

FLORA MONTANA FORMOSAE
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.*

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NOTICE.

In this Journal, each article has a paging of its own; and the position of an article in a volume is indicated by the number placed at its head.

It is hoped that this arrangement, which enables us to print papers independently of one another, will ensure a rapid publication of the material.

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Corrections.

- P. 8. line 12 from bottom, for Then brachyearpa, read Thea brevistyla.
- P. 10. line 2 from top, after Vidal, omit the comma.
- P. 11, line 10 from bottom, for Fntsin mnlctnrpn, read Fntsin polycarpa.
- P. 13. line 12 from bottom. for Artemisia paucicapa, rend Artemisia oligocarpa.
- P. 29. line 9 from bottom. for *Fatsia multcarpa*, read *Fatsia polycarpa*.
- P. 31. line 8 from bottom, after genera and *Conandron*. omit the commas.
- P. 32. line 8 from bottom, after ages³⁾, omit. the" .
- P. 32, line 7 from bottom, after Conifers³⁾. add ".
- P. 56, line 11 from top. instead of the semicolons, put in commas.
- P. 157, line 11 from bottom, for Sysimachia, read Lysimachia.

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Flora Montana Formosae

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, Tokyo.

With 41 plates and 16 woodcuts.

Introduction.

In the year 1905, Professor MATSUMURA and I jointly published an enumeration 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 110 special

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

publication, except a few papers¹⁾ that have appeared in the Tokyo 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. H. TORH 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 Taito and the central ranges were botanically explored by Mr. U. MORI in the same year. Some parts of the hill regions of Taihoku, Taiohu, Tainan and Koshun 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 Coniferre of Lao-chao and Formosa, in Tokyo Bot. Mag. XV. pp. 137-141.
HAYATA, B.—On the Distribution of the Formosan Conifers, in Tokyo Bot. Mag. XIX. pp. 43-61.
HAYATA, B.—Contributions to the Alpine Flora of Formosa, in Tokyo Bot. Mag. XX. pp. 14-22, Pl. I.
HAYATA, B.—Contributions to the Flora of Mt. Morrison, in Tokyo 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. KAWAKMI, S. MARGASAWA 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 Coniferae and Quercineae. A new species of Coniferae is named *Cunninghamia Konishii* in recognition of his kindness.

March 14th., 1908.

B. HAYATA

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College of Science,
Tokyo.*

I.) 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,

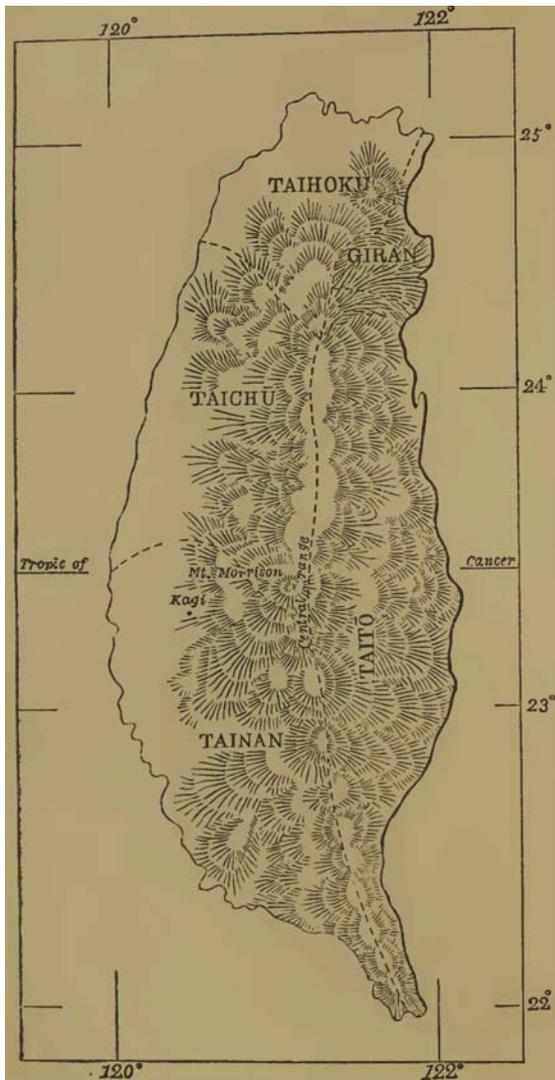


Fig. 1. Sketch-map of Formosa.
----- Prefectural boundaries.

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 70 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 neighboring 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 montana 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 -Javrae, 4 vols.

MIQUEL :—Flora van Nederlandseh Indie, 3 vols,

VIDAL : — Revision de Phantas Vasculares Filipinas.

: —Planerogamae Cumingianae 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 Tokyo Bot. Mag XIX. pp. 43-61.

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

2) Tho Himalayas:

Hook. 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.

: —Beitriige zur Flora des Tsin ling shan und andere Zusatze zur Flora von Centrnl-Chiua, In Beiblatt zn den Bot. Jnhrb. XXXVI. pp. 1-138.

FRACHET :—Plantm Davidianre ex Sinarnm Imperio.

FORBES and HEMSLEY:—Index Florae Sinensis, 3 vols,

4) Northern China (including Korea, Manchuria, Annuland, and Saghlien: —

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

MAXIMOWICZ :—Primitire Florae Amurensis,

SCHMIDT :—Reisen im Amur-lande und anf der Insel Snchnlin.

KOMAROV : —Flora M aushuriae, 2 vols,

PALIBIN : —Conspectus Flonc Korerae.

NAKAI : —Polygonaceae Koreanrae, in Journ. Sci. Coll. XXIII. Art. 11.

5) Japan: —

FRANCHET et SAVATIER : —Enumeratio Plautnrnm Japonicarum, 2 vols, Herbarium of the Botanical Institute, College of Science, Imperial University, Tokyo.

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

MATSUMURA : —Index Plantarum -Japonioarum, 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.

Formosana.	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.
Anemone luzoniensis ROLFE ..	+	+1)							
Clematis lasiandra MAXIM. var. Nngnsawni HAYATA .	.....	.....	. ....	.....	type				
Clematis longisepala HAYATA									
Clematis Morii HAYATA									
Clematis tozauensis HAYATA ..	+2)								
Clematis Wightiana WALL. ? ..	.....	+						
Thnlictrum Fauriei HAYATA ..									
Trochodendron aralioides SIEB. et ZUCC.	.....	.....	.....	.....	+
Illicium sp. ....	.....	+	+	.....	+		
Kadsnra japonica LINN .....	.....	.....	?	.....	+	
Melodornm Oldhami HEMSL ..									
Akebia sp.....	.....	. ....	+	+	+		
Berberis nepalensis SPRENG ...	+	+	+	+	+				
Berberis sp.									
Corydalis sp. ....	.....	+	+	+	+			
Arabis alpinn LINN .....	.....	+	+	+	.....	.....	.....	.....	Europe
Arabis taraxacifolia AXDERS ...	.....	+						
Arabis sp.									
Cardamine reniformis HAYATA									
Cnrdamine sp.									
Viola japonica LANGSD .....	.....	.....	+	+	+		
Viola Kawaknmii HAYATA									
Viola Nagaswai HAYATA									
Viola tozanensis HAYATA									
Viola sp. ...									
Idesia polycarpa MAXIM .....	.....	.....	+	.....	+	
Polygala arcunta HAYATA									

1) Anemone vitifolia HAM.

2) Clematis smilacifolia WALL.

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.
Euonymus echinatus WALL	South							
Euonymus trichocarpus HAYATA									
Celastrus nrticulntus Thunb	+	+	+				
Rhamnus arguta MAXIM. var. Nnkahnrai HAYATA	+					
Acer sp.									
Cardiospermum Halicaeabum LINN.	+	+	Loo- chao (+1)	.....	.....	+	Arrica
Rhus intermedia HAYATA					
Pistacia formosana MATSUMURA.	+2)	+2)					
Crotalnria formosana MATSUMURA.									
Desmodium prrvifolium, DC ..	+	+	+				
Desmodinm polycarpum DC ...	+	+	+				
Desmodium pulehellum BENTH.	+	+						
Desmodium sinuatnm BLUME.	+	+	+						
Dumasin bicolor HAYATA									
Cajnnus indicus SPRENG.	+								
Flerniugln strobilifer R. BR	+	+							
Prunus cnmpnnulata MAXIM.	+	Loo- choo.				
Prunus Knwakamii HAYATA	+3)	+3)	+3)				
Spirrea prunifolia SIED. et ZUCC.	+	+	+				
Spirrea sp.									
Rubus elegans HAYATA									
Rubus corchorifolius LINN. f.	type	.....	type				
Rubus fraxinifolius Porn	+								
Rubus pectiuellus MAXIM.....	+	+				
Rubus peutnlobus HAYATA ..									

1) Rhus Toxicodendron LINN. var. Radicans. ENGI.
3) Prunus japonica TRUNB.

2) Pistacia chincnsis BONGE.

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Rubus Rolfei VIDAL, var. lanatus HAYATA	type								
Rubus rosmfolius SM. var. hirsutus, HAYATA	type	type	type				
Frngnrin sp									
Potentilla gelida C. A. MEY ..	.....	.....	+	+	+		
Potentilla leueonota DON. var. morrisonicola HAYATA	.....	type	type	t.type					
Sibbaldin procumbens LINN ..	.....	+	+	+	+	.....	.....	+	+
Rosa Sp									
Astilbe chinensis FRANCH. et SAV.	.....	.....	+	+	+		
Astilbe chinensis FRANCH. et SAVe var. longicarpn HAYATA									
Astilbe microflora HAYATA									
Chrysosplenim sp .....	.....	+	+	+	+	. ....	.....	+
Mitella japonica MIQ .....	.....	.....	.....	. ....	+
Pnrrnssia pnlustris LINN.....	.....	Tibet.	. ....	+	+	.....	.....	+	+
Hydrangen chinensis MAXIM ..	.....	.....	+	. ....	South .				
Hydrangea glaberrima HAYATA									
Hydrangea integra HAYATA									
Hydrangea Kawakamii HAYATA									
Hydrangea longifolia HAYATA.									
Deutzia scabra THUNB .....	.....	.....	+	.....	+	
Onodiandra formosana HAYATA	.....	.....	+1)	. ....	+2)				
Ribes formosanum HAYATA									
Sedum morrisonense HAYATA.									
Sedum sp	+	+	+	+	+	

1) Cardiandra sinensis HEMSLEY

2) Cardiandra alternifolia SIED. et Zucc.

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Kalnchoe sp									
Haloragis micrantha R. BR.	+	+	+	+	Anstr
Muriophyllum spicatum LINN.	?	+	+	+	
Eugenia sinensis HEMSL.	+						
Osbeckia aspera BLUME	+								
Barthea formosana HAYATA	+1)						
Snrcopyramis nepalensis ·WALL.	+	+						
Epilobium alpinum LINN.	+	Euro
Epilobium roseum SCHREB.	+	+	+	+	+	+
Circrea alpina LINN.	+	+	+	+	+	+	+
Thladiantha formosana HAYATA	+2)						
Gynostemma pedatum BLUME.	+	+	+	+				
Hydrocotyle javanica THUNB.	+	+		scuth				
Hydrocotyle rotundifolia ROXB.	+	+	+	+	Afric
Hydrocotyle setulosa HAYATA.									
Sanicln petagnioides HAYATA									
Ac:mthopanax aculeatum SEEM	+	+	+				
Fatsia multicaarpa HAYATA	+3)				
Helwingia rusciflora WILLD	+	+				
Heptnpleurum octophyllum BENTH.	+	south				
Heptpleurum racemosum BEDD.	+								
Oreopannx formosana HAYATA.	Trople Amerl
Hedera Helix LINN.	+	+	+	Afric
Dendropamax sp.									
Marlea begonirofolia ROXB.	+	+	+4)				
Aucuba japonica THUNB.	+	+	+	+				
Ophiorrhiza pamila CHAMP.	+						

1) Barthea chinensis HOOK.

3) Fatsia japonica DECNE et PLANCH.

2) Thladiantha muliflora HEMSL.

4) Marlea platanifolia S. et Z.

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Knoxia corymbosa WILLD	+	+	+	Austr.
Damnacanthus angustifolius HAYATA.	+	+	+
Damnacanthus indicus GAERTN. f.	+	+	+
Lasianthus formosensis MATSUMURA.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prederin tomentosa BLUME ....	+	+	+	.....	+	.....	.....	.....	.....
Nertem nigricarpa HAYATA	+1)	.....	+2)	.....	.....	.....	+1)	.....	.....
Rubin. Cordifolin LINN .....	+	+	+	.....	+	.....	.....	.....	+
Rubin lanceolate HAYATA ....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Galium brachypodium MAXIM.	.....	.....	.....	.....	+	.....	.....	.....	.....
Patrinia sea biosrefolia LINK ..	.....	.....	+	+	+	.....	.....	+	.....
Patrinia villosa JUSS .....	.....	.....	+	+	+	.....	.....	.....	.....
Hecetia Aschersoniana ENGL. et GRAEBN.	.....	.....	+	.....	.....	.....	.....	.....	.....
Scabiosa lacerifolia HAYATA ...	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ethiopia. Conyzoides LINN .....	+	.....	.....	.....	.....	.....	.....	.....	.....
Vernonia Andersoni CLARKE ..	.....	+	+	.....	.....	.....	.....	.....	.....
Vernonia cinerea LESS .....	+	?	+	.....	.....	.....	.....	.....	.....
Adenostemma viscosum FORST	+	.....	+	.....	+	.....	.....	+	+
Ageratum conyzoides LINN ...	+	.....	+	+	+	.....	.....	+	+
Eupatorium formosanum HAYATA.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eupatorium Lindleyanum DC.	.....	+	+	+	+	.....	.....	+	.....
Eupatorium Tashiroi HAYATA.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Solidago Virgaurica LINN ....	.....	+	+	+	+	+	+	+	+
Myriactis Wightii DC	+	+	+3)	.....	.....	.....	.....	.....	.....
Aster baccharoides STEETZ ....	.....	.....	+	.....	.....	.....	.....	.....	.....
Aster scaber THUNB. ....	.....	.....	+	+	+	.....	.....	+	.....
Aster trinervius ROXB.....	.....	+	+	+	+	.....	.....	+	.....
Erigeron morrisonensis HAYATA	.....	.....	.....	.....	.....	.....	.....	.....	.....

1) Nertera depressa BANKS et SOL.

2) Nertera sinensis HEMSL.

3) Myriactis nepalensis LESS.

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Ainsliroa maerocli indiooides HAYATA.									
Ainsliroa morrisonicola HAYATA.									
Ainsliroa reflexa MERRILL	+								
Picris hiemcioides LINN.	+	+	+	+				
Lactuca versicolor SCH. BIP.	+	+	+	+	
Pratin begonifolia LINDL. ...	+	+	+						
Lobelia affinis WALL.	+	+						
Lobelia pyramidalis WALL.	+	+						
Wahlenbergia graeilis A. DC.	+	+	south	.....	.....	.....	Austr.
Codonopsis sp.	+	+	+	+	+	
Campnumoea axillaris OLIVER.	+	Loo- choo				
Campnumoea javanica BLUME.	+	+	+	+				
Perncarpu enmosn HOOK. f. et THOMS.	+	+	+				
Adenophora verticillata FISCH.	+	+				
Adenophora verticillata FISCH. var. linearis HAYATA									
Adenophora polymorpha LEDEB. var. Linnæckii TRAUTV.	+	+	+	+	
Adenophora polymorpha LEDEB. var. coronopi- folia TRAUTV.									
Vaccinium emarginatum HAYATA.									
Vaccinium Merrillianum HAYATA.									
Gaultheria Cumingiana VIDAL.	+								
Gaultheria Itoana HAYATA.									
Pieris formosa D. DON.	+	+						
Pieris ovatifolia D. DON.	+	+	+				
Rhododendron brachycarpum G. DON.	Man- churia	+				

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Rhododendron ellipticum MAXIM.	south	Loo-Chilo				
Rhododendron Nakaharai HAYATA.									
Rhododendron Oldhami MAXIM.									
Rhododendron Oldhamii MAXIM. var. glandulosum HAYATA.									
Rhododendron pseudo-chrysanthum HAYATA									
Pyrola morrisonensis HAYATA									
Pyrola rotundifolia LINN. var. albiflora MAXIM	+	+	+	+	+	+
Shortia rotundifolia : MAKINO	south				
Primula sp									
Lysimachin sikokiana MIQ	+				
Symplocos confusa BRAND. ...	-								
Symplocos modestu BRAND ...									
Symplocos morrisonicola HAYATA									
Symplocos spicata HOXB	+	+	+				
Osmanthus sp									
Osmanthus sp									
Dischidia formosana : MAXIM.									
Loganin dentata HAYATA	+	+1)							
Grawfordia fasciculata WALL.	+	+	+				
Gentiana cespitosa HAYATA									
Gentiana fnsieulata HAYATA									
Gentiana flavescens HAYATA ..									
Gentiana formosana HAYATA ..									
Gentiana humilis STEV.	Tibet						
Gentiana tenuissima HAYATA									
Gentiana scabrida HAYATA ..									

1) Hemiphmgma heterophyllum WALLICH.

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Swertia alata HAYATA									
Swertia sp.									
Ellisiophyllum pinnatum MAKINO.	+2)	+3)	+				
Cynoglossum micranthum DESF.	+	+	Africa
Trigonotis formosana HAYATA.									
Solanum sp.									
Scrophularia alata A. GRAY, var, duplicato-serrata MIQ.	... ..	.....	+	.....	+	
Mazus rugosus LOUR	+	+	+	+	+				
Torenia pedunculata BENTH..	+	.....	+	.....	?		
Bonnayn veronicifolia SPRENG.	+	.....	+					
Rehmannia Oldhami HEMSL ..									
Veronica morrisonicola HAYATA									
Veronica spuria LINN .....	.....	.....	+	+	+	.....	.....	.....	Europe
Sopubia formosana HAYATA....	+4)	+4)	+4)						
Phtheirospermum chinense BUNGE.	... ..	.....	+	+	+	.....	.....	+
Euphrasia borneensis STAFF ..	+								
Euphrasia petiolaris WETTST.	.....	+						
Orobancha creulescens STEPH.	.....	?	+	+	+	.....	.....	+
Lysionotus pauciflora MAXIM.	.....	.....	+	.....	+	
Rhynchoglossum obliquum BLUME.	+								
Chirita anochorata HANCE .....	.....	.....	+				
Conandron ramondioides S. et Z.	.....	.....	.....	.....	
Strobilanthes flaccidifolms NEES.	.....	+	+	.....	south				
Codonacanthus pauciflorus NEES .	.....	+	+					
Justisia procumbens LINN .....	+	.....	+	.....	+	.....	.....	.....	Austr.
Rungia parviflora NEES .....	+	.....	+					

1) Ellisiophyllum pinnatum MAKINO.=Ellisiophyllum reptans MAXIM.

= 2) Moseleya pinnata HEMSL. = 3) Hornernnnin pinnatn BENTH. = Bibthorpia pinnata BENTH.

4) Sopubia trifida BUCH.-HAM.

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Viscum articlatum BURM	+	+	+	south				
Viscum orientale WILLD. var. mltinerve HAYATA.	+								
Balnophora parvior HAYATA.									
Balanophora spicata HAYATA.									
Buxus sempervirens LINN.	+	+	•.....	+	Enrope Africa.
Glochidion formosanum HAYATA.									
Glochidion zeylanicum A. JUSS.	+								
Aleurites cordata STEUD	+	+				
Mercurialis lasiocarpa SIEB. et ZUCC	+	+	+				
Mallotus coehinchinensis LOUR.	+	+						
Fatoua pilosa GAUD.	+	+	+				
Morns alba LINN	+	+	+				
Urtica Thunberginna SIEB et ZUCC.	+	+				
Girardinia heterophylla DECNE	+	+							
Pilea stipnosa MIQ.....	+	+	+	Loo- choo				
Pilea Wattersii HANCE									
Leeanthus Wightii WEDD	+	+							
Elatostema minutum HAYATA.									
Elatostema sessile FORST. var. cuspidatum WEDD.	+	+	+				
Proeris laevigata BLUME	+	+						
Juglans sp	+	+	+	+	+	
Engellhardtia spicata BLUME. var. formosana HAYATA.	+	+							
Alnus maritima NUTT. var. formosana BURKILL.	+	+	+	

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Carpinus sp	+	+	+	+	+	
Quercus amygdalifolia SKAN....									
Quercus dentata THUNB.	+	+	+				
Quercus formosana SKAN.....									
Quercus glauca THUNB.....	+	+	+				
Quercus Kawakamii HAYATA ..									
Quercus Konishii HAYATA									
Quercus serrata THUNB.	+	+	+	+				
Quercus Junghubnii :MIQ	+								
Quercus varinbilis BLUME									
Quercus sp									
Castanopsis indica A. DC.	+							
Castanopsis taiwaniana HAYATA.									
Fagus sp.	+	+	+	
Salix sp									
Liboedrus macrolepis BENTH.	+						
Chamaecyparis formosensis MATSUMURA.	+1)				
Chamaecyparis obtusa SIEB. et ZUCC.	+	+2)	
Juniperus formosana HAYATA.	+1)	+3)	+3)		.....		
Juniperus morrisonicola HAYATA.									
Cunninghamia Konishii HAYATA.									
Taiwania. cryptomerioides HAYATA.									
Cephalotaxus sp	+	+	+				
Taxus sp.	+	+	+	+				
Pinus Armandi :FRANCH.	+						
var. Mastersiana HAYAT..									

1) Chamaecyparis pisifera H. et Z.
Juniperus communis LINN.

2) Chamaecyparis Lawsoniana PARI.

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.
Pinus formosana HAYATA	+1)				
Pinus sp									
Pinus sp									
Picea monisonicola HAYATA.	*	*				
Keteleeria Davidiana BEISSN.			+						
var. formosana HAYATA							
Tsuga formosana HAYATA	+2)				
Pseudotsuga japonica SHIRAS	+				
Abies Mariesii MASTERS, var.									
Kawakamii HAYATA.	*	+				
Peliosanthes courtallensis WIGHT	+	-+3)						
Smilacina japonica A. GRAY	+	+	+				
Tricyrtis lasiocarpa MATSUMURA.									
Tricyrtis stolonifera MATSUMURA.									
Metanarthecium foliatum MAXIM.	+				
Disporum Sp	+	+	+	+	*	+	
Polygonatum officinale ALL. var. Maximowiczii MAXIM.	+	+	+				
Paris lancifolia HAYATA									
Aneilemn divergens CLARKE	+	+						
Cyanotis archnoidea CLARKE.	+								
Luzula effusa BUCH.	+	+						
Luzula spicata DC	+	+	+	
Juncus effusus LINN	+	+	+	+	+	Arriell Austr
Juncus Maximowiczii BUCH	+				
Arisaema sp									

1) Pinus purvittora S. et Z.

3) Peliosanthes Delavayi FRANCH.

2) Tsuga diversifolia MAXIM.

* Picea Glehni FN, SCHM.

Formosa,	The Malay pen. & archipelago.	The Himalayas.	Central and southern China (including Tibet).	Northern China (including east Siberia & Amur).	Japan.	Arctic.	Antarctic.	North America.
Braechypodium sylvaticum BEAUV.	Philip +	+	+	+	+			Europe
Festuca ovina LINN.	.....	.....	+	+	+	.....	.....	Europe
Arundinaria nitakayamensis HAYATA.								
Lycopodium clavatum LINN.	+	+	+	+	+	+		
Lycopodium clavatum LINN. var. Chamaecyparissus A. BR.	+	+	+	+	+			
Lycopodium obscurum LINN.	.....	.....	.....	Man- churia	+	.....	+
Lycopodium serratum THUNB.	+	+	+	.....	+		
Polystichum amabile SM.....	+	.....	+	.....	south			
Polystichum nitakayamensis HAYATA.								
Asplenium laciniatum DON.	.....	+	.....	.....	+
Asplenium Trichomanes LINN.	.....	+	+	+	+	+	+
Coniogramme fraxinea FEE.	+	+	+	Man- churia	+			
Plagiogyria glauca METT. var. philippinensis CHRIST.	+							
Plagiogyria Matsumureana MAKINO.	.....	.....	.....	.....	+
Plagiogyria aquilinum KUHN. var. lanuginosum BORY.	+							
Polypodium lineare 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 fill allied species, *Sopubia trifida*.

*** Of these species, ten are here represented by allied species, *Thladiantha nudiflora*, *Myriadiis nepolensis*, *Blumea hieracifolia*, *Peliosanthes Delacayi*, *Cephalotaxus Fortunei*, *Burthea 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*, *Cephalotanus 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 :-

<i>Asplenium Trichomanes</i> LINN.	<i>Luzula spicata</i> DC.
<i>Circea alpina</i> LINN.	<i>Deschampsia caespitosa</i> BEAUV.
<i>Solidago Virga-aurca</i> LINN.	<i>Trisetium subspicatum</i> BEAUV.
<i>Leontopodium.</i> R. BR.	

b) *Antarctic Elements.*

Antarctic elements are represented by the following species :-

<i>Asplenium Trichomanes</i> LINN.	<i>Trisetum subspicatum</i> BEAUV.
<i>Nertera</i> BANKS.	<i>Solidago Virga-aurea</i> Lrx.
<i>Deschampsia caespitosa</i> BEAUV.	

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 :-

<i>Arobis alpine</i> LINN.	<i>Stellera Chamaejasme</i> LINN
<i>Andis to taraxacifolia</i> ANDERS.	<i>Juniperus</i> LINN.
<i>Potentilla gelida</i> C. A. MEY.	<i>Luzula effusa.</i> BUCH.
<i>Potentilla Ieuconota</i> DON.	<i>Luzula spica</i> DC.
<i>Sibbaldia procumbens</i> LINN.	<i>Agrostis Clarkci</i> HOOK. f.
<i>Epilobium alpinun:</i> LINN,	<i>Descluunpsia caespitosa</i> BEAUV.
<i>Circaea alpina</i> LINN.	<i>Deschampsia flexusa.</i> TRIN.
<i>Leoniopodium</i> R. BR.	<i>Trisetum subspicatum:</i> BEAUV
<i>Peracarpa Carnosa</i> HOOK. f. et THOMOS.	<i>Brachypodium sylvaticum</i> BEAUV.
<i>Rhododendron brachycarpum</i> G. DON.	<i>Fesiucu ocina</i> LINN,
<i>Geniiana humilis</i> STEV.	<i>Lycopodium olscurum</i> LINN.
<i>Oriqanum vulgrwc</i> LINN.	<i>Asplenium Trichomanes</i> LINN.

d) Tropical American Elements.

These elements are very few in number, but among them we have *Orcopanax*, a genus of Araliaceae. 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, *Heptopleurum*, which is found at all 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 110 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).

Chamaecyparis (Formosa, Japan, and North America).

Pseudotsuga (Formosa, Japan, and North America).

g) Himalayan Elemzents.

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 pouciflorus NEES

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

Stellera Chanaejasme LINN.

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

Peliosanthus courtallensis WIGHT.

Aneileuui 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 spicaia 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 Formosana, are as follows :—

<i>Hteckia Aschersoniana</i> ENGL. et GRAEBN.	<i>Salvia scapiformos</i> HANCE, <i>Daphne Championi</i> BENTH.
<i>Senecio monanthus</i> DIELS.	<i>Libocedrus macrdepis</i> BENTH
<i>Petasites tricholobus</i> FRANCH.	<i>Pinus Armandi</i> FRANCH.
<i>Gentiana humnilis</i> STEV.	<i>Keteleeria Davidiana</i> BEEISN.

They are in all 9 species, among which we have 2 genera, *Haeckia* 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 Formosana and Japan, are as follows :—

<i>Clematis lasiandra</i> MAXIM	<i>Lytsimachia sikokiana</i> MIQ.
<i>Mitella japonica</i> MIQ.	<i>Conandron. ramondioides</i> S. et Z.
<i>Trocliodendron oroliodes</i> S. et Z.	<i>Tsuga diversifloia</i> MAXIM.
<i>Fatsia</i>	<i>Pseudostuga japonica</i> SHIRASAWA.
<i>Galium brachypodium</i> MAXIM.	<i>Abies Mariesii</i> MASTERS.

<i>Chamaecyparis pisifera</i> S. et Z.	<i>Metanarthesium foliatum</i> . MAXIM.
represented by <i>C. formosensis</i>	<i>Juncus Maximowiczii</i> FR, et SAV.
MATSUM	<i>Plagiogyria Matsumureana</i> MAKINO.
<i>Chamaecyparis obtusa</i> S. et Z.	
<i>Pinus parviflora</i> S. et Z. (represented by <i>P. formosana</i> HAYATA.)	

They are in all in 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 Maichuria, Saghalieb, Aunurland, 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>Vioda</i>	3	<i>Euonymus</i>	1	<i>Hydrocotyle</i>	1
<i>Polygla</i>	1	<i>Crotolaria</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>Lasianilcus</i>	1	<i>Disclidia</i>	1	<i>Quercus</i>	4
<i>Rubia</i>	1	<i>Gentiana</i>	6	<i>Castanopsis</i>	1
<i>Scobiosa</i>	1	<i>Swertia</i>	1	<i>Chamaecyparis</i>	1
<i>Eupatorium</i>	2	<i>Trigonotis</i>	1	<i>Juniperus</i>	1
<i>Erigeron</i>	1	<i>Relononnia</i>	1	<i>Cunninghamia</i>	1
<i>Auapholis</i>	1	<i>Veronica</i>	1	<i>Taiwania</i>	1
<i>Gnophaliun</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>Paris</i>	1
<i>Gynura</i>	1	<i>Peperomia</i>	1	<i>Scirpus</i>	1
<i>Ainslicea</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>Braclotpolium</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, *Tuiuania*, are as follows :—

Fatsia multicarpa HAYATA.

Chamaecyparis formosensis MATSUMURA.

Oreopanax formosana HAYATA.

Cunninghamia Konishii HAYATA.

Damnacanthus angustifolia HAYATA.

Taiwania cryptomerioides HAYATA.

Leontopodium microphyllum HAYATA.

Pinus formosana HAYATA.

Pyrola morrisonicola HAYATA.

Brachypodium Kawakamii HAYATA.

Helicia formosana HEMSLEY.

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%	"	"
<hr/>			
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 260 genera.

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 S: 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

Himalayus; 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*, *Faisia*, *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 Conifers³⁾", 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 extension 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 dear, 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 Tokyo Bot. Mag. XIX. pp. 43-61.

Thus, I divided the Chino-Japanese flora into two florulae, 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) Genera. 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, H. NAGASAWA and G. NAKAHAHA, and a report¹⁾ of the journey was published by Mr. T. MAWAKAMI in the Tokyo Botanieal Magzine. 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. :—Botanieal Excursion to Mt. Morrison. in Tokyo 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 *Balauophoraceae* were found attached to the host.

Further, at the height of 4,200 ft., the trees of various *Quercus*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*, *Ciboitum*, & *Dicksonia*.

6) *Asplenium Nidus* LINN.

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

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

9) *Alocasia macrorrhiza*. SCHOTT.

10) *Pilea Wattersii* HANCE?

11) *Boumoptiora spicaia* HAYATA & *B. parvior* HAYATA..

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

13) *Adenophora verticiliata*: 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 *Chamaecyparis*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 *Chamaecyparis*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 Cumphora* N, et E.

2) *Quercus* & *Castanopsis*,

3) *Chamaecyparis obtusa* S. d Z. form. *formosana*

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

5) *Chamaecyparis obtusa* S. et Z, form.
formosana,

6) *Cervus taevanus* = 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.
ulosum HAYATA.

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

Further on, there was a grassy hillside with pines scattered here and there. Various plants including Thymelaeaceae²⁾, Rutaceae³⁾, Rosaceae⁴⁾, Onagrarieae⁵⁾, Rubiaceae⁶⁾, Juneaceae⁷⁾ and Gramineae⁸⁾ were also found. A large tree of Juglandaceae⁹⁾ 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*, Campanulaceae¹²⁾ and Orobanchaceae¹³⁾: also a forest of *Picea*¹⁴⁾, with an undergrowth of Compositre¹⁵⁾, Rubiaceae¹⁶⁾, Saxifragaceae¹⁷⁾, and Geraniaceae¹⁸⁾, 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

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

more interesting than to see these flowers of cold regions on this mountain lying within the tropics. A kind of *Fragria*¹⁾ with a yellow fruit and a beautiful flower²⁾ of Caryophylleae 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 *Chamaeopsis*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 growth 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

- | | |
|--|--|
| 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> DOX. var. <i>Morrisonicola</i> HAYATA. & <i>Sibbaldia procumbens</i> LINN. |
| 3) <i>Abies Mariesii</i> MAST. var. <i>Kawakamii</i> HAYATA. | 13) <i>Astilbe chinensis</i> FR. et SAV. |
| 4) <i>Tsuga formosana</i> HAYATA. | 14) <i>Lycopodium obscurum</i> LINN. <i>L. clavatum</i> LINN. & <i>L. serratum</i> THUNB. |
| 5) <i>Chamaeopsis formosensis</i> MATSUMURA. | 15) <i>Adenophora polymorpha</i> LEDEB. |
| 6) <i>Sanicula petagnioides</i> HAYATA & <i>Cnidium</i> sp. | 16) <i>Scabiosa lacerifolia</i> HAYATA. |
| 7) <i>Primula</i> sp. | 17) <i>Hypericum attenuatum</i> CHOISY. |
| 8) <i>Thalictrum Fauriei</i> HAYATA. | 18) <i>Sedum morrisonense</i> HAYATA. |
| 9) <i>Epilobium alpinum</i> LINN. & <i>E. roseum</i> SCHREB. | 19) <i>Oxalis Griffithii</i> EDGEW. et HOOK. f. |
| 10) <i>Juniperus formosana</i> HAYATA. & <i>J. Morrisonicola</i> HAYATA. | |

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*, *Taiicouia*, *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 (*Leonopodium*, *Potenlilla*, *Origanum*, *Siblialdia*, *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.**Polypetalae.****Ranunculaceae.*****Anemone* LINN.**

***Anemone luzoniensis* ROLFE¹⁾**; HAYATA, in Tokyo Bot. Mag. XX. p. 73 HAB.

Shintiku: Goshorin, leg. T. KAWAKAMI, Mai. 1906.

DISTRIB. The Philippine islands.

***Anemone* sp.** Herbacea perennis, basi apicoque longo soriceo-pubescentis, undique pilis brevioribus adpressis tenuiter obtecta. Folia radicalia magna cum petiolis circ, 30 cm longa trifoliolata palmatinervia, superne laete viridia subtus glauca; foliola petiolulata, circumscriptione cordato-rotundata, tri- vel multiloba vel profunde incisa, margine inaequaliter 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 luzonensis* 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, inaequaliter duplicato-serratis. Pedunculi plerumque 2 valde elongati tenues oreeti.

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. Caulis lignoso-scandens glaber sulcatus. Folia pinnata 3-5-foliolata, cum petiolis 10-15 cm, longa 3-9 cm. lata, foliolis longe petiole-latis simplicibus vel interdum trilobatis ovatis v. ovato-lanceolatis acuminatis inaequaliter argute serratis. Paniculae axillares pauciflorae, vel quasiterminales, folio breviores vel longiores, basin pedicelli bracteatae, bracteis trilobatis vel elobatis linearibus minoribus, pedicellis gracilibus flore 2-3- plo longioribus. Flores utraque, 2 cm in diametro aequantes et totidem longi. Sepala 4, conniventia apice revoluta, oblonga v. ovato-oblonga obtusa v. emarginata, 23 mm. longa 8 mm. lata, utraque pagina subglabra leviter purpurea, margine velutinoso-tomentosa. Stamina 4-seriata, externa longissima, filamentis planis linearibus 17 mm. longis dorso longe denseque sericeo-pilosis, antheris 2 mm. longis apice non appendiculatis, stamina interna breviora, filamentis 9 mm. longis, antheris 3 mm. longis. Pistilla 8 mm. longa sericeo-piloso-caudata. Receptaculum fructiferum erectum globosum 4 mm. in diametro aequans pilosum; carpellis sub maturitate numerosis ovato-lanceolatis acuminatis compressis 3 mm, longis marginatis rugulosis, longe plumoso-caudatis, caudis 3½ cm, longis.

HAB. in valle Shukoran, ad 11117 ped. alt., in monte Morrison, leg. S. NAGASAWA, Nov. 1005, (No. 611).

DISTRIB. Type: Kiushiu, 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 liguoso-seandons glaber striatus, Folia pinnatim 5-foliolata longe pctiolata glaberrima, cum petiolis 15-20 cm. longa, petiolis volnobilibus striatis, foliolis petiolulatis, petiolulis 1.5-2 cm. longis, oppositis ova to-oblongis apice acutis basi rotundatis integris 3-5-nerviis submembranaceis subtus pallidioribus 5 cm. longis 2½ cm. latis, stipulis connatis ad nodos caulis peltam formantibus. Paniculae axillares, folio subrequilongre 5-8-floratate. Flores majusculi patentes 6-7 cm. in diametro requuntes, ad basin pedicelli 1-bracteati, braeteticis pinnatim 3-sectis 3-4 cm, longis longo stipitatis, segmentis oblongo-lanceolatis, pedicellis 7-10 cm. longis. Scapula 4, lineurilanceolata 3 ern. long a vel longiora apice obtusa cariuato-mucronata. intns subglabra atro-purpurea, oxtus cburnea velutinoso perallelimulti-nervia. Petala 0. Stamina multi-seriata (cire. 5-seriata). extima longiora 2 cm. longa , filamcutis linearibus sursum leviter crassinisculis ad basin antherarum constrictis deorsum tonuibus dilutis glabris, antheris linearibus 2 mm longis apiculntis, stamina intima sensim breviora 7 mm. longa. Carpella longe seriecoplumoso-caudata, cire, 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-scundens glaber striatus. Folia opposita vel quaternata trifoliolata, cum petiolis circ, 15 cm, longa, petiolis volubilibus, subcoriacea subtus glancescentia exstipulata, foliolis terminalibus petiolulatis longe caudate-acuminatis deorsum obscure lobatis basi rotundatis margine sub-integris vel remote mucronato-serrulatis subtus venis prominentibus supra venis impressis venulis prominentibus 5-nerviis 11 cm. longis 3½ cm. latis, petiolulis 1 cm, longis, foliolis lateralibus multo brevioribus saepe lobatis caudato-ovatis remote mucronato-serrulatis petiolulatis, petiolulis 3 mm. longis, vel subsessilibus. Flores majusculi cernui semi-clausi, 1½ cm, in diametro aequantes 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-aeuta, intus atro-purpurea, extus velutinoso-pilosa basi leviter cordata venulis parallelis, semi-clausis numquam patentia, Stamina 3-4-seriata, externa longissima, filamentis linearibus planis longe barbatis 13 mm. longis, antheris circ, 2 mm. longis apice emarginatis, stamina interna 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 lasiantha* MAXIM.; but differs from them in having silky pubescent sepals and subtire 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 palmatis 9-7-nerviis apice obtusis integerrimis leviter repandis submembranaceis vel crassiusculis, petiolulis 2-3 cm. longis valde volubilibus, stipulis latis connatis ad nodes caulium peltatis formatibus. Paniculae axillares pauciflorae folio subaequilongae. Flores majusculi patentes 6 cm. in diametro aequantes, ad basin pedicelli 1-bracteati, bracteati majusculis foliaceis simplicibus stipitatis ellipticis apice acutis, Sepala 4, angusta 3½ cm, longa 8 mm. lata acuta vel obtusa intus glabra atro-purpurea, extus eburnea velutiuoso-pubescentia multi-striata patentes. Stamina multi-seriata, externa longissima filamentis 2 cm, longis dilatatis linearibus tenuibus antheris linearibus 2 mm. longis unguiculatis, stamina interna 1 brevissima filamentis 2 mm. longis unguiculatis, antheris 3mm. longis longiuscule unguiculatis. Carpella longe sericeo-plumoso-caudata, circ. 9 mm. longa.

HAB. in Tozan, in montibus Morrison, leg. G. NAKAHARA. Oct. 1900.

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. Taito: 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.

2. *Thalictrum* LINN.

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

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

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

Magnoliaceae.

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, Lisb Pl. Formos. p. 16; MATSUM. in Tokyo Bot. Mag. XII. p. 54 ; MATSUM. et HAYATA, Enum. Pl. Formos. in Journ. Sci. Coll. XXII. p. II.

HAB. Snizan, ad 7702 ped. alt., in montibus Morrison, leg. B. NAGASAWA, Oct. 1 D05, (No. (48); 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 Kiushiu 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. LEVELLE under the same name. As it is not desirable to maintain one und 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 rarnorum plerumque approximata opposita vel sub-verticillata petiolata, petiolis 11 cm longis, superne sinclatis snbtms convexis crassis, laminis oblougis oblongo-ellipticis vel obovatis ntrinque attenuatis vel apice cuspidate-acuminatis integris coriaceis, superne nitidis at laeto 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, style brevior extrorsum recurvato. Semina oblonga compressu 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); Tozan 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 Tokyo Bot. Mag. XXI. p. 243.

p. 255; FRACH. et SAV. Eunm. Pl. Jap. 1. p. 18; HENRY, List Pl. Formes. p. 16; ITO et MATSUM. Tent. Fl. Lutch, in Journ. Sci. Coll. XII. p. 285; MATSUM. in Tokyo Bot. Mag. XV. p. 85; MATSUM. et HAYATA, Enum. Pl. Formes, p. 12.

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

Uvaria japonica LINN. Sp. Pl. ed-2, p. 756; THUNB. Fl. Jap. p. 237. HAB. Kagi : Kishirei, 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.

Anonaceae.

Melodorum DUN.

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

HAB. Nanto : Kashiukiyama, leg. G. NAKAHARA, Feb. 1907. DISTRIB. An endemic plant.

Berberideae.

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 potiululatis, terminalibus longioribus lanceolatis obtusis basi truncatis 4 cm. longis 1.3 cm, latis, potiululis ½ cm.

longis, lateralibus pauce minoribus breviter petiolulatis, veonis et venulis utruque 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 trifoliolato 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 Tokyo Bot. Mag. XII. p. 54; MATSUM. et HAYATA, Enum. Pl. Formes. 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 spatulutavo apice rotundata aristato-mucronata vel obtusa margine remote spinuloso-dentata basi cuneata sessilia vel breve petiolata, 1.5 cm. longa 7

mm. lata. Baccae 3-fasciculatae globoso-ellipsoidales, utrinque obtusai rubrm, 9 mm. longae 3-Spermae, stigmatibus parvis sessilibus, seminibus luaribus 4 mm. longis, pedunculis 1½ 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 snbtus prominulis, venulis utraque pagine prominentibus, subtus pallidiora. Baccre 5-10-fasciculatae nigricantes oblongo-ovulares 7 mm. longre, utrinque obtusre, 2-3-spermae seminibus lunaribus eurvis 5 mm. longis pedunculis 1 cm. longis.

