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THE PHYTOGEOGRAPHY OF THE MIDDLE KURILES

By

Misao Tatewaki

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INTRODUCTION

The present paper reports on the research in continuation of the study on the vegetation in the Middle Kuriles.*¹⁾ In the previous paper, attention was mainly directed to a study of the nature and development of the plant-association, whilst the distribution of the plants in the Middle Kuriles forms the subject matter of this paper. The first impression of the vegetation gained by a cursory observation in the Middle Kuriles is an attenuated flora of the Kamtchatka region; but the further study of the flora in detail reveals some complexity in its make-up. There are quite different groups in the mode of their dis-

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tribution. One group contains a number of northern species from colder regions through Kamtchatka and the Northern Kuriles; the other includes a number of southern elements through Yezo and the Southern Kuriles. The district of the Middle Kuriles on consideration is the area from the Island of Urup to the Island of Matuwa, bordered on the south by the Etorofu Strait and on the north by the Matuwa Strait.

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I. The Floristic Composition of the Islands in the Middle Kuriles

The following enumeration is a general list of the plants collected in the Middle Kuriles. The specimens are now mostly preserved in the Herbarium of the Faculty of Agriculture of Hokkaido Imperial University. Though this list is incomplete, it gives a general idea of the composition of the flora of these islands.

A. FLORISTIC COMPOSITION OF THE ISLAND OF URUP

PTERIDOPHYTA

Ophioglossaceae

Botrychium Lunaria Sw. in Schrad. Journ. Bot. II. p. 110.

Hab. In grassy places: Tokotan (1927); Onsenzaki (1927).

Botrychium robustum Underw. in Bull. Torr. Bot. Club, XXX. p. 51.

Hab. In meadows: Tokotan (1927); Onsenzaki (1927); Hatchowan (S. Itagaki, 1928); Kobune (1930).

Polypodiaceae

Woodsia polysticoides Eat. var. *nudiuscula* Hook. Gard. Fern. sub t. 32.

Hab. On rocks: Tokotan (1927); Pirikamoye (1927).

Cystopteris fragilis Bernh. in Schrad. N. Journ. Bot. I. 2. p. 26.

Hab. On rocky cliffs: Kobune (1927); Mishima (1929).

Dryopteris oreopteris Maxon, var. *Fauriei* Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. VI. p. 119.

Hab. In woods: Hatchowan (S. Itagaki, 1928).

Dryopteris dilatata A. Gray, var. *oblonga* Takeda, in Tokyo Bot. Mag.

XXIV. p. 179.

Hab. In woods: Kobune (1927); Tokotan (1927).

Dryopteris Phegopteris C. Chr. Ind. Fil. 284.

Hab. In woods and on rocks: Tokotan (1927).

Polystichum aculeatum Schott, var. *retroso-paleaceum* Kodama, in Tokyo Bot. Mag. XXIX. p. 330.

Hab. (ex Miyabe & Kudo).

Polystichum Braunii Fée, Gen. Filic. p. 278.

Hab. In woods: Tokotan (1927).

Athyrium Filix-femina Roth, var. *melanolepis* Makino, in Tokyo Bot. Mag. XIII. p. 30.

Hab. In woods: Tokotan (1927).

Polypodium vulgare L. Sp. Pl. ed. 1, p. 1085.

Hab. On rocks: Tokotan (1927; 1930); Karanzaki (S. Itagaki, 1928).

Equisetaceae

Equisetum arvense L. Sp. Pl. ed. 1, p. 1061.

Hab. In dampy places or grassy places: Afunruimoi (K. Jimbo, 1891); Hatchowan (S. Itagaki, 1928).

var. *boreale* Rupr. in Beitr. Pfl. Russ. Reich. III. p. 19.

Hab. In dampy places: Tokotan (1927); Daibahama (1927); Pirikamoye (1927); Kobune (1929).

Equisetum palustre L. Sp. Pl. ed. 1, p. 1061.

Hab. In swamps: Kobune (1927); Daibahama (1927).

Equisetum hyemale L. Sp. Pl. ed. 1, p. 1062.

Hab. In dampy places, especially along the stream: Tokotan (K. Jimbo, 1891); Kobune (T. Kitahara, 1895; M. Tatewaki, 1927); River Yoroi (1928); Mishima (1928).

Equisetum variegatum Schreih. Cat. Pl. Helv. ed. 2, p. 27.

Hab. Without locality: (ex Ruprecht).

Lycopodiaceae

Lycopodium Selago L. Sp. Pl. ed. 1, p. 1102.

Hab. Anama (K. Jimbo, 1891); Afunruimoi (K. Uchida, 1891).

Lycopodium chinense H. Chr. in Nouv. Giron. Bot. Ital. Nouv. Ser. IV. p. 101.

Hab. In woods: Hayakawa valley (1927); Tokotan (1927); Hatchowan (S. Itagaki, 1928).

Lycopodium annotinum L. var. *latifolium* Takeda, in Tokyo Bot. Mag. XXIII. p. 215.

Hab. In woods: Tokotan (K. Jimbo, 1891); Kobune (1927).

Lycopodium clavatum L. Sp. Pl. ed. 1, p. 1101.

Hab. In heaths and bogs: Daibahama (1927); Kobune (1927); Hatchowan (S. Itagaki, 1928).

Lycopodium complanatum L. Sp. Pl. ed. 1, p. 1104.

Hab. In woods and heaths: Kobune (1927); Tokotan (1927); Hatchowan (S. Itagaki, 1928).

Selaginellaceae

Selaginella selaginoides Link, Fil. Sp. Hort. Berol. p. 158.

Hab. In bogs: Kobune (1927).

Selaginella helvetica Link, Fil. Sp. Hort. Berol. p. 159.

Hab. In rocky places: Tokotan (1927).

PHANEROGAMAE

Gymnospermae

Taxaceae

Taxus cuspidata Sieb. et Zucc. Fl. Jap. Fam. Nat. II. p. 108.

Hab. In woods: Tomarigawa (K. Jimbo, 1891); Tokotan (1927); Kobune (1927); Daibahama (1927); Onsenzaki (1927).

Pinaceae

Pinus pumila Regel, in Ind. Sem. Hort. Petrop. (1858) p. 23.

Hab. On terraces, mountain-sides, etc.: Anama (K. Jimbo, 1891); between Sarumaoi and Tokotan (K. Jimbo, 1891); Tokotan (T. Ishikawa, 1891); Kobune (1927); without locality (K. Miura, 1906).

Cupressaceae

Juniperus communis L. var. *montana* Aiton, Hort. Kew. III. p. 414.

Hab. In bogs: Kobune (1927); Daibahama (1927).

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

Salix Reini Fr. et Sav. Enum. Pl. Jap. I. p. 459 et II. p. 503.

- Hab. In heaths: Tokotan (1927); Onsenzaki (1927); Daibahama (1927).
- Salix kurilensis* Koidz. in Tokyo Bot. Mag. XXXII. p. 62.
- Hab. In heaths: Yoshinohama (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891).
- Salix sachalinensis* Fr. Schm. Fl. Sachal. p. 173.
- Hab. Along streams or on margins of the lake: Tokotan (1927).
- Salix paramushirensis* Kudo, Fl. Paramushir, p. 97.
- Hab. Along valleys: Tomarigawa (K. Jimbo, 1891).

Betulaceae

- Betula Ermani* Cham. in Linnaea VI. p. 537.
- Hab. In woods: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); without locality (K. Miura, 1906).
- Alnus fruticosa* Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.
- Hab. In woods: Suisanwan (K. Jimbo, 1891); Tomarigawa (K. Uchida, 1891); Pirikamoye (K. Uchida, 1891); Tokotan (1927); Mishima (1930).

Urticaceae

- Urtica Takedana* Ohwi, in Phytotax. et Geobot. I. p. 129.
- Hab. In meadows: Tokotan (1927).

Polygonaceae

- Rumex Gmelini* Turcz. ex Ledeb. Fl. Ross. III. p. 508.
- Hab. On lake-sides: Tokotan (1927).
- Rumex crispus* L. var. *japonicus* Makino, in Tokyo Bot. Mag. VIII. p. 174.
- Hab. In meadows: Onsenzaki (1927).
- Rumex Acetosa* L. var. *alpina* Hartm. in Handb. Skand. Fl. ed. 1, p. 146.
- Hab. In meadows: Megane (T. Kitahara, 1895); Kobune (1927).
- Oxyria digyna* Hill, Hort. Kew. p. 158.
- Hab. In heaths: Megane (K. Jimbo, 1891; T. Kitahara, 1895); between Anama and Yoshinohama (K. Uchida, 1891); Iyema (I. Kodama, 1893); Kobune (1927); Daibahama (1927); Tokotan (1927).
- Polygonum nodosum* Pers. apud Meisn. in DC. Prodr. XIV. p. 118.
- Hab. Along road-sides: Kobune (1929).
- Polygonum viviparum* L. Sp. Pl. ed. 1, p. 360.

Hab. In heaths: Megane (K. Jimbo, 1891; T. Kitahara, 1895); high land between Anama and Yoshinohama (K. Uchida, 1891); Iyema (I. Kodama, 1893); Kobune (1927); Daibahama (1927); Tokotan (1927).

Polygonum Weyrichii Fr. Schm. var. *alpinum* Maxim. in Mél. Biol. IX. p. 617.

Hab. In grassy places: Otoimaoibet (K. Uchida, 1891); Tomarigawa (K. Uchida, 1891); Yoshinohama (K. Uchida, 1891); Kobune (1927); Tokotan (1927).

Chenopodiaceae

Atriplex Gmelini C. A. Mey. in Bong. Vég. Sitcha, p. 160.

Hab. On sandy beaches: Onsenzaki (1927).

Portulacaceae

Montia lamprosperma Cham. in Linnaea VI. p. 564.

Hab. In wet places: Kobune (1927).

Caryophyllaceae

Stellaria Fenzlii Regel, Pl. Radd. Dicotyl. Polypet. pp. 264, 280.

Hab. In woods or grassy places: Suisanwan (K. Uchida, 1891); Tokotan (1927).

Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII. p. 194.

Hab. In rocky places: Otoimaoibet (K. Uchida, 1891); Iyema (I. Kodama, 1893); Megane (T. Kitahara, 1895); Tokotan (1927); Kobune (1927); Pirikamoye (1927).

Cerastium boreale Takeda, var. *herbaceo-bracteatum* Takeda, in Kew Bull. (1911), p. 105.

Hab. In grassy places: Megane (T. Kitahara, 1895); Kobune (1927).

Sagina crassicaulis Watson, in Proc. Am. Acad. XVIII. p. 191.

Hab. On rocky cliffs: Kobune (1927).

Sagina Linnaei Presl, Real. Haenk. II. p. 14.

Hab. On rocky cliffs: Tokotan (1927).

Ammodenia oblongifolia Rydb. var. *maxima* Nakai, in Tokyo Bot. Mag. XLIII. p. 458.

Hab. On beaches: Tomarigawa (K. Jimbo, 1891); Otoimaoibet (K. Uchida, 1891); Yoshinohama (K. Jimbo, 1891); Tokotan

(K. Jimbo, 1891; K. Uchida, 1891); without locality (K. Miura, 1906).

