apice in stylum brevem pubescens 2-divisum attenuatum, stigmatibus lamellatis revolutis. Capsulæ oblongæ cum stylo stipiteque 22 mm. longæ, stipite capsula brevior 6 mm. longo, ad suturas 2-valvis revolutis dehiscentes. Semina ovoidea compressiuscula $\frac{2}{3}$ mm. longa elegante reticulata.

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905; (No. 624); ibidem, leg. T. KAWAKAMI et G. NAKAHARA.

Gentiana (§ *Chondrophylla*) **flavescens** HAYATA, sp. nov. Herbæ annuæ minute scabriusculæ vel glabratae, caulibus gracilibus. Folia opposita angusto-obovata 8-mm. longa $2\frac{1}{2}$ mm. lata apice aristato-acuta basi confluentia, vaginis interpetiolaribus 1 mm. longis, margine obscure albo-lamellata integra basin versus minute ciliato-denticulata crassiuscula. Flores ad apices ramorum solitarii. Calyx campanulatus $4\frac{1}{2}$ mm. longus 5-lobatus, lobis $1\frac{1}{2}$ mm. longis cuspidato-acuminatis. Corolla tubuloso-campanulata 12 mm. longa, lobis primariis 5, $2\frac{1}{2}$ mm. longis triangularibus, lobis secundariis 5 ad sinus plicatos lobo primario æquilongis cuspidato-acutis tenuissimis. Stamina 5 tubo corollæ affixa, filamentis ad medium adnatis, antheris oblongis 1 mm. longis basi sagittatis apice emarginatis. Capsulæ obovatæ 6 mm. longæ longe stipitatae corollam excedentes, stipitibus 12 mm. longis, stylis linearibus 2-divisis complanatis

pilosiusculis spiraliter revolutis. Semina oblonga angulata $\frac{2}{3}$ mm. longa minute longitudinaliter reticulato-striata.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., (No. 646), et Ganzan, in isdem montibus, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905.

Gentiana formosana HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 242.

HAB. in monte Shichiseitonzan, leg. B. HAYATA, Aug. 1900; ibidem, leg. G. NAKAHARA, 1905. (No. 5.)

Gentiana humilis STEV.; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 111. *Gentiana aquatica* PALL. Fl. Ross. II. t. 97, fig. 2 (non LINN.).

HAB. Tōzan, montibus Morrison, leg. S. NAGASAWA, Nov. 1905. DISTRIB. Western Tibēt.

Gentiana (§ *Chondrophylla*) **tenuissima** HAYATA, sp. nov. Herbæ humillimæ 6 cm. altæ glabræ tenues. Folia radicalia conferta lanceolato-ovata 1 cm. longa 5 mm. lata apice acuta basi abrupte angusta sessiliâ margine minutissime denticulata; folia caulina paucissima; folia floralia radicali conformia minora. Flores paniculato-cymosi. Calyx tubuliformis 3 mm. longus 5-lobatus, lobis circ. 1 mm. longis late ovatis aristato-acutis, sinibus inter lobos latis truncatis. Corolla tubuloso-campanulata 5 mm. longa 5-lobata, lobis 1 mm. longis rotundato-acutis, sinibus plicatis obscure lobatis. Stamina 5 tubo corollæ affixa inclusa, filamentis supra medium liberis. Ovarium stipitatum oblongo-obovoidæum cum stipitibus 3 mm. longum, stylo brevi $\frac{1}{2}$ mm. longo stigmatæ 2-lamellato recurvo. Capsulæ obovatæ 3 mm. longæ longe stipitatæ, stipitibus capsulam 2-plo in longitudine superantibus, ad suturas 2-valvis dehiscentes, valvis patento-revolutis marginibus

minute serratis. Semina oblonga $\frac{1}{2}$ mm. longa longitudinaliter reticulata utrinque attenuata.

HAB. Taitō : Gozenjō, leg. T. KAWAKAMI.

Neer *G. aquatica* LINN. and *G. delicata* HANCE, but differs from them in having much smaller flowers and reticulated seeds.

***Gentiana scabrida* HAYATA, sp. nov.** Herbæ annuæ paucifoliatæ scabriusculæ, caulibus 20 cm. longis atropurpureis pauciramosis. Folia radicalia caulino conformina oblongo-lanceolata 11 mm. longa 4 mm. lata apice aristato-acuta, vaginis interpetiolaribus 2 mm. longis, margine et ad costam subtus scaberrima albo-lamellata, supra minute scaberrima subtus præter costas glabra. Flores ad apices ramorum solitarii pedunculati, pedunculis $\frac{1}{2}$ cm. longis. Calyx campanulatus obscure 5-costatus, costis scaberrimis, 1 cm. longus 5-lobatus, lobis spathulatis supra basin leviter constrictis basi paullo dilatis 5 mm. longis 2 mm. latis 1-costatis, costis serrulatis, margine albo-lamellatis intus minute scaberrimis. Corolla campanulata 2 cm. longa 5-lobata, lobis late ovatis 4 mm. longis aristato-acutis, sinibus plicatis, appendiculis triangularibus 3 mm. longis. Stamina 5, supra medium tubi corollæ affixa, filamentis ad insertionem dorso dilatis, antheris angustis basi sagittatis apice obtusis. Capsulæ ovatæ 7 mm. longæ longe stipitatae, stipitibus 20 mm. longis capsulam 3-plo superantibus, stigmatibus lamellatis revolutis. Semina oblonga 1 mm. longa longitudinaliter minute reticulato-striata.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (Nos. 701 et 702); in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2275).

Swertia LINN.

***Swertia alata* HAYATA, sp. nov.** Herbæ annuæ 2–3 ped. altæ

glabræ, caulibus tetragonis tetrapteris, alis 2 mm. latis. Folia opposita sessilia membranacea oblongo-lanceolata 7 cm. longa 2 cm. lata apice breve obtuse acuminata basi angusta ad insertionem dilata 6 mm. lata trinervia supra nervis impressis subtus prominentibus. Flores paniculato-racemosi, ramis oppositis, pedicellis oppositis per anthesin $\frac{1}{2}$ cm. longis bracteis lanceolatis. Calyx 4-partitus, lobis lanceolatis 5 mm. longis trinerviis. Corollæ tubus brevis, limbo 4-partito, lobis laciniatis oblongis 7 mm. longis apice obscure serratis prope basin foveolatis, foveolis glandulosis margine ciliato-fimbriatis supra foveolam squamulis fimbriatis. Stamina 4 basi corollæ affixa, filamentis complanato-filiformibus basi dilatis, antheris subsagittatis apiculatis. Ovarium ovoideum apice attenuatum, stylo subnullo, stigmate 2-lamellato, lobis brevissimis latisque leviter recurvis. Capsulæ oblongo-ovatæ circ. 1 cm. longæ ad suturas 2-valvis dehiscentes. Semina parvissima $\frac{1}{2}$ mm. longa compressa ovata reticulato-muricata.

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

Near *S. tetraptera* MAXIM., but differs from it in having mostly 3-nerved and sessile leaves and paniculate racemes; from *S. pulchella* HANCE, in having prominent wings and much smaller petals.

Swertia sp. Herbæ basi suffruticosæ circ. 1 ped. altæ. Folia oblonga 3 cm. longa apice obtusa basi angusta ad petiolum attenuata. Flores paniculato-racemosi. Capsulæ 6 mm. longæ.

HAB. Ganzan, in montibus Morrison, ad 9140 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 642); Tōzan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906.

Hydrophyllaceæ.

Ellisiophyllum MAXIM.

Ellisiophyllum pinnatum MAKINO, in Tōkyō Bot. Mag. XX. p. 92.

Hornemannia pinnata BENTH. in DC. Prodr. X. p. 428.

Sibthorpia pinnata BENTH. in BENTH. et HOOK. f. Gen. Pl. II. p. 959 ;
HOOK. f. Fl. Brit. Ind. IV. p. 288.

Moseleya pinnata HEMSL. in HOOK. Ic. Pl. XXVI. t. 2592.

Ellisiophyllum reptans MAXIM. in Mém. Biol. VIII. p. 18 ; FRANCH. et
SAVAT. Enum. Pl. Jap. I. p. 329.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI
et U. MORI, Oct. 1906, (No. 1781).

DISTRIB. Japan, China and the Philippines, westward to the
Himalayas.

As stated by Mr. T. MAKINO, the plant should properly be called
E. pinnatum MAKINO, assuming that *Moseleya pinnata* HEMSL. is the
same as *Ellisiophyllum reptans* MAXIM. ; for *Ellisiophyllum* is older
name than *Moseleya*, and the specific name *pinnata* is much so
than *reptans*.

Boragineæ.

Cynoglossum LINN.

Cynoglossum micranthum DESF. ; DC. Prodr. X. p. 149 ; MAXIM. in
Mém. Biol. VIII. p. 555 ; MIQ. Fl. Ind. Bat. II. p. 931 ; FRANCHET, Pl. David.
p. 215 ; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 156 ; FORBES et HEMSL.
Ind. Fl. Sin. II. p. 150 ; HENRY, List Pl. Formos. p. 63 ; MATSUM. in Tōkyō
Bot. Mag. XII. p. 108 ; DIELS, Fl. Centr. Chin. p. 546 ; MATSUM. et HAYATA,
Enum. Pl. Formos. p. 257.

Cynoglossum racemosum ROXB. Fl. Ind. I. ed.-CAREY, p. 456.

Cynoglossum furcatum WALL. ; WIGHT, Ic. Pl. Ind. or. t. 1395.

HAB. Kagi: Shakkōshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1746).

DISTRIB. South China; widely spread in India Malay and also found in East Africa.

Trigonotis STEV.

Trigonotis formosana HAYATA, sp. nov. Herbæ perennes pilosæ scaberrimæ, caulibus ascendentibus 10 cm. longis stoloniferis. Folia radicalia et inferiora longe petiolata, petiolis 5 cm. longis laminam æquantibus setuloso-pilosis, laminis oblongis vel spathulatis 7 cm. longis $2\frac{1}{2}$ —3 cm. latis apice truncato- vel retuso-mucronatis basi acuminatis membranaceis crassiusculis margine integris repandis supra pilis setulosis brevissimis scaberrimis subtus hispidulis pallidioribus, venis transversis primariis utrinque obscure 5–6 ad margines arcuatis 2–3-seriatim anastomosantibus. Folia superiora inferioribus conformia sed minora. Flores in cymas scorpioidales ramosas vel simplices racemosas elongatas dispositi, breve pedicellati pedicellis 1 mm. longis. Calyx 5-fidus, lobis obovatis $1\frac{1}{2}$ mm. longis obtusis intus et extus pilosiusculis, fructifer vix auctus. Corolla rotata $2\frac{1}{2}$ mm. longa, tubo brevi 1 mm. longo fauce squamis brevibus crassis subfornicatis subclausis instructo, lobis 5 imbricatis patentibus late orbicularibus basi breve angustis $1\frac{1}{2}$ mm. longis. Stamina 5 supra medium tubi affixa inclusa, filamentis brevibus, antheris oblongis obtusis. Ovarium depresso-globosum $\frac{1}{4}$ mm. longum $\frac{1}{2}$ mm. latum 4-lobatum, lobis distinctis, stylo brevi $\frac{1}{2}$ mm. longo, stigmate capitato. Nuculæ 4, obpyramidales ad angulas costatæ 1 mm. longæ vel vix longiores erectæ læves facie superiore planæ truncatæ pauce setulosæ, cæterum glabræ.

HAB. Sanchōki, ad 4000 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 724); Kagi: Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906,

(No. 1969) ; Taitō : Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2230).

Solanaceæ

Solanum LINN.

Solanum sp. Herbæ tenues scandentes pubescentes ad nodos radicales. Folia ovata 5 cm. longa 3 cm. lata petiolata, petiolis lamina 2-plo brevioribus, apice obtusa acuta basi rotundata subito attenuata ad petiolum abeuntia membranacæa utrinque ad costas pubescentia cæterum glabra. Flores axillares longe pedunculati, solitarii, pedunculis petiolum vix superantibus. Bacca globosa 1 cm. in diametro æquans.

HAB. Nantō : Rakurakusha, leg. G. NAKAHARA, Aug. 1905, (No. 466) ; Kagi : Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1737).

Very interesting plant, on account of its intermediate form between *Solanum* and *Capsicum*. It may constitute a new genus when the floral structures are fully known.

Scrophularineæ.

Scrophularia LINN.

Scrophularia alata A. GRAY, Bot. Jap. p. 401 ; MIQ. Prol. Fl. Jap. p. 47 ; DIELS, Fl. Centr. Chin. p. 565 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 342.

var. **duplicato-serrata** MIQ. Prol. Fl. Jap. p. 47 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. 343.

HAB. in monte Morrison, leg. G. NAKAHARA, Nov. 1905.

DISTRIB. Type : Central China and Japan.

Mazus LOUR.

Mazus rugosus LOUR. Fl. Cochinch. éd.-WILLD. p. 468; BENTH. in DC. Prodr. X. p. 375, et Fl. Hongk. p. 247; MAXIM. Prim. Fl. Amur. pp. 205 et 475, et in Mém. Biol. IX. p. 402; FORBES et HEMSL. Ind. Fl. Sin. II. p. 183; FRANCHET, Pl. David. p. 222; HENRY, List Pl. Formos. p. 67; DIELS, Fl. Centr. Chin. p. 566; PALIBIN, Conspect. Fl. Koreæ, II. p. 20; MATSUM. et HAYATA, Enum. Pl. Formos. p. 275.

Mazus vandelliioides HANCE, in WALP. Ann. III. p. 193.

Lindernia japonica THUNB. Fl. Jap. p. 253.

Mazus japonica O. KUNTZE, "Revis. Gen. Pl. II. (1891) p. 462"; MAKINO, in Tōkyō Bot. Mag. XIV. p. 170;

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

DISTRIB. South China and Japan; Afghanistan to Manchuria; and also in the Malay archipelago.

Here we do not follow O. KUNTZE, for *M. rugosa* LOUR. is too commonly used to be suppressed.

Torenia LINN.

Torenia peduncularis BENTH.; HOOK. f. Fl. Brit. Ind. IV. p. 276; FORBES et HEMSL. Ind. Fl. Sin. II. p. 188; HENRY, List Pl. Formos. p. 67. DIELS, Fl. Centr. Chin. p. 567; MATSUM. et HAYATA, Enum. Pl. Formos. p. 278.

Torenia edentula BENTH. in DC. Prodr. X. p. 410; Bot. Mag. t. 4229.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 670).

DISTRIB. South central China, India and Malay.

Bonnaya LINK. et OTTO.

Bonnaya veronicaefolia SPRENG.; BENTH. in DC. Prodr. X. p. 421, et Fl. Hongk. p. 252; MIQ. Fl. Ind. Bat. II. p. 696; MAXIM. in Mém. Biol. IX. p. 421; HOOK. f. Fl. Brit. Ind. IV. p. 285; WIGHT, Ic. Pl. Ind. or. t. 1411;

FORBES et HEMSL. Ind. Fl. Sin. II. p. 192; HENRY, List Pl. Formos. p. 68; MATSUM. et HAYATA, Enum. Pl. Formos. p. 281.

HAB. Tappansha, ad 3139 ped. alt., leg. S. NAGASAWA, Oct, 1905, (No. 718).

DISTRIB. South China, India throughout, Ceylon and Malay.

Rehmannia LIBOSCH.

Rehmannia Oldhami HEMSL. in Ann. Bot. IX. p. 154, et in FORBES et HEMSL. Ind. Fl. Sin. II. p. 194; HENRY, List Pl. Formos. p. 68; MATSUM. et HAYATA, Enum. Pl. Formos. p. 282.

HAB. Sanchōki, ad 4000 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 723); Kagi: Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1745).

DISTRIB. An endemic plant.

Veronica LINN.

Veronica morrisonicola HAYATA, sp. nov. (Pl. XXIX). Herbæ validæ basi suffruticosæ repentes ad nodos radicales, ramis ascendentibus 10–20 cm. longis præter inflorescentiam simplicibus hispidulis demum glabratiss. Folia opposita spathulato-lanceolata sessilia 2 cm. longa 6 mm. lata apice acuta basi sensim attenuata margine sursum serrata deorsum integra subtus costis prominentibus venulis inconspicuis. Racemi pubescentes ad axillas foliorum superiorum ramorum siti, longe pedunculati ramos excedentes, pedunculis 5 cm. longis partem florigeram æquantibus, bracteis angustis 4 mm. longis pedicello vix longioribus. Calyx 5-partitus, lobis angustis acutis 4 mm. longis. Corolla rotata circ. 5 mm. longa, tubo brevissimo limbo 4-lobato, lobo postico majore late ovato obtuso, lobis lateralibus mediocribus, lobo antico minore. Stamina 2 tubo ad latere lobi postici affixa, filamentis exsertis, antheris loculis divergentibus

obtusis apice confluentibus. Ovarium pilosum. Capsulæ compressæ apice emarginatæ bisulcatæ 6 mm. longæ totidem latæ loculicide dehiscentes, valvis columna placentifera adherentibus. Semina numerosa ovata 1 mm. longa facie interna plano-cymliiformi. affixa, dorso rugulosa.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., (Nos. 704 et 633), Seizan, in isdem montibus, ad 11579 ped. alt., (No. 634), et Suizan, in isdem montibus, ad 7702 ped. alt., Oct. 1905, (No. 736), leg. S. NAGASAWA; in monte Morrison, ad 9000 ped. alt., Oct. 1906, (No. 2278), et in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2213).

Very like *V. serpyllifolia* LINN.; but differs from that species in having long pedunculate racemes and very small bracts. The habit of this plant is like that of *V. Onoei* FRANCH. et SAVAT., but differs from it in having obovate lanceolate leaves.

Veronica spuria LINN. Sp. Pl. ed.-2, p. 13; LEDEB. Fl. Ross. III. p. 236 (var.); FORBES et HEMSL. Ind. Fl. Sin. II. p. 200; PALIBIN, Conspect. Fl. Koreæ, II. p. 21; DIELS, Fl. Centr. Chin. p. 267; HAYATA, in Tōkyō Bot. Mag. XX. p. 72.

Veronica angustifolia FISCH.; HANCE, in Journ. Linn. Soc. XIII. p. 84.

Veronica paniculata LINN.; BENTH. in DC. Prodr. X. p. 465; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 348.

HAB. in monte Morrison, ad 8500 ped. alt., (Nos. 1809, 2080 et 1811), et eodem monte, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2295); Tikuzan, ad 150 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 764).

DISTRIB. Japan to central Asia, and westward to central Europe.

Sopubia HAM.

Sopubia formosana HAYATA, sp. nov. Herbæ annuæ erectæ circ.

30 cm. altæ pubescentes siccitate nigricantes; caulibus ramosis vel simplicibus tetragonis sulcatis. Folia opposita sessilia oblonga 2 cm. longa 8 mm. lata dentata deorsum integra apice acuta vel obtusa basi acuta vel cuneata supra exsiccato nigricantia subtus pallidiora distincte nervosa. Flores ad apices ramorum dense subspicati, ad axillas bractearum solitarii, bracteis lanceolatis dentatis calycem 2-plo superantibus, pedicellis 1 mm. longis 2-bracteolatis, bracteolis linearibus calycem æquantibus. Calyx campanulato-semiorbiculatus 7 mm. longus 10-nervatus breviter 5-lobus, lobis valvatis triangularibus acuminatis. Corolla ignota. Stamina 4 didynamia subinclusa: 2 longiora, antheris majoribus coherentibus, filamentis longe barbatis; 2 breviora, antheris parvioribus liberis, filamentis glabris; loculis antherarum omnibus ovatis basi muticis. Stylus apice stigmatoso-incrassatus sublinguiformis obtusus. Capsulæ depresso-globosæ 5 mm. in diametro æquantes apice retusæ, loculicide dehiscentes, valvis demum 2-fidis columnam placentiferam liberantibus. Semina numerosa minutissima angusta 1 mm. longa truncata testa laxiuscula.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (Nos. 661 et 673); Kagi: Kōdenshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1739).

DISTRIB. An allied species *S. trifida* HAM. occurs in India and Ceylon; and is also found in Kwangtung in the opposite continent.

Near *S. trifida* HAM.; but differs from it in having ovato-lanceolate leaves.

Phtheirospermum BUNGE.

Phtheirospermum chinense BUNGE; BENTH. in DC. Prodr. X. p. 391; MAXIM. Prim. Fl. Amur. p. 208; HANCE, "in Journ. Bot. (1882), p. 292"; FRANCHET, Pl. David. p. 225; FORBES et HEMSL. Ind. Fl. Sin. II. p. 204; DIELS, Fl. Centr. Chin. p. 570.

Pltheirospermum japonicum KANTZ, "Anthoph. Jap. p. 12"; MAKINO, in Tōkyō Bot. Mag. XV. p. 72.

Gerardia japonica THUNB. Fl. Jap. p. 251, et Icn. Pl. Jap. Decas-5, t. X; WILLD. Sp. Pl. III. p. 224; BENTH. in DC. Prodr. X. p. 519.

HAB. Toroku: Tōhozan, (No. 2082); Taitō: Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2169).

DISTRIB. Japan and China northward to Manchuria; and also in North America.

Here we do not follow Mr. T. MAKINO, for *P. chinense* BUNGE is too generally used to be suppressed.

Euphrasia LINN.

Euphrasia borneensis STAFF in "Trans. Linn. Soc. II. 4, (1794) 210, t. 16, f. 1-16"; MERRILL, in Philipp. Journ. Scie. I. Suppl. Bot. p. 236.

HAB. Nanto: Mushazan, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1129).

DISTRIB. The Philippine islands and also in Borneo.

Euphrasia petiolaris WETTST. Monogr. Gatt. Euphras. p. 199, t. IV. Figs. 321-325, et t. XI. Fig. 8.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, ad 8000 ped. (No. 1728), et eodem monte, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1894 et 2274).

DISTRIB. in Himalaya.

Orobanchaceæ.

Orobanche LINN.

Orobanche cœrulescens STEPH.; WILLD. Sp. Pl. III. p. 349; DC. Prodr. XI. p. 34; LEDEB. Fl. Ross. III. p. 322; PALIBIN. Conspect. Fl.

Koreæ, II. p. 22; Biblioth. Bot. IV. p. 138; MATSUM. et HAYATA, Enum. Pl. Formos. p. 285.

HAB. in montibus Morrison, ad 9000 ped. alt., (No. 2238), et ad 8000 ped. alt., (No. 2071), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. Asia, Europe, and North America.

Gesneraceæ.

Lysionotus DON.

Lysionotus pauciflorus MAXIM. in Mém. Biol. IX. p. 366; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 327; S. MOORE, in Journ. Bot. (1875) p. 231; CLARKE, in DC. Monogr. Phanerog. V. p. 59; FORBES et HEMSL. Ind. Fl. Sin. II. p. 225; HENRY, List Pl. Formos. p. 68; MATSUM. et HAYATA, Enum. Pl. Formos. p. 287.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 556); Arizan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1719).

DISTRIB. Japan and central China.

Rhynchoglossum BLUME.

Rhynchoglossum obliquum BLUME; DC. Prodr. IX. p. 274; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 367.

Rhynchoglossum Blumei DC. Prodr. IX. p. 274.

HAB. Kōdenshō: ad 2623 ped. alt., leg. S. NAGASAWA, Oct. 1906, (No. 745); Kagi: Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1777).

DISTRIB. The Philippine islands throughout, and the other islands of the Malay archipelago.

Chirita HAM.

Chirita anachorata HANCE; DC. in DC. Monogr. Phanerog. V.-1, p. 115; MAXIM. in Mél. Biol. IX. p. 370; FORBES et HEMSL. Ind. Fl. Sin. II. p. 231; HENRY, List Pl. Formos. p. 68; MATSUM. et HAYATA, Enum. Pl. Formos. p. 288.

HAB. in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2048).

DISTRIB. South China.

Conandron SIEB. et ZUCC.

Conandron ramondiioides SIEB. et ZUCC. Fl. Jap. Fam. Nat. II. p. 730, t. 3, f. 1; MIQ. Prol. Fl. Jap. p. 55; MAXIM. Mél. Biol. IX. p. 370; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 328; Bot. Mag. t. 6484.

HAB. Biyōritsu: Banahōzan, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1093).

DISTRIB. Japan.

Acanthaceæ.

Strobilanthes BLUME.

Strobilanthes flaccidifolius NEES, in DC. Prodr. XI. p. 194; T. ANDERS. in Journ. Linn. Soc. IX. p. 481; HANCE, in Journ. Linn. Soc. XIII. p. 116; CLARKE, in Hook. f. Fl. Brit. Ind. IV. p. 468; Bot. Mag. t. 6947; FORBES et HEMSL. Ind. Fl. Sin. II. p. 239; MATSUM. et HAYATA, Enum. Pl. Formos. p. 291.

Strobilanthes Championi T. ANDERS.; BENTH. Fl. Hongk. p. 261.

Goldfussia Cusia NEES, in DC. Prodr. XI. p. 175.

HAB. Kōdenshō, ad 2623 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 727); in monte Morrison, ad 5000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2064).

DISTRIB. South China, Burma and eastern India.

Codonacanthus NEES.

Codonacanthus pauciflorus NEES, in DC. Prodr. XI. p. 103; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 500; BENTH. Fl. Hongk. p. 267; FORBES et HEMSL. Ind. Fl. Sin. II. p. 244; HENRY, List Pl. Formos. p. 69; MATSUM. et HAYATA, Enum. Pl. Formos. p. 292.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 787); Taitō : Inikufukusha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2156).

DISTRIB. South China and eastern India.

Justicia LINN.

Justicia procumbens LINN.; HANCE, in Journ. Linn. Soc. XIII. p. 116; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 539; FORBES et HEMSL. Ind. Fl. Sin. II. p. 246; HENRY, List Pl. Formos. p. 69; DIELS, Fl. Centr. Chin. p. 579; MATSUM. et HAYATA, Enum. Pl. Formos. p. 293.

Rostellularia procumbens NEES, in DC. Prodr. XI. p. 371; BENTH. Fl. Hongk. p. 265; WIGHT, Ic. Pl. Ind. or. t. 1539; FRANCHET, Fl. David. p. 230.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1886).

DISTRIB. China and Japan; Malay, India, Ceylon, and also in Australia.

Rungia NEES.

Rungia parviflora NEES, in DC. Prodr. XI. p. 469; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 550; FORBES et HEMSL. Ind. Fl. Sin. II. p. 247.

var. **pectinata** CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 550; MATSUM. et HAYATA, Enum. Pl. Formos. p. 294.

Rungia pectinata NEES, in DC. Prodr. XI. p. 470; WIGHT. Ic. Pl. Ind. or. t. 1547; T. ANDERS. in Journ. Linn. Soc. IX. p. 517.

Rungia polygonoides NEES, in DC. Prodr. XI. p. 471.

HAB. Kagi: Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1967).

DISTRIB. South China; East and South India and Ceylon.

Hypæstes R. BR.

Hypæstes purpurea R. BR.; NEEB, in DC. Prodr. XI. p. 509; MIQ. Fl. Ind. Bat. II. p. 851; BENTH. Fl. Hongk. p. 265; FORBES et HEMSL. Ind. Fl. Sin. II. p. 249; HENRY, List Pl. Formos. p. 70; MATSUM. et HAYATA, Enum. Pl. Formos. p. 295.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 577); Kagi: Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1768).

DISTRIB. South China and in the Philippine islands.

Labiatae

Mesona BLUME.

Mesona elegans HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 306, t. 16.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. An endemic plant.

Mesona procumbens HEMSL. in Ann. Bot. IX. p. 155; HENRY, List Pl. Formos. p. 72; MATSUM. et HAYATA, Enum. Pl. Formos. p. 306.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 777); Taitō: Tabari, leg. G. NAKAHARA, Jan. 1906, (No. 736); in monte Morrison, ad 6000 ped. alt., (No. 2211), et ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2212).

DISTRIB. An endemic plant.

Origanum LINN.

Origanum vulgare LINN. Sp. Pl. ed.-2, p. 824; BENTH. in DC. Prodr. XII. p. 193 (varietates); HANCE, in Journ. Bot. (1880) p. 300; FRANCHET, Pl. David. p. 235; HOOK. f. Fl. Brit. Ind. IV. p. 648; FORBES et HEMSL. Ind. Fl. Sin. II. p. 282; DIELS, Fl. Centr. Chin. p. 559.

Origanum heracleoticum et *O. creticum* LOUR. Fl. Cochinch. ed.-WILLD. p. 453.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 632); in monte Morrison, ad 8000 ped. alt., (No. 1957), et eodem monte, ad 11000 ped. alt., (No. 2292), leg. T. KAWAKAMI et U. MORI.

DISTRIB. Central China to Manchuria; from North Africa to West Europe.

This species has dimorphic flowers; the larger flowers are bisexual, and the smaller ones are female which are one third long as the perfect flowers.

Salvia LINN.

Salvia scapiformis HANCE, in Journ. Bot. (1885) p. 368; Bot. Mag. t. 6980; FORBES et HEMSL. Ind. Fl. Sin. II. p. 287; HENRY, List Pl. Formos. p. 73; DIELS, Fl. Centr. Chin. p. 559.

HAB. Taitō : Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1934).

var. **pinnata** HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 312, t. 17.

HAB. Suizan, in monte Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 663); in montibus centralibus, ad 9000 ped. alt., (No. 2194), et Toroku : Gunkei, (No. 1820), leg. T. KAWAKAMI et U. MORI, Nov. 1906.

forma **hirsuta**. caules basi subglabri, inflorescentiæ hirsutæ. Folia hirsuta.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906 ; Taitō : Shūkoranzan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1884).

forma **gracilis**. Folia minora, foliolis rhomboideis acutis dentatis, dentibus acutis vel obtusis.

HAB. Tōzan, et Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906 ; in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2050).

DISTRIB. Type : Central China.

Scutellaria LINN.

Scutellaria luzonica ROLFE, in Journ. Linn. Soc. XXI. p. 315 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 296 ; HENRY, List Pl. Formos. p. 73 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 314.

HAB. in montibus centralibus, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1862).

DISTRIB. The Philippine islands.

Anisomeles R. BR.

Anisomeles ovata R. BR. ATT. Hort. Kew. ed.-2. II. p. 364 ; MIQ. Fl. Ind. Bat. II. p. 975 ; BENTH. in DC. Prodr. XII. p. 455, et Fl. Hongk. p. 278 ; HOOK. f. Fl. Brit. Ind. IV. p. 672 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 299 ; HENRY, List Pl. Formos. p. 73 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 315.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1770).

DISTRIB. South China, tropical and subtropical India.

Leucas R. BR.

Leucas javanica BENTH. in DC. Prodr. XII. p. 528 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 304 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 317.

HAB. Taitō : Hinansha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1835).

DISTRIB. Java and the Philippines.

Dicotyledones

Monochlamydeæ

Polygonaceæ

Polygonum LINN.

Polygonum biconvexum HAYATA, sp. nov. Herbæ graciles decumbentes 15 cm.—20 cm. altæ inæqualiter angulatæ retrorsum aculeatæ. Folia alterna hastato-triloba 3 cm. longa basi 2.5 cm. lata apice caudato-acuminata pilis setulosis atque pilis stellatis brevissimis sparce tecta margine integra dense setulosis, petiolis lamina 2-plo brevioribus aculeolatis, ochreis truncatis hirsutis ciliatis. Flores ignoti. Achænia biconvexa, ovata $3\frac{1}{2}$ mm. longa $2\frac{1}{2}$ mm. lata lævia.

HAB. in monte Morrison, leg. G. NAKAHARA, 1905.

This is very near *P. Thunbergii* S. et Z.; differs from it in having biconvex seeds.

Polygonum chinense LINN. Sp. Pl. ed.-2, p. 520; MEISN. in DC. Prodr. XIV. p. 130; MIQ. Fl. Ind. Bat. I.-1, p. 1008; LINN. Fl. Cochinch. ed.-WILLD. p. 297; HOOK. f. Fl. Brit. Ind. V. p. 44; BENTH. Fl. Hongk. p. 289; ROXB. Fl. Ind. ed.-CAREY, p. 289; Bot. Mag. t. 5238; WIGHT. Ic. Pl. Ind. or. t. 1806; HOOK. et ARN. Bot. Beech. Voy. p. 208; FRANCH. et SAVAT. Enum. Pl. Formos. I. p. 398, et II. p. 480; FORBES et HEMSL. Ind. Fl. Sin. II. p. 335; DIELS, Fl. Centr. Chin. p. 314; MATSUM. et HAYATA, Enum. Pl. Formos. p. 334.

Polygonum sinense HOOK. et ARN. Bot. Beech. Voy. p. 269.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S.

NAGASAWA, Oct. 1905, (No. 653); in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1789).