HAB. Seizan, in montibus Morrison, ad 11570 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.

Papaveraceae.

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. Taito: Daironkosha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (Nos. 2170 et 2183).

Cruciferae

Arabis LINN.

In the lowland flora we have had nothing of *Arabie*, 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 Dent. Fl. ed-3, p. 290; THOME, Fl. Deut. Ost, U. Schw. II. p.175.

Arabie 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 13004 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 speoimon 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 stollato-tomentosus, 14-15 cm. longus, basi 2-3 foliolatus ramosns. 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. Siliquae lineares 2 cm. longre,

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 tennis 8-9 cm. longus creetus glaber. Folia radicalia longe petiolata. petiolis eire. 5 cm. longis basi leviter dilatis, laminis rotundato-

reniformibus apice obtusis basi reniformibus repauidis palmatis-
6-7 -nerviis, 4 cm. longis totidem latis utraque pagine subglabris pauca
ciliolatis, Folia caulina breve petiolata radicali similia, Scapi pauci-
florati. Flores parvi, 3 mm. longi pedicellati. Sepala 4, oblongo-
elliptica, utrinque obtusa, 2½ mm. longa, Petala spatulata 2 mm.
longa. Stamina 6, 2½ mm. longa. Ovarium cyliudraceum 2. mm.
longum, stylo brevi, stigmatibus globosis. Siliqua lineares 2 cm longae
½ mm, latae, seminibus oblongis compressis ½ mm. longis.

HAB. in monte Morrison, ad 7500 pod. 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 rudicalia
15 cm, longa 2 cm, lata bi-pinnata longe petiolata, pinnis latera libus
breve petiolulatis, pinnulis partis superioris sessilibus majoribus
lobatis, lobis rotundatis. Folia caulina multo minora.

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

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

Violaceae.

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 Mel. 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; ITO et MATSUM. Tent. Fl. Lutch, p. 207; PALIBIN, Conspect, Fl. Korero, I. p. 32; MATSUM. et HAYATA, Enum. Pl. Formos, p. 29.

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

Viola kamtschatica var. *pekinensis* REGEL, Pl. Rad, 1. 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. 1900, (No. 2011).

DISTUIB. 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 crenae pilosis ceterum glabris, subtus glauco-violascentibus circ, 3 cm. longis 2 cm. latis, stipulis lacuiatis ad petiolum parce adnatis, Flores patentes 1.5 cm, in diametro aequantes, longe pedunculati, pedunculis petiolo aequilongis, bracteis 2 subulatis remote sitis, 5 mm. longis. Sepala subaequalia obtuso-acuminata 4 nun. longa 1 mm. lata, basi ultra insertionem $\frac{1}{2}$ mm. producta glabra. Petala superiora et latorialia subaequalia 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, calcar 6 mm. longo leviter curvo. Antherae subsessiles, connective complauato apico in membranam 1 mm, longam producto; stamina 2 inferioru dorso basi calcarata, calcar 3 mm.

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

HAB. Suizan, in montibus Morrisou, 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 MATSUMI et HAYATA, Enum, Pl. Formos. p. 30.

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

Viola tozanensis HAYATA, sp. nov. Herba ucaulis. Folia longe petiolata stipulata, petiolis 4 cm. longis, laminis late cordatis rotundatis erenulatis setoso-pubescentibus subtus glaucis violascentibus, circ. 2 cm. longis totidem latis, stipulis laciniatis ad petiolum puree aduatis. Flores patentes reflexi 11 cm. in diametro aequantes longe pedunculati, pedunculis petioloaequilongis, bracteis 2 subulatis oppositis 5 mm longis. Sepala subaequilongia obtuso-acuminata 4 mm. longa 1 mm. lata basi ultra insertionem 1 mm. producta glabra. Petala superiora et lateralia subaequalia ovato-cuneata apice truncata 10 mm. longa 5 mm. lata, inferius majus 18 mm. longum 8 mm. latum apice valde emarginatum basi longe calcitrans, calcarum 4 mm. longum leviter recurvum. Antherae sessiles, connective complanatae apice in membranam 1 mm. longam producta; stamina 2 inferiora dorso basi incurva, calcarum 3 mm. longum. Stylus fere rectus, stigma subterminali. Capsula ignota.

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

Bixineae

Idesia MAXIM.

Idesia polycarpa MAXIM. in Mel. Biol, VI. p. 9; FRANH. et SAVAT. Enum. Pl. Jap, I. p. 45; Bot. Mag. t. 6794; HENRY, List Pl. Formes. p. 18; MATSUM. in Tokyo 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. Taito : Iryokukakushu , leg. T. KAWAKAMI .et U. MORI, Dec. 1906, (No. 2165); Kagi: Burakukausha. leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1756).

DISTRIB, Contral China and Japan.

Polygaleae.

Polygala LINN.

Polygala areuata HAYATA, sp. nov, (Pl. I.). Tota, praeter ramules novellos tenuiter pubescentes, glaberrima, caule lignescens plerumque simplici. Folia petiolata, laminis membraceis orassiusculis elliptico-lanceolatis acuminatis integris 10 cm. longis 3 cm, latis basi in petiolum 1 cm. longum cuueatum attenuatis supra opacis snbtns glancescentibns, venis transversis primariis utrinque circ. 4-5 arcuatis prope marginern anastoruosantibus, Racemi caulis a picem versus axillares vel tenninales 5-6 cm. longi densiuscnle multiflorati folium haud superantes. Flores lutei pedicellis brevibus 2 mm. longis. Sepala 5, exteriora 3, interiora 2, decidua, supremum exterionuu sepalorum globosum majuseulum

rotundatum saccatum 3 mm. longum, 2 inferiora exteriorum sepalorum late rotundata basi obliqua 1½ mm. longa ; 2 interiora petaloidea oblique oblonga 5½ mm. longa. Petala alte coalita, lateralia arte imbricata 7 mm, longa apico rotundata, carina breviter cucullata dorso longe cristata inerassata bisaccata. Ovarium glabrum breviter stipitatum, disco late annulari. Stylus apico 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 stropholata, stropholis in utroque latere 1.2 mm, longis.

HAB. Taichu . 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. Formes. p. 18; ITO et MATSUM. Tent. Fi. Lutch. p. 311; PALIBIN, Conspect. Fl. Rorefe, I. p. 37; MATSUM. et HAYATA, Enum. Pl. Formos. p.34.

Polygala sibirica LINN. Sp. Pl. ed-2, p. 987; DC. Proch. 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.

Caryophylleae.

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; HEGEL, 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. Korere, I. p. 39; MATSUM et HAYATA, Enum, Pl. Formes. p. 35.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., (No. 700); Snizan, 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 pede alt., (No. 1861) ; Taito : Taironkosha, (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 Linnrea, XXIV. p. 181, et XXXVI. p. 688; FRANCHET, Pl. David. p. 47 ; FORBES et HEMSL. Ind. Fl. Sin. I. p. 65 ; HENRY, List Pl. Formes, p. 19; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb, XXIX. p. 318; Bot. Mag. t. 7649; MATSUM. et HAYATA, Enum, Pl. Formes. p.35.

HAB. in monte Morrison, ad 7000 pod. 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. Proch. 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. Manshuriro, II. p. 205; WAGNER, Dent. Fl. ed-3, p. 244; DIELS, Fl. Centr. Chin. in ENGL. Bot. Jahrb, XXIX. p. 319; THOME, Fl. Dent. Ost, n. 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. Herbae diffusae v. crosptosre, glanduloso-pubescentes demum glabrae. Folia plenunque remota interdum approximata lineari-lauceolata vel sputulato-acnminata basi interdum attenuata dilata semi-amplexicanlia apice calloso-acuta vel aristato-acuta 1-2 cm. longa 2-2½ mm. lata. Cymae terminales, nunc uui-florte, nunc tri-florae, bractcatre, bracteis scariosis, pedicellis 2-1½ cm. longis glanduloso-pubescentibus. Sepalu 5, lanceolata 7½ mm. longu margine senrioso extns glan-

duloso-pubescentia intus glabra. Petala 5, oblanceolata 13 mm. longa apice 2-lobata, lobis oblongis obtusis 6 mm, longis, basi augusta. Stamina 10, filamentis petalo 2-plo brevioribus ad basin filamentorum sepalis oppositorum 2-glancluliferis. Ovarium ovoideum 2 mm, longum 1 -locularo ∞ 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 dohiscens, dentibus obtusis truncatis, Semina snhreniformi-globosa, 1 mm. longa a latere plus minus cOlnpresRa dorso granulata.

HAB. ad verticem mentis 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 LEDER in " Mem. Aead. Petersb, V. p.539," "Fl. Alt. II. p. 173"; Fl. Ross. I. p. 398, et "Ic. Pl. Fl. Ross. t. 351"; FORBES et HEMSL. Ind. Fl. Sin. T. 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 deterrnation is rather conjectural.

Stellaria LINN.

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

Stellaria stellato-pilosa HAYATA, sp. nov, (Pl. II). Herbre diffusae ramosae laxae adscendentes in totum praeter caulem densissime

stellato-pilosro. Folia sessiliu ovato-lanccolatn basi cordata apice aristato-acuminata 12 mm. longa 3 mm. lata rarius ovato-cordata, supra pilis stellatis subtus pilis longioribus dense toctis, costis prominentibus. Flores 3-4, in cymas terminales v. rarius axillares dispositi pedicellati, pedicellis eire. 1 em. longis, basi pedicelli bracteati, bracteis 2 oppositis ovato-lanccolatis, Sepala 5, lauceolata extus dense stellato-pilosa demum glabra 3½ mm. longa 1 mm. lata. Petala profundo 2-fida, lobis lanceolatis obtusis sepalo longioribus. Stamina 10 ; discus inter stamina in glandulas promittentes plus minus expansus. Ovarium 1-loculare, pauci-ovulatum. Styli 3. Capsula oblongo-ovoidea, 4 mm, longa in 3 vulvas dehiscens, valvis 2-fidis. Semina globoso-reniformia a latere compressa, 1 mm. in diametro aequantia granulata v. muricata.

HAB. ad verticem montis Morrison, ad 13094 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. (22)); 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 lobes and entirely separate sepals,

Hypericineae.

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. 1. p. 548; HANCE, in Journ. Bot. (1874) p. 259, (1878) p. 104, et (1885) p. 321; MAXIM. in Mel. 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

pede 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.

Ternstraemiaceae.

Ternstraemia. LINN.

Ternstraemia japonica Tausn, in Trans. Linn. Soc. II. p. 335; SIEB. et Zucco 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. Formes, p. 19 ; ITO et MATSUM. Tent. Fl. Lutch, p. 324; MATSUM. et HAYATA. Enum. Pl. Formos. p. 45.

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

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

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

HAB. Nanto : 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; FRANVH. et SAVAT. Enum. Pl. Jap. I. p. 57; FORBES et HEMSL. Ind. Fl. Sin. I. p. 77 ; HENRY, List Pl. Formes, p. 19 ; DIELS, Fl. Centro Chin. p. 474; PALIBIN, Conspect, Fl. Korete, 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 Tozan, 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 ; Rinkiho, ad 4500 ped. alt., leg. N. KONISHI Feb. 1904; Taito: Iniknfknku, 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 serieeo-villosi. Folia distichs approximata sessilia coriacea oblongo-acuminata vel lanceolata 10 cm. longa 2½ cm, lata basi rotundata srepinsquo leviter inrequalin apice acuminata margine praeter basin serrulata, serrulis acntis, snpra glabra nitida subtus strigillosa, costis prominentibus, venis utraquo inconspieuis. Flores ♂ breve pedicellati, pedicellis 1 mm. longis vel longioribns, ad axillas foliorurn 2-3 congesti, patentes 8 mm. in diumetro roquantcs, Sepala 5-6, valde inaequalia late rotundata 1½ mm. longa totidem lata extus pilosula. Potala plerumquo 5, obovato-oblonga 4 mm. longa 2½ mm. lata glabra basi leviter connatu. Stumiua eire. 15, glabra potalo breviorrn, filameutis planis 2½ mm. longis, antheris undulatis filamonto duplo vel triple brevioribus. Ovarii rudimcutum brevissimum conicum apico barbatum. Flores ♀ ignoti.

HAB, in monte Morrison, ac1 8000 ped. alt., leg. T, KAWAKMI et U. MORI, Oct. 1906, (No. 2023).

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

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

Actinidia LINDL.

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

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

DISTRIB. Himalaya, central China to Japan.

Stachyurus SIEB. at ZUCC.

Stachyurus praecox 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. T. p. 79; MATSUM. et HAYATA, Enum. Pl. Formes. 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); Koshun : Naibun, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. The Himalayas 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 Noronhae REINW. ; MIQ. Fl. Ind. Bat. 1.-2, p. 492; BENTH. Fl. Hongk p. 29; MAXIM. Mel. Biol. XII. p. 426; FORBES et HEMSL. Ind.

Fl. Sin. 1. p. 80; HENRY, List Pl. Formos. p. 20; MATSUM. in Tukyū Bot. Mag. XII. p. 63; ITO et MATSUM. Tont. Fl. Lutch. p. 328; MATSUM. et HAYATA, Enum. Pl. Formos. p. 49:

Gordonia japonica, HOOK. f. Bot. Mag. t. 4589.

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 Cochinchin 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 srepissime integris utraque pagine glabris, costis prominulis venis impressis coriaceis, Flores ad axillas foliorum semper solitarii sessiles patentes 3 cm. in diametro requantes. Sepala decidua 4-5 valde inaequalia 2-seriata late ovata obtusa vel mucronata 6-8 mm. longa totidem lata extus medio pilosiuscula. Petala 5 alba obovato-cuneata apice sinuato-ernarginata vel 2-lobata circ. 1½ cm. longa 1 cm. lata. Stamina circ. 30, 2-seriata, exteriora longiora, filamentis plerumque potalis duplo hrevioribus basi connatis. Ovarium globosum sericeo-pilosum 1½ mm. longum. Styli 4, brevissimi basi connati apice recurvi 1 mm. longi. Fructus ignotus.

HAB. Arizan et Toxan, 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. T. p. 293.

HAB. Taito : Iryokukakusha, leg. T. KAWAKAMI et U. MORI, Dec. 1900, (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.

Tiliaceae.

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. Sanchoki, leg. S. NAGASAWA, Nov. 1905, (No. 726).

DISTRIB. Tropical Asia and Africa ; South China.

Elaeocarpus LINN.

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

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

DISTRIB. South China and the Loo-choo islands.

Geraniaceae.

Geranium LINN.

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

HOOK. f. Fl. Brit. Ind. 1. p. 432; DIELS, Fl. Centr. Chin. p. 419; LEDEB "Fl. Alt. III. p. 233"; THOME, :Fl. Dent. Ost, u. Schw, III. p. 201; WAGNER, Dent. Fl. ed-3, p. 431.

HAB. Taito: 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 supemo pilosus, ramis articulato-nodosus. Folia longe petiolata piloso-pubeseentia, petiolis 2-4 cm. longis, laminis arnbitu late orbicularibus vel pentagonis 5-7 cm. in diametro requantibus profunde fi-partitis, segmentis acuruinatis, pinnatifldis inciso-serratis, stipulis oblongis abrupts acuminatis 1 cm, longis extus pilosiusculis. Flores axillares vel subterminales longe pedunculati uniflori 2- bracteati, pedunculis 13-6 cm, longis pubescentibus, braeteis subulatis oppositis . circ. 1 cm. longis. Sepala 5, elliptica 12 mm. longa 5 mrn. la ta oxtus distincto 5-nervia ad nervos pilosula apice aristato-uoutu intus glabra. Petala 5, obovata euneata integra 2 em. longu vel longiora apice rotundata emarginata basi supra unguent ciliata, Glandula, 5. Stamina 10, 2-seriata, filamontis basi dilatis brevissinio ciliatis antheris oblongis dociduis. Ovarium pilosum, Capsular lobi ohlongi pilosi 5 mm. longi 21- mm. lati, candis 14 mm. longis.

HAB. ad verticem mentis 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 now plant is somewhat like *G. pretense* LINN. in its foliagio 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 ENGEW. et HOOK. f. in HOOK. f. Fl. Brit. Ind. I. p. 436; S. MOORE, in Journ. Bot. (1875) p. 230; FORBES et HEMSL. Ind. Fl. Sin. I. p. 99; DIELS, Fl. Centr. Chin. p. 420.

HAB. Suizau, in montibus Morrison, ad 7700 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. (54); in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1792); Arizan, 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. Herbre erectae circ. 30 cm. altae paucis ramosae sursum flexuosae, caulibus (exsiccatis) stramineis praeter apicem glabris. Folia versus apicem caulis approximata breviter petiolata, laminis oblongis ellipticis vel lanceolato-ellipticis circ. 8 cm. longis 2½ cm, latis apice caudato-aeuminatis 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, bracteola minuta incurva instructis, Sepala 3: 2 lateralia oblique ovata aeuminata integra 6 mm, longa 2½ mm. lata, posticum longe saccatum apice ad orem acutum, are 1½ cm. in

diametro, basi subito calcar breve incurvum apice incrussatum ac bilobum abeuns, a basi usque ad apicem calcaris 3½ cm, longum. Petala : vexillum alis duplo brevius late subreniforme medio dorso cristatum in cornu recurvum maculosum uttenuatnm ; alae arnbitu ellipticro 2 1/3 cm. longae latera superiore 2-lobatae, lobo basilari exteriori lato, lobo apicali longiore oblongo. Stamina 5, filamentis inrequalibus brevioribus circ. 4 mm. longis complanatis medio appendiculatis, antheris ovatis apiculatis circa pistillum coberentibus, loculis introrsum dehiscentibus, Ovarium oblougnm 4 cm. 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).

Rutaceae.

Baenninghausenia REICHB.

Baenninghausenia albiflora REICHB. "Conspect. Beg. 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. Pl. Jap. p. 209; ENGL. in ENGL. et PRANT. Nat. Pfl.-fam. III.-4, p. 130 ; FORBES et HEMSL. Ind. Pl. Sin. I. p. 102; DIELS, Pl. Centr. Chin. p. 423; HAYATA, in Tokyo 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 melirefolia 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. Formes. 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. Taito : 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; ITO et MATSUM Tent. Fl. Lutch, p. 357; Drets, Fl. Centro Chin. p. 424 ; HAYATA, in Tokyo 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. 1900, (Nos. 2060 et 2059); Tozan, 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. T. 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 ; OLIY. in Journ. Linn, Soc. V. Supp.-2, p. 28; HOOK. f. Fl. Brit. Ind. I. p. 502; MAXIM in Mel. Biol. XII. p. 429; MATSUM. et HAYATA, Enum. Pl. Formes, p. 74.

HAB. Taito : Koshnsha, leg. T. KAWAKAMI et U. MORI, Dec. 1900, (No. 1837).

DISTRIB. Widely spread in tropical Asia and Polynesia.

Ilicineae

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

Celastrineae.

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; ITO et MATSUM. Teut. Fl. Lutch. p.371.

HAB. in monte Morrison, ad 7000 pede alt., (No. 1721); in eodem monte, ad 9000 ped. alt., (No. 2004), leg. T. KAWAKAMI et U. MORI, Nov. 1906 ; Tozan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Nanto : 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 potiolnta, potiolis circ. 1 cm, longis scmi-torctibus, laminis oblongo-cllipticis 6-7 cm. longis 4 cm, latis apice obtusis vel neutis basi rotundatis vel obtusis rarius leviter angustis margine serrulatis, sorrulis obtusis, venis utraque prominulis. Cymro (ad ramulus terminalos) latoralos oppositro pauciflorae. Flores ignoti. Capsula dcproso-globosa 6-7 mm, in diametro requnus breve echinulata, echinulis 1 mm, lougis.

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

This new plant resembles *E. echiualus* 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 Mel. 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. Incl. Pl. Sin. I. p. 122; HENRY, List pl. Eormos, p. 27; DIELS, Fl. Centr. Chin. p. 446; PALIBIN, Conspect. Fl. Korere, I. p. 54; MATSUM. et HAYATA, Enum. Pl. Formes, p. 84.

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

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

Rhamnaceae.

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 3½ cm. lata margine praeter basin apicemque crenulato-serrata, serraturis setaceo-acuminatis rectis, venis utrinque 5-6 omnibus angulo acute emergentibus leviter arcuatis, membranacea, petiolis circ. 1 cm, longis, Flores ♂ ignoti. Flores ♀ in axillis foliorum inferiorum eire. 5-6 fusciculati, 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 abentibus. Calycis lobi tubum triplo superantes circ. 3 mm, longi lanceolati apice callosi trinervi. Rudimenta petalorum stamina quo 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. Taichu: Binoshu, 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.

Sapindaceae.

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 sequantia palmatim 7-loba, lobis lanceolatis acuminatis, duplicato-dentatis, lobo terminali 5 cm. longo $1\frac{1}{2}$ cm. lato, lobis inferioribus brevioribus $2\frac{1}{2}$ cm, longis, petiolis 2 cm. longis.

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

Acer sp. (aff. *A. cranceifolio* S. et Z.). Ramuli glabri, atropurpurei. Folia ovate-cordata finervi, 8 cm. longa 6 cm. lata leviter 3-loba,

lobis inconspicuis obtusissimis, margine preeter apicem duplicate-serrata, apice acurninata vel cuspidata, cuspidibus serrulatis, petiolis eire. 3 cm. longis.

HAB. in monte Morrison.

Acer sp. (aff. *A. rufineroi* S. et Z.). Hamuli palliduli exsiccato nigricantes. Folia ambitu cordata octagon a leviter 5-loba, lobis brevissimis euspidatis, cuspidibus terminalibus angustis linearibus, lateralibus latioribus serrulatis, infimis brevissimis, basi cordata, margine preeter euspidem 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. Taito : 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; Tozan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906.

Acer sp. (aff. *A. picio* THUNB.). Ramuli palliduli glabri. Folia ambitu late orbicularis 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 subtns pilosiusculis demum glabris. Cymae terminales. Flores ignoti. Carpella elliptico-oblonga lenticularia 4 mm, longa, alis dimidiato-obovatis divaricantibus cum carpello 2-2½ cm, longis.

HAB. Chosokei, leg. G. NAKAHARA, Juli, 1905, (No. 161); Shintiku, in rivulos Taito, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1426) ; Taito: Taironkosha, 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; BENRY, List. Pl. Formes, p. 28; DIELS, Fl. Cent. Chin. p. 450; MATSUM. et HAYATA, Enum. Pl. Formes. p. 94.

Cardiospermuni 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.

Anacardiaceae.

Rhus LINN.

Rhus intermedia HAYATA, sp. nov. radicans vel volubilis, Folia trifoliolata cum petiolis eire. 30 cm. longa longe petiolata, petiolis 9-10 cm. longis puberulis foliolo torminali requilongis, foliolis lateralibus oblongis aeutis basi rotmndatis obliqnis 13 cm. longis breviter petiolulatis, petiolulis 3 mm. longis, foliolis terminalibns longe petiolulatis, petiolulis 3 cm, longis, laininis oblongo-ovatis apiee acutis vel breviter acuminatis 15 cm. longis 7½ cm. latis, integris, subtus imprimis costis et nervis pilosis demum glabris Drupae late globosae compressae breve apiculatae 5 cm, latm, totidem longae viridi-tlavescentes pilis setaceis brovioribus dense obteetae.

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 Totcicodendron* LINN., but differs from it in having densely bristled fruits. At first sight, this new species appears to be referable to *Trichocarpae*, on account of its bristled exocarpium. Studying the plant carefully, I have found that it should be referred to *Venenatae* 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 Tokyo Bot. Mag. XV. p. 40; MATSUM. et HAYATA, Enum. Pl. Formos. p. 99, t. 9.

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

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

Legumiriosae

Crotalaria LINN.

Crotalaria formosana MATSUMURA, in ITO et MATSUM. in Tent. Fl. Lutoh, 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.; ITO et MATSUM. 1. 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. (69)); 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.; ITO et MATSUM. l. c. p. 416; MATSUM. et HAYATA, l. c. p. 107.

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

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

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

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

DISTRIB. Tropical Asia and the Philippine islands .

Desmodium sinuatum BLUME; ITO et MATSUM. l. c. p. 412; MATSUM. et HAYATA, l. c. p. 108.

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

DISTRIB. Tropical Asia and southern China.

Dumasta DC.

Dumasia bicolor HAYATA, sp. nov, Herbae volubilos in totum pubescentos. Folia bicoloria pubescentia pinnatim 3-foliolata 12 cm. lata 18 cm. longa longe petiolata, petiolis basi crassiusculis 9 cm, longis foliolo terminali subrequilongis, foliolis laterulibus brevissime petiolulatis, petiolulis 3 mm. longis, laminis rotundato-ovatis basi truncatis vel acutis apice rotundatis minutissime aristate-mucronatis 3-nerviis, foliolis terminalibus iis lateralibus conformibus longe petiolulatis, petiolulis 2½ cm. longis, laminis ovatis

basi acutis majoribus 6½ cm. longis 4½ 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, are valde oblique truncato antice acute, Vexillum obovatum apice emarginatum 14 mm. longum 7 mm. latum late unguiculatum, lamina unguem subrequanti supra medium postice inflexa basin angusta ad unguem aequanti et auriculata. Alae longe unguiculatae 14 mm. longae, laminis oblongis, unguibus linearibus laminam duplo superantibus, carinae adhaerentes. Carinae alis brevior obtusa. Stamen vexillare liberum, cretae connatae. Antherae uniformes, Ovarium villosum substipitatum, stipite 1 mm. longo; stylus supra ovarium filiformis erectus supra medium dilatatus, 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); Tozau, 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.; ITO et MATSUM. 1. c. p. 431; MATSUM. et HAYATA, 1. c. p. 113.

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

DISTRIB. All over the tropics.

Flemingia ROXB.

Flemingia strobilifera R. BR.; ITO et MATSUM. 1. c. p. 432; MATSUM. et HAYATA, 1. 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.

Rosaceae.

Prunus LINN.

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

Hsu, Tnichu : Kushigatani, 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 hysternanthu

annua altera (novella) brevissime petiolate, 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 faucis affixa, ex ungue breve cuneato-obovata, apice rotundata integerrima radiatim venosa tonera glabra horizontaliter patentia $6\frac{1}{2}$ nun. longa 4 mm. lata. Stamina calycis faucis affixa longe exserta petalo vix longiora. Ovarium superum, ovoideum cum stylo 6 mm. longum, stigmatibus capitato-peltatis.

HAB. Toroku: Kanosha, 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.

Spiraea LINN.

Spiraea 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); Nanto: Hinokiyama, leg. G. NAKAHARA, Feb. 1907; Toroku: Knreikiyaku, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1902).

DISTRIB. China throughout, Japan and Korea,

Spiraea sp. Suffruticos nani glabri. Folia alterna subsessilia

ovata apice obtusa basi acuta vel cuueata 1½ cm. longa medio sursum denticlata basin versus integra, venis supra impressis subtus prominentibus, Fructus in cymas racemosas terminales clispositi. 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 Tokyo Bot Mag. XV. p. 157; MATSUM. et HAYATA., Enum. Pl. Formes. p. 120.

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

DISTRIB. Type: Japan and China.

Rubus elegans HAYATA, (Pl. IV.), in Tokyo Bot. Mag. XX. p. 74. Caulis humilis herbaceus basi snffruticosns sirnpliuscnlus 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 1 cm. latis, terminalibns interdum tri-lobatis, sorratis, serris acutis, ad petiolum et costas pinnarum aculeolata, stipulis adnatis snbulatis linearibus circ. 1 cm. longis, Flores majusculi, pedunculati, pedunculis 5-6 cm, longis, 1- bracteati, bracteis minutis aeutis 2 mm. longis. Flores patentes 22 mm. in diametro aequantes. Calyeis lobi ovato-triangulares aculeato-acuminati 8 mm. longi extus pubescentos, Petala late ovata 9 mm. longa apice obtusissima, basi brevissime unguiculata. Stamina numerosa, filamentis planis glabris. Capitulum fructiferum ovato-glohosum 1 cm, longum vel longins. 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. 374; HOOK. f. Fl. Brit. Ind. II. p. 342; MAXIM. in Mel. Biol. VIII. p. 391 ; MATSUM. in Tokyo Bot. Mag. XVI. p. 4; MATSUM.: et HAYATA, Enum. Pl. Formos. p.121.

HAB. Tohosha, ad 2930 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. G05).

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

Rubus pectinellus MAXIM. in Mel. Biol. VIII. p. 374; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 122; HAYATA, in Tokyo Bot. Mag. XX. p. 55.

HAB. Tozan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1790).

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 aequantibus laeviter 5-lobis apice rotundatis basi cordatis, lobis rotundatis irregulariter denticulatis palmatis 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. Achrenia drupacea,

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

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

The present *Rubus* is near *R. pectinellus* MAXIM.; hut 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 dernum glabri. Folia 5- rarius 3-loba, ambitu cordato-orbicularia 3-5 cm, in diametro requantia, 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 11 mm. 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 rosaefolius SM, var. **hirsutus** HAYATA, n. v. Hamuli aculeati pilosi, pilis validiusculis, aculeis parvis falcatis acumiuatis. Folia ambitu ovato-nouminata hirsuta cum potiolis 5-6 cm. longa 5-foliolata, foliolis latorialibus subsossilibus vel breve potiolulatis 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 subnullis ciliolatis, Flores terminales vel laterales saepe solitariae, pedunculatae. Calycis lobi ovato-triangulares longe exsertati, lobis 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 radioalia longe petiolata, petiolis 3-4 cm. longis tomentosis, trifoliolata, foliolis lateralibus rotundatis 13 mm. longis 11 mm. latis apice truncatis basi valde obliquis infero rotundatis superne acutis et integris, foliolis terminalibus late obovatis 15 mm. longis 14 mm. latis apice rotundatis vel truncatis basi acutis praeter 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); Tozan, 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 Tokyo Bot. Mag. XX. p. 78.

Potentiilla grandiflora LINN., VAGNER, Dent. Fl. ed-3, p. 359; THOME, Fl. Dent. Ost, u. Schwa 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).

Potentiilla leuconoia HAYATA, in Tokyo Bot. Mag. XX. p. 74.

Caulis sericeo-pilosus erectus circ. 15 cm, longus. Folia subradicalia pinnntu in ambitu oblanecolata obtusa 10 cm. longa circ. 19-foliolata, foliolis sessilibus obovatis obtusis 1 cm, longis arguto dentatis supra pilosiusculis subtus sericeo-pilosis, potioliis appresse pilosis, stipulis majusculis scariosis circ. 3 cm. longis ad basin potiolorum adnatis integris. Folia caulina radieali conforinia sed multo minora, pauca saepe ad medium caulis 1-2. Flores ad apicem caulis 9-8 faseienlati subumbellati 1-2-bractcati, pedicellis 1 cm. longis, Flores patontes 8 mm. in dinmetro rcquantos, brar-teolis angnstis integris, Calycis lobi ovati acuti scricei, Petala late ob-

ovata, basi leviter angusta, apice rotundata. Stamina 10 (-20 ?). Aehren eire. 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 leuconia* 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; THOME, Fl. Deut. Ost. u. Schw. III. p. 60; ASCHERSON et GRAEBN. Syn. Mitt. Fl. VI.-1, p. 661; WAGNER, Dent. Fl. ed-3, p. 361; HAYATA, in Tokyo Bot. Mag. XX. p. 58; MAKINO, in Tokyo Bot. Mag. XV. p.98.

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

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

HAB. ad verticern montis Morrison, 13004 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, aeuleis albidis rectis subulatis, ramis patentibus gracilibus. Folia pinuata 7 -11-foliolata glabra ambitu elliptica cum petiolis 5 cm. longa 2½ cm. lata, petiolis gracilibus minutissime aeuleolatis, foliolis subsessilibus firmis late obovatis vel subrotundatis 13 cm. longis 7 mm. latis medio denticulatis apicem versus dentatis, clementibus acutis, stipulis petiole adnatis apice liberis acutis glabris glanduloso-serrulatis, serrulis argutis. Flores secus ramulos quasi racemosi, e gemmis solitarii breviter pedunculati, pedunculis 1½ 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 parcissimo 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. xanthine* 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. NAKAUHA, Oct. 1906.

Saxifragaceae.

Astilbe IAM.

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

Asiilbe odonfaploylla 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. (36).

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 tomato-bipinnata, foliolis lateralibus ovatis terminalibus acumiuato-ovatis duplicato serratis, serris acuminatis, petiolnlatis, Racemi 30 cm, longi basi 12 cm, lati pyramidales, racemulis deorsum pedunculatis sursum subsessilibus, Flores brevissime pedicellati basi calycis braeteolati, Calyces 1½ mm, longi, lobis ovatis truncatis. Petala spathulato-ovovata vix 1 mm, longa apioe minute apiculata margine integra diffusa. Stamina 10 multo exserta, petalnm cluplo 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 macrofiora HAYATA, sp. nov. Herba circ, 30 cm. alta,

erecta basi squamis membranae fuscis late ovatis acuminatis numerosis obvallata, rhizomate crasso fibris numerosissimis ohtecto, caulibus petiolisque pilis fuscis parco vestitis. Folia radicalia et caulina ternato-bipinnata, petiolis lamina subrequalibus ad ramificationes parce lange pilosis, foliolis ovatis vel oblongis basi cordatis rarius leviter 3-lobatis 3 cm. longis 2½ cm. latis supra parcissime pilis scabris vestitis subtus ad costas pilosiusculis biserratis, serraturis primariis majusculis patulis breviter acuminatis secundariis minutis seta brevi tenninatis, 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, rhachibus fusco-hirtis, bracteis stipula conformibus erectis. Flores versus apicem racemulorum subpedunculorum dense congesti, breviter pedicellati. Calyx 3½ mm. longis campaulatus lutescons, lobis ovatis obtusis 3 mm, longis trinerviis crassiusculis tubo multo longioribus. Petala spatulata 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 earpello requilongis. 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. Herbae humiles piloso-pubescentos. Folia membranacea longe petiolata, petiolis 11 cm. longis lamina vix longioribus planis subalatis pilosis basi dilatis, laminis late ovatis vel orbicularibus 1½ cm. longis apice rotundatis basi abrupte acutis vel

truncatis brevissime attenuatis in petiolum abeuntibus margine erenatis, erenis 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.s-Bat, III. PP., 96 et 201, et Prol, Fl. Jap. pp. 260 et 365; FRANCH. et SAVe Enum. Pl. Jap. I. p. 147, excl. syn. (non MAXIM.); MAKINO, in Icon. Fl. Jap. Imp. Uni. Tokyo, 1.-2, p. 7, tt. IV. et V.; HAYATA, in Tokyo 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; Tozan, 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 Tokyo 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. Peke in Prim. Fl. Amur, p. 469; HOOK. f. Fl. Brit.

Ind. II. p. 401; DRUDE, in Linnroa, XXXIX. p. 307; FORBES et HEMSL. Incl. Fl. Sin. I. p. 272; HAYATA, in Tokyo 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; ITO et MATSUM. Tent. Fl. Lutch. p. 461; MATSUM. et HAYATA, Enum. Pl. Formes. p. 131.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2073) ; Taito: Bushiseki, leg. T. KAWAKAMI et U. MORI, (No. 2185); Toroku : Nanshikiyakumunsha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1006).

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

Hydrangea glabra HAYATA, sp. nov. (Pl. VI.), Frutices ad truncos scandentes, ramis glaberrimis corti co cinereo-fusco tectis. Folia oblonga petiolata, petiolis lamina 3-plo brevioribus, laminis oblongis 11 cm. longis 7 cm. latis apico acutis basi obtusis vel acutis margine serratis, serraturis acutis, utraque pagine. glaberrimis, Cymae oorymbosre teruato-ramosro, rhachibus tomentosis demum glabris. Flores extoriores steriles, sepalis 4 petaloideis late obovatis nervosis basi breve cuncatis apice rotundatis vel truncatis interdum emarginatis 15 mm. longis 17 mm. latis. Flores interiores fertiles. Capsula depresso-globosa apice truncata latere leviter compressu. Somina oblonga plana ala augusta 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* SIED.; 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 oblougo-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. Cymte corymbosae umbellato-fasciculatae terminales 14 cm, longae 15 cm. in diametro requantes, rhachibus tomento subfloccoso dense tectis. Flores exteriores steriles, sepalis 2 petaloideis late rotundatis valde nervosis, altero minore 1½ cm, lato altero majore 2 cm, lato. Capsula hemisphercica 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. intergrifolia*, but easily distinguished in having narrowed base of the leaves.

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

supra pilis scaberrimis sparce subtus dense tectis, Cymae corymbosae umbellato-faseiculatae tenninales circ. 12 cm. longae 14 cm. in diametate requantae, rhachibus tomentosis. Flores exteriores steriles, sepalis 4 petaloideis nervosis fere orbicularibus 2 cm. longis totidem Intis utraque latere praeter basin apicemque serratis. sordis acutis ; interiores fertiles. Capsula hemisphaerica 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 .. log. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 187:3).

Somewhat near *H. incolucrata* 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-fuseo tectis. Folia breve petiolata, petiolis lamina 10- plo brevioribus, laminis oblougo-lanceolatis acuminatis basi obtusis circ, 20 cm. longis 4½ cm, latis margine remote serrulatis, serraturis acuminatis, supra scabro-pilosis subtus ad costas tomentosis. Cymae corymbosae umbellato-lasciculatae terminales circ. 9 cm. longae 14 cm. latae, rhachibus tomentulosis. Flores exteriores steriles, sepalis petaloideis utraque pagina tomentulosis late orbicularibus nervosis apice rotundatis basi brevissime contractis 17 mm. longis totidem latis. Capsula hemisphaerica tomentulosa latere leviter compressa, stylis persistentibus apice recurvis. Semina lasiformia utriusque producta.

HAB. Taito : 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; ITO et MATSUM. Tent. Fl. Lutch, p. 463; DIELS, Fl. Centr. Chin. p. 372; MATSUM. et HAYATA, Enum, Pl. Formes. p. 132.

Deutzia crenate SIEB. et ZUCC. Fl. Jap. P: 19, t. 6; MAXIM. Revis. Hy-chang. As. or. pp. 22. et 45.

Deutzia crenata a taiwanensis MAXIM. 1. 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. at ZUCC.

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

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

HAB. Taita: Tokeizan, leg. T. KAWAKAMI et U. MORI, Dec. 1906. (No. 2201); Magi: Kaden, 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 Tokyo Bot. Mag. XX. p. 56. Frutices, ramulis angularibus spinis infra-axillaribus ternatis validis patentibus, Folia simplicia vervatione plicata late rotundata basi truncata vel cordata 2½ cm. longa 5-6-lobata, lobis obtusis grosse pance serratis, petiolata, petiolis pauce glanduloso-setosis laminam requantibus. Flores subsolitarii, pedicellis 1 cm. longis basi bracteatis modio articulatis 2-4 bracteolatis. Calycis tubus ovoideus ovario adnatus, lobis 5 subpatentibus 1 cm. longis oblongo-ovatis apice rotundatis petalum 3-plo superantibus. Petala 5 calycis fauce inserta oblonga parva squamifera 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. Baccae globosae roseae pulposae 18 mm. in diametro aequantes, sepalis persistentibus. Semina subangulata, testa extus glabra intus crustacea 3 mm. longa leviter compressa minute reticulata.

HAB. Tohokei, ad 5907 ped. alt., in montibus Morrison, leg. S. NAGASAWA, Nov. 1905, (No. 502); in monte Morrison, ad 10000 ped. Mt., leg. T. KAWAKAMI e 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.

Crassulaceae.

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 carnosae oblongo-lanceolata apice obtusa basi obtusissima ultra insertionem $\frac{1}{2}$ mm, producta 6 mm. longa $1\frac{1}{2}$ mm. lata vel latiora. Cymae trifidae pluriflorae bracteatae, bracteis folio conformibus flore brevioribus ; floribus ad ramos cymarum sessilibus, parvis 7 mm, longis campanulatis. Sepala oblongo-lineariter obtusa petalorum $\frac{1}{2}$ aequantia crassiuscula. Petala oblongo-acuta apice obtuse breviter carinata $6\frac{1}{2}$ mm. longa : stamina epipetala petalorum aequantia, epipetala paulo breviora, antheris oblongis; squamis hypogynis minutis late quadratis. Folliculi membranacei basi breviter connati obovato-patuli oblongi in stylis 2-plo breviores attenuati cum stylis 6 mm, longi, stigmatibus punctiformibus. Semina oblonga obscure striata, striis minutissime muricatis.

HAB. ad summam mentis Morrison, ad 13004 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. 1802).

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, indeteminable.

***Kalanchoe* ADANS**

Kalanchoe sp.

HAB. in monte Morrison ad 6000 ped. alt., log. T. KAWAKAMI et U. MORI, Nov. 1006, (No. 1881); Kagi: Kishirei, leg. T. KAWAKAMI et U. Mont, Oct. 1906, (No. 1779).

No flower, indeterminable.

Halorageae.

***Haloragis* FORST.**

Haloragis micrantha R. ER. ; BENTH. Fl. Austral. II. p. 482; CLARKE. in HOOK, f. Fl. Brit. Ind. II. p. 4:30; HANCE, in Journ. Bot. (1870) p. 276; SIED. 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; ITO. et MATSUM. Ten. Fl. .Lutch. p. 471; DIEV., Fl. Contr. Chin. p. 486; MATSUM. et HAYATA. Enum. P1. Formes. 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. Boss. 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; ITO et MATSUM. Tent. Fl. Lutch, p. 471; MATSUM. et HAYATA, Enum. Pl. Formes p.138.

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

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

Myrtaceae.

Eugenia LINN.

Eugenia sinensis HEMSL.? in FORBES et HEMSL. Ind. Fl. Sin. I p. 298; HENRY, List Pl. Formes. p. 43; MATSUM. in Tokyo Bot. Mag. XII. p. 64; ITO et MATSUM. Tent. Fl. Lutch, p. 481; DIELS, Fl. Centr. Chin. p. 484; MATSUM. et HAYATA, Enum. Pl. Formes. 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 buxifidiuni HOOK. et ARN. Bot. Beech. Voy. p. 187 ; WALP. Ann. II. p. 180; BENTH. Fl. Hongk. p. 118.

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

DISTRIB. South central China.

Sp. Hab. Koshuu : Marihasha 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.

Melastomaceae

Osbeckia LINN.