Moehringia lateriflora Fenzl, Verb. Alsin. pp. 18, 38.

Hab. In grassy places: Tokotan (1927).

Dianthus superbus L. var. *speciosus* Reichb. Fl. Germ. Excurs. p. 808.

Hab. In grassy places: Tokotan (1927).

Ranunculaceae

Trollius Riederianus Fisch. et Mey. in Ind. Sem. Hort. Petrop. IV. p. 48

Hab. In meadows: Tokotan (K. Jimbo, 1891; T. Ishikawa, 1894); Mishima (Cap. Taketomi, 1926; M. Tatewaki, 1929); Kobune (T. Kitahara, 1895); without locality (T. Kitahara, 1895).

Coptis trifolia Salisb. in Trans. Linn. Soc. VIII. p. 305.

Hab. In bogs or woods: Yoshinohama (K. Uchida, 1891); Afunruimoi (K. Uchida, 1891); Kobune (1927); Tokotan (1927).

Cimicifuga simplex Wormsk. ex DC. Prodr. I. p. 64.

Hab. In meadows: Tokotan (1927).

Aquilegia akitensis Huth, in Bull. Herb. Boiss. (1897), p. 1094.

Hab. On rocky cliffs: Tokotan (1927).

Aconitum kamtschaticum Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.

Hab. In meadows: Kobune (T. Kitahara, 1895); between Iwanagawa and Anama (K. Uchida, 1891); Tokotan (1927).

Anemone debilis Fisch. apud Turcz. in Bull. Soc. Nat. Mosc. XXVII. p. 274.

Hab. In woods: Tokotan (1930).

Anemone narcissiflora L. Sp. Pl. ed. 1, p. 542.

Hab. In meadows and heaths: Tokotan (K. Jimbo, 1891; T. Ishikawa, 1894; M. Tatewaki, 1929; 1930); Mishima (1929, 1930); Onsenzaki (1927); Kobune (1927); Iwayadomari (K. Uchida, 1891); Anama (C. Tarao, 1892); Tomarigawa (K. Jimbo, 1891); without locality (S. Fujimura, 1891; T. Kitahara, 1895).

Pulsatilla angustifolia Turcz. in Bull. Soc. Nat. Imp. Mosc. XIII. p. 61.

Hab. Iyema (I. Kodama, 1893; S. Itagaki, 1928).

Troutvetteria japonica Sieb. et Zucc. Fl. Jap. Fam. Nat. I. p. 184.

Hab. Hatchowan (S. Itagaki, 1928).

Ranunculus trichophyllus Chaix, in Vill. Hist. Pl. Danch. I. p. 335.

Hab. In lakes: Tokotan (1927).

Ranunculus acris L. var. *Steveni* Rgl. et Til. Fl. Ajan. p. 32.

Hab. In meadows: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Iwayadomari (K. Uchida, 1891); Afunruimoi (K. Jimbo, 1891); Kobune (1927); Pirikamoye (1927).

Ranunculus repens L. var. *major* Nakai, in Tokyo Bot. Mag. XLII. p. 23.

Hab. In meadows: Tokotan (1927); without locality (M. Aizawa, 1900).

Thalictrum Thunbergii A.P. DC. Syst. I. p. 183.

Hab. In grassy places: Tokotan (1927); Mishima (1929).

Papaveraceae

Papaver nudicaule L. subsp. *xanthopetalum* Fedde, var. *Fauriei* Fedde, Repert. VII. p. 257.

Hab. Otoimaoibet (K. Uchida, 1891).

Corydalis ambigua Cham. et Schlech. in Linnaea I. p. 558.

Hab. In meadows: Anama (K. Jimbo, 1891; C. Tarao, 1892); Iyema (I. Kodama, 1893; S. Itagaki, 1928); Otoimaoibet (K. Uchida, 1891); Kobune (1930); Mishima (1930); Tokotan (Y. Hayakawa, 1928; 1930).

Brassicaceae

Cochlearia oblongifolia DC. Syst. II. p. 363.

Hab. On rocky cliffs near the sea: Yoshinohama (K. Uchida, 1891); Pirikamoye (K. Uchida, 1891); Kobune (1927).

Barbarea orthocerus Ledeb.: Fl. Ross. I. p. 114.

Hab. In dampy places: Tomarigawa (K. Jimbo, 1891; K. Uchida, 1891); Iwanagawa (K. Jimbo, 1891); Otoimaoibet (K. Uchida, 1891); Kobune (1927).

Parrya nudicaulis Regel, Pl. Radd. Dicotyl. Polypet. p. 176.

Hab. Without locality (ex Maximowicz).

Cardamine Regeliana Miq. Prol. Fl. Jap. p. 73.

Hab. In wet places: Tokotan (1930).

Draba borealis DC. Syst. II. p. 342.

Hab. On rocky cliffs near the sea: Tomarigawa (K. Jimbo, 1891); Otoimaoibet (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927); Kobune (1927); without locality (K. Miura, 1906).

Draba cardaminiflora Komar. in Bull. Jard. Bot. Pier. Gr. XVI. 1, p. 169.

Hab. On rocky cliffs: Pirikomoye (1927). (det. by Prof. T. Nakai).

Arabis lyrata L. var. *kamtschatica* Fisch. apud DC. Prodr. I. p. 146.

Hab. On rocky cliffs or in gravelly places: Tomarigawa (K. Uchida, 1891); Otoimaoibet (K. Uchida, 1891); Tokotan (K. Jimbo, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); Kobune (1929); Mishima (1929); without locality (K. Miura, 1906).

Arabis japonica A. Gray, Bot. Jap. p. 381.

Hab. On sandy beaches or grassy places: Tomarigawa (K. Uchida, 1891); Otoimaoibet (K. Uchida, 1891); Tokotan (1927); Mishima (1930).

Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.

Hab. In meadows: Tokotan (1927); Mishima (1929; 1930).

Droseraceae

Drosera rotundifolia L. Sp. Pl. ed. 1, p. 281.

Hab. In wet places or bogs: Daibahama (1927); Kobune (1927).

Crassulaceae

Sedum elongatum Ledeb. Fl. Ross. II. p. 178.

Hab. On rocky cliffs: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927); between Iwanagawa and Iyema (K. Uchida, 1891); Afunruimoi (K. Jimbo, 1891); Iyema (K. Jimbo, 1891); Onsenzaki (K. Jimbo, 1891); without locality (T. Kitahara, 1895; K. Miura, 1906).

Saxifragaceae

Saxifraga bracteata D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.

Hab. On rocky cliffs near the sea: Pirikamoye (K. Uchida, 1891); Kobune (1927).

Saxifraga bronchialis L. var. *cheterioides* Engl. Monogr. Saxifr. p. 216.

Hab. On rocky cliffs: Iyema (T. Shimotomai, 1932).

Saxifraga Ohwii Tatewaki, nom. nov.

Syn. *Saxifraga purpurascens* Komar. in Fedde, Rep. XIII. p. 167, (non Hook. f.).

Saxifraga fusca Maxim. var. *kurilensis* Ohwi, in Acta Phytotax. et Geobot. I. 49.

Hab. In rocky places: Tokotan (1927); Pirikamoye (1927); Kobune (1927); Mishima (1928).

Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

Hab. On rocky cliffs: Tokotan (1927).

- Saxifraga Merckii* Fisch. in Sternb. Rev. Sax. Suppl. I. p. 1.
 Hab. Suribachiyama (K. Jimbo, 1891).
- Chrysosplenium flagelliferum* Fr. Schm. Fl. Sachal. p. 134.
 Hab. Along streams: Afunruimoi (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891); Kobune (1927).
- Chrysosplenium kamtschaticum* Fisch. in DC. Prodr. IV. p. 48.
 Hab. In woods: Yoshinohama (K. Uchida, 1891); Tokotan (K. Jimbo, 1891).
- Parnassia palustris* L. Sp. Pl. ed. 1, p. 273.
 Hab. In grassy places: Megane (T. Kitahara, 1895); Tokotan (1927); Daibahama (1927); Pirikamoye (1927); Kobune (1927).

Rosaceae

- Spiraea betulaefolia* Pall. Fl. Ross. I. p. 33.
 Hab. On hill-sides: Onsenzaki (1928).
 var. *Aemiliana* Koidz. in Tokyo Bot. Mag. XXIII. p. 166.
 Hab. On hill-sides: Onsenzaki (K. Jimbo, 1891; M. Tatewaki, 1927; S. Itagaki, 1928); Tokotan (1930).
- Aruncus sylvester* Kostel. var. *kamtschatica* Maxim. in Act. Hort. Petrop. VI. p. 170.
 Hab. In grassy places: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Suisanwan (K. Uchida, 1891).
- Sorbus sambucifolia* Roem. Syn. Monogr. III. p. 139.
 Hab. In woods or heaths: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Afunruimoi (K. Jimbo, 1891); Kobune (1927); without locality (K. Miura, 1906).
- Sorbus kamtschaticensis* Kom. in Not. Syst. ex Herb. Petrop. II. p. 135.
 Hab. In woods: River Yoroi (1927); Tokotan (1927); Hayakawa valley (1927).
- Rubus Chamaemorus* L. Sp. Pl. ed. 1, p. 494.
 Hab. In heaths: Afunruimoi (K. Jimbo, 1891; K. Uchida, 1891).
- Comarum palustre* L. Sp. Pl. ed. 1, p. 502.
 Hab. In swampy places: Tokotan (1927).
- Potentilla pacifica* Howell, Fl. N. W. Amer. I. p. 179.
 Hab. On sandy beaches: Tokotan (T. Ishikawa, 1894; M. Tatewaki, 1927).
- Potentilla Miyabei* Makino, in Tokyo Bot. Mag. XVI. p. 28.
 Hab. Mt. Suribachiyama (K. Jimbo, 1891).

- Potentilla stolonifera* Lehm. in Delect. Sem. Hort. Hamb. Bot. (1831), p. 56.
Hab. In grassy places: Afunruimoi (K. Uchida, 1891); Tokotan (1927); Mishima (1929).
- Potentilla megalantha* Takeda, in Kew Bull. (1911), p. 255.
Hab. On rocky cliffs near the sea: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Tomarigawa (K. Jimbo, 1891); Otoimaoibet (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Megane (T. Kitahara, 1895); without locality (K. Miura, 1906).
- Geum calthaeifolium* Menz. ap. Sm. in Rees Cyclop. 16. Geum n. 13.
Hab. In meadows and bogs: Yoshinohama (K. Uchida, 1891); Daibahama (1927).
- Geum pentapetalum* Makino, in Tokyo Bot. Mag. XXIV. p. 32.
Hab. In bogs and heaths: Kobune (1927).
- Filipendula kamtschatica* Maxim. form. *typica* Koidz. in Tokyo Bot. Mag. XXIII. p. 179.
Hab. In meadows: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927). form. *pilosa* Koidz. l. c.
Hab. In meadows: Iwayadomari (K. Uchida, 1891); Kobune (T. Kitahara, 1895).
- Sanguisorba sitchensis* Trautv. et Mey. Fl. Ochot. p. 35.
Hab. Along valleys: Hayakawa (1927); Kobune (1929).
- Sanguisorba tenuifolia* Fisch. var. *alba* Trautv. et Mey. Fl. Ochot. n. 117.
Hab. In meadows: Tokotan (1927); Daibahama (1927).
var. *grandiflora* Maxim. Prim. Fl. Amur. p. 94.
Hab. In boggy places: Kobune (1928); Tokotan (1928).
- Rosa rugosa* Thunb. Fl. Jap. p. 213.
Hab. On sandy beaches: Tokotan (K. Uchida, 1891).
- Prunus kurilensis* Miyabe, apud Takeda, in Tokyo Bot. Mag. XXIV. p. 11.
Hab. In woods: Tomarigawa (K. Jimbo, 1891); Tokotan (1927; 1930); Daibahama (1927).