DISTRIB. Japan, south central China, the Philippines, India throughout, and Malay to Ceylon.

Polygonum cuspidatum SIEB. et ZUCC. Fl. Jap. Fam. Nat. n. 731; MEISN. in DC. Prodr. XIV. p. 136; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 402, et II. p. 481; S. MOORE, in Journ. Bot. (1875) p. 231; FRANCHET, Pl. David. p. 256; Bot. Mag. t. 6503; FORBES. et HEMSL. Ind. Fl. Sin. II. p. 336.

HAB. Suizan, in monte Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 575); in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2071).

DISTRIB. Japan and North China.

Polygonum minutum HAYATA, sp. nov. (Pl. XXX.). Herbæ perennes? minutæ scandentes ramosæ, caulibus glabris. Folia parva ovato-triangularia $4\frac{1}{2}$ mm. longa 4 mm. lata apice acuta vel obtusa utraque pagine breve setulosa integra, petiolis 1 mm.—2 mm. longis, ochreis $1\frac{1}{2}$ mm. longis setulosis laceratis. Flores 3–4 conferti, pedicellis 1 mm. longis, bracteolis hyalinis connatis 2–3-fidis. Perianthium late campanulatum $1\frac{1}{3}$ mm. latum tubo brevissimo, limbo 5 lobato, lobis ovatis obtusis glandulis sparce punctatis, discis basi perianthii connatis. Stamina 8 subæqualia. Achænia ovato-trigona ad angulas prominente costata $2\frac{1}{2}$ mm. longa $1\frac{1}{2}$ mm. lata, styli ramis brevissimis.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2267).

Polygonum morrisonense HAYATA, sp. nov. (Pl. XXXI.). Herbæ annuæ? caulibus erectis vel adscendentibus pauciramosis ad nodos

retrosum pilosis cæterum glabris, ochreis pilosis truncatis 7 mm. longis. Folia obcuneata 4 cm. longa 2 cm. lata apice cuneato-acuminata basi abrupte angusta ad petiolum 1 cm. longum attenuata rarius infra medium profunde sinuata, folia superiora subsessilia obcuneato-cordata, margine albo-lamellata sursum integra deorsum ciliata utraque pagine glandulis subpellucidis punctata. Flores dense spicato-capitati, capitulis subovoideis 8 mm. longis 6 mm. latis ad apices ramorum vel axillas foliorum superiorum solitariis pedunculatis, pedunculis 1 cm. longis apice glanduloso-hispidulis, bracteis scariosis ovato-acutis $3\frac{1}{2}$ mm. longis 2 mm. latis. Flores 2 ad axillas bractearum siti, bracteolis subconnatis hyalinis, pedicellis brevissimis. Perianthium urceolato-campanulatum 4 mm. longum corollinum, 5-lobum segmentis subæqualibus oblongis $2\frac{1}{2}$ mm. longis. Stamina 8, inæqualia; 3 longiora prope basin perianthii affixa, filamentis basi utrinque glandulosis; 5 breviora tubo perianthii affixa, filamentis basi non-glandulosis. Styli rami 3. Achænia ovato-globosa subtrigona vix 2 mm. longa.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2074).

Somewhat near *P. alatum* HAM.; but differs from it in having no involucre leaf; from *P. microcephalum* DON, in having no auricled leaf.

Polygonum Posumbu HAM.; MIQ. Fl. Ind. Bat. I. p. 1000; HOOK. f. Fl. Brit. Ind. V. p. 38; FRANCHET. Pl. David. p. 258; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 394, et II. p. 473; FORBES et HEMSL. Ind. Fl. Sin. II. p. 345; HENRY, List Pl. Formos. p. 76. DIELS, Fl. Centr. Chin. p. 312; MATSUM. et HAYATA, Enum. Pl. Formos. p. 340.

HAB. in monte Morrison, ad 8500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1872).

DISTRIB. Japan and China; Java to East Himalaya and Khasia.

Aristolochiaceæ.

Asarum LINN.

Asarum macranthum HOOK. f. in Bot. Mag. t. 7022; HEMSL. in Gard. Chron. 3rd. Ser. VII. p. 421; FORBES et HEMSL. Ind. Fl. Sin. II. p. 359; MATSUM. et HAYATA, Enum. Pl. Formos. p. 343.

HAB. Taitō : Daironkōsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2186).

DISTRIB. An endemic plant.

Piperaceæ.

Piper LINN.

Piper Futokadsura SIEB. et ZUCC. Fl. Jap. Fam. Nat. II. p. 231, n. 811; MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 139; C.DC. in DC. Prodr. XVI-1, p. 346; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 443; MAXIM. in Mém. Biol. XII. p. 532; FORBES et HEMSL. Ind. Fl. Sin. II. p. 365; HENRY, List Pl. Formos. p. 77; MATSUM. et HAYATA, Enum. Pl. Formos. p. 346.

HAB. Taitō : Tōkeisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1910).

DISTRIB. Japan.

Peperomia R. et PAV.

Peperomia dindygulensis MIQ.; C.DC. in DC. Prodr. XVI-1, p. 442; HOOK. f. Fl. Brit Ind. V. p. 98; WIGHT, Ic. Pl. Ind. or. t. 1921; FORBES et HEMSL. Ind. Fl. Sin. II. p. 366; HENRY, List Pl. Formos. p. 77; MATSUM. et HAYATA, Enum. Pl. Formos. p. 346.

HAB. Suizan, in montibus Morrison, leg. S. NAGASAWA, Oct. 1905, (No. 558); in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2045).

DISTRIB. South China, and the western peninsula of India.

Peperomia Nakaharai HAYATA, sp. nov. (XXXII.). Herbae perennes ramosissimae glabrae procumbentes, ramis ascendentibus 8–9 cm. longis glaberrimis. Folia opposita rarius 3–4 verticillata cuneato-obovata apice profunde emarginata basi obtusa, circ. 1 cm. longa 6 mm. lata integerrima crassiuscula obscure marginata subtus pallidiora. Flores ♀ spicati, spicis clavatum incrassatis $1\frac{1}{2}$ cm. longis. Ovarium sessile ovoideum, bracteis peltatis glanduloso-punctatis.

HAB. in monte Arizan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, ad 8000 ped. alt., T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1997).

Peperomia reflexa A. DIETR.; MIQ. Fl. Ind. Bat. I.-2, p. 436; WIGHT, Ic. Pl. Ind. or. t. 1923; HOOK. f. Fl. Brit. Ind. V. p. 99; DC. Prodr. XVI.-1, p. 451; FORBES et HEMSL. Ind. Fl. Sin. II. p. 366; MATSUM. et HAYATA, Enum. Pl. Formos. p. 347.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2033).

DISTRIB. Subtropical Asia, Africa, America, and Australia, South China.

Chloranthaceae.

Chloranthus Sw.

Chloranthus serratus ROEM. et SCHULT.; SOLMS, in DC. Prodr. XVI.-1. p. 475; MIQ. Fl. Ind. Bat. I.-1. p. 802; FRANCH. et SAVAT. Enum.

Pl. Jap. I. p. 444; FORBES et HEMSL. Ind. Fl. Sin. II. p. 369; DIELS, Fl. Centr. Chin. p. 273; MATSUM. et HAYATA, Enum. Pl. Formos. p. 348.

HAB. Kagi: Kōdenshō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1774).

DISTRIB. Japan and central China.

Laurineæ.

Cinnamomum BURMAN.

Cinnamomum Camphora NEES et EBERM.; MEISN. in DC. Prodr. XV.-1. p. 24; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 411; MIQ. Fl. Ind. Bat. I.-1, p. 892; FORBES et HEMSL. Ind. Fl. Sin. II. p. 371; DIELS, Fl. Centr. Chin. p. 347; MATSUM. et HAYATA, Enum. Pl. Formos. p. 349.

Laurus Camphora LINN. Sp. Pl. ed.-2, p. 528; THUNB. Fl. Jap. p. 172.

HAB. in montibus Morrison.

DISTRIB. Japan and China.

Proteaceæ.

Helicia LOUR.

Helicia formosana HEMSL. in Ann. Bot. IX. p. 156, et in FORBES et HEMSL. Ind. Fl. Sin. II. p. 394; HENRY, List Pl. Formos. p. 80; MATSUM. et HAYATA, Enum. Pl. Formos. p. 354.

forma **subintegra**, foliis subintegris.

HAB. Kōshun; Botansha, leg. G. NAKAHARA, 1905.

forma **acuminata**, foliis apice abrupte acuminatis.

HAB. Nantō: Shichikwaikutsuzan, leg. N. KONISHI, (No. 39); in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2013).

DISTRIB. An endemic plant.

Thymelæaceæ.

Daphne LINN.

Daphne Championi BENTH. Fl. Hongk. p. 296; FORBES et HEMSL. Ind. Fl. Sin. II. p. 395; MATSUM. et HAYATA, Enum. Pl. Formos. p. 355.

HAB. Taitō: Shinrōzan, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1836).

DISTRIB. Hongkong.

Stellera LINN.

Stellera Chamæjasme LINN.; MEISN. in DC. Prodr. XIV. p. 549; MAXIM. Ind. Fl. Pek. in Prim. Fl. Amur. p. 476; Hook. f. Fl. Brit. Ind. V. p. 196; "LEDEB. Ic. Pl. Ross. t. 374"; FORBES et HEMSL. Ind. Fl. Sin. II. p. 401.

HAB. in monte Morrison, ad 8000 ped. alt., Oct. 1906, (No. 1708), et eodem monte, ad 7500 ped. alt., (No. 1999), leg. T. KAWAKAMI et U. MORI.

DISTRIB. Caucasus through central Asia eastward to North India, Malay, and central China.

Elæagnaceæ.

Elæagnus LINN.

Elæagnus umbellata THUNB. Fl. Jap. p. 66, t. 14; SCHLECHT. in DC. Prodr. XIV. p. 614; MAXIM. in Mém. Biol. VII. p. 559; Hook. f. Fl. Brit. Ind. V. p. 201; S. MOORE, in Journ. Bot. (1878), p. 138; FORBES et HEMSL. Ind. Fl. Sin. II. p. 404.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 675); Arizan et Tōzan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 9000

ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1952 et 1891); in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1856).

DISTRIB. China to Japan, North India westward to Afghanistan.

Loranthaceæ.

Loranthus LINN.

Loranthus Yadoriki SIEB. in SIEB. et ZUCC. Fl. Jap. Fam. Nat. n. 398; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 481; FORBES et HEMSL. Ind. Fl. Sin. II. p. 407; MAXIM. in Mém. Biol. IX. p. 609; HENRY, List Pl. Formos. p. 80; DIELS, Fl. Centr. Chin. p. 305; MATSUM. et HAYATA, Enum. Pl. Formos. p. 357.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7500 ped. alt., (Nos. 2038, 1786 et 2007), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. Japan and south central China.

Loranthus Owatarii HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 357.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1948); in montibus centralibus, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1865).

Viscum LINN.

Viscum articulatum BURM.; MIQ. Fl. Ind. Bat. I.-1, p. 806; DC. Prodr. IV. p. 284; HOOK. f. Fl. Brit. Ind. V. p. 226; FORBES et HEMSL. Ind. Fl. Sin. II. p. 407; HENRY, List Pl. Formos. p. 81; DIELS, Fl. Centr. Chin. p. 305; MATSUM. et HAYATA, Enum. Pl. Formos. p. 358.

HAB. Suizan, in montibus Morrison, ad 7700 ped. alt., leg. S.

NAGASAWA, Oct. 1905, (No. 751); in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2014).

DISTRIB. Widely spread in India and Malay.

Viscum orientale WILLD. var. **multinerve** HAYATA, in Tōkyō Bot. Mag. XX. p. 72.

HAB. Jitsugetsutan, leg. G. NAKAHARA, Aug. 1905.

DISTRIB. Type: Java.

Balanophoreæ.

Balanophora FORST.

Balanophora spicata HAYATA, sp. nov. (Pl. XXXIII). Planta ♀ gracilis 7 cm. alta. Pedunculus per partem inferiorem bracteatus, bracteis sæpius suboppositis. Inflorescentia ovata $1\frac{1}{2}$ cm. longa. Flores ♀ brevissime stipitati circa stipites graciles spadiceorum capitatorum apiculorum dispositi, stylis gracillimis quam ovario circ. 2-plo longioribus. Planta ♂ graciliuscula circ. 14 cm. alta. Pedunculus infra medium bracteatus, bracteis suboppositis. Inflorescentia incrassata circ. 5 cm. longa. Flores ♂ sessiles laxiuscule spicati. Perianthium crassiusculum, segmentis 6 inæqualibus, postice et antice latissimis apice truncatis, lateralibus ovatis obtusis minoribus. Antherarum loculi circ. 15, 2-seriatim dispositi.

HAB. Kishirei, ad 4000 ped. alt., leg. S. NAGASAWA, Nov. 1905.

The present plant is very like *B. laxiflora* HEMSL. in its habit; but differs from it in having multi-locular anthers and in the segments of perianths.

Balanophora parvior HAYATA, sp. nov. (Pl. XXXIV). Planta ♀ parvior 7 cm. alta. Pedunculus per totam fere longitudinem bracteatus, bracteis ovatis. Inflorescentia oblongo-cylindræa $3\frac{1}{2}$

cm. longa. Flores ♀ brevissime stipitati, circa stipites graciles spadiceorum clavato-capitatorum dispositi, stylis gracillimis quam ovario 3-plo longioribus. Planta ♂ gracilis circ. 14 cm. alta. Pedunculus fere per totam partem bracteatus, bracteis suboppositis. Inflorescentia incrassata circ. 4 cm. longa. Flores ♂ sessiles, laxiuscule spicati. Perianthium crassiusculum, segmentis 6 inæqualibus, postice et antice majoribus ovatis truncatis, lateralibus parvioribus, oblongo-ovatis acutis. Antherarum loculi circ. 20, irregulariter dispositi.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2227).

This differs from the preceding species in the shape of the segments and the cells of the anthers.

Euphorbiaceæ.

Buxus LINN.

Buxus sempervirens LINN.; MUELL. ARG. in DC. Prodr. XVI.-I, p. 18; HOOK. f. Fl. Brit. Ind. V. p. 267; BENTH. Fl. Hongk. p. 315, (excl. syn. *B. sinensis* LINK.); FORBES et HEMSL. Ind. Fl. Sin. II. p. 418.

Buxus japonica MUELL. ARG. in DC. Prodr. XVI.-I. p. 20; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 428.

Buxus sempervirens LINN. var. *japonica* MAKINO, in Tōkyō Bot. Mag. IX. p. 281, et XV. p. 169; HAYATA, Revis. Euphorb. et Bux. Jap. in Journ. Scie. Coll. XX.-3. p. 82.

HAB. loco non indicata.

DISTRIB. This plant extends from Japan and China through North Africa and Europe to the Canary islands.

The plant presents a great range of variation. Although my plant does not exactly agree with this species, still I think it may be regarded as a form of it.

Glochidion FORST.

Glochidion formosanum HAYATA, in Journ. Scie. Coll. XX.-3. p. 20, t. 2, G.; MATSUM. et HAYATA, Enum. Pl. Formos. p. 360.

HAB. loco non indicato.

Glochidion zeylanicum A. JUSS.; MUELL. ARG. in Linnæa, XXXII. p. 60, et in DC. Prodr. XV.-2. p. 281; HOOK. f. Fl. Brit. Ind. V. p. 311
MATSUM. et HAYATA, Enum. Pl. Formos. p. 360.

DISTRIB. Malay archipelago and Deccan Peninsula.

Aleurites FORST.

Aleurites cordata STEUD.; MUELL. ARG. in DC. Prodr. XV.-2, p. 724; FORBES et HEMSL. Ind. Fl. Sin. II. p. 433; DIELS, Fl. Centr. Chin. p. 430; HAYATA, in Journ. Scie. Coll. XX.-3, p. 55; MATSUM. et HAYATA, Enum. Pl. Formos. p. 366.

HAB. Kagi: Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1757).

DISTRIB. Japan and south central China.

Mercurialis LINN.

Mercurialis leiocarpa SIEB. et ZUCC. Fl. Jap. Fam. Nat. I. p. 145, n. 78; MUELL. ARG. in DC. Prodr. XV.-2, p. 795; MIQ. Prol. Fl. Jap. p. 291; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 425; FORBES et HEMSL. Ind. Fl. Sin. II. p. 436; DIELS, Fl. Centr. Chin. p. 428; PALIBIN, Conspect. Fl. Koreæ, II. p. 43; HAYATA, in Journ. Scie. Coll. XX.-3, p. 38, t. 3, D; MATSUM. et HAYATA, Enum. Pl. Formos. p. 363.

HAB. Tōzan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1716).

DISTRIB. Japan and south central China.

Mallotus LOUR.

Mallotus cochinchinensis LOUR. Fl. Cochinch. ed.-WILLD. p. 635; MUELL. ARG. in Linnæa, XXXIV. p. 189; HOOK. f. Fl. Brit. Ind. V. p. 430; FORBES et HEMSL. Ind. Fl. Sin. II. p. 439; HENRY, List Pl. Formos. p. 84; HAYATA, in Journ. Scie. Coll. XX.-3, p. 45, t. 3, J; MATSUM. et HAYATA, Enum. Pl. Formos. p. 364.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1906, (No. 713).

DISTRIB. South China, Malay peninsula and archipelago.

Urticaceæ.

Fatoua GAUD.

Fatoua pilosa GAUD.; BUREAU, in DC. Prodr. XVII. p. 256; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 434; FORBES et HEMSL. Ind. Fl. Sin. II. p. 454.

Fatoua japonica BLUME, in MUSS. Bot. Lugd.-Bat. II.-1, p. 38; HANCE, in Journ. Bot. (1878) p. 232.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2065).

DISTRIB. Japan, South China, and Malay archipelago.

Morus LINN.

Morus alba LINN. Sp. Pl. ed.-2. p. 1398; BUREAU, in DC. Prodr. XVII. p. 238; FRANCHET, Pl. David. p. 270; HOOK. f. Fl. Brit. Ind. V. p. 492; FORBES. et HEMSL. Ind. Fl. Sin. II. p. 455; DIELS, Fl. Centr. Chin. p. 297; PALIBIN, Conspect. Fl. Koreæ, II. p. 45; MATSUM. et HAYATA, Enum. Pl. Formos. p. 373.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1778); Taichū : Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. China and Japan; temperate and subtropical Asia.

**Ficus* LINN.

The plants belonging to this genus are very few in the flora of the hilly regions. The specimens brought to me are all wanting of receptacles and therefore they are not determinable.

Urtica LINN.

Urtica Thunbergiana SIEB. in SIEB. et ZUCC. Fl. Jap. Fam. Nat. II. p. 214, n. 756; DC. Prodr. XVI.-1. p. 55; FORBES et HEMSL. Ind. Fl. Sin. II. p. 472; DIELS, Fl. Centr. Chin. p. 301; MATSUM. et HAYATA, Enum. Pl. Formos. p. 390.

Urtica dioica THUNB. Fl. Jap. p. 69.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1747).

DISTRIB. Japan and central China.

Girardinia GAUD.

Girardinia heterophylla DCNE.; DC. Prodr. XVI.-1, p. 100; BLUME, Mus. Bot. Lugd.-Bat. II. p. 158; HOOK. f. Fl. Brit. Ind. V. p. 550.

* The following *Ficus* was found on the sea shore in the island of Kōtō. As the plant is very remarkable for the smallest size of receptacles and the full description of the species was not previously made, I take this occasion to give the following description of the plant.

Ficus vaccinioides HEMSL. et KING. (Pl. XXXV.), in Ann. Bot. Gard. Calc. I.-2, p. 126, t. 159, A; FORBES et HEMSL. Ind. Fl. Sin. II. p. 468; MATSUM. et HAYATA, Enum. Pl. Formos. p. 379. Suffrutices. Rami reptantes vel scandentes graciles ferrugineo-tomentoso-pubescentes remote foliati teretes. Folia subrhombea vel obovata obtusa vel acuta basi rotunda vel subcordata $1\frac{1}{2}$ -2 cm. longa 1 cm.-8 mm. lata 1-nervia, venis primariis lateralibus utrinque 3-4 sub angulo 60° egressis, venulis reticulatis inconspicuis, margine minute serrulata, petiolis 2-3 mm. longis, stipulis subulatis 1-nerviis caducis scariosis ferrugineis 3 mm. longis. Receptacula axillaria solitaria breve stipitata globosa apice leviter contracta basi rotundata rarius leviter attenuata hirsuta, ore rotundo concavo extus bracteis latioribus clausis et intus bracteis triangularibus vel lanceolatis instructo, basi bracteis 3-4 late ovatis acutis. Fl. ♂: sessiles, perianthia 4-5 partita, segmentis linearibus, purpureo-fuscentibus; stamina 3-4, filamentis brevioribus. Fl. gulliferi saepe longe pedicellati; ovarium stipitatum. Fl. ♀: breve pedicellati; perianthia 4-6-partita, segmentis purpureo-fuscentibus, subulato-linearibus; ovarium obovoideum basi contractum, stylo laterali filiformi.

HAB. Kōtōshō, leg. T. KAWAKAMI et U. MORI, 1907, (No. 2461); ibidem, G. NAKAHARA, 1905, (No. 974).

DISTRIB. An endemic, and very local plant.

This curious and beautiful *Ficus* was found creeping on the walls or rocks along the sea shore. It is very remarkable for its smallest form of the receptacles. Gall and male flowers are found mixed in one receptacle, while female flowers are in a different receptacle.

Urtica heterophylla VAHL; WIGHT, Ic. Pl. Ind. or. t. 687.

Givardinia palmata GAUD.; FORBES et HEMSL. Ind. Fl. Sin. II. p. 475.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1769).

DISTRIB. Java, Ceylon, and Himalaya.

Pilea LINDL.

Pilea stipulosa MIQ.; Hook. f. Fl. Brit.-Ind. V. p. 555; MIQ. Fl. Ind. Bat. I.-2, p. 236; FORBES et HEMSL. Ind. Fl. Sin. II. p. 478; DIELS, Fl. Centr. Chin. p. 303; MATSUM. et HAYATA, Enum. Pl. Formos. p. 383.

Pilea angulata BLUME, Mus. Bot. Lugd.-Bat. II. p. 55; WEDD. in DC. Prodr. XVI.-1, p. 131; MAXIM. in Mém. Biol. IX. p. 631.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1985).

DISTRIB. Central China, North India, Ceylon, and Java.

Pilea Wattersii HANCE, in Journ. Bot. (1885) p. 327; FORBES et HEMSL. Ind. Fl. Sin. II. p. 479; MATSUM. et HAYATA, Enum. Pl. Formos. p. 383.

HAB. Tappansha, ad 3108 ped. alt., (No. 590), et Sanchōki, ad 4000 ped. alt., leg. S. NAGASAWA, Oct. 1905.

DISTRIB. An endemic plant.

Lecanthus WEDD.

Lecanthus Wightii WEDD.; MIQ. Fl. Ind. Bat. I.-2, p. 238; Hook. f. Fl. Brit. Ind. V. p. 559; FORBES et HEMSL. Ind. Fl. Sin. II. p. 480.

Lecanthus peduncularis WEDD. in DC. Prodr. XVI.-1, p. 164.

Lecanthus Wallichii WEDD. in DC. Prodr. XVI.-1, p. 164; FORBES et HEMSL. Ind. Fl. Sin. II. p. 480.

Lecanthus major WEDD. in DC. Prodr. XVI.-1, p. 164.

Elatostema ovatum. WIGHT, Ic. Pl. Ind. or. t. 1985.

HAB. Arizan, leg. G. NAKAHARA, Nov. 1906.

DISTRIB. Central China: Szechuen and Yunnan. The Himalayas, Java, and Tropical Africa.

Very small form of the specis.

Elatostema FORST.

Elatostema minutum HAYATA, sp. nov. (Pl. XXXVI.). Herbæ parvissimæ, caulibus decumbentibus basi ad nodos radican-
tibus tomentosis. Folia alterna obovata 14 mm. longa 7 mm. lata valde obliqua apice obtusa basi inferiore latere rotundata superiore latere angusta, petiolis 1–2 mm. longis, utraque pagina pilis minutissimis dense atque pilis setulosis sparse oblecta margine serrata, serraturis acutis setulosis, viridissima, stipulis lanceolatis. Flores in receptaculo campanulato fasciculati. Receptacula in axillis foliorum solitaria sessilia, bracteis parvis. Achænia ovata minuta punctata.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1986).

Elatostema sessile FORST.; WEDD. in DC. Prodr. XVI-1, p. 172; HOOK. f. Fl. Brit. Ind. V. p. 563; FORBES et HEMSL. Ind. Fl. Sin. II. p. 483.

Procris sessilis HOOK. et ARN. Bot. Beech. Voy. p. 70.

var. ***cuspidatum*** WEDD. in DC. Prodr. XVI-1, p. 173; HOOK. f. Fl. Brit. Ind. V. p. 564; MAXIM. in Mém. Biol. IX. p. 634; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 495.

HAB. in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1987).

DISTRIB. Type: central China through Japan to the Pacific islands and also in Malay.

Procris JUSS.

Procris lævigata ELUME; MIQ. Fl. Ind. Bat. I.-2, p. 248; WEDD. in DC. Prodr. XVI-1, p. 192; HOOK. f. Fl. Brit. Ind. V. p. 575; FORBES et HEMSL.

Ind. Fl. Sin. II. p. 484; HOOK. Ic. Pl. Ind. or. t. 1295; MATSUM. et HAYATA, Enum. Pl. Formos. p. 385.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905. (No. 591).

DISTRIB. South China, India throughout, and extending from Java to the Comoro islands.

Juglandaceæ.

Juglans LINN.

Juglans sp.

HAB. Tōhosha, ad 2930 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 604).

Engelhardtia LESCH.

Engelhardtia spicata BLUME, Fl. Jav. Jugland. p. 8, t. 1, et t. 5, A; DC. Prodr. XVI-2. p. 140; MIQ. Fl. Ind. Bat. I.-1. p. 842; HOOK. f. Fl. Brit. Ind. V. p. 595; MERRILL, in Philipp. Journ. Scie. I. Supp. Bot. p. 41.

var. **formosana** HAYATA, n. v. Bracteæ fructiferæ parviores $2\frac{1}{2}$ cm. longæ 3-lobatæ, lobis lateralibus $1\frac{1}{2}$ cm. longis, terminale $2\frac{1}{2}$ cm. longo lineari-oblongo, scariosis reticulatis.

HAB. Kussaku, (Nov. 6), et Bunsanho, (No. 25), leg. N. KONISHI, Sept. 1902; Giran: Chūrei, leg. T. KAWAKAMI et U. MORI, Juni. 1906, (No. 1359), Nantō; Nankōkei, leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1173).

DISTRIB. Type: Java, Cochinchina, subtropical Himalaya.

Cupuliferæ.

Alnus GÆRTN.

Alnus maritima NUTT. var. **formosana** BURKILL, in FORBES et HEMSLE. Ind. Fl. Sin. II. p. 500; HENRY, List Pl. Formos. p. 90; MATSUM. Revis.

Aln. Jap. in Journ. Scie. Coll. XVI.-5, p. 8; MATSUM. et HAYATA, Enum. Pl. Formos. p. 391.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1731, 1926 et 1047).

DISTRIB. Type: Japan, North China, Manchuria, and extending to North America.

Carpinus LINN.

Carpinus sp.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1998).

Quercus LINN.

Quercus amygdalifolia SKAN, in FORBES et HEMSL. Ind. Fl. Sin. II. p. 506; MATSUM. et HAYATA, Enum. Pl. Formos. p. 393.

HAB. Nantō: Mushazan, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (Nos. 1139 et 1194).

Quercus dentata THUNB. Fl. Jap. p. 177, et Ic. Pl. Jap. Dec.-V. t. 6; DC. Prodr. XVI.-2, p. 13; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 445; FORBES et HEMSL. Ind. Fl. Sin. II. p. 511; DIELS, Fl. Centr. Chin p. 288; PALIBIN, Conspect. Fl. Koreae, II. p. 51; MATSUM. et HAYATA, Enum. Pl. Formos. p. 393.

Quercus obovata BUNGE; DC. Prodr. XVI.-2, p. 13.

HAB. Taichū: Dainankō, leg. T. KAWAKAMI et U. MORI, Aug. 1906, (No. 1220).

DISTRIB. China and Japan.

Quercus formosana SKAN, in FORBES et HEMSL. Ind. Fl. Sin. II. p. 513; MATSUM. et HAYATA, Enum. Pl. Formos. p. 393.

HAB. Kōshūn; Kōbutsuzan, leg. N. KONISHI, April. 1898.

Quercus glauca THUNB. Fl. Jap. p. 175; HOOK. f. Fl. Brit. Ind. V.

p. 604; FORBES et HEMSLEY, Ind. Fl. Sin. II. p. 515; DIELS, Fl. Centr. Chin. p. 293; MATSUMURA et HAYATA, Enum. Pl. Formos. p. 392.

HAB. Nantō: Nankōkei, (No. 1172), et Kwantōzan, (No. 1120), leg. T. KAWAKAMI et U. MORI, Aug. 1906.

DISTRIB. Japan, China, and Himalaya.

Quercus (*Pasania*) **Kawakamii** HAYATA, sp. nov. Ramuli validiusculi sulcati cinereo-flavescentes. Folia oblongo-obovata 13–15 cm. longa 6–7 cm. lata apice abrupte obtuse acuminata basi attenuata integra apicem versus obscure undulato-serrata coriacea supra nitida, costis planis leviter sulcatis, subtus pallidiora, costis valde prominentibus venis primariis lateralibus utrinque 13 prominulis sub angulo 50° egressis prope margines curvatis anastomosantibus tenuibus obscuris, petiolis semiteretibus supra leviter sulcatis basin versus incrassatis circ. 3 cm. longis. Flores ignoti. Fructus juniore ternatim aggregati sed proventu solitarii ad pedunculum incrassatum remote dispositi. Cupula subpatelliformis 2½ cm. in diametro 7 mm. longa intus margine depressa medio convexa extus squamis adpressis latis apice cuspidatis pubescentibus 7–8 seriatis suffulta. Glans depresso-globosa breve apiculata 2 cm. longa 2¼ cm. in diametro, cicatrici depressa.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906.

The present *Quercus* bears some resemblance to *Q. spicata* SMITH, *Q. formosana* SKAN, and *Q. brevicaudata* SKAN; but is easily distinguished by the shape of the leaves. Mr. S. A. SKAN informs me that this new plant is the nearest to *Quercus spicata* SMITH, but sufficiently distinct in the long stalked leaves broad and rounded at the apex.

Quercus (*Pasania*) **Konishii** HAYATA, sp. nov. (Pl. XXXVII.). Ramuli juniores dense pubescentes angulati. Folia petiolata re-

motiuscula oblongo-elliptica 7–9 cm. longa 2–3 cm. lata apice cuspidato-acuminata basi angusta integra apicem versus serrata, serris obtusis, supra nitida, nervis et venis supra impressis subtus valde prominentibus, venis primariis lateralibus utrinque 7 sub angulo 45° egressis ad apices serrarum attingentibus, venulis tenuibus vix prominulis, petiolis sub-gracilibus 1–2 cm. longis dense pubescentibus. Amenta ad apicem ramuli 2–3-fasciculata erecta androgyna 5–8 cm. longa validiuscula erecta, floribus inferioribus foemineis remotis solitariis, superioribus masculinis dense aggregatis. Fl. ♂ : perianthium 6-lobatum, lobis obtusis incrassatis rotundatis, intus hirsutum extus tomentosum. Stamina 8–12, filamentis perianthio 3-plo-longioribus; antherae globosae glabrae; bracteis ovatis basi incrassatis concavis. Ovarii rudimentum dense albotomentosum. Fl. ♀ : involucrem globosum tomentosum squamis incrassatis triangularibus obtusis multiseriatim suffultum; ovarium globoso-conicum, stylis trifidis incrassatis; bracteis subulatis incrassatis. Fructus secus pedunculum incrassatum foliis paullo breviorum dense dispositi. Cupula subpatelliformis medio depressa 8 mm. longa 3 cm. in diametro aequans intus pallida rubra leviter glauca pubescens extus griseo-pubescens, squamis latis basi 2-sulcatis minute cuspidatis arcte adpressis circ. 10-seriatis suffulta. Glans 2 cm. longa 3 cm. in diametro semiglobosa nitida brevissime apiculata, cicatrici margine depressa medio convexa.

HAB. Taitō: Tōkwasan, Shinshōshō, leg. N. KONISHI, 1906, Tōtōgyōho, ad 2500 ped. alt., Juli. 1906; Kōshun: Botansha, leg. G. NAKAHARA, Dec. 1906, (No. 747.); Nantō: Hinokiyama, leg. G. NAKAHARA, Feb. 1907.