Osbeckia aspers 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.). Frntex scandens ? ramosus, ramis gracillimis glaberrinlis v. partibus novellis sub microscopic glanduloso-lepiclotis. Folia breve petiolata, petiolis lamina 10- plo brevioribus laminis subcoriaceis (novellis membranaceis) oblongis circ. 10 cm. longis 3 cm. latis apice oblique candato-acurninatis, caudis linearibus, basi acutis requalibus margine subintegris vel remote obscure serrulatis 3-5-nerviis supra sub lente minute sparae sotulosis snbtus pallidionbus venis prominentibus sub microscopic minute densiusculo lepidotis. Flores ad a picem rumorum terminales 1-3-congosti majusculi patentcs 3 cm. in diametro roquantes breve pedicellati, pedicollis 3-4 mm. longis minutissime lepidotis. Calyeis tubus glaberrimus obpyramidali-earnpanulatus 9 mm. longus 4-quotrus, limbus dilutus 4 lobus, lobis brevibus triangnlaribus apico sotoso-oarinato-acuminatls. Petala 4, ampla oblique obovata 18 mm. longa 16 mm. lata apice rotundato-apiculata glaberrima margine sub lente ciliato-serrulata. Stamina 8, valde inaeqnalialia : nutherru majores lineari-elongatae obtusae 1-porosae incurvae, connectivis basi antice longe

2-setosis (setis bi-fldis) postice in calcaria crassa asceudentia productis : antherte minores breves oblongae recurvae, connectivis basi antice 2-setosis (setis simplicibus) postice breve calcaratis. Ovarium calyci adherens (inter ipsum at calycem longitudinaliter 4-canaliculatum) 4-loculare vertice leviter productum ; stylus filiformis declinatus ovarium 2-plo superans, stigmatate 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. Snihenkiakn? leg. T. KAWAKAMI et G. NAKAHARA, Jan. 1906, (No. 41); Nanta: 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. cliinensis* 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 HEMSL. Ind. Fl. Sin. I. p. 302 COGN. in DC. Monogr. Phanerog. VII. p. 517.

Sarcopyramis lancedaia WALL.; Kunz, 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); Taito: Tokeizan, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1013).

DISTRIB. India and Malay.

Onagrarieae

Epilobium LINN.

Epilobium alpinum LINN, : DC. Prodr, III. p. 41; HOOK. f. Fl. Brit. Ind. II. p. 586; WAGNER, Dent. 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. Proch. 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. Ganzau, 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); Nanto : Mushazan, 8000 ped. alt., leg. T. KAWAKAUI et U. MORI, (No. 1130); Taito: Daironkosha, leg. T. KAWAKAMI et U. MORI, Nay. 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.

Circaea LINN.

Circaea 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. Contr, 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.

Cucurbitaceae.

Thladiantha BUNGE.

Thladiantha formosana HAYATA, sp. nov. (Pl. XL). Herbai scandentes vel volubiles, ramulis floriferis graoiliusculis suleatis pilosis, pilis longis, cirrhis 2-partitis. Folia longe petiolata, petiolis lamina aequilongis vel brevioribus pilosis, laminis crassiusculis membranaceis angularibus rotundnto-cordatis vel ovato-cordatis 10 cm. longis 7 cm. latis acute acuminatis margine minute remoteque denticulatis supra seabridis subtus villosopubescntibus. Flores ♂ puberuli racemosi, racemis longis petiolo 2-3-plo longioribus, braoteis parvis cito deciduis. Calycis tubus brevis late campanulatus, lobis ovato-lanceolatis 5 mm. longis. Petala patentia ovato-lanceolata 11 mm. longa. Stamina 5 aequalia, ant. heris 1-locularibus rectis, filamentis liboris. Ovarii rudimeutum globosum. Appendicula brevis pctaloidea obtnsa discum centrale horizontaliter tegens.

HAB, Tozan, 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; ITO et MATSUM. Tent. Fl. Lutch, p. 519 ; DIELS, Fl. Centr. Chin. p. 604; HAYATA, in Tokyo Bot. Mag. XX. p. 53.

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

Enkylia trigyna GRIFFITH.; :MIQ. Prol. Fl. .Tnp. pp. 15 et 142.

Pesialozzia palata ZOLL. et MOR. ; WALP. Ann. I. p. 316.

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

Zanonia pedaiia MIQ. Fl. Incl. 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. 2040), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

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

Begoniaceae.

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

Umbelliferae

Hydrocotyle LINN.

Hydrocotyle japonica 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; CLAURE, in HOOK. f. Fl. Brit. Ind. II. p. 667; MAXIM in Mel. 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 P1. Formes. p. .17; ITO et MATSUM Tent. Fl. Lutch. p. 260; DIELS, Flo Centr. Chin. p. .490; YABE, Revis. Umbell. .. Tn.p. 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. .Tap. 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 hirta R. BR, var. *acutiloba* F. MUELL. in BENTH. Fl. Austr. III. p. 340.

HAB. Tappansha, all 3139 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 719); Tozan, 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. Proch. IV. p. G4; WIGHT, Ic. Pl. Ind. or. t. 564; BENTH. Fl. Hongk p. 134; CLARKE in HOOK. f. Fl. Brit. Ind. II. p. 6G8; MASUM. in Mel. Biol. XII. p. 461; FORBES et HEMSL. Ind. Fl. Sin. I. p. 825; HENRY, List. Pl. Formos, p. 47 ; ITO 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 Sibthorpioidee LAM.; DC. Prodr, IV. p. 66; FRANCH. et SAVAT. Enum, Pl. Jap. I. p. 178.

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

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

Hydrocotyle tenella DON, in DC. Proch. 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 radieans. 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. Umbellae simplices multiflores, floribus breve pedicellatis, pedicellis 1 mm, longis, dense capitatis, Fructus late cordato-orbiculati compressi utriusque costati 1 mm, longi 1½ 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.). Herbrae perennes humiles glaberrimae. 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 aequantibus 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. Umbellae compositae ad apicem caulis 2-3, vel axillares solitariae, longe pedunculatae, pedunculis 3 cm, longis, 5-7 -radiatae 6 mm, longae, 10 mm. in diametro aequantes, bracteis paucis setaceo-dentiformibus vel subfoliaceis minutis. Umbellulae minores 2½ mm. longae 3 mm. in diametro aequantes basi bracteolatae, bracteolis 5-6 minutissimis setaceo-dentiformibus, 5-6-florae, floribus exterioribus masculinis (= sterilibus) longe pedicellatis, centralibus unifloris perfectis ferti-

libus. Flores ♂ minutissimi circ, $\frac{2}{3}$ mm. in diametro aequantes 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 i- mIn. 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 ; Tozan, 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 vittae, The vittae in my species are very few, while in the other they are as many as eight, An allied genus, *Peiaqnia* 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.

Araliaceae

Acanthopanax DONE 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 HEMSL.; Ind. Fl. Sin. I. p. 339 ; HENRY, List Pl. Formos, P: 47; DIELS, Fl. Centr. Chin. p. 489; MATSUM. et HAYATA, Euum, Pl. Formes. p. 17G.

Panax aculeaiuni AIT. Hart. Kew. ed-2. V. p. 482. DC. Prodr. IV. p. 252.

Panax Loureirianuni DC. Proch. IV. p. 2::)2.

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

Plecironia cldnensis 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 DONE et PL.

Fatsia polycarpa HAYATA, sp, nov. (Pl. XIII.). Arbor ? Kamuli primum valde fulvo-lanati, pilis longiusculis, demum subglabri. Folia (novella fulvo-lanate dernum glabra) ampla longe petiolata, petiolis inlongitndine laminam requa utibus vel brovioribus basi valde dilatis ciliatis, stipulis intra petiolum parum prominulis, laminis ambitu late orbicularibus 15-30 cm. in diametro aequantibus Profunde ad 2/3 partem laminae palmatim 7 -fidis inter lobus valde sinuatis, lobis oblongo-obovatis apice candato-ocuminatis basi attenuatis margine praeter acumen partes basilures et sinnatus dentato-serrutis, serraturis mucronato-neuminatis asceudentibus, palmatim 7 -nerviis, subtus nervis prominentibus, pallidioribus. Umbollae paniculatae, Paniculae terminules 30-40 cm. longae dense fulvo-lanatae, ramis infimis 14 cm, longis umbellis peduuculatis remote instructis ; pedunculi umbellarum 1-½ cm. longi umbollam in longitudine aequantes ; bracteae ad basin umbellarum ovutae 1-½ cm. longae

membranaceo caducissime dense lanate ; bracteolae minutissime lineares. Umbellae circ. 20-florae in alabastro globosae 1 cm. in diametro requantibus indumento lanato obtectae : umbellae demum patentes 1½ cm, longae 2½ cm, in diametro requantibus, Flores patentes longe pedicellatae, pedicellis 1 cm, longis gracilibus flore continuis sed basi pedunculo articulatis, majusculi 7 mm. in diametro aequantes. Calycis tubus brevis leviter sulcatus, margine vix prominulo, Petala 5 membranacea valvata revoluta longe triangularia apice mucronata acuta 3½ 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 ½ 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* DONE. 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* DONE. 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 ruseiflora 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.

Helwingia japonica Drnrrn: DC. Proch. XVI. -2, p. 680; FRANCH. et SAVAT. Enum. Pl. Jap. I. p.196.

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

DISTRIB. Japan and central China.

***Heptapleurum* GAERTN.**

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

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

Paratropia cosdonienseis 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 Tokyo Bot. Mag. XX. p. 53.

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

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

HAB. Tozan, 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 aequantes 13 cm, latae, pilis stellatis et simplicibus dense obtectae, ramis alternis angulo obtuso divaricantibus, capitulis florum pedunculatis remote instructis, et ad apicem ramorum capitulis ternatis : bractea basi pedunculorum late ovatae 4 mm. longae; bracteolae florum squarroliformes crassiusculae sub singulo flore 3-nae, 1 subtendente majore late ovata 3 mm. longa, 2 laterulibus minoribus oppositis, pilis longis dense tectis et barbibus validis nigris sparse insertis. Capitula florum subglobosa 6-7 mm. in diametro aequantia, circ. 15-flora, pedunculis capitulum 2-plo superantibus. Flores omnino villosi intra bracteam arete sessiles in alabastro subturbinati 2½ mm. longi. Calycis margo

obsolete dentatus. Petala G valvata intus glabra ovato-triangularia 1½ 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 teruiualibus. Fructus late globosi 4½ mm. longi 5 mm. lati laeves ubortu 1-spermi compressiusculi tomentulosi drupacei, stylis persistentibus valde recurvis, Semina ovoidea subtriquetra 4 mm. longa, albuminibus ruminatis. Embryo hilo proximus minutns,

HAB. Taito: Bataiankei, ad 6000 ped. alt., leg. X. 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); Taito: in monte Iryokukuku, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1914).

In " BENTH. et HOOK. f. Gen. Pl. 1. p. 939 ", it is stated that the ovary of the genus *Orcopauax* is 5-celled. But, in "ENGL. and 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-ovarics 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. Jll. ed-2. p. 292; DC. Proch. 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. 1. 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 longo petiolutn , petiolis lamina 1-2-plo longioribus, basi dilatis stipulis fere ohsoletis, 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-norviis utraque pagine inter reticula punctatis, interdum laminis simplicibus oblongo-ellipticis cuspidato-actuninatis basi cuneatis. Umbellae ad apicem ramnlorum solitariae pauciflorae breve pedunculatae, pedunculis 7 mm, longis, pedicellatse, pedicellis 8 mm. longis. Flores ignoti. Fructus globosi 4 mm. in diametro reqnantes multi-sulcati,

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*.

Cornaceae

Marlea ROXB

Marlea begonirefolia 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: Muroensha, 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. Proch. IV. p. 274; MIQ. Prol. Fl. Jap. p. 92; FRANCH. et SAVAT. Enum. Pl. Jap. p. 197; HENRY, List. Pl. Formes. p. 48; FORBES et HEMSL. Ind. Fl. Sin. I. p. 346; ITO et MATSUM. Tent. Fl. Lutch. p. 541; DIELS, Fl. Centr. Chin. p. 507; PALIBIN, Conspect. Fl. Korere, I. p. 102; HAYATA, in Tokyo 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

Gamopetalae

Caprifoliaceae

Lonicera LINN.

Lonicera sp.

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

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

Rubiaceae

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. Formes. p. 50; MATSUM. in Tokyo Bot. Mag. XIV. p. 147; MATSUM. et HAYATA., Enum. Pl. Formes, 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); Tozan et Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; Taito: Busshiseki-shu, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2182).

DISTRID. South China.

Knoxia LINN.

Knoxia corymbosa WILLD. Sp. Pl. I. p. 582; BENTH. Fl. Hongk. p. 164; Home 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; FONURS et HEMSL. Ind. Fl. Sin. I. p. 384; MATSUM in Tokyo Bot. Mag. XVI. p. 13 ; MATSUM. et HAYATA, Enum. Pl. Formos. p. 189.

Spermacoce teres ROXB. Fl. Ind. ed.-CAREY, I. p. 3G7.

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 GAERTN.

Damnacanthus angustifolius HAYATA, sp. nov. (Pl. X·V.). Frutices glaberrimi dichotome ramosissimi, ramulis cinereo-fulvis niteutibus 4-gonis. Folia opposita brevissime petiolata lanceolata vel lanceolato-linearia 13 cm, longa 1½ cm. lata basi ncuta apice acuminata margine integra vel remote minuteque deutieuluta subtus pallidiora, venis utrinque prominulis, venulis fere transvorsum divergeutibus, stipulis interpetiolaribus multi-dividis minute digitiformibus. Flores parvi in axillis 5-6 faseiculatim vel umbellatim dispositi, pedicellis gracilibus 2-3 mm, longis. Calycis tubus obovoideus 1 mm, longus limbum in longitudine aequans, limbo campanulato 4-lobo, lobis triangularibus persistontibus. 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 corollae alterna fore libera, filamentis longiusculis, anthesis oblongis obtusis dorso connectivo lato affixis. Discus pulvinatus. Ovarium 4-loculare loculis 1-ovulatis, ovulis in loculis solitariis ab apice loculi pendulis amphotropis, stylo filiformi, stigmata clavelluto 4-fido, rarnis latiusculis erecto-patentibus. Drupre rubrre late globosae 6 mm, in diametro reqnantes 4-pyrenae, pyrenis dorso rotundatis subtrigonis cartilagineis 1-spermis. Semina subtrigona, testa tenuissima, albumine

cornea; embryo parvus, cotylidonibus subplanis erassis, radícula brevi infra.

HAB. in Suizan, in montibus Morrison, ad 7703 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 784); Tozan 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 6000 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 GAERTN. 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 Mel. 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); Nanto : 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* GAERTN. f., as he has very many transitional stages between the two species. Mr. T. MAKINO refers also to this interesting species in the Tokyo 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 now plant bears much resemblance, to *D. macrophyllus* SIEB. from which it differs in having much smaller flowers and more narrowed loaves.

Lasianthus JACK.

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

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

Paederia LINN.

Paederia tomentosa BLUME; DC. Prodr. IV. p. 471; HOOK. f. Fl. Brit. Ind. III. p. 197; MAXIM in Me1. Biol. XI. p. 798; MIQ. Fl. Ind. Bat. II. p. 258; FORBES et HEMSL. Ind. Fl. Sin. I. p. 389 ; MATSUM in Tokyo Bot. Mag. XV. p. 38; DIELS, Fl. Centr. Chin. p. 582; PAKIBIN, Conspect. Fl. Koreae. T. p. 106; MATSUM et HAYATA, Enum. Pl. Formos. p. 197.

Paederia faetida THUNB, Fl. Jap. p. 106; HOOK. et Aux. not. Bepch. Voy, p. 194; BENTH. Fl. Hongk. p. 162; FRANCH. et SAVAT. Enum. Pl. Jap, T. p. 210; HANCE, in Journ. Bot. (1874) p. 261.

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

HAB. Taito : Daironkosha, leg. T. KAWAKAMI et U. MORI, Nov, 1906" (No. 2163).

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

Nertera BANKS et SOL

Nertera nigricarpa HAYATA, sp, Herbae parvae: glaberrimae exsiccate nigricantes, caulibus repentibus ad nodes radicanibus, internodiis 1-3 cm. longis, ramulis drepressis. Folia petiolata, petiolis laminam in longitndine supcrantibus, laminis late ovatis vel ovato-reniformibus obtusis minute macronatis basi abrupte

attenuatis ad petiolum abeuntibus margine integerrimis 5 mm. latis 4 mm. longis, stipulis interfoliuceis validiusculis triangularibus vel late cuspidatis. Flores quasitenninales sessiles solitarii 2½ mm. longi. Calycis tubus ovoideus, limbo integro annulate. 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. Drupes nigricantes globosae 4½ mm. in diametro requantur carnosae dicoccae (rarius mono coccae), calycis limbo annulari coronatae, coccis coriaceis ovatis intus plano-concavis extus convexis 1-spermis. Semina ovata plano-convexa circ. 2 mm. longa intus leviter sulcata.

HAB. Tozan, 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. IY. p. 588; FRANCHET, Pl. David. p. 155; MAXIM. Mel. 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. Centra Chin. p. 583; MATSUM. in Tokyo Bot. Mag. XV. p. 39; PALIBIN, Conspect. Fl. Korere, I. p. 106; MATSUM. et HAYATA, Enum. Pl. Formos. p. 199.

HAB. Toroku: Tohozan, 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 Dalutria : inountains of India southward to Ceylon and Mulacoa : tropical Africa.

Rubia lanceolata HAYATA, sp. nov. Herbae minute aculeolatm, eaulibus elongatis 4-gonis. Folia 4-natim verticillata longe petiolata, petiolis lamina in longitueline 1-2-plo longioribus minute uncinato-aculeolatis, laminis lanceolatis ovato-lanceolatis vel lineari-lanceolatis apice acuminatis basi rotundatis vel leviter corclatis 9 cm. longis 1 cm. latis supra ad nerves 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 montibns 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 1089?).

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

Galium LINN.

Galium brachypodium MAXIM in Mel. 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 *Calium* ; not yet determined.

Valerianeae

Patrinia JUSS.

Patrinia scabiosmfolia FISCH.; DC. Prodr. IV. p. 624;· LEDER 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. J'ap, Fam. Nat. n. 678; MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. p. 115.

HAB. Nauta: 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. 024; FRANCH. et SAVAT. Enum. Pl. ,Jap. I p. 216; FORBES et HEMSL. Ind. Fl. Sin. I. p. 398; HENRY, List Pl. Formes. p. 51; DIELS, Fl. Centr. Chin. p. 597; PALIBIN, Conspect, Fl. Koreae, I. p. 108.

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

Valeriana villosa THUNB. Fl. Jap. p. 82, t. 6.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., Oct. 1905, (No. (72)); Torokn: Tahokei, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1 905).

DISTRIB. Japan and China .

Hreckia ENGL. et GRAEBN

Hreckia Aschersoniana ENGL. et GRAEBN. in DIELS, Fl. Centr. Chin. p. 598; HAYATA, in Tokyo 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,

Dipsaceae,

Scabiosa LINN.

Scabiosa (Sect. *Scleroslemma*) **lacerifolia** HAYATA, (Pl. XVI.), in Tokyo Bot. Mag. XX. p. 16. Herbae perennes pubescentes vel glabrescentes, caulibus validiusculis 10-20 cm. altis pauci-ramosis. Folia sessilia semi-amplexicaulia linearia oblanceolata obsolete pinnatisecta vel lacerata, segmentis irregulariter serratis, radicalia ere. 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 rostrata longe pedunculata, pedunculis 5-6 cm. longis vel longioribus. Involucri bracteae 3-seriales herbaceae liberis sublanceolatis plerumque J-flores gerentes extimae 15 mm. longae interiores minores; receptaculi paleae spatulatae 5 mm. longae. Involucellum 4-costatum 8-foveolatum apice 4-lobatum, lobis obtusis. Calycis limbus in 5 setas radiato-patentes diversus. Flores radiantes involucrum fere excedentes; corollae 18 mm. longae, limbis 5-fidis 2-labiatis. Stamina 4, omnia perfecta. Stylus filiformis. Achamium involucello basi adnatum calyceis limbo persistente coronatum obovatum 3 mm. longum; setae breves 1 mm. longae.

HAB. in monte Morrison, ad 13094 ped. alt., leg. S. NAGASAWA; III montibus contralibus, 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.

Compositae

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 angusiifolia. 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. Formes. p. 51; HAYATA, Compos. Formes. p. 4; MATSUM. et HAYATA, Enum, Pl. Formes, p. 201.

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

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

Vernonia cinerea LESS. in Linnrea, 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, Compo Formos, p. 5; MATSUM. et HAYATA, Enum. Pl. Formos. p. 201.

HAB. Tozan, in montibus Mon-isou, leg. G . NAKAHARA, Oct. 1906

DISTRIB. Tropical Asia, Africa and Australia.

Adenostemma FORST.

Adenostemma viscosum FORST; LESS. Syuop. Comp. p. 156; DC. Proch. V. p. 111; SIEB. et ZUCC. Fl. Jap. Fain: 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. G08; HAYATA, Comp, Formes. p. 7; MATSUM. et HAYATA, Enum, Pl. Formes. p.202.

Spilanihes 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 LISS. Sp, Pl. ed-2, p. 1176; LESS. Syuop. 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, Compo Ind. p. 30; OLIVEH, Fl. Tropic. Afric. III. p. 300; HEMSL Voy. Chall. Bot. I. p. 40, et in Biol. Centr.-Americ. II. p. Fl; HOOK f. Fl. Brit. Ind. III. p. 243; FORBES et HEMSL, Ind. Fl. Sin. 1. p. 403; HENRY.

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

HAB. Taito: Bokusekikaku, 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. Herbae basi suffruticosae praeter inflorescentiam subsimpliis villosopubescentes. Folia opposita tripartita, segmentis lateralibus subsessilibus lanceolatis basi obliquis vel latere inferiore ad petiolum decurrentibus segmentis terminalibus lanceolatis breviter 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 4-6-florum. Involucrum oblongo-campanulatum, bracteis 3-seriatis imbricatis scariosis, internodiis oblongo-angustis 5 mm. longis, exterioribus gradatim minoribus, extimis parvissimis ovatis 1½ mm. longis. Receptaculum parvum convexum foveolatum. Corollae tubulatae 4 mm. longae, tubis tenuibus limbis parum ampliatis tubo 2-plo brevioribus breviter 5-dentatis, dentibus triangularibus marginatis. Antherae appendiculatae basi obtusae integrae. Styli basi disco dentato annulari coronati, ramis elongatis obtusis. Achrasia 5-angulata apice truncata basi attenuata 2 mm. longa; pappi setae 1-seriatae rigidulae scabrae 3½ mm. longae.

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. Anstr. III. p. 462; FORBES et HEMSL. Ind. Fl. Sin. I. p. 404 ; HENRY, List Pl. Formes. p. 52; DIELS, Fl. Centr. Chin. p. 608; HAYATA, Comp. Formos. p. 9; MATSUM. et HAYATA, Enum. Pl. Formes. p. 203.

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

DISTRIB. China, Manchuria and Japan.

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

HAB. Koshun : 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. Formes. p. 52; HAYATA, Comp. Formes. 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. 2140) ; Nanto : Mushu-

zan, ad 7000 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; TRIMEN, Fl. Ceyl. III. p. 15.

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

HAB. Suizan, ad 7702 ped. alt., in montibus Morrison, Oct. 1905, (No. 667), eodomo loco, ad 11570 ped., alt., (No. 620), et Tozan, in isdem montibus, leg. G. NAGASAWA, Oct. 1906; in isdem montibus, ad 7000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1700), Taito: Daironkosha, 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. Formes. p. 52; DIELS, Fl. Centr. Chin. p. 610; HAYATA, Comp. Formes. 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); Nanto: Nankokei, leg. T.

KAWAKAMI et U. :MORI, Aug. 1906, (No. 1174).

DISTRIB. South central China.

Aster scaber THUNB. Fl. Jap. p. 316; Fonnrs 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 ecutratibus, ad 10000 ped. alt., leg. T. KAWAKAMI et U. :MORI, Nov. 1906, (No. 1860).

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

Aster trinervi us Roxn. Fl. Ind. ed.-CAREY, p. 433; BENTH. Fl. Hongk. p. 174; FRANCH. et SAVAT. Ennm. 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. Formes. p. 52; HAYATA, Comp. Formes. p. 13 ; MATSUM. et HAYATA, Enum. Pl. Formos. p.204.

Diplopappus asperriuius DC. Proch. V. p. 277 (fide HEMSL.)

Aster aqeraoides TURCZ; MAXIM Prim. Fl. Amnr. 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.1 958), 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. NAGAHAWA, Oct. 1905, (No. 715); Tozan, in montibns Morrisou, leg. n. NAKAHARA, Oct. 1906 ; Tohosha, ad 2930 ped, alt., (Nos. 607 et 606) Nov, 1905, leg. S. NAGASAWA; Nanto : Tlinokiynma leg. G. NAKAHARA, Fob. 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. Herbae perennes parvae, caulibus hirsutis subsimplicibus circ. 10 cm. altis erectis. Folia radicalia longe spatulata cum petiolis 6 cm. longa 5 mm. lata apice rotundata vel brevissime apiculata basi longe attenuata in petiolum 3 cm. longum abeunt, caulina altera sessilia angusta breviora. Capitula mediocria 13 mm. in diametro aequantia, 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 inaequalibus extus pilosissimis, Receptaculum convexum nudum. Corollae ♀ ligulatae angustissime tubis limbo vix brevioribus; ♀ tubulatae 4 mm. longae, tubis pilosiusculis, limbis parum ampliatas 4-dentatis. Antherae basi obscure sagittatae. Styli fl. ♀ rami complanati, appendicibus triangularibus. Achaenia compressa angusta 2 mm. longa pilosa, margine nervio, facie enervia; pappi setae tenues 1-seriatim scabriusculis rufo-albis 3 mm. longae.

HAB. in summa montis Morrison, ad 13004 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 spatulate 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: Shitosa, 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, Compo 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 ease 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 erectisvo simplicibus 5-6 cm. altis, Folia radicalia caulinis conformia spathulato-angusta integerrima 1 cm, longa 2 mm. lata. supra laxo subtus dense lanata. Capitula purvula 3 mm. longa

ad apicem caulis in cymas densas foliis floralibus quasi involueratus 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, Corollae ♀ filiformes truncatae ; ♀ regulares 2 mm. longae tubulosae, limbis ampliatis subcampanulatis apice 5-fidis pauca pilosis. Anthene basi sagittatae, auriculis tenuissime caudato-appendiculatis. Stylus breviter 2-fidus, ramis obtusis. Achaenia parva oblonga subteretia ecostata glabra : pappi setae 1-seriatae tenues breviter valdeque barbellatae basi subeounatae.

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 Mel. Biol, XI. p. 235; FORBES et HEMSL. Ind. Fl. Sin. T. p. 425.

Aniennaria 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. *anyuslifoliwn* FRANCH. et SAVAT Enum. Pl. Jap. I. p. 242.

Antennaria japonica MIQ. Prol. Fl. Jap. p. 110.

forma **nana**. Humiles circ, 5 cm. altae, caulibus simplicibus,

Folia parvissima oblonga vel oblongo-linearata 6 mm. longn 1 mm-1½ mm, lata apice crassiusculo-apiculata lanata.

HAB. in monte Morrison, ad 10000 ped. alt.

forma **morrisonicola**. Altiores 10-15 cm. altae, caulibus simplicibus. Folia parviora oblongo-lanceolata vel oblongo-linearata circ. 2½ cm. longa 3 mm. lata uristato-apiculata vel obtusa supra glabra subtus lanata.

HAB. In monte Morrison, ad 5000 ped. alt., leg. R. TORII, 1899; Giyokusau, ad 10634 ped. alt., (No. 711), et Ganzan, ad 9141 ped. alt., (No. 705), in montibus Morrison, leg. S. NAGASAWA, Nov. 1905; Tozan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906 ; in monte Morrison, ad 8000 ped. alt. (No. 1707), 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); Nanto : 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 Amunuland and Kumtchatka : also in North America and naturalized in Europe.

Anaphalis Nagasawai HAYATA, (Pl. XVIII.), in Tokyo Bot. Mag. XX. p. 15. Herbae perennans erectae lanatae stoloniferae 4 cm.-5 cm. altae tenuiusculae, radicibus ligniscentibus. 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 sequantim heterogama ; fioribus ♀ 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. Corolla, fl. ♀ filiformes, 4-dentatae apice glanduloso-pilosee ; fl. ♀ tubulosae, limbo ampliato subcampanulato apice 5-fido minuto papilloso-marginato. Antherae apice appendiculatae, appendicibus obtusis, basi sagittatae caudatae. Styli fl. ♀ filiformes minute 2-lobi; fl. ♀ apice breve 2-lobi, ramis truncatis. Achamia oblonga minutissime hirtello-papillosa subtetia 1 mm. longa ♀ mm. in sectione aequantia ; pappi setae tenues 1-seriatae seabrae liberae caducae 6 mm. longae.

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. nitakayalnense* 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 *Anapholis* from *Gnapholium* 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. 420.

Gnapholium 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.

Gnapholium lineare HAYATA, sp. nov. (Pl. XIX.). Herbae graciles sericeo-lanatae. Caules erecti tenuissimi simplices 20 cm, alti foliis caulinis remote instructi. Folia radicealia sessilia linearia 7 cm. longa 1½ mm. lata apice obtusa basi decurrentia, caulina radicealia conformia alterna breviora basi semi-amplexicaulia exsicco revoluta supra subglabra subtus sericeo-lanata. Capitula ad apicem caulium in axillis densas foliis floralibus quasi involucratas circ. 10 conferta. Cyma capitulorum depresso-globosa 2½ cm. in diametro requans, foliis floralibus 5-10, 2-seriatis linearibus circ. 1 cm. longis 1 mm. latis apice obtusis basin versus dilatatis intus subglabris extus plus minus lanatis. Involucrum ovoideum 4 mm. longis 2 mm. latum, bracteis 2-3-seriatis scariosis apice fuscis, interioribus spatulatis integris vel paucis laevibus 4 mm. longis 2/3 mm. latis, exterioribus brevioribus latioribus obovatis dorso lanatis. Receptaculum leviter concavum minute muricatum. Fl. ♀ in ambitu ∞-seriati; corollae tubiformes 3 mm. longae apice breviter 2-3-fidae; styli rami elongati recurvi. Fl. ♀ in disco paucissimi 1-4, tubulosi tenues, limbo purpureo ampliato 5-dentato, dentibus triangularibus marginatis; antherae basi sagittatae, auriculis stipe paucifloris tenuiter eandem appendiculatis: styli

rami subteretes apice subcapitati. Achmnia oblonga $\frac{1}{2}$ mm. longa teretiuscula ecostata minute paucisque glanduloso-tuberculata, pappi sotis 1-soriatis tenuibus eaducis scariosis 3 mm. longis.

HAB. Tozan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, leg. T. KAWAKAMI et U. MORI, Oct. 1906 (No. 1905).

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. Camp. p. 331; DC. Prodr. VI. p. 230; MIQ. Fl. Ind. Bat. II. p. 91; BENTH. Fl. Anstr. III. p. 653; SONDER, Fl. Capens, III. p. 262; CLARKE, Comp. Ind. p. 114; HEMSL Biol. Centr.-Americ. II. p. 139; HOOK. f. Fl. Brit. Ind. III. p. 288; HENRY, List Pl. Formes. p. 53; HAYATA. Comp. FORBES. p. 32; MATSUM. et HAYATA, Enum. Pl. Formes, p. 210.

HAB. in monte Morrison, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1900, (Nos. 1980 et 2044); Nanto: 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 Tokyo Bot. Mag, XX. p. 14. Herbae percunes erectae dense lanatae 6-7 cm. altae validiusculae. Folia alterna integerrima sessilia oblanceolata vel spathulato-obovata 1-1½ cm. longa 5 mm. lata. Capitula parva obovoidea 1 cm.-1½ cm. in diametro aequantia ad apicem caulis 2-3 conferta vel solitaria, floribus in ambitu ♀ ∞-serratis, ♀ paucioribus, omnibus fertilibus, Involucrum obovoideo-campanulatum, bracteis 4-5 soriatis scariosis albis, extimis dorso lanatis, intimis linoaribus, interioribus

oblongis 8 mm. longis. Receptaculum planum foveolatum. Corollae ♀ filiformes, minute 4-dentatae; ♀ regulares tubulosae, limbo parum umpliato 5-fido. Anthorra apice appendiculatae basi sagittatae, auriculis caudato-appendiculatis. Styli fl. ♀ rami subteretes apice subcapitati. Achaenia oblongo-obovoidca teretiuscula ecostata glabra minute papillosa 7/8 mm. in sectione requantia ; pappi setae 1-seriatae teuves caducissimae 4 mm. longae.

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. 1006.

The present plant is remarkable in having general appearance of *Anoplialis*. As the disc flowers are all fertile, however, this should be referred to *Gnaphalium*,

Carpesium LINN.

Carpesium acutum HAYATA., sp. nov. Herbae rigidae basi suffruticosae erectae ramosae puberulae vel tomentosae 2-3-ped. altae, 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 diametria requantia cernua ad axillas foliorum longe podunculata, floribus in ambitu ♀ ∞-soriatis discisque ♀ fertilibus, Involucrum campanulato-semiorbiculatum, bracteis sub-4-seriatis, interioribus angustis 4. mm. longis obtusis vel acutis seariosis, extimis 5-6 foliaceis lanceolatis dentatis 2½ cm, longis, Receptaculum planum muricatum. Corollae fl. ♀ brevis tubulosae 1½ mm. longae 5-dentatae; fl. ♀ longiores 3 mm. longae achaenium requantes, limbo paulo latiore ; 5-dentatae. Autherae apice appendiculatae

rotundato-truncato basi sagittate, aucticulis caudis setaceo-subramosis appendiculatis. Styli fl. ♀ rami latiores complanati apice rotundati, Achmnia elongata teretia circ, 4 mm. longa 10-striata apice in rostrum glanduloso-punctatum longum vel breve contracta, annulo obscure 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.

Stegesbeckia LINN.

Siegesbeckia orientalis LINN. Sp. Pl. ed.-2, p. 1269; ROXB. Fl. Ind. ed.-CABEY, III. p. 439 ; Lotm, 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, Compo 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. T. p. 433; HENRY, List Fl. Formes, p. 54; DIELS, Fl. Centr. Chin. p. 615; HAYATA, Comp. Formes. p. 17; MATSUM, et HAYATA, Enum. Pl. Formos. p. 205.

HAB. Toroku : Kureikiaku, leg. T. KAWAKAMI et U. MORI, Nov, 1906, (No. 1818).

DISTRIB. Cosmopolitan 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, Camp. Formes. p. 20; MATSUM. et HAYATA, Enum, Pl. Formes, p. 205.

HAB. Kodensho : 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; THUKB. Fl. Jap. p. 320; FORBES et HEMSL. Ind. Fl. Sin. T. p. 437; DIELS, Fl. Centr. Chin. p.617.

Pyrethrum idicum CASS.; MAXIM. in Mel. 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: Tohozan, 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. YI. p. 100; BENTH. Fl. Hongk. p. 186; FRANCHET, Pl. David. p. 168; MAXIM. in :Mel. 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.-CABEY, III. p. 420 ; HOOK. f. Fl. Brit. Ind. III. p. 322.

Artemisia cuneifolia nc. Prodr. VI. p. 126.

HAB. Tappansha, ad 3138 peel. alt., leg. S. NAGASAWA, Oct. 1905, (No. 786); Kagi : Kodensho, leg. T. KAWAKAMI et IT. MORI, Oct. 1906, (No. 1740); Tozan, 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 Tokyo Bot. Mag. XX. p. 16. Herbae perennes basi suffruticosae hirsutae odoratae multicaules, caulibus simplicibus 10 cm.-16 cm. altis, Folia alterna ambitu obovata 2 cm. longa 1 cm. lata basi longe angusta decurrentia sordidamplexicaulia bipinnatisecta, segmentis utrinque 2-3 obovatis 2-3 lobatis, lobis ovato-acutis. Capitula majuscula 1 cm. in diametro requantia erecta rarius cernua racemosa longe pedicellata, pedicellis 2 cm, longis. Involucrum late campanulatum, bracteis 3-seriatis margine scariosis, intimis 5 mm. longis spatulatis, interioribus oblongis margine denticulatis, exterioribus gradatim minoribus ovato-acutis. Receptaculum semi-orbiculatum sparse pilosum. Fl. ♀ in ambitu 1-seriati fertiles; corollae tenues tubulosae apice breviter 4-fidae. Fl. ♀ fertiles; corollae teretes limbis parum ampliatis basi limbi constrictis apice 5-fidis. Antherae apice appendiculatae basi obtusae, Styli rami apice truncati dilatati penicillati, Achaenia obovoidea compressa 2 mm. longa 1 mm. in sectione requantia leviter incurva apice truncata facie dorsali saepe 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.). Herbae perennes basi suffruticosm, Caulos erectae glabrescentes 15 cm.-30 cm. alti. Folia radicalia eauliuo conformin 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 aeutis, primum pubescentia demurn glabra. Capitula parviora 4 mm. in dininetae requantia erecta racernosa vel paniculatn pedicellatn., pedicellis ½ cm.-1 cm. longis. Involucrum late catnpanulatum, bracteis 2-seriatis margine scariosis obovatis apice rotundatis basi eonstrictis 3 nun. longis 2 mm. latis, Receptaculum serniorbiculatum 1.g mm. in diametro aequans nudum. Flores ♀ in ambitu 1-seriati 15-20, fertiles : corollae breve tubulosae 1 mm. longae apice 2-3-fidae; styli rami elongati recurvati. Fl. ♀ steriles; numerosi ; corollae tubuloso-campanulatae 2½ mm, longte, limbis longe ainpliatas tubum in longituclino roquantibus apice 5-fidis, lobis triangularibus acutis murginatis ; antherae apice appendieulatae apiculatae cuspidato-ucuminatae, basi leviter brevissime caudatre ; stylus inclivisus apice peltato-dilatus minute et longiuscne papillosus. Achrenia oblique obovoidea obscure reticulate-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. Proch. VI. p. 99; MAXIM. in Mel. Biol. VIII. p. 523; FRANCHET, Pl. David. p. 167; HOOK. f. Fl. Brit. Ind. III. p. 323; Fonnns et HEMSL. Ind. Fl. Sin. I. p. 445.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905. (No. 631); Tozan. 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 Kamtchatkn and North America : westward to North India and extends to central Europe.

Petasites GAERTN.

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 CASH.

Gynura flava HAYATA, sp. nov. Herbre sparce hirtellae vel subglabrae. Caules validinsculi 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 augusta in petiolum

2 cm. longum sensim attonuata, auriculis basin petioli distinctis oblongis dentatis, utraque pagino sparce hirtella ad costas et venulas hirsuta subtus pallidiora. Capitula medioerin 1½ 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 requalibus 11 mm. longis 2 mm. latis margine scariosis plus minus coherentibus, additis nonnullis exterioribus parvis linearibus 5 mm. longis ciliolatis. Receptaculum planum foveolatum. Corollae flavae tenuiter tubulosae 13 mm. longae, limbis plurimum ampliatas tubo in longitudine 2-plo brevioribus apice breviter 5-fidis, lobis oblongo-triangularibus. Antherae subexsertae, elongatae 2½ mm. longae basi integrae. Styli exserti cum ramis 17 mm. longi, ramis elongatis erecto-patentibus 5 mm. longis in appendices longas tereti-subulatas hirtellas clesinentibus. Achaenia 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. T. p. 4f57; DIELS, Fl. Centr. Chin. p. 620.

Senecio campylodes DC. Proch. VI. p. 370;

Senecio stiptolatus WALL. ; DC. Prodr. VI. p. 370.

Senecio Wightionus DC.; WIGHT, Ic. Pl. Ind. or. t. 1136.

Senecio chinensie DC. Prodr. VI. p. 368; BENTH. Fl. Hongk. p. 190;
MAXIM in Mel. Biol. VIII. p. 16

Senecio iniennelius WIGHT, Ic. Pl. Ind. or. t. 1135.

Cineraria repanda Lonn, Fl. Cochinch. ed-WILLD. p. G13.

HAB. Tozan, 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:
Hoosan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1927);
Tohosha, leg. S. NAGASAWA, Nov. 1905, (No. (08).

DISTRIB. South China and southern part of Japan; north and
south India, and Ceylon.

Eclia JI ops LINN.

Echinops dahuricus FISCH.; DC. Prodr. VI. p. 523; FRANCHET, Fl.
David. p. 176; HENRY, List Pl. Formes. p. 55; FORBES et HEMSL. Ind. Fl.
Sin. I. p. 159; HAYATA., Comp. Formes. p. 33; MATSUM. et HAYATA, Enum.
Pl. Formes. p. 221.

Echinops Gmelini LEDEB. Fl. Ross. II. p. 653; MAXIM. Prim. Fl. Amur.
p. 167.

Echinops Sphaerocephalus MIQ. in Aun. Mus. Bot. Lugd.-Bat. II. p. 182;
FRANCH. et SAVAT. Enum, Pl. Jap. I. p. 258.

HAB. Taito : Bokusekikaku, leg. T. KAWAKAMI et U. MORI, Dec.
1900, (No. 1832); Arokonsha, 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.

Oirsium Wallichii DC.; Drsts, Fl. Centr. Chin. p. 627.

HAB. Ganzan, in montibus Morrison, ad 6141 ped. alt., Oct. 1905, (No. 778), in monte Morrison, ad 12000 ped. alt., (No. 2245), et in eodem monte, ad 10000 ped. alt., (No. 2270), leg. T. KAWAKAMI et U. MORI, Oct. 1906.

DISTRIB. South China to the Philippine islands, and Himalayne

Saussurea DC.

Saussurea japonica DC. in Prodr. VI. p. 536; BENTH. Fl. Hongk. p. 167; MAXIM. in Mel. Biol. IX. p. 337; HANCE, in Journ. Linn. Soc. XIII. p. 108; FRANCHET, Pl. David. p. 181; FORBES et HEMSL Ind. Fl. Sin. I. p. 464; DIELS, Fl. Centr. Chin. p. 627.

var. **longicephala** HAYATA, n. v. Capitula longiusculu ovoidea, squarnis involucri apice appendieula potaloidea rotundata instructis.

HAB. loco non indicato.

DISTRIB. Type: China, Japan, and Manchurin 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. Taito: Bushisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2168).

Ainsttaea DC.

Ainslirea macroclinioides HAYATA, sp. nov, (Pl. XXII.). Herbae

* 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 suffruticosai pilosiuscula elatiores 60 cm. altae. Folia altera 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 inaequalibus 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 : corollae tubulosae pappi setis 2-plo breviores, apice 5-fidae ; antherae basi longe sagittatae, auriculis in candas longas 2-fidae productis; styli rami obtusi basi incrassati. Achaenia oblongo-obovoidea subcompressa 7 mm, longa apice contracta 10-costata pilosa, stipitibus parvis persistentibus; pappi setae 1-seriatae plumosae 8 mm. longae rufo-albae.