Fabaceae

- Thermopsis fabacea* DC. Prodr. II. p. 99.
Hab. On sandy beaches: Tomarigawa (K. Jimbo, 1891; K. Uchida, 1891); Tokotan (K. Uchida, 1891); Onsenzaki (K. Jimbo, 1891); Daibahama (1927).

Trifolium Lupinaster L. Sp. Pl. ed. 1, p. 766.

Hab. In grassy places: Otoimaoibet (K. Uchida, 1891); Tokotan (1927); without locality (K. Miura, 1906).

Astragalus kurilensis Matsum. in Tokyo Bot. Mag. XV. p. 115.

Hab. In grassy places: Pirikamoye (K. Uchida, 1891); Tokotan (1927); Mishima (1929).

Oxytropis retusa Matsum. in Tokyo Bot. Mag. XV. p. 116.

Hab. On rocky cliffs and in heaths: Suribachiyama (K. Jimbo, 1891); Yoshinohama (K. Jimbo, 1891); between Iwanagawa and Inama (K. Uchida, 1891).

Oxytropis Itoana Tatewaki, sp. nov.

Acaulis, petiolis scapisque pilosis; stipulis membranaceis petiolo breviter adnatis hyalinis plurinervis lanceolatis acuminatis longe ciliatis 2–2.5 cm. longis intus glabris extus pilosis; foliolis 12–13 jugis lineari-oblongis acutis vel mucronatis juvenilibus sericeo-canescens denique supra pilosis subtus sericeis 2–3.5 cm. longis 7–9 mm. latis; scapis foliis paulo longioribus; racemis oblongis circ. 6 cm. longis; floribus inferioribus racemi subremotis; bracteis hirsutis viridibus lanceolatis acutis calycis tubum subaequantibus; floribus erectis; petalis ochroleucis, vexillo obovato emarginato, carinae mucrone circ. 1 mm. longo, ovario sessili parce albohirsuto; calycis adpresse sericeis, dentibus deltoidibus vel lineari-deltoidibus 2 mm. longis, tubis cylindricis 8 mm. longis.

Nom. Jap. *Urup-ohgi*.

Hab. On rocky cliffs: Mishima (M. Tatewaki & K. Takahashi, VII. 24, 1929).

In honorem cl. Prof. Dr. Seiya Ito, Directoris Horti Botanice, Hokkaido Universitatis Imperialis, grato animo nomen dedico.

Hedysarum obscurum L. var. *neglectum* Trautv. et Mey. in Bull. Soc. Nat. Mosc. XXXIII. 2, p. 516.

Hab. On rocky cliffs: Iwayadomari (K. Uchida, 1891); Tokotan (1927); Kobune (1927); Onsenzaki (1927).

Vicia unijuga Al. Br. in Ind. Sem. Hort. Berol. (1853), App. 12.

Hab. In grassy places: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Mishima (1929).

Lathyrus maritimus Bigel. Fl. Bost. ed. 2, p. 268.

Hab. On sandy beaches: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Otoimaoibet (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Suisanwan (K. Uchida, 1891); Afunruimoi (K. Jimbo, 1891); Iyema (K. Jimbo, 1891).

Lathyrus palustris L. var. *pilosus* Ledeb. Fl. Ross. I. p. 686.

Hab. In dampy places: Onsenzaki (1927).

var. *pseudo-myrtifolius* Kudo, in Kudo & Suzaki, Icon. Medic. Pl. Hokkaido, p. 53.

Hab. In boggy places: Kobune (1927).

Geraniaceae

Geranium erianthum DC. Prodr. I. p. 641.

Hab. In grassy places: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927); between Iwanagawa and Inama (K. Uchida, 1891); Afunruimoi (K. Uchida, 1891); Iyema (I. Kodama, 1893); Kobune (T. Kitahara, 1895).

Geranium yesoense Fr. et Sav. Enum. Pl. Jap. II. p. 305.

Hab. In grassy places near the sea: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927).

Oxalidaceae

Oxalis Acetosella L. Sp. Pl. ed. 1, p. 433.

Hab. In woods: Tokotan (1927); Hayakawa (1927).

Rutaceae

Skimmia repens Nakai, in Tokyo Bot. Mag. XLI. p. 505.

Hab. In woods: Tokotan (1927).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths, bogs and on rocks: Yoshinohama (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); between Anama and Yosinohama (K. Uchida, 1891); Onsenzaki (1297); Kobune (1927); Daibahama (1927).

Aquifoliaceae

Ilex rugosa Fr. Schm. Fl. Sachal. p. 122.

Hab. In woods: Kobune (K. Jimbo, 1891; M. Tatewaki, 1927; 1930); Tokotan (1927).

Aceraceae

Acer ukurunduense Trautv. et Mey. Fl. Ochot. p. 24.

Hab. In woods: Tokotan (K. Jimbo, 1891).

Balsaminaceae

Impatiens Noli-tangere L. Sp. Pl. ed. 1, p. 938.

Hab. In wet places: Tokotan (1927).

Hypericaceae

Hypericum kamtschaticum Ledeb. in Denkschr. Bot. Ges. Regensb. III.
p. 131.

Hab. In grassy places: Kobune (1927).

Violaceae

Viola Selkirkii Pursh, apud Goldie in Edinbg. Phil. Journ. VI. p. 319.

Hab. In woods: Tokotan (1927).

Viola sachalinensis H. d. Boiss. in Bull. Soc. Bot. Fr. (1910) p. 188.

Hab. In grassy places near the sea: Tokotan (K. Jimbo, 1891;
K. Uchida, 1891; M. Tatewaki, 1927; 1930); Mishima (1930).

Viola kamtschadalorum B. et H. in Sv. Vet. Ak. Ark. f. Bot. 22 A. 3, p. 6.

Hab. In boggy places: Afunruimoi (K. Jimbo, 1891); Tokotan
(M. Tatewaki, 1927; S. Itagaki, 1928); Onsenzaki (1927).

Viola crassa Makino, var. *vegeta* Nakai, in Tokyo Bot. Mag. XLII. p. 565.

Hab. In meadows: Mishima (1929); Kobune (1927); Tokotan
(1927); Iyema (S. Itagaki, 1928); without locality (T.
Kitahara, 1895).

Viola biflora L. Sp. Pl. ed. 1, p. 936.

Hab. In grassy places: Yoshinohama (K. Uchida, 1891); between
Iwanagawa and Inama (K. Uchida, 1891); Afunruimoi (K.
Jimbo, 1891; K. Uchida, 1891).

Oenotheraceae

Epilobium angustifolium L. Sp. Pl. ed. 1, p. 347.

Hab. Without locality (ex Haussknecht).

Epilobium latifolium L. Sp. Pl. ed. 1, p. 347.

Hab. (ex Maximowicz).

Epilobium glandulosum Lehm. Pug. II. p. 14.

Hab. In dampy places: Kobune (1929); Tokotan (1929).

Epilobium Bongardii Hausskn. in Österr. Bot. Zeitschr. XXIX. p. 57.

Hab. In dampy places: Tokotan (1927).

Epilobium Behringianum Hausskn. Monogr. Epilob. p. 277.

Hab. In dampy places: Kobune (1927); Tokotan (1927); Onsen-
zaki (1927).

Epilobium Hornemanni Reichb. Icon. Crit. II. p. 73.

Hab. In dampy places: Tokotan (1927).

Circaea alpina L. Sp. Pl. ed. 1, p. 9.

Hab. In woods: Hayakawa (1927).

Halorrhagaceae

Myriophyllum spicatum L. Sp. Pl. ed. 1, p. 992.

Hab. In ponds: Yoroigawa (1927).

Hippuridaceae

Hippuris vulgaris L. Sp. Pl. ed. 1, p. 4.

Hab. In ponds: Yoroigawa (1927).

Araliaceae

Aralia cordata Thunb. Fl. Jap. p. 127.

Hab. In meadows: Hatchowan (S. Itagaki, 1928).

Apiaceae

Anthriscus sylvestris Hoffm. Umbellif. praem. pp. 40, 46.

Hab. In woods: Tokotan (K. Jimbo, 1891; K. Uchida, 1891).

Pleurospermum camtschatium Hoffm. Umbellif. praem. p. 8.

Hab. In grassy places: Iwayadomari (K. Uchida, 1891); Kobune (1927); Tokotan (1927); Mishima (1930).

Cnidium ajanense Drude, in Engl. u. Pr. Nat. Pfl.-fam. III. 8. p. 210.

Hab. In heaths and grassy places: Anama (K. Jimbo, 1891; T. Kitahara, 1895); Kobune (1927); Tokotan (1928).

Ligusticum Hultenii Fernald, in Rhodora XXXII. p. 7.

Hab. On rocky cliffs near the sea: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); Afunruimoi (K. Jimbo, 1891); Kobune (1927).

Coelopleurum Gmelini Ledeb. Fl. Ross. II. p. 361.

Hab. In grassy places: Iwayadomari (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Iyema (K. Kodama, 1893); Tokotan (1927).

Conioselinum Gmelini Coult. et Rose, in Contr. Nat. Herb. VII. 1. p. 150.

Hab. In meadows: Iwayadomari (K. Uchida, 1891); Anama (K. Jimbo, 1891).

Conioselinum univittatum Turcz. ex Maxim. in Mém. Biol. IX. p. 251.

Hab. In woods: Kobune (1927; 1929).

Angelica refracta Fr. Schm. Fl. Sachal. p. 138.

Hab. In wet places: Yoroigawa (1927); Tokotan (1927); Kobune (1929).

Phellopterus littoralis Benth. in Benth. et Hook. Gen. Pl. I. p. 905.

Hab. On sandy beaches: Daibahama (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In meadows: Between Anama and Yoshinohama (K. Uchida, 1891); Yoshinohama (K. Uchida, 1891); Hayakawa (1927).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In meadows and heaths: Afunruimoi (K. Uchida, 1891); Tokotan (1927); Yoroigawa (1927).

Cornus canadensis L. Sp. Pl. ed. 1, p. 118.

Hab. In woods: Kobune (1927).

Metachlamydeae

Diapensiaceae

Diapensia lapponica L. var. *obovata* Fr. Schm. Fl. Sachal. p. 161.

Hab. In heaths: Yoshinohama (K. Jimbo, 1891).

Rhodoraceae

Ledum palustre L. var. *dilatatum* Wahlb. Fl. Lapp. p. 103.