Mr. S. A. SKAN informs me that this new plant appears to be a distinct new species and there is nothing at Kew near it among the Asiatic material.

Quercus serrata THUNB. Fl. Jap. p. 176; DC. Prodr. XVI.-2, p. 50; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 447; HOOK. f. Fl. Brit. Ind. V. p. 601; FORBES et HEMSL. Ind. Fl. Sin. II. p. 520.

HAB. Taichū : Toshikaku, leg. Y. TASHIRO, April. 1896.

DISTRIB. Japan, China, and Himalaya.

Quercus Junghuhnii MIQ. (Fig. 2.); Fl. Ind. Bat. I.-1, p. 853; Ann. Bot. Gard. Calc. II. p. 78, t. 73.

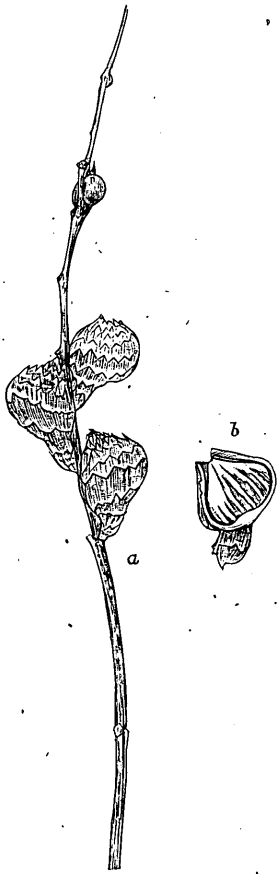


Fig. 2.

Quercus Junghuhnii MIQ.

a— a branch of an inflorescence bearing fruits; b— a fruit, in vertical section, glans clearly seen.

Ramuli graciles griseo-fuscentes patentes. Folia petiolata patentia coriacea elliptico-ovata vel ovato-lanceolata 7 cm. longa 2 cm. lata margine integra extra medium grosse serrata apice longe cuspidata vel caudata leviter recurva basi rotundata æquilateralia rarius obliqua supra viridia costis impressis subtus ferrugineo-albicantia sub lente integumento tenuissimo lepidoto oblecta, costis prominentibus, venis primariis lateralibus utrinque circ. 10 apicem versus inconspicuis sub angulo 60° egressis, petiolis supra sulcatis semiteretibus 8 mm. longis. Fructus secus pedunculum gracilem erectum remote dispositi solitarii. Cupula turbinata valde obliqua 1 cm. in diametro sursum acuta deorsum abrupte attenuata in stipitem 7 mm. longum abeuns, glandem includens, extus squamis dentoideis in annulum dispositis 7-∞-seriatis sursum erectis deorsum adpressis, extus tenuiter

cinero-tomentosa, intus sericea, crustaceo-fragilis. Glans subglobosa sursum attenuata acutiuscula glabra brunnea 8 mm. longa 9 mm. lata.

HAB. in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. Java.

I am informed by Mr. S. A. SKAN that this plant is certainly very near *Quercus cuspidata* THUNB., and still nearer *Q. Carlesii* HEMSL. in Hook. Ic. Pl. t. 2591, from Foo-chow. But, in Mr. HEMSLEY'S species, the leaves are not so much rounded at the base, the fruit is not so distinctly stipitate, and it is broadest in the middle, not at the base. To my opinion, however, this Formosan plant is quit referable to the Javan species, although I have not yet seen the specimen of it.

Quercus variabilis ELUME, Mus. Bot. Lugd.-Bat. I. p. 297; DC. Prodr. XVI.-2, p. 50; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 447; MATSUM. et HAYATA, Enum. Pl. Formos. p. 394.

HAB. Taichū : Suiteiryō, leg. Y. TASHIRO, 1896, (No. 77); Biyō-ritsu : Banabōzan, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1106).

DISTRIB. Japan.

Quercus sp.

HAB. Bunsanho (No. 3), et Heirinbi (No. 21), leg. N. KONISHI, Oct. 1899.

Very near *Q. glauca* THUNB.; but the leaves are much narrower and the veins are more elevated. The leaves of dried specimens are of a color of neutral tint.

Castanopsis SPACH.

Castanopsis indica A. DC. in SEEM. Journ. Bot. (1864) p. 182; DC.

Prodr. XVI.-2, p. 109; MIQ. in Ann. Mus. Bot. Lugd.-Bat. I. p. 119; Hook. f. Fl. Brit. Ind. V. p. 620.

Castanea indica ROXB. Fl. Ind. ed.-CAREY, III. p. 643; BLUME, Mus. Bot. Lugd.-Bat. I. p. 284; WIGHT, Ic. Pl. Ind. or. t. 417.

Castanopsis tribuloides var. *formosana* HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 394.

HAB. Banchoryō: Rokurisha, leg. G. NAKAHARA, Oct. 1905, (No. 593).

DISTRIB. Tropical Himalaya.

Castanopsis taiwaniana HAYATA, sp. nov. (Fig. 3). Ramuli teretes dense ferrugineo-pubescentes. Folia breviter petiolata patentia oblongo-lanceolata 8-14 cm. longa $3\frac{1}{2}$ -5 cm. lata integerrima apice obtuse acuminata basi rotundata vel leviter attenuata coriacea rigida bicoloria supra glabra nitida pallido-viridia costis impressis venis inconspicuis, subtus ochraceo-lepidota costis prominentibus venis primariis lateralibus utrinque

10-13 sub angulo 60° egressis intra margines curvatis anastomosantibus, petiolis 1 cm. longis basi leviter incrassatis sulcatis semiteretibus; folia novella conduplicativa subtus dense ferrugineo-tomentosa, stipulis caducis lateralibus sub-obliquis obtusissimis integerrimis sub-coriaceis venis parallelis sericeis ab initio erectis dein revolutis. Amenta 10 cm. longa ex axillis foliorum superiorum solitaria simplicia erecta remotiflora. Fructus sessiles solitarii globosi magnitudine cum spinis 3 cm. æquantes. Cupula clausa intus spadiceo-sericea

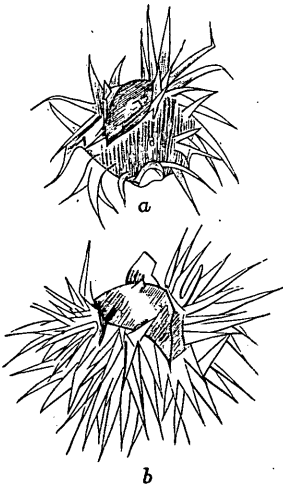


Fig. 3.
Castanopsis taiwaniana HAYATA.
a and b—fruits.

extus echinata, spinis confertis erectis subulatis rigidis rufescentibus sericeis. Glans solitaria globoso-trigona basi truncata leviter convexa ochraceo-rufescens pubescens vel subglabra.

HAB. Nantō, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1185 et 1165); Shintiku: Goshizan, leg. T. KAWAKAMI, Dec. 1905, (No. 1294); Hokuho, leg. N. KONISHI, 1899, (No. 8).

This *Castanopsis* is very like *C. javanica* A. DC.; but differs from it in having subglabrous nuts and more strong spines on the involucre.

I am informed by Mr. S. A. SKAN that this new plant is very near to *C. Hystrix* A. DC., in which the leaves, though usually toothed, are sometimes quite intire, and that there is no specimen at kew of *C. Hystrix* with the spines of the involucre so stout and that is apparently the only difference.

Fagus LINN.

Fagus sylvatica LINN. Sp. Pl. ed.-2, p. 1416; DC. Prodr. XVI.-2. p. 118.

var. ?

HAB. Kushaku: Sōtenzan, ad 5600 ped. alt., leg. N. KONISHI, Feb. 1906, (spec. steril.).

Salicaceæ.

Salix LINN.

Salix sp.

HAB. in monte Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 596).

It somewhat resembles the Japanese *S. Sieboldiana* BLUME. The specimens being all sterile are not yet determined.

Gymnospermeæ.

Coniferæ.

Libocedrus ENDL.

***Libocedrus macrolepis* BENTH.** (Fig. 4). BENTH. in BENTH. et HOOK. Gen. Pl. III. p. 426; FORBES et HEMSL. Ind. Fl. Sin. II. p. 540; MASTERS, in Journ. Linn. Soc. XXXVII p. 411; MAYR, Fremdland. Wald-und Park-Bäume, p. 316.

Calocedrus macrolepis KURZ, in Journ. Bot. (1873) p. 196.

HAB. Rinkōshō: leg. T. KAWAKAMI et U. MORI, Sept. 1906, (No. 1675).

As the descriptions of the male flowers and seeds were not sufficiently made previously, the following accounts may be properly added here.

Flores masculini ad ramulos brevissimos terminales oblongi, staminibus circ. 8, filamentis ad basin squamarum subpeltatis, squamis suborbicularibus vel subcordatis, loculis antheræ 2-3. Strobilus cylindraco-oblongus. Semina samaroidea, alis cultri-formibus.

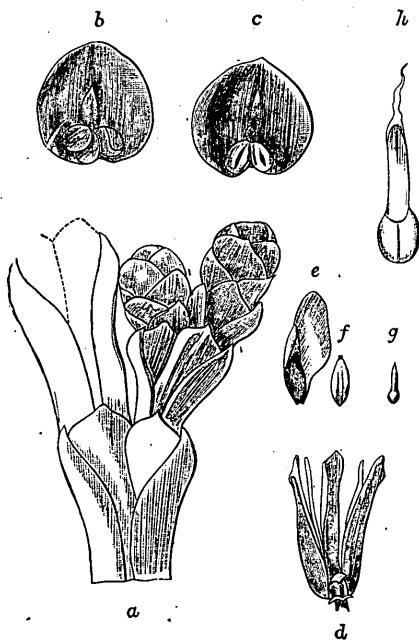


Fig. 4.

Libocedrus macrolepis BENTH. a— male flowers; b and c— stamens; d— a cone; e— a seed; f— an albumen; g— an embryo; h— the same, highly magnified.

Chamaecyparis SPACH.

Chamaecyparis formosensis MATSUM. in Tōkyō Bot. Mag. XV. p. 137; MATSUM. et HAYATA, Enum. Pl. Formos. p. 402.

HAB. in montibus Morrison, leg. R. TORII, 1900; Giyokusan, in montibus Morrison, ad 10634 ped. alt., (No. 554), et Seizan, in isdem montibus, ad 11579 ped. alt., (No. 584), leg. S. NAGASAWA, Nov. 1905; in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2103); Taitō: Bunshiseki, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2104).

DISTRIB. An allied species, *C. pisifera* S. et Z., occurs in Japan.

Chamaecyparis obtusa SIEB. et ZUCC. in "ENDL. Conif. p. 63"; PARL. in DC. Prodr. XVI.-2, p. 466; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 471; WARBURG, Monsunia, I. p. 190; BEISSN. Handb. Nadelh. p. 92.

Retinispora obtusa SIEB. et Zucc. Fl. Jap. II. p. 38; MIQ. Prol. Fl. Jap. p. 332.

Thuja obtusa MAST. Journ. Linn. Soc. XVIII. p. 491, Fig. 4.

forma **formosana**, (Fig. 5); HAYATA, in Gard. Chron. (1908) p. 194. Strobili ut typicæ multo minores 8 mm. in diametro æquantes, seminibus minoribus cum alis 2 mm. in diametro æquantibus.

Shinkō: Shirakku, leg. T. KAWAKAMI et U. MORI, Juni. 1906, (No. 1329); Arizan, in montibus Morrisson, leg. G. NAKAHARA, Nov. 1906.

DISTRIB. Japan.

This Formosan *Chamaecyparis* is in all respects the same as the Japanese species. But, the cone of the present plant is always much smaller than the Japanese one, and the seed is also smaller. Native botanists in the island suggest to me to separate it from the Japanese species as a new variety. For the present,

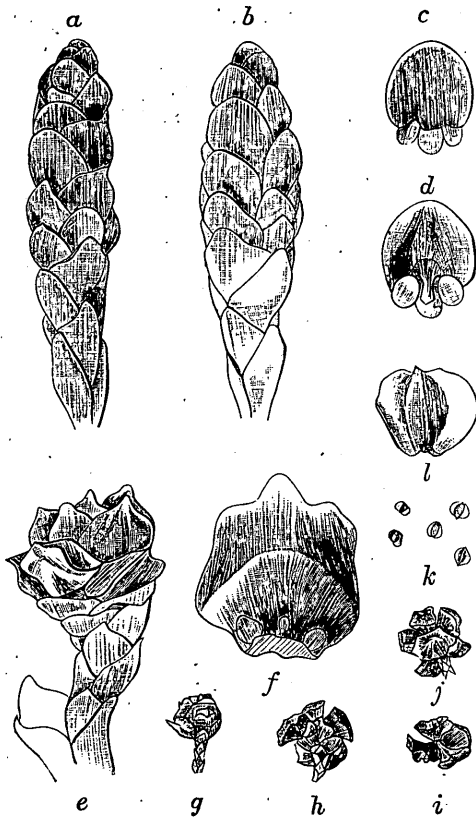


Fig. 3.

Chamæcyparis obtusa S. et Z. form. *formosana*
a— a male flower; *b*— the same, seen from a different side; *c*— a stamen, seen from the outer side; *d*— the same, seen from the inner side; *e*— a female flower in an advanced stage; *f*— a scale; *g*— a cone; *h*— another cone, after opening; *i*— another form; *j*— another one; *k*— seeds; *l*— a seed, magnified.

squamis ovato-acutis verticillatis 2-seriatim dispositis, globosi 7 mm. longi carnosius rufo-fuscentes supra medium vestigiis acutis bractearum intimarum notati. Semina 3, erecta trigono-elliptica apice mucronata, testa ossea, facie dorsali glandulis 3–4 resiniferis oblongis insculpta, facie ventrali paucis notata.

however, it would be better to regard it as a form of the Japanese species.

Juniperus LINN.

Juniperus formosana HAYATA. (Pl. XXXVIII.) in Gard. Chron. (1908). p. 194.

Juniperus taxifolia HAYATA, in Tōkyō Bot. Mag. XX. p. 46; MATSUM. et HAYATA, Enum. Pl. Formos. p. 403.

Ramuli novelli triquetri in angulis prominentibus marginati glabri. Folia in totum lineari-angusta 14 mm. longa 2 mm. lata verticillato-ternata patentia integerrima acuminato-pungentia glabra supra concava glauca stomatifera subtus valde carinata prominentia convexa. Flores ignoti. Galbuli ad axillas foliorum inferiorum ramulorum novellorum solitarii, basi

HAB. in monte Morrison, leg. R. TORII, 1900 ; Seizan, in montibus Morrison, ad 11579 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 752) ; in isdem montibus, ad 13000 ped. alt., (No. 2262), et ad 8000 ped. alt., (No. 2039), in montibus centralibus, (No. 2099), leg. T. KAWAKAMI et U. MORI, Nov. 1906.

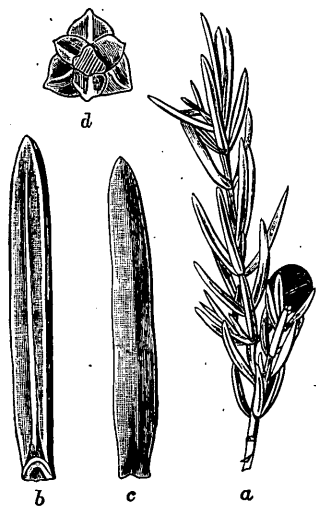


Fig. 6.

Juniperus taxifolia Hook. et Arn.
from the Bonin islands.

a—a branch ; *b*—a leaf, seen from within ; *c*—the same, seen from without ; *d*—bracts at the base of a fruit, seen from below.

Very like *J. communis* LINN. ; but differs from it in having pointed vestiges on the fruits ; also near *J. taxifolia* Hook. et Arn., but differs from it in having acute leaves ; from *J. rigida* SIEB. et Zucc., in having less narrowed leaves and acute vestiges on the fruits.

The present plant has erroneously been regarded by myself and also by some other botanists as the same species as the Bonin *J. taxifolia*. On re-examining carefully the all specimens of the genus, *Juniperus*, from China, Formosa, Japan, the Bonin islands and Loo-choo archipelago, I have found that *J. taxifolia* is confined to the latter two archipelagos, but does not extend to either Formosa

or China. The Formosan plant differs from the Bonin species in having pungent leaves. As to the *Juniperus* of China, I was so fortunate as to examine the same specimens which were studied by the late Dr. M. T. MASTERS, F. R. S., F. L. S. The Chinese plant collected by Mr. E. H. WILSON in West China, Changyang (Hupeh, No. 428), which is referred to *J. taxifolia* by that eminent authority¹⁾

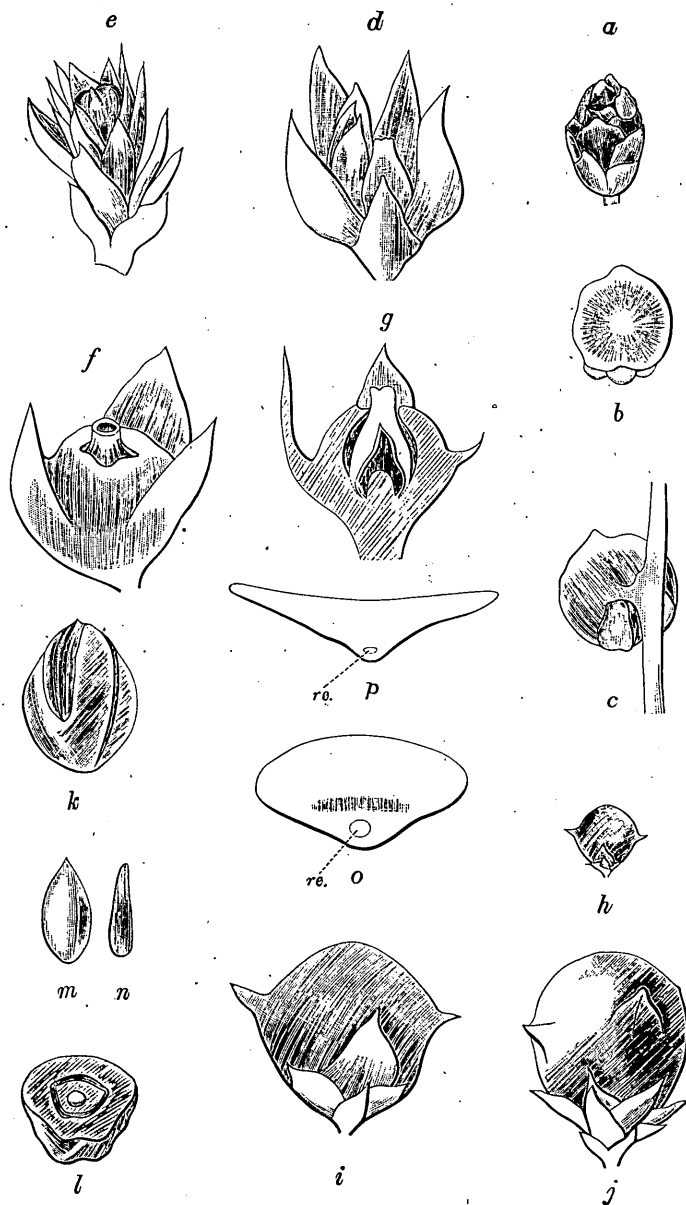
1). M. T. MASTERS : Chinese Conifers collected by E. H. WILSON, in the Journal of Botany, Vol. XLI. p. 267, & On Chinese Conifers, in the Journal of the Linnean Society, XXXVII. p. 413.

is not to my opinion the same as the Bonin plant in which the leaves are altogether blunt, and the male flowers are much longer (see Fig. 6). Nor is the specimen¹⁾ which was collected by M. A. HENRY (Hupeh, No. 2067, A!), referable to the juniper of the archipelago. The Chinese plant has pungent leaves and much shorter male flowers. Whether the *Juniperi* of Formosa and China are similar or not, demands further investigation. At present, I can only state that *J. taxifolia* does not extend to either Formosa or China, and that it is found in the Bonin, and Loo-choo islands, but nowhere else.

Juniperus morrisonicola HAYATA, (Fig. 7), in Gard. Chron. (1908) p. 194. Rami teretes, ramulis novellis viridibus trigonis. Folia omnia lanceolata apice acerosa patentiuscula 3–4 mm. longa 1 mm. lata verticillato-ternata supra concava glaucescentia subtus leviter carinata. Flores masculini terminales ad ramulos brevissimos ovoidei 4 mm. longi 2 mm. lati, staminibus 8, filamentis in squamam peltatis, squamis suborbicularibus $1\frac{1}{2}$ mm. in diametro æquantibus, loculis antheræ 3. Flores fœminei ad ramulos brevissimos terminales basi foliis squamiformibus bracteisque 6–9 ternato-verticillatis suffulti, squamis intimis 3 ovatis acutis verticillatis patentibus. Ovulum terminale solitarium squamis intimis circumdatum oblongum apice attenuatum. Galbuli solitarii globosi vel paullo longiores 6 mm. longi, sub maturitate nigricantes glabri medio vestigiis squamarum notati. Semina solitaria globoso-ovoidea 5 mm. long. 4 mm. lata, testa ossea sulcata. Embryo normalis; cotyledones 2.

HAB. ad summam montis Morrison, 13200 ped. alt., leg. SHIMOYAMA, 1899; ibidem, leg. R. TORII, 1900; ibidem, leg. S. NAGASAWA, 1905, (No. 585), et leg. T. KAWAKAMI, 1906, (No. 2142, fr.).

1). FORBES et HEMSL. Ind. Fl. Sin. II. p. 543.

Fig. 7.. *Juniperus morrisonicola* HAYATA.

a—a male flower; *b*—a stamen; *c*—the same, seen from the inner side; *d*—a female flower; *e*—the same, in a little advanced stage; *f*—the same, in a more advanced stage; *g*—the same, in vertical section, one side taken off, showing the hollow receptacle, ovule and nucellus (as the figure is drawn from a dry specimen, the nucellus is probably much more contracted than it really is); *h*—a fruit (natural size); *i*—the same, magnified; *j*—the same, seen from a different side; *k*—a seed; *l*—the same, in section, the upper half taken away, showing the hard seed coat, albumen and embryo; *m*—an albumen; *n*—an embryo; *o* and *p*—sections of different parts of a leaf, *re*=resin-canal.

The *Juniperus* described above was first found by Mr. SHIMOYAMA on the top of Mt. Morrison at an altitude of about 4000 m., in the year 1899. Although the same mountain was since botanized by several collectors, the specimens brought back to me were but fragments of a sterile branch. I could not get any more idea about this plant than that it is something like *Juniperus chinensis* LINN., until Mr. T. KAWAKAMI gave me a most perfect specimen of it. Examining the material, I have found that the plant is far different from *J. chinensis* LINN., in having a solitary ovule on a short branchlet, and in the shape of its cone. The leaves have a large single resin-canal near the phloëm. So far, the plant does not seem to have dimorphic leaves, all the specimens we have at present possessing but one kind of leaf.

Cunninghamia R. Br.

Cunninghamia, being a monotypic genus, implies only *C. sinensis* R. Br. It is, therefore, the most remarkable matter that we have here an addition of one more species belonging to this interesting genus. The new *Cunninghamia* was kindly sent to me by Mr. T. KAWAKAMI, Government Expert of Formosa. It was obtained by Mr. N. KONISHI on Mt. Randaisan at an altitude of about 2000 m. It is very rarely found in the coniferous forests, and attains a considerable height. It affords a good timber which bears some resemblance to *Chamæcyparis*.

***Cunninghamia Konishii* HAYATA**, in Gard. Chron. (1908) p. 194. Arbor, ramis omnibus teretibus glabris foliorum spiraliter confertorum cicatricibus notatis. Gemmæ floriferæ nudæ depresso-globosæ, bracteis depresso-ovatis brevissime aristato-acutis.

Folia ramorum veterum spiraliter conferta adnato-decurrentia anguste lineari-falcata incurvo-erecta acuta dorso leviter carinata, ramulorum juvenium longiora ascendento-patentia anguste lineari-lanceolata 15 mm. longa $2\frac{1}{2}$ mm. lata ad basin oblique torta apice obtusiuscula margine sub lente serrulata rigida coriacea utraque pagine glaucescentia stomatibus multiseriatis instructis octavum in annum virentia demum exarida sensim soluta. Strobili sub maturitate ovato-globosi 20 mm. longi 15 mm. lati. Squamæ rotundatæ mucronatæ basi distincte unguiculatæ, unguibus brevibus, laminis dilatis, cordatis late depresso-ovatis margine integris lignescens sursum coriaceis et marginem versus subundulatis dorso apice leviter carinatis glabris. Bracteæ obsoletæ. Squamulæ 3 ad medio laminæ squamæ distinctæ fimbriatæ crenulatæ. Semina 3 ad medium squamularum affixa reversa libera ovato-elliptica, testis coriaceis duriusculis, alis angustis. Embryo ignotus.

HAB. Nantō : in monte Randaisan, ad 7000 ped. alt., leg. N. KONISHI, Mai. 1907.

Mr. T. KAWAKAMI informs me that the habit of this new plant is an intermediate between those of *Cunninghamia* and *Taiwania*. On examining the specimen carefully, I find that the cone of the plant has a secondary squama. Therefore, this should undoubtedly be referred to *Cunninghamia*. The leaf of this plant has stomata on both surfaces, while that of *C. sinensis* has no stoma on the upper surface, or a very few if at all. In the case of *Taiwania*, the stomata are found on both surfaces. The new *Cunninghamia* differs mainly from the other species in the arrangement and the shape of the leaves, and in having smaller cones and broader squamæ. The timber is like other Conifers, the bark is reddish brown and in all respects is very like that of *Chamæcyparis*, but it has an odour peculiar to itself. The leaf of the present plant is more persistent

than that of the other; the former lasts for eight years, while the latter only lasting five years.

***Taiwania* HAYATA.**

***Taiwania cryptomerioides* HAYATA**, in Journ. Linn. Soc. XXXVII. p. 331, t. 16, et in Tōkyō Bot. Mag. XXI. p. 2, t. 1.

Cryptomeria japonica HAYATA, (non DON.) in Tōkyō Bot. Mag. XX. p. 46.

HAB. Arizan, in montibus Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, et ibidem, leg. G. NAKAHARA; Taitō: Taironkōsha, ad 8000 ped. alt., leg. U. MORI, Nov. 1906.

DISTRIB. An endemic monotypic genus.

***Cephalotaxus* ZUCC.**

***Cephalotaxus* sp.**

HAB. in monte Morrison, leg. R. TORII, 1900; Ganzan, in montibus Morrison, ad 8012 ped. alt., leg. S. NAGASAWA, Nov. (1905), (No. 568); in monte Morrison, ad 8500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2106); Taitō: Dakunsha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2105).

DISTRIB. The genus extends from Japan to China.

In the absence of cones, the species is indeterminable.

***Taxus* LINN.**

***Taxus* sp.**

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Taitō: Bunshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2107).

In the absence of cones, it is impossible to determine it specifically.

***Pinus* LINN.**

***Pinus Armandi* FRANCHET**, Pl. David. I. p. 285, t. 12; MASTERS, in FORBES et HEMSL. Ind. Fl. Sin. II. p. 549.

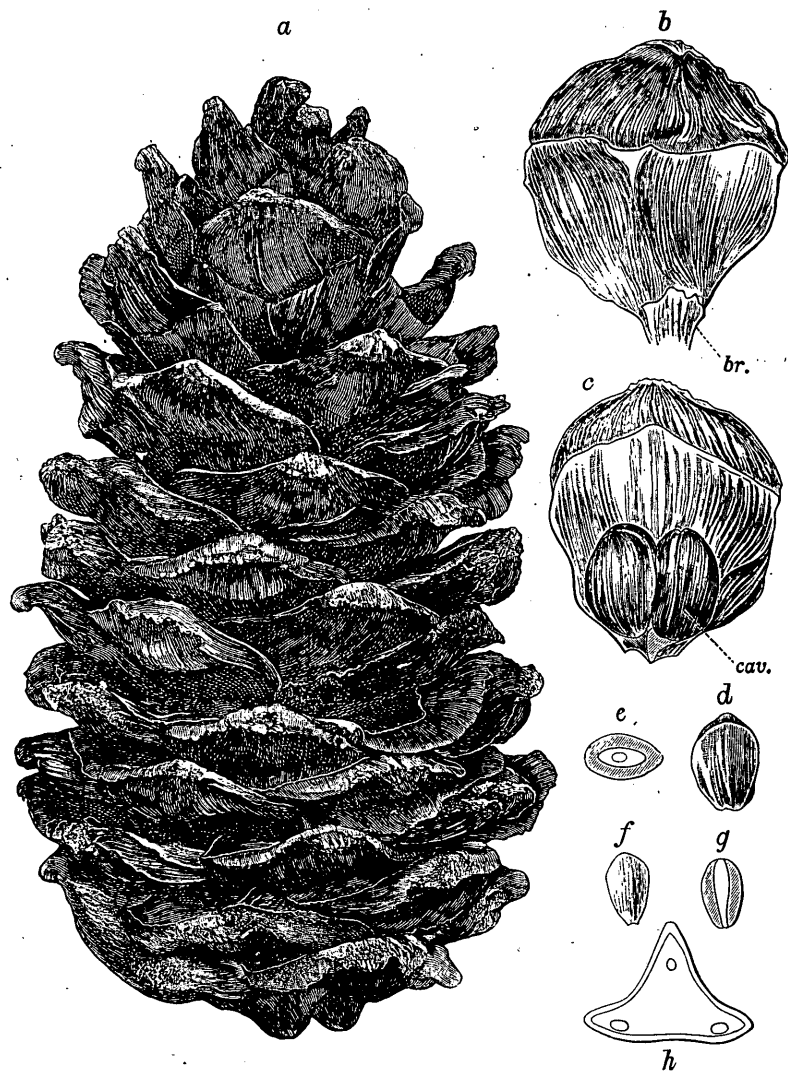


Fig. 8.

Pinus Armandi FRANCH. var. *Mastersiana* HAYATA.

a—a cone, (slightly reduced); *b*—a scale detached from the middle part of the same cone, seen from the outer side; *c*—the same, seen from the inner side, seeds taken off, *cav.*=impression of the seeds; *d*—a seed; *e*—cross section of the same; *f*—an albumen; *g*—the same, in vertical section; *h*—cross section of a leaf.

var. **Mastersiana** HAYATA, (Fig. 8), in Gard. Chron. (1908) p. 194. Rami teretes fusci novelli glabri cicatricibus perularum et foliorum notati. Folia in fasciculo quinque acerosa filiformia tenuia acuta dorso plana triangularia in sectione margine et in carina remote serrulata 10 cm. longa. Strobili erecti ovato-cylindracei obtusi 14 cm. longi 7 cm. lati. Bracteae minutissimae. Squamae numerosae orbiculares v. subrhombeae acutae sursum reflexae basi breviter cuneatae lignescentes longitudinaliter rugosae fuscae dispermae. Semina obovata 12 mm. longa 9 mm. lata apice leviter apiculata aptera compressiuscula, testa ossea crassa fusca glabra. Albumen crassum oleosum. Embryo cotyledonibus 5 verticillatis.

HAB. in monte Morrison, leg. R. TORII, 1900; Hatsukwanzan, ad pedem montis Morrison, leg. YAMASHITA; Gyokusan, in montibus Morrison, ad 10634 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 582); in monte Morrison, ad 8000 ped. alt., (No. 2088), et in eodem monte, ad 9000 ped. alt., (No. 2095), leg. T. KAWAKAMI et U. MORI, Oct. 1906; in eodem monte, leg. G. NAKAHARA, Oct. 1905.

The present variety differs from the type in its reflexed squamae and longer cones.

DISTRIB. Type: west central China.

Pinus formosana HAYATA, (Fig. 9).

Pinus morrisonicola HAYATA, in Gard. Chron. (1908) p. 194.

Ramuli teretes perularum rudimentis notati, novelli pubescentes. Gemmae ovatae perulatae, perulis acutis membranaceis margine fractis. Folia in fasciculo quinque, fasciculis approximatis

* The *Pinus* is for the first time printed under the name, *P. morrisonicola*, which is, however, an unfortunate name which is erroneously copied from my manuscript. The occurrence of the plant in the Mount Morrison is rather doubtful, for the *Pinus* is very local plant, being found only in some parts of the Taichū district.

acerosa rigidula 6-8 cm. longa arcuata sed non torta apice acuta dorso plana facie acute carinata triangularia in sectione margine et in carina remote serrulata. Strobili erecti ovato-elliptici obtusi, e squamis circ. 40 compositi 7-9 cm. longi 4-6 cm. lati, squamis ellipticis basi cuneatis sursum rotundatis leviter reflexis 3 cm. longis $1\frac{1}{2}$ cm. latis coriaceo-crassis sublignescens concavis badio-fuscis dispermis semper abortu monospermis. Bracteae brevissimae. Semina ovata apice obtusa 10 mm. longa 6 mm. lata, testa coriacea pallide ferruginea glabra, ala membranacea tenui cultriformi 2 cm. longa 8 mm. lata.