HAB. Suizan, ad 7702 ped, alt., leg. S. NAGASAWA, Oct. 1905, (No. 665); Kagi: Tappansha, leg. T. KAWAKAMI at U. MORI, Oct. 1906, (No. 1971).

Remarkable for the fascicled leaves at the middle of the stem just like those of *Macroclinulium robustum* MAXIM.

Ainslirea morrisonicola HAYATA, n. n. (Pl. XXIII).

Ainslicea elegans HAYATA, (non HEMSL.) in Tokyo Bot. Mag. XX p. 14. Herbae laxae pilosae, caulibus erectis 5-6 cm. altis simplicibus aphyllis, Folia omnia radicealia oblanceolata 15 mm.-20 mm, longa 8 mm. lata apice apiculato-acuta basi subito angusta ad petiolum attenuata vel basi rotundata margine remote ciliate-

aristata, petiolis 10 mm. longis basi dilatis. Capitula 3-4-flora secus eulem 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 : corollae tubulosae pappi setis breviores circ. 4 mm. longae, apice leviter 6-fidae clausae antherae basi sagittatae, auriculis in candas longas productis ; styli basi dilati, ramis angustis, complanatis apice rotundatis. Achaenia obovoideo-oblonga subteretia 5 mm. longa 1 mm. in sectione requantia 10-costata apice truncata glabra ; pappi setae 1-seriate plumosae $5\frac{1}{2}$ mm. longae rufo-albae,

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov. 1905, (No. 628); Tazan, in montibus Morrison, leg. G. NAKAHARA, Nov. 1906.

The plant is originally named *Ainsliaea 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.

Ainsliaea reflexa MERRILL. in Philipp. Journ. Sci. I. Suppl, Bot, p.242.

HAB. Nautas: 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 HEMSL. Ind. Fl. Sin. I. p. 474.

Picris 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.

Laetuca versicolor SCH.-BIP.; MAXIM. in Mel. Biol. IX. p. 362; BAKER, et MOORE, in Journ. Linn. Soc. XVII. p. 383; FRANCHET, Pl. David, p. 188; FORBES et HEMSL. Ind. Fl. Sin. I. p. 485; DIELS, Fl. Centr. Chin. p. 631; HAYATA, Comp. Formos. p. 39; MATSUM. et HAYATA, Enum. Pl. Formes. p.212.

Ixeris versicolor DC. Prodr. VII. p. 151; BENTH. Fl. Hongk. p. 193; MIQ. in Ann. Mus. Bot. Lugd.-Bat. II. p. 191; LEDED. Fl. Ross. II. p. 817.

Prenanthes chinensis THUNB. Fl. J n p. p. 301.

Youngia chinensis DC. Prodr. VII. p. 194.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 775); Taito : Daironkosha, leg. T. KAWAKAMI et U. MORI, Nov, 1906, (No. 2220).

DISTRIB. Japan and China northward to Dahnria ; also in North America.

Campanulaceae

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.

Piddiugtonia Nummularia DC. Prodr, VII. p. 341; BENTH. Fl. Hongk. p.196.

Lobelia Horsfieldiana MIQ. Fl. Ind. Bat. II. p. 577.

HAB. Kodensho, 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. Tozan, 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. aS1; 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, Taito : Bunshisekisha, leg. T.KAWAKAMI et U. MORI, Doc. 1906, (No. 1911).

DISTRIB. Mountains of North and East India, and Bunna ; South China.

Wahlellbergia 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. Formes, p. 56; FORBES et HEMSL. Ind. Fl. Sin. II. p. 4; MATSUM. in Tokyo Bot Mag XIV. p. 58; DIELS, Fl. Centr. Chin. p. 606; MATSUM. et HAYATA, Enum. Pl. Formos. p. 215.

Wohlenbergia agrestis A. DC. Prodr, VII. p. 434; BENTH. Fl. Hongk. p. 197.

Wahlenbergia marginata A. DC. Prodr. VII. p. 433; FRANCH. et SA VAT. Enum. Pl. Jap. I. p.277.

Wahlenbergia dehiscens A. DC., *W. Suberi* A. DC., *W. lavandulaefolia* A. DC. et *W. quadrifida* A. DC., ex CLARKE, in HOOK. f. Fl. Brit. Ind. m. 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.

Ooanpamumuea BL.

Campanumaea 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); Taito : Bnnshisekisha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2102).

DISTRIB. The Loo-choo islands, westward to central and southern China, and Burma.

Campanumrea 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.

Campanumaea japonica MAXIM. in Mel. Biol. VI. p. 268.

HAB. Taito: Rokuro, 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 carnosus HOOK. f. et THOMS. in Journ. Linn. Soc. II. p. 26; CLARKE, in HOOK. f. Fl. Brit. Ind. III. p.437.

Peracarpa circaeoides H. FEER, in ENGL. Bot. Jahrb. XII. p. 621.

Campanula carnosus WALL. "in ROXB. :Fl. Ind. II. p. 102"; DC. Prodr. VII. p.474.

Campanula circaeoides F. SCHMIDT. Reis. in Amur. pp. 154: et 222, t. m. 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; Tozan, 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.

Aenophora FISCH.

* **Adenophora verticillata** FISCH.; DC. Prodr. VII. p. 492; HERDER, Pl. Radd. IV.-1, p. 28; FRANCH. et SAVAT. Enum. Pl. Jap. n. 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. (50).

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. Nanto: Mnshasan, ad 75,00 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 LEDER. 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. 2200, 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 islands 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 the stump after the stem is cut they are arranged alternately. Mr. T. MAKINO also refers to this point in Tokyo Bot. Mag, XX. p. 39, where he expresses his opinion that *A. verticillata* FISCH. r. *alternifolia* FRANCH. et SAVAT. is nothing but a sport of the type.

Vacciniaceae

Vaccinium LINN.

Vaccinium emarginatum HAYATA, Sp. nov. Frutices ramosi cortice cinereo vestiti, ramulis glabris in exsiccato rufoscentibus. Folia oblonga vel oblongo-obovata eire. 5 cm, longu 2 cm. lata. margine integerrima revoluta apice emarginata basi sensim attenuata crasse coriacea nitida pallida a subtus pallidiora breve petiolata, petiolis 4 mm. longis. Flores in racemes breves axillares folio 2-plo breviores fasciculatim dispositi, bracteis 2 subulatis. Calycis tubus globosus, limbo 5-lobus, lobis longe triangularibus. Corollae ignotae. Baccae oblongo-globosae 8 mm. longae 10-loculares, loculis polyspermis. Semina minuta ovoidea 1½ mm, longa 1 mm. lata compressa angulata testa coriacea reticulata.

HAB. Tozan, In monte Morrison, leg. G. NAKAHARA, Oct. 1906; eodem loco, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1947) ; Nanto : Mushasan, ad 7500 ped. alt., leg. T. KAWAKAMI et U. MORI, Aug. 1906, (Nos. 71461, 1178 et 1143); Taito : Iryokukakushu, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2166).

Vaccinium Merrillianum HAYATA, sp. nov. (Pl. XXIV.). Frutices ramosissimi, ramulis ad innovatiouem squarnatis rufescentibus hispido-tomentosis. Folia parvula approximata obovata eire. 8 mm. longa 5 mm, lata apice rotundata emarginata basi cuneata breve petiolata, petiolis 1 mm.-2 mm. longis, integerrima margine albolamelligera supra nitida in exsiccato profundo rugosa subtus laevia pallidiora crasse coriacea. Flores in racemes terminales dispositi. Calycis lobi 5, lobis late triangularibus. Baccae globosae, circ. 1 cm. in diametere roquntes 10-loculares, loculis oligospermis. Semina

minuta obovoidea compressa testa coriacea minute reticulata 1½ mm-longa 1 mm. lata.

HAB. Seizan, in montibus Morrison, ad 11707 ped. alt., leg. S. NAGASAWA, Nov, 1905, (No. 573); Tozan, 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.

Ericaceae

Gaultheria LINN.

Gaultheria Cumingiana VIDAL, Phanerog. Cuming, p.184, et Rev. Pl. Vascul, Filip. p. 170; HAYATA, in Tokyo 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 Itoana HAYATA, (Pl. XXV.), in Tokyo Bot. Mag. XX. p.74. *Gaultheria repens* HAYATA, in Tokyo Bot. Mag. XX. p. 18. Suffrutices decumbentes v. erecti 10-15 cm, alti sparse 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 racemes 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 persisteantibus. Calyx 5-partitus 2 mm. longus, lobis acutis. Corolla

lata globosa urceolata 6 mm. in diametro requans 4 mm. longa apice 5-loba, lobis brevissimis 0.5 mm. longis erectis recurvis. Stamina 10 basi tubi corollae adherentia inclusa, filamentis glabris supra basin dilatis quam anthera longioribus, antheris 2-ocularibus, loculis in tubos recurvos apice fncatos productis. Discus non conspicuus. Ovarum 5-loculare 5-lobum leviter pubescens, stylo columnnri 4 mm. longo apice truncate. Calyx fructifer accrescens persistens carnosus depresso-globosus 6 mm.-7 mm. in diamctae rcquans. Capsulae sparce pubescentes intra calycem inelusae, loculicide 5-valyatae polyspermae. 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); Tozan, in isdem montibus, leg. G. NAKAHARA, Nov. 1906; in monte Morrison, ad 12000 ped. alt., Oct. 1906, (No. 2134), ad 9000 ped. alt., (No. 1 727), 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.

Pteris 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 Tokyo Bot. Mag. XIV. p. 59; MATSUM. et HAYATA, Enum. Pl. Formes. 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; Taito : Daironsan, leg. T, KAWAKAMI et U. MORI, Nov. 1906, (No.

2184); Nauta: Mushazan, ad 7000 ped. alt., leg. T. KAWAKAMI at 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. m. 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 Mel. Biol. VIII. p. 620; WIGHT, Ic. Pl. Ind. or. t. 1199.

Andromeda elliptica SIEB. et ZUCC. Fl. Jap. Fam. Nat. n, 433.

HAB. Nanto : Shojodaizan, 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 Mel. BioI. XII. p. 742; FORBES et HEMSL. Ind. Fl. Sin. II. p. 22; TASHIRO, in Tokyo Bot. Mag. III. p. 201 ; MAKINO, in Tokyo Bot. Mag, XVIII. p. 47, et Icones Floras Japonic. I.-3, p.15, t. 9.

HAB. Ako, ad 8000 ped. alt., leg. T. KAWAKAMI? 1907 ; Bioritsu : Bahozan, 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 Tokyo Bot. Mag. XX. p. 72.

Frutices humiles ramosi, rarnis 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 snbtus 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 ciroumvallntis. Sepala obovata spathulata 4 mm. longa extus et margine longe strigoso-ciliata, Corolla campanulata 2½ cm. longa 5-fida, lobis obovatis apice rotundatis tubo brevioribus. Stamina 10, corollam superantia, fllamontis 2½ cm. longis infra medium pilosiusculis, antheris obovoideis apice truncatis 2-porosis. Ovarium longe et dense setosnm. 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; Fonnrs et HEMSL. Ind. Fl. Sin. II. p. 28; HENRY, List Pl. Formes. p. 57; MATSUM. ot HAYATA, Enum. Pl. Formes. p. 218.

HAB. Toroku : Kasogi, leg. rr. 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 mollissimi 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 $\frac{1}{2}$ aequantibus glanduloso-villosis, Calyx 5-partitus, lobis lanceolatis longissime acuminatis 5 mm-15 mm, longis. Corolla campanulato-infundibuliformis 4 cm. longa, tubo lobum in longitudine eequante, Stamina 10, corollam subaequantia, filamentis basin versus pubescentibus, antheris oblongis apice truncatis 2-porosis. Ovarium glanduloso-setosum.

HAB 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 cretorum 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 sequantibus. Calycis lobi acuti, Corolla rotato-campanulata, lobis rotundatis leviter emarginatis, Stamina 10, antheris oblongis apice truncatis, filamentis inaequalibus basi leviter dilatis pubescentibus. Ovarium ovoidem 5-loculare 5-sulcatum pubescens, stylo corollam vix superanti basi glanduloso-piloso declinato, stigmato capitate 5-lobo. Capsula oblonga 1 cm. longa vel longiora lignosa 5-locularis apice septicide dehiscens. Semina scobiformia 1½ 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; Nanto: Mushazall, 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 Tokyu Bot. Mag. XX. p. 15.

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-rotundata subtus prominente venosa glaberrima. Racemi 15 cm, longi. Flores ignoti. Capsula depresso-globosa cornua 5-6 mm. in diametro aequans, Semina minutissima 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. 1800).

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. 773; MAXIM. :Mel. 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.

Diapensiaceae

Shortia TORR. et GR.

Shortia rotundifolia (MAXIM.) MAKINO, in Tokyo Bot. Mag. XV. p. 149.

Schizocodon rotundifolius MAXIM, in Mel. Biol. XII. p. 743; FORBES et HEMSL. Ind. Fl. Sin. II. p. 84.

HAB. in monte Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2283); Nanto : 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.

Primulaceae

Prinuula LINN.

Primula Sp. Herbae annuae. Folia radicalia spatulata circ. 13 cm. longa 2½ cm. lata apice rotunda ta ad medium deorsum sensim attenuata basi leviter dilata snrsum arguto denticulata deorsum subintegra. Scapi elongati 30 cm. longi. Flores in verticillos 2-3 superpositos dispositi, bracteis linearibus, pedioellis 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.

Lnstsn.aclici LINN.

Sysimachia 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 Tokyo 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. Taita: Tokoisha, leg. T. KAWAKAMI et U. MORI, Dec. 1905. (No. 1929).

DISTRIB. Japan.

Myrsineae

There is three distinct species belonging to *Ardisia* and two species to *Maesa* ; but they are not yet determined.

Styraceae

Symplocos LINN.

Symplocos confusa BRAND. in ENGL. Pfl-reich, IV.-242, Symploc. p.88.

HAB. in monte Morrison, ad 7000 pede 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 rarins obscure erenata supra costis impressis venulis obscuris, subtus promiuentibus 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 uumerosa ∞ -seriata corollae tubo adnata, exterioribus longioribus filamentis complanatis apice abrupte angustis fere usque ad medium in tubum coalitis, antheris brevibus facie dorsoque minute papillois, loculis parallelis longitudinaliter dehiscentibus, Ovarium apice pilosum semi-inferius 2-loculare, loculis 2-ovulatis, ovulis pendulis ex angulo superiore,

Stylo filiformi pilosissimo, stigmatate capitate. Fructus (immaturi ?)
carnosi cylindracei apice truncati.

Symplocos modesta BRAND, in ENGL. Pfl.sreich, IV. 242 Symploc. p. 66.

Symplocos myrtacea HEMSL. in FORBES et HEMSL. Ind. Fl. Sin. II. p. 73; MATSUM. et HAYATA, Enum. Pl. Formes. p. 230.

HAB. Taito: 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 21 cm. longum attenuata 7 cm. longa 2 cm. lata basi cuneata, supra costis impressis venulis leviter prominentibus, subtus costis et venulis prominentibus, Raccmi ad axillas foliorum inferiorum ramulorum novellorum solitarii laxiflori vel densiflori folio breviores gracillimi, Flores longe pedicellati, pedicellis 1-2 cm. longis basi pedicelli 2- bractcatis, bracteis parvis ciliatis triangularibus costatis. Calyx longe campanulatus glaber viridis 3 mm, longus, lobis 5 rotundatis margine ciliatis. Corolla patens 5½ mm. longa, tubo brevissimo, 5-loba, lobis ovatis apice rotundatis margine obscure ciliolatis imbricatis, Stamina numerosa cc-seriata, exterioribus longioribus corollam excedentibus, ad basin corollae adnata basi connatu, filamentis subcomplanatis, Ovarium inferius 3-loculare, loculis 2-ovulatis, stylo filiformi, stigmatate truncate. 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. Racerni 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-lobata, lobis ovatis apice rotundatis imbricatis. Stamina circ. 20, sub-2-seriata ad basin corollae adnata exterioribus longioribus, filamentis complanatis basi connatis corollam excedentibus, antheris brevibus, loculis parallelis longitudinaliter dehiscentibus. Ovarium inferius 3-loculare, loculis 2-ovulatis, ovulis penicillatis ex angulo superiore, style filiformi, stigmata capitato obscure 3-lobato. Fructus ignoti.

HAB. Suizan, in montibus Morrison, ad 7702 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 737); Tozan, 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),

Neal' *S. modesia* BRAND; but differs from it in having shorter racemes, subtentive leaves and pubescent branchlets.

Symplocos spicata ROXB. Fl. Ind. ed-CAREY, II. p. 541; A. DC. Proch. 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. Formes. p. 58; MATSUM. in Tokyo Bot. Mag. XV. p. 77; DIELS, Fl. Centr. Chin. p. 528; MATSUM. et HAYATA, Enum. Pl. Formes. p. 231.

Lodkera spicata MIERS, in Journ. LINN. Soc. XVII. p. 298.

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

DISTRIB. Japan, south central China, and North and East India.

Oleaceae

Osmanthus LOUR.

Osmanthus sp. nov. ? Folia alterna rigide coriacea lanceolata 10 cm, longa 2½ cm. lata longe acuminata basi acuta petiolata, petiolis 1 cm. longis. Flores ad axillas foliorum eire. 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 2½ mm. longis late ovatis subclausis. Stamina 2 ad medium tubi corollae affixa, antheris suborbicularibus, connectivis latis npiculatis. Ovarium conicum, stylo ovario longiore, stigmatate peltato crasso 2-lobo. Fructus ignoti.

HAB. Tozan, 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 (exsiccate) reticulate-rugosa subtus obscure venosa, petiola ta , petiolis 1 cm, longis. Flores ad axillas foliorum circ. 10 fusciculati, 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 corollae affixa, filamentis brevibus, antheris oblong is npiculatis. Ovarium conicum, stylo brevi, stigmatate conico 2-lobo. Fructus ignoti,

HAB. in monte Morrison, ad 8000 ped. a lt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2003).

Asclepiadeae

Dischidia H. BR.

Dischidia formosana MAXIM. in Mel. Biol. IX. p. 822; FORBES et HEMSL. Ind. Fl. Sin. II. p. 116; MATSUM. et HAYATA, Enum, Pl. Formes. p.240.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 581).

DISTRIB. An endemic plant.

Loganiaceae

Eoqanda R. BR.

Logania dentata HAYATA, n. n. (Pl. XXVIII.).

Nertera deniaia ELMER, in Leafl. Philipp. Bot. I.-1, p. 15.

Herbae humiles repentes in totum hispidae, ramis ad nodes 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 glabratis. Calyx 3 mm. longus 4-partitus, segmentis lanceolatis extus glabratis, intus et margine sericeo-setulosis crassiusculis. Corollae tubus urceolatus, limbo 4-lobo, lobis patentibus rotundatis.

Stamina 4 infra faucem tubi affixa, filamentis brevibus, antheris oblongis. Ovarium globosum 2-lobum. stylum subsequans 2-loculare, loculis ∞ -ovulatis. Capsula globosa 6 mm, in diametro aequans rubra 4 valvis dehiscens. Semina numerosa ovoida $\frac{1}{2}$ mm. longa laevia minute reticulata.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. (39); 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 deniata*, 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 Rubiacoro, but must be referred to Loganiaceae. 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* H. BR, It also bears some resemblance to *Polypreum* 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.*

Gentianaceae

Crawfordia WALL.

Crawfordia fasciculata WALL.; DC. Prodr, IX. p. 120; CLARK, in HOOK. f. Fl. Brit. Ind. IV. p. 107; S. MOORE, in Journ. Bot. (1875) p. 231 ; Bot. Mag. t. 4838; FORBES et HEMSL. Ind. Fl. Sin. II. p. 122; HENRY, List Pl. Formos. p. 61; Drers, Fl. Centr. Chin. p.538; MATSUM. et HAYATA, Enum. Pl. Formos. p. 243.

Crawfordia japonica SIEB. et ZUCC. Fl. Jap. Fam. Bat. II. p. 36, n. 516; FRANCH. et SAVAT. Enum. Pl. Jap. I. p.324; MAXIM. in Mel. Biol. IX. p. 399; 8. MOORE, in Journ. Bot. (1880), p. 4.

Golowninia japonica MAXIM "in Bull. Acad. Imp. Sc. Petersb. 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 has just returned to Manila from his trip, that he thinks the Philippine plant *Xertera detdata* ELMER to be referable to *Hemiphragma heterophylla* 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*) *ceespitosa* HAYATA, Sp. nov, Herbae hunillimae perennes rigidiuseulae glabrae cespitosae, caulibus ascendontibus 4 cm. altis simplicibus multifoliatis. Folia approximata opposita plicata leviter recurva prominente costata ovata 5 mm. longa 2½ mm. lata aristato-acuta basi truncata, vaginis interpetiolaribus 1 mm. longis hyalinis, crasso cartilagine margine albo-lamellata apicom versus obscure basin arguto denticulata. Flores terminales solitarii 17 mm. longi. Calyx campanulata-tubuliformis 7 mm. longus 5-lobus, lobis 3 mm. longis angustis ucutis crassiusculis, sinibus inter lobos aetis. Corolla tubulosa campanulata 17 mm. longa 5-10ba, lobis 3 mm. longis late ovatis, sinibus inter lobes plicatis, appendiculatis triangularibus. Stamina 5 inclusa, filamentis ad medium aduatis. Capsulre compresso-obovatae 6 mm. longae ad suturas 2-valvis dehiscentes, valvis margine denticulatis, stipitibus longis capsulam in longitudine 2-plo sperantibus, stylis persistentibus 2-fidis 2 mm. longis spiraliter recurvis, Semina oblonga unguolata 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. inicans* 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. Herbae humiles glabrae, caulibus repentibus apice ascendentibus gracilibus 8-10 cm. longis, foliis basin versus remote apicem versus approximate dispositis, Folia caulium 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 obracteati. Calyx tubuliformis 12 mm. longus 5-lobatus, lobis linearibus 3 mm, longis, sinibus latis truncatis. Corolla campanulato-tubuliformis 2.5 cm. longa, fance tubi nuda 5-loba, lobis patentibus eontortis rotundato-acutis, sinibus plicatis, appeudiculis 0. Stamina 5 tubo corollae affixa inclusa : antheris linearibus, connectivis apiculatis. Ovarium stipitatum 1-loculare apice in stylum brevem pubescens 2-divisum attenuatum, stigmatibus lamellatis revolutis, Capsules oblongte cum stylo stipiteque 22 mm, longai, stipite capsula brevior 6 mm. longo, ad suturas 2-valvis revolutis clehiscentes. Semina ovoidea compressiuscula 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 (§ *Chndrophylla*) **flavescens** HAYATA, sp. nov, Herbae annum minute scabriusculae vel glabratae, caulibus gracilibus. Folia opposita angusto-obovata 8-mm. longa 2½ 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 4½ mm. longus 5-lobatus, lobis 1½ mm. longis cuspidato-aouminutis. Corolla tubuloso-campanulata 12 mm. longa, lobis primariis 5, 2½ mm. longis triangularibus, lobis secundariis 5 ad sinus plicatos lobo primario mquilongis cnspidato-aoutis tenuissimis. Stamina 5 tubo corollae affixa, filamentis ad medium adnatis, antheris oblongis 1 mm. longis basi sagittatis apice emarguatis. Capsulae obovatae 6 mm. longae longe stipitatae corollam excedentes, stipitibus 12 mm. longis, stylis linoaribus 2-divisis complanatis

pilosiuseulis spiraliter revolutis. Semina oblonga angulata $2/3$ mm. longa minute longitudinaliter reticulate-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 Shiehiseiton-zau, 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. Tozan, montibus Morrison, leg. S. NAGASAWA, Nov. 1905. DISTRIB. Western Tibet.

Gentiana (§ *Chondrophylla*) *tenuissima* HAYATA, sp. nov. Herbae humillimee 6 cm. alte glabre tenues. Folia radicalia conferta lanceolato-ovata 1 cm, longa 5 mm. lata apice acuta basi abrupte angusta sessilia 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 cristato-acutis, sinibus inter lobos latis truncatis. Corolla multilobata 5 mm. longa 5-lobata, lobis 1 mm. longis rotundato-acutis, sinibus plicatis obscure lobatis. Stamina 5 tubo corollae affixa inclusa, filamentis supra medium liberis. Ovarium stipitatum oblongo-obovoidum cum stipitibus 3 mm. longum, stylo brevi $\frac{1}{2}$ mm. longo stigmate 2-lamellato recurvo. Capsulae obovatae 3 mm. longae longe stipitatae, stipitibus capsulae 2-plo in longitudine superantibus, ad suturas 2-valvis dehiscentes, valvis patentibus revolutis marginibus

minute serratis, Semina oblonga $\frac{1}{2}$ mm. longa longitudinaliter reticulata utrinque attenuata.

HAB. Taito : Gozenjo, 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. Herbae annum paucifoliatae scabriusculae, caulibus 20 cm. longis atropurpureis pauciramosis. Folia radicalia caulino conformia 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 praeter 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 spatulatis 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 corollae affixa, filamentis ad insertionem dorso dilatis, antheris angustis basi sagittatis apice obtusis, Capsulae ovatae 7 mm. longae longe stipitatae, stipitibus 20 mm. longis capsularum 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. Herbae annuae 2-3 ped. altae

glabne, caulibus tetragonis totapteris, 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. Corollae 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 corollae affixa, filamentis complanato-filiformibus basi dilatis, antheris subsagittatis apiculatis. Ovarium ovoideum apice attenuatum, stylo subnullo, stigmato 2-lanceolato, lobis brevissimis latisque leviter recurvis. Capsulae oblongo-ovatae circ. 1 cm. longae 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. tetraplera* MAXIM., but differs from it in having mostly 3-nerved and sessile leaves and particulate racemes ; from *S. pulchella* HANCE, in having prominent wings and much smaller petals.

Swertia sp. Herbae basi suffruticosae circ. 1 ped. altae. Folia oblonga 3 em. longa apice obtusa basi angusta ad petiolum attenuata. Flores paniculato-racemosi. Capsulae 6 mm. longae.

HAB. Ganzan, in montibus Morrison, ad 9140 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 642); Tozan, in isdcm montibus, leg. G. NAKAHARA, Nov. 1906.

Hydrophyllaceae

Ellisiophyllum MAXIM.

Ellisiophyllum pinnatum MAKINO, in Tokyo Bot. Mag. XX. p. 92.

Hornemannia pinnaia BENTH. in DC. Prodr. X. p. 428.

Sibikorpia pinnaio. 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.

Eaisiopltyllum replans MAXIM. in Mel. Biol. VIII. p. 18; FRANCH. et
SAVAT. Enum. Pl. Jap. I. p. 1329.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U.
MORI, Oct. 1900, (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. pinuaium MAKINO, assuming that *Moseleya pinnata* HEMSL. is the
same as *Ellisiophyllum replans* MAXIM.; for *Ellisiophyllum* is older
name than *Moseleya*, and the specific name *pinnate* is lunch so
than *replans*.

Boragineae

Cynoglossum LINN.

Cynoglossum micranthum DESF.; DC. Prodr. X. p. 149; MAXIM. in
Mel. 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. n. p. 150; BENRY, List Pl. Formes, p. 63; MATSUM. in Tokyo
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 furcoium WALL.; WIGHT, Ic. Pl. Ind. or. t. 1395.

HAB. Kagi: Shakkosho, leg. T. KAWAKAMI at 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. Herbre pereunes pilosae scaberrimae, caulibus ascendentibus 10 cm. longis stoloniferis. Folia radicalia et inferiora longe petiolata, petiolis 5 cm. longis laminam eequautibus setuloso-pilosis, laminis oblongis vel spathulatis 7 cm, longis 2½-3 cm. latis apice truncato- vel retuso-mucronatis basi acuminatis membranaceis crassiusculis margine integris repandis supra pilis setnlosis brovissimis 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 eymas scorpioidales ramosas vel simplices racemosas elongatas dispositi, breve pedicellati pecllicellis 1 mm. longis. Calyx 5-fidus, lobis obovatis 1½ mm. longis obtusis intus et extus pilosiusculis, fructifer vix auctus. Corolla rotata 2½ mm. longa, tubo brevi 1 mm. longo fauce squamis brevibus crassis subfornicatis subclausis instructo, lobis 5 imbricatis patentibus late orbicularibus basi breve angustis ½ mm. longis. Stamina 5 supra medium tubi affixa inclusa, filamentis brevibus, antheris oblongis obtusis. Ovarium dpresso-globosum 1/4 mm. longum ½ mm. latum 4-lobatum, lobis distinctis, style brevi ½ mm. longo, stigmate capitato. Nuculae 4, obpyramidales ad angulas costatre 1 mm. longae vel vix longiores erectae laeves facio snperioro planae truneatae pauce setulosae, cmterum glabrae.

HAB. Sanchoki, ad 4000 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 724); Magi: Kishirei, leg. T. KAWAKAMI ct U. MORI, Oct. 1906,

(No. 1969); Taito: Dakunsha, leg. T. KAWAKAMI et U. :MORI, Dec. 1906, (No. 2230).

Solanaceae

***Solanum* LINN.**

Solanum sp, Herbre tenues scandentes pubescentes ad nodos rudicantes, Folia ovata 5 ern, longn 3 cm. lata petiolata, petiolis lamina 2-plo brevioribus, apico obtusa acuta basi rotundata subito attenuata ad petiolum abeuntia membranacca utrinque ad costas pubescentia croterum glabra. Flores axillares longe pedunculati, solitarii, pedunculis petiolum vix snperantibns. Bacca globosa 1 cm. in diametro aequans,

HAB. Nanto : Itakurakusha, leg. G. NAKAHARA, Aug, 1905, (No. 460); 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 fnlly known.

Scraphularineae

***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. NAKAHAHA, Nov. 1905.

DIBTRIB. Type: Central China and Japan.

Mazus LOUR.

Mazus rugosus Loun. Fl. Cochinch. ed.-WILLD. p. 468; BENTH. in DC. Prodr. X. p. 375, et Fl. Hongk. p. 247; MAXIM. Prim. Fl. Amur. pp. 205 et 4: 7 5, et in Mel. 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. Pl. Korere, II. p. 20; MATSUM. et HAYATA, Enum. Pl. Formos. p. 275.

Mazus vandellioides HANCE, in WALL. Ann. III. p. 193.

Lindernia japonica THUNB. Fl. Jap. p. 253.

Mazus japonica O. KUNTZE, Revis. Gen. Pl. II. (1891) p. 462"; MAKINO, in Tokyo Eot. Mag. XIV. p. 170 ;

HAB. Tozan, 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. 18 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. 1906, (No. 670).

DISTRIB. South central China, India and Malay.

Bonnaya LINN. et OTTO.

Bonnaya veronicrefolia SPRENG. ; BENTH. in DC. Prodr. X. p. ,121, et Fl. Hongk. p. 252; MIQ. Fl. Ind. Bot. II. p. 696; MAXIM. in Mel. 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. Formes, p. 68; MATSUM. et HAYATA, Enum, Pl. Formes, 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. n. p. 194; HENRY, List Pl. Formes. p. 68; MATSUM. et HAYATA, Enum. Pl. Formos, p. 282.

HAB. Sanchoki, 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). Herbae validm basi suffruticosse repentes ad nodos radieantes, ramis ascendentibus 10-20 cm, longis praeter inflorcscentiam simplicibus hispidulis demum glabratis, Folia opposita spathulato-lanceolata sessilia 2 cm. longa 6 mm. lata apico aeuta 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 florigoram requantibus, 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 ovate obtuso, lobis lateralibus mediocribus, lobo antico minore. Stamina 2 tubo ad latere lobi postici affixa, filamentis exsertis, antheris loculis clivergentibus

obtusis apice confluentibus. Ovarium pilosum, Capsulae compresses apice emarginatro bisulcatee 6 mm, longae totidem latae loculicide dehiscentes, valvis columna placentifera adherentibus. Semina numerosa ovata 1 mm, longa facie interna plano-cylindrici 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; LEDER. Fl. Ross. III. p. 236 (var.); FORBES et HEMSL. Ind. Fl. Sin. II. p. 200; PALIBIN, Conspect, Fl. Korem, II. p. 21; DIELS, Fl. Centr. Chin. p. 267; HAYATA, in Tokyo Bot. Mag. XX. p. 72.

Veronica angustifolia FISCH.; HANCE, in Journ, LINN. Soc. XIII. p. 84.

Veronica panicidaia 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.

Sopubta HAM.

Sopubia formosana HAYATA., sp, nov. Herbae annum erectm circ,

30 cm. altai pubescentes siccitate nigricantes, caulibus ramosis vel simplicibus tetragonis sulcatis. Folia opposita sessilia oblonga 2 cm. longa 8 mm. lata clementata 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 sequantibus. Calyx campanulato-semiorbiculatus 7 mm. longus 10-nervus breviter 5-lobus, lobis valvatis triangularibus acuminatis. Corolla iguota, Stamina 4 didynamia subinclusa ; 2 longiora, antheris majoribus coherentibus, filamentis longe barbatis : 2 breviora, antheris parvioribus liberis, filamentis glabris ; loculis antherum omnibus ovatis basi muticis, Stylus apice stigmatoso-incrassatus sublinguiformis obtusus. Capsulae depressoglobosae 5 mm. in diametro sequantes apice retusae, 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. 1906, (Nos. 601 et 673); Kagi: Kodensho, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1730).

DISTRIB. An allied species *S. trifida* HAM. occurs in India and Ceylon; and is also found in I-wangtung in the opposite continent.

Near *S. trifida* HAM.; but differs from it in having ovate-lanceolate leaves.

***Phtheirospermum* BUNGE.**

***Phtheirospermum chinense* BUNGE;** BEKTH. 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.

Phtheirospermum japonicum KANITZ, "Anthoph. Jap. p. 12 "; MAKINO, in Tokyo 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. Torokn: Tohozan, (No. 2082); Taito: 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 STAPF in "Trans. Linn. Soc. II. 4, (1794) 210, t. 16, f. 1-16"; :MERRILL, in Philipp. Journ. Seie. I. Suppl, Bot. p. 236.

HAB. Nanto : Mnshazan, 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. Euplanns. p. 199, t. IV. Figs. 321-325, et t. XI. Fig. 8.

HAB. Tozan, in montibus Morrison, leg. G. NAKAHARA, Nov, 1906; in monte Morrison, ad 8000 ped. (No. 172S), 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 coerulescens STEPH.; WILLD. Sp. Pl. III. p. 349; DC. Prodr. XI. p. 34; LEDED. Fl. Ross. III. p. 322; PALIBIN;. Conspect, Fl.

Korere, II. p. 22; Biblioth. Bot. IV. p. 138; MATSUM. et HAYATA, Enum, Pl. Formes. 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, Enrope, and North America.

Gesneraceae

Eustonotus Dox

Lysionotus pauciflorus MAXIM. in Mel. 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. Formes. p. 287.

HAB. Suizan, in montibus Morrisou, 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. Proch. IX. p. 274; CLARKE, in HOOK. f. Fl. Brit. Ind. IV. p. 367.

Rhynchoglossum Blumei DC. Prodr. IX. p. 274.

HAB. Kedensho : 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.-I, p. 115; MAXIM. in Mel. Biol. IX. p. 370; FORBES et HEMSL. Ind. Fl. Sin. II. p. 231 ; HENRY, List Pl. Formes. 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 ramondioides SIEB. et ZUCC. Fl. Jap. Fam. Bot. II. p. 730, t. 3, f. 1; MIQ. Procl. Fl. Jap. p. 55; MAXIM. Mel. Biol. IX. p. 370 ; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 328; Bot. Mag. t. 6484.

HAB. Biyoritsu : Banahozan, leg. T. KAWAKAMI et U. MORI, Juli. 1906, (No. 1093).

DISTRIB. Japan.

Acanthaceae*Strobilantlies* BLUME.

Strobilanthes flaccidifolius NEES, in DC. Proch. 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. Kodensho, ad 2023 ped. alt., kg. S. NAGASAWA., Oct. 1905, (No. 727); in monte Morrison, ad 6000 pod. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2061).

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); Taito: 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, Pl. 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. 460; 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.

Hyprestes R. BR.

Hyprestes purpurea R. BR. ; NEES, in DC. Prodr. XI. p. 509; MIQ. Fl. Ind. Bot. II. p. 851; BENTH. Fl. Hongk. p. 265 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 249 ; HENRY, List Pl. Formes. p. 70; MATSUM. et HAYATA, Enum. Pl. Formes. p. 295.

HAB. Tappansha, ad 3138 pede alt., leg. S. NAGASAWA, Oct. 1905, (No. 577); Kagi: K.ishirei, 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. Formes, p. 806, 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. Formes. p. 72; MATSUM. et HAYATA., Enum. Pl. Formes, p. 306.

HAB. Tappansha, ad 3138 ped. alt., leg. S. NAGASAWA, Oct. 1905, (No. 777); Taito : Tabari leg. G. NAKAHARA, Jan. 1906, (No. 736); in monte Monison, 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. Spa 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. Cochmch, ed-.WILLD. p.453.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGARAWA, 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. Taito : 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 pede alt., leg. S. NAGASAWA, Oct. 1905, (No. 663); in montibus centralibus, ad 9000 ped. alt., (No. 2194), et Toroku: Gunkel, (No. 1820), leg. KAWAKAMI et U. MORI, Nov. 1906.

forma **hirsuta**. caules basi subglabri, inflorescentiro hirsutae, Folia hirsuta .

HAB. Tozan, in montibus Morrison, leg. G. NAKAHARA, Nov, 1906 ; Taito: Shukoranzan, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 1884).

forma **gracilis**. Folia minora, foliolis rhomboideis acutis dentatis, dentibus acutis vel obtusis,

HAB. Tozan, 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. Formes, 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. 18(2)).

DISTRIB. The Philippine islands.

Anisomeles R. BR.

Anisomeles ovata R. BR. AIT. 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. Formes. 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. Incl. Fl. Sin. II. p. *i304*; MATSUM. et HAYATA, Enum. Pl. Formos. p. 317.

HAB. Taita: Hinansha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1835).

DISTRIB. Java and the Philippines.

Dicotyledones**Monochlamydeae****Polygonaceae****Polygonum** LINN.

Polygonum biconvexum HAYATA, sp. nov. Herbae graciles decumbentes 15 cm.-20 cm. altae inaequaliter angulatae retrorsum aculeatae. Folia alternata liastato-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. Achsenia biconvexa, ovata 3½ mm. longa 2½ mm. lata brevia.

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. Cochin, ed- WILLD. p. 297; Home 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; Home et ARN. Bot. Beech. Voy. p. 208; FRANCH. et SAVAT. Enum. Pl. Formes. 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. Formes, p. 334.

Polygonum sinense HOOK. et ARN. Bot. Beech. Voy. p.269.

HAB. Snizan, 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. p. 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. 886.

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.). Herbae perennes ? minutae scandentes ramosae, caulibus glabratis. Folia parva ovato-triangularia $4\frac{1}{2}$ mm. longa 4 mm. lata apice acuta vel obtusa utraque pagina 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 sparse punctatis, discis basi perianthii connatis. Stamina 8 subaequalia Achaenia 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.). Herbae annuae ? caulibus erectis vel adscendentibus pauciramosis ad nodes

retrosum pilosis creterum glabris, ochrois pilosis truncatis 7 mm. longis. Folia obcnneatn 4 cm. longa 2 cm, lata apice cuneate-acuminata basi abrupto augusta ad petiolum 1 cm. longum attenuata rarius infra medium profunde sinuata, folia superiora subsessilia obcuneato-corduta, margine albo-lamellata sursum integra doorsum ciliata utraque pagine glandulis subpellncidis punctata. Flores dense spicato-capitati, capitnlis subovoideis 8 mm. longis 6 mm. latis 'ad apices rurnorurn vel axillas foliorum superiorum solitariis peduneulatis, peduncnlis 1 cm. longis apice glanduloso-hispidulis, bracteis scariosis ovato-acutis 3½ mm. longis 2 mm. latis. Flores 2 ad axillas bractearum siti, bracteolis subconnatis hyalinis, pedicellis brevissirnis. Perianthium urceolato-campanulatum 4 mm. longum corollinum, 5-lobum segmentis subaequnlibus oblongis 2½ mm. longis. Stamina 8, inaequalia : 3 longiora prope basin perianthii affixa, filamentis basi utrinque glandulosis; 5 breviora tuba perianthii affixa, filamentis basi non-glandulosis. Styli rami 3. Achsenia ovato-globosa subtrigona vix 2 mm. longa.

HAB. in monte Monison, ad 10000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2074).

Somewhat near *P. alaium* HAM.; but differs from it in having no involucral leaf; from *P. miocepholuni* 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. Formes, p. 76, DIELS, Fl. Centr. Chin. p. 312; MATSUM. et HAYATA, Enum, Pl. Formes. 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.

Aristolochiaceae

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. Formes. p. 34:).

HAB. Taito : Daironkosha, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2186).

DISTRIB. An endemic plant.

Piperaceae

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.De. in DC. Prodr, XVI-1, p. 346; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 443; MAXIM. in Mel, Biol XII, p. 532; Fonnrs et HEMSL. Ind. Fl, Sin. II. p. 065; HENRY, List Pl. Formos. p. 77; MATSUM. et HAYATA, Enum. Pl. Fornos. p. 846.

HAB. Taito : Tokeisha, leg. T. KAWAKAMI ct U. MORI, Dec. 1906, (No. 1910).

DISTRIB. Japan.

Peperomia et PAV.

Peperomia dindygulensis MIQ.; C.DC. in DC. Prodr. XVI.-1, p. 442; HOOK. f. Fl. Brit Ind. Y. p. ns; WIGHT, Ic. Pl. Ind. ,or. t. 1921 ; FORBES et HEMSL. Ind. Fl, Sin. II. p. 366; HENRY, List Pl. Formes. p. 77; MATSUM. et HAYATA., Enum. Pl. Formes, p. 346.

HAB. Suizan, in montibus Morrison, leg. S. NAGASAWA, Oct. 1905, (No. 5G8); in monte Monison, 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 glabratae procumbentes, ramis ascendentibus 8-10 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 clavatim incrassatis 1½ cm, longis. Ovarium sessile obovoideum, 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 reftexa A. DIETR.; MIQ. Fl. Ind. Bat. 1.-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

Chlorantus Sw.

Chlorantus 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: Kodensho, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1774).

DISTRIB. Japan and central China.

Leurineae

Cinnamomum BURMAN.

Cinnamomum Camphora NEES et EBERM.; MEISN. in DC. Prodr. XV.-I. p. 24; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 411; MIQ. Fl. Ind. Ent. 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.