Hab. In heaths; Onsenzaki (K. Jimbo, 1891; M. Tatewaki, 1927); Anama (K. Jimbo, 1891); Tokotan (1927); Daibahama (1927); between Anama and Yoshinohama (K. Uchida, 1891); Kobune (1927); Iyema (I. Kodama, 1893).

var. *procumbens* Aiton, Hort. Kew. II. p. 60.

Hab. In heaths: Yoshinohama (K. Jimbo, 1891); Afunruimoi (K. Uchida, 1891); Kobune (1927).

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729..

Hab. In heaths: Between Anama and Yoshinohama (K. Uchida, 1891); Anama (K. Jimbo, 1891); Suribachiyama (K. Jimbo, 1891); Tokotan (T. Ishikawa, 1894; M. Tatewaki, 1927); Onsenzaki (1927); Daibahama (1927); Kobune (1927); without locality (K. Miura, 1906).

Rhododendron camtschaticum Pall. Fl. Ross. I. 1. p. 48.

- Hab. In heaths: Tokotan (1927); without locality (K. Miura, 1906).
- Loiseleuria procumbens* Desv. in Journ. Bot. III. p. 35.
Hab. In heaths: Suribachiyama (K. Jimbo, 1891); Yoshinohama (K. Jimbo, 1891).
- Phyllodoce aleutica* A. Heller, in Muelenb. I. p. 1.
Hab. Suribachiyama (K. Jimbo, 1891).
- Cassiope lycopodioides* Don, in Edinbg. New Phil. Journ. XVII. p. 158.
Hab. In heaths and on rocky cliffs: Yoshinohama (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Tokotan (1927); Onsenzaki (1927); without locality (K. Miura, 1906).
- Andromeda Polifolia* L. Sp. Pl. ed. 1, p. 393.
Hab. In bogs: Afunruimoi (K. Jimbo, 1891; K. Uchida, 1891); Yoshinohama (K. Jimbo, 1891; K. Uchida, 1891); Kobune (1927).
- Gaultheria Miqueliana* Takeda, in Tokyo Bot. Mag. XXXII. p. 195.
Hab. In woods and heaths: Kobune (1927); Onsenzaki (1927); between Anama and Yoshinohama (K. Uchida, 1891).
- Arcteria nana* Makino, in Tokyo Bot. Mag. XX. p. 85.
Hab. In gravelly places on the sand dune: Tokotan (1927).
- Arctous alpina* Niedz. var. *japonica* Takeda, ex Tatewaki in Res. Bull. Exp. For. Fac. Agr. Hok. Imp. Univ. V. p. (56).
Hab. In heaths: Between Anama and Yoshinohama (K. Uchida, 1891); Tokotan (1927); Kobune (1927).
- Oxycoccus vulgaris* Hill, Brit. Herbal, p. 324.
Hab. In bogs: Yoroigawa (1927).
- Oxycoccus microcarpus* Turcz. ex Rupr. Beitr. Pfl. Russ. Reich. IV. p. 56.
Hab. In bogs: Kobune (1927).
- Vaccinium Vitis-idaea* L. Sp. Pl. ed. 1, p. 351.
Hab. In bogs and heaths: Tokotan (T. Ishikawa, 1894; M. Tatewaki, 1927; 1930); Yoshinohama (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Anama (K. Jimbo, 1891); Suribachiyama (K. Jimbo, 1891); Kobune (T. Kitahara, 1895; M. Tatewaki, 1927; 1930); Onsenzaki (1927).
- Vaccinium uliginosum* L. Sp. Pl. ed. 1, p. 350.
Hab. In heaths and bogs: Tokotan (1927); Daibahama (1927); Kobune (1927).
- Vaccinium Chamissonis* Bong. Vég. Sitch. p. 151.

Hab. In woods: Tokotan (1927); Kobune (1930).

Vaccinium praestans Lamb. in Trans. Linn. Soc. X. p. 264.

Hab. In woods: Tokotan (1927).

Primulaceae

Primula Fauriei Franch. in Bull. Soc. Phil. Paris, 7. sér. X. p. 146.

Hab. On rocky cliffs near the sea: Afunruimoi (K. Uchida, 1891); Yoshinohama (K. Uchida, 1891); Tomarigawa (K. Jimbo, 1891); Otoimaoibet (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Tokotan (1927); Pirikamoye (1927); Kobune (1927); Onsenzaki (1927); Daibahama (1927).

Primula cuneifolia Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.

Hab. In heaths: Anama (K. Jimbo, 1891); Yoshinohama (K. Jimbo, 1891); Daibayama (T. Shimotomai, 1932).

Androsace Lehmanniana Spr. in Isis I. Ht. 9, col. 1289, tab. 9.

Hab. On rocky cliffs: Tokotan (1927); without locality (T. Kitahara, 1896).

Naumburgia thyrsoiflora Reichb. Fl. Germ. Excurs. p. 410.

Hab. In swamps: Tokotan (1927).

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237. p. 313.

Hab. In grassy places and under bushes: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Daibahama (1927); without locality (K. Miura, 1905).

var. *arctica* Ledeb. Fl. Ross. III. p. 25.

Hab. In bogs: Afunruimoi (K. Uchida, 1891); Megane (T. Kitahara, 1895); Otoimaoibet (K. Uchida, 1891); Tokotan (T. Ishikawa, 1894); Kobune (1927).

Gentianaceae

Crawfordia japonica Sieb. et Zucc. Fl. Jap. Fam. Nat. II. p. 160.

Hab. In woods: Kobune (1927; 1930).

Gentiana Kawakamii Makino, in Tokyo Bot. Mag. XVIII. p. 67.

Hab. In bogs: Kobune (1927); Daibahama (1927).

Gentiana auriculata Pall. Fl. Ross. I. 2. p. 102.

Hab. In grassy places: Kobune (1927; 1929); Tokotan (1927); Pirikamoye (1927).

Swertia tetrapetala Pall. Fl. Ross. I. 2. p. 99.

Hab. In grassy places: Kobune (1927); Tokotan (1927); Daibahama (1927).

Swertia perennis L. var. *obtusa* Griseb. in DC. Prodr. IX. p. 132.

Hab. In dampy places: Kobune (1927).

Halenia corniculata Druce, in Rep. Bot. Exch. Cl. Brit. Isl. III. 5. p. 419.

Hab. In grassy places: Tokotan (1927).

Menyanthes trifoliata L. Sp. Pl. ed. 1, p. 145.

Hab. In swamps: Yoroigawa (1927).

Convolvulaceae

Calystegia Soldanella R. Br. Prodr. p. 483.

Hab. On sandy beaches: Mishima (1928; 1929).

Heliotropiaceae

Mertensia maritima G. Don, subsp. *asiatica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. On sandy beaches: Tomarigawa (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891; K. Uchida, 1891); Iwayadomari (K. Uchida, 1891); Megane (T. Kitahara, 1895); Daibahama (1927).

Mertensia rivularis DC. var. *japonica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. In rocky places: Yoshinohama (K. Uchida, 1891); Suisanwan (K. Uchida, 1891); Kobune (1927).

Lamiaceae

Scutellaria yezoensis Kudo, in Journ. Coll. Sc. Tokyo Imp. Univ. XLIII. 8, p. 12.

Hab. In grassy places: Tokotan (1927).

Mentha sachalinensis Kudo, in Journ. Coll. Sc. Tokyo Imp. Univ. XLIII. 8, p. 47.

Hab. In dampy places: Onsenzaki (1927).

Rhinanthaceae

Linaria japonica Miq. Prol. Fl. Jap. p. 47.

Hab. On sandy beaches: Tokotan (1927; 1929).

Veronica serpyllifolia L. Sp. Pl. ed. 1, p. 12.

Hab. In grassy places: Kobune (1927; 1929).

Veronica americana Schw. apud Benth. in DC. Prodr. X. p. 468.

- Hab. In wet places: Kobune (1927); Pirikamoye (1927).
- Lagotis glauca* Gaertn. in Nov. Comm. Ac. Sc. St. Pétersb. XIV. p. 533.
- Hab. In heaths: Suribachiyama (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Tokotan (1927); Daibahama (1927); Mishima (1929); without locality (S. Fujimura, 1891; K. Miura, 1906).
- Euphrasia mollis* Wettst. Monogr. Euphr. p. 141.
- Hab. In grassy places: Tokotan (1927); Daibahama (1927); Kobune (1927).
- Pedicularis Chamissonis* Stev. var. *Maximowiczii* Kudo, Fl. Paramushir, p. 156.
- Hab. In grassy places, meadows and bogs: Megane (T. Kitahara, 1895); Kobune (1927); Daibahama (1927).
- Pedicularis resupinata* L. Sp. Pl. ed. 1, p. 608.
- Hab. In grassy places: Yoshinohama (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Kobune (1927); Tokotan (1927); without locality (M. Aizawa, 1900).
- Pedicularis euphrasioides* Steph. in Willd. Sp. Pl. III. p. 204.
- Hab. In bogs and heaths: Kobune (1927); Tokotan (1927).
- Pedicularis venusta* Schang. var. *Schmidtii* Ito, Memorial Work, etc. of Keiske Ito, p. 75.
- Hab. In grassy places: Afunruimoi (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Tokotan (K. Jimbo, 1891; K. Uchida, 1891); Onsenzaki (1927); Daibahama (1927); Mishima (1929).
- Pedicularis Oederi* Vahl, in Hornem. Danks. Oek. Plantel. I. ed. 2, p. 580.
- Hab. In heaths and grassy places: Afunruimoi (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Inama (K. Uchida, 1891); without locality (T. Kitahara, 1895).

Orobanchaceae

- Boschniakia rossica* Hult. Fl. Kamtchat. IV. p. 126.
- Hab. In heaths: Tokotan (1927).

Lentibulariaceae

- Pinguicula vulgaris* L. var. *macroceras* Herd. Pl. Radd. Monop. IV. 1, p. 98.
- Hab. Daibahama (T. Shimotomai, 1932); Without locality (T. Kitahara, 1895).

Plantaginaceae

Plantago camtschatica Cham. ex Link, Enum. Pl. Hort. Berol. I. p. 120.

Hab. On rocky cliffs near the sea: Tokotan (K. Jimbo, 1891); Otoimaoibet (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Iwanagawa (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Mishima (1929).

Rubiaceae

Galium trifloriforme Kom. in Act. Hort. Petrop. XVIII. p. 428.

Hab. In woods: Tokotan (1927); Hayakawa (1927).

Galium verum L. Sp. Pl. ed. 1, p. 107.

Hab. In grassy places and on rocky cliffs: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927); between Inama and Iyema (K. Uchida, 1891); Tomarigawa (K. Uchida, 1891); Otoimaoibet (K. Uchida, 1891).

Galium kamtschaticum Stell. var. *hirsutum* Takeda, in Tokyo Bot. Mag. XXIV. p. 65.

Hab. In woods: Tokotan (1927).

var. *oreganum* Piper, Fl. Washington, p. 526.

Hab. In woods: Hayakawa (1927).

Rubia jesoensis Miyabe et Miyake, Fl. Saghal. p. 229.

Hab. In boggy places: Yoroigawa (1927).

Caprifoliaceae

Linnaea borealis L. form. *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7, p. 159.