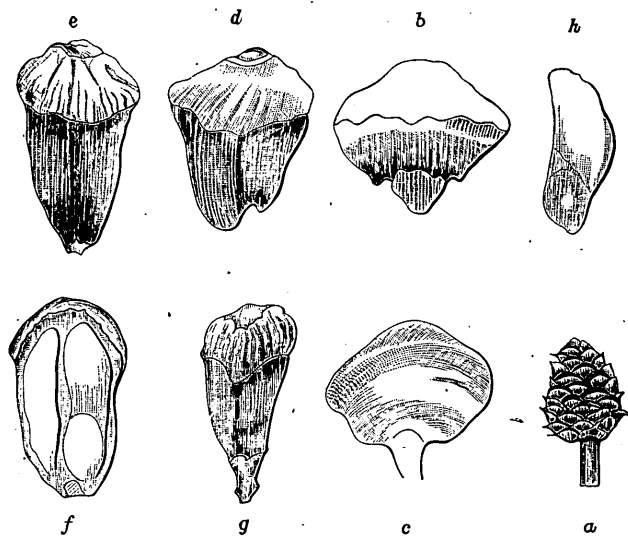


Fig. 9. *Pinus formosana* HAYATA.

a—a very young cone; *b*—a scale of the same cone, magnified; *c*—the same, seen from a different side; *d*—a scale detached from the basal portion of a mature cone; *e*—a scale detached from the middle portion of the same cone; *f*—the same, seen from the inner side; *g*—a scale detached from the apical portion of the same cone; *h*—a seed.

HAB. Shōhakulin, et inter Hōkkōkei et Horisha, C. OWATARI,
Jan. 1898; Taichū: Yagatayama, leg. G. NAKAHARA, Feb. 1907; ad

summam montis Hanrizan, ad 8000 ped. alt., leg. MURATA, Sept. 1897; Taitō: Bunshiseki, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2090).

DISTRIB. An allied species, *P. parviflora* S. et Z., occurs in Japan.

The present *Pinus* is very near *Pinus parviflora* S. et Z.; but differs from that in the shape of the cones. The scales of the cones of this new plant are usually reflexed and especially so in the scales of the basal part. The wings of the seeds are much larger than those of *P. parviflora* S. et Z.

According to Mr. G. NAKAHARA, the plant grows in the mountainous districts of the Taichū prefecture, at an altitude of 1500 m. Forming a forest along a valley, making lines parallel to the camphor forests, this pine gives a most remarkable feature to the vegetation of this spot. Attaining a height of about 15 m., and a diameter of a little less than 1 m., it describes an outline of a conical form, stretches out its branches quite loosely upwards from the middle of the trunk, and sends them down within the reach of one's arms. It grows mostly on a cliff of the clay slates, and faces itself to the valley below. The trunk presents a colour of grayish white and it is very straight like a fir, and the texture of the bark is very similar. The distribution of the pine is rather local, the habitat being limited to the western slope of the central mountain ranges in the middle part of the island.

Pinus sp. (aff. *P. Thunbergii* PARL.).

HAB. in monte Morrison, leg. R. TORII, 1900.

Pinus sp. (aff. *P. densiflora* S. et Z.)

HAB. in montibus centralibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2097 et 2094).

Picea LINK.

Picea morrisonicola HAYATA, sp. nov. (Fig. 10.).

Picea. Glehni MATSUM. in Tōkyō Bot. Mag. XV. p. 141; MATSUM. et HAYATA, Enum. Pl. Formos. p. 401, (non FR. SCHM.).

Ramuli glabri, pulvinis oblongo-obovatis superne erectis in petiolum brevem ascendentem angustis, cicatricibus quadrangularibus. Gemmæ ovoideoconicæ, perulis scariosis ovatis obtusis. Folia linearia 6 mm–16 mm. longa $\frac{2}{3}$ mm. lata curvata quadran-

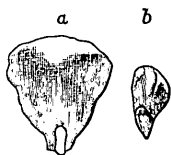


Fig. 10.

Picea morrisonicola HAYATA.
a— a scale detached from the middle portion of a cone; b— a seed.

gularia apice acuta utrinque stomatifera. Strobili oblongo-cylindracei 6 cm. longi deflexi? Bractæ ovato-lanceolatæ obtusæ margine fractæ $\frac{1}{4}$ squamæ fructiferæ æquantibus. Squamæ planiusculæ obovato-orbiculares basi attenuatæ, apice truncatæ-rotundatæ subintegre. Semina cum alis 1 cm. longa, alis subcultriformibus obovatis semen ipsum $1\frac{1}{2}$ –2 plo superantibus.

HAB. in monte MORRISON, leg. R. TORII 1900; Hattsukwanzan, leg. YAMASHITA; in eodem monte ad 95000 ped. alt., leg. T. KAWAKAMI et U. MORI. Nov. 1906, (No. 2108).

Strobilus (T. KAWAKAMI, No. 2108) 60 mm. longus 22 mm. latus.

„	(R. TORII)	75 mm.	„	30 „
„	(„)	65 mm.	„	23 „

Near *P. Glehnii* MASTERS, but differs from it in having glabrous branchlets; also near *P. Watsoniana* MASTERS, but differs from it in having subtruncate squamæ of cones.

DISTRIB. An allied species, *P. Glehnii* MAST., occurs in Japan and Saghalien.

Keteleeria Carr.

***Keteleeria Davidiana* BEISSN. var. *formosana* HAYATA**, (Fig. 11.). in Gard. Chron. (1908) p. 194. Ramuli dense puberuli. Folia laxè disposita plana lineari-lanceolata 30 mm. longa vel longiora 5 mm. lata, nervis utraque pagine prominentibus, margine parum deflexa vernicosa subtus vix pallidiora apice obtusa (ramuli hornotini aristato-acuta) in pedem brevem compressum demum contortum attenuata, petiolis basi transverse insertis. Strobili erecti cylindracei obtusi 9 cm. longi 5 cm. lati. Squamæ coriaceæ ovato-rotundatæ v. cordatæ superne sensim attenuatæ apice subreflexæ basi brevè unguiculatæ extus longitudinaliter striatæ puberulæ margine tenues irregulariter serrulatæ. Bracteæ squamis duplo breviores, spathulatæ membranaceæ dorso fuscae apice cuspidatæ vel trifidæ irregulariter serrulatæ subpungentes supra medium contractæ. Semina pallida fulva basi acuta, ala concolore cultriformi, squamis æquilongâ, cum alis 27 mm. in longitudine æquantia.

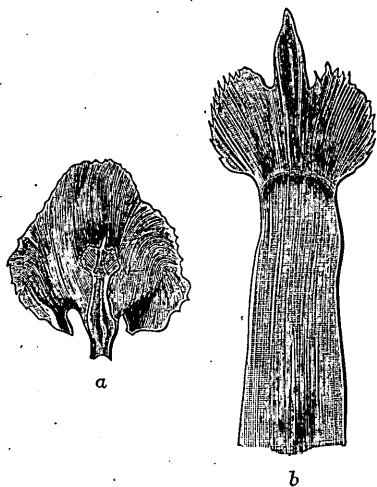


Fig. 11.

Keteleeria Davidiana FRANCH. var. *formosana* HAYATA. a—a scale of a cone; b—the bract of the same scale, magnified.

HAB. Shinjuki, Shinkōchō, leg. N. KONISHI, Nov. 1902; Bunsanho, leg. T. TASHIRO, Juni. 1899.

DISTRIB. Type: west central China.

This new variety differs from the type in having spatulate bracts which are contracted a little above the middle portion. The cone is shorter and the wing of the seed is narrower. The leaf is

acute or obtuse, but not truncate or emarginate as is the case with the type.

Tsuga Carr.

***Tsuga formosana* HAYATA**, (Fig. 12). in Gard. Chron. (1908) p. 194. Ramuli novelli tenues glabri pallido-fuscentes. Gemmæ perulatae, perulis obtusis integris. Folia approximata distincte petiolata, petiolis brevibus semiteretibus parum incurvis, linearia 8 mm.—16 mm. longa $1\frac{1}{2}$ mm.—2 mm. lata apice obtusa vel emarginata integerrima glabra coriacea. Strobili ovoidei 2–2.3 cm. longi 1.3 cm. lati, squamis circ. 20. Squamæ imbricatæ coriaceæ basi truncatæ sursum suborbiculares integræ $1\frac{1}{2}$ cm. longæ 1 cm. latæ substriatæ pallidæ fuscæ. Bracteæ brevissimæ rhomboideæ apice brevissime 2-lobatæ irregulariter dentatæ. Semina parva obovata, 4 mm. longa vel longiora, alis membranaceis tenuibus cultriformibus pallido-ferrugineis 7 mm. longis.

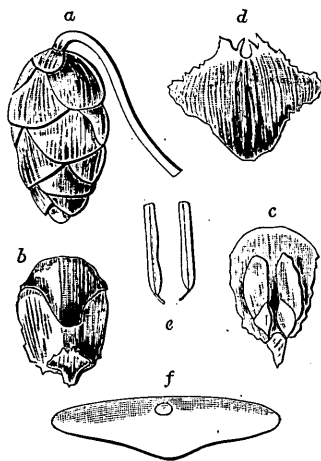


Fig. 12.

Tsuga formosana HAYATA. a— a cone; b— a scale, seen from the outer side; c— the same, seen from the inner side; d— the bract of the same scale, magnified; e— leaves, seen from different sides; f— cross section of a leaf.

HAB. in monte Morrison, leg. R. TORII, 1900; Giyokusan, in montibus Morrison, ad 10634 ped. alt., leg. S. NAGASAWA, Nov. 1905, (Nos. 553 et 552); in monte Morrison, ad 8000 ped. alt., (No. 2364), et eodem monte, ad 9000 ped. alt., (No. 2110), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. An allied species, *T. diversifolia* MAXIM., occurs in Japan.

This *Tsuga* very much resembles *T. diversifolia* in the shape of cones and bracts, but differs from it in the seeds having longer

wings and in the glabrous branchlets. It also bears some resemblance to *T. Sieboldi* CARR., in the shape of the cones and seeds, but is easily distinguished from the latter by the shape of the bracts, and by the shorter leaves. This new plant is, I think, just an intermediate form of *T. Sieboldi* and *T. diversifolia*.

***Pseudotsuga* CARR.**

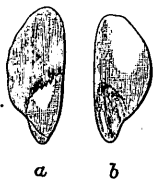


Fig. 13.

Pseudotsuga japonica
SHIRASAWA. *a*— a seed;
b— the same, seen from a
different side.

***Pseudotsuga japonica* SHIRASAWA, (Fig. 13).**
in Tōkyō Bot. Mag. IX. p. 84; HAYATA, in Tōkyō
Bot. Mag. XX. p. 45; MATSUM. et HAYATA, Enum.
Pl. Formos. p. 400; M. T. MASTERS, in Journ. Linn.
Soc. XXXVII. p. 424.

HAB. in monte Morrison, leg. T. KAWAKAMI
et U. MORI, Oct. 1906.

DISTRIB. Japan.

***Abies* JUSS.**

***Abies Mariesii* MAST. var. *Kawakamii* HAYATA, n. v. (Fig. 14).**

Abies Mariesii HAYATA, in MATSUM.
et HAYATA, Enum. Pl. Formos. p.
400, (non MASTERS).

Ramuli ferruginei pilosissimi,
pulvinis obovatis paucè promi-
nentibus, cicatricibus depressis
ovato-oblongis. Folia approxi-
mata late linearia a basi an-
gustiora ad apicem sinsim dila-
ta apice rotundato-obtusa et
emarginata supra impressa sub-

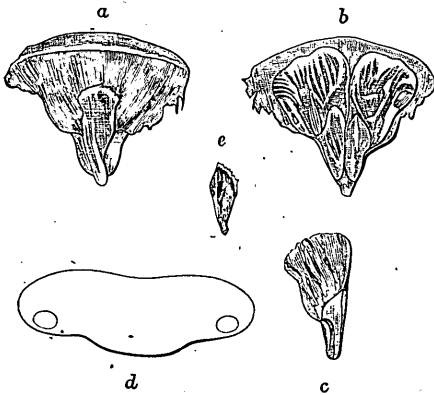


Fig. 14.

Abies Mariesii MAST. var. *Kawakamii* HAYA-
TA. *a*— a scale; *b*— the same, seen from the
inner side; *c*— a seed; *d*— section of a leaf;
e— a seed, wing taken off.

tus carinata inter carinam marginemque argentea stomatifera. Strobili laterali erecti ovato-cylindracei apice retusi $7\frac{1}{2}$ cm. longi 4 cm. lati. Bracteæ $\frac{2}{3}$ plo squamam in longitudine æquantes obovatæ angustæ supra medium leviter constrictæ et transverse coloratæ apice dilato-rotundatæ mucronatæ fractæ ecostatæ. Squamæ late rotundato-cuneatæ 2 cm. longæ $2\frac{1}{2}$ cm. latæ basi vix auriculatæ abrupte stipitatæ margine sursum integerrimæ deorsum fractæ. Semina cum alis 18 mm. longa, alis truncatis, seminibus alisque nigricantibus.

HAB. in monte Morrison, ad 11220 ped. alt., leg. R. TORII, 1900; ibidem, leg. HONDA, 1896, (No. 98.); Seizan, in montibus Morrison, ad 11579 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 583.); in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 2369 et 2372).

DISTRIB. An ally, *A. Mariesii* MAST., occurs in Japan.

This differs from the type in having longer cylindrical cones, black coloured wings and seeds; from *A. brachyphylla* MAXIM., this differs in having shorter cones and in the position of the resin-canal lying close to the epiderm.

Monocotyledones.

Orchideæ.

The species belonging to this family are about twenty in number, and must be very interesting ones. Owing to the lack of literature, I am at present obliged to put off the study of this family. The work of these orchids will be specially treated in the near future.

Hæmodoraceæ.

Peliosanthes ANDR.

Peliosanthes courtallensis WIGHT, Ic. Pl. Ind. or. t. 2051; BAKER, in Journ. Linn. Soc. XVII. p. 504; Hook. f. Fl. Brit. Ind. VI. p. 266.

HAB. Arizan, in montibus Morrison, ad 8000 ped. alt., leg. G. NAKAHARA, 1906; in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2327).

DISTRIB. Travancore.

Liliaceæ.

Smilacina DESF.

Smilacina japonica A. GRAY, Bot. Jap. p. 414; MIQ. Prol. Fl. Jap. p. 313; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 53; MAXIM. Mém. Biol. XI. p. 857.

Smilacina hirta MAXIM. Prim. Fl. Amur. p. 276.

Smilacina japonica var. *mandschurica* MAXIM. Mém. Biol. p. XI. p. 857.

Tovaria japonica BAKER, in Journ. Linn. Soc. XIV. p. 570; WRIGHT, in FORBES et HEMSL. Ind. Fl. Sin. III. p. 110.

HAB. in monte Morrison, leg. G. NAKAHARA, Oct. 1905; in

eodem monte, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1900, (No. 2384).

DISTRIB. China and Japan.

Tricyrtis WALL.

Tricyrtis lasiocarpa MATSUM. in Tōkyō Bot. Mag. XI. p. 79; MATSUM. et HAYATA, Enum. Pl. Formos. p. 448.

HAB. Suizan, in montibus Morrison, ad 7703 ped. alt., (No. 730), et Ganzan, in isdem montibus, ad 9141 ped. alt., (Nos. 645 et 695), leg. S. NAGASAWA, Oct. 1905; in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2321).

Tricyrtis stolonifera MATSUM. in Tōkyō Bot. Mag. XI. p. 78; MATSUM. et HAYATA, Enum. Pl. Formos. p. 442.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2319).

Metanarthecium MAXIM.

Metanarthecium foliatum MAXIM. "Decas Pl. Nov. (1882) p. 10."

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2328); ibidem, leg. G. NAKAHARA.

DISTRIB. Japan.

Disporum SALISB.

Disporum sp. nov.? Rhizoma repens crassum, caulibus simplicibus sursum foliatis. Folia alterna petiolata oblonga apice abrupte in acumen longum attenuata crassiuscula. Baccæ (ut videntur) ad axillas solitariae longe pedunculatae. Flores ignoti.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2329).

Polygonatum ADANS.

Polygonatum officinale ALL. var. **Maximowiczii** FRANCH. et SAVAT.

MAXIM. in Mél. Biol. XI. p. 851; PALIBIN, Conspect. Fl. Koreae, III. p. 10; FORBES et HEMSL. Ind. Fl. Sin. III. p. 108; MATSUM. et HAYATA, Enum. Pl. Formos. p. 436.

Polygonatum Maximowiczii FR. SCHMIDT, Reis. Amur. p. 185, n. 449.

Polygonatum officinale ALL. γ . *pluriflorum* MIQ. Prol. Fl. Jap. p. 312.

HAB. in herbidis Taiton, ad 4000 ped. alt., leg. U. FAURIE, 1903, (No. 544).

DISTRIB. Type: extends from western Europe through Russia, Siberia and Mongolia to northern China and Japan. Variety: through Japan to Saghalien Manchuria and northern China.

Paris LINN.

Paris lancifolia HAYATA, (Pl. XXXIX.). in Tōkyō Bot. Mag. XX. p. 52. Rhizoma repens multinodosum. Caulis simplex circ. 20–50 cm. longus glaberimus. Folia ad apicem caulis 7–8 verticillata sessilia lanceolata vel lanceolato-angusta acuminata circ. 12 cm. longa 1 cm. lata 1–nervia, nervis superne impressis subtus prominentibus. Flores ad apicem caulis inter folia verticillata solitarii longe pedunculati exserti, pedunculis 7 cm. longis erectis. Segmenta perianthii distincta 5–mera 2–seriata, exteriora patentissima herbacea lanceolata acuminata 5–6 cm. longa 7–8 mm. lata supra basin leviter contracta, interiora filiformia $2\frac{1}{2}$ –3 cm. longa. Stamina 8–10, filamentis ovarium vix superantibus. Ovarium depresso-globosum apice truncatum concavum marginibus prominentibus ad apices carpellorum paullo cornutum, 1–loculare 5–placentiferum, stylo 5-fido, ramis recurvis. Baccæ depresso-globosæ 12 mm. longæ 15 mm. in diametro oligospermæ.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 693); in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1953).

Commelinaceæ.

Aneilema R. BR.

Aneilema divergens CLARKE, in Commel. et Cyrt. Beng. t. 16, et in DC. Monogr. Phanerog. III. p. 203; HOOK. f. Fl. Brit. Ind. VI. p. 376; FORBES et HEMSL. Ind. Fl. Sin. III. p. 151; MATSUM. et HAYATA, Enum. Pl. Formos. p. 446.

Aneilema herbaceum KUNTH, var. *divergens* CLARKE, in Journ. Linn. Soc. XI. p. 448.

HAB. in monte Morrison, ad 6000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2326).

DISTRIB. India and South China.

Cyanotis DON.

Cyanotis arachnoidea CLARKE, in DC. Monogr. Phanerog. III. p. 250; HOOK. f. Fl. Brit. Ind. VI. p. 386; HENRY, List Pl. Formos. p. 99; FORBES et HEMSL. Ind. Fl. Sin. III. p. 157; MATSUM. et HAYATA, Enum. Pl. Formos. p. 449.

Cyanotis pilosa WIGHT, Ic. Pl. Ind. or. t. 2083.

HAB. in monte Morrison, ad 3000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2325).

DISTRIB. India and Malay.

Juncaceæ.

Luzula DC.

Luzula effusa BUCH. in ENGL. Bot. Jahrb. VI. p. 196, et XII. p. 106; HOOK. f. Fl. Brit. Ind. VI. p. 401; DIELS, Fl. Centr. Chin. p. 237, et Fl. Tin. ling shan, in ENGL. Bot. Jahrb. XXXIV. Beibl. p. 17; FORBES et HEMSL. Ind. Fl. Sin. III. p. 161.

HAB. in monte Morrison, leg. G. NAKAHARA, Oct. 1905; eodem

monte, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2381).

DISTRIB. Central China and Himalaya.

Luzula spicata DC.; Hook. f. Fl. Brit. Ind. VI. p. 401; BUCH. in ENGL. Bot. Jahrb. XII. p. 128; SOWERBY, Engl. Bot. X. p. 1553.

HAB. in montibus Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2300); ad summam ejusdem montis, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 599).

DISTRIB. Widely spread in the alpine regions of Europe, and also in Himalaya and North America; generally in the arctic Zone.

Juncus LINN.

Juncus effusus LINN. Sp. Pl. ed.-2, p. 464; KUNTH, Enum. Pl. III. p. 320; BUCH. in ENGL. Bot. Jahrb. XII. p. 228; "FRANCHET, Pl. David. II. p. 137"; Hook. f. Fl. Brit. Ind. VI. p. 392; DIELS, Fl. Centr. Chin. p. 238; FORBES et HEMSL. Ind. Fl. Sin. III. p. 163.

HAB. in montibus Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1821); Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1906, (No. 677).

DISTRIB. Asia, America, Africa, Australia and Europe.

Juncus Maximowiczii BUCH. in ENGL. Bot. Jahrb. XII. p. 394.

HAB. in montibus Morrison, leg. G. NAKAHARA, Oct. 1905.

DISTRIB. Japan.

Aroideæ.

Arisæma sp. (*A. consanguineum* SCHOTT?)

HAB. in montibus Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2330).

Alocasia (*macrorrhiza* SCHOTT?)

HAB. in Kagi: Burokusha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1752).

Cyperaceæ.

Bulbostylis KUNTH.

Bulbostylis capillaris KUNTH var. **trifida** CLARKE (Fig. 15), in HOOK. f. FL. Brit. Ind. VI. p. 652; FORBES et HEMSL. Ind. FL. Sin. III. p. 248; MAKINO, in Tōkyō Bot. Mag. IX p. 390.

Bulbostylis trifida KUNTH, Enum. Pl. II. p. 213.

Scirpus trifidus HANCE, in Journ. Bot. (1878) p. 112.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1840).

DISTRIB. In tropical warm countries; very common in central and southern China and also in southern parts of Japan.

In the present specimens, the spikelets are very small, glumes boat-shaped, lanceolate, ovate, maculate a little above the middle portion, carinate and bearing a small bristle at the apex. Nuts truncate, obovate, longitudinally maculate. (Fig. 15.)

Scirpus LINN.

Scirpus morrisonensis HAYATA, sp. nov. (Fig. 16). Culmi plus minus fasciculati gracillimi rigiduli erecti 40–50 cm. alti basi 1 mm. in sectione striati teretes, vaginis inferioribus scariosis ovatis brevibus brunneis superioribus elongatis membranaceis transverse

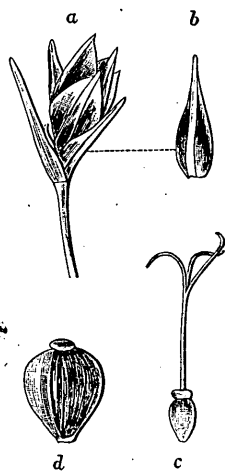


Fig. 15.

Bulbostylis capillaris KUNTH var. *trifida* CLARKE. a— a spikelet; b— a glume; c— an ovary; d— a seed.

truncatis in laminam brevem productis, laminis lanceolatis minute serrulatis. Spicula quasiterminalis oblongo-elongata leviter arcuata pallido-fusca obtusa parum compressa circ. 10-flora circ. 1 cm. longa 0.7 mm. lata, squamis arcute imbricatis omnibus fertilibus mem-

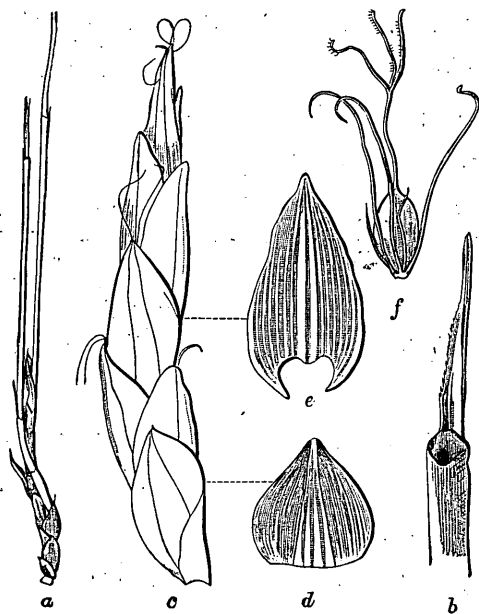


Fig. 16.

Scirpus morrisonensis HAYATA.

a—the basal portion of caules; b—a sheath; c—a spikelet; d—a scale detached from the basal portion of the same spikelet; e—a scale detached from the middle portion of the same; f—a flower.

branaceis obtusis obscure carinatis superioribus ovatis basi breve decurrentibus inferioribus late ovatis basi truncatis, nervo mediano infra apicem evanido, versus apicem fusco-castaneis marginibus pallidis, binis inferioribus latioribus brevibus. Achænium obovatum v. obovato-ellipsoidale trigonum $1\frac{1}{2}$ mm. longum glabrum læve fusco-rubrum, stylo persistenti exserto apice 2–3 fido, setis 6 capillaribus achænio brevioribus.

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1843).

Carex LINN.

The following five species were kindly examined by the Rev. KUEKENTHAL. Owing to the imperfectness of the specimens, as he wrote me, the identification is not easy one. Nevertheless, the descriptions of the plants here given may be of some interest.

Carex sp. (aff. *C. breviculmi* R. BR. subsp. *Royleana* (NEES) KUEK.). Culmi 5–8 cm. longi firmi scabridi apice 2–3 spicas gerentes. Folia 5–7 cm. longa 2 mm. lata culmo breviora firma subtus carinata glaucescentia apice sæpe circinnato-curvata basi vaginata, vaginis 15 mm. longis. Spicæ 2–3; terminalis masculina teres 7 mm. longa 1 mm. lata sæpe basi attenuata, squamis ovatis basi truncatis apice acutis 6 mm. longis 2–3 mm. latis subtrinerviis, nervis castaneis; reliquæ fœminæ sessiles paucifloræ 8–9 mm. longæ, squamis late ovatis acuminatis late 1-nerviis, nervo producto castaneo, partibus marginibus hyalinis. Utriculus 2-costatus ad costas minute denticulatus ovatus rostratus ore obscure bidentatus glaber. Achænium apice contractum triquetrum 3-costatum. Styli basi conico-crassati. Stigma 3-fidum.

HAB. in monte Morrison, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2383).

This *Carex* is very small in its habit and a floriferous culm has a very few spikes on its top. Short branches are sometimes seen at the basal portion of culms.

Carex sp. nov.?

HAB. in monte Morrison, ad 12000 ped. leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2385).

The Rev. KUEKENTHAL informs me that this plant may be a species not yet described; but the specimen is too imperfect to draw a description of it.

Carex sp. (aff. *C. Makinoensi* FRANCH.). Rhizoma? Folia fasciculorum 20–30 cm. longa 2 mm. lata culmo florigero paullo breviora basi vaginata, vaginis 2–3 cm. longis, oribus truncatis, supra et margine scabrida. Culmi florigeri graciles 30 cm. longi

3-4 foliati, foliis superioribus basi vaginatis. laminis spica æquilongis. Spicæ 3-4, remote dispositæ; terminalis masculina elongata pedunculata 3 cm. longa 2 mm. lata, squamis obovatis vel late cuneatis marginatis, marginibus badio-fuscis; reliquæ fœmineæ elongatæ, 2 cm. longæ spica masculina latiores brève pedunculatæ erectæ, floribus remotis, squamis ovatis marginatis acutis basi truncatis. Utriculus 2-carinatus multinervius pubescens, compressus apice rostratus distincte 2-dentatus. Stigma 3-fidum. Achænium trigonum 3-costatum glabrum apice leviter in collum brevissimum coronatum.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2380).

I am informed by the Rev. KUEKENTHAL that this *Carex* have same resemblance to *C. Makinænsis* FRANCH.

Carex sp. (aff. *C. tristachya* THUNB.). Rhizoma tenue repens, culmos florigeros graciles et fasciculas steriles ad apicem rhizomatis emittens. Folia fasciculorum culmis paullo longiora 17 cm. longa 3-4 mm. lata utraque pagine et margine scabrida. Culmi florigeri graciles circ. 15 cm. longi foliis brevibus instructi; foliis superioribus longe vaginatis in laminam longam vel brevem desinentibus. Spicæ 3-4; terminalis masculina tenuissima breve pedunculata 15 mm. longa 0.5 mm. lata, squamis obovatis basi truncatis marginibus membranaceis subtrinerviis apice tenuiter ciliatis et brevissime mucronatis; reliquæ fœmineæ pedunculatæ lineares laxifloræ 1-2 cm. longæ, squamis pallidis late ovatis utriculo paullo brevioribus, marginibus hyalinis subtrinerviis, nervo medio ultra apicem in mucronem breviter producto. Utriculus pubescens sub maturitate 3 mm. longus tenuiter membranaceus obovatus breve stipitatus 2-costatus, multinervatus distincte rostratus, rostro bifido, ore

scabro. Stigma trifidum. Achænium pallidum glabrum trigonum 3-costatum stipitatum apice abrupte contractum in collum brevissimum coronatum, disco coriaceo albido styli basi conica emarcida superato.

HAB. in monte Morrison, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1907, (No. 1846).

This *Carex* somewhat resembles *C. pseudo-conica* FRANCH. et SAVAT., but differs from it in the contracted apex of the achænium possessing collar-like body at the base of the style. The Rev. KUEKENTHAL informs me that the plant is like *C. tristachya* THUNB.

Carex sp. nov. (aff. *C. japonica* THUNB.).

HAB. in monte Morrison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2998).

The Rev. KUEKENTHAL informs me that this *Carex* may be a species not yet described. It is not, however, advisable to draw a description from such an imperfect specimen.

Gramineæ.

Isachne R. BR.

Isachne Clarkei HOOK. f. Fl. Brit Ind. VII. p. 24.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1839).

DISTRIB. Himalaya.

Panicum LINN.

Panicum montanum ROXB. Fl. Ind. ed.-CAREY, I. p. 313; KUNTH, Enum. Pl. I. p. 126; BENTH. Fl. Hongk. p. 412; HOOK. f. Fl. Brit. Ind. VII. p. 53; FORBES et HEMSLE. Ind. Fl. Sin. III. p. 331; MERRILL, in Philipp. Journ. Scie. I. Supp. Bot. p. 27.

HAB. in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1848).

DISTRIB. South China, the Malay archipelago, and from Ceylon northward to the mountains of India.

Optismenus BEAUV.

Optismenus undulatifolius BEAUV. var. **imbecillis** HACK.; MERRILL, in Philipp. Journ. Scie. I. Suppl. Bot. pp. 28, et 364; HAYATA, in Tōkyō Bot. Mag. XXI. p. 50.

HAB. in monte Morrison, ad 5000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1845).

DISTRIB. Type: Japan, China and the Himalayas. Variety: the Malay archipelago.

Arundinella RADDI.

Arundinella setosa TRIN.; BENTH. Fl. Hongk. p. 416; HOOK. f. Fl. Brit. Ind. VII. p. 70; HACK. in Bull. Herb. Boiss. VII. (1899) p. 723; FORBES et HEMSLEIGH. Ind. Fl. Sin. III. p. 342; MATSUM. et HAYATA, Enum. Pl. Formos. p. 515.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1847).

DISTRIB. South China, the Philippine islands, India and Ceylon.

Miscanthus ANDERSS.

Miscanthus sinensis ANDERSS. var. **formosanus** HACK. in Bull. Herb. Boiss. Sér. 2, IV. (1904) p. 526; MATSUM. et HAYATA, Enum. Pl. Formos. p. 518.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1826); in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2366).

DISTRIB. Type: Japan, China and the Malay archipelago.

Saccharum LINN.

Saccharum Narenga HAM. ; HACK. Monogr. Androp. p. 119 ; HOOK. f. Fl. Brit. Ind. VII. p. 120 ; DIELS, Fl. Centr. Chin. p. 222 ; FORBES et HEMSL. Ind. Fl. Sin. III. p. 349 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 519.

Saccharum porphyrocomum HACK. Monogr. Androp. p. 120.

Eriochrysis Narenga NEES, ex STEUD. Syn. Gram. p. 411.

HAB. Nantō : Horisha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2379).

DISTRIB. India, Burma, and South China.

Spodiopogon TRIN.

Spodiopogon Kawakamii HAYATA, in Tōkyō Bot. Mag. XXI. p. 54.
HAB. Kagi : Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1837).