Proteaceae

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 subintogris,

HAB. Koshun : Botansha, leg. G. NAKAHARA, 1906.

forma **acuminata**, foliis apice abrupte actuninntis.

HAB. Nanto : 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.

Thymelaeaceae

Daphne LINN.

Daphne Championi BENTH. Fl. Hongk. p. 296; FORBES et HEMSL. Ind. Fl. Sin. IT. p. 395; MATSUM. et. HAYATA, Enum. Pl. Formes. p. 355.

HAB. Taito : Shinrozan, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 1836).

DISTRIB. Hongkong.

Stettera LINN.

Stellera Chamrejasme LINN.; MEISN. in DC. Proch. XIV. p. 549; MAXIM, Ind. Fl. Peke in Prim. Fl. Amur. p. 476; HOOK. f. Fl. Brit. Ind. V. p. 196; "LEDER 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. Canoasus through central Asia eastward to North India, Malay, and central China.

Elseagnaceae

Elreagnus LINN.

Elreagnus umbellata THUNB. Fl. Jap. p. 66, t. 14; SCHLECHT. in DC. Prodr. XIV. p. 614; :MAXIM. in Mel. 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. G75); Arizan et Tozan, in isdem montibus, leg. G. NAKAHARA, Oct. 1906; in monte Morrison, ad 9000

ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1952 et 1801); 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.

Loranthaceae

Lorouthus 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 Mel. Biol. IX. p. 609; HENRY, List Pl. Formes. p. 80; DIELS, Fl. Centr. Chin. p. 305; MATSUM. et HAYATA, Enum. Pl. Formes. p. 357.

HAB. Tozan, 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. Formes. p. 357.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 10-18); 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. Formes. p. 81; DIELS, Fl. Centr. Chin. p. 305; MATSUM. et HAYATA., Enum. Pl. Formes. p. 358.

HAB. Snizan, 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 Tokyo Bot. Mag. XX. p. 72.

HAB. Jitsugetsutan, leg. G. NAKAHARA, Ang. 1005.

DISTRIB. Type: Java.

Balanophoreae

Balanophora FORST.

Balanophora spicata HAYATA, sp. nov. (Pl. XXXIII). Planta ♀ gracilis 7 cm. alta. Pedunculus per partem inferiorem bracteatus, bracteis saepe suboppositis. Inflorescentia ovata 1½ cm. longa. Flores ♀ brevissime stipitati circa stipites graciles spadicellorum 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 eire, 5 cm. longa. Flores ♂ sessiles laxiuscule spicati, Perianthium crassiusculum, segmentis 6 inaequalibus, 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-ocular anthers and in the segments of perianths.

Balanophora parvior HAYATA, sp. nov. (Pl. XXXIV). Planta ♀ parvior 7 cm. alta. Pedunculus per totam fore longitudinem bracteatus, bracteis ovatis. Inflorescentia oblongo-cylindrica 3½

cm. longue Flores ♀ brevissimo stipitati, circa stipites graciles spadicellorum clavato-capitatorum dispositi, stylis gracillimis quam ovario 3-plo longioribus. Planta 6 gracilis circ. 14 cm, alta. Pedunculus fere per totam partem bracteatus, bracteis suboppositis. Inflorescentia incrassata circ. 4 cm. longa. Flores ♂ sessiles, laxinscule spicati. Perianthium crassiusculum, segmentis 6 in-requalibus, 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., log. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2227).

This differs from the preceding species III the shape of the segments and the cells of the anthers,

Euphorbiaceae

Buxus LINN.

Buxus sempervirens LINN.; MUELL. ARG. in DC. Prodr. XVI.-I, p. 18; HOOK. f. Fl. Brit. Incl. V. p. 267; BENTH. Fl. Hongk. p. :115, (excl. syn. *B. sinensis* LINN.; FORBES et HEMSL. Ind. Fl. Sin. IT. 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* NAKINO, in Tokyo Bot. Mag. IX. p. 281, et XV. p. 169; HAYATA, Revis. Enphorb. et Bux. Jap. in Journ. Scie. Coll. XX.-3. p. 82.

HAB. loco non indieata.

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. Formes. p. 360.

HAB. loco non indicate.

Glochidion zeylanicum A. JUSS.; MUELL. AUG. in Linnaea, XXXII. p. 60, et in DC. Prodr. XV.-2. p. 281; HOOK. f. Fl. Brit. Ind. V. p. 311 MATSUM. et HAYATA, Enum, Pl. Formes. 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. 4:33; DIELS, Fl. Centr. Chin. p. 430; HAYATA, in Journ. Scie, Coll, XX.-3, p. 55; MATSUM. et HAYATA, Enum. Pl. Formes. p. 366.

HAB. Kagi : Tappansha, leg. T. KAWAKAMI at U. MORI, Oct. 1906, (No. 1757).

DISTRIB. Japan and south central China.

Mercurialis LINN.

Mercurialis leiocarpa SIEB. et ZUCC. Fl. Jap. Fain. 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. Koreae, II. p. 43; HAYATA, in Journ. Scie. Coll. XX.-3, p. 38, t. 3, D; MATSUM. et HAYATA, Enum, Pl. Formos. p. 363.

HAB. Tozan, 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. Cochiuch. ed.-WILLD. p. 635; MUELL. ARG. in Linnaea, XXXIV. p. 189; HOOK. f. Fl. Brit. Ind. V. p. 430 ; FORBES et HEMSL. Ind. Fl. Sin. II. p. 4:39; HENRY, List Pl. Formos. p. 84 ; HAYATA, in Journ. Scie. Coll. XX.-:1, 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.

Urticaceae

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. n. 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.

Morns LINN

Morns alba LINN. Hp. 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. Chiu p. 297; PALIBIN, Conspect. Fl. Koreae, II. p. 45; MATSUM. et HAYATA, Enum. Pl. Formos. p. 373.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1778); Taichu : Kashigatani, leg. G. NAKAHARA, Feb. 1907.

DISTRIB. Chinn 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, 11. 756; DC. Prodr. XVI.-1. p. 55; FONSECA et HEMSLEY. 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 DONE. ; DC. Prodr. XXI.-1, p. 100; BLUME, Mus. Bot. Lugd.-Bat. II. p. 158; HOOK. f. Fl. Brit. Ind. Y. p. 550.

* The following *Ficus* was found on the sea shore in the island of Kota. 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 HEMSLEY. et KING, (Pl. XXXV.), in Ann. Bot. Gard. Calc. I.-2, p. 126, t. 159, A; FORBES et HEMSLEY. 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 subrhombica vel obovata obtusa vel nuda basi rotunda vel subcordata $1\frac{1}{5}$ -2 cm, longa 1 cm.-8 mm, lata 1-nervia, venis primariis interlobis utrinque 3-4 sub angulo 60° egressis, venulis reticulatis inconspicuis, margine minute serrulatis, petiolis 2-3 mm, longis, stipulis subulatis 1-nerviis caducis scariosis fenestrigiis 3 mm. longis, receptacula axillarum solitaria breve stipitata globosa apice leviter contracta basi rotundata rarius leviter attenuata hirsuta, ore rotundo concavo extus bracteis latioribus clausis et intus bracteis triangulatis vel lanceolatis instructo, basi bracteis 3-4 late ovatis natis, Fl. ♂: sessiles, perianthium 4-5 partita, segmentis linearibus, purpureo-fuscentibus; stamina 3-4, filamentis brevioribus. Fl. galliferi Haepae longe pedicellati ovarium stipitatum. Fl. ♀: breve pedicellati; perianthium 4-6-partita, segmentis purpureo-fuscentibus, subulato-linearibus; ovarium obovoideum basi contractum, stylo internodi filiformi.

HAB. Kotosha, 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.

Girardinia polmata GAUD.; Fonnms et HEMSL. Ind. Fl. Sin. II. p. 475.

HAB. Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906.

(No. 1769).

DISTRIB. Java, Ceylon, and Himalayn.

Pilea LINDL.

Pilea stipulosa :MIQ.; HOOK.: f. Fl. Brit. Ind, Y. 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, Fmuu. Pl. Formes. p. 383.

Pilea angulata BLUME, Mus, Bot Lugd.-Bat. II. p. 55; WEDD. in DC. Prodr. XVI.-1, p. 131; MAXIM. in :Mel. 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, Xorth 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, Emun. Pl. Formos. p. ;383.

HAB. Tappansha, ad 3108 ped. alt., (No. 590), et Sanchoki, 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 HEHSL. Ind. Fl. Sin. II. p.480.

Lccanthus peduncularis WEDD. in DC. Prodr, XVI.-1, p. 164.

Lccanthus Wallichii WEDD. in DC. Prodr. XVI.-1, p. 164; FORBES; et HEMSL. Ind. Fl. Sin. II. p. 480.

Lecanihus 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 species,

Elatostema FORST

Elatostema minutum HAYATA, sp. nov. (Pl. XXXVI.). Herbae parvissimae, caulibus decumbentibus basi aequaliter uodis radieantibus tomentosis. Folia alterna obovata 14 mm. longa 7 mm. lata valde obliqua apice obtusa basi inferiora latere rotundata superiore latcaea augusta, petiolis 1-2 mm. longis, utraque pagina pilis minutissimis dense atque pilis setulosis sparco obiecta margine serrata, serraturis ucutis setulosis, viridissima, stipulis lanceolatis. Flores in receptaculo campannato fasciculati. Receptacula in axillis foliorum solitaria sessilia, bracteis parvis, Aehrenin 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. III 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 Aux. Bot. Beech. Voy. p. 70.

var. *cuspidatum* WEDD. in DC. Prodr. XVI.-1, p. 173; HOOK. f. Fl. Brit. Ind. Y. p. 564; MAXIM. in Mel. 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.

Proeris JUSS.

Proeris laevigata BLUME; MIQ. Fl. Ind. Bat, 1.-2, p. 248; WEDD, in DC. Prodr, XVI.-1, p. 192; HOOK. f. Fl. Brit, Ind. Y. p. 576; 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. 501).

DISTRIB. South China, India throughout, and extending from Java to the Comoro islands.

Juqlandaceae

Juglans LINN.

Juglans sp.

HAB. Tohosha, ad 2030 ped. alt., leg. S. KAGASAWA, Nov. 1905 (No. 604).

Engelhardtia LESCH.

Engelhardtia spicata BLUME, Fl. Jav. Juglaud. 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. Braeteeae fructiferae parviores 2½ cm. longae 3-lobatae, lobis lateralibus 1½ cm. longis, terminale 2½ cm longo lineari-oblongo, scariosis reticulatis.

HAB. Kusshaku, (Nov. 6), et Buusanho, (No. 25), leg. K. KONISHI, Sept. 1902; Giran: Churei, leg. T. KAWAKAMI et U. MORI, Juni, 1900, (No. 1359), Nanto : Nankokei, leg. T. KAWAKAMI et U. MORI, Aug, 1900, (NO. 1173).

DISTRIB. Type: Java, Cochinchinu , subtropical Himalaya.

Cupuliferae

Alnus GAERTN.

Alnus maritima NUTT. var. **formosana** BURKILL, in FORBES et HEMSL. 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 Spa

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. Incl. Fl. Sin. II. p. 506 ; MATSUM. et HAYATA, Enum. Pl. Formes. p. 393.

HAB. Nauto : 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. Korere, II. p. 51; :MATSUM. et HAYATA, Enum. Pl Formos, p. 393.

Quercus obovata BUNGE; DC. Prodr, XVI.-2, p. 13.

HAB. Taichu : Dainanko, 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. Formes. p. 393.

HAB. Koshnn , Kobutsuzan, leg. N. KONISHI, April, 1898.

Quercus glauca THUNB. Fl. Jap. p. 175; HOOK f. Fl. Brit. Ind. V.

p. 604; FORBES et HEMSL. Ind. Fl. Sin. II. p. 515; DIELS, Fl. Centr. Chin. p. 293; MATSUM. et HAYATA., Enum. Pl. Formos. p. 392.

HAB. Nanta: Nankakei, (No. 1172), et Kwantozan, (No. 1120), leg. T. KAWAKAMI et U. MORI, Aug. 1906.

DIRTRIB. 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 nndnlato-serrata coriacea supra nitida, costis planis leviter snlcatis, snbtus pallidiora, costis valde prominentibus venis primariis laterulibus utrinque 13 prominulis sub angulo 50° egressis prope margines curvatis anastomosantibus tenuibus obscuris, petiolis scrniteretibus supra leviter sulcatis basin versus incrassatis eire. 3 cm. longis. Flores ignoti. Fructus juniore ternatim aggregati sed proventu solitarii ad pedunculum incrassatum remote dispositi. Cupula subpatelliformis 21 cm. in diarnetro 7 mm. longa intus margine depressa medice convexa extus squamis adpressis latis apice cuspidatis pnbescentibus 7-8 seriatis suffulta. Glans depresso-globosa breve apiculata 2 em. longa 21 em. in diarnetro, 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 potiolata re-

motiuscula oblougo-elliptica 7-9 cm. longa 2-3 cm. lata apice cuspidato-acuminatu basi augusta integra apicem versus serrata, serris obtusis, supra nitida, nervis et venis supra impressis subtus valde prominentibus, venis primariis lateralibus utriquo 7 sub angulo 45° egressis ad apices serrurum 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 faemiueis remotis solitariis, superioribus masculinis dense aggregatis. Fl. ♂ : perianthium 6-lobuttu, lobis obtusis incrassatis rotundatis, intus hirsutum extus tomentosum. Stamina 8-12, filamoutis perianthio 3-plo-longioribus; anthe globosae glabra: bracteis ovatis basi iucrassatis coneavis. Ovarii rudimentum dense albotomentosum, Fl. ♀ : involucrum globosum tomentosum squamis inerassatis triangularibus obtusis urultisoriatim suffultum ; ovarium globoso-conicum, stylis trifidis incrassatis ; bracteis subulatis incrassatis. Fructus secus pedunculum iucrassatnm foliis paullo broviorem dense dispositi. Cupula subpatelliformis medio depressa 8 mm. longa :1 cm. in diarnetro requaus intus pallida rubra leviter glauca pubescens extus griseo-pubesceus, squamis latis basi 2-suleatis minute cuspidatis areto adpressis circ. 10-soria tis suffulta. Glans 2 cm. longa 3 cm. in diametro semiglobosa nitida brevissime apiculata, cieutrici margine depressu medio convexu.

HAB. Taito : Tokwnsan, Shinshosho, leg. :K. KONISHI, 1906, Totogyoho, ad 2500 ped. alt., .Juli, 1906; Koshun : Botnusha, leg. G. NAKAHARA, Dec. 1906 (No. 747.); Nanto: Hinokiyamn , 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. Fl. Jap. I. p. 447; HOOK. f. Fl. Brit. Ind. V. p. 601; FORTMANS et HEMSL. Ind. Fl. Sin. II. p. 520.

HAB, Taiehn : Toshikaku, leg. Y. TASHIRO, April. 1896.

DISTRIB. Japan, Chinn, 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 graeiles griseo-fuscentes patentés. 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 requilateralia rarius obliqua supra viridin costis impressis subtus ferrugineo-albicantibus subtus lente integumentis tenuissimo lepidoto oblecta, costis prominentibus, venis primariis lateralibus ntrinque circ, 10 apicem versus inconspicuis sub angulo 60 egressis, petiolis supra sulcatis semiteretibus 8 mm. longis. Fructus secus pedunculnm graeilem 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 anulum dispositis 7-∞-seriatis sursum erectis deorsum adpressis, extus tenniter

cinoro-tomentosa, intus sericea, crustaceo-fragilis. Glans subglobosa sursurn 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 run 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. 2501, from Foe-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 varlabilis BLUME, Mus. Bot. Lugd.-Bat. I. p. 297 ; DC. Prmh. XVI.-2, p. 50; FRANCH. et SAVAT. Enum. Pl. Jap. I. p. 447; MATSUM. et HAYATA, Enum. Pl. Formes. p. 394.

HAB. Taichu: Suiteiryō, leg. Y. TASHIRO, 1896, (No. 77) ; Biyō-ritsu : Banahozan, 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. (1804) p. 182; DC.

Prodr. XYI.-2, p. 109 ; MIQ. in Ann. Mus, Bot. Lugd.-Bat, I. p. 119 ; HOOK. f. Fl. Brit. Incl. 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 tribudoides var. *formosana*, HAYATA, in MATSUM. et HAYATA, Enum. Pl. Formos. p. 391-.

HAB. Banchoryo : Ilokurisha , leg. G. NAKAHARA, Oct. 1905, (No. 593).

Drsrnrn, Tropical Hillalaya.

Castanopsis taiwaniana HAYATA, sp. nov. (Fig. 3). Ramuli teretes dense ferrugineo-pubescentes. Folia breviter petiolata pateutia oblongo-lanceolata 8-14 xm. longa 3½-5 cm. lata integerrima apice obtuse acuminata basi rotundata vel leviter attenuata coriacea rigida bicoloria supra glabra nitidu palliclo-viridia eostis impressis venis inconspicuis, subtus ochraceo-lepidota eostis proninentibus venis primariis lateralibus utrinque

10-13 sub angulo 60° egressis intra margines curvatis anastomosantibus, petiolis 1 cm. longis basi levitor incrassatis sulcatis semiterctibns ; folia novella conduplicativa subtus dense ferruginco-tomentosa, stipnlis oaducis lateralibus sub-obliquis obtusissimis integerrimis sub-coriaceis venis parallclis sericeis ab initio crectis dein rovolutis. Amenta 10 cm. longa ex axillis foliorum superiorum solitaria simplicia erccta romotiflora. Fructus scssiles solitarii globosi magnitndino cum spinis 3 cm, aequantes. Cupula clausa intus spadiceo-soricea

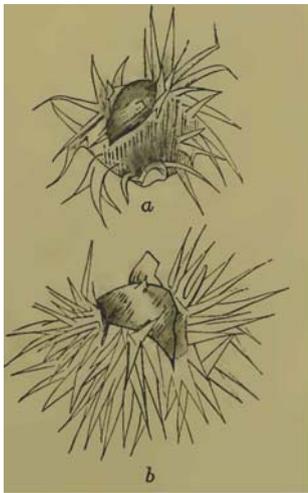


Fig. 3.
Castanopsis taiwaniana HAYATA.
a ana b- fruits,

extus cchinata, spinis confertis erectis subulatis rigiclis rufescentibus serioeis. Glans solitaria globoso-trigona basi truncata leviter convexa ochraceo-mfoscens pubescens vel subglubra.

HAB. Nanto, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (Nos. 1183 et 1165); Shintiku : Goshizan, leg. T. KAWAKAMI, Doc. 1905, (No. 1294); Hokuho, leg. N. KONISHI, 1899, (No.8).

This *Castunopsis* is very like *C. javanica* A. DC.; but differs from it in having subglabrous nuts and more strong spines on the involucre.

HAB. 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. Kushuku : Soteuzan, ad 5600 ped, alt., leg. N. KONISHI, Feb. 1906, (spec, steril.).

Salicaceae

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. Sicboldiana* BLUME. The specimens being all sterile are not yet determined.

Gymnospermeae.

Coniferae.

Libocedrus ENDL.

***Libocedrus maerolepis* 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; MAYB, Fremdlund. Wald-und Park-Biiume, p. 316.

Calocedrus macrdepis KURZ, in Journ. Bot. (1873) p. 196.

HAB. Rinkosho : leg. T. KAWAKAMI et U. MORI, Sept. 1906, (No. 1075).

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, squaiuis suborbicularibus vel subcordutis, loculis antherro 2-3. Strobilus cylindracco-oblongus. Somiua snmnroidea, alis cnltri-formibus.

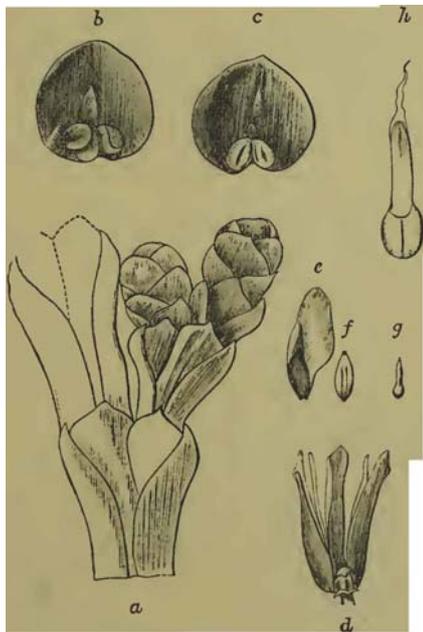


Fig. 4.

Libocedrus maerolepis BENTH a— male flowers; b— c— stamens; d— a cone; e— n. seed; f— an albumen; g— an embryo; h— the same, highly magnified.

Chamaecyparis SPACH.

Chamaecyparis formosensis MATSUM. in *Tukyu Bot. Mag.* XV. p. 137; MATSUM. et HAYATA, *Enum. Pl. Formos.* p. 402.

HAB. in montibus Morrison, leg. H. TORII, 1900 ; Giyoknsan, in montibus Morrison, ad 10034 ped. alt., (No. 554), at 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 t; MORI, Oct. 1906, (No. 2103); Taito: Buushiseki, leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2104).

DISTRIB. An allied species, *C. pisifera* S. et Z., occurs in Japan.

Chamrecyparis obtusa SIEB. et ZUCC. in "ENDL. *Conif.* p. 63"; PABL. in DC. *Prodr.* XVI.-2, p. 466; FRANCH. et SAVAT. *Enum. Pl. Jap.* I. p. 471 ; WARDURG, *Monsuua*, I. p. 190; BEISSN. *Handb. Nadelh.* p. 92.

Retinispora obtusa SIEB. et ZUCC. *Fl. Jap.* II. p. 38; MIQ. *Prol. Fl. Jup.* 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 typicae multo miuores 8 mm. in diametro requantes, seminibus minoribus cum alis 2 mm. in diametro aequantibns.

Shinko : Shirakkn, leg. T. KAWAKAMI et U. MORI, Juni, 1906, (No. 1329); Arizan, iumontibus Morrison, 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 lunch 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. 5.

Chamaecyparis obtusa S. et Z. form. *Formosana*
a— a male flower; *b*— the same, seen from n. different
 side; *c*— n 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.

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 Tokyo Bot. Mag. XX. p. 46; MATSUM. et HAYATA, Enum, Pl. Formes. p. 403.

Ramuli novelli triquetri in angulis promiuentibus marginati glabri. Folia in totum lineari-angusta 14 mm. longa 2 mm, lata verticillato-temata patentin integerrima acuminato-puugentia glabra supra concava glauca stomatiforma subtus valdo carinata prominontia convexa. Flores ignoti, Galbuli ad axillas foliorum inferiorum ramulorum novellorum solituri, basi

squauns ovato-ncutis vorticillatis 2-seriatila dispositis, globosi 7 mm. longi caruosi rufo-fuscentcs supra medium vostigiis acutis bractonrum intimarum notati. Semina 3, erecta trigono-elliptica apice mucronata, testa ossea, facie dersuli glandulis 3-4 resiniferis oblougis insculpta, facie vcntruli pauce notate.

HAB. in monte Morrison, leg. H. MORI, 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. 2099), in montibus centralibus, (No. 2099), leg. T. KAWAKAMI et U. MORI. Nov. 1906.

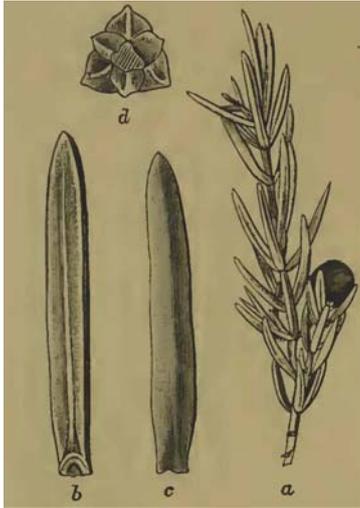


Fig. 6.

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 tho 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 authority"

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. G). 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, deruands 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-ternuta snpra concava glaucescentia snbtus leviter curinata. Flores masculini terminalos ad ramulos hrevissimos ovoidei 4 mm. longi 2 mm. lati, staminibus 8, filamentis in squarnain peltatis, squamis suborbicularibus 1½ mm. in diarnetro requnutibus, loculis antlieræ 3. Flores fceminei ad ramulos hrevissimos terminales basi foliis squnmiformihus bracteisque 6-9 ternato-verticillatis snffulti, squa mis intimis 3 ovutis acntis verticillntis patentibus. Ovulum terminale solita.rium squamis intimis circumdutum oblongum apice attenuatum. Galbuli solitarii globosi vel paullo longiores 6 mm. longi, sub maturitate uigricantes glubri medio vestigiis squamarum notati. Semina solitaria globoso-ovoidca 5 mm. long. 4 mm. lata. testa essen suleata. Embryo normalis : cotyledonos 2.

HAB. ad summam montis Morrison, 13200 ped. alt., leg. SHIMOYAMA, 1809; ibidem, leg. R. TORII. 1900; ibidem, leg. S. NAGASAWA. 1905, (No. 585), at leg. T. KAWAKAMI, 1906, (No. 2142, fr.).

1). FORBES et HEMSL. Ind. Fl. Sin. II. p. 543.

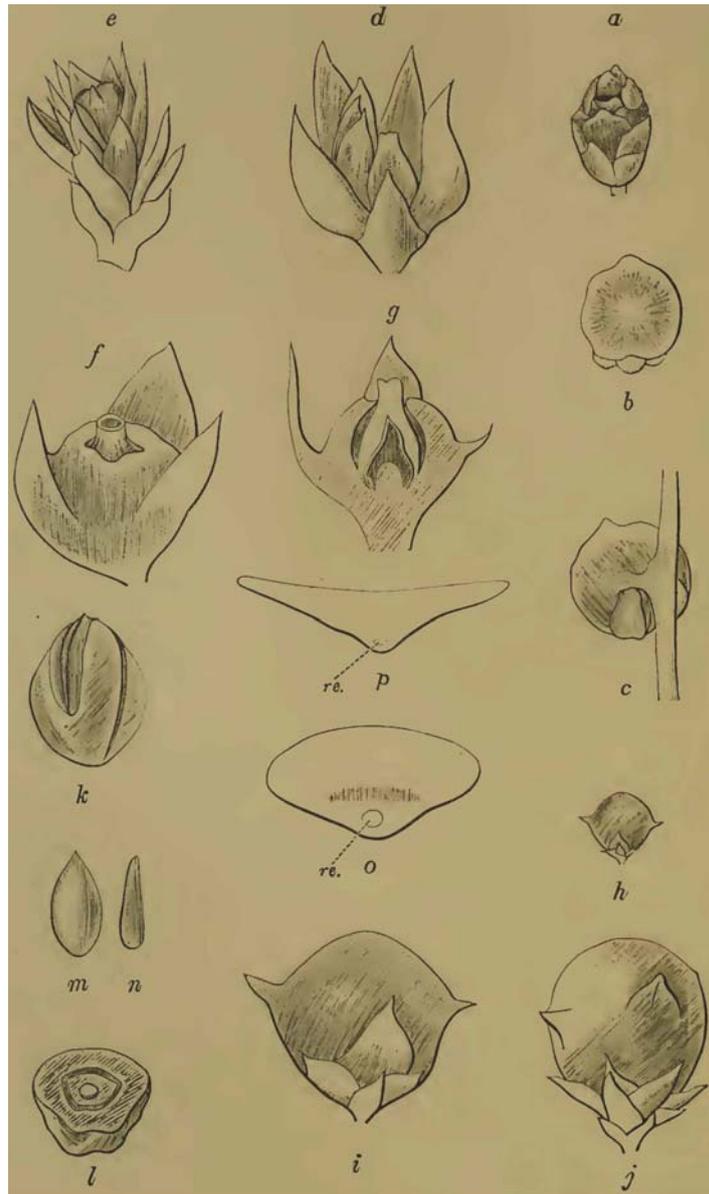


Fig. 7. *Juniperus morrisonicola* HAYATA

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 give 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 brachlet, and in the shape of its cone. The leaves have a large single resin-canal near the phloem. 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 H. BR.

Cunninghamia, being a monotypic genus, implies only *C. sineusis* H. 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 Export 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 *Chamaecyparis*.

Cunninghamia Konishii HAYATA. in Gard. Chron. (1908) p. 194. Arbor, ramis omnibus teretibus glabris foliorum spiraliter confertorum cicatricibus notatis. Gemmae floriferae nudae depresso-globosae, bracteis depresso-ovatis brevissime aristato-acutis.

Folia ramorum vectorum spiraliter conferta adnato-decurrentia anguste lineari-falcatn incurvo-erecta acuta dorso leviter carinata, ramulorum juvenum longiora uscendento-pnteutia angusto lineari-lanceolata 15 mm. longa 2½ mm. lata ad basin oblique torta apice obtusiusculu margine sub lente serrulata rigida coriacea utraque pagine glaucescentia stomatibus multiseriatis iustructis octavum in annum virentia demum exarida sensim soluta. Strobili sub maturitate ovato-globosi 20 mm, longi 15 mm. lati. Squamae rotundatae mucronatae basi distincte unguiculatae, unguibus brevibus, lamini dilatis, cordatis late depresso-ovatis margine integris lignescenscentibus sursum eoriaceis et marginern versus subundulatis dorso apice leviter carinatis glabris, Bracteae obsoletae. Squamulae 3 ad medio laminae squamae distinctae funbriatae crenulatae. Somina 3 ad medium sqnanmlnrum aflixa reversa libera ovato-elliptica , testis corioceis duriusculis, alis angustis. Ernhrvo ignotus.

HAB. nanto : in monte Randnisan, nd 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 *Cunniughamia* and *Tawania*, 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 *Tawania*, 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 squamae. The timber is like other Conifers, the bark is reddish brown and in all respects is very like that of *Chamaecyparis*. 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 Tokyo Bot. Mag. XXI. p. 2, t. 1.

Cryptomeria japonica HAYATA, (non DON.) in Tokyo 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; Naito: Taironkosha, ad 8000 ped. alt., leg. U. MORI, Nov. 1906.

DISTRIB. An endemic monotypio genus.

Cephalotaxus ZUCC.

Cephalotaxus sp.

HAB. in monte Morrison, leg. R. TORII, 1900; Gauzan, in montibus Morrison, ad 8012 ped. alt., leg. S. NAGASAWA, Koy. (1905), (No. 508); in monte Morrison, ad 8500 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2100); Taito: 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 indeteeminable,

Taxus LINN.

Taxus sp.

HAB. Arizan, in montibus Morrison, leg. G. NAKAHARA, Oct. 1906 ; Taito: Bunshisekisha , leg. T. KAWAKAMI et U. MORI, Dec. 1906, (No. 2107).

In the abseneo of cones, it is impossible to determine it specifically.

Pinus LINN.

Pinus Armandi FRANCHET. Pl. David. 1. p. 286, t. 12; MASTERS, in FORBES et HEMSL. Ind. Fl. Sin, II. p. 640.

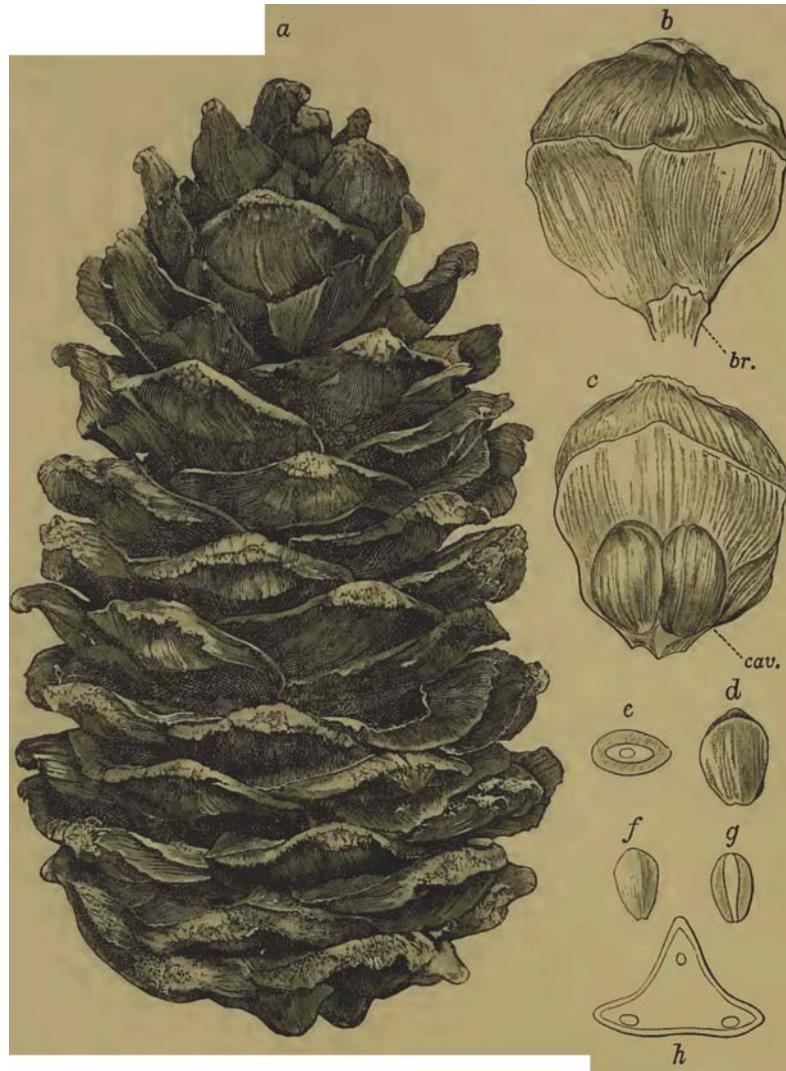


Fig. 8.

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. 104. Rami teretes fusci novelli glabri cicatricibus porularum et foliorum notati. Folia in fasciculo quinque accrosa fliformia tenui acutu dorso plana trinngularia in sectione margine ot in carina remote serrulata 10 cm. longue Strobili erecti ovnto-cylindracci obtusi 14 cm. longi 7 cm. lati. Bractee minutissimre. Squamae numerosae orbiculares v. suln-hombere acutae sursum reflexae basi breviter cuueatae lignescentes lougitudinaliter rugosre fuscre dispermae. Semina obovata 12 mm. longa 9 mm. lata apice leviter apiculata aptera compressiuscula, testa ossea crassa fusca glabra. Albumen erassum oleosum, Embryo cotyledonibus 5 verticillatis.

HAB. in moute Morrison, leg. R. TORII, 1900; Hatsukwauzan, ad pedem montis Morrison, leg. YAMASHITA; Gyokusan, in montibus Morrisou, ad 10034 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 tipe in its reflexed squamae and longer cones,

DIRTRIB. Type: "Test central China.

Pinus formosana HAYATA, (Fig. 9).

Pinus morrisonicda HAYATA, ill Gard. Chron. (1908) p. 194.

Ramuli teretes perulurum rudimontis notati, novelli pubescentes. Gemmae ovatae perulatae, perulis acutis momhrnuaceis margine fraetis. Folia in fasciculo quinque, fasciculis approximatis

* The *Pinus* is for the first time printed under the name, *P. morrisonicola*, which is, however, all 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 Taichu district,

acorosa rigidula 6-8 cm, lougu urcuata sed non torta apice acuta dorso plana facie acute cariuata trinugularia in sectione margine et in carina remote sorrulata. Strobili erecti ovato-elliptici obtusi, e squamis circ. 40 compositi 7-9 cm. longi 4-6 cm. lati, squamis ellipticis basi cuneatis sursum rotuudutis leviter reflexis 3 cm. longis $1\frac{1}{2}$ cm, latis corinneo-crassis sublignescensibus concnvis badio-fuseis dispormis semper abortu monospermis. Bractee brevissimae. Semina ovata apice obtusa 10 mm. longa 6 mm. lata, testa coriacea pallide ferruginea glabra, ala membrnuacca tenni cultriformi 2 cm. longa 8 mm. lata.

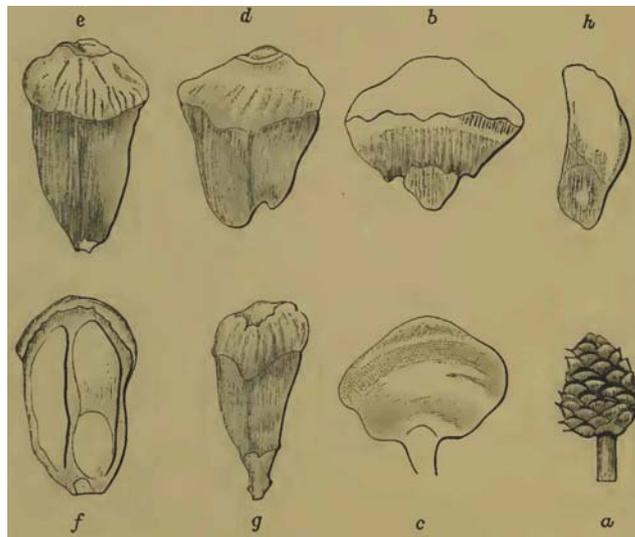


Fig. 9. *Pinus formosana* HAYATA.

a— a very young cone; *b*— a scale of the same cone, magnified; *c*— the same, seen from a different side ; *d*— n 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*— n scale detached from the apical portion of the same cone; *h*— It seed,

HAB. Shohakulin, et inter Hokkokei et Horishu , C. UWATARI,
Jan. 1898 . Taichu : Yagatavuma, leg. G. NAKAHARA, Feb. 1907; ad

summam mentis Hanrizan, ad 8000 ped. alt., leg. MURATA, Sept. 1807; Taito: Bnnshiseki, 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 Taichu 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* PAUL.).

HAB. in monte Morrison, leg. H. 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 2004).

Picea LINN.***Picea morrisonicola*** HAYATA, Sp. nov, (Fig. 10.).*Picea Glehni* MATSUM. in Tokyo Bot. Mag. XV. p. 141; MATSUM et HAYATA., Enum, Pl. Formes. p. 401, (non FR. SCHM.).

Ramuli glabri, pulvinis oblongo-obovatis superne erectis in petiolum brevem nscendeutem angustis, cicntricibus quadrangularibus. Gemmm ovoideoconicm, perulis scariosis ovatis obtusis, Folia linearia 6 mm-16 mm. longn 2/3 mm. lata curvata quadan-

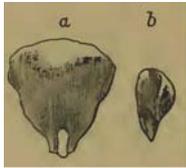


Fig. 10.

Picea morrisonicola HAYATA
a— it scale detached from the middle portion of It cone ; b— a seed.

Gularia apice acuta utriusque stomatifera. Strobili oblongo-cylindracei 6 cm, longi deflexi ? Bracteae ovato-lanceolatae obtusae

margine fractae 1 sqnama; fructiferae roquantibus. Squamae planiusculae obovato-orbicularis basi attenuatae, apice truncatae-rotuudatae subiutegrae. Semina cum alis 1 cm. longa, alis subcultriformibus obovatis semen ipsum 1/2-2 plo snperantibus,

HAB. in monte Morrison, leg. H. TORII 1900; Hattsukwunzan, leg. YAMASHITA; in codem 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. Glehmii* MASTERS, but differs from it in having glabrous branchlets : also near *P. Watsoniana* MASTERS, but differs from it in having subtruncate squamre of cones.

DISTRIB. An allied species, *P. Glehmii* MAST., occurs in Japan and Saghalien.

Keteleeria CARR

Keteleeria Davidiana BEISSN. var. *formosana* HAYATA, (Fig. 11.). in Gard. Chrou. (1908) p. 104. Hamuli dense puberuli. Folia laxe disposita plana lineari-lanceolata 30 mm. longu vel longiora 5 mm. lata, norvis utraque pagine promiueutihus, margine parum deflexa vernicosa sublus vix pallidora apico obtusa (ramuli hornotini uristuto-acuta) in pedem brevem comprssum demum contortum attenuata , petiolis basi transverse insortis, Strobili erecti eyliudracci obtusi 9 cm. longi 5 cm. lati. Squamae coriaceae ovato-rotundutae

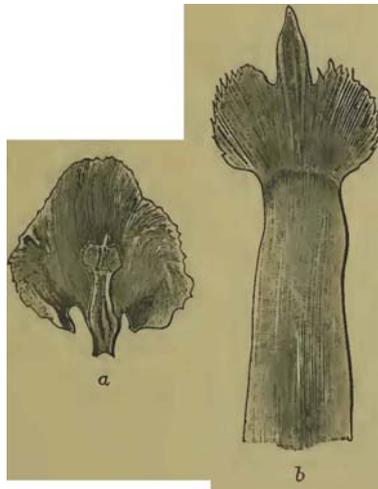


Fig. 11.

Keteleeria Davidiana FRANCH. var. *formosana* HAYATA. a— a scale of a cone ; b— the bract of the same seale, magnified,

v. cordatre superne sensim uttenuatae apice subreflexae basi breve ungniculatru extus longitudinaliter striatae puberulernargine tenues irregnlariter sorrula tro. Bracteae squamis duple breviores, spathulatae membranaceae dorsa fuscae apice cuspidatae vel trifldro irregulariter serrulatae subpungentes supra modium contractae, Semina pallida fulva basi acuta , ala eoncolore cultriformi, squamis aequilonga, cum alis 27 mm. in longitudine aequantia.

HAB. Shinjuki, Shinkochu, leg. N. KONISHI, Nov. 1902; Bunsanho, leg. T. TASHIRO. Juni. 1899.

DISTRIB. Type : west central China.

This now variety differs from the typo ill 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 tenuos glabri pallido-fuscentes. Gemmae perulatae, perulis obtusis integris. Folia approximata distincto petiolata, petiolis brevibus semiteretibus parum incurvis, linearia 8 mm.-16 mm, longa 1½ mm.- 2 mm. lata apico obtusa vel emarginata integrima

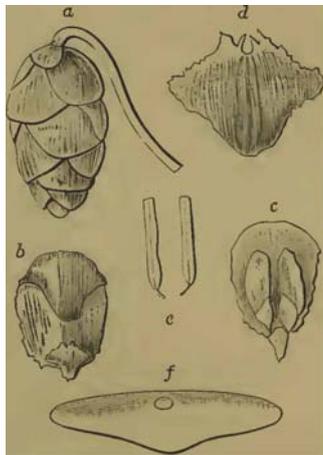


Fig. 12.

Tsuga formosana HAYATA. (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) transverse section of a leaf.

glabra coriacea. Strobili ovoidei 2-2.3 cm. longi 1.3 cm. lati, squamis circ. 20. Squamae imbricatae coriaceae basi truncatae sursum suborbiculares integrimae 1½ cm. longae 1 cm. latae substriatae pallidae fuscescentes. Bractee brevissimae rhomboidae apice brevissime 2-lobatae irregulariter denticulatae. Semina parva obovata, 4 nun. longa vel longiora, alis membranaceis tenuibus cultriformibus pallidofuscis 7 mm. longis.