Hab. In woods and heaths: Kobune (1927); Tokotan (1927).

Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.

Hab. Tokotan (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Yoroigawa (1927); Daibahama (1927); Onsenzaki (1927).

var. *glabrescens* Rupr. Beitr. Pfl. Russ. Reich. II. p. 37.

Hab. (ex Nakai).

Lonicera Chamissoi Bunge, in Kiril. Lonic. Russ. Reich. p. 26.

Hab. In woods: Daibahama (K. Jimbo, 1891); Tokotan (1927); Hayakawa (1927).

Diervilla Middendorffiana Carr. in Rév. Hort. XXV. p. 306.

Hab. In woods: Onsenzaki (1927).

Valerianaceae

Patrinia sibirica Juss. in Ann. Mus. Par. X. p. 311.

Hab. On rocky cliffs: Tokotan (1927); Mishima (1929).

Campanulaceae

Adenophora kurilensis Nakai, in Tokyo Bot. Mag. XLIV. p. 11.

Hab. In meadows: Tokotan (1927).

Campanula dasyantha Bieb. Fl. Taur. Cauc. III. p. 147.

Hab. Daibayama (T. Shimotomai, 1932); Iyema (T. Shimotomai, 1932); Without locality (T. Kitahara, 1895).

Peracarpa circaeoides H. Feer, in Engl. Bot. Jahrb. XII. p. 621.

Hab. In woods: Hayakawa (1927).

Lobelia sessilifolia Lamb. in Trans. Linn. Soc. X. p. 260.

Hab. In swampy places: Daibahama (1927); Yoroigawa (1927).

Asteraceae

Solidago Virgaurea L. Sp. Pl. ed. 1, p. 880.

Hab. In grassy places: Anama (C. Tarao, 1892); Daibahama (1927).

Aster Glehni Fr. Schm. Fl. Sachal. p. 146.

Hab. In wet meadows: Kobune (1927); Tokotan (1927); Daibahama (1927).

Anaphalis margaritacea Benth. et Hook. f. Gen. Pl. II. p. 303.

Hab. In grassy places: Kobune (T. Kitahara, 1895); between Iwanagawa and Inama (K. Uchida, 1891); Tokotan (1927).

form. *latifolia* Kudo, Fl. Paramushir, p. 165.

Hab. In grassy places: Megane (T. Kitahara, 1895); Kobune (1927); Tokotan (1927).

Achillea Ptarmica L. var. *speciosa* Herd. Pl. Radd. Monop. III. 2, p. 39.

Hab. In grassy places: Iyema (I. Kodama, 1893); Tokotan (K. Uchida, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); between Iwanagawa and Inama (K. Uchida, 1891); Megane (T. Kitahara, 1895); Kobune (1927); Onsenzaki (1927).

Matricaria matricarioides Porter, in Mem. Torr. Club. V. p. 341.

Hab. On sandy beaches: Tokotan (1927); without locality (ex Maximowicz).

Chrysanthemum arcticum L. Sp. Pl. ed. 1, p. 889.

Hab. On rocky cliffs: Onsenzaki (1927).

var. *yezoense* Maekawa, in Trans. Sapporo Nat. Hist. Soc. VIII. p. 14.

- Hab. On rocky cliffs near the sea: Kobune (1927); Onsenzaki (1927); without locality (T. Kitahara, 1895).
- Artemisia vulgaris* L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.
- Hab. In grassy places and meadows: Iwayadomari (K. Uchida, 1891); Tomarigawa (K. Uchida, 1891); Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927).
- var. *coarctata* Bess, l. c. p. 53.
- Hab. In grassy places: Tokotan (1927).
- var. *latiloba* Ledeb. Fl. Alt. IV. p. 83.
- Hab. In meadows: Tokotan (1927).
- Artemisia arctica* Less. in Linnaea IV. p. 213.
- Hab. In heaths: Tokotan (1927); Daibahama (1927).
- Artemisia Stelleriana* Bess. in Nouv. Mém. Soc. Nat. Mose. III. p. 79.
- Hab. On sandy beaches: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927).
- Artemisia sericea* Aeber, in Stechm. Artem. p. 16.
- Hab. On rocky cliffs near the sea: Iwayadomari (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Iyema (K. Jimbo, 1891); Onsenzaki (1927); Tokotan (1927); Kobune (1927).
- Petasites japonicus* Miq. var. *giganteus* Makino, in Tokyo Bot. Mag. XXIII. p. 18.
- Hab. Along streams: Tokotan (K. Jimbo, 1891); Tomarigawa (K. Uchida, 1891); between Iwanagawa and Inama (K. Uchida, 1891); Tokotan (1927); Kobune (1930).
- Arnica unalaschcensis* Less. in Linnaea VI. p. 238.
- Hab. In heaths: Megane (T. Kitahara, 1895); between Iwanagawa and Inama (K. Uchida, 1891); Suisanwan (K. Uchida, 1891); between Yoshinohama and Anama (K. Uchida, 1891); Kobune (1927); without locality (K. Miura, 1906).
- Cacalia kamtschatica* Kudo, Contr. Fl. N. Saghal. p. 60.
- Hab. In woods and meadows: Megane (T. Kitahara, 1895); between Iwanagawa and Inama (K. Uchida, 1891); Suisanwan (K. Uchida, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Kobune (1927); without locality (K. Miura, 1906).
- Cacalia hastata* L. var. *pubescens* Ledeb. Fl. Ross. II. p. 626.
- Hab. In woods and along valleys: Tokotan (1927).
- var. *glabra* Ledeb. l. c.

Hab. In woods: Tokotan (1927).

Senecio palmatus Pall. Reise Russ. Reich. III. p. 321.

Hab. In meadows: Kobune (T. Kitahara, 1895); Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927).

Senecio pseudo-Arnica Less. in Linnaea VI. p. 240.

Hab. On sandy beaches: Tokotan (K. Jimbo, 1891; K. Uchida, 1891); Suisanwan (K. Uchida, 1891); between Iwanagawa and Anama (K. Uchida, 1891).

Ligularia sibirica Cass. var. *vulgaris* DC. Prodr. VI. p. 315.

Hab. In meadows: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927).

Cirsium kamtschaticum Ledeb. ex DC. Prodr. VI. p. 644.

Hab. In meadows: Tokotan (1927).

Saussurea Riederi Herd. Pl. Radd. Monop. III. 3, p. 35.

Hab. In grassy places and meadows: Kobune (T. Kitahara, 1895); Tokotan (1927); Daibahama (1927); Onsenzaki (1927).

Saussurea kurilensis Tatewaki, sp. nov.

Planta juvenilis plus minus albo-arachnoidea deinde glabrescens; cauli solitario polyphylo cum inflorescentibus 20–30 cm. alto glabro tereti costato; foliis radicalibus numerosis, petiolis 6–8 cm. longis glabris supra sulcatis, laminis cartaceis late deltoidibus apice acuminatis vel acutis basi late cordatis margine dentatis 5–6.5 cm. longis 5–7 cm. latis supra viridibus infra pallidis vernis infra prominentibus parcissime araneis; foliis caulinis conformis foliis radicalibus sed superioribus parvioribus et brevibus petiolatis; inflorescentibus contracto-corymbosis polycephalis; involueris subcylindricis 1 cm. longis et latis; squamis imbricatis 4 serialibus vulgo glabrescentibus brunnescentibus apice atropurpureis caudatis attenuatis exterioribus ovato-oblongis reflexis, interioribus lanceolatis; pappis brunnescentibus 7 mm. longis plumosis; corollis roseis; antheribus coloris parce longioribus.

Nom. Jap. *Urup-tôhîren*.

Hab. In meadows: Tokotan (1927; 1928).

Picris japonica Thunb. Fl. Jap. p. 299.

Hab. In grassy places: Tokotan (1927).

Picris kamtschatica Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 557.

Hab. In meadows: Megane (T. Kitahara, 1895).

Hieraceium umbellatum L. subsp. *coronopifolium* Zahn, var. *coronopifolium* Bernh. in Engl. Pfl.-reich. IV. 280, p. 914.

Hab. In grassy places: Tokotan (1927).

Lactuca repens Benth. et Hook. f. Gen. Pl. II. p. 526.

Hab. On sandy beaches: Tokotan (1927).

Taraxacum ceratophorum DC. Prodr. VII. p. 146.

Hab. In grassy places, meadows and rocky places near the sea:
Tomarigawa (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891; K.
Uchida, 1891); Onsenzaki (1927).

Monocotyledoneae

Sparganiaceae

Sparganium glomeratum Laestad. ex Beurl. in Oefvers. Vet. Akad. Foerh.
IX. p. 192.

Hab. In swamps: Yoroigawa (1927).

Potamogetonaceae

Potamogeton natans L. Sp. Pl. ed. 1, p. 126.

Hab. In pools: Yoroigawa (1927).

Potamogeton alpinus Balbis, prol. *microstachys* Graebn. in Engl. Pfl.-
reich. IV. 11. p. 74.

Hab. In lakes: Tokotan (1927).

Potamogeton perfoliatus L. Sp. Pl. ed. 1, p. 126.

Hab. In lakes: Tokotan (1927).

Potamogeton Maackianus A. Benn. in Journ. Bot. XLII. p. 74.

Hab. In lakes: Tokotan (1927).

Scheuchzeriaceae

Triglochin palustre L. Sp. Pl. ed. 1, p. 338.

Hab. In bogs: Daibahama (1927).

Poaceae

Miscanthus sinensis Anders. var. *purpurascens* Rendle, in Journ. Linn.
Soc. XXXVI. p. 348.

Hab. In grassy places: Hatchowan (S. Itagaki, 1928).

Phalaris arundinacea L. Sp. Pl. ed. 1, p. 55.

Hab. On lake-sides: Tokotan (K. Jimbo, 1891; K. Uchida, 1891;
T. Ishikawa, 1894; M. Tatewaki, 1927; 1929).

Milium effusum L. Sp. Pl. ed. 1, p. 61.

Hab. In grassy places: Tokotan (1927).