Spodiopogon tainanensis HAYATA, in Tōkyō Bot. Mag. XXI. p. 53.
HAB. Kagi : Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1855).

Pollinia TRIN.

Pollinia ciliata TRIN. ; STEUD. Syn. Gram. p. 410 ; HACK. Monogr. Androp. p. 176, et in Bull. Herb. Boiss. VII. (1899) p. 723 ; HOOK. f. Fl. Brit. Ind. VII. p. 116 ; FORBES et HEMSL. Ind. Fl. Sin. III. p. 354.

var. **Wallichiana** HACK. Monogr. Androp. p. 177, et in Bull. Herb. Boiss. VII. (1899) p. 723 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 521.

HAB. in monte Morrison, ad 6500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1848).

DISTRIB. South China, India, and Malay.

Cymbopogon SPRENG.

Cymbopogon Nardus RENDLE subsp. **marginatus** var. **Göeringii**

RENDLE, in FORBES et HEMSL. Ind. Fl. Sin. III. p. 376; MATSUM. et HAYATA, Enum. Pl. Formos. p. 531.

Andropogon Nardus LINN. var. *Gæringii* HACK. Monogr. Androp. p. 607, et in Bull. Herb. Boiss. VII. (1899) p. 642, et Sér. 2, III. (1903) p. 501; PALIBIN, Conspect. Fl. Koreae, III. p. 30.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1841).

DISTRIB. The Philippine islands, South China, and Japan.

Agrostis LINN.

Agrostis Clarkei HOOK. f. Fl. Brit. Ind. VII. p. 257; HAYATA, in Tôkyô Bot. Mag. XXI. p. 52.

HAB. in monte Morrison, ad 12500 ped. alt., Oct. 1906, (No. 2374); in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2365).

DISTRIB. The Himalayas.

Calamagrostis ADANS.

Calamagrostis arundinacea ROTH; HANCE, Journ. Bot. (1878) p. 234; HACK, in Bull. Herb. Boiss. VII. (1899) p. 652, et Sér. 2, III. (1903) p. 502.

Deyeuxia sylvatica KUNTH, Enum. Pl. I. p. 243; HOOK. f. Fl. Brit. Ind. VII. p. 266; FORBES et HEMSL. Ind. Fl. Sin. III. p. 395.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1838 et 1820).

DISTRIB. Japan, the Himalayas, Temperate Asia, and Europe.

var. *nipponica* HACK. in Bull. Herb. Boiss. VII. (1899) p. 652, et Sér. 2, IV. (1904) p. 523.

Calamagrostis nipponica FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 168 et 599.

HAB. ad monte Morrison, 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2373).

DISTRIB. Japan and the Philippine islands?

Deschampsia BEAUV.

Deschampsia caespitosa BEAUV.; HACK. in Bull. Herb. Boiss. VII. (1899) p. 702; MAXIM. Prim. Fl. Amur. p. 323; HOOK. f. Fl. Brit. Ind. VII. p. 273; FORBES et HEMSL. Ind. Fl. Sin. III. p. 399.

Aira caespitosa LINN.; STEUD. Syn. Gram. p. 219.

HAB. in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2375).

DISTRIB. Central China, Japan, Himalaya; generally in the temperate and cold regions of the northern and southern hemispheres; and also in the alpine regions in the Tropics.

Deschampsia flexuosa TRIN.; LEDEB. Fl. Ross. IV. p. 420; HACK. in Bull. Herb. Boiss. VII. (1899) p. 702.

Aira flexuosa LINN. var. *montana* FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 172.

HAB. in monte Morrison, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906; in montibus centralibus, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2364).

DISTRIB. Japan; the arctic regions of Asia and Europe.

Trisetum PERS.

Trisetum subspicatum BEAUV.; STEUD. Syn. Gram. p. 225; HACK. in Bull. Herb. Boiss. VII. (1899) p. 703; FORBES et HEMSL. Ind. Fl. Sin. III. p. 400; BENTH. Fl. Austral. VII. p. 588; MAKINO, in Tōkyō Bot. Mag. XX. p. 44.

Avena subspicata CLAIRV.; HOOK. f. Fl. Brit. Ind. VII. p. 278; THOMÉ, Fl. Deut. Öst. Sch. I. p. 145.

HAB. in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2378).

DISTRIB. The Himalayas, central China and the Kurile islands; generally in the alpine and frigid regions.

Arundo LINN.

Arundo formosana HACK. in Bull. Herb. Boiss. VII. p. (1899), p. 724; FORBES et HEMSL. Ind. Fl. Sin. III. p. 408; MATSUM. et HAYATA, Enum. Pl. Formos. p. 540.

HAB. Taitō: Taiwnkōsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2305).

DISTRIB. An endemic plant.

Brachypodium BEAUV.

Brachypodium Kawakamii HAYATA, (Pl. XL.) in Tōkyō Bot. Mag. XXI. p. 51. Perennis ascendens subcaespitosa circ. 20 cm. alta. Folia convoluto-teretia, laminis 5–6 cm. longis 6–7–nerviis, extus glaberrimis intus scabris pauce hirsutis, vaginis 2 cm. longis, ligulis latioribus brevibus leviter ciliolatis. Spiculæ paucae sæpe ad unam terminalem reductæ longe pendunculatæ sæpe cernuæ, pedunculis filiformibus, 6–7–floræ compressæ 2 cm. longæ 3 mm. latæ, rachillis inter flores articulatis hirsutissimis; floribus hermaphroditis sæpe superioribus imperfectis. Glumæ 2 inferiores vacuæ 7–nerviæ florentibus minores et breviores muticæ subglabræ; gl. [I.] 7–mm. longa; gl. [II.] longior. Gluma florens rigidula angusta dorso rotundata 7–9–nervia integra in aristam rectam 4 mm. longam desinens; palea gluma vix brevior 7 mm. longa latiuscula 2–carinata, carinis ciliatis, apice truncata et emarginata. Stamina 3. Lodiculæ 2 oblongæ obtusæ basi oblique stipitatæ margine ciliolatæ, lateribus interioribus basi callosis. Ovarium obovatum apice appendicula brevi villosa coronatum. Styli longiusculi, stigmatibus laxe plumosis. Achænia angusta oblonga a dorso compressa antice late sulcata palea adherentia.

HAB. in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2377).

As a complete description of the present species was not previously made, I have taken this occasion to give a full account of the plant. It is perhaps the smallest species of *Brachypodium*, which species is very remarkable for its terete leaves and its simplest form of an inflorescence reduced into one spicule. The leaves are very slender and they measure but 1 mm. in diameter, and 3 mm. in circumference.

Brachypodium sylvaticum BEAUV.; MIQ. Prol. Fl. Jap. p. 174; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 185; HACK. in Bull. Herb. Boiss. XII. (1899), p. 714; HOOK. f. Fl. Brit. Ind. VII. p. 363; LEDEB. Fl. Ross. IV. p. 346; FORBES et HEMSL. Ind. Fl. Sin. III. p. 431.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2302).

DISTRIB. North Asia, and the mountains of India and Europe.

Festuca LINN.

Festuca ovina LINN.; MIQ. Prol. Fl. Jap. p. 170; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 181; THOMÉ, Fl. Deut. Öst. Sch. I. p. 114, t. 53; WAGNER, Deut. Fl. ed-3, p. 82; FORBES et HEMSL. Ind. Fl. Sin. III. p. 429; var. **vulgaris** KOCH; HACK. in Bull. Herb. Boiss. VII. (1899) p. 713, et Sér. 2, III. (1903), p. 506; HAYATA, in Tōkyō Bot. Mag. XXI. p. 51.

HAB. in monte Morrison, ad 12500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2376).

DISTRIB. North Asia; Japan and China.

Arundinaria MICH.

Arundinaria niitakayamensis HAYATA, in Tōkyō Bot. Mag. XXI p. 49.

HAB. in monte Morrison, ad 9000 ped. alt., (No. 1842), et ad 8500 ped. alt., (No. 1849), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

Cryptogamiæ.

Lycopodiaceæ.

Lycopodium LINN.

Lycopodium clavatum LINN. Sp. Pl. ed.-2, p. 1564; HOOK. Brit. Fern. t. 49; BAKER, Fern All. p. 26; THUNB. Fl. Jap. p. 341; MIQ. Prol. Fl. Jap. p. 348; MAXIM. in Mém. Biol. VII. p. 341; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 197; LUERSS. in ENGL. Bot. Jahrb. IV. p. 366; DIELS, Fl. Centr. Chin. p. 210; WARB. Mons. I. p. 97; HAYATA, in Tōkyō Bot. Mag. XX. p. 20.

HAB. in monte Morrison, leg. S. NAGASAWA, T. KAWAKAMI et G. NAKAHARA, Nov. 1905.

DISTRIB. West and East China and Japan; arctic and alpine zones of both hemispheres; also mountains of Tropical Asia, Africa and America.

Lycopodium complanatum LINN. Sp. Pl. ed.-2, p. 1567; BAKER, Fern All. p. 28; DIELS, Fl. Centr. Chin. p. 210.

var. **Chamæcyparissus** A. BR. "in DELL, Rhein Flora p. 36"; BAKER, Fern All. p. 29; MAXIM. in Mém. Biol. VII. p. 341; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 198; HAYATA, in Tōkyō Bot. Mag. XX. p. 21.

HAB. in monte Morrison, leg. S. NAGASAWA, T. KAWAKAMI et G. NAKAHARA, Nov. 1905.

DISTRIB. Japan and central and southern China; generally in the temperate zone of both hemispheres; also in some tropical regions of Asia and America; subcosmopolitan.

Lycopodium obscurum LINN. Sp. Pl. ed.-2, p. 1566; BAKER, Fern

ALL. p. 24 ; HAYATA, in Tōkyō Bot. Mag. XX. p. 21 ; KOMAROV, Fl. Manshur. I. p. 159.

Lycopodium japonicum THUNB. Fl. Jap. p. 341 ; MAXIM. in Mél. Biol. VII. p. 341 ; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 197.

Lycopodium dendroideum MICHX. ; MIQ. Prol. Fl. Jap. pp. 348 et 390 ; HOOK. Exot. Fern. t. 7.

HAB. in monte MORRISON, leg. T. KAWAKAMI, S. NAGASAWA et G. NAKAHARA, Nov. 1905.

DISTRIB. Japan, Kamtchatka, Siberia, Manchuria, and North America. Not yet known from central and southern China.

Lycopodium serratum THUNB. Fl. Jap. p. 341 ; A. GRAY, Bot. Jap. pp. 422 et 436 ; MIQ. Prol. Fl. Jap. pp. 348 et 390 ; BAKER, Fern. All. p. 12 ; MAXIM. in Mél. Biol. VII. p. 341 ; DIELS, Fl. Centr. Chin. p. 210 ; WARB. Mons. I. p. 96 ; HAYATA, in Tōkyō Bot. Mag. XX. p. 20.

HAB. in monte MORRISON, ad 13094 ped. alt., leg. S. NAGASAWA, (No. 735) ; ibidem, leg. T. KAWAKAMI et G. NAKAHARA, Nov. 1905.

DISTRIB. In the tropical or subtropical regions, and in some temperate countries as Japan and China.

This MORRISON plant is of a form having much broader leaves than the Japanese species.

Polypodiaceæ.

Polystichum ROTH.

Polystichum amabile SM. ; DIELS, in Nat. Pfl.-fam. I-4, p. 193 ; MATSUM. et HAYATA, Enum. Pl. Forms. p. 582.

Aspidium amabile BLUME ; METT. in Ann. Mus. Bot. Lugd.-Bat. I. p. 227 ; MIQ. Prol. Fl. Jap. pp. 340 et 389 ; HOOK. Sp. Fil. IV. p. 25, t. 225 ; HOOK. et BAKER, Syn. Fl. p. 254 ; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 232.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 659).

DISTRIB. Japan and central and eastern China and the Malay archipelago.

Polystichum niitakayamense HAYATA, (Pl. XLI.) in Tōkyō Bot. Mag. XXI. p. 14.

Stipites 10–12 cm. longi fusco-pallidi paleacei leviter canaliculati basin teretes, paleis oblongis vel linearibus. Frondes 25–30 cm. longæ 2 cm. latæ erectæ circumscriptione lineares pinnatæ, pinnis 7–8 mm. longis 5 mm. latis approximatis horizontaliter patentibus oblongis vel oblongo-quadrangularibus angulo inferiore affixis, basi superiore transverse truncatis auriculatis, basi superiore et apice aristatis, margine obscure crenulatis. Indusium 0. Sporangium fuscum longe pedicellatum. Sporæ oblongæ tuberculatæ.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, 1905, (No. 698).

Asplenium LINN.

Asplenium laciniatum DON. "Prodr. Fl. Nep. p. 8"; HOOK. Sp. Fil. III. p. 164, t. 200, A; HOOK. et BAKER, Syn. Fil. p. 211; CLARKE, Rev. Fern. North Ind. p. 481; BEDD. Fern. South Ind. p. 49, t. 145; HAYATA, in Tōkyō Bot. Mag. XXI. p. 12.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, 1905, (No. 656).

DISTRIB. The temperate regions of the Himalayas and Japan. Not yet found in the Philippines or China.

Asplenium Trichomanes LINN.; HOOK. Sp. Fil. III. p. 136, et Brit. Fern. t. 29; METT. in Ann. Mus. Bot. Lugd.-Bat. II. p. 234; MIQ. Prol. Fl. Jap. p. 337; HOOK. et BAKER, Syn. Fil. p. 196; CHRIST, Farn. Erd. p. 192; BEDD. Fern. South Ind. p. 49, t. 147; HAYATA, in Tōkyō Bot. Mag. XXI. p. 14; DIELS, Fl. Centr. Chin. p. 198.

Asplenium anceps SOL; HOOK. et GREV. Ic. Fil. t. 195.

HAB. in monte Morrison, leg. G. NAKAHARA, 1906.

DISTRIB. Subcosmopolitan in the temperate and cold regions of both hemispheres.

Coniogramme FÉE.

Coniogramme fraxinea (DON.) FÉE; DIELS, in Nat. Pfl.-fam. I.-4. p. 262; COPELAND, Polyp. Philipp. p. 66; HAYATA, in Tōkyō Bot. Mag. XXI. p. 15.

Gymnogramme javanica BLUME, Fl. Jav. II. p. 95, t. 41; HOOK. et BAKER, Syn. Fil. p. 381; MIQ. Prol. Fl. Jap. p. 335; FRANCH. et SAVAT, Enum. Pl. Jap. II. p. 248; HENRY, List Pl. Formos. p. 116.

HAB. Sanchōkei, leg. S. NAGASAWA, 1905, (No. 721).

DISTRIB. Tropics in the old world.

Plagiogyria KUNZE.

Plagiogyria glauca (BLUME) METT. Plagiog. p. 273; Bedd. Fern. Brit. Ind. t. 90.

Lomaria glauca BLUME, "Enum. Pl. Java. Fil. p. 204"; CLARKE, Rev. Fern. North Ind. p. 472; HOOK. Sp. Fil. III. p. 22; HOOK. et BAKER, Syn. Fil. p. 182.

var. **philippinensis** CHRIST, in Bull. Herb. Boiss. VI. (1898) p. 151; COPELAND, Polyp. Philipp. p. 98; HAYATA, in Tōkyō Bot. Mag. XX. p. 22.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, 1905.

DISTRIB. The Philippine islands.

Plagiogyria Matsumureana MAKINO, in Tōkyō Bot. Mag. VIII. p. 335; HAYATA, in Tōkyō Bot. Mag. XXI. p. 14.

Lomaria Matsumureana MAKINO, in Tōkyō Bot. Mag. VIII. p. 90.

HAB. Rakurakusha, leg. G. NAKAHARA, 1905, (No. 458).

DISTRIB. Japan.

Pteridium GLED.

Pteridium aquilinum KUHN. var. **lanuginosum** BORY; COPELAND, Polyp. Philipp. p. 104; HAYATA, in Tōkyō Bot. Mag. XXI. p. 12.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, 1905, (No. 676).

DISTRIB. Tropics.

Polypodium LINN.

Polypodium lineare THUNB. var. ? HAYATA, in Tōkyō Bot. Mag. XXI. p. 13.

HAB. in monte Morrison, leg. G. NAKAHARA, 1905.

DISTRIB. Type: Tropics of the old world; Japan and China.

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" <i>pectinellus</i> MAXIM.	80	" sp.	95
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" <i>Rolfei</i> VIDAL var. <i>laniatus</i> HAYATA.	81	" <i>campylodes</i> DC.	140
" <i>roseifolius</i> SM. var. <i>hirsutus</i> HAYA-		" <i>chinensis</i> DC.	140
TA	81	" <i>intermedius</i> WIGHT.	140
RUTACEÆ.	67	" <i>monanthus</i> DIELS.	139
Rungia NEES.	180	" <i>scandens</i> HAM.	139
" <i>parviflora</i> NEES var. <i>pectinata</i>		" <i>stipulatus</i> WALL.	140
CLARKE.	180	" <i>Wightianus</i> DC.	140
" <i>pectinata</i> NEES.	180	Shortia TORR. et GR.	156
" <i>polygonoides</i> NEES	180	" <i>rotundifolia</i> (MAXIM.) MAKINO.	156
Saccharum LINN.	236	SHRUBBERY REGION.	38

Sibbaldia LINN.	84	Swertia alata HAYATA...	168
„ <i>cuneata</i> KUNZE.	84	„ <i>tetraptera</i> MAXIM.	169
„ <i>procumbens</i> LINN.	84	„ sp.	169
<i>Sibthorpia pinnata</i> BENTH.	170	Symplocos LINN.	153
Siegesbeckia LINN.	134	„ <i>confusa</i> BRAND...	153
„ <i>orientalis</i> LINN.	134	„ <i>modesta</i> BRAND...	159
Silene LINN.	56	„ <i>morrisonicola</i> HAYATA.	160
„ <i>Fortunei</i> VIS.	56	„ <i>myrtacea</i> HEMSL.	159
Skimmia THUNB.	68	„ <i>spicata</i> ROXB.	160
„ <i>japonica</i> THUNB.	68	<i>Syzygium buxifolium</i> HOOK.	96
Smilacina DESB.	225	Taiwania HAYATA.	215
„ <i>hirta</i> MAXIM.	225	„ <i>cryptomerioides</i> HAYATA.	215
„ <i>japonica</i> A. GRAY.	225	<i>Taonabo japonica</i> SZYSZ.	60
„ <i>japonica</i> var. <i>mandschurica</i>		Taxus LINN.	215
MAXIM.	225	„ sp.	215
SOLANACEÆ.	172	TERNSTROMIACEÆ...	60
Solanum LINN.	172	Ternstroemia LINN.	60
„ sp.	172	„ <i>japonica</i> THUNB.	60
Solidago LINN.	123	Thalictrum LINN.	44
„ <i>cantonensis</i>	123	„ <i>Fauriei</i> HAYATA.	44
„ <i>decurrens</i> LOUR.	123	„ <i>Urbani</i> MATSUMURA.	44
„ <i>Virga-aurea</i> LINN.	123	Thea LINN.	63
Sopubia HAM.	175	„ <i>brevistyla</i> HAYATA.	63
„ <i>formosana</i> HAYATA.	175	„ <i>caudata</i> (WALL)	63
„ <i>trifida</i> HAM.	176	Thladiantha BUNGE.	100
<i>Spermacoce teres</i> ROXB.	113	„ <i>formosana</i> HAYATA.	100
Spilanthes LINN.	134	„ <i>nudiflora</i> HEMSL.	100
„ <i>Acmella</i> LINN.	134	<i>Thaia obtusa</i> MAST.	208
„ <i>tinctorius</i> LOUR.	121	THYMELÆACEÆ.	190
Spiraea LINN.	78	TILIACEÆ.	64
„ <i>prunifolia</i> SIEB. et ZUCC.	78	Torenia LINN.	173
„ sp.	78	„ <i>edentula</i> BENTH.	173
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„ <i>Kawakamii</i> HAYATA.	236	<i>Tovaria japonica</i> BAKER.	225
„ <i>tainanensis</i> HAYATA.	236	<i>Trevesia</i> VIS.	106
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„ <i>precox</i> SIEB. et ZUCC.	62	„ <i>stolonifera</i> MATSUM.	226
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„ <i>Chamaejasme</i> LINN.	190	Triumfetta LINN.	64
Strobilanthes BLUME.	179	„ <i>pilosa</i> ROTH.	64
„ <i>Championi</i> T. ANDERS.	179	TROCHOCARPÆ.	74
„ <i>flaccidifolius</i> NEES.	179	Trochodendron SIEB. et ZUCC.	44
Stylidium chinense LOUR.	111	„ <i>analioides</i> SIEB. et ZUCC.	44
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„ <i>Sieboldi</i> CARR.	223	„ <i>japonica</i> LANGSD.	52
UMBELLIFERÆ.	101	„ <i>japonica</i> var. <i>pekinensis</i> MAXIM.	52
URTICACEÆ.	195	„ <i>kamtschatica</i> var. <i>pekinensis</i> REGEL.	52
<i>Urtica</i> LINN.	196	„ <i>Kawakamii</i> HAYATA.	52
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„ <i>Thunbergiana</i> SIEB.	196	„ <i>sp.</i>	53
<i>Uexaria japonica</i> LINN.	46	<i>Viscum</i> LINN.	191
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„ <i>angustifolia</i> FISCH.	175	„ <i>quadrifida</i> A. DC.	146
„ <i>morrisonicola</i> HAYATA.	174	„ <i>lavandulæfolia</i> A. DC.	146
„ <i>paniculata</i> LINN.	175	„ <i>Sieberi</i> A. DC.	146
„ <i>serpyllifolia</i> LINN.	175	<i>Youngia chinensis</i> DC.	144
„ <i>spuria</i> LINN.	175	<i>Zanonia cissoïdes</i> WALL.	101
<i>Viburnum</i>	112	„ <i>pedata</i> MIQ.	101
VIOLACEÆ.	51	<i>Zanthoxylum trifoliatum</i> LINN.	105

B. HAYATA.

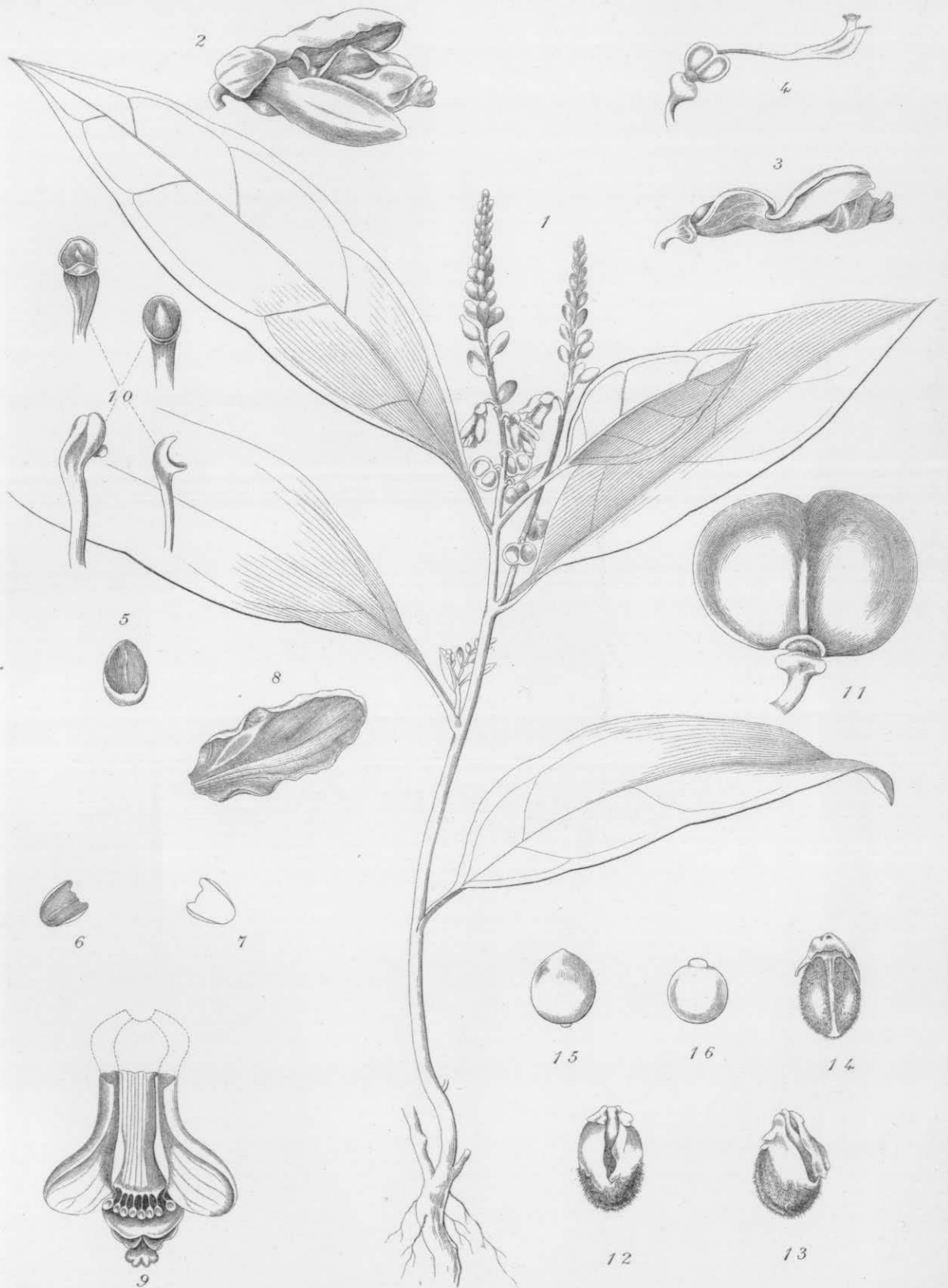
FLORA MONTANA FORMOSÆ.

PLATE I.

PLATE I.

Polygala arcuata HAYATA.

- Fig. 1. The plant.
2. A flower.
3. The same, sepals taken off, showing petals.
4. A pistil.
5. The superior sepal of the exterior series.
6 and 7. The inferior sepals of the exterior series.
8. A sepal of the interior series.
9. Petals and stamens, seen from above, petals a little expanded.
10. Stamens, seen from various sides.
11. A capsule
12. A seed, seen from the dorsal side.
13. The same, seen from the lateral side.
14. The same, seen from the ventral side.
15. An albumen.
16. An embryo.



B. Hayata del.

P. Fujisawa sculp.

B. HAYATA.

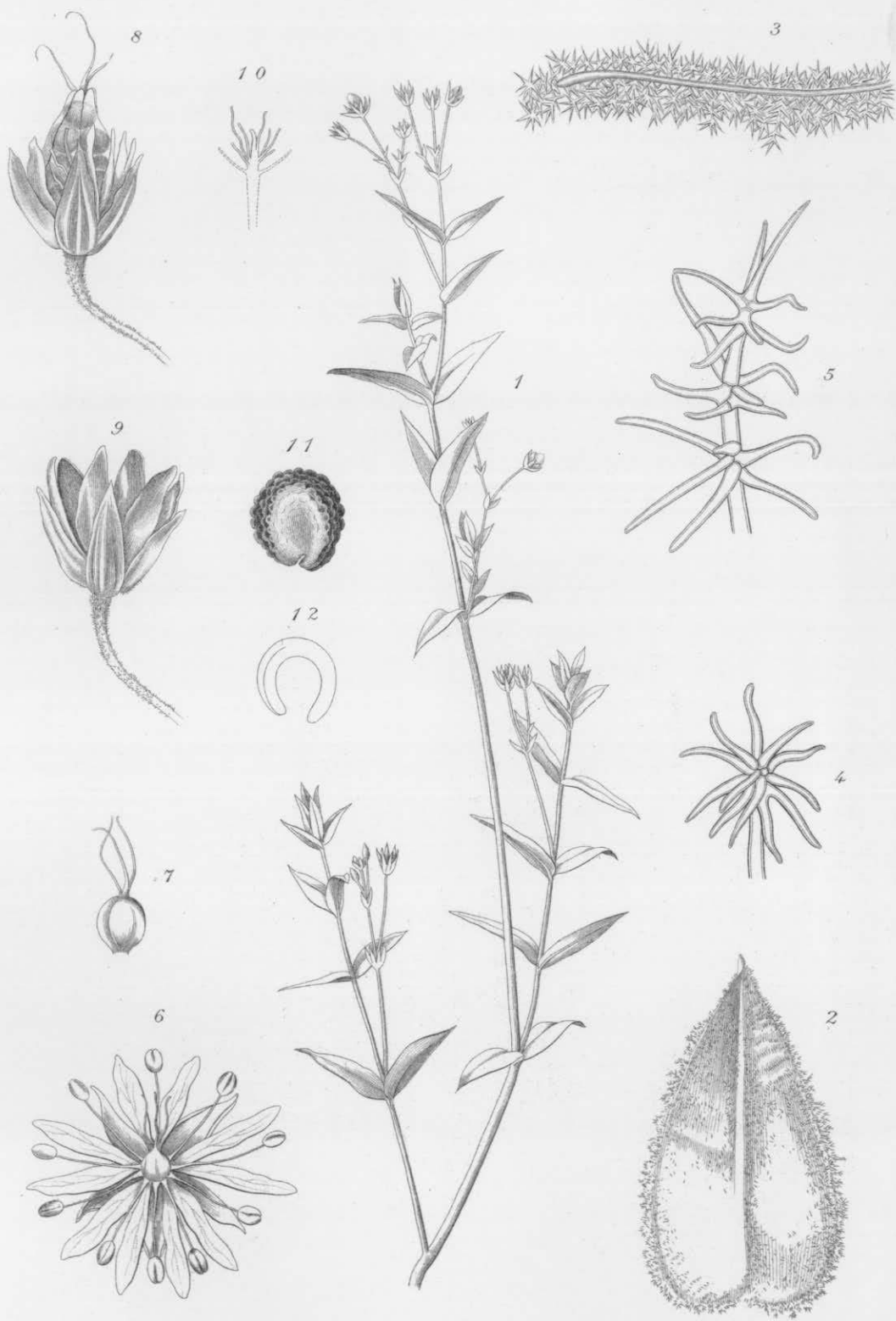
FLORA MONTANA FORMOSÆ.

PLATE II.

PLATE II.

Stellaria stellato-pilosa HAYATA.

- Fig. 1. A branch.
2. A leaf detached from an upper portion of a stem.
3. Transverse section of a leaf, showing stellate hairs on both sides of the leaf.
4. A stellate hair on the upper surface of a leaf.
5. A superposed stellate hair on the under surface of a leaf.
6. A flower.
7. A pistil.
8. A capsule with persistent sepals and petals.
9. A capsule after dehiscence.
10. A placenta in a capsule
11. A seed.
12. An embryo.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE III.

PLATE III.

Thea brevistyla HAYATA.

- Fig. 1. A branch.
2. A flower.
3. Vertical section of a flower, upper parts of the petals taken off.
4. Stamens, one seen from the ventral side, and the other, from the dorsal side.
5. Vertical section of an ovary.
6. Cross section of the same ovary.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE IV.

PLATE IV.

Rubus elegans HAYATA.

- Fig. 1. The plant.
2. A leaf, detached from the basal portion of a stem.
3. A flower seen from the under side.
4. A petal.
5. Fruits.
6. Vertical section of the same.
7. A stamen, seen from the inner side.
8. The same, seen from the outer side.
9. A fruit.
10. Another one, highly magnified.