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, *P. 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 brachlets. It also bears Some resemblance to *T. Siebokli* 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. Sleboldi* and *T. diversifolia*.

Pseudotsuga CARR.

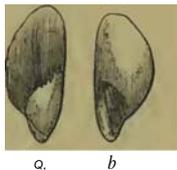


Fig. 13.

Pseudotsuga japonica SHIRASAWA. *a*— a seed; *b*— the same, seen from a different side.

Pseudotsuga japonica SHIRASAWA, (Fig. 13). in Tokyo Bot. Mag. IX. p. 84; HAYATA, in Tokyo Bot. Mag. XX. p. 45; MATSUM et HAYATA, Euum. Pl. Formes. 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. Formes. p. 400, (non MASTERS).

Ramuli ferruginei pilosissimi, pulvinis obovutis pance prominentibus, cicatricibus depressis ovato-oblongis. Folia approximata late lincarua a basi angustiora ad apicem sinsim dilata apice rotundnto-obtusn et emarginatu supra impressu sub-

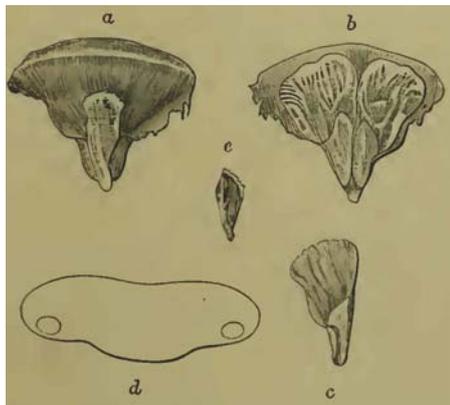


Fig. 14.

Abies Mariesii MAST. var. *Kawakamii* HAYATA. *a*— a setle; *b*— the same, seen from the inner side ; *c*— a sC311; *d*— section of a leaf; *e*— a seed, wing taken off.

tus carina ta inter carinam marginemque argentea stomatifera. Strobili laterali erecti ovato-cylindranei apice retusi 7½ cm. longi 4 cm. lati. Bractee 2/3 plo squamam in longitudine sequentes obovatae angustro supra medium leviter constrictae et transverse coloratae apice dilato-rotundatae mucronatae fractae ecostatae. Squamae late rotundato-cuneatae 2 cm. longae 2½ cm. latre basi vix auriculatae abrupto stipitatae margine sursum integerrimae deorsum fractae. Semina cum alis 18 mm. longa, alis truncatis, seminibus alisque nigricantibus,

HAB. in monte Mottrison, 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.

Orchideae.

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.

Haemodoraceae.

Peliosanthes ANDR.

Peliosanthes courtallensis WIGHT, Ic. Pl. Ind. or. t. 2031; 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.

Liliaceae

Smilacina. DESE

Smilacina japonica A. GRAY, Eat. Jap. p. 414; MIQ. Prol. Fl. Jap. p. 313; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 53; MAXIM. Mel. Biol. XI. p.857.

Smilacina hirta MAXIM. Prim. Fl. Amur. p. 276.

Smilacina japonica var. *mandschurica* MAXIM. Mel. 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. 1906; in

eodem monte, ad 13000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1900, (No. 2384).

DISTRIB. China and Japan.

Tricyrtis WALL.

Tricyrtis lasioearpa MASTUM. in Tokyo Bot. Mag. XI. p. 79 ; MASTUM. et HAYATA, Enum. Pl. Formes. 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. 1900, (No. 2321).

Tricyrtis stolonifera MATSUM. in Tokyo Bot. Mag. XI. p. 78; MATSUM. et HAYATA, Enum. Pl. FORBES, p. 442.

HAB. in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2319) .

Metanartheicum MAXIM.

Metanartheicum foliatum MAXIM. "Daeas Pl. Nay. (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 erassiuscula, Baccae (ut videntur) ad axillas solitarie longe pedunculatae. Flores ignoti.

HAB. in monte : Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 2320).

Polyyoualuut _ ADANS.

Polygonatum officinale ALL. var. ***Maximowiczii*** FRANCH. et SAVAT.

MAXIM. in Mel. Dial. XI. p. 851; PALIBIL, Conspect, Fl. Koreae, III. p. 10 ; FORBES et HEMSL. Ind. Fl. Sin. III. p. 108; MASTUM. et HAYATA, Enum. Pl. Formes. p. 436.

Polygonatum Maximowiczii FR. SCHMIDT, Reis. Amur, p. 185, n. 449.

Polygonatum officinale ALL. r. *pluriflorum* MIQ. Prol. Fl. Jap. p. 312.

HAB. in herbidis Taiton, ad 4000 ped. alt., leg. U. FAURIE, 1903, (No. 044).

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 Tokyo Bot. Mag, XX. p. 52. Rhizoma repens multinodosum, inulis simplex eire. 20-50 cm. longus glaberrimus. 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 21--3 cm. longa. Stamina 8-10, filamentis ovarium vix superantibus. Ovarium depresso-globosum nupice truncatum concavum marginibus prominentibus ad apices carpellorum paullo cornutum, 1-loculare 5-placentiferum, stylo 5-fido, ramis recurvis. Baccae depresso-globosae 12 mm. longae 15 nun, in diametro oligospermae.

HAB. Ganzan, in montibus Morrison, ad 9141 ped. alt., leg. S. NAGASAWA, Oct. 1905 (No, 003); in monte Morrison, ad 9000 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906 (No, 1953).

Commelinaceae

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.

Juncaceae.*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. YI. p. 401; BUCH. in ENGL. Bot. Jahrb. XII. p. 128; SOWERBY, Engl. Bot. X. p.1558.

HAB. in montibus Morrison, ad 12000 ped. alt., leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2300); ad summam ejusdem mentis, 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. NGASAW.A, Oct. 1906, (No, 677).

DISTRIB. Asia, America, Africa, Australia and Europe.

Juncus Maximowiczi BUCH. in ENGL. Bot. Jahrb. XII. p. 394.

HAB. in montibus Morrison, leg. G. NAKAHARA, Oct. 1905.

DISTRIB. Japan.

Aroideae

Arisaema sp. (*A. consatujuineunc* 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).

Cyperaceae.*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 Tokyo 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, obovato, longitudinally maculate. (Fig. 15.)

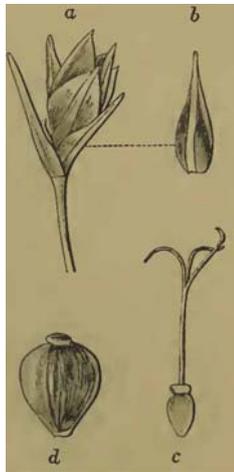


Fig. 15.
Bulbostylis capillaris BUNTH
var. *trifida* CLARKE. *a*— a
spikelet; *b*— a glume; *c*— an
ovary; *d*— a seed,

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

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 arcte imbricatis omnibus fortilibus mem-

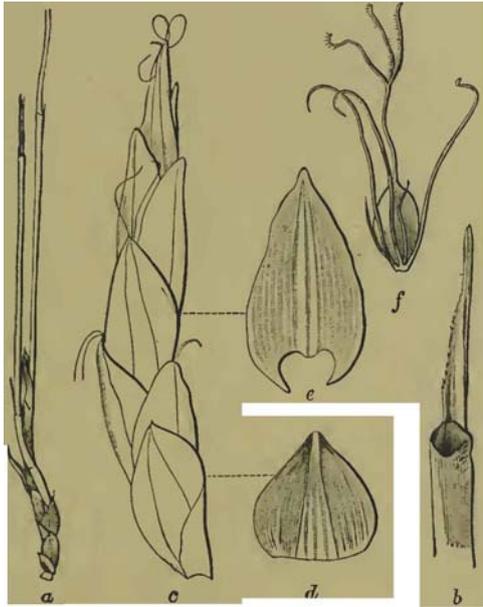


Fig. 16.

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 truncate, nerve mediano infra apicem evanido, versus apicem fusco-castaneis marginibus palliis, binis inferioribus latioribus brevibus, Achsenium obovatum v. obovato-ellipsoidule trigonum 1½ mm. longum glabrum laeve fusco-rubrum, stylo persistenti exserto apice 2-3 fido, setis 6 capillaribus achrenio 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 saepe circinnato-curvata basi vaginata, vaginis 15 mm. longis. Spicre 2-3; terminalis masculina teres 7 mm. longa 1 mm. lata saepe basi attenuata, squamis ovatis basi truncatis apice acutis 6 mm. longis 2-3 mm. latis subtrinerviis, nervis castaneis; reliquiae faemineae subsessiles pauciflorae 8-9 mm. longae, squamis late ovatis acuminatis late 1-nerviis, nervo producto castaneo, partibus marginibus hyalinis. Utriculus 2-costatus ad costas minute denticulatus ovatus rostratus are obscure bidentatus glaber. Aehrenium apice contractum triquetrum 3-costatum. Styli basi conieo-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 panillo breviora basi vaginata, vaginis 2-3 cm. longis, oribus truncatis, supra et margine scubrida. Culmi florigeri graciles 30 cm, longi

3-4 foliati, foliis superioribus basi vaginatis laminis spicae
 equilongis. Spicae 3-4, remote dispositae; terminalis masculina
 elongata pedunculata 3 cm, longa 2 mm. lata, squamis obovatis
 vel late cuneatis marginatis, marginibus badiifuseis; reliquiae
 femineae elongatae, 2 cm. longae spicae masculinae latiores breves
 pedunculatae erectae, floribus remotis, squamis ovatis marginatis
 acutis basi truncatis. Utriculus 2-crenatus multinerviis pubes-
 cens, compressus apice rostratus distincto 2-dentatus. Stigma
 3-fidum. Achrenium 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*
 has some resemblance to *C. Makinaensis* FRANCH.

Carex sp. (aff. *C. tristachya* THUNB.). Rhizoma tenue repens,
 culmos floriferos graciles et fasciculus steriles aequaliter apicem rhizomatis
 emittens. Folia fascicularum culmis paulo longiora 17 cm. longa
 3-4 mm, lata utraque pagina et margine scabra. Culmi floriferi
 graciles erecti 15 cm. longi foliis brevibus instructi; foliis superioribus
 longis vaginatis in laminam longam vel brevem desincentibus. Spicae
 3-4; terminalis masculina tenuissima brevis pedunculata 15 mm.
 longa 0.5 mm, lata, squamis obovatis basi truncatis marginibus
 membranaceis subtrinerviis apice tenuiter ciliatis et brevissime
 mucronatis: reliquiae femineae pedunculatae lineares laxiflorae 1-2
 cm. longae, squamis pallidis late ovatis utriculo paulo brevioribus,
 marginibus hyalinis subtrinerviis, nervo medio ultra apicem in
 mucronem breviter producto, Utriculus pubescens sub maturitate
 3 mm. longus tenuiter membranaceus obovatus brevis stipitatus
 2-costatus, multinerviis distincte rostratus, rostro bifido, are

scabro. Stigma trifidum, Achrenium pallidum glabrum trigonum 3-costatllal 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 achrenium possessing collar-like body at the base of the style. The Rev, KUEKENTHAL informs me that the plant is like *C. trlstaclnta* 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.

Gnarniriese.

Isachne R. BR.

Isachne Clarkei HOOK. f. Fl. Brit Ind. VII. p.24.

HAB. in monte Morrison, all 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 HEMSL. 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. Mont, Oct. 1906, (No. 1848).

DISTRIB. South China, the Malay archipelago, and from Ceylon northward to the mountains of India.

Oplismenus BEAUV.

Oplismenus undulatifolius BEAUV. var. **imbecillis** HACK.; MERRILL in Philipp. Journ. Scie. I. Suppl. Bot. pp. 28, et 364; HAYATA, in Tokyo 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 HADDL.

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 HEMSL. Ind. Fl. Sin. III. p. 342; MATSUM. et HAYATA, Enum. Pl. form os. 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 ANDEUSS.

Miscanthus sinensis ANDEUSS. var. **formosanus** HACK. in Bull. Herb. Boiss, Ser. 2, IV. (1904) p. 526 ; MATSUM. et HAYATA, Enum, Pl. Formes. 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. 111. 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. Formes, p. 519.

Saccliarum porphyrocomum HACK. Monogr, Androp, p. 120.

Erioclrrysis Narenga NEES, ex STEUD. Syn. Gram. p. 411.

HAB. Nanto : Horisha, leg. T. KAWAKAMI. et U. MORI, Nov. 1906, (No. 2379).

DISTUIB. India, Burma, and South China.

Spodiopogon TRIN.

Spodiopogon Kawakamii HAYATA, in Tokyo Bot. Mag. XXI. p. 54.

HAB. Kagi : Tappansha, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1837).

Spodiopogon taiwanensis HAYATA, in Tokyo Bot. Mag. XXI. p. 53.

HAB. Kagi: Kishirei, leg. T. KAWAKAMI et U. MORI, Oct. 1906, (No. 1853).

Pollinia TRIN

Pollinia ciliata TRIN, ; STEUD. Syn. Gram, p. 410; HACK. Monogr . Androp. p. 176, et in Bull. Herb. Poiss. 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. Formes. p. 521.

HAB. in monte Morrison, ad 6600 ped. alt., leg. T. KAWAKAMI et U. MORI, Oct. 1906: (No. 1848).

DISTRIB. South Chinn, India, and Malay.

Cymbopogon SPRENG.

Cymbopogon Nardus RENDLE subsp. **marginatus** var. **Gaeringii**

REKDLÉ, in FORBES et HEMSL. Ind. Fl. Sin. III. p. 376; MATSUM. et HAYATA., Enum. Pl. Formes. p. 531.

Atulropogen Nardue LINN. var. *Gaeringii* HACK. Mouogr. Androp, p. 607, et in Bull. Herb. Boiss. VII. (1899) p. 642, et ser. 2, III. (1903) p. 501 ; PALIBIN, Conspect, Fl. Korea, III. p. 30.

HAB. in monte Morrison, ad 8000 ped. alt., leg. T. KAWAKAMI et e. MORI, Oct. 1906, (No. 1841).

DISTRIB. The Philippine islands, South China, and Japan.

Agrostis LINN.

Agrostis Clarkei Home f. Fl. Brit. Ind. VII. p. 257; HAYATA, in Tokyo 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.

Calamagrosis ADANS.

Calamagrostis arundinacea ROTH; HANCE, Journ. Bot. (1878) p. 234 ; HACK., in Bull. Herb. Boiss. VII. (1899) p. 652, et Ser. 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 Ser. 2, IV. (1904) p. 520.

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 ?

Desctuimpisia BEAUV.

Deschampsia caespitosa BEAUV.; HACK. in Bull. Herb. Boiss. VII. (1899) p. 702 ; MAXIM. Prim. Fl. Amur. p. B23; 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.; LEDED. Fl. Ross. IV. p. 420; HACK. in Bull. Herb. Boiss, VII. (1899) p. 702.

Aira flexuosa LINN. vnr. *monituu* 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 centrnlibus, 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. Grnm. 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 Tokyo Bot. Mag. XX. p. 44.

Arena subspicata CLARV.; HOOK. f. Fl. Brit. Ind. VII p. 278; THOME, Fl. Dent. Ost. 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. Taito: Taiwukosha, leg. T. KAWAKAMI et U. MORI, Nov. 1906, (No. 2303).

DISTRIB. An endemic plant.

Brachypodium BEAUV.

Brachypodium Kawakamii HAYATA, (Pl. XL.) in Tokyo Bot. Mag. XXI. p. 31. Perennis ascendens suberespitosa circ. 20 cm. alta. Folia convoluto-teretia, laminis 5-6 cm. longis 6-7 -nerviis, extns glaberrimis intus scabris pauce hirsutis, vaginis 2 cm. longis, ligulis latioribus brevibus leviter ciliolatis. Spiculae paucae saepe ad unam terminalem reductae longe pendunculatae saepe cernuae, pedunculis filiformibus, 6-7-florem compresso 2 cru, langte 3 mm. latae, rhachillis inter flores urticulatis hirsutissimis ; floribus hermaphroditis saepe superioribus imperfectis. Glumae 2 inferiores vacuae 7 -nerviae florentibus minores et breviores muticae subglabrae ; gl. [I.] 7-mm. longa; gl. [II] longior. Gluma florens rigidula angusta dorso rotundata 7-9-nervia integra in aristam roctam 4 mm. longam desinens ; palea gluma vix brevior 7 mm. longa latiuscula 2-carinata, carinis ciliatis, apice truncata et emarginata. Stamina 3. Lodiculae 2 oblongo obtusae basi oblique stipitatae margine ciliolatae, lateribus interioribus basi callosis, Ovarium obovatum apice appendicula brevi villosa coronatum. Styli longiusculi, stigmatibus laxe plumosis. Achrenia angusta oblonga a dorso compressa antice late sulcata palca ndliorientiu.

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; LEDED. Fl. Ross. IV. p. 346; FORBES et HEMSL. Ind. Fl. Sin. III. p. 431.

HAB. in monte Monison, 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; THOME, Fl. Dent. Ost. Sch. I. p. 114, t. 53; WAGNER, Dent. 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 Ser. 2, III. (1903), p. 506; HAYATA, in Tokyo 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 Tokyo 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.

Cryptogamiae

Lycopodiaceae

Lycopodium LINN.

Lycopodium clavatum LINN. Sp. Pl. ed.-2, p. 1504; HOOK. Brit. Fern. t. 49; BAKER, Fern All. p. 26; THUNB. Fl. Jap. p. 341; MIQ. Prol. Fl. Jap. p. 348; MAXIM. in Mel. 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 Tokyo Bot. Mag. XX. p.20.

HAB. in monte Morrison, leg. S. NAGASAWA, T. KAWAKAMI et G. KAKAHARA, 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. **Chamaecyparissus** A. BR. "in DCELL, Rhein Flora p. 36"; BAKER, Fern All. p. 29; MAXIM. in Mel. Biol. "VII. p. 341; FRANCH. et SAVAT. Enum, Pl. Jap. II. p. 198; HAYATA., in Tokyo Bot. Mag. XX. p. 21.

HAB. in monte Morrison, leg. S. NAGASAWA, T. KAWAKAMI et G. NAKAHARA, Nov. 1905.

DISTRIB. Japan and contra I 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 Tokyo Bot. Mag. XX. p. 21; KOMAROV, Fl. :Manshur. I. p.159.

Lycopodium japonicum THUNB, Fl. Jap, p. 841; MAXIM. in Mel. Biol. VII. p. :341; FRANCH. et SAVAT. Enum. Pl. Jap. II. p. 197.

Lycopodium deiulrouleuni MICHX.; MIQ. Prol. Fl. Jap. pp. 348 et 390; HOOK. Esot. Fern. t. 7.

HAB. in monte Morrison, leg. T. KAWAKAMI, S. NAGASAWA et G. NAKAHARA, Nov. 1906.

DISTRIB. Japan, Karntchatka, Siberia, Manchuria , and North America. Not yet known from central and southern Chinn.

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 Mel. Biol. V IT. p. 341; DIELS, Fl. Centr. Chin. p. 210; WABB. Mons, I. p. 9G; HAYATA, in Tokyo 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.

Polypodiaceae

Potusticlucni ROTH.

Polystichum amabile SM.; DIELS, in Xut. Pfl.-fam. 1-4, 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 Tokyo Bot. Mag. XXI. p. 14.

Stipites 10-12 cm. longi fusco-pallidi paleacei leviter canalculati basin teretes, paleis oblongis vel linearibus. Frondos 25-30 cm. longae 2 cm, latae erectae circumscriptione lineares pinuatae, 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. Spora oblongae tuberculatae.

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, Rey. Fern. North Ind. p. 481; BEDD. Fern. South Ind. p. 49, t. 145; HAYATA, in Tokyo 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 Trichomalles 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; Cnrsr, Farn. Erd. p. 192; BEDD. Fern. South Ind. p. 49, t. 147; HAYATA, in Tokyo Bot. Mag. XXI. p. 14; DIELS, Fl. Contr, 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.

Conigramme FEE.

Coniogramme fraxinea (DON.) FEE; DIELS, in Nat. Pfl.-fam. 1.-4. p. 262; COPELAND, Tolyp. Philipp. p. 66; HAYATA, in Tokyo Bot. Mag. XXI. p. 15.

Gymnogramme jaccanica 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. Formes. p. 116.

HAB. Sanchokei, 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.

Lorauria glauca BLUME, "Enum. Fl. 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 Tokyo 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 Tokyo Bot. Mag. VIII. p. 335; HAYATA, in Tokyo Bot. Mag. XXI. p.14.

Lomuria Matsumureana MAKINO, in Tokyo Bot. Mag. VIII. p. 90.

HAB. Iiakurakusha, leg. G. NAKAHARA, 1906, (No. 458).

DISTRIB. Japan.

Pteridium GLED.

Pteridium aquilinum KUHN. var. **lanuginosum** Bony; COPELAND, Polyp. Philipp. p. 104; HAYATA, in Tokyo 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 Tokyo Bot. Mag. XXI. p.13.

HAB. in moute Morrison, leg. G. NAKAHARA, 1905.

DISTRIB. Type: Tropies of the old world : Japan and China.

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B. HAYATA.
FLORA MONTANA FORMOSAE

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 sepal 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.
FLORA MONTANA FORMOSAE.

PLATE II.

PLATE II.

Stellarria stellado-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 FORMOSAE

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 all ovary,
6. Cross section of the same ovary.

B. HAYATA
FLORA MONTANA FORMOSAE.

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.

H. HAYATA.
FLORA MONTANA FORMOSAE.

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.
FLORA MONTANA FORMOSAE.

PLATE VI.

PLATE VI.

Hydrangea glabra HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in cross section.
4. A seed.
5. All embryo.

B. HAYATA.
FLORA MONTANA FORMOSAE.

PLATE VII.

PLATE VII.

Hydrangea integra HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in vertical section.
4. A seed.
5. All embryo.

B. HAYATA.
FLORA MONTANA FORMOSAE.

PLATE VIII.

PLATE VIII.

Hydrangea Kawakamii HAYATA.

- Fig. 1. The plant.
2. A fruit.
3. The same, in cross section.
4. A seed.
5. An embryo.

B. HAYATA.
FLORA MONTANA FORMOSAE

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 FORMOSAE.

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.

R. HAYATA.
FLORA MONTANA FORMOSAE.

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.
FLORA MONTANA FORMOSAE.

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.
G. 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 FORMOSAE.

PLATE XIII.

PLATE XIII.

Faisia 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, ill cross section.
9. Stamens, seen from different sides.
10. A flower.
11. The apex of a style.
12. A petal.

B. HAYATA.
FLORA MONTANA FORMOSAE

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 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 Reed (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.
FLORA MONTANA FORMOSAE.

PLATE XV.

PLATE XV.

Dammacanthus 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. All ovules.
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 FORMOSAE.

PLATE XVI.

PLATE XVI.

Scabiosa lacerifolia HAYATA.

- Fig. 1. The plant.
2. A marginal flower.
3. A disc-flower.
4. Cross section of an involucl.
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 involucl.
10. The same, the involucl taken off.
11. Cross section of the same.
12. Au albumen.
13. An embryo.

B. HAYATA.

FLORA MONTANA FORMOSA:.

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. Setae of a pappus.

B. HAYATA.
FLORA MONTANA FORMOSAE.

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 femal 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.
FLORA MONTANA FORMOSAE.

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.

U. HAYATA.
FLORA MONTANA FORMOSAE.

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 FORMOSAE

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 FORMOSAE .

PLATE XXII.

PLATE XXII.

Ainsliaea macrodinidioides 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.
FLORA MONTANA FORMOSAE.

PLATE XXIII.

PLATE XXIII.

Ainsliaea 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.

B. HAYATA.
FLORA MONTANA FORMOSAE.

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 FORMOSAE.

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.
FLORA MONTANA FORMOSAE.

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. Tracts 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. All embryo.

B. HAYATA.
FLORA MONTANA FORMOSAE.

PLATE XXVII.

PLATE XXVI.

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 FORMOSAE.

PLATE XXVIII.

PLATE XXVIII.

Layania 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 FORMOSAE.

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 FORMOSAE.

PLATE XXX.

PLATE XXX.

Polygonum minatum 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 FORMOSAE.

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 n gland at the base of the filament,
9. A fruit.
10. A seed.
11. An embryo.

B. HAYATA.
FLORA MONTANA FORMOSAE.

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 FOR MOSAE.

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 FORMOSAE.

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 FORMOSAE.

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 month 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. varies, seen from different sides.

B. HAYATA.
FLORA MONTANA FORMOSAE.

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 FORMOSAE.

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.
FLORA MONTANA FORMOSAE.

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 FORMOSAE.

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.
FLORA MONTANA FORMOSAE.

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 H.
 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.

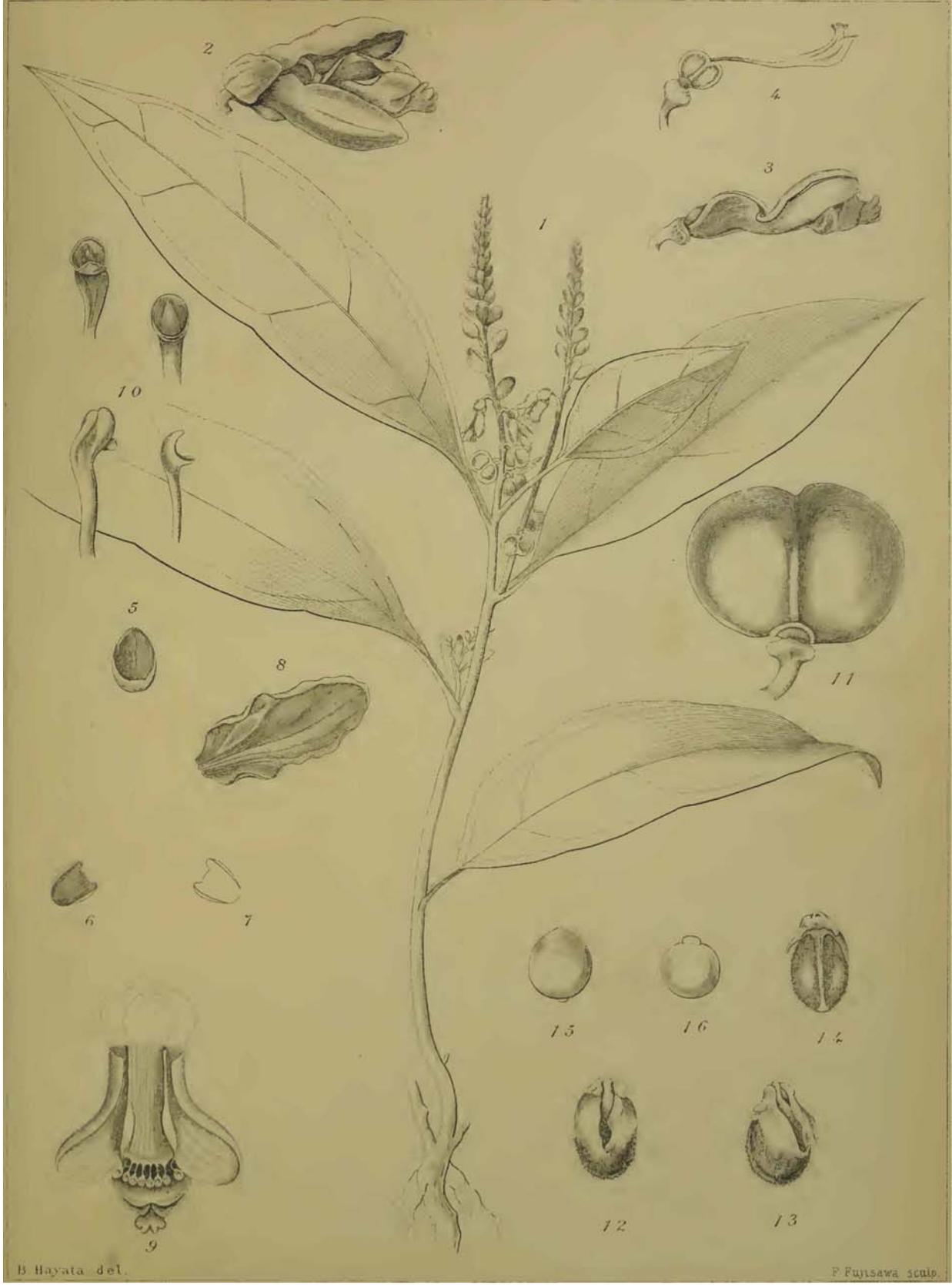
B. HAYATA.
FLORA MONTANA FORMOSAE.

PLATE XLI.

PLATE XLI.

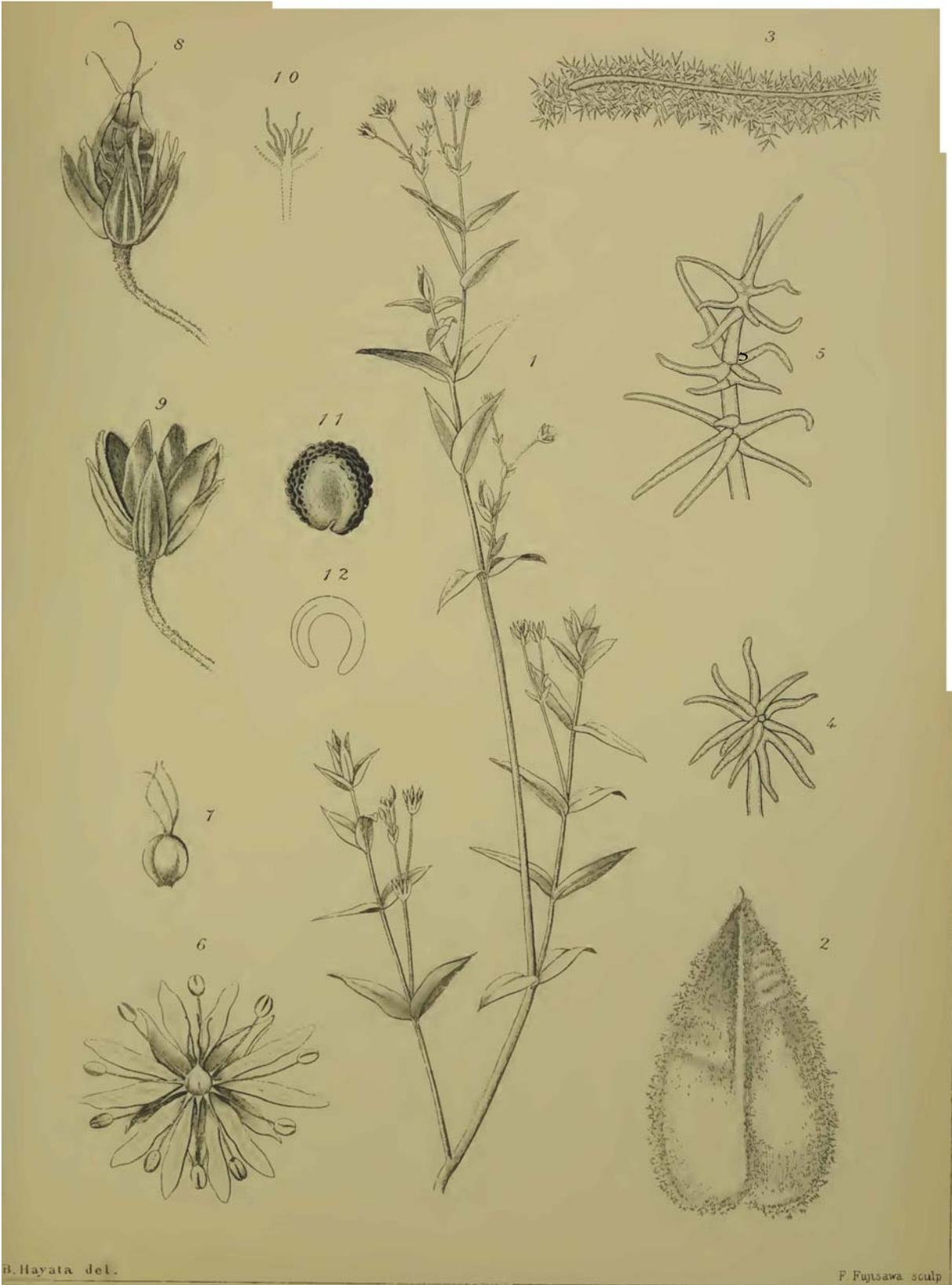
Polystichum niikayamense HAYATA.

- 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.



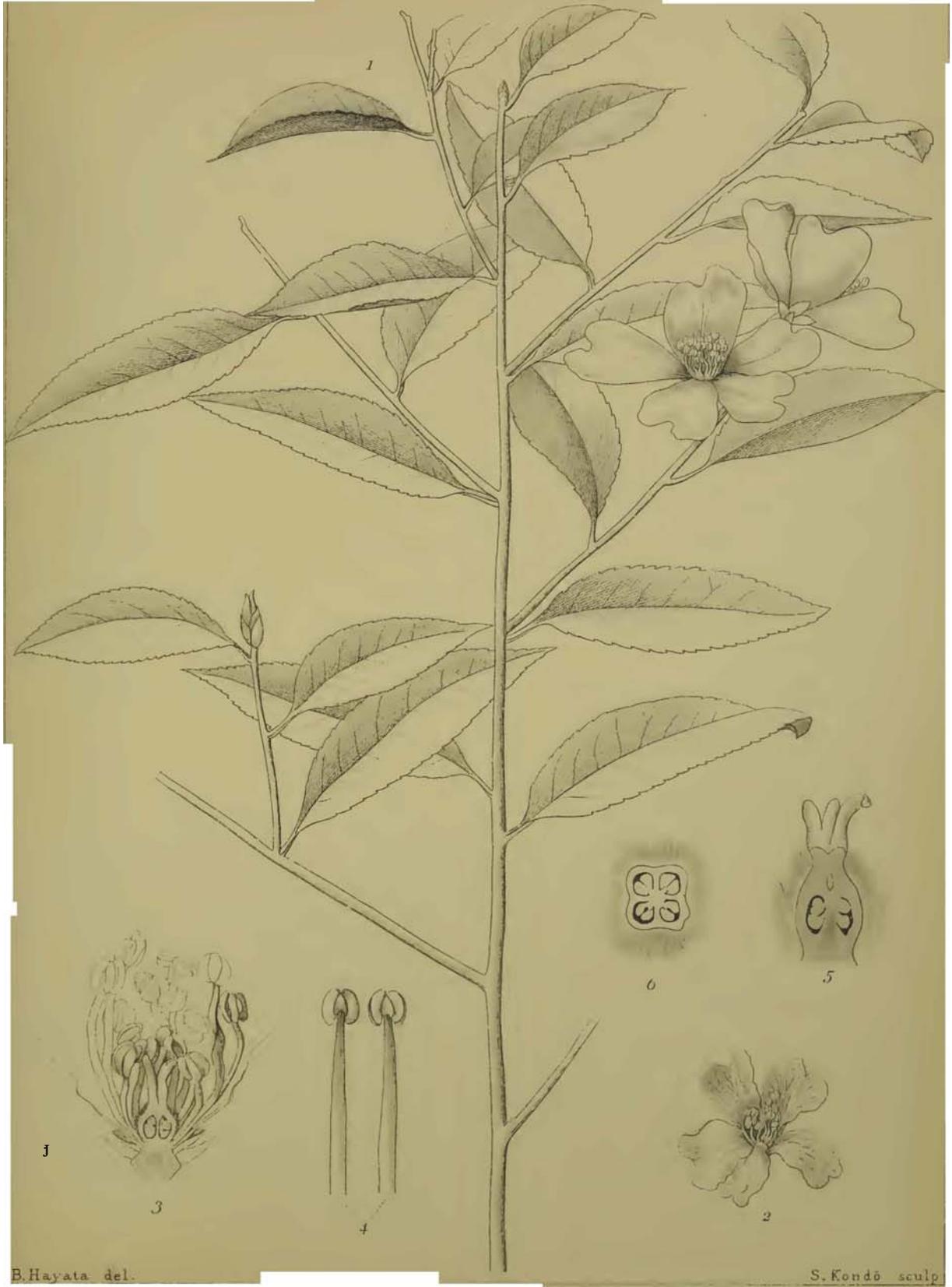
B Hayata del.

P Futsawa sculp.