- Alopecurus aequalis* Sobolowski, Fl. Petrop. p. 16.
 Hab. Along the road: Mishima (1929).
- Agrostis flaccida* Hack. in Bull. Herb. Boiss. VII. p. 649.
 Hab. In bogs and on rocks: Daibahama (1927); Tokotan (1927).
- Agrostis canina* L. Sp. Pl. ed. 1, p. 62.
 Hab. On rocks and in grassy places: Mishima (1929).
- Agrostis Trinii* Turcz. Fl. Baic.-Dahur. II. 2, p. 305, in nota.
 Hab. In bogs and grassy places: Kobune (1927); Tokotan (1927);
 Daibahama (1927).
- Agrostis exarata* Trin. Gram. Unifl. p. 207.
 Hab. In dampy places: Onsenzaki (1927); Kobune (1929).
- Agrostis hiemalis* B. S. P. Prel. Cat. N. Y. (1888) p. 68.
 Hab. In grassy places: Onsenzaki (1927); Kobune (1929).
- Agrostis clavata* Trin. in Spr. Neue Entdeck. II. p. 55.
 Hab. In grassy places: Pirikamoye (1927).
- Calamagrostis Langsdorffii* Trin. Gram. Unifl. p. 225.
 Hab. In boggy or grassy places: Kobune (1927); Tokotan (1927).
- Calamagrostis neglecta* Gaertn. Fl. Wett. I. p. 94.
 Hab. In bogs: Yoroigawa (1927).
- Calamagrostis sachalinensis* Fr. Schm. Fl. Sachal. p. 202.
 Hab. In grassy places and on rocks: Kobune (1927; 1929);
 Tokotan (1927).
- Calamagrostis purpurascens* R. Br. in Richards. Bot. App. Frankl. Journ.
 (1823), p. 731.
 Hab. On hill-sides: Tokotan (1927); Kobune (1927).
- Deschampsia caespitosa* Beauv. Agrost. p. 91.
 Hab. In boggy places: Kobune (1927; 1929).
- Deschampsia beringensis* Hult. Fl. Kamtchat. I. p. 107.
 Hab. In grassy places: Suisanwan (K. Uchida, 1891).
- Deschampsia flexuosa* Trin. in Bull. Sc. Acad. St. Pétersb. I. p. 66.
 Hab. In grassy places: Kobune (1927); Onsenzaki (1927).
- Trisetum spicatum* Richt. Pl. Europ. I. p. 59.
 Hab. On rocky cliffs: Kobune (1927).
- Phragmites vulgaris* Trin. Fund. Agrost. p. 134.
 Hab. In bogs: Daibahama (1927).
- Poa bracteosa* Kom. in Not. Syst. Herb. H. P. X. p. 146.
 Hab. In grassy places: Tokotan (1927).
- Poa scabriflora* Hack. in Fedde, Rep. III. p. 244.
 Hab. Yoshinohama (K. Uchida, 1891).

- Poa macrocalyx* Trautv. et Mey. Fl. Ochot. p. 103.
 Hab. In grassy places: Iwayadomari (K. Uchida, 1891); Suisanwan (K. Uchida, 1891); Tokotan (1927); Kobune (1927); Pirikamoye (1927).
- Poa pratensis* L. Sp. Pl. ed. 1, p. 67.
 Hab. Iwayadomari (K. Uchida, 1891).
- Poa eminens* Presl, Reliq. Haenkean. I. p. 273.
 Hab. Without locality (K. Miura, 1906).
- Festuca rubra* L. Sp. Pl. ed. 1, p. 74.
 Hab. In grassy places: Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927); Mishima (1929).
 var. *kitaibeliana* Piper, in Contr. Nat. Herb. X. p. 23.
 Hab. In grassy places: Tokotan (1927).
- Festuca eriantha* Honda, in Tokyo Bot. Mag. XLII. p. 135.
 Hab. In grassy places: Yoshinohama (K. Uchida, 1891).
- Elymus mollis* Trin. in Spr. Neue Entdeck. II. p. 72.
 Hab. On sandy beaches: Megane (T. Kitahara, 1895); Tokotan (K. Uchida, 1891; M. Tatewaki, 1927); Iwayadomari (K. Uchida, 1891); Afunruimoi (K. Jimbo, 1891); Iyema (I. Kodama, 1893).
- Sasa kurilensis* Makino et Shibata, var. *genuina* Nakai, in Miyabe & Kudo, Fl. Hok. & Saghal. II. p. 182.
 Hab. Tokotan (K. Jimbo, 1891; M. Tatewaki, 1927).
 var. *cernua* Nakai, l. c. p. 183.
 Hab. In woods: Kobune (1927); Mishima (1930).

Cyperaceae

- Eriophorum alpinum* L. Sp. Pl. ed. 1, p. 53.
 Hab. In bogs: Hatchowan (S. Itagaki, 1928).
- Eriophorum vaginatum* L. Sp. Pl. ed. 1, p. 52.
 Hab. In bogs: Afunruimoi (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Anama (K. Jimbo, 1891); Kobune (1927; 1930); Tokotan (Y. Hayakawa, 1928).
- Scirpus caespitosus* L. Sp. Pl. ed. 1, p. 48.
 Hab. In bogs: Daibahama (M. Tatewaki, 1927; S. Itagaki, 1928).
- Scirpus Maximowiczii* C. B. Clarke, in Kew Bull. add. sér. 8, p. 30.
 Hab. In bogs: Yoshinohama (K. Jimbo, 1891).
- Eleocharis palustris* R. Br. Prodr. Fl. Nepal. p. 224, in nota.
 Hab. In boggy places: Yoroigawa (1927); Daibahama (S. Itagaki,

- 1928).
- Eleocharis uniglumis* Schult. Mant. II. p. 88.
Hab. In swamps: Tokotan (1927).
- Carex gynocrates* Wormskj. apud Drejer, Rev. Crit. p. 16.
Hab. In bogs: Yoshinohama (K. Jimbo, 1891); Daibahama (S. Itagaki, 1928).
- Carex pauciflora* Lightf. Fl. Scot. II. p. 543.
Hab. In bogs: Kobune (1927).
- Carex macrocephala* Willd. apud Spr. Syst. II. p. 808.
Hab. On sandy shores: Tokotan (1927); Mishima (1928).
- Carex aperta* Boott, in Hook. Fl. Bor.-Am. II. p. 218.
Hab. In bogs: Yoroigawa (1927).
- Carex caespitosa* L. var. *minuta* Kuek. Cyp.-Car. in Engl. Pfl.-reich. IV. 20. p. 329.
Hab. In bogs: Kobune (1927).
- Carex Lyngbyei* Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtchat. I. p. 188.
Hab. In swamps: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; M. Tatewaki, 1927); Yoroigawa (1927); Kobune (1927).
- Carex Middendorffii* Fr. Schm. Fl. Amg.-Burej. p. 70.
Hab. In bogs: Kobune (1927).
- Carex Augustinowiczii* Meinsh. apud Korsh. in Act. Hort. Petrop. XII. p. 411.
Hab. In bogs: Tokotan (Y. Hayakawa, 1928).
- Carex Gmelinii* Hook. et Arn. Bot. Beech. Voy. III. p. 118.
Hab. In grassy places near the sea: Karanzaki (S. Itagaki, 1928); Hatchowan (S. Itagaki, 1928); Tokotan (1928).
- Carex scita* Maxim. in Mém. Biol. XII. p. 564.
Hab. In swampy places: Tokotan (1927; 1928).
var. *scabrinervia* Kuek. Cyp.-Car. p. 415.
Hab. On rocky cliffs: Kobune (1927); Tokotan (1927).
- Carex sachalinensis* Fr. Schm. Fl. Sachal. p. 194.
Hab. In woods: Kobune (1927).
- Carex vaginata* Tausch, in Regensb. Flora, IV. p. 557.
Hab. In grassy places: Tokotan (1928).
- Carex longerostrata* C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 220.
Hab. In grassy places: Mishima (1929).
- Carex Oederi* Retz. var. *viridula* Kuek. Cyp.-Car. p. 674.
Hab. In bogs: Yoroigawa (1927).

Carex Michauxiana Boeck. form. *asiatica* Akiyama, Consp. Car. Jap. p. 220.

Hab. In bogs: Kobune (1927); Daibahama (M. Tatewaki, 1927; S. Itagaki, 1928); Yoroigawa (1927).

Carex laevirostris Blytt, ex Blytt et Fries in Bot. Not. p. 24.

Hab. In swampy places: Tokotan (S. Itagaki, 1928).

Carex vesicaria L. Sp. Pl. ed. 1, p. 979.

Hab. In swampy places: Between Onsenzaki and Tokotan (1927).

var. *Grahqmi* Kuek. Cyp.-Car. p. 727.

Hab. In bogs: Yoroigawa (1927).

Araceae

Lysichiton camtschaticense Schott, in Oester. Bot. Wochenbl. VII. p. 62.

Hab. In swamps: Kobune (1927; 1930).

Juncaceae

Luzula parviflora Desv. in Journ. Bot. I. p. 144.

Hab. In swamps: Kobune (1927).

Luzula capitata Nakai, Rep. Veg. Mt. Apoi, p. 76.

Hab. In grassy places: Tokotan (1927); Kobune (1927); Mishima (1929).

Luzula multiflora Lejeune, Fl. Envir. Spa I. p. 169.

Hab. In grassy places: Kobune (1927); Tokotan (1927; 1928).

Luzula pallescens Besser, Enum. Pl. Volh. Podol. p. 15.

Hab. In grassy places: Tokotan (1928).

Luzula Kjellmanniana Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 38.

Hab. In grassy places: Yoshinohama (K. Uchida, 1891).

Juncus filiformis L. Sp. Pl. ed. 1, p. 326.

Hab. In wet places: Yoroigawa (1927).

var. *curvatus* Kudo, Contr. N. Saghal. p. 26.

Hab. In wet places: Tokotan (1927).

Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII. p. 164.

Hab. In dampy places: Tokotan (K. Jimbo, 1891; K. Uchida, 1891); Kobune (1927).

Juncus Faurienseis Buch. in Not. Bot. Kön. Gart. Berl. III. p. 127.

Hab. In bogs: Kobune (1927).

Juncus kamtschaticensis Kudo, Fl. Paramushir, p. 88.

- Hab. In bogs: Yoshinohama (K. Jimbo, 1891); Yoroigawa (1927); Daibahama (1927).
- Juncus prismatocarpus* R. Br. var. *Leschenaultii* Buch. subvar. *pluritubulosus* Buch. Monogr. Junc. p. 311.
- Hab. In dampy places: Near Onsenzaki (1927).
subvar. *thermalis* Buch. l. c. p. 312.
- Hab. In dampy places: Onsenzaki (1927).
- Juncus prominens* Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 40.
- Hab. In dampy places: Onsenzaki (1927).

Liliaceae

- Tofieldia nutans* Willd. ex Schult. Syst. VII. p. 1573.
- Hab. On rocky cliffs: Eastern coast (K. Miura, 1906); Kobune (1927); Tokotan (1927); Pirikamoye (1927); Iyema (S. Itagaki, 1928); without locality (T. Kitahara, 1895).
- Veratrum album* L. var. *oxysepalum* Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 484.
- Hab. In woods and meadows: Afunruimoi (K. Jimbo, 1891); Anama (K. Jimbo, 1891); Tokotan (M. Tatewaki, 1927; Y. Hayakawa, 1928).
- Hemerocallis Middendorffii* Trautv. et Mey. Fl. Ochot. p. 94.
- Hab. In grassy places: Tokotan (1928).
- Gagea lutea* Ker-Gawl. in Bot. Mag. (1809), t. 1200.
- Hab. In grassy places: Anama (C. Tarao, 1892); Iyema (S. Itagaki, 1928); Mishima (1930).
- Allium Victorialis* L. subsp. *platyphyllum* Hult. Fl. Kamtchat. I. p. 239.
- Hab. In woods or meadows: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927; 1928); Kobune (T. Kitahara, 1895); Tomarigawa (K. Jimbo, 1891); Anama (C. Tarao, 1892).
- Allium strictum* Schrad. Hort. Goett. t. 1.
- Hab. In grassy places: Pirikamoye (1927); Mishima (1929).
- Lilium dauricum* Ker-Gawl. in Bot. Mag. XXX. t. 1210.
- Hab. In grassy places: Onsenzaki (1927); Mishima (1929).
- Lilium medeoroides* A. Gray, Pl. Jap. p. 415.
- Hab. In meadows: Iwayadomari (K. Uchida, 1891); Tokotan (1927).
- form. *kurilense* Kudo, Fl. Paramushir, p. 91.