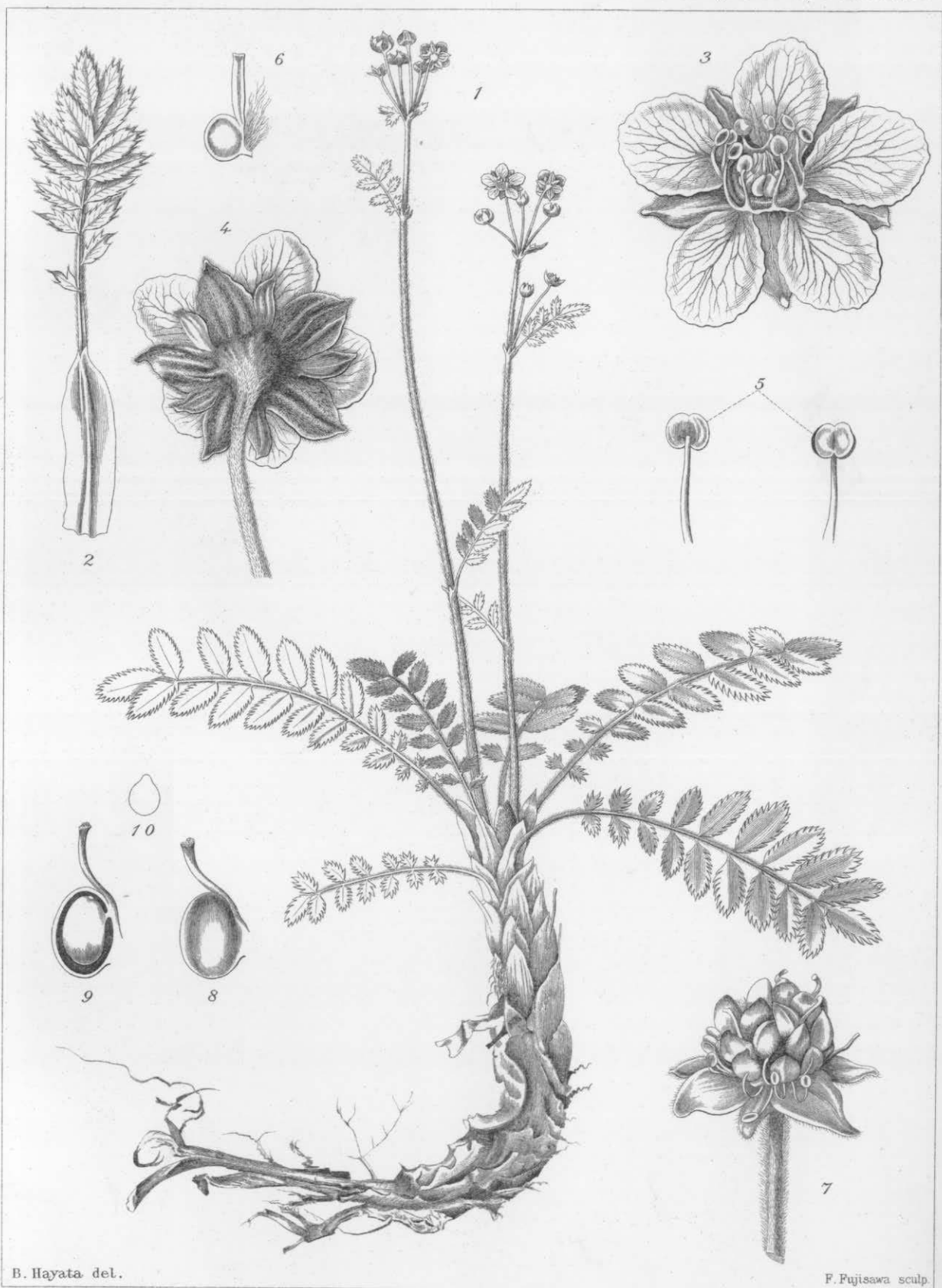
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE V.

PLATE V.

Potentilla leuconota DON. var. *morrisonicola* HAYATA.

- Fig 1. The plant.
2. A radical leaf.
 3. A flower, seen from the upper side.
 4. Another one, seen from the under side.
 5. Stamens, one seen from the ventral side, and the other, from the dorsal side.
 6. A pistil.
 7. Fruits on a receptacle.
 8. A fruit.
 9. The same, in vertical section.
 10. An embryo.



B. Hayata del.

F. Fujisawa sculp.

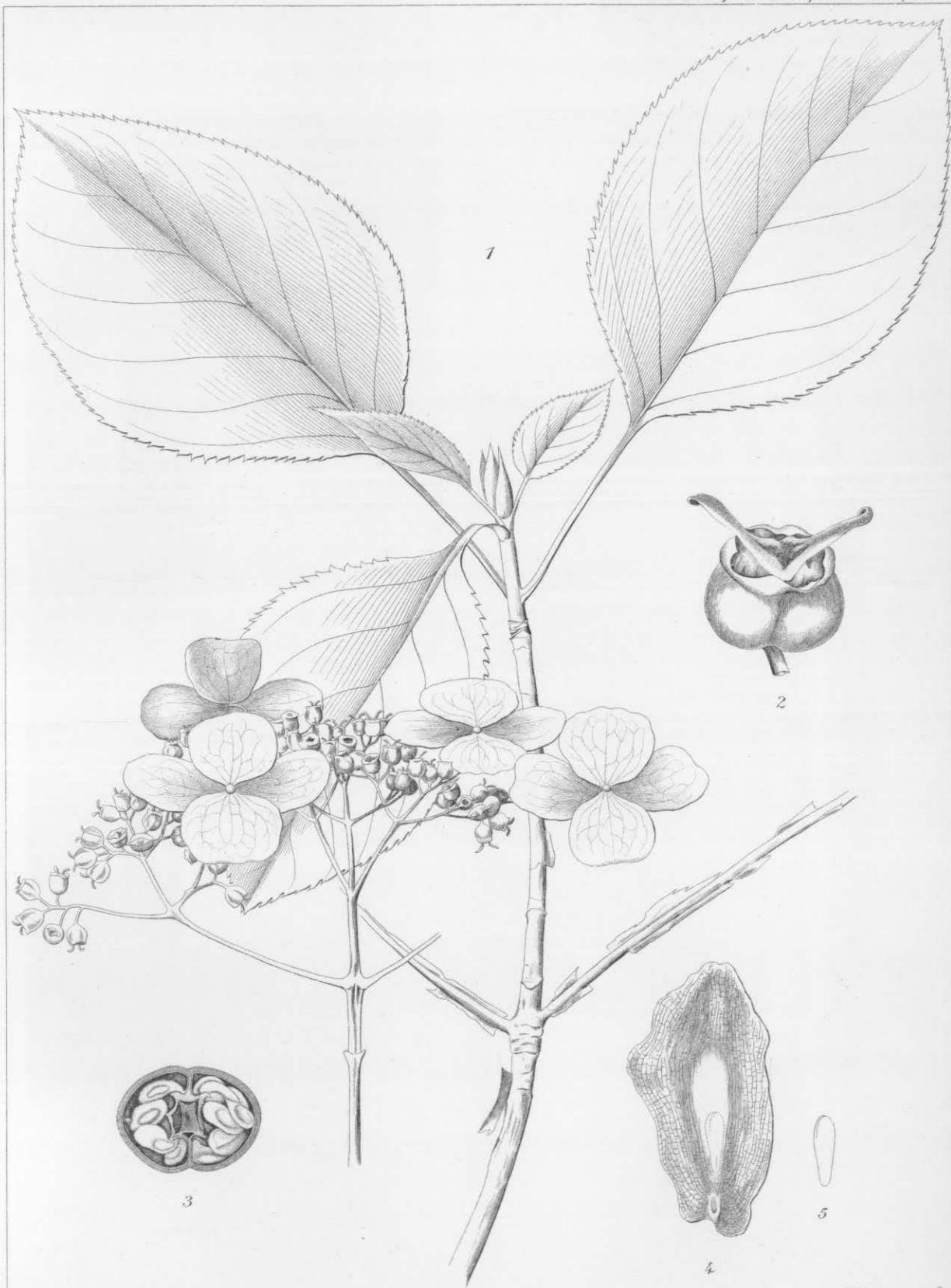
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE VI.

PLATE VI.

Hydrangea glabra HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in cross section.
4. A seed.
5. An embryo.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE VII.

PLATE VII.

Hydrangea integra HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in vertical section.
4. A seed.
5. An embryo.



B. Hayata del.

F. Fujisawa sculp.

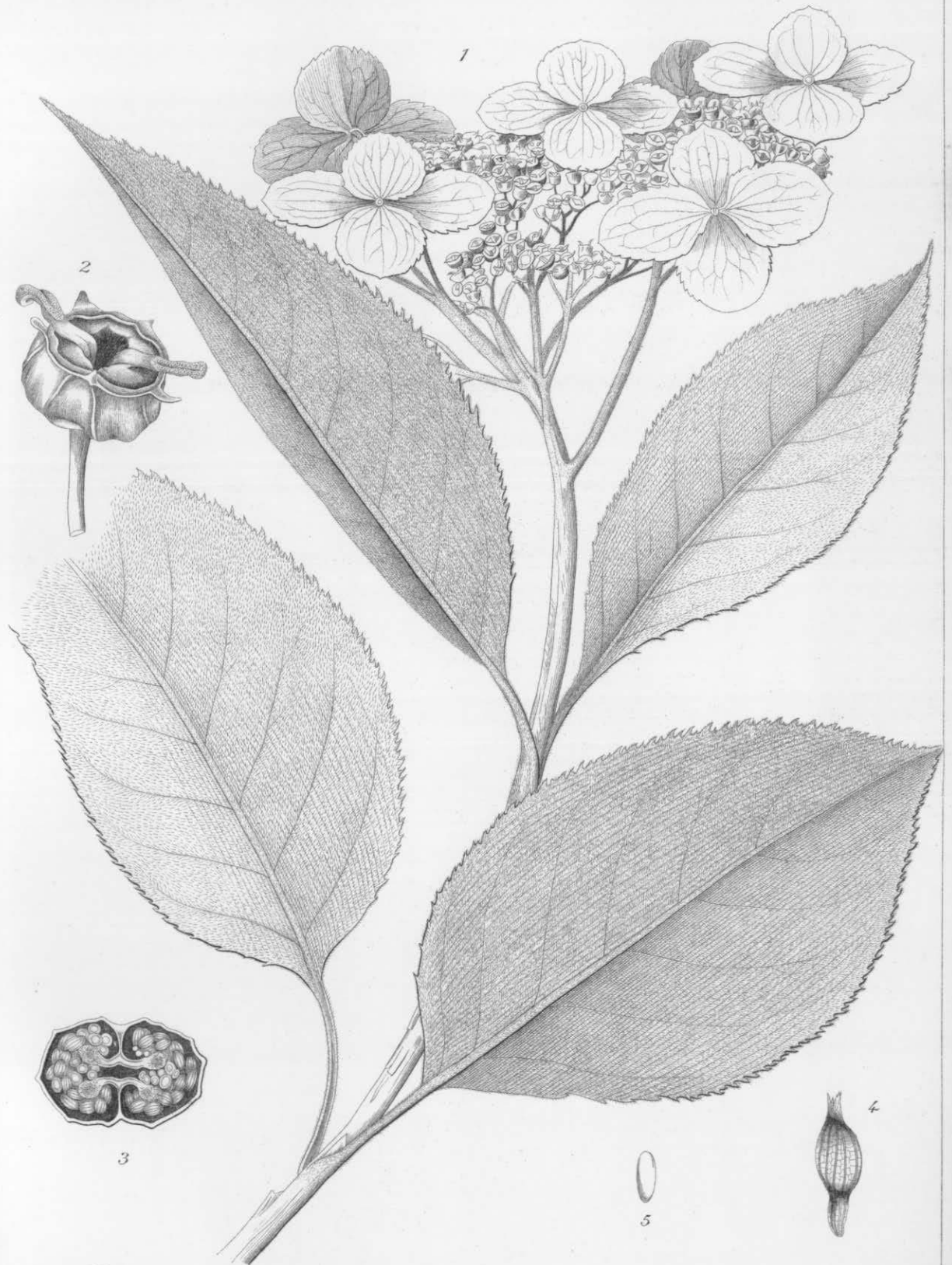
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE VIII.

PLATE VIII.

Hydrangea Karakamii HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in cross section.
4. A seed.
5. An embryo.



B. Hayata del.

F. Fujisawa sculp.

B. HAYATA.

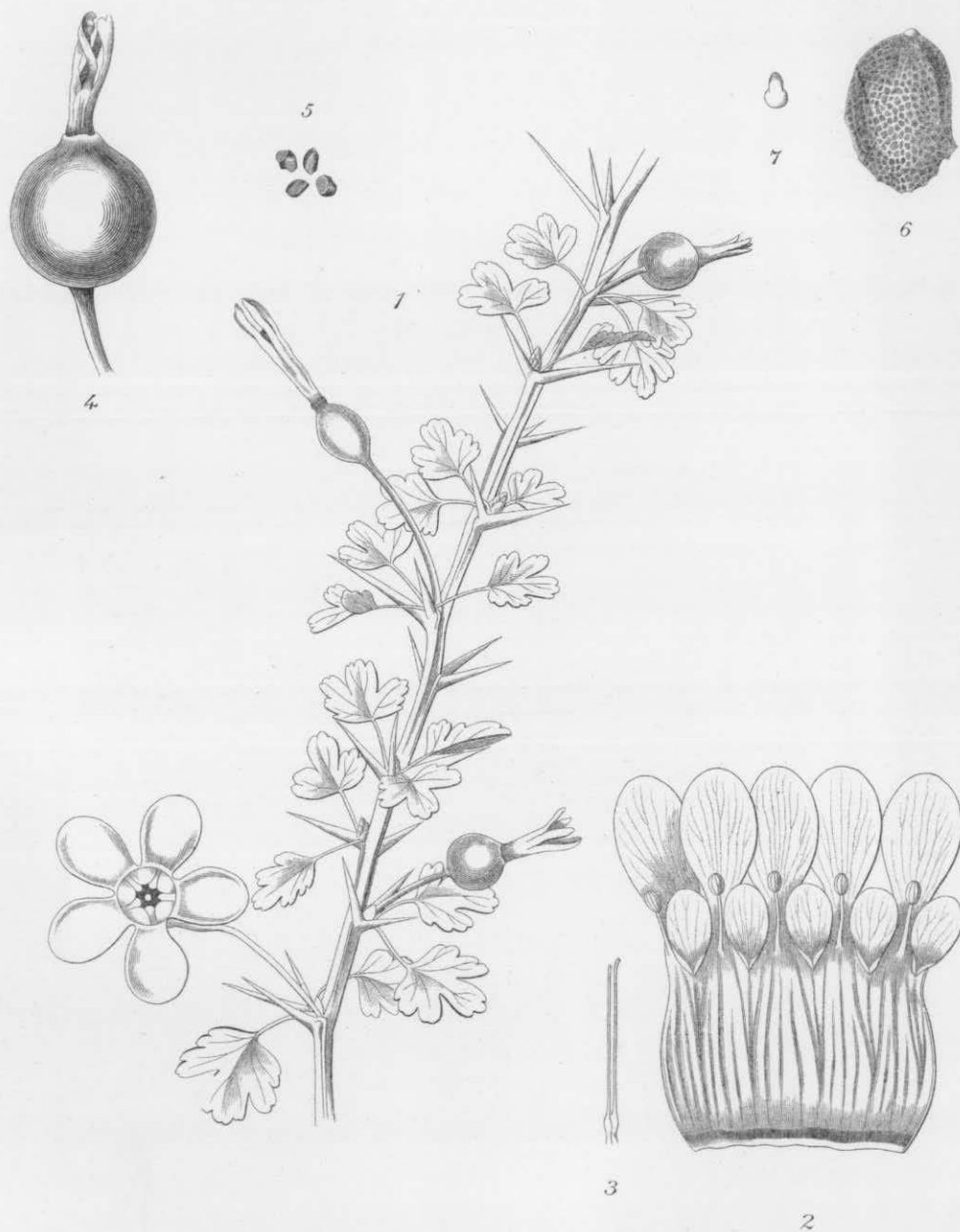
FLORA MONTANA FORMOSÆ.

PLATE IX.

PLATE IX.

Ribes formosanum HAYATA.

- Fig. 1. A branch.
2. Calyx and petals, laid open.
3. Styles.
4. A fruit.
5. Seeds.
6. A seed (highly magnified)
7. An embryo.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE X.

PLATE X.

Barthea formosana HAYATA.

- Fig. 1. A branch.
2. A flower-bud.
3. A flower.
4. A petal.
5. A portion of the upper margin of a petal
6. A longer stamen, (dorsal view.)
7. The same, (lateral view.)
8. A shorter stamen, (lateral view.)
9. An ovary, in vertical section.
10. The same, in cross section, stamens are seen in the holes
of the wall of the calyx tube.
11. A capsule, a part of the calyx taken off.
12. Seeds, seen from different sides.
13. An embryo.



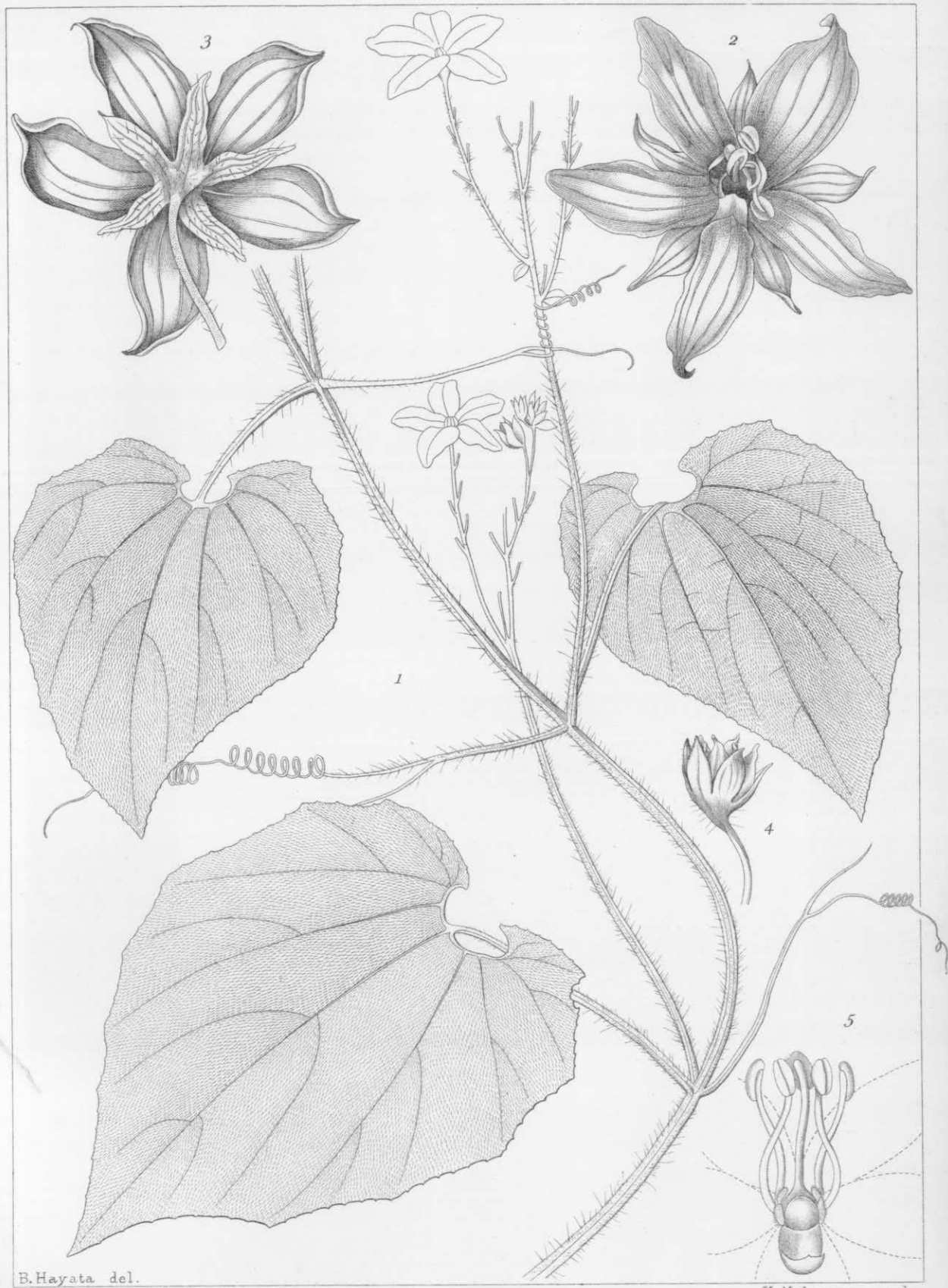
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XI.

PLATE XI.

Thladiantha formosana HAYATA.

- Fig. 1. A branch.
2. A flower, seen from above.
3. The same, seen from below.
4. A flower-bud.
5. Stamens and glands at the base of filaments.



B. Hayata del.

K. Nakazawa sculp

B. HAYATA.

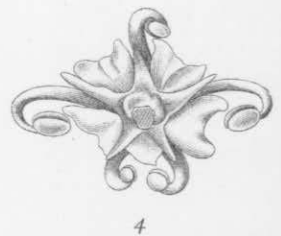
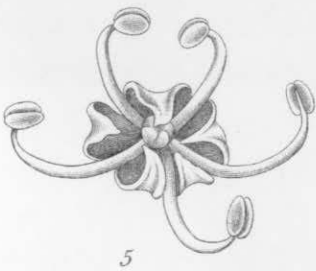
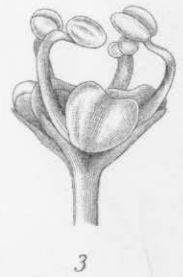
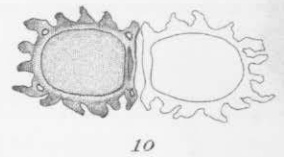
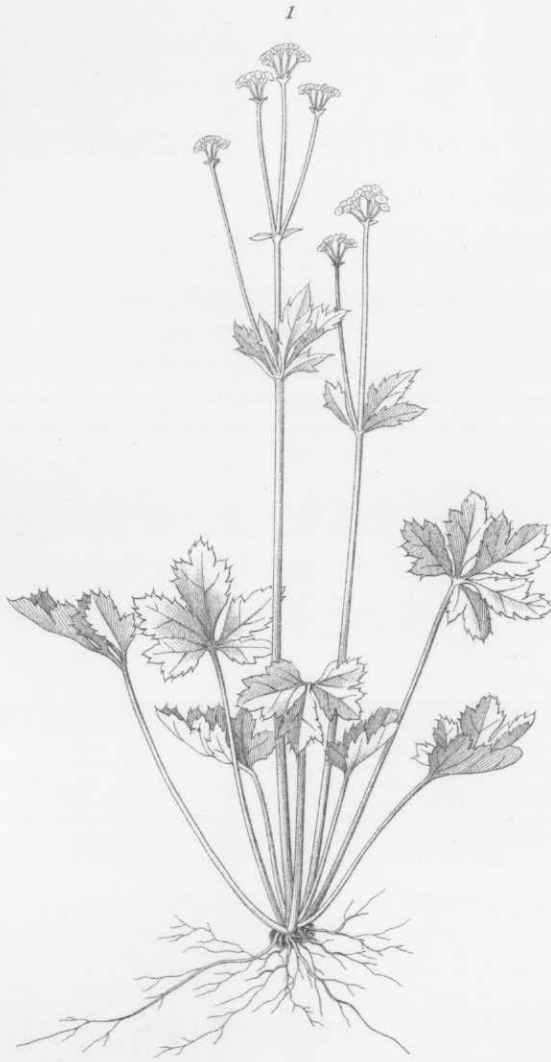
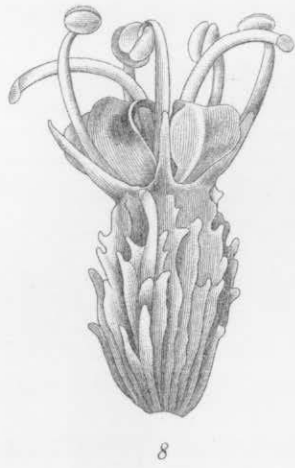
FLORA MONTANA FORMOSÆ.

PLATE XII.

PLATE XII.

Sanicula petagnioides HAYATA.

- Fig. 1. The plant.
2. An umbel.
3. A male flower, seen from side.
4. The same, seen from below.
5. The same, seen from above.
6. A stamen, seen from within.
7. The same, seen from without.
8. A perfect flower.
9. A fruit.
10. The same, in cross section.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XIII.

PLATE XIII.

Fatsia polycarpa HAYATA.

- Fig. 1. The plant.
2. An umbel, not yet unfolded.
3. The same, seen from a different side.
4. An outer larger bract.
5. Two inner smaller bract.
6. A flower-bud.
7. The same, in vertical section.
8. An ovary, in cross section.
9. Stamens, seen from different sides.
10. A flower.
11. The apex of a style.
12. A petal.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XIV.

PLATE XIV.

Oreopanax formosana HAYATA.

- Fig. 1. A branch.
2. A head.
3. The same, in vertical section.
4. A flower, in vertical section.
5. An ovary, in cross section.
6. An ovary, in a more advanced stage.
7. Stamens, seen, from different sides.
8. A head of fruits.
9. A ruminant albumen.
10. The same, in vertical section, the embryo is seen.
11. The same embryo, more enlarged.
12. Section of a fruit; a seed is ripe, while the other is abortive.
13. A seed (lateral view).
14. The same (dorsal view).
15. An inferior bract.
16. A lateral bract.
17. Hairs covering all over the plant.
18. A stellate hair dotting the surface of a leaf and inflorescence.



B. Hayata del.

K. Nakazawa sculp.

B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XV.

PLATE XV.

Damnacanthus angustifolius HAYATA.

- Fig. 1. A branch.
2. A flower.
3. Corolla and stamens, laid open.
4. A flower showing the ovary, corolla and stamens taken off.
5. An ovary, in vertical section.
6. The same, in cross section.
7. An ovule.
8. A stamen (dorsal view).
9. The same (lateral view).
10. A fruit.
11. The same, in cross section.
12. A seed (ventral view).
13. The same (dorsal view).
14. An albumen, in section, the embryo seen.
15 and 16. An embryo, seen from different sides.



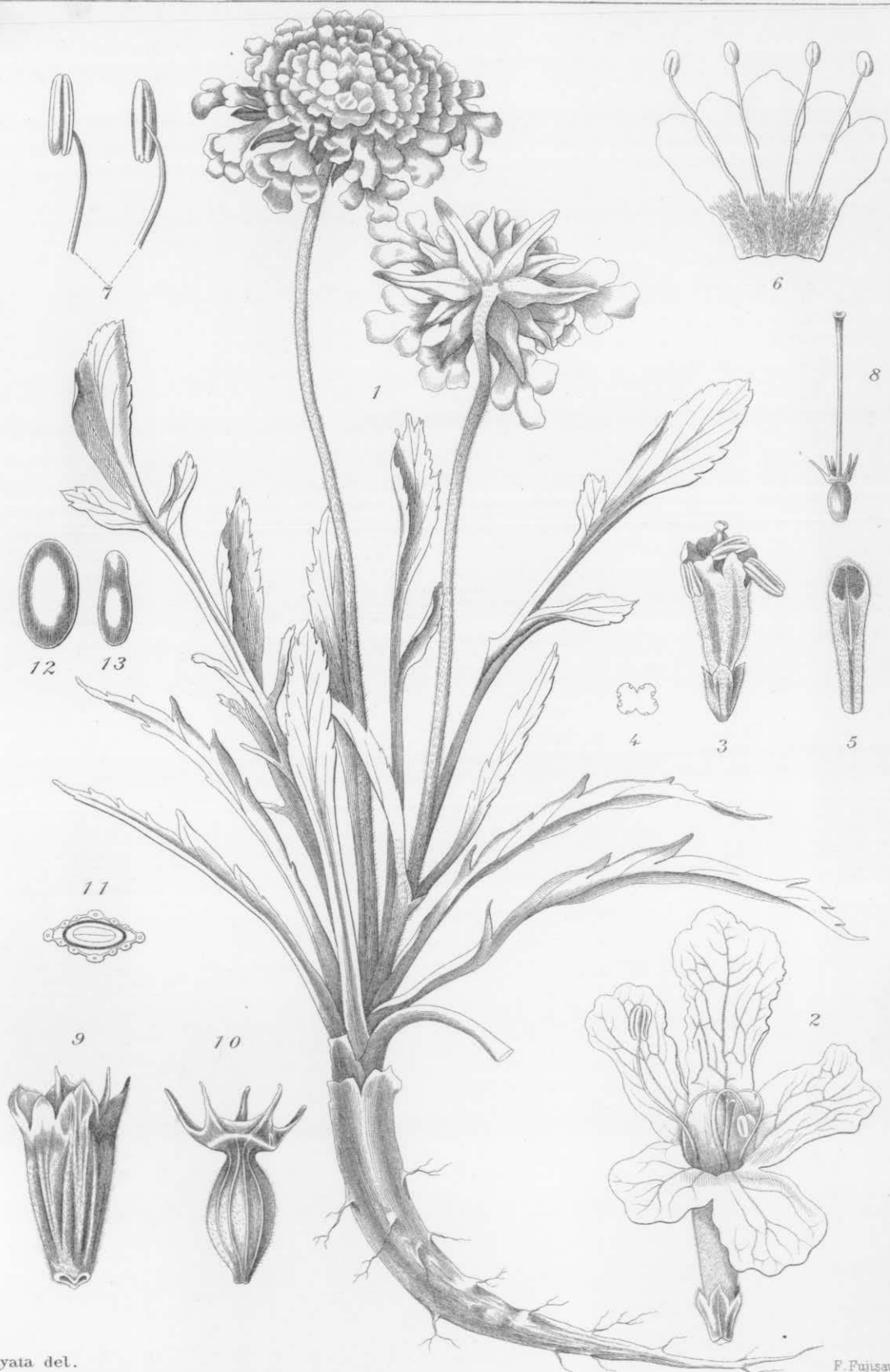
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XVI.

PLATE XVI.

Scabiosa lacerifolia HAYATA.

- Fig. 1. The plant.
2. A marginal flower.
 3. A disc-flower.
 4. Cross section of an involucrel.
 5. A bract of a flower.
 6. Corolla and stamens, laid open.
 7. Stamens, seen from different sides.
 8. An inferior ovary.
 9. A fruit in the involucrel.
 10. The same, the involucrel taken off.
 11. Cross section of the same.
 12. An albumen.
 13. An embryo.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XVII.

PLATE XVII.

Leontopodium microphyllum HAYATA.

- Fig. 1. The plant.
2. A cyme of heads.
3. A head.
4. A bract of an involucre.
5. A female and fertile flower.
6. A perfect and sterile flower.
7. A female fertile flower, pappus taken off, corolla seen.
8. Stamens of a perfect and sterile flower.
9. A style of the same flower.
10. A stamen, more magnified.
11. An apical portion of a style.
12. Setæ of a pappus.



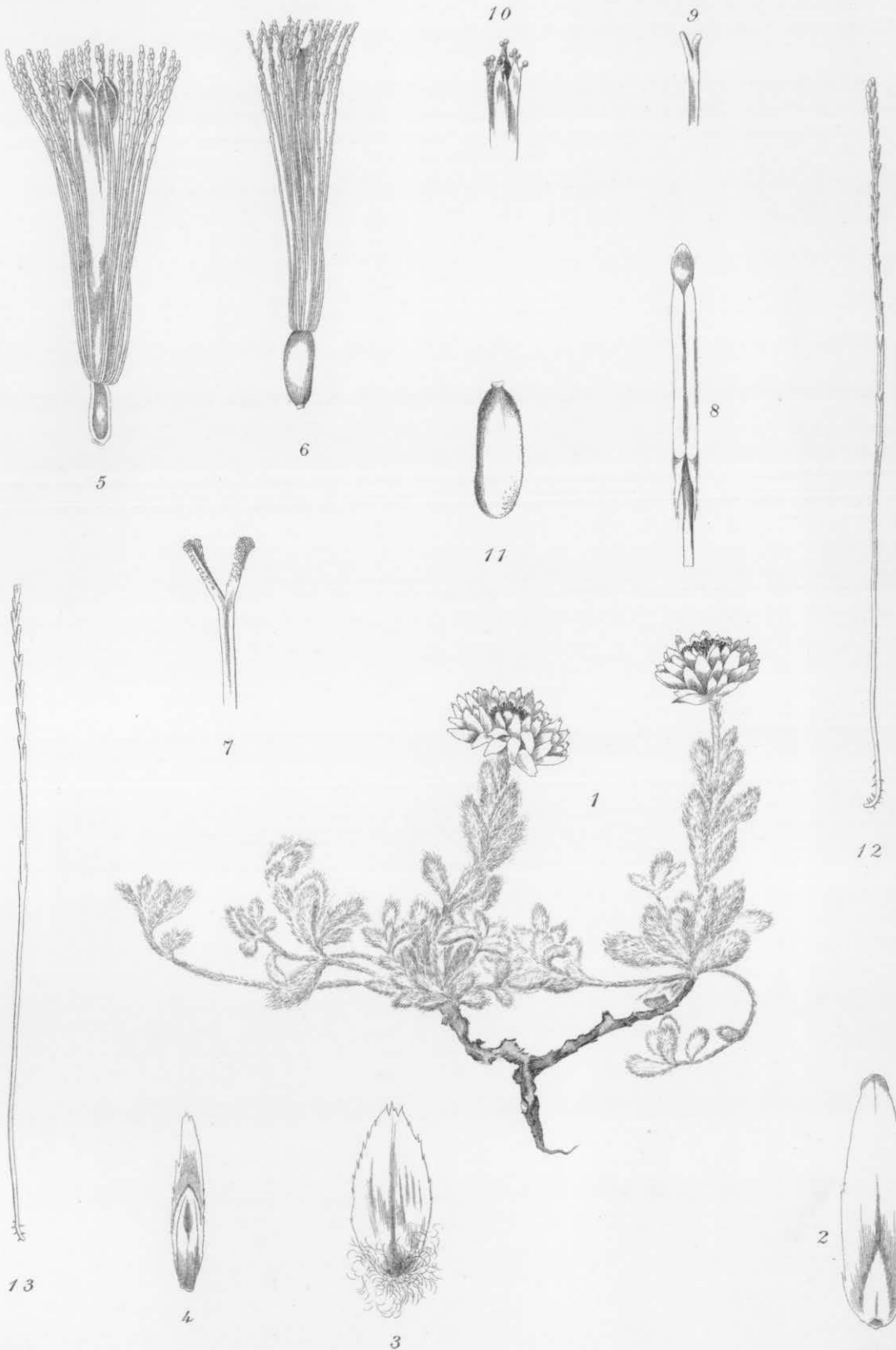
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XVIII.