B. Hayata del.

F. Futsawa sculp





B. Hayata del.

P. Fujisawa sculp.

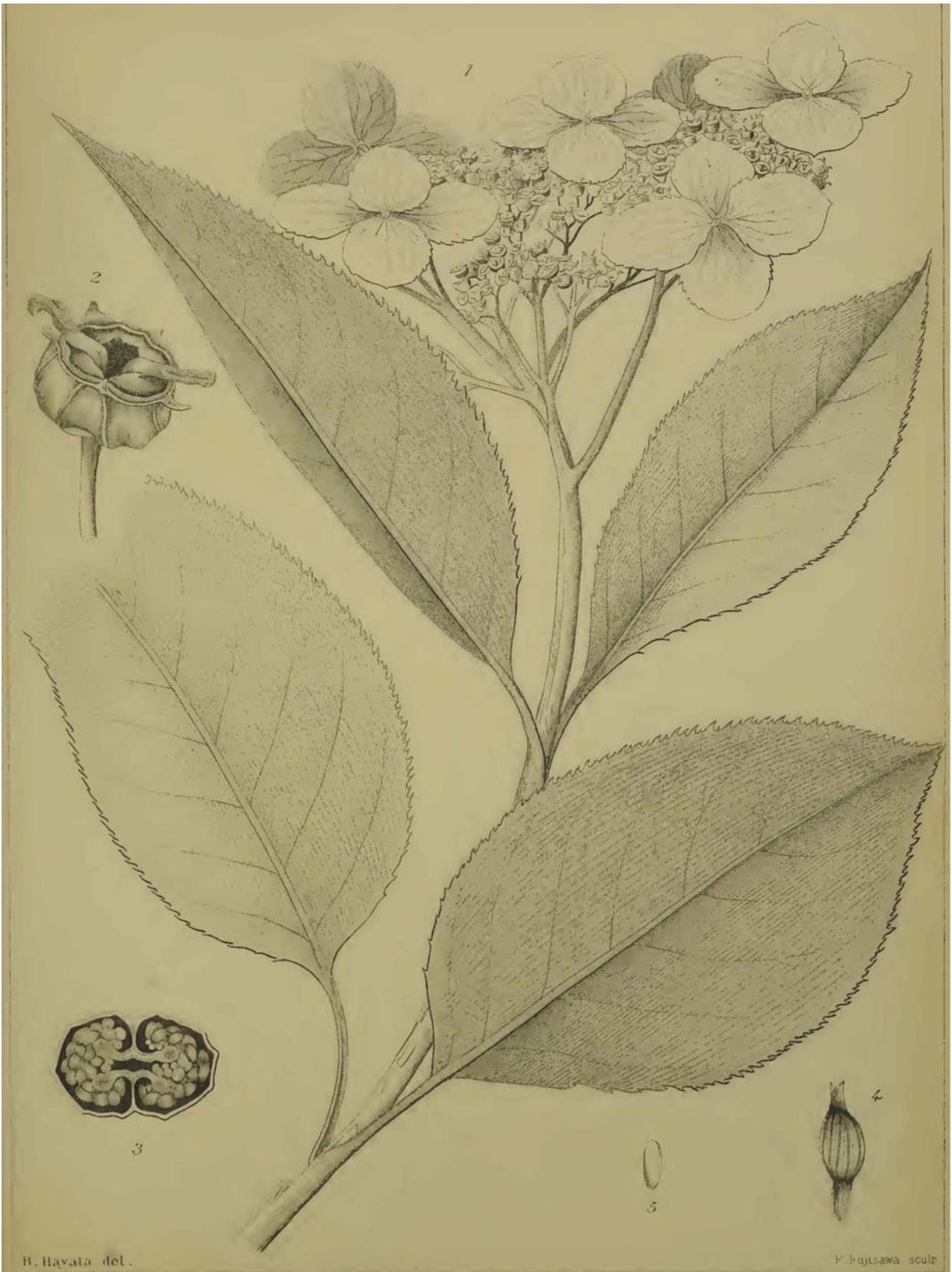


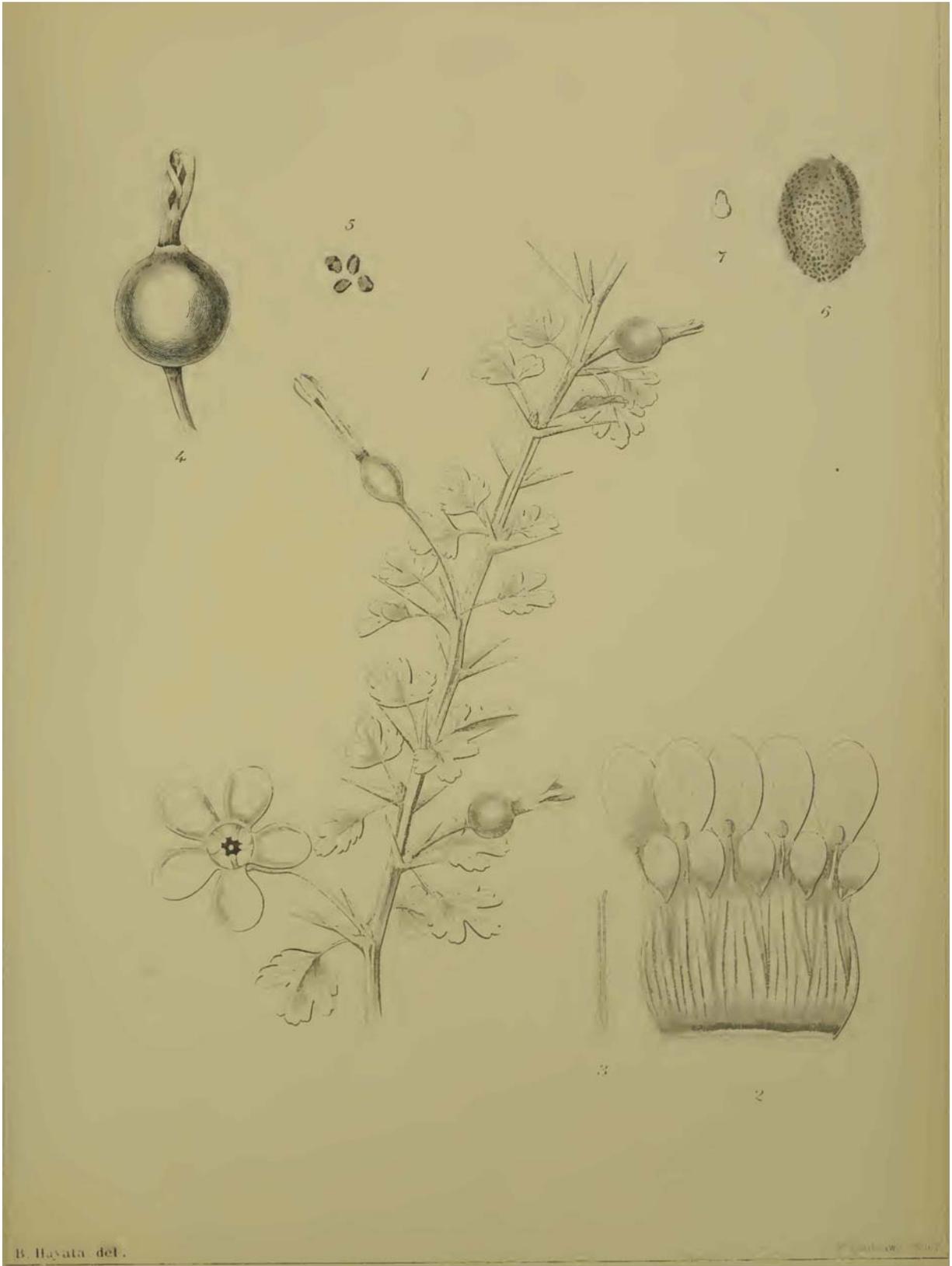


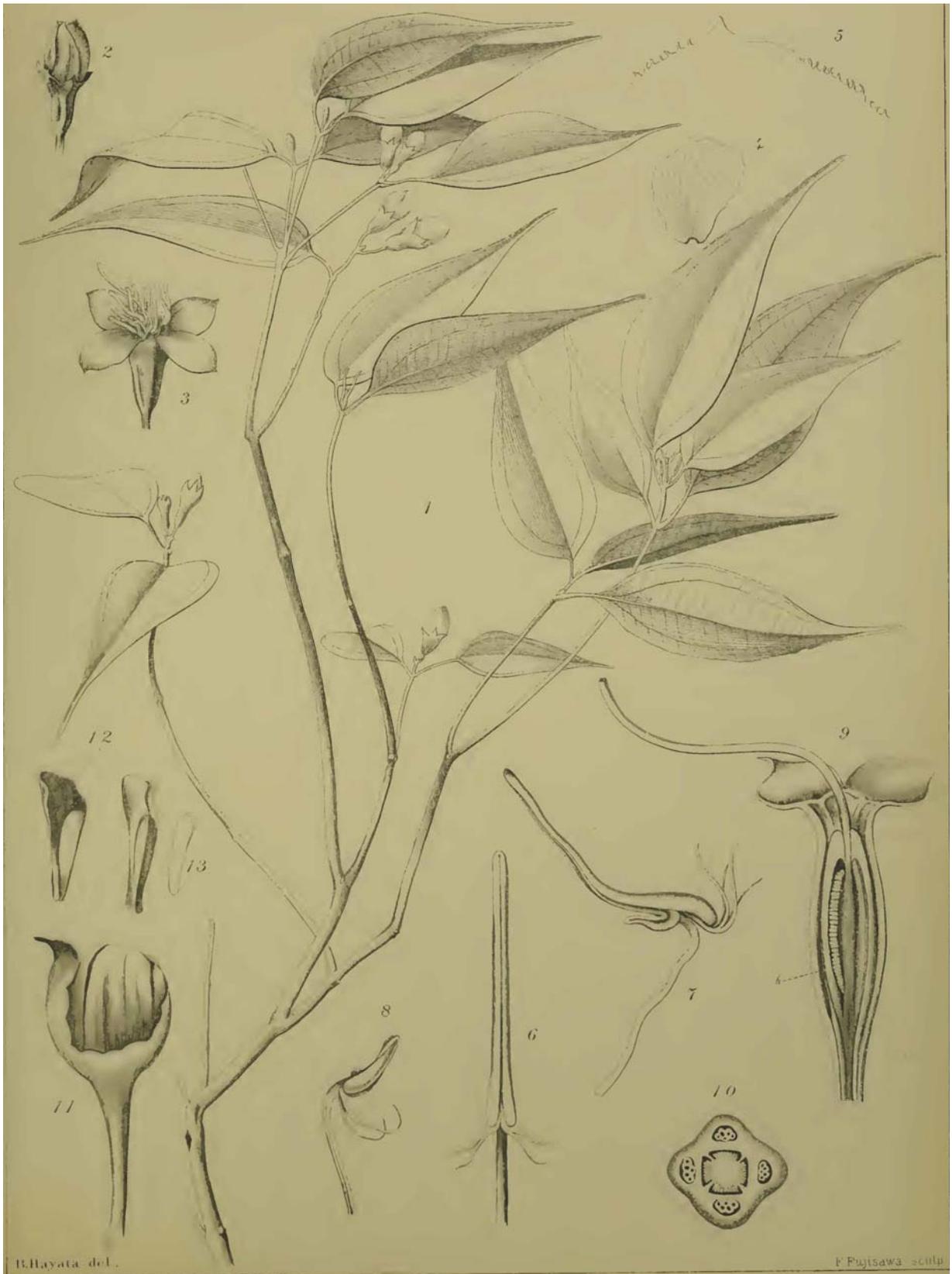


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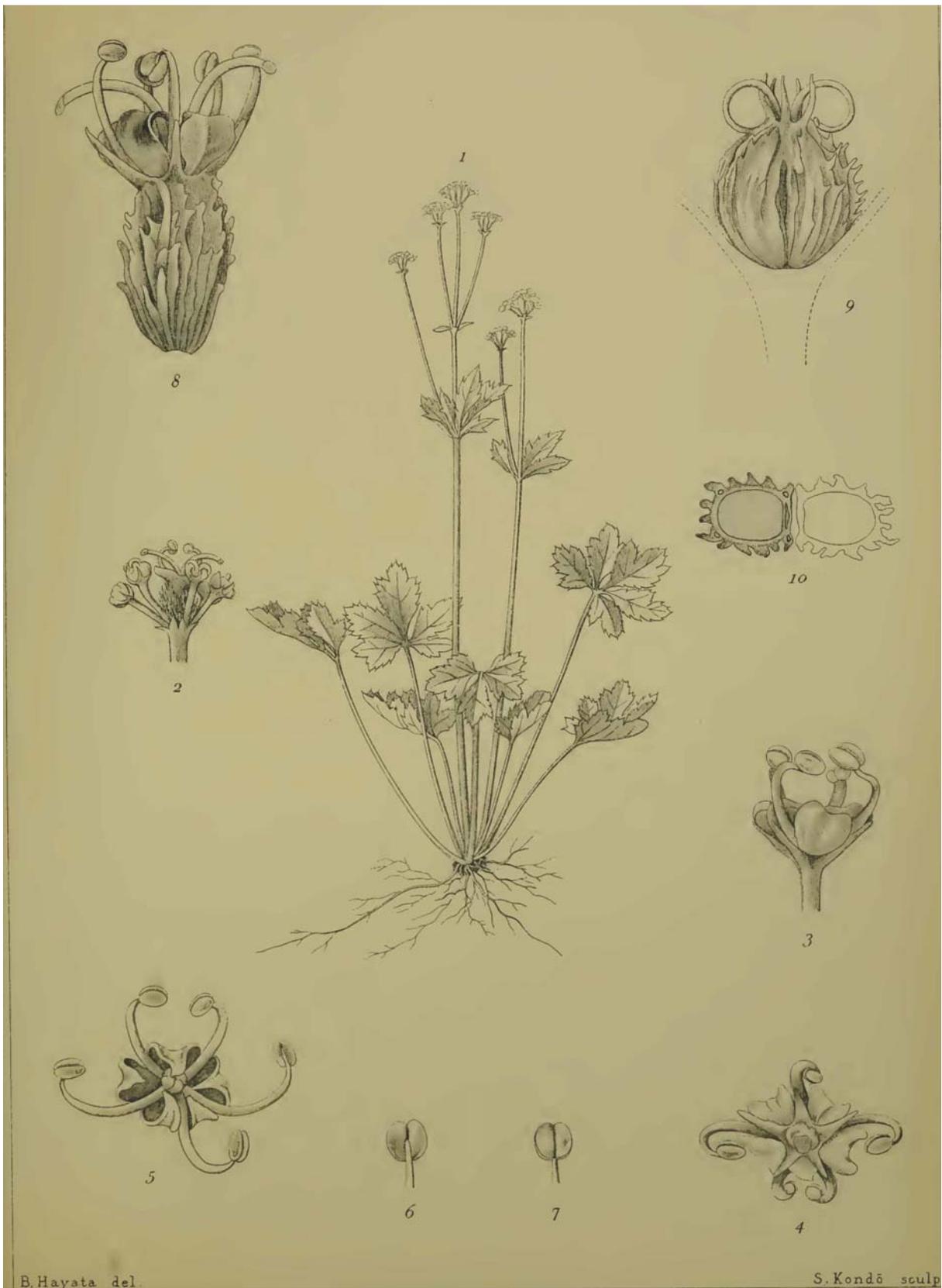
F. Fujisawa sculp.

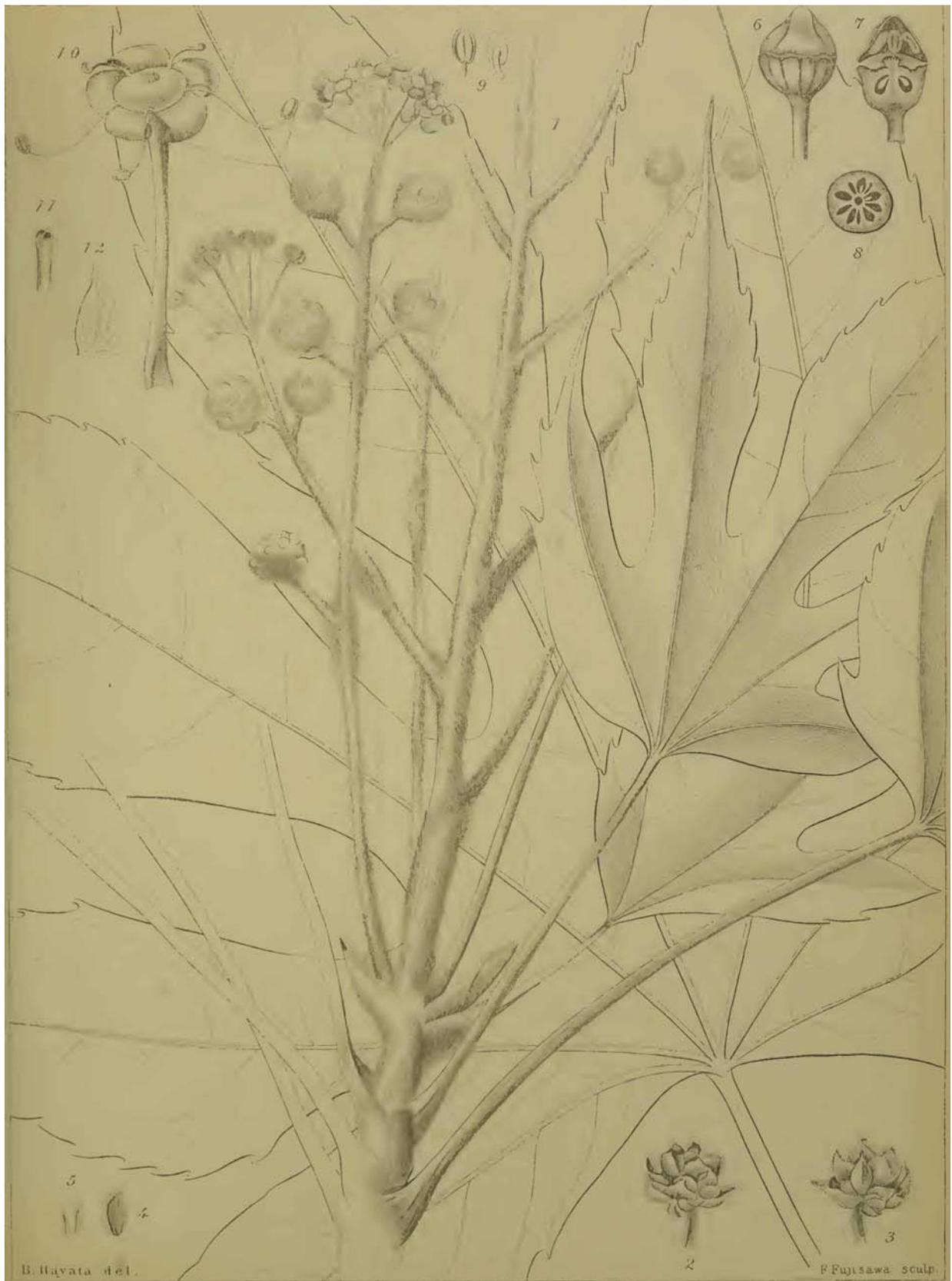








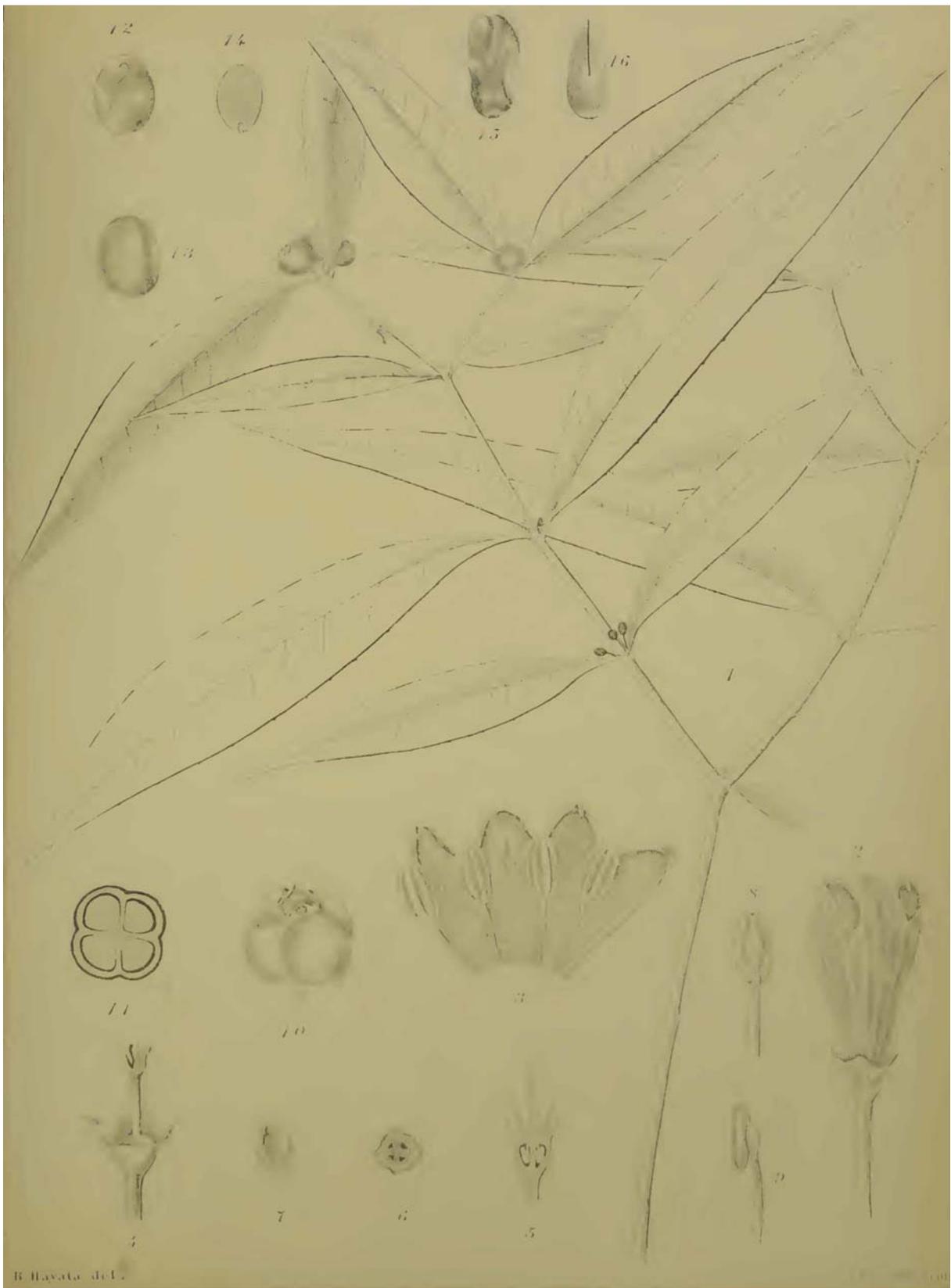


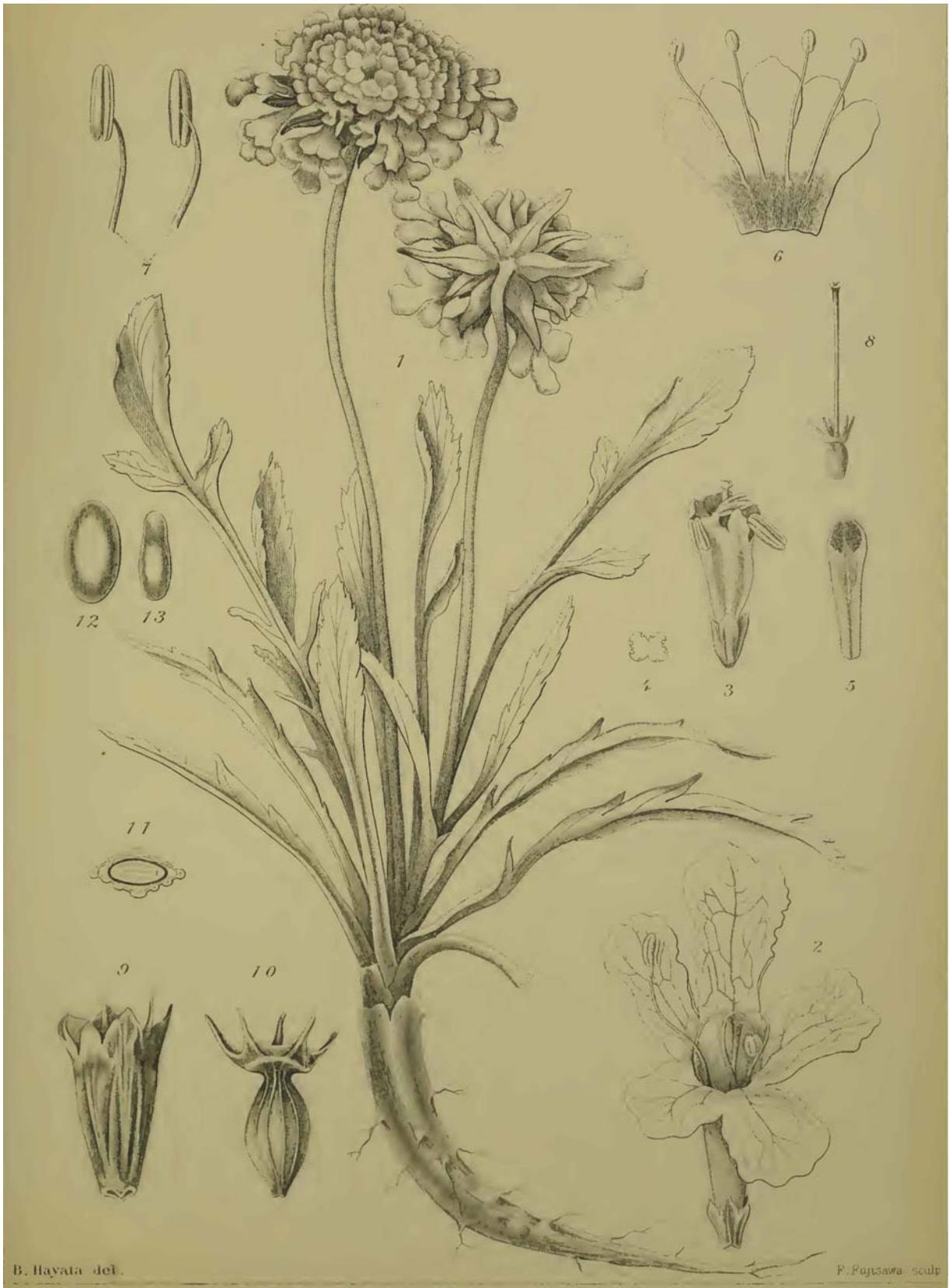




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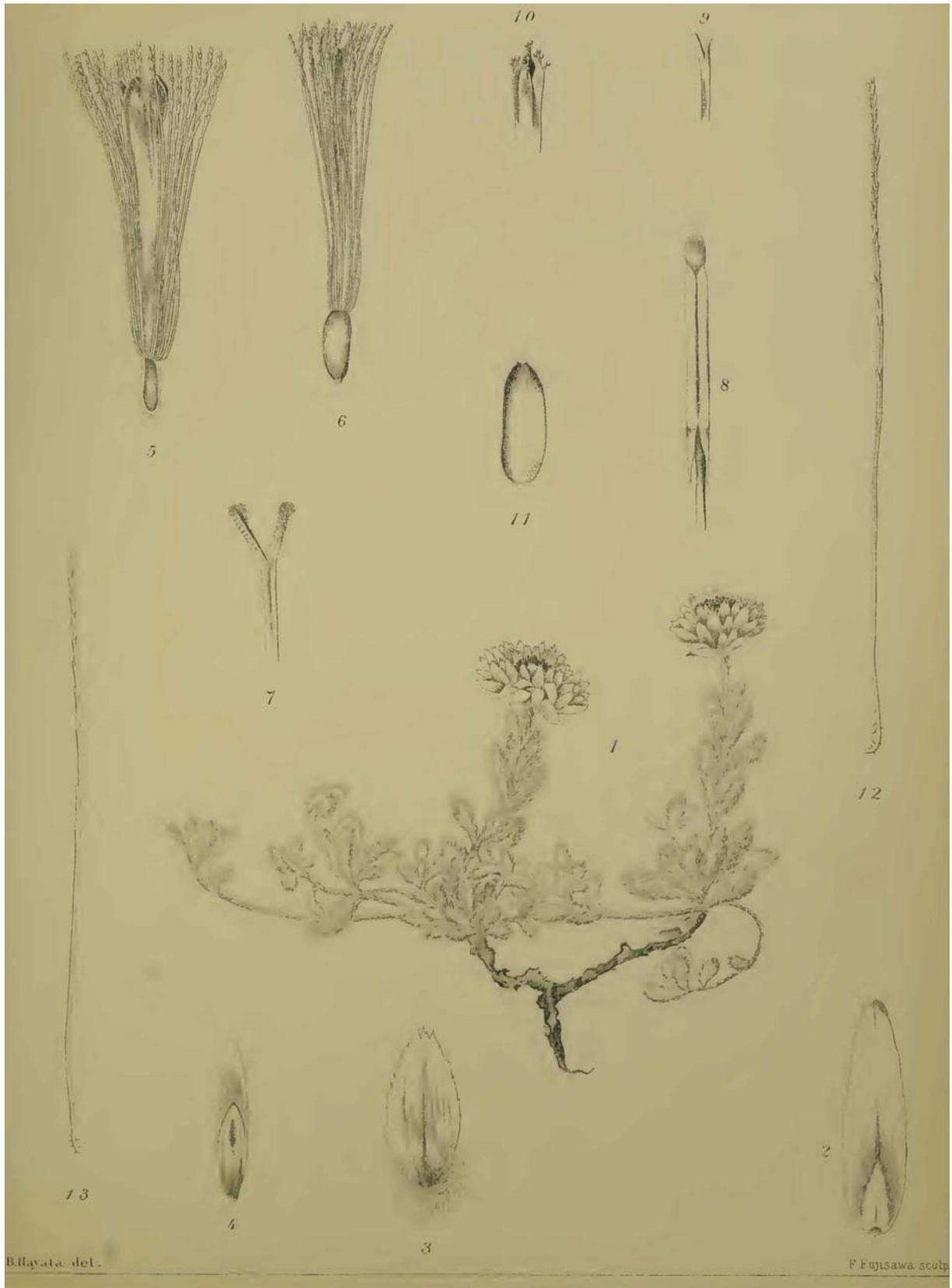
K. Nakazawa sculp.

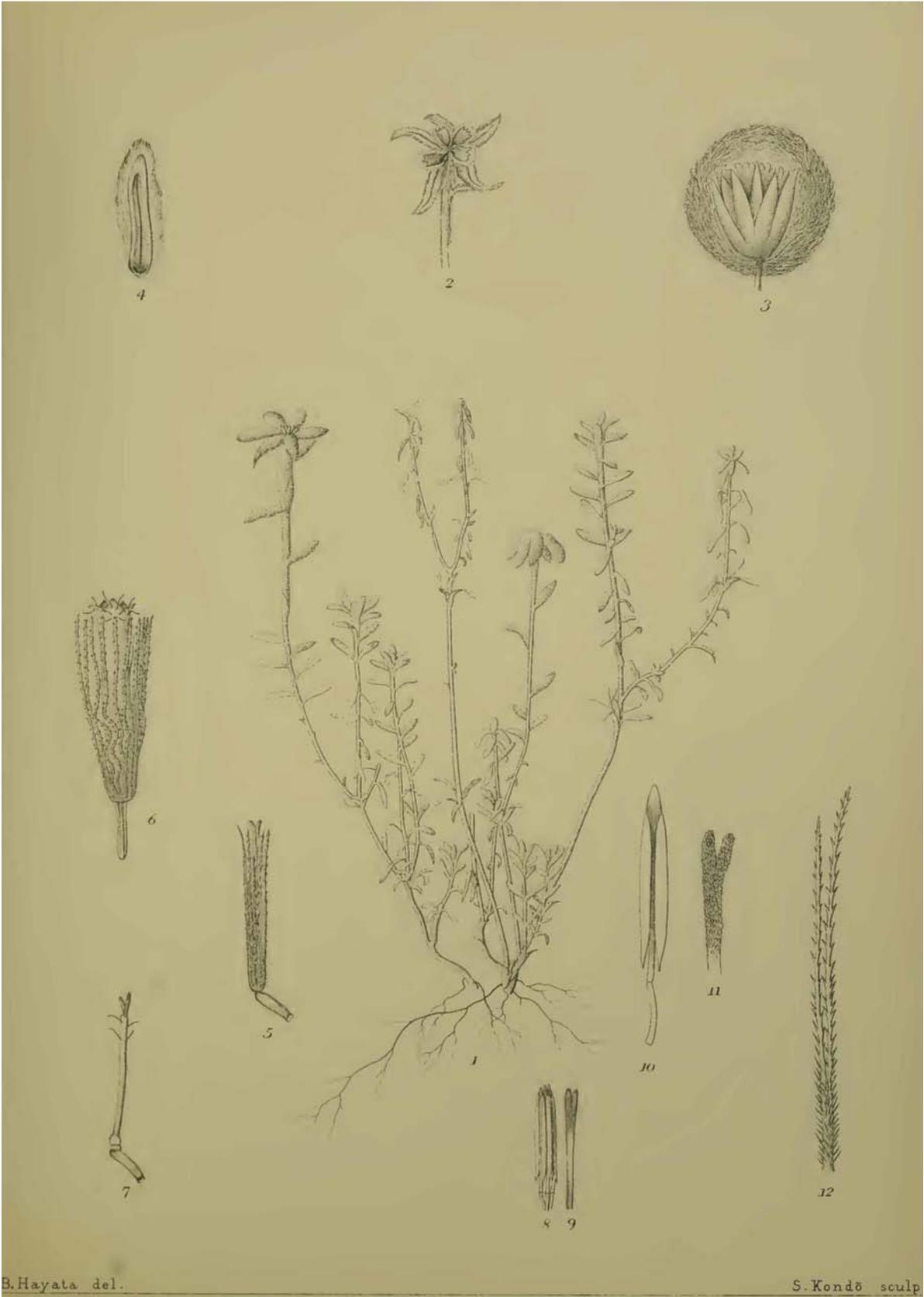




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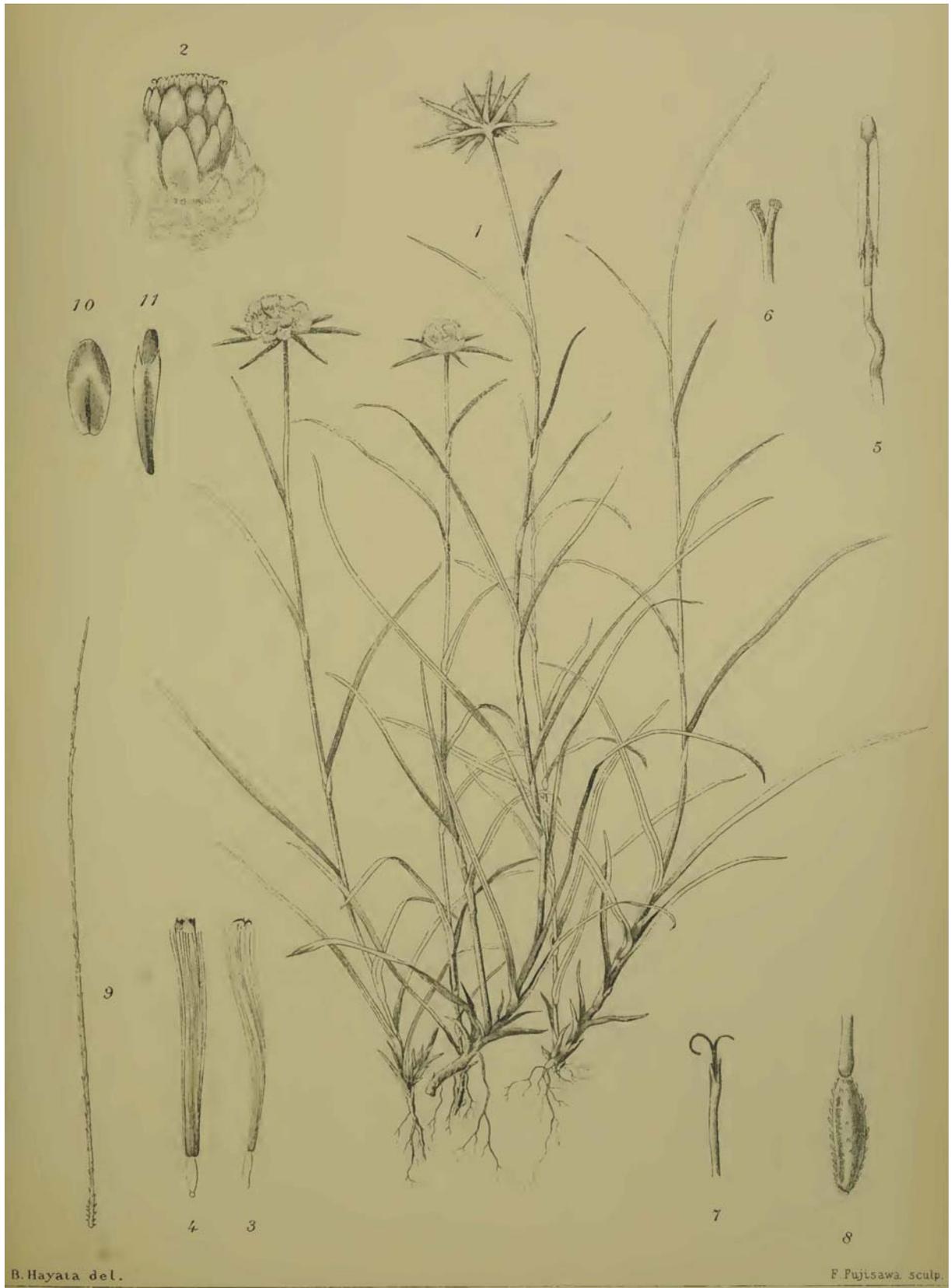
P. Fujisawa sculp.





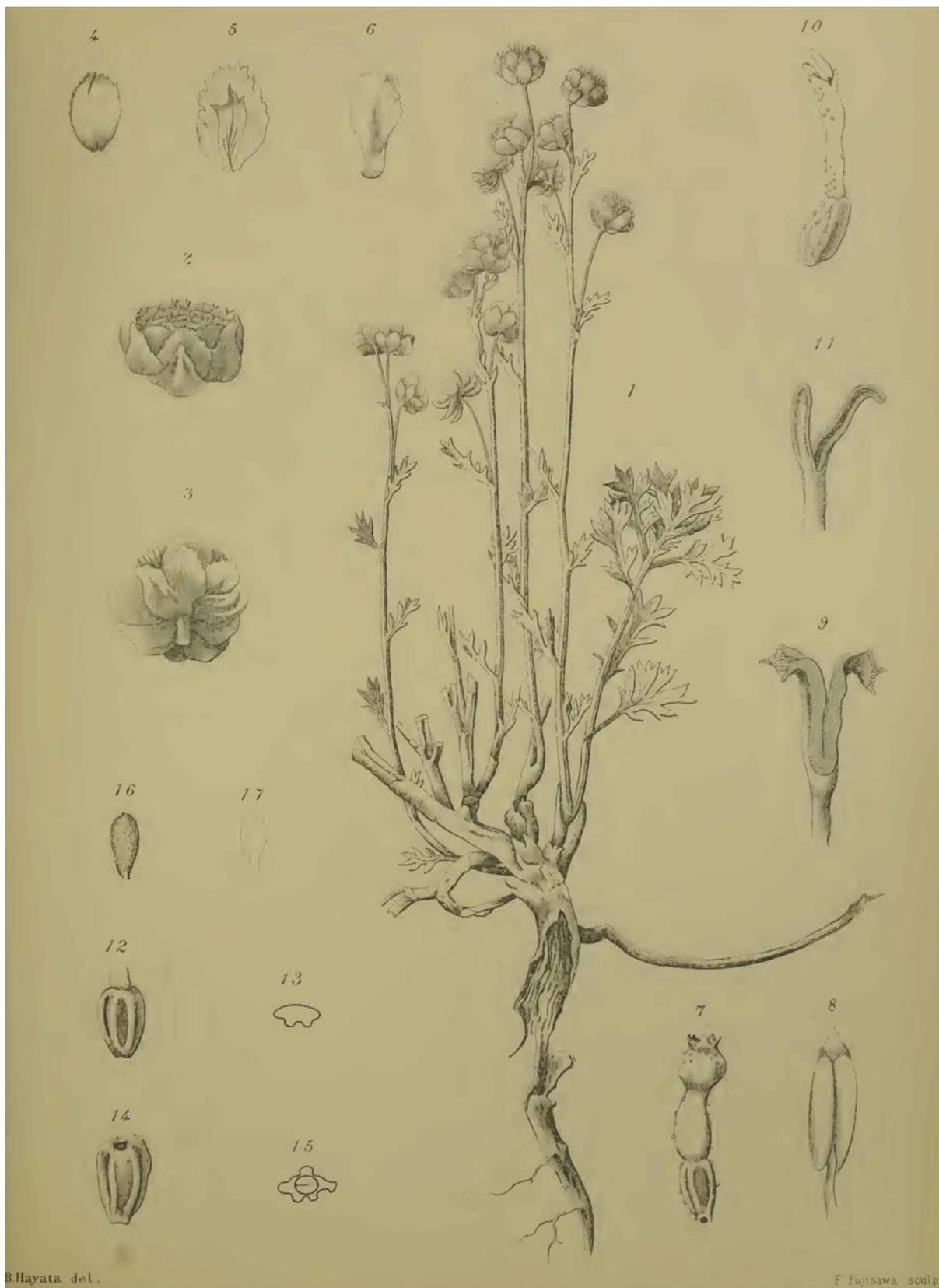
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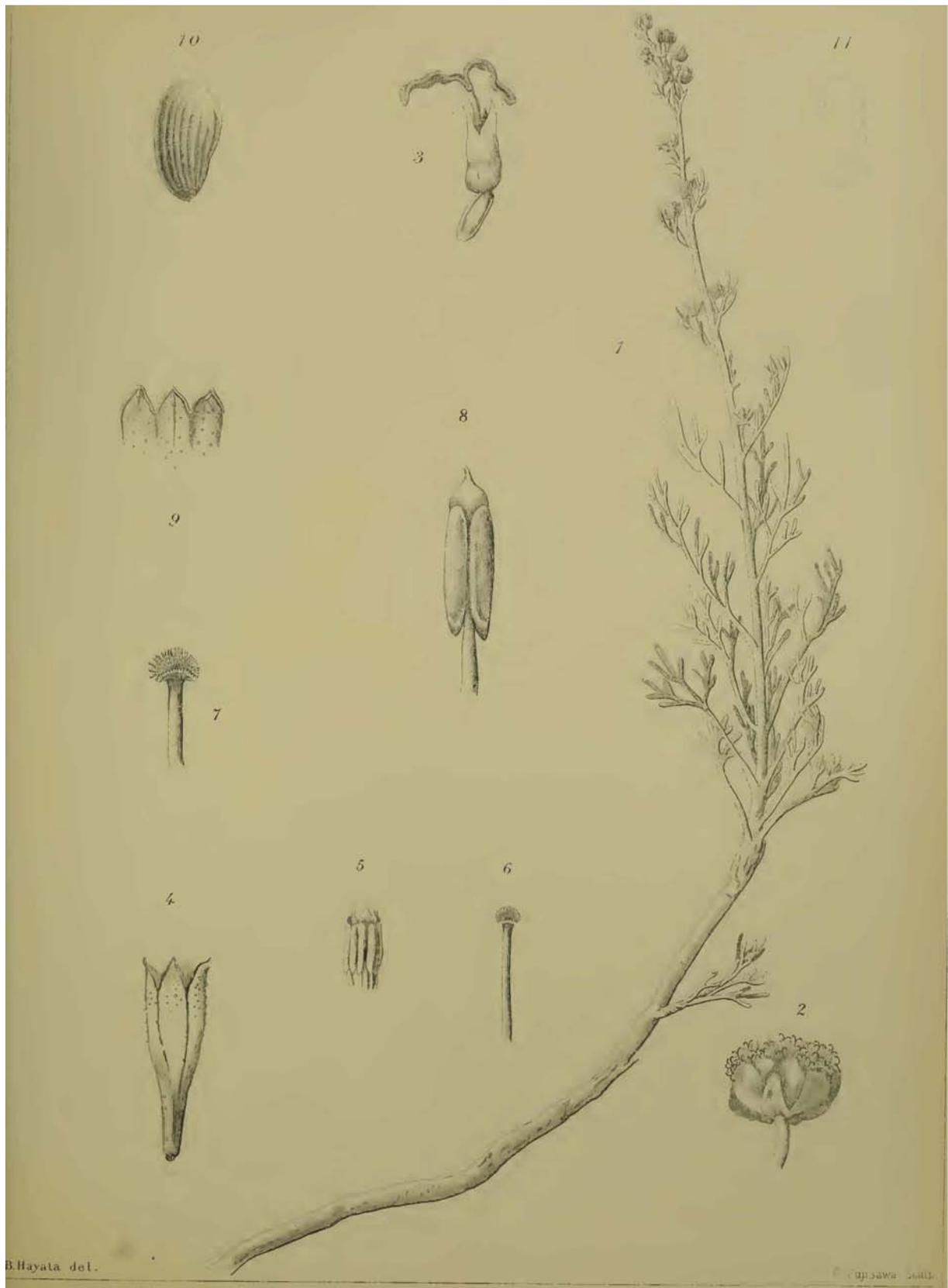
S. Kondō sculp