- Hab. In meadows: Tokotan (1927).
- Fritillaria camschatcensis* Ker-Gawl. in Bot. Mag. XXX. sub t. 1216.
 Hab. In meadows or on hill-sides: Tomarigawa (K. Jimbo, 1891); Suisanwan (K. Uchida, 1891); Kobune (1927); Tokotan (K. Jimbo, 1891; K. Uchida, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); Mishima (Cap. Taketomi, 1926; M. Tatewaki, 1928).
- Lloydia serotina* Reichb. Fl. Germ. Exc. p. 102.
 Hab. In meadows: Yoshinogawa (K. Jimbo, 1891); between Iwanagawa and Anama (K. Uchida, 1891); Mishima (1927); without locality (T. Kitahara, 1895).
- Majanthemum dilatatum* Nels. et Macbr. in Bot. Gaz. LXI. p. 30.
 Hab. In grassy places and meadows: Tokotan (K. Jimbo, 1891; K. Uchida, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); between Iwanagawa and Anama (K. Uchida, 1891); Megane (T. Kitahara, 1895); Pirikamoye (1927).
- Disporum smilacinum* A. Gray, Pl. Jap. p. 321.
 Hab. In woods: Tokotan (1927).
- Streptopus amplexifolius* DC. in Lam. et DC. Fl. Fr. III. p. 174.
 Hab. In woods: Tokotan (K. Jimbo, 1891); between Iwanagawa and Anama (K. Uchida, 1891).
 var. *papillatus* Ohwi, in Tokyo Bot. Mag. XLV. p. 185.
 Hab. In woods: Kobune (1927).
- Polygonatum humile* Fisch. ex Maxim. Prim. Fl. Amur. p. 275.
 Hab. In grassy places: Pirikamoye (1927).
- Trillium kamschaticum* Pall. var. *kurilense* Tatewaki, in Miyabe & Kudo, Fl. Hok. & Saghal. III. p. 243.
 Hab. Afunruimoi (K. Jimbo, 1891); Tokotan (K. Jimbo, 1891; S. Itagaki, 1928; M. Tatewaki, 1930); Mishima (1930).
- Trillium Smallii* Maxim. in Mém. Biol. XI. p. 862.
 Hab. In woods and meadows: Hayakawa (1927); Pirikamoye (1927); Hatchowan (S. Itagaki, 1928); Mishima (1930).

Iridaceae

- Iris setosa* Pall. ex Link, Jahrb. I. 3, p. 71.
 Hab. In bogs and meadows: Iyema (I. Kodama, 1893); Tokotan (K. Jimbo, 1891; M. Tatewaki, 1928); Yoroigawa (1927; 1928).

Orchidaceae

- Cypripedium macranthum* Sw. in Act. Acad. Holm. (1800), p. 250.
 Hab. In grassy places: Afunruimoi (K. Jimbo, 1891); Tokotan (1927); Iyema (S. Itagaki, 1928); without locality (S. Fujimura, 1891).
- Orchis aristata* Fisch. ex Lindl. Gen. & Sp. Orchid. Pl. p. 262.
 Hab. In grassy places and meadows: Megane (T. Kitahara, 1895); Tokotan (K. Jimbo, 1891; T. Ishikawa, 1894; M. Tatewaki, 1927); Afunruimoi (K. Uchida, 1891); Onsenzaki (K. Jimbo, 1891); Tomarigawa (K. Jimbo, 1891); between Anama and Yoshinohama (K. Uchida, 1891); Yoshinohama (K. Uchida, 1891); Daibahama (1927); Mishima (M. Tatewaki, 1929); without locality (K. Miura, 1906).
 form. *punctata* Tatewaki, Pl. Alaid, p. 160.
 Hab. In grassy places: Kobune (1927); Tokotan (1927).
- Coeloglossum viride* Hartm. var. *bracteatum* Richter, Pl. Europ. I. p. 279.
 Hab. In grassy places and woods: Tokotan (M. Aizawa, 1900; M. Tatewaki, 1927); Iyema (S. Itagaki, 1928); Hatchowan (S. Itagaki, 1928).
 var. *interjectum* Miyabe et Kudo, Fl. Hok. & Saghal. III. p. 360.
 Hab. In meadows and heaths: Sonrakuwan (1929); Nakadomari (1929).
- Gymnadenia conopsea* R. Br. in Ait. Hort. Kew. ed. 2, V. p. 196.
 Hab. In grassy places and meadows: Tokotan (1927); Daibahama (1927); Mishima (1929).
- Gymnadenia camtschatica* Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 450.
 Hab. In grassy places: Tokotan (Y. Hayakawa, 1928).
- Platanthera Ditmariana* Kom. in Fedde, Rep. XIII. p. 165.
 Hab. In birch-woods: Kobune (1927); Tokotan (1927).
- Platanthera hyperborea* Lindl. Gen. & Sp. Orchid. Pl. p. 287.
 Hab. In swampy places: Kobune (1927).
- Platanthera tipuloides* Lindl. Gen. & Sp. Orchid. Pl. p. 285.
 Hab. In bogs and dampy places: Kobune (1927); Onsenzaki (1927).
- Listera cordata* R. Br. in Ait. Hort. Kew. ed. 2, V. p. 201.
 Hab. In woods: Tokotan (1927).
- Listera nipponica* Makino, in Tokyo Bot. Mag. XIX. p. 9.
 Hab. In woods: Kobune (1927).

Microstylis monophylla Lindl. Gen. & Sp. Orchid. Pl. p. 19.

Hab. In grassy places: Tokotan (1927).

form. *diphyllos* Makino et Nemoto, Fl. Jap. p. 1188.

Hab. In grassy places: Tokotan (1927); Pirikamoye (1927);
Mishima (1928).

Oreorchis patens Lindl. in Journ. Linn. Soc. III. p. 27.

Hab. In grassy places: Onsenzaki (1927); Hayakawa (1927);
Hatchowan (S. Itagaki, 1928); Mishima (1929); Tokotan
(1929).

Ephippianthus sachalinensis Reichb. f. apud Fr. Schm. Fl. Sachal. p. 180.

Hab. In meadows: Karanzaki (1928).

B. FLORISTIC COMPOSITION OF THE ISLAND OF SHIMUSHIR

PTERIDOPHYTA

Ophioglossaceae

Botrychium lanceolatum Ångustr. in Bot. Not. (1854) p. 68.

Hab. In grassy places: Tozanzaki (1928).

Botrychium robustum Underw. in Bull. Torr. Bot. Club, XXX. p. 51.

Hab. In woods and grassy places: Sakanagawa (1928); Shimushir
(1928).

Polypodiaceae

Cystopteris fragilis Bernh. in Schrad. N. Journ. Bot. I. 2. p. 26.

Hab. On rocky cliffs: Takinoshita (1929).

Dryopteris dilatata A. Gray, var. *deltoidea* Takeda, in Tokyo Bot. Mag.
XXIV. p. 179.

Hab. In woods: Broughton Bay (1928); Shimushir (1928).

Polystichum Braunii Fée, Gen. Filie. p. 278.

Hab. In woods: Broughton Bay (1928).

Equisetaceae

Equisetum arvense L. var. *boreale* Rupr. in Beitr. Pfl. Russ. Reich. III.
p. 19.

Hab. In dampy places: Shimushir (1928); Nakadomari (1928);
along the River Shimushir (1930).

Equisetum littorale Kuehlew. apud Rupr. Beitr. Pfl. Russ. Reich. IV.
p. 91.

Hab. Lake Midori (1928).

Equisetum palustre L. Sp. Pl. ed. 1, p. 1061.

Hab. In boggy places: Broughton Bay (1928).

Equisetum hyemale L. Sp. Pl. ed. 1, p. 1062.

Hab. In woods or meadows: Broughton Bay (1928); Higashiura (1928).

Lycopodiaceae

Lycopodium Selago L. Sp. Pl. ed. 1, p. 1102.

Hab. In woods, meadows and heaths: Broughton Bay (1928); Broughton-zaki (1928); along the River Shimushir (1930).

Lycopodium obscurum L. form. *juniperoideum* Takeda, in Tokyo Bot. Mag. XXIII. p. 213.

Hab. In heaths: Near Wan-oku (1928).

Lycopodium annotinum L. var. *latifolium* Takeda, l. c. p. 215.

Hab. In woods and heaths: Uratomine (1928); Broughton Bay (1928); Wan-oku (1928).

Lycopodium clavatum L. Sp. Pl. ed. 1, p. 1101.

Hab. In meadows and heaths: Yamagoshizaki (1928); Nakayama (1928); near Sakanagawa (1928); Wan-oku (1928); Shimushir (1928; 1930).

Lycopodium sitchense Rupr. in Beitr. Pfl. Russ. Reich. III. p. 30.

Hab. In heaths: Near Wan-oku (1928); Shimushir (1928; 1930).

Lycopodium complanatum L. Sp. Pl. ed. 1, p. 1104.

Hab. In heaths and on hill-sides: Broughton Bay (1928); Uratomine (1928); Lake Midori (1928); Wan-oku (1928).

Lycopodium alpinum L. Sp. Pl. ed. 1, p. 1104.

Hab. In heaths: Nakayama (1928); Lake Midori (1928); Wan-oku (1928); Shimushir (1928; 1930).

Selaginellaceae

Selaginella selaginoides Link, Fil. Sp. Hort. Berol. p. 158.

Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928); Broughton Bay (1928); Nakadomari (1929).

PHANEROGAMAE

Gymnospermae

Taxaceae

Taxus cuspidata Sieb. et Zucc. Fl. Jap. Fam. Nat. II. p. 108.

Hab. In woods: Broughton Bay (1928).

Pinaceae

Pinus pumila Regel, in Ind. Sem. Hort. Petrop. (1858) p. 23.

Hab. Uratomine (1928); Shimushir (1930).

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

Salix Reinii Fr. et Sav. Enum. Pl. Jap. I. p. 459 et II. p. 503.

Hab. Along the River Shimushir (1928).

Salix kurilensis Koidz. in Tokyo Bot. Mag. XXXII. p. 62.

Hab. In bogs: Wan-oku (1928).

Salix arctica × *Salix fuscescens* (det. by Dr. A. Kimura).

Hab. Near Lake Midori (1928).

Salix longipetiolata Flod. in Sv. Vet. Ak. Ark. f. Bot. 20, A. No. 6, p. 14.

Hab. In rocky places: Near Nakayama (1928).

Salix sachalinensis Fr. Schm. Fl. Sachal. p. 173.

Hab. Along streams: Sakanagawa (1928).

Betulaceae

Betula Ermani Cham. in Linnaea VI. p. 537.

Hab. On hill-sides: Near Broughton Bay (1928).

Alnus fruticosa Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.

Hab. In heaths: Shimushir (1928); Lake Midori (1928; 1930).

Urticaceae

Urtica Takedana Ohwi, in Phytotax. et Geobot. I. p. 129.