PLATE XVIII.

Anaphalis Nagasawai HAYATA.

- Fig. 1. The plant.
2. An inner bract.
3. An outer-most bract.
4. An inner-most bract.
5. A perfect and sterile flower.
6. A female and fertile flower.
7. The apical portion of the style of a perfect flower.
8. A stamen of a perfect flower.
9. The apical portion of the style of a female flower.
10. The apical portion of the corolla of a female flower.
11. An achene.
12. A bristle of the pappus of a perfect flower.
13. A bristle of the pappus of a female flower.



B. Hayata del.

F. Fujisawa sculp.

B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XIX.

PLATE XIX.

Gnaphalium lineare HAYATA.

- Fig. 1. The plant.
2. A head.
3. A female flower.
4. A perfect flower.
5. A stamen of the same flower.
6. The apical portion of the style.
7. The apical portion of the corolla of a female flower.
8. An achene.
9. A bristle of a pappus.
10. An outer-most bract.
11. An inner-most bract.



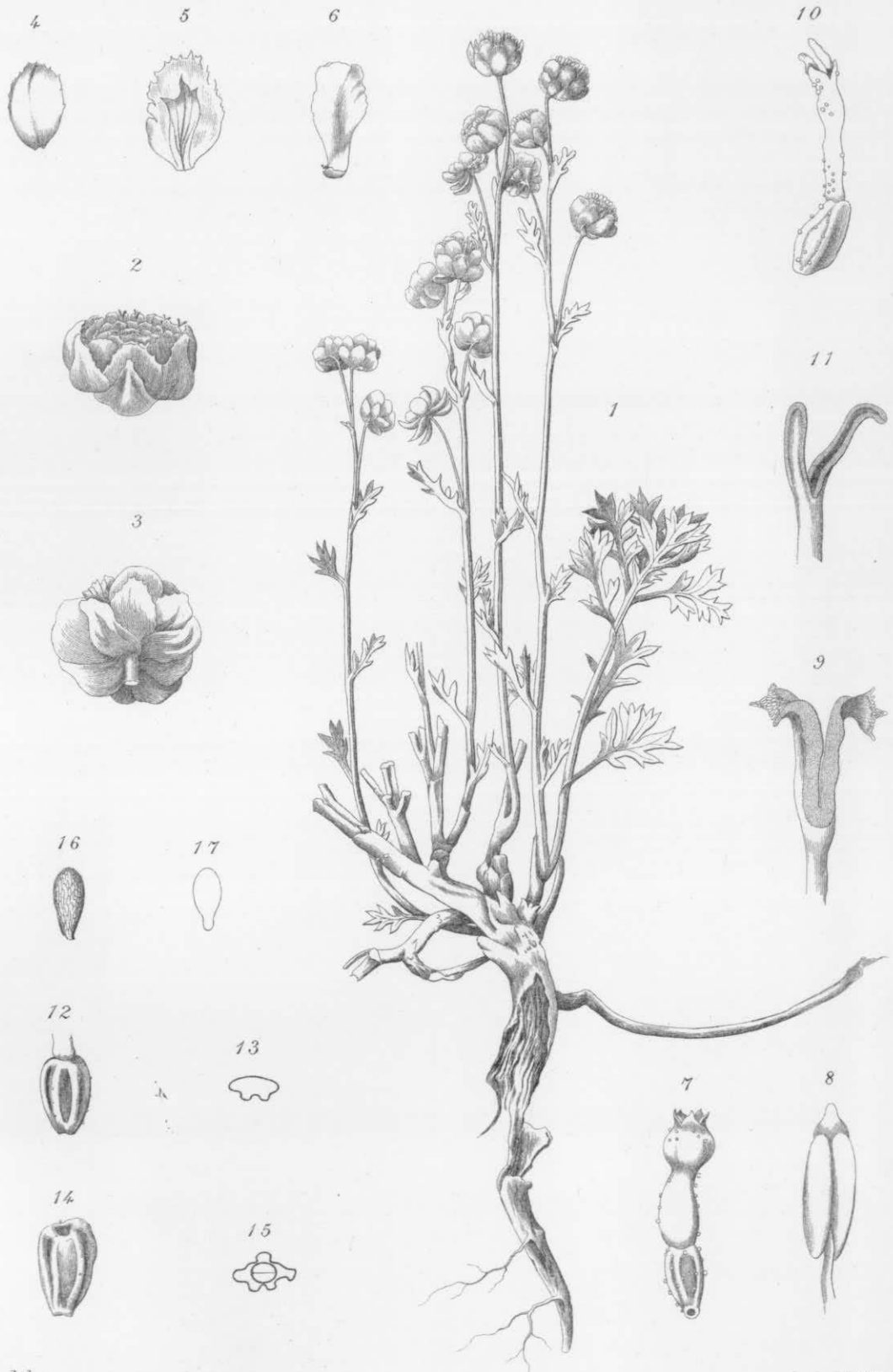
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XX.

PLATE XX.

Artemisia niitakayamensis HAYATA.

- Fig. 1. The plant.
2. A head.
3. The same, seen from a little below.
4. An outer-most bract.
5. An inner bract.
6. An inner-most bract.
7. A perfect flower.
8. A stamen of the same flower.
9. The apical portion of the style.
10. A female flower.
11. The apical portion of the style of the same flower.
12. An achene.
13. The same, in cross section.
14. Another achene.
15. The same, in cross section.
16. A seed.
17. An embryo



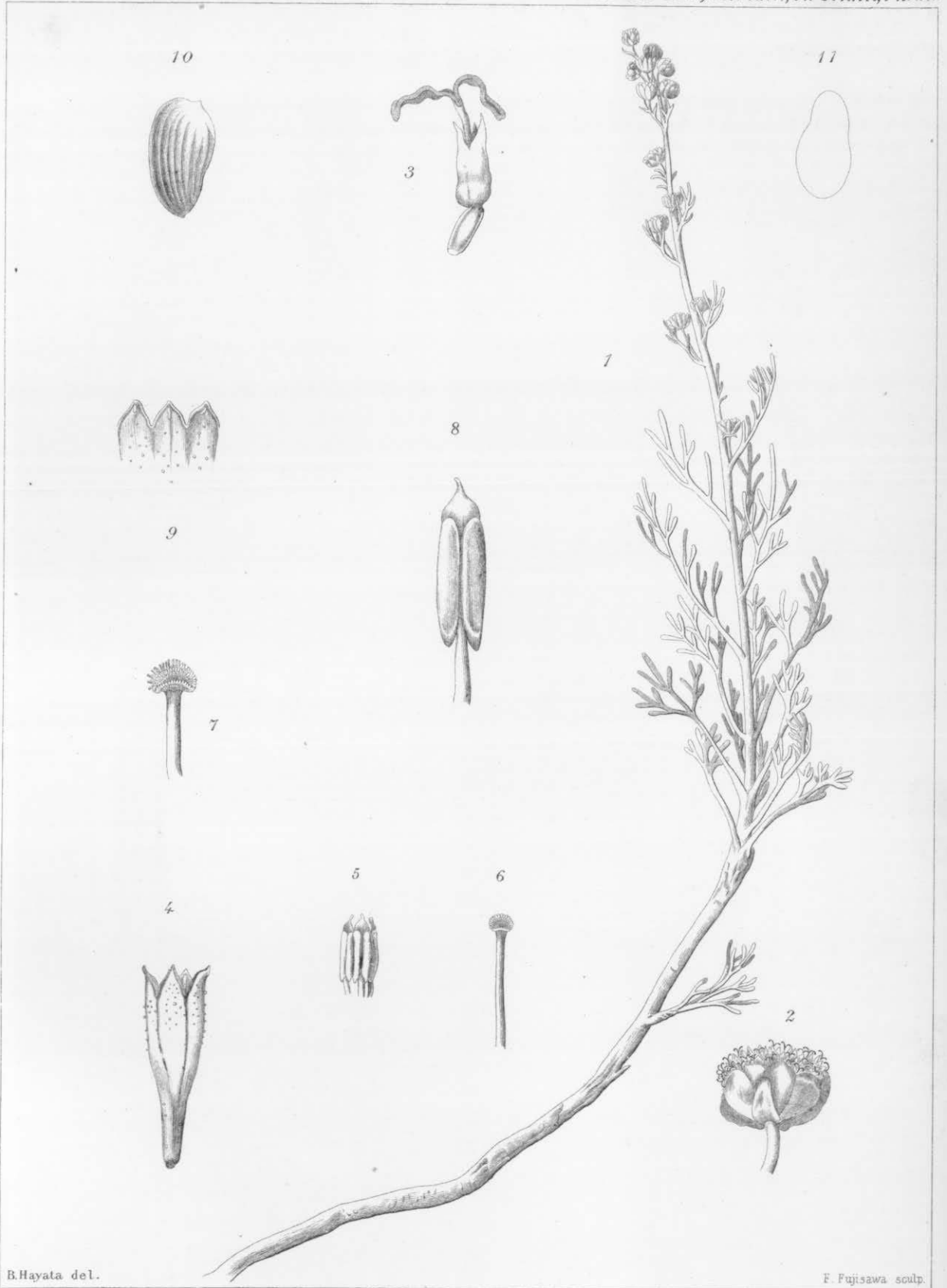
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXI.

PLATE XXI.

Artemisia oligocarpa HAYATA.

- Fig. 1. The plant.
2. A head.
3. A female flower.
4. A perfect and sterile flower.
5. The stamens of the same flower.
6. The upper portion of the style of the same flower.
7. The same, more magnified.
8. A stamen of the same flower.
9. The upper portion of the corolla.
10. An Achene.
11. An embryo.



B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XXII.

PLATE XXII.

Ainsliea macroclinidioides HAYATA.

- Fig. 1. The plant.
2. Roots.
3. A part of an inflorescence.
4. A cleistogamous flower.
5. The corolla of the same flower.
6. The stamens of the same flower.
7. The style of the same flower.
8. The upper portion of the same style.
9. The basal portion of the same style.
10. A bristle of a pappus.
11. A stamen, much more magnified.
12. Cross section of an achene.
13. An embryo.



B. Hayata del.

S. Kondō sculp.

B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XXIII.

PLATE XXIII.

Ainsliea morrisonicola HAYATA.

- Fig. 1. The plant.
2. A cleistogamous flower.
3. A radical leaf.
4. Corolla.
5. Stamens.
6. A stamen, much more magnified.
7. A style.
8. A bristle of a pappus.
9. Cross section of an achene.
10. A seed.
11. An embryo.



2



6



1



9

4



5



8



7



10



11



3

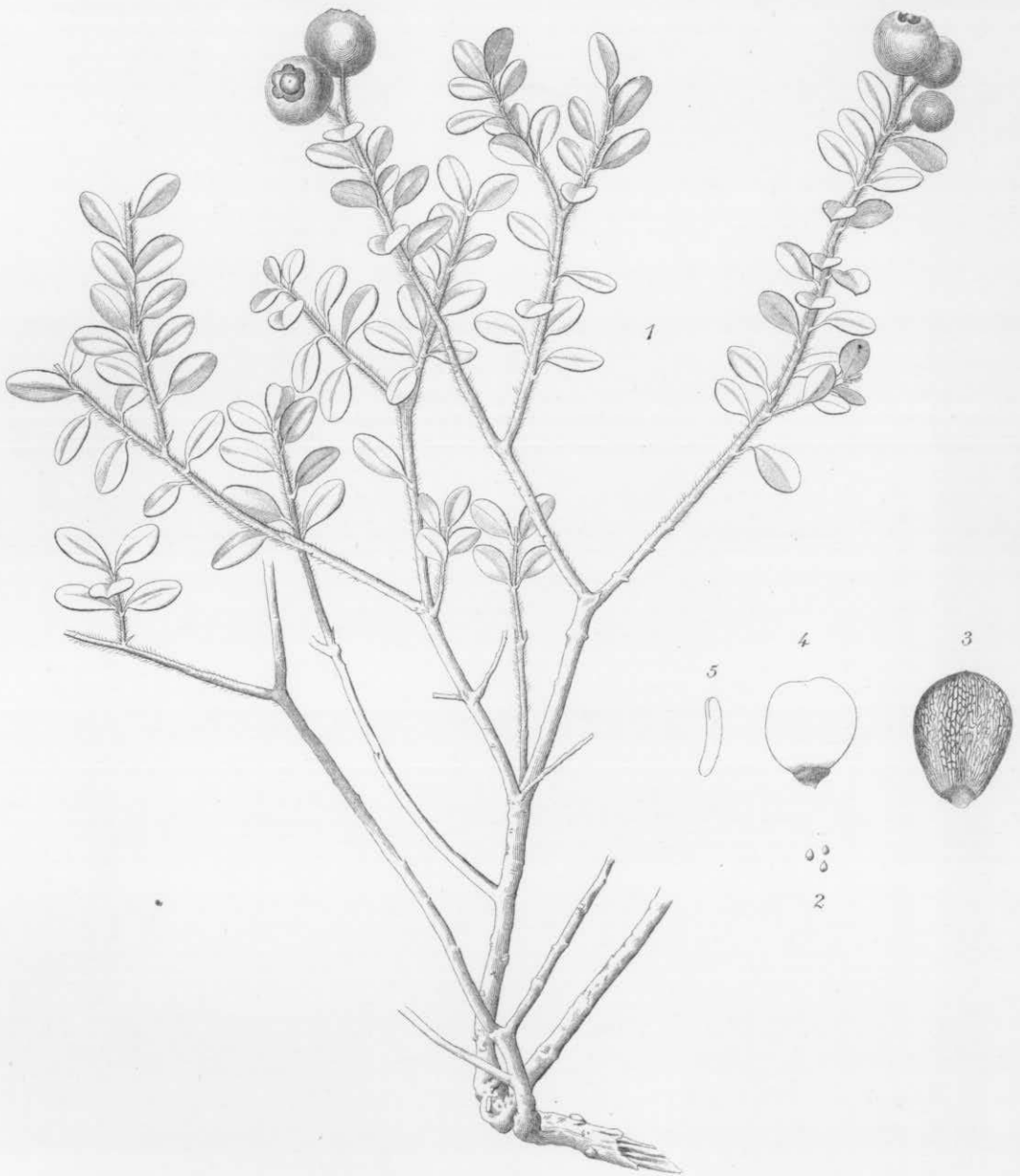
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXIV.

PLATE XXIV.

Vaccinium Merrillianum HAYATA.

- Fig. 1. A branch.
2. Seeds (natural size)
3. A seed, highly magnified.
4. An albumen.
5. An embryo.



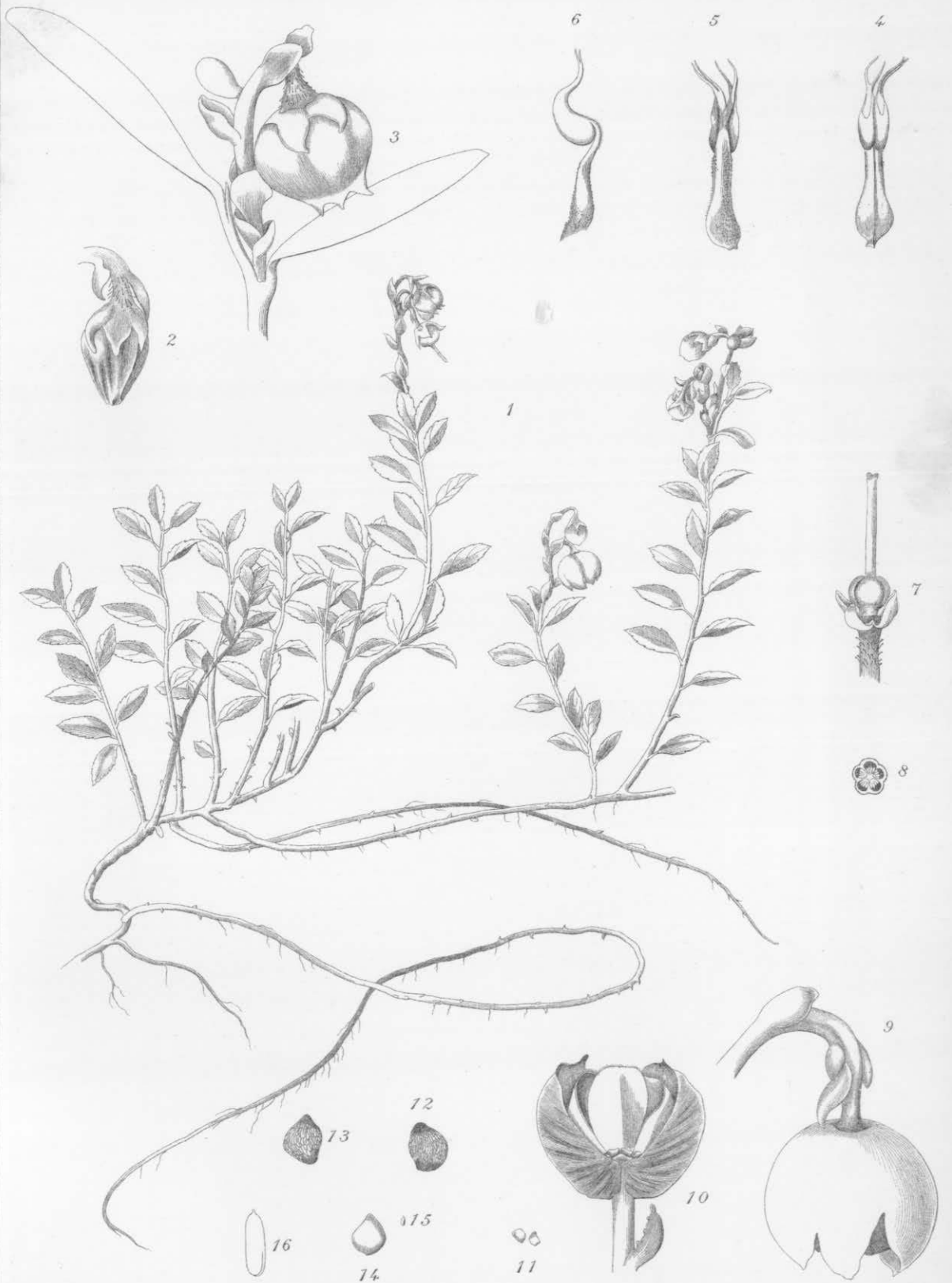
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXV.

PLATE XXV.

Gaultheria Itoana HAYATA.

- Fig. 1. The plant.
2. A flower-bud.
3. A flower.
4. A stamen (ventral view).
5. The same (dorsal view).
6. The same (lateral view).
7. An ovary.
8. The same, in cross section.
9. A fruit.
10. The same, in vertical section.
11. Seeds.
12 and 13. The same, seen from different sides, highly magnified.
14. An albumen.
15. An embryo, in the same proportion.
16. The same, much more magnified.



B. Hayata del.

F. Fujisawa sculp.

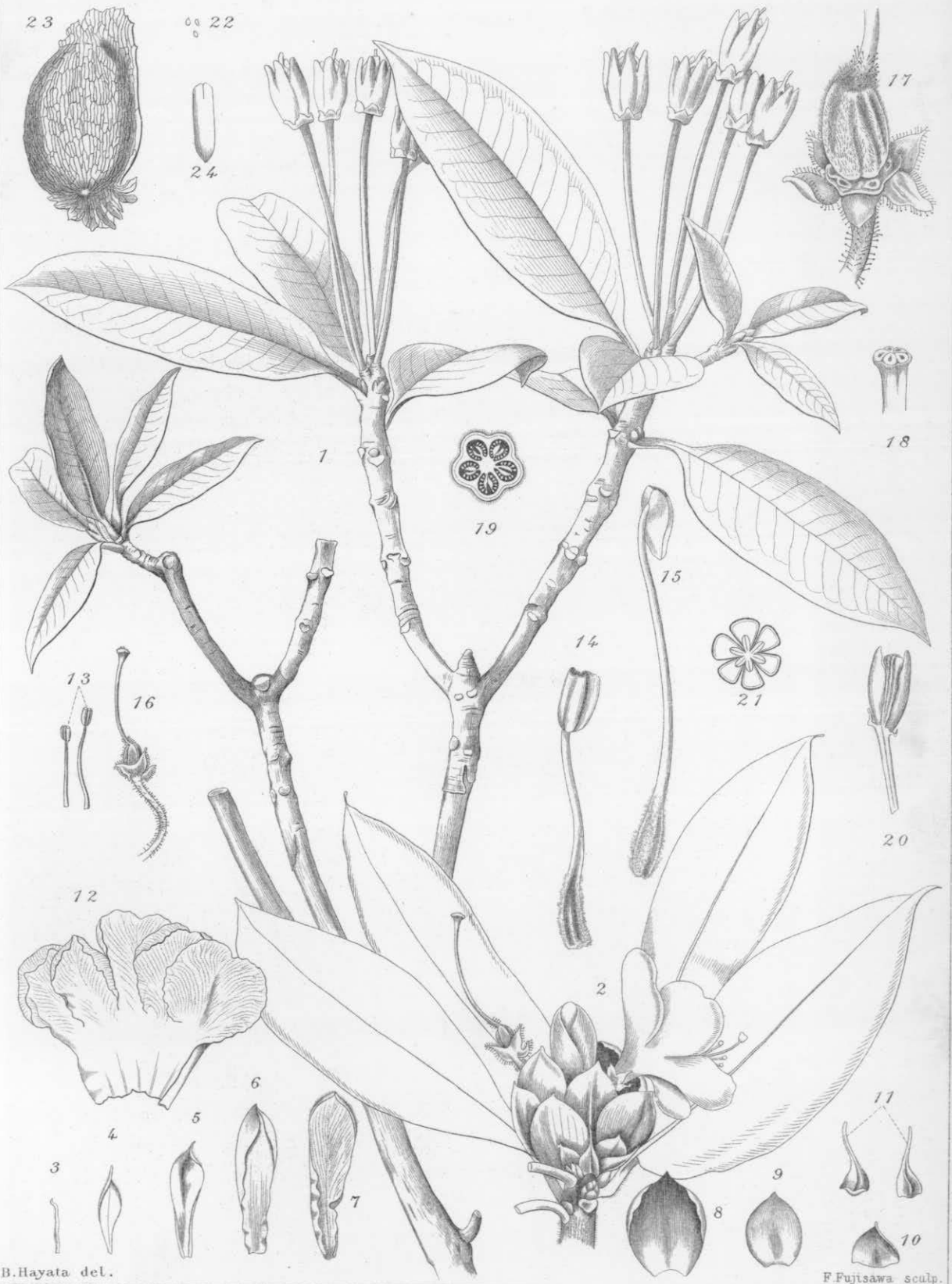
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXVI.

PLATE XXVI.

Rhododendron pseudo-chrysanthum HAYATA.

- Fig. 1. A branch.
2. An inflorescence.
3. An inner-most bract.
4, 5, 6, 7, 8, 9 and 10. Bracts of different series.
11. An outer-most bract.
12. A corolla, laid open.
13. Stamens.
14 and 15. The same, seen from different sides.
16. An ovary.
17. The same, much more magnified.
18. The upper portion of a style.
19. Cross section of an ovary.
20. A capsule, in vertical section.
21. Cross section of a capsule.
22. Seeds (natural size).
23. A seed highly magnified.
24. An embryo.



B. Hayata del.

F. Fujisawa sculp.

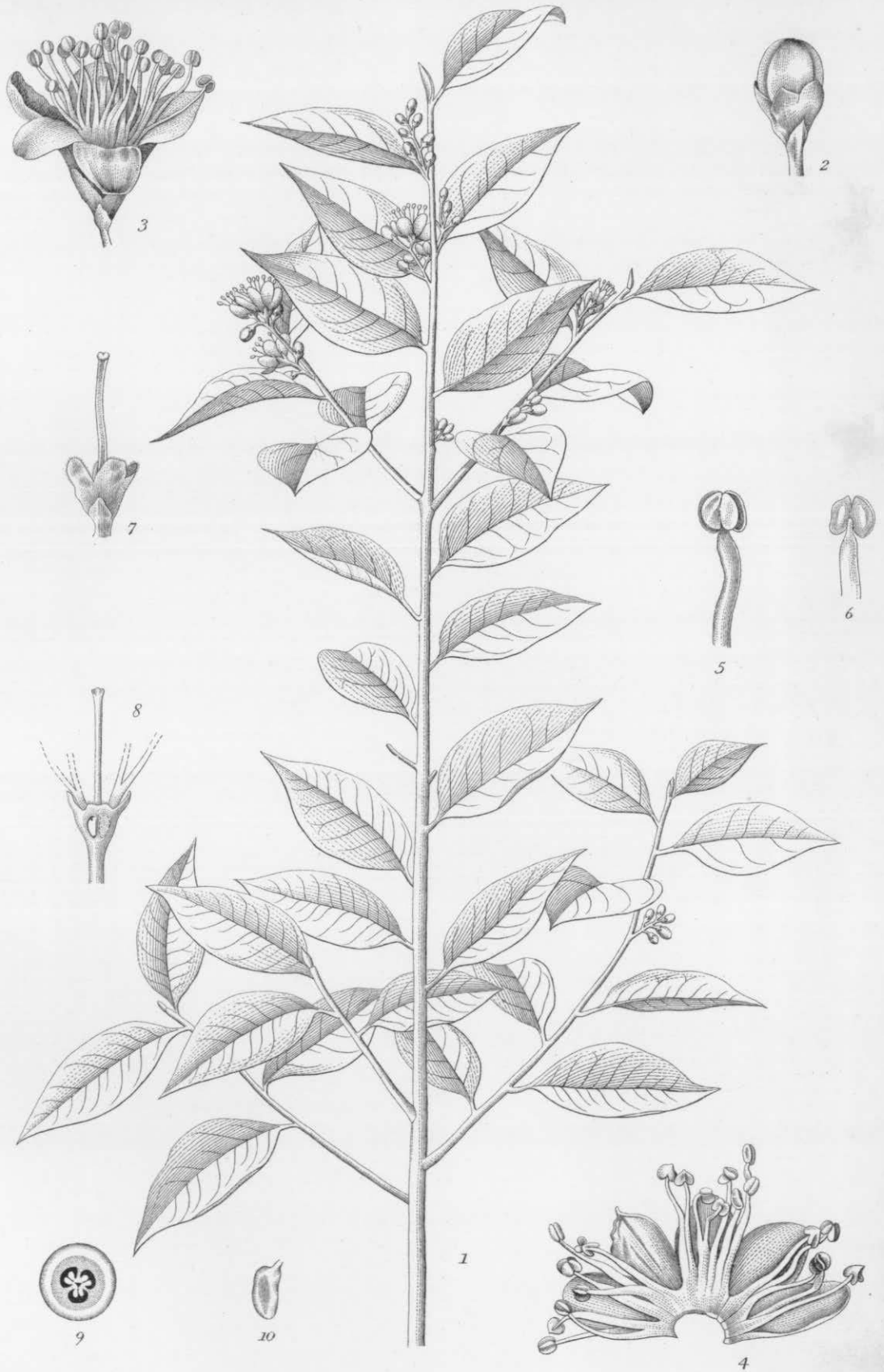
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXVII.

PLATE XXVII.

Symplocos morrisonicola HAYATA.

- Fig. 1. A branch.
2. A flower-bud.
3. A flower.
4. Corolla and stamens laid open.
5. A stamen, seen from without.
6. The same, seen from within.
7. A calyx.
8. The same, in vertical section.
9. Cross section of an ovary.
10. An ovule.



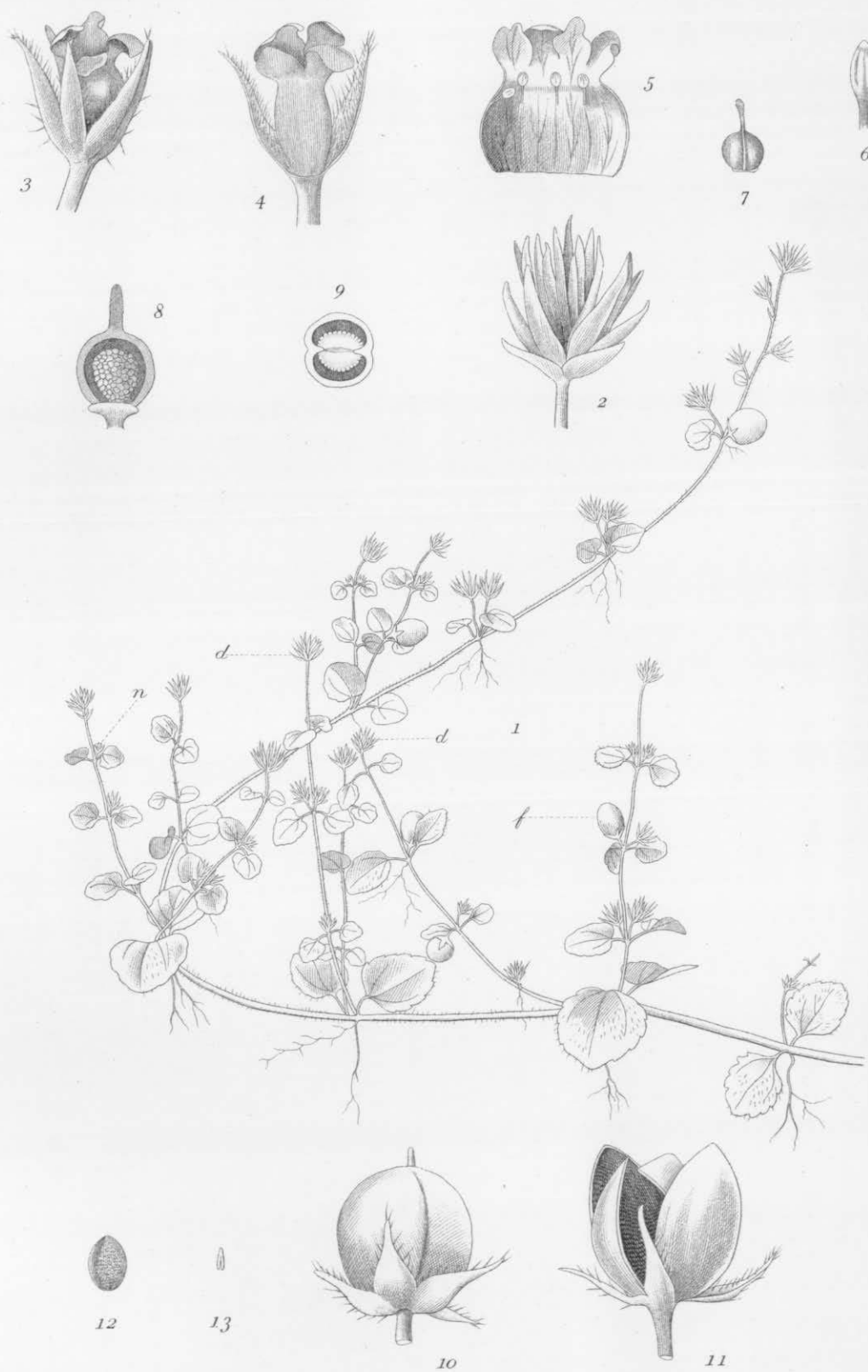
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXVIII.

PLATE XXVIII.

Lagania dentata (ELMER) HAYATA.

- Fig. 1. The plant.
2. A deformed flower.
3. A flower.
4. The same, a part of the calyx taken off, the corolla seen.
5. The same corolla, laid open.
6. A stamen, seen from without.
7. An ovary.
8. The same, in vertical section, much more magnified.
9. The same, in cross section.
10. A capsule.
11. The same, after opening.
12. A seed.
13. An embryo.