B. Hayata del.

F. Fujisawa sculp.

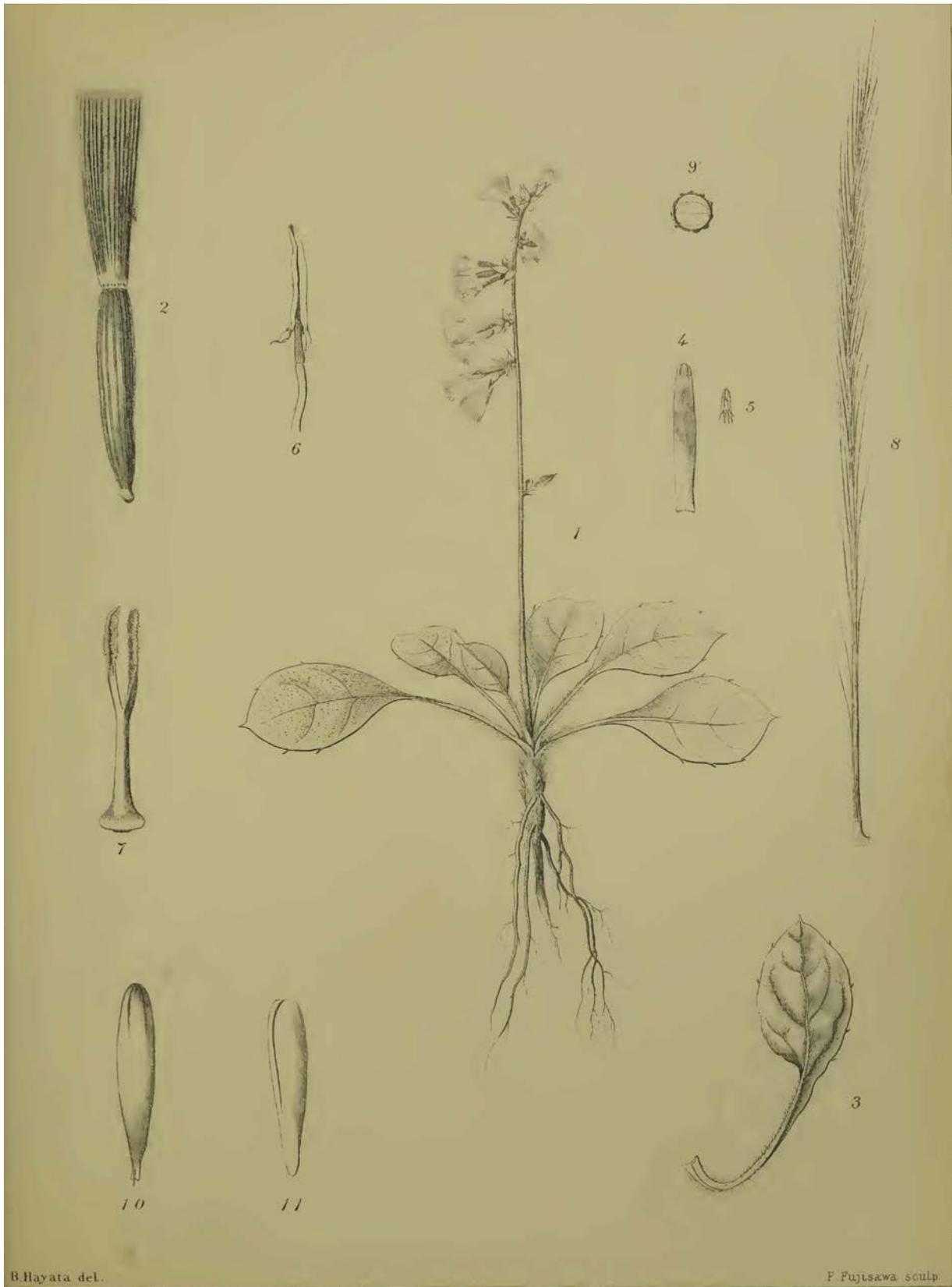






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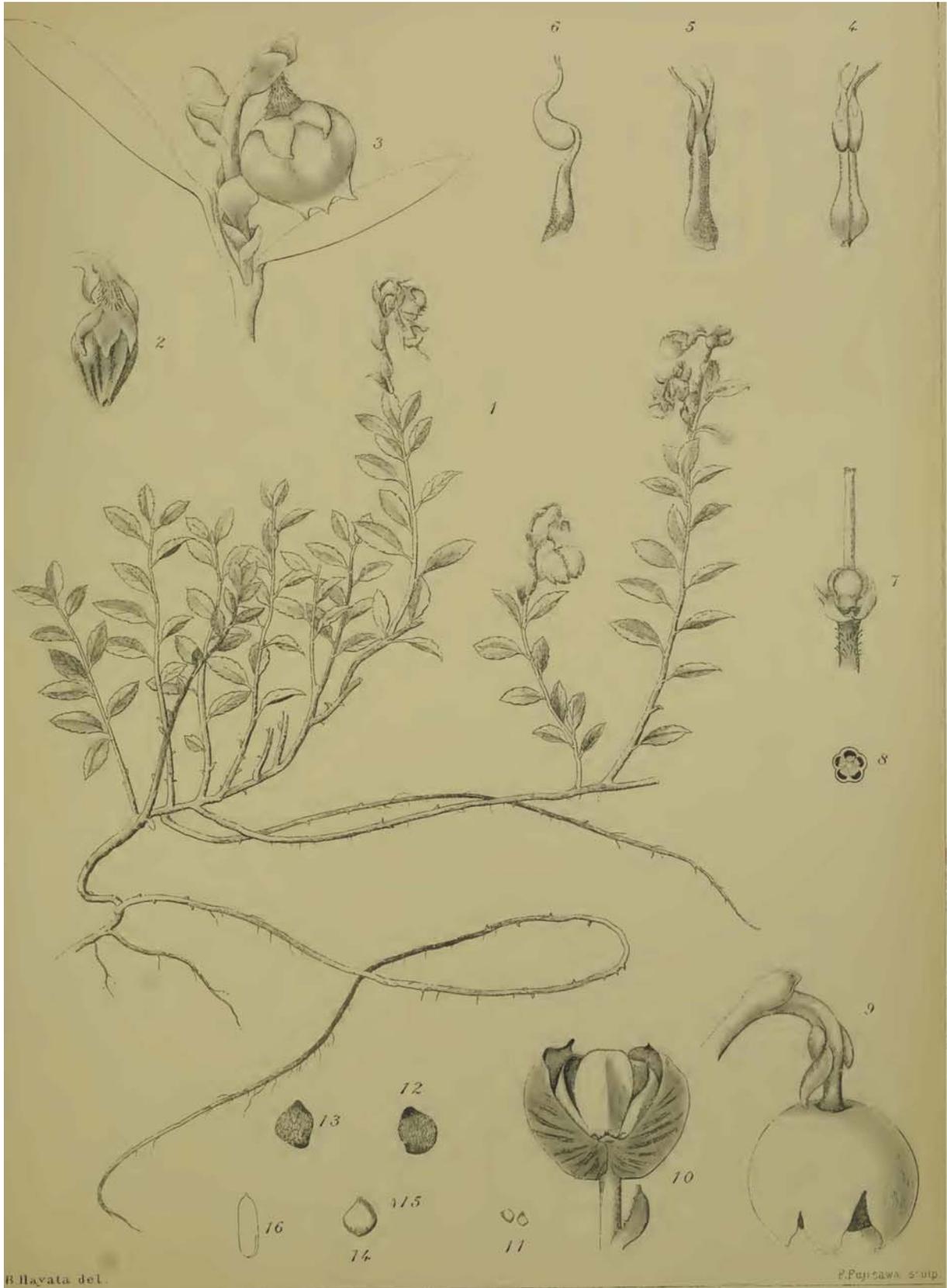
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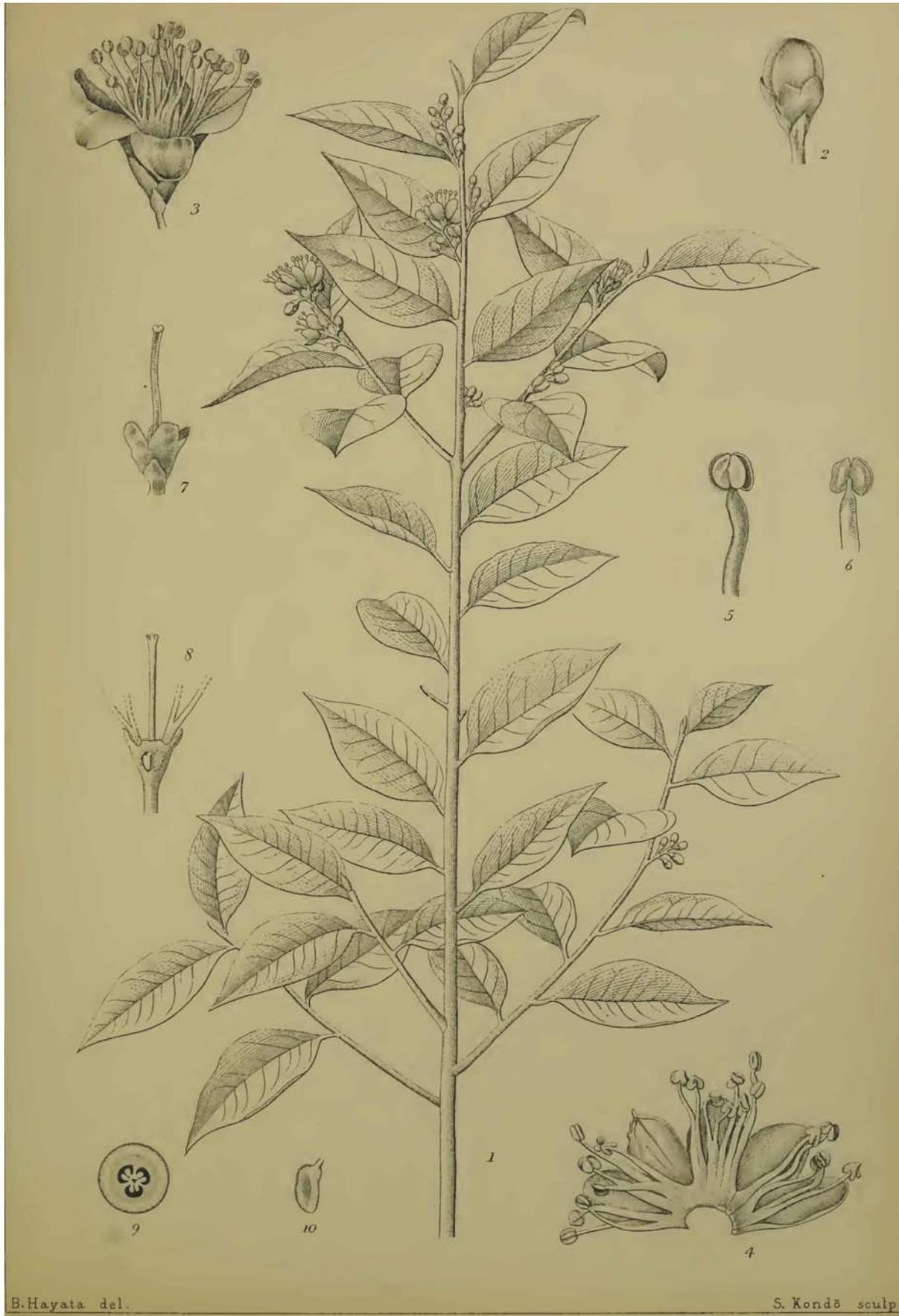


Rilayata del.

F Fujisawa sculp

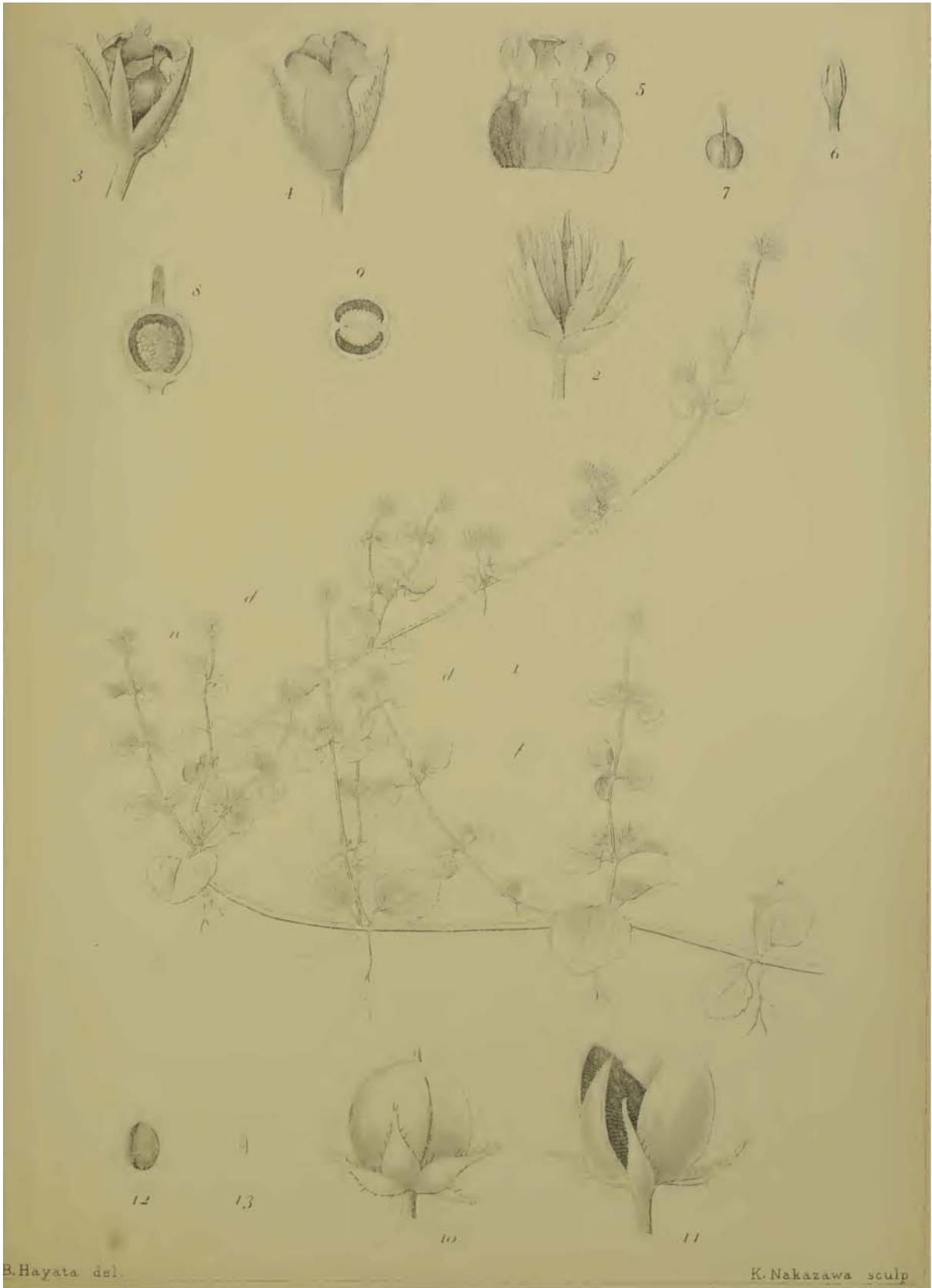






B. Hayata del.

S. Kondō sculp



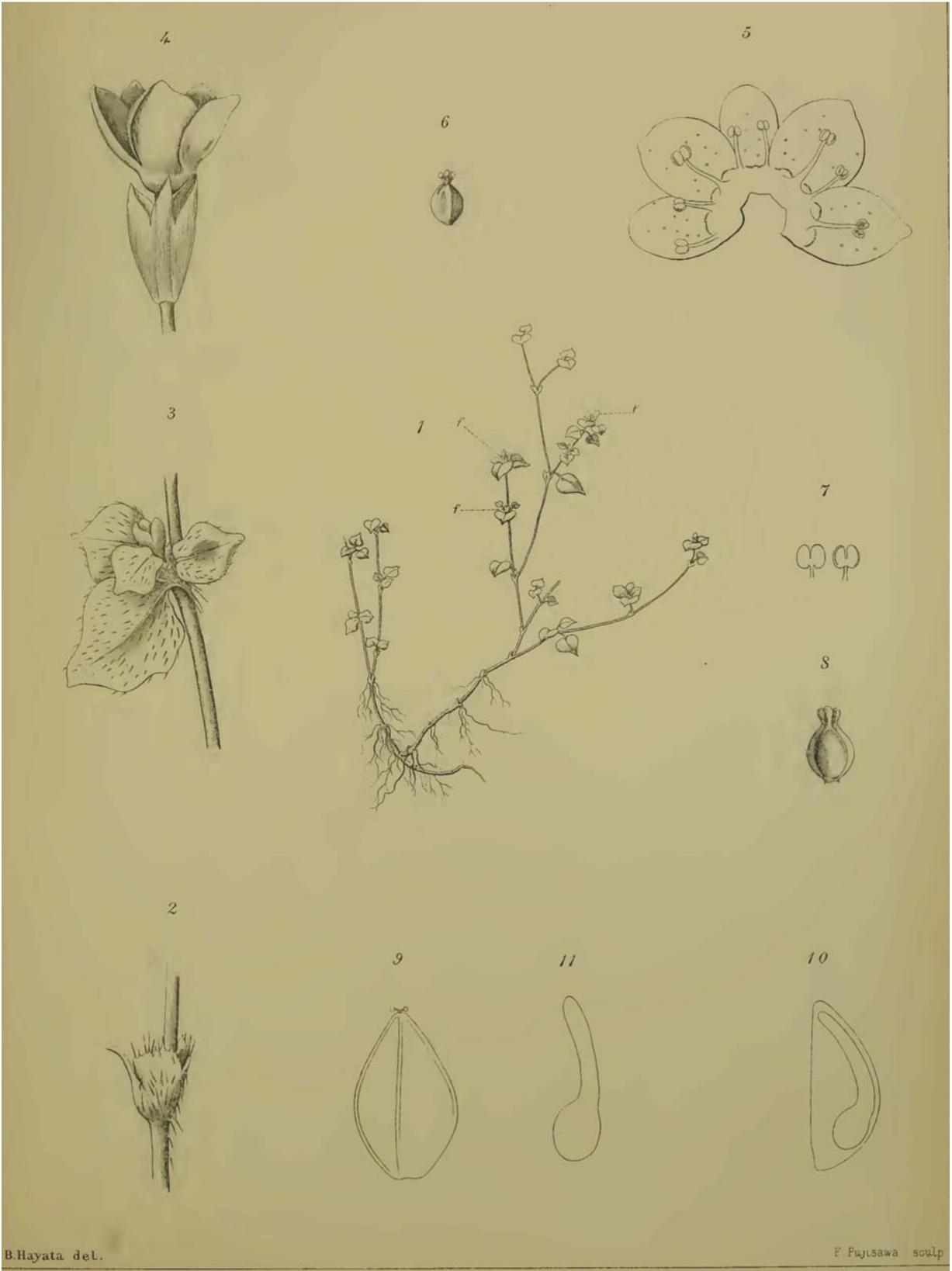
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K. Nakazawa sculp.



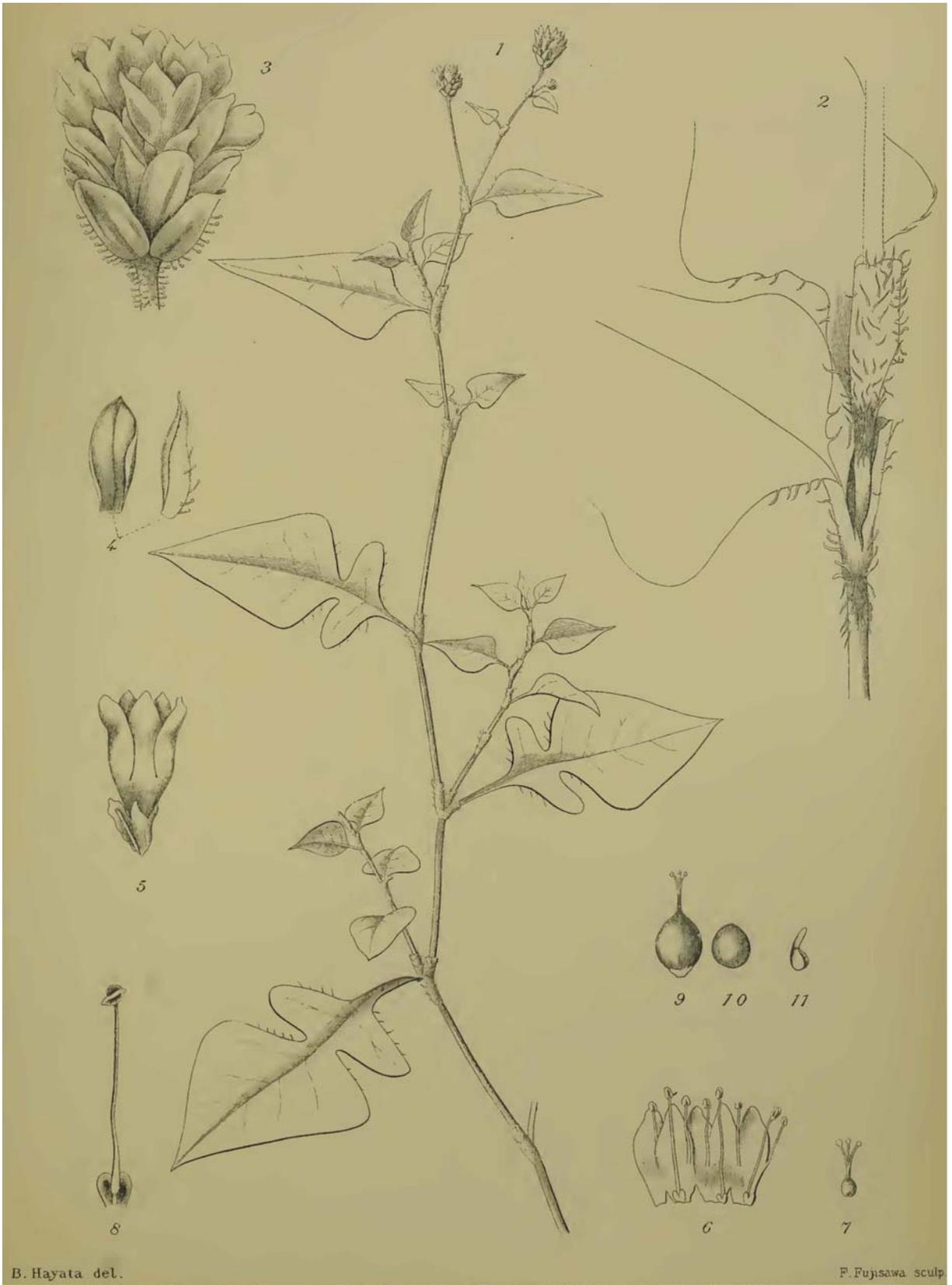
B. Hayata del.

F. Funsawa sculp.



B. Hayata del.

F. Fujisawa sculp



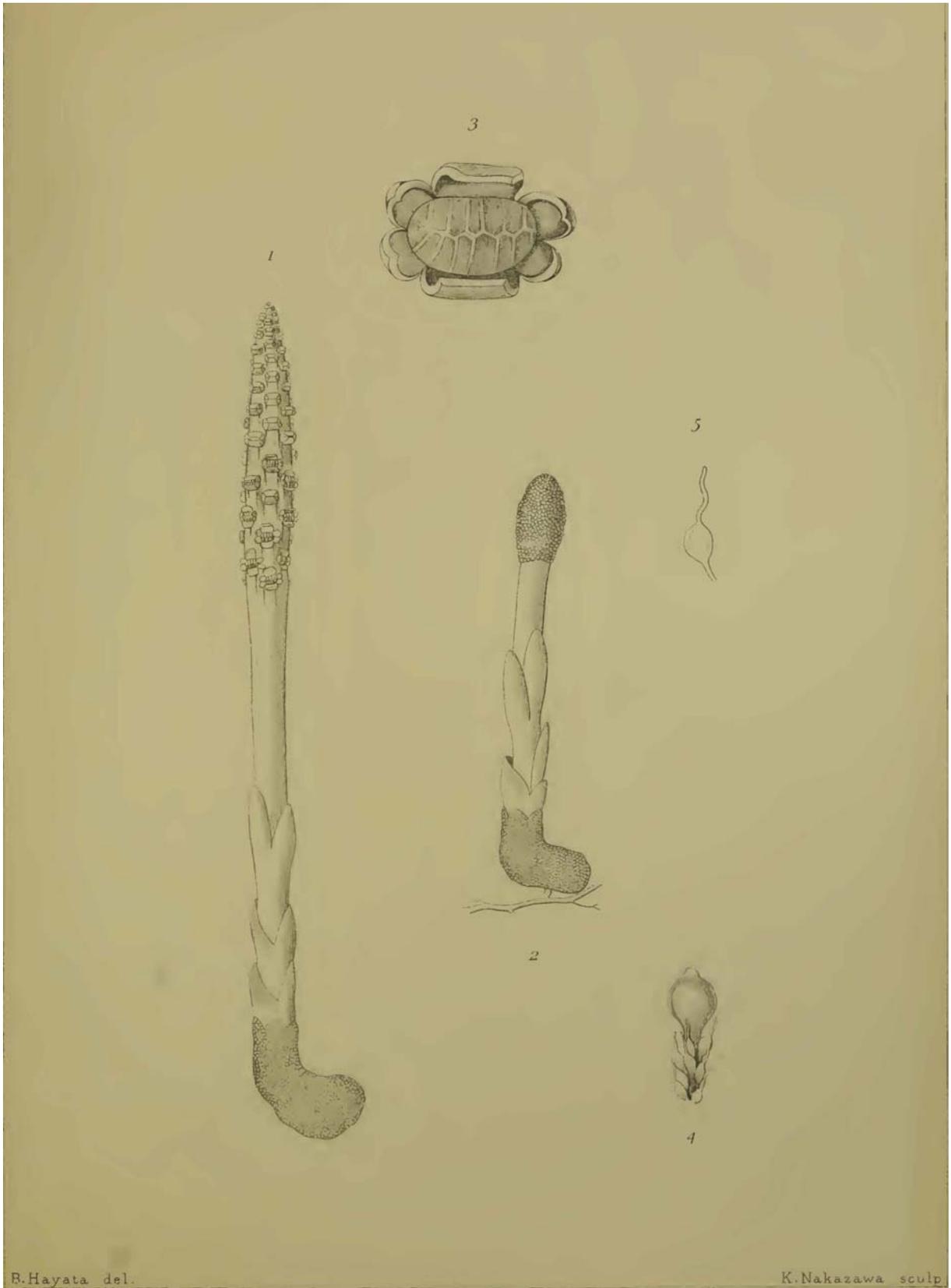
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F. Fujisawa sculp



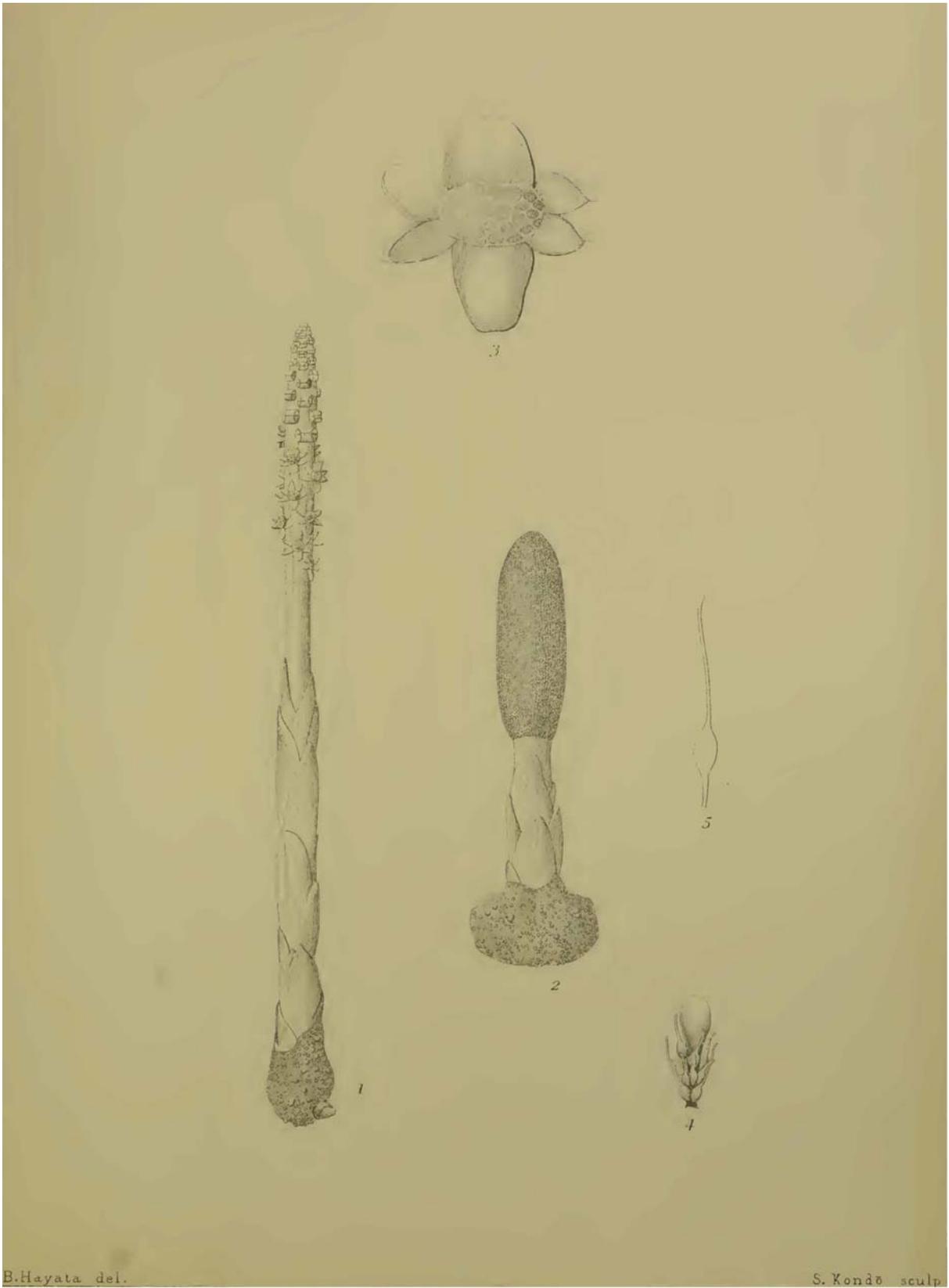
B. Hayata del

S. Kondo sculp



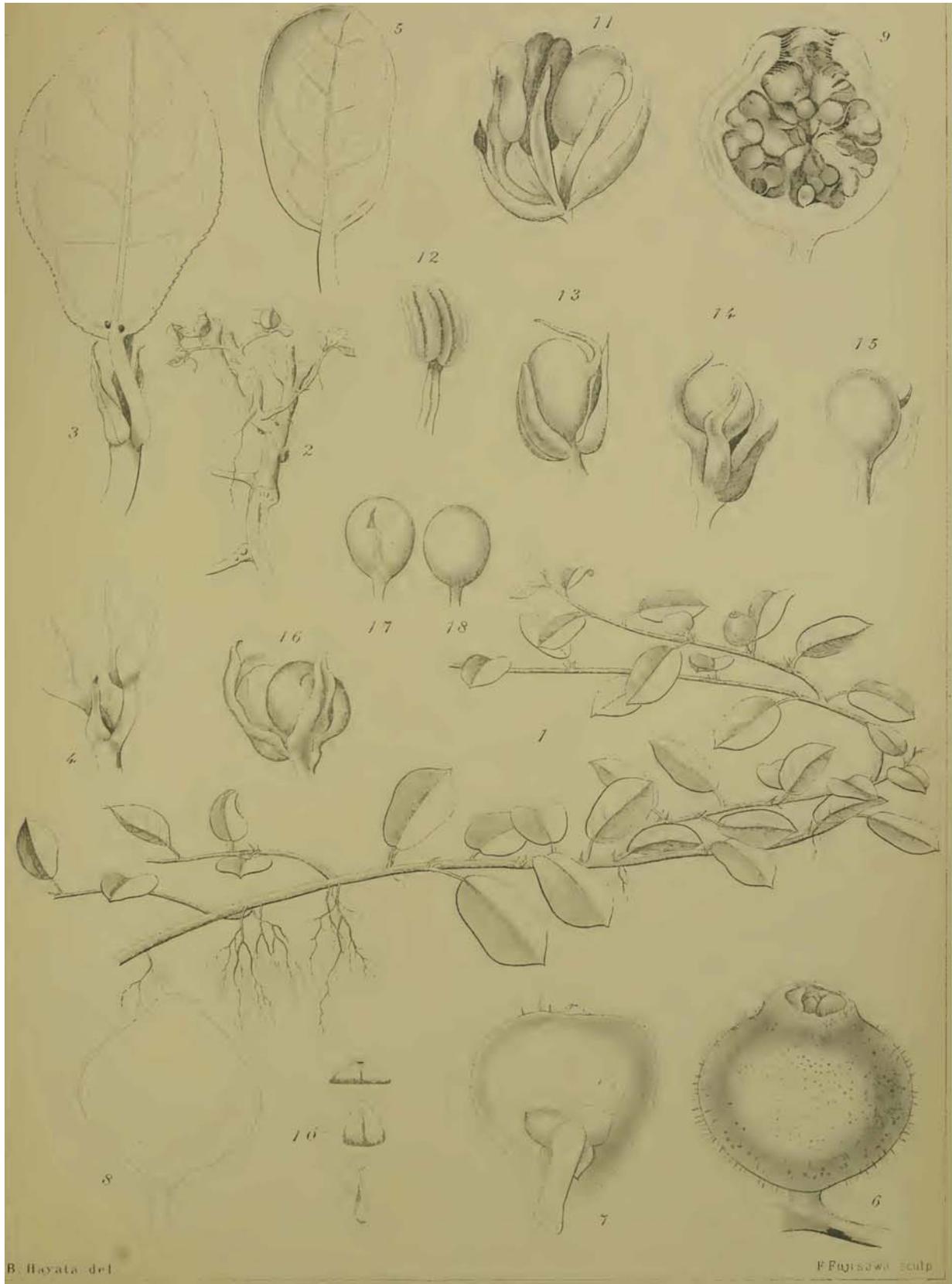
B.Hayata del.

K.Nakazawa sculp.



B. Hayata del.

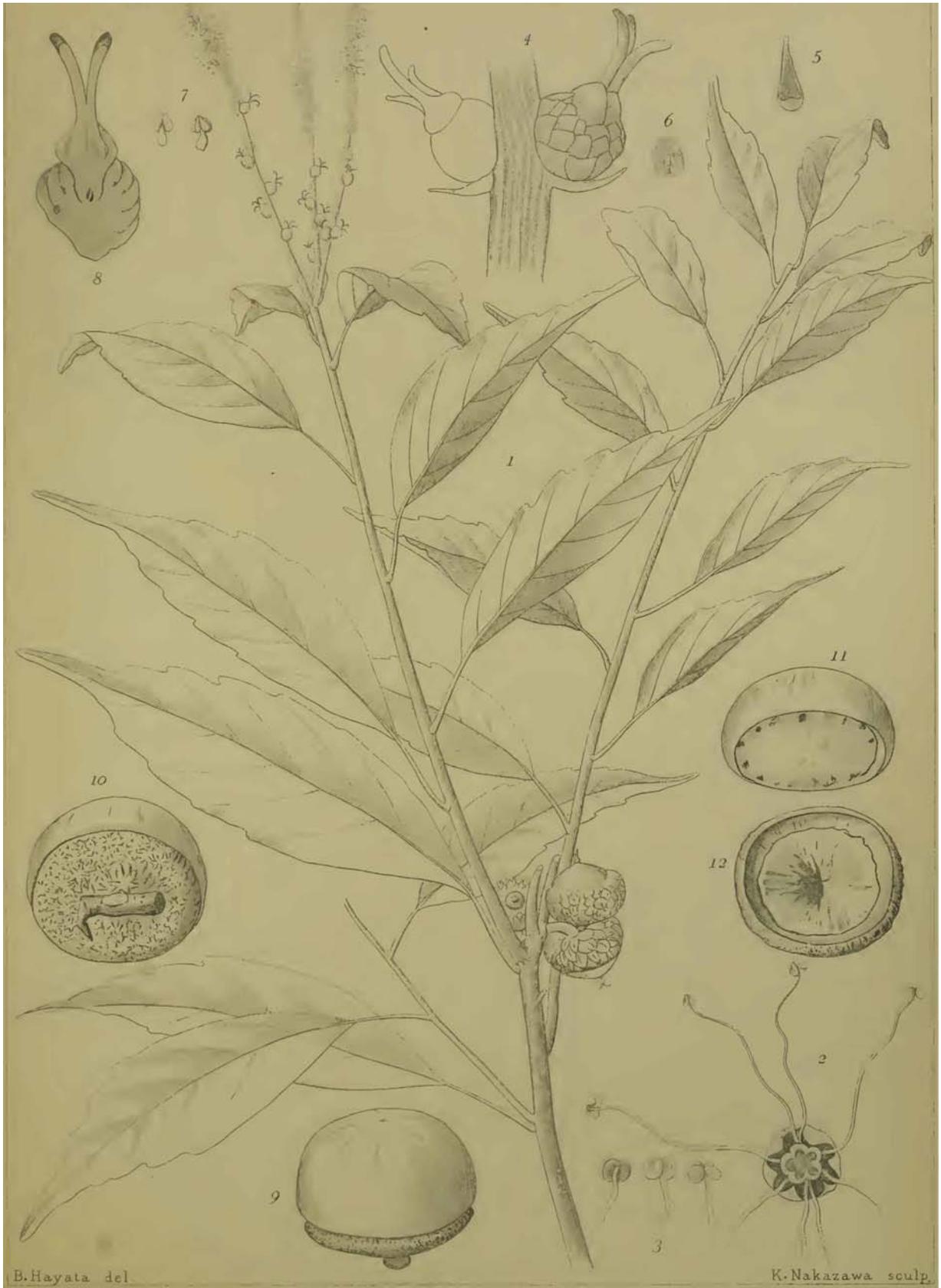
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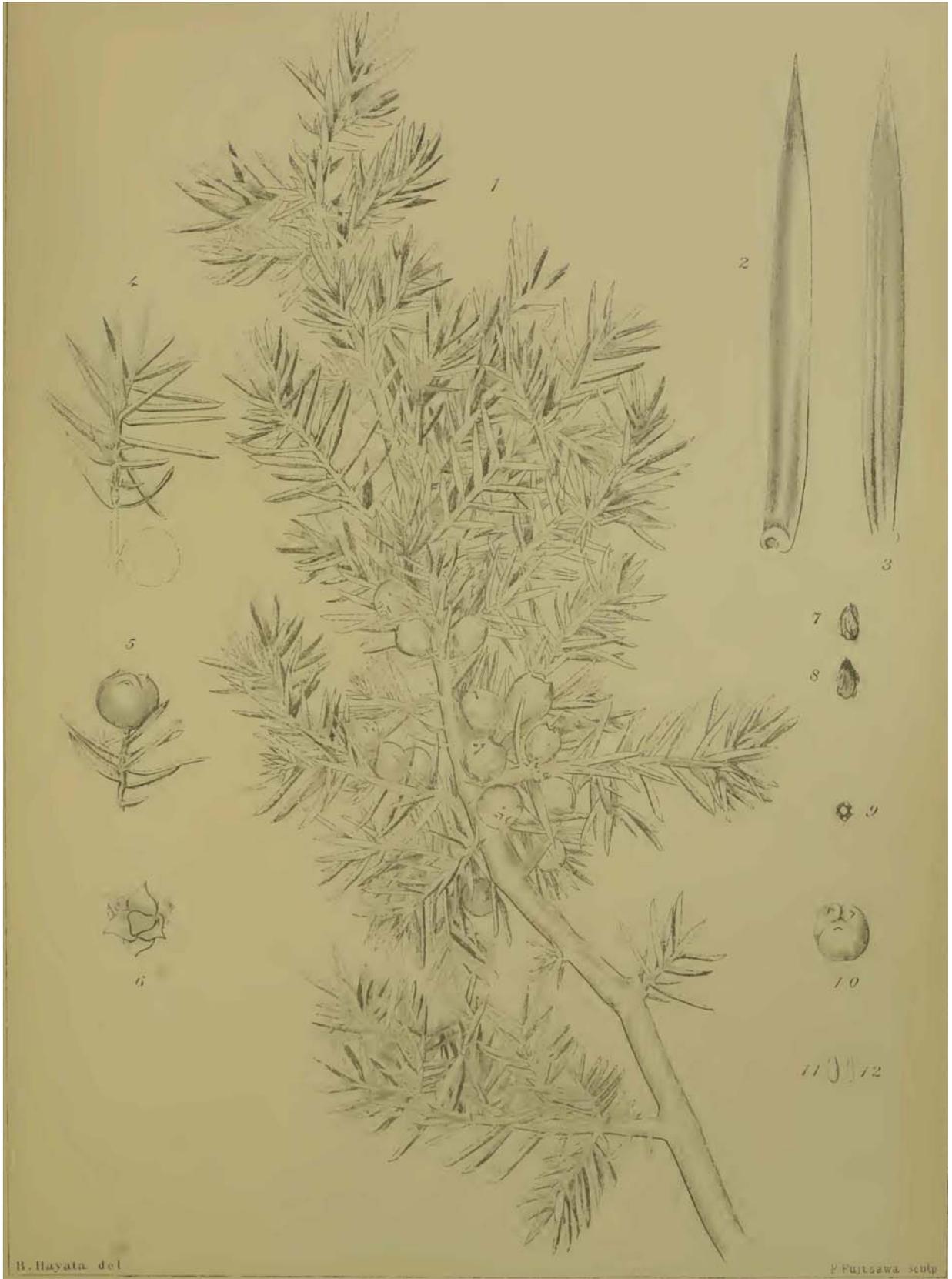




B. Hayata del.

K. Nakazawa sculp.





B. Hayata del

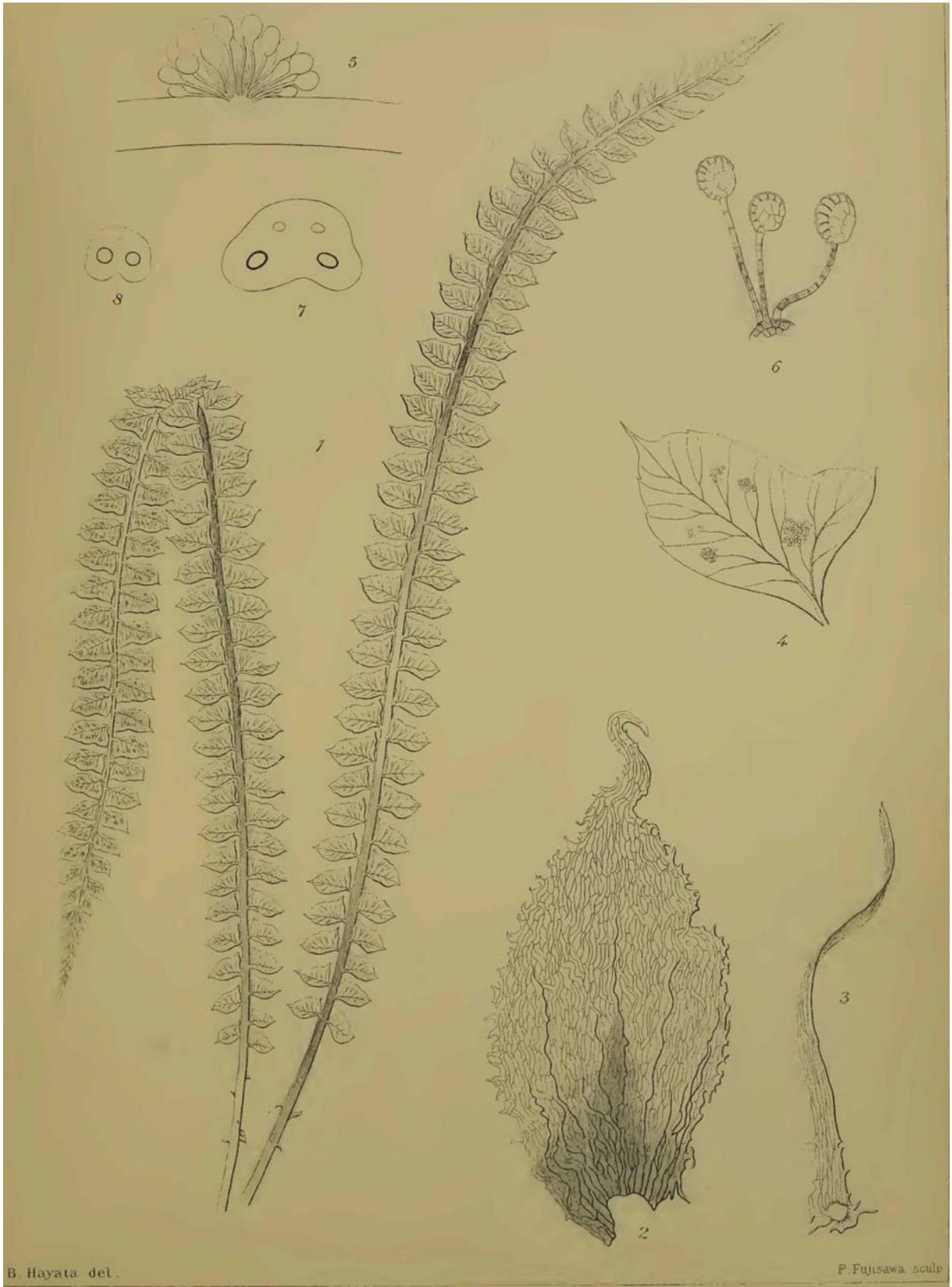
P. Fujisawa sculp





B. Hayata del.

K. Nakazawa sculp.



B. Hayata del.

F. Fujisawa sculp