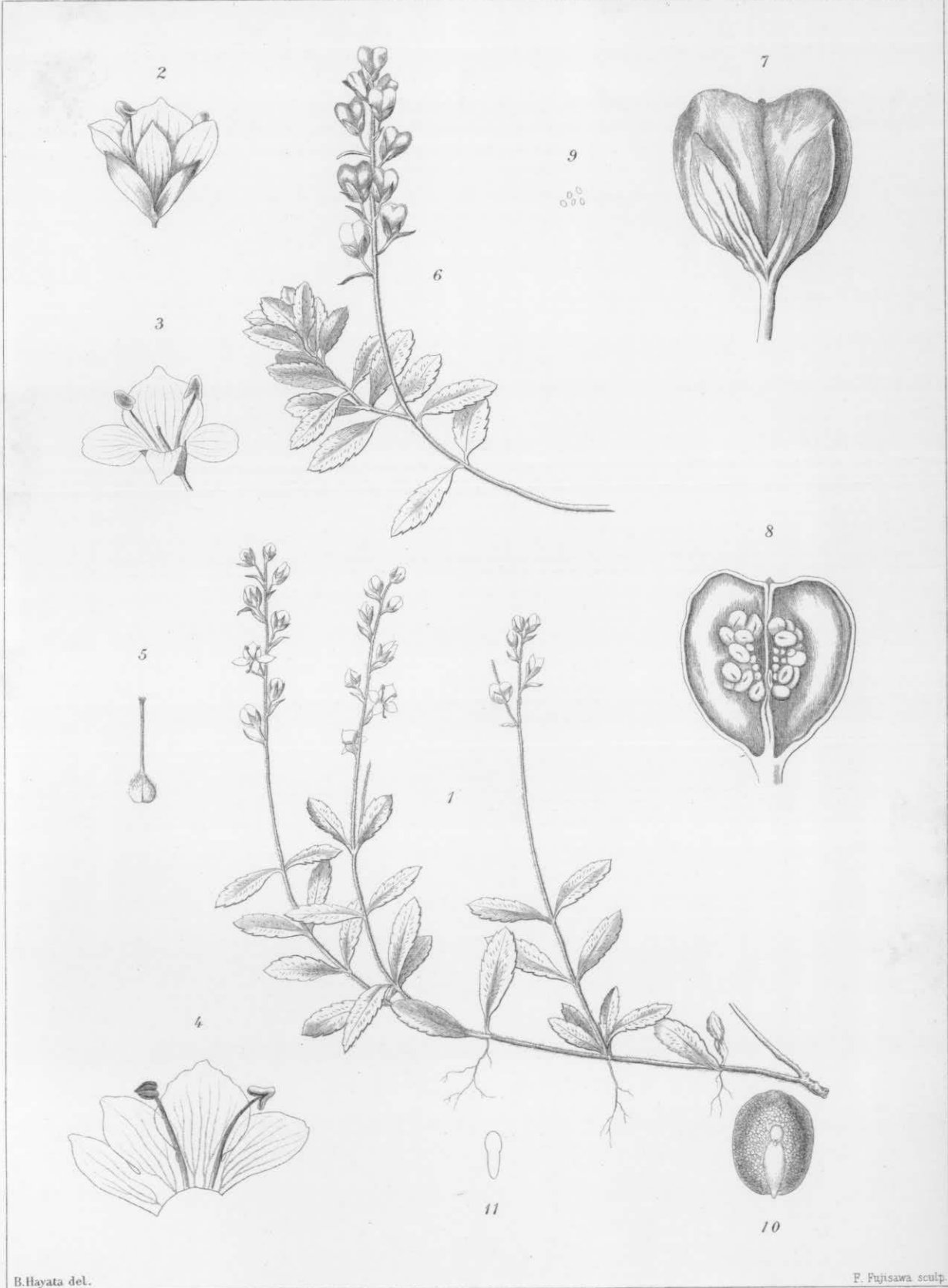
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXIX.

PLATE XXIX.

Veronica morrisonicola HAYATA.

- Fig. 1. The plant.
2. A flower, seen from side.
3. The same, seen from above.
4. A corolla, laid open.
5. An ovary.
6. A branch bearing fruits.
7. A fruit.
8. The same, in vertical section.
9. The seeds (natural size).
10. A seed, magnified.
11. An embryo.



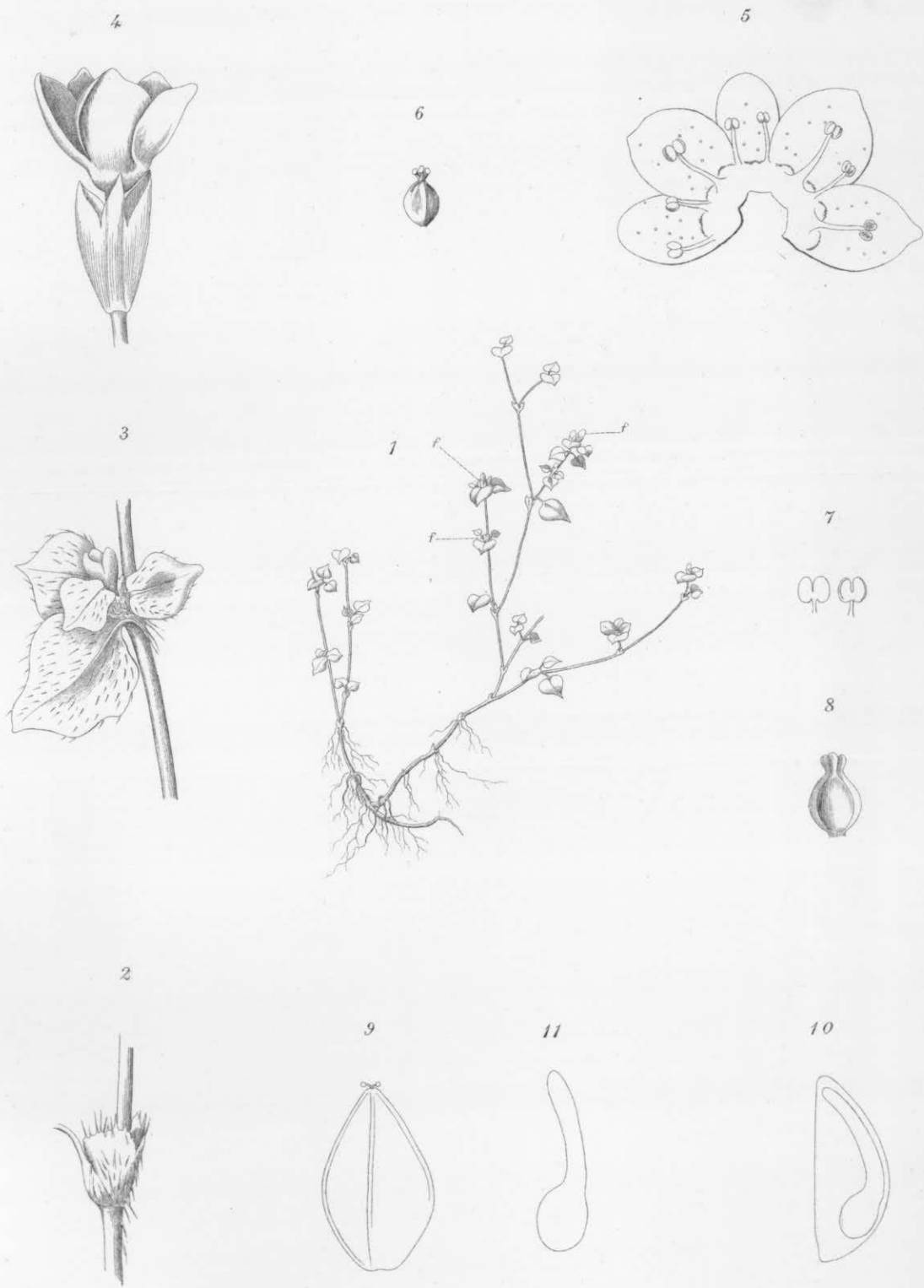
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXX.

PLATE XXX.

Polygonum minutum HAYATA.

- Fig. 1. The plant.
2. A sheath.
3. A flower on a branchlet.
4. A flower.
5. A perianth, laid open.
6. An ovary.
7. Stamens, seen from different sides.
8. An ovary.
9. A fruit.
10. The same, in vertical section, showing the embryo in it.
11. The embryo.



B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XXXI.

PLATE XXXI.

Polygonum morrisonense HAYATA.

- Fig. 1. The plant.
2. A branch, showing sheaths.
3. A head.
4. Bracts, seen from different sides.
5. A flower.
6. A perianth, laid open.
7. An ovary.
8. A stamen with a gland at the base of the filament.
9. A fruit.
10. A seed.
11. An embryo.



B. Hayata del.

F. Fujisawa sculp.

B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XXXII.

PLATE XXXII.

Peperomia Nakaharai HAYATA.

- Fig. 1. The plant.
2. A spike.
3. A female flower, seen from the dorsal side.
4. The same, seen from lateral side.
5. The same, in a more advanced stage.
6. A fruit.



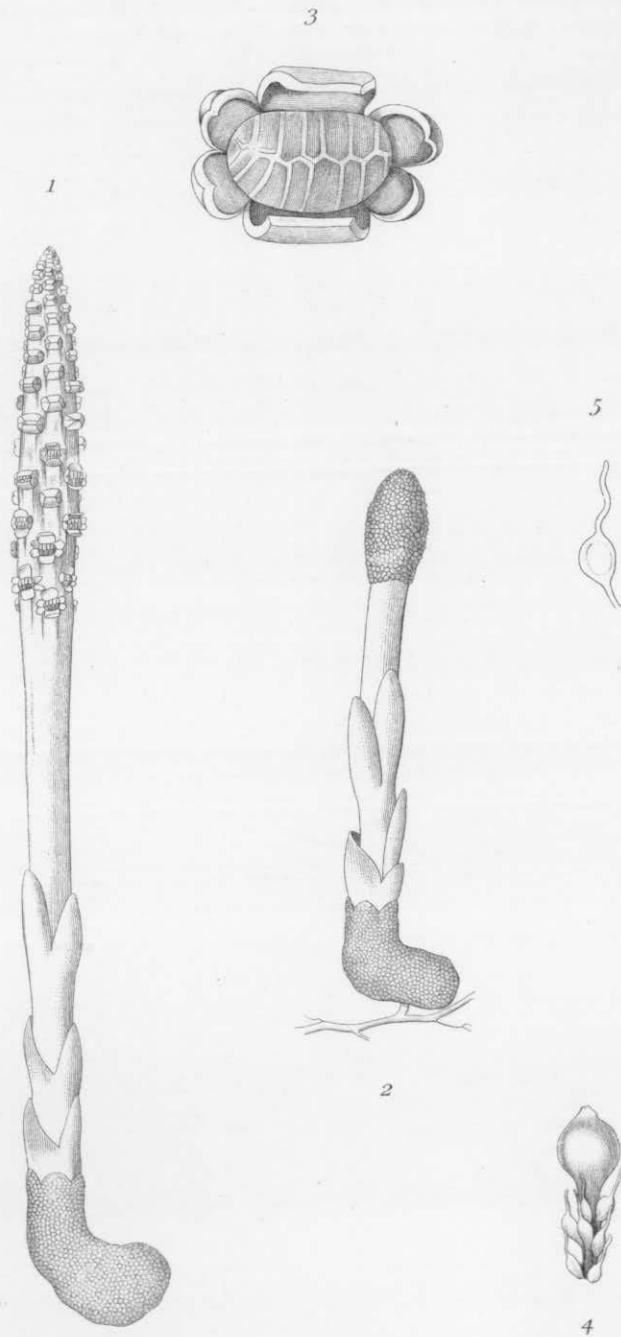
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXXIII.

PLATE XXXIII.

Balanophora spicata HAYATA.

- Fig. 1. A male plant.
2. A female plant.
3. A male flower.
4. A stipe with female flowers.
5. A female flower.



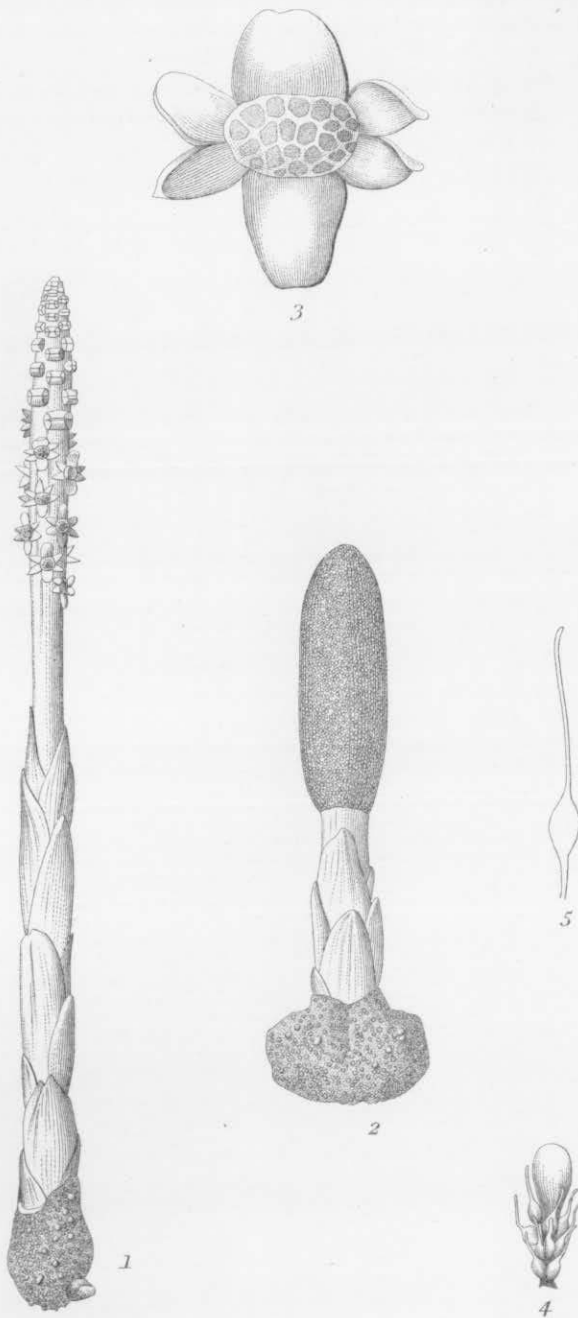
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXXIV.

PLATE XXXIV.

Balanophora parvior HAYATA.

- Fig. 1. A male plant.
2. A female plant.
3. A male flower.
4. A stipe with female flowers.
5. A female flower.



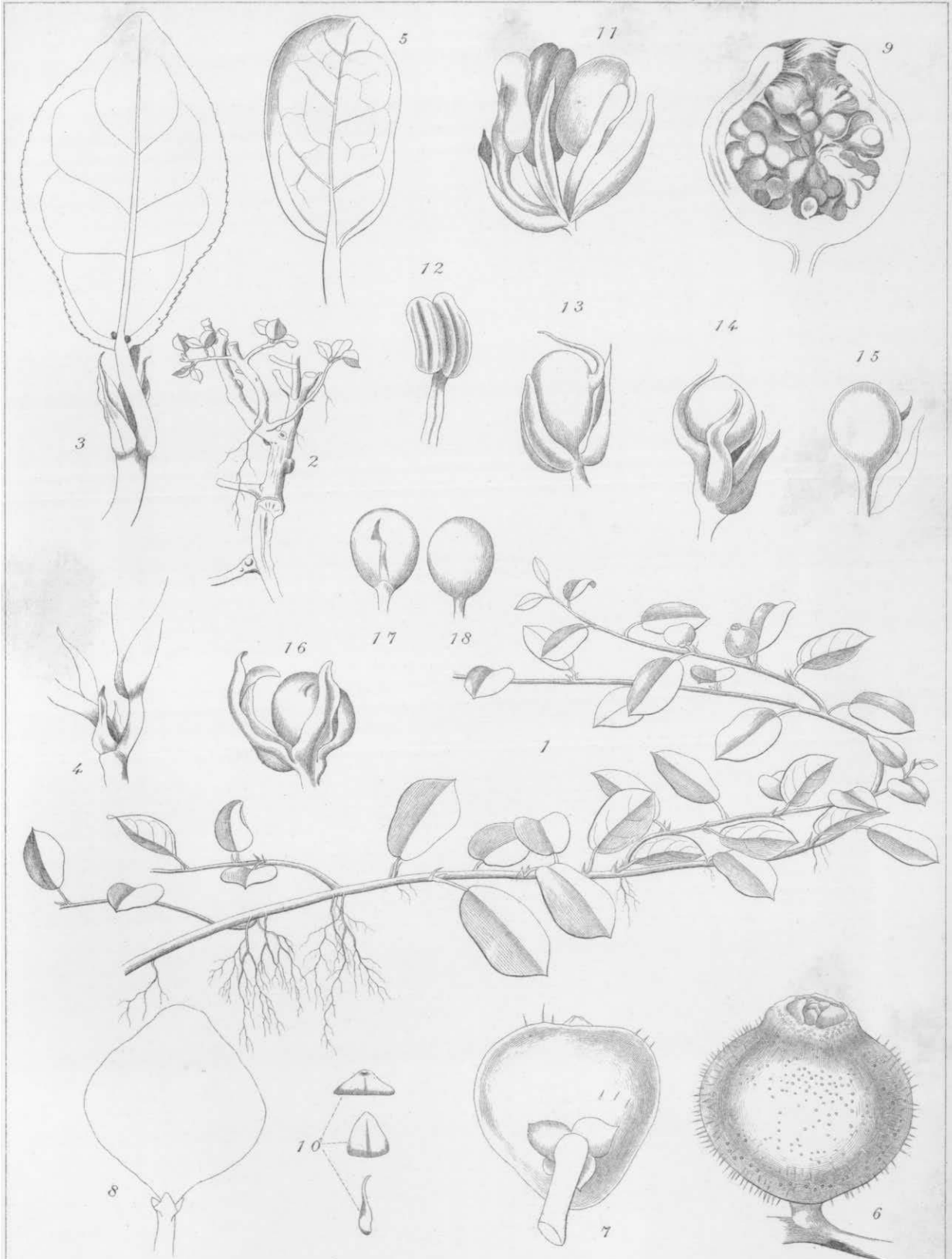
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXXV.

PLATE XXXV.

Ficus vaccinioides HEMSL. et KING.

- Fig. 1. The plant.
2. A dwarf.
3. A leaf with stipules.
4. An axil, showing stipules.
5. A leaf.
6. A receptacle.
7. The same, seen from below.
8. Another form of a receptacle.
9. A receptacle, in vertical section.
10. Bracts at the mouth of the same receptacle.
11. A male flower.
12. A stamen.
13, 14, 15 and 16. Various forms of female flowers and gall flowers.
17 and 18. Ovaries, seen from different sides.



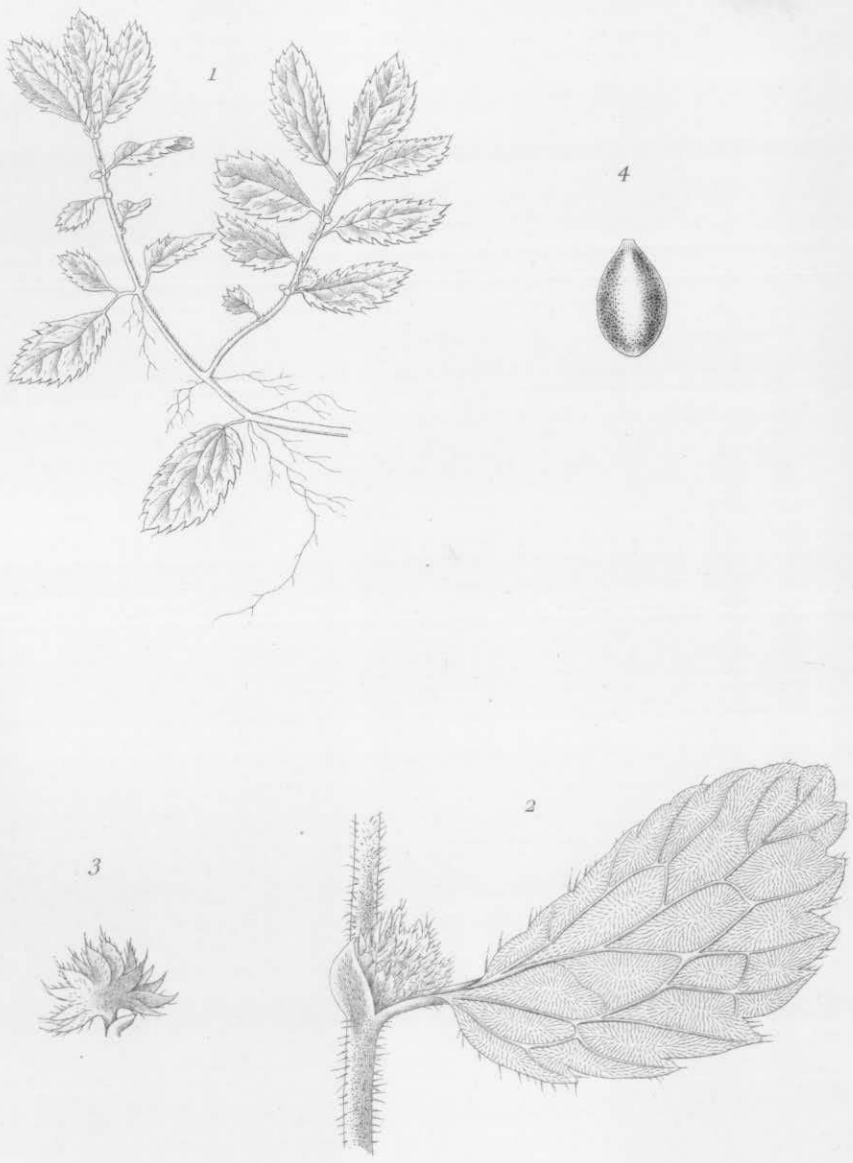
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXXVI.

PLATE XXXVI.

Elatostema minutum HAYATA.

- Fig. 1. The plant.
2. A receptacle in an axil.
3. The same, detached from the axil.
4. A fruit.



B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XXXVII.

PLATE XXXVII.

Quercus (Pasania) Konishii HAYATA.

- Fig. 1. A branch.
2. A male flower.
3. Stamens, seen from different sides.
4. Female flower.
5. A bract at the base of a flower.
6. A rudimental stamen in a scale of a flower.
7. Rudimental stamens, seen from different sides, more magnified.
8. A female flower, in vertical section.
9. A fruit, seen from a little above.
10. The same, seen from a little below.
11. The same, cup taken off, seen from below.
12. The same, showing the under side of the glans.



B. Hayata del.

K. Nakazawa sculp.

B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XXXVIII.

PLATE XXXVIII.

Juniperus formosana HAYATA.

- Fig. 1. A branch.
2. A leaf, seen from the inner side.
3. The same, seen from the outer side.
4. A fragment of a branch.
5. A fruit.
6. Bracts at the base of a fruit, magnified.
7. A seed (lateral view).
8. The same (dorsal view).
9. The same, in cross section.
10. A fruit showing vestiges upon it.
11. An albumen.
12. An embryo.



B. HAYATA.

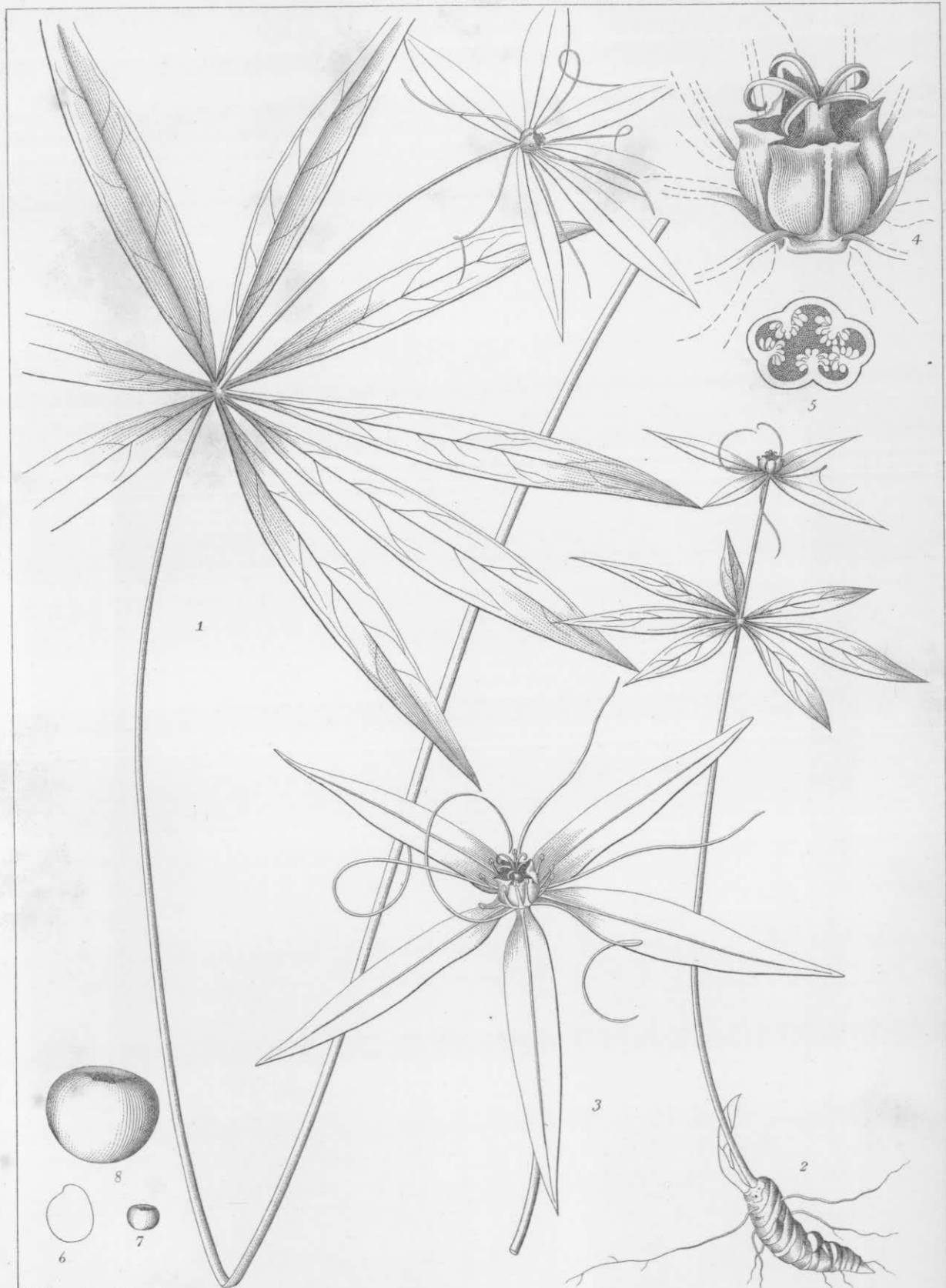
FLORA MONTANA FORMOSÆ.

PLATE XXXIX.

PLATE XXXIX.

Paris lancifolia HAYATA.

- Fig. 1. A full grown plant.
2. A small form.
3. A flower, a little magnified.
4. An ovary.
5. Cross section of an ovary.
6. An embryo (magnified).
7. An albumen (natural size).
8. The same albumen, in the same proportion as the embryo shown in Fig. 6.



B. Hayata del.

S. Kondō sculp.

B. HAYATA.

FLORA MONTANA FORMOSÆ.

PLATE XL.

PLATE XL.

Brachypodium Kawakamii HAYATA.

- Fig. 1. The plant.
2. A flowering glume.
3. The same, the palea and rhachilla are taken off.
4. A palea, its section is figured near it.
5. An ovary with its lodicules.
6. The same ovary, more magnified.
7. The same, seen from a different side.
8. Two lodicules belonging to an ovary.
9. A stamen.
10. An achene, seen from different sides.
11. Cross section of the same.
12. The basal portion of the same achene.
13. The basal portion of a culm.
14. A part of a leaf, showing its ligule.



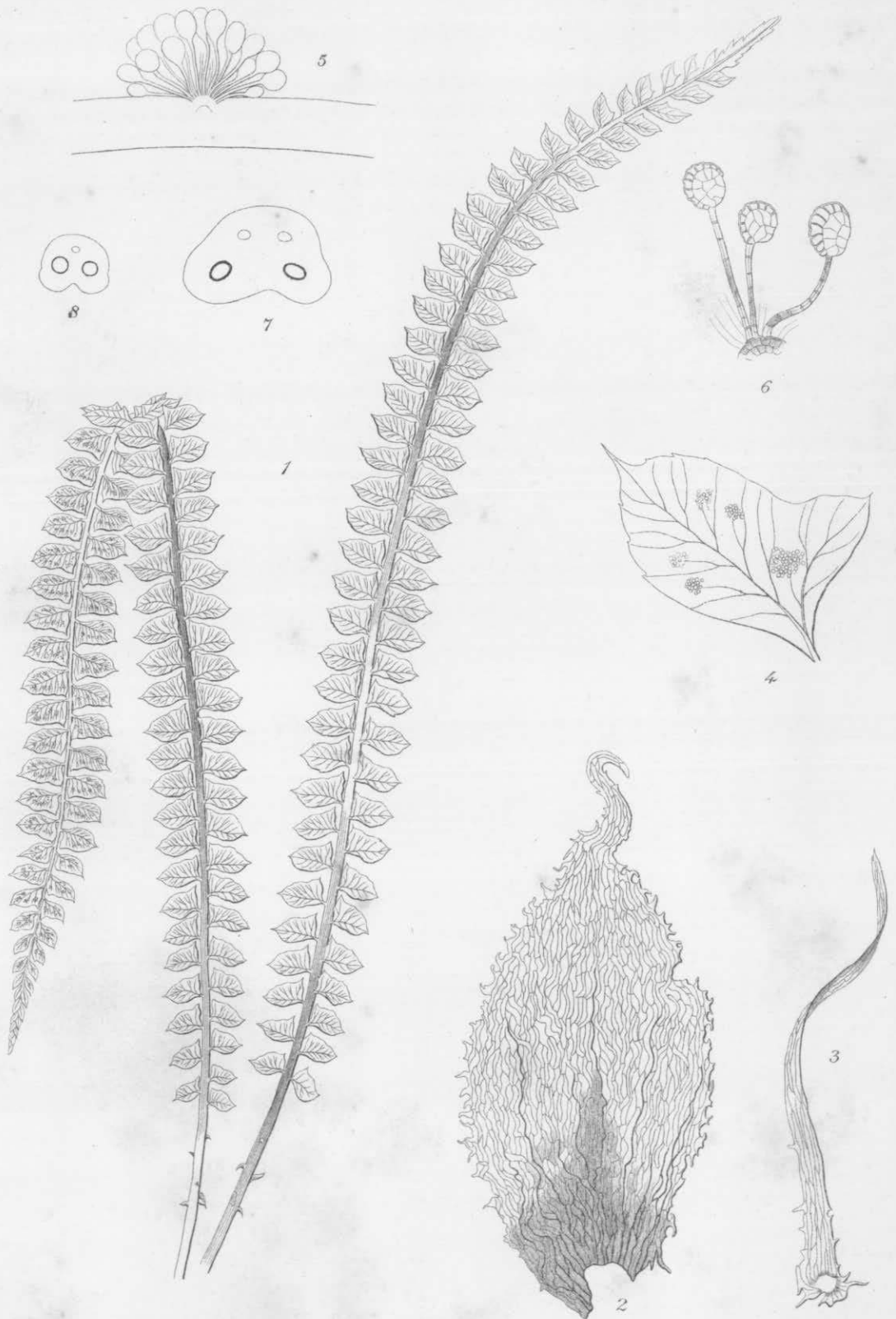
B. HAYATA.
FLORA MONTANA FORMOSÆ.

PLATE XLI.

PLATE XLI.

Polystichum nitakayamense HAYATA.

- Fig. 1. Fronds of the plant.
2. A chaff, detached from the basal portion of a frond.
3. Another one, detached from the middle portion of a frond.
4. A pinna.
5. Section of a sorus.
6. Sporangia.
7. Section of the basal portion of a frond.
8. Section of the middle portion of a frond.



Corrections.

- P. 8, line 12 from bottom, for *Thea brachycarpa*, read *Thea brevistyla*.
- P. 10, line 2 from top, after Vidal, omit the comma.
- P. 11, line 10 from bottom, for *Fatsia multicaarpa*, read *Fatsia polycarpa*.
- P. 13, line 12 from bottom, for *Artemisia paucicarpa*, read *Artemisia oligocarpa*.
- P. 29, line 9 from bottom, for *Fatsia multicaarpa*, read *Fatsia polycarpa*.
- P. 31, line 8 from bottom, after genera and *Conandron*, omit the commas.
- P. 32, line 8 from bottom, after *ages*³), omit the " .
- P. 32, line 7 from bottom, after *Conifers*³), add " .
- P. 56, line 11 from top, instead of the semicolons, put in commas.
- P. 157, line 11 from bottom, for **Sysimachia**, read **Lysimachia**.