Hab. In meadows: Broughton Bay (1928).

Polygonaceae

Rumex Acetosella L. Sp. Pl. ed. 1, p. 338.

Hab. Along the road-side: Nakadomari (1928).

Rumex Acetosa L. var. *alpina* Hartm. in Handb. Skand. Fl. ed. 1, p. 146.

Hab. In grassy places and meadows: Broughton Bay (1928).

Oxyria digyna Hill, Hort. Kew. p. 158.

Hab. On disintegrated slopes: Broughton Bay (1928); Kamoi-zaki (1928); Nakadomari (1928).

Polygonum viviparum L. Sp. Pl. ed. 1, p. 360.

Hab. In meadows and boggy places. Broughtonzaki (1928); Yamagoshizaki (1928).

Polygonum Weyrichii Fr. Schm. var. *alpinum* Maxim. in Mém. Biol. IX. p. 617.

Hab. In meadows: Broughton Bay (1928); near Shimushir (1928).

Chenopodiaceae

Atriplex patula L. Sp. Pl. ed. 1, p. 1054.

Hab. On sandy beaches: Nakadomari (1928); Kadomizaki (1928).

Portulacaceae

Montia lamprospermum Cham. in Linnaea VI. p. 564.

Hab. In damp places: Along the River Sakanagawa (1928).

Caryophyllaceae

Stellaria media Cyrill, Char. Comm. p. 36.

Hab. Along road-sides: Broughton Bay (1928).

Stellaria calycantha Bong. in Mém. Acad. Imp. Sc. St. Péteresb. Ser. VI. 2, p. 127.

Hab. Near shores: Takinoshita (1929).

Stellaria Fenzlii Regel, in Pl. Radd. Dicotyl. Polypet. pp. 264, 280.

Hab. In woods: Broughton Bay (1928).

Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII. p. 194.

Hab. On rocky cliffs and gravelly shores: Broughton Bay (1928); Lake Midori (1928); near Shimushir (1928).

Cerastium boreale Takeda, in Kew Bull. (1911) p. 105.

Hab. In grassy places: Broughton Bay (1928).

Cerastium rigidulum Takeda, l. c.

Hab. In grassy places: Nakadomari (1928).

Sagina Linnaei Presl, Real. Haenk. II. p. 14.

Hab. On rocky cliffs: Nakadomari (1928).

Ammodenia oblongifolia Rydb. var. *maxima* Nakai, in Tokyo Bot. Mag. XLIII. p. 458.

Hab. On sandy and gravelly shores: Broughton Bay (1928);

Shimushir (1929).

Moheringia lateriflora Fenzl, Verb. Alsin. pp. 18, 38.

Hab. In meadows and grassy places: Broughton Bay (1928; 1929); Nakadomari (1928; 1929).

Ranunculaceae

Trollius Riederianus Fisch. et Mey. in Ind. Sem. Hort. Petrop. IV. p. 48.

Hab. In boggy places and meadows: Broughton Bay (1928); Yamagoshizaki (1928).

Trollius membranostylis Hult. Fl. Kamtchat. II. p. 99.

Hab. In meadows: Nakadomari (1929).

Coptis trifolia Salisb. in Trans. Linn. Soc. VIII. p. 305.

Hab. In meadows and boggy places: Broughton Bay (1928); Yamagoshizaki (1928).

Aconitum kamtschaticum Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.

Hab. In meadows and grassy places: Broughton Bay (1928).

Anemone narcissiflora L. Sp. Pl. ed. 1, p. 542.

Hab. In grassy places: Broughton Bay (1928).

Pulsatilla angustifolia Turcz. in Bull. Soc. Nat. Imp. Mose. XIII. p. 61.

Hab. In meadows: Broughton-zaki (1928; 1930); Kamoiyama (1928); near Nakadomari (1928); Takinoshita (1929).

Ranunculus acris L. var. *Steveni* Rgl. et Til. Fl. Ajan. p. 32.

Hab. In grassy places: Broughton Bay (1928; 1929).

Thalictrum Thunbergii A. P. DC. Syst. I. p. 183.

Hab. In grassy places: Broughton Bay (1928).

Papaveraceae

Papaver nudicaule L. subsp. *xanthopetalum* Fedde, var. *Fauriei* Fedde, Repert. VII. p. 257.

Hab. In disintegrated slopes: Broughton Bay (1928); Lake Midori (1928); Shimushir (1928; 1929).

Corydalis ambigua Cham. et Schlech. in Linnaea I. p. 558.

Hab. In meadows: Broughton Bay (1930).

Brassicaceae

Cochlearia oblongifolia DC. Syst. II. p. 363.

Hab. On rocky cliffs: Broughton Bay (1928); Nakadomari (1928).

Barbarea orthoceras Ledeb.: Fl. Ross. I. p. 114.

Hab. In dampy places: Nakodomari (1928); Shimushir (1928; 1929).

Cardamine umbellata Greene, Pittonia III. p. 154.

Hab. In dampy places: Broughton Bay (1928).

Cardamine Regeliana Miq. Prol. Fl. Jap. p. 73.

Hab. Along streams: Shimushir (1930).

Draba borealis DC. Syst. II. p. 342.

Hab. On rocky cliffs near the sea: Broughton Bay (1928; 1930); Kamoyama (1928); Nakadomari (1928); Shimushir (1930).

Arabis lyrata L. var. *kamtschatica* Fisch. apud DC. Prodr. I. p. 146.

Hab. Along streams and in rocky places: Nakadomari (1928); Shimushir (1929; 1930); Takinoshita (1929).

Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.

Hab. In woods and meadows: Broughton Bay (1928); Nakadomari (1928; 1929).

Droseraceae

Drosera rotundifolia L. Sp. Pl. ed. 1, p. 281.

Hab. In bogs and along streams: Nakadomari (1928); Wan-oku (1928); Shimushir (1928); Yamagoshizaki (1928).

Crassulaceae

Sedum elongatum Ledeb. Fl. Ross. II. p. 178.

Hab. On rocky cliffs near the sea: Nakadomari (1928).

Saxifragaceae

Saxifraga bracteata D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.

Hab. On rocky cliffs near the sea: Nakadomari (1928).

Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

Hab. On sea-cliffs: Broughton Bay (1928).

Saxifraga Ohwii Tatewaki, in Journ. Facul. Agr. Hokkaido Imp. Univ. XXIX. p. 199.

Hab. Along streams: Nakadomari (1928).

Saxifraga Merckii Fisch. in Sternb. Rev. Sax. Suppl. I. p. 1.

Hab. On plateaux and gravelly places: Nakayama (1928); Lake Midori (1928); Shimushir (1928; 1929).

Chrysosplenium kamtschaticum Fisch. in DC. Prodr. IV. p. 48.

Hab. In dampy places: Nakadomari (1928; 1929).

Parnassia palustris L. Sp. Pl. ed. 1, p. 273.

Hab. In meadows: Nakadomari (1928); Broughton-zaki (1928).

Rosaceae

Aruncus sylvester Kostel. var. *kamtschatica* Maxim. in Act. Hort. Petrop. VI. p. 170.

Hab. In meadows: Kamoizaki (1928); Nakadomari (1928).

Sorbus sambucifolia Roem. Syn. Monogr. III. p. 139.

Hab. In boggy places: Broughton Bay (1928).

Rubus Chamaemorus L. Sp. Pl. ed. 1, p. 494.

Hab. In bogs: Yamagoshizaki (1928).

Potentilla Miyabei Makino, in Tokyo Bot. Mag. XVI. p. 28.

Hab. In gravelly places: Lake Midori (1928); near Shimushir (1928).

Potentilla stolonifera Lehm. in Delect. Sem. Hort. Hamb. Bot. (1831), p. 56.

Hab. In grassy places: Broughton Bay (1928).

Potentilla megalantha Takeda, in Kew Bull. (1911), p. 255.

Hab. On rocky places near the sea: Broughton Bay (1928); along the River Shimushir (1928); Kamoizaki (1930); Nakadomari (1928).

Potentilla Matsumurae Wolf, in Bibl. Bot. Hft. 72, p. 508.

Hab. In gravelly places: Nakayama (1928); Nakadomari (1929); Shimushir (1929; 1930).

Geum calthaefolium Menz. ap. Sm. in Rees Cyclop. 16. Geum n. 13.

Hab. In meadows, bogs and heaths: Broughton-zaki (1928); Broughton Bay (1928); Uratomine (1928); Lake Midori (1928); Wan-oku (1928); Shimushir (1929).

Geum pentapetalum Makino, in Tokyo Bot. Mag. XXIV. p. 32.

Hab. In bogs and heaths: Yamagoshizaki (1928); Wan-oku (1928).

Filipendula kamtschatica Maxim. form. *pilosa* Koidz. in Tokyo Bot. Mag. XXIII. p. 179.

Hab. In meadows: Kamoizaki (1928); Broughton Bay (1928).

Sanguisorba sitchensis Trautv. et Mey. Fl. Ochot. p. 35.

Hab. Along the River Sakanagawa (1928).

Sanguisorba tenuifolia Fisch. var. *grandiflora* Maxim. Prim. Fl. Amur. p. 94.

Hab. In bogs: Broughton Bay (1928); Wan-oku (1928); Yamagoshizaki (1928).

Fabaceae

Thermopsis fabacea DC. Prodr. II. p. 99.

Hab. Near shores: Broughton Bay (1928); Shimushir (1928; 1929).

Trifolium repens L. Sp. Pl. ed. 1, p. 767.

Hab. Along road-sides: Broughton Bay (1928).

Trifolium pratense L. Sp. Pl. ed. 1, p. 767.

Hab. Along road-sides: Broughton Bay (1928).

Oxytropis retusa Matsum. in Tokyo Bot. Mag. XV. p. 116.

Hab. In heaths and meadows: Shimushir (1927; 1928); Broughton-zaki (1928); Kamoiyama (1928); Nakadomari (1928); Lake Midori (1928); Tozan-saki (1928).

Hedysarum obscurum L. var. *neglectum* Trautv. et Mey. in Bull. Soc. Nat. Mosc. XXXIII. 2, p. 516.

Hab. In meadows, heaths and on rocky cliffs: Shimushir (1928; 1929); Broughton Bay (1928); Broughton-zaki (1928); Nakadomari (1928); between Kamoiyama and Uratomine (1928).

Lathyrus maritimus Bigel. Fl. Bost. ed. 2, p. 268.

Hab. On sandy beaches: Shimushir (1928; 1929); Broughton Bay (1928); Nakadomari (1928).

Lathyrus palustris L. var. *pilosus* Ledeb. Fl. Ross. I. p. 686.

Hab. In boggy places: Broughton Bay (1928).

Geraniaceae

Geranium erianthum DC. Prodr. I. p. 641.

Hab. In meadows: Nakadomari (1929).

Geranium yesoense Fr. et Sav. Enum. Pl. Jap. II. p. 305.

Hab. In grassy places: Broughton Bay (1928).

Oxalidaceae

Oxalis Acetosella L. Sp. Pl. ed. 1, p. 433.

Hab. In woods: Broughton Bay (1928).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths and bogs: Wan-oku (1928); Broughton Bay (1928); Shimushir (1928).

Aquifoliaceae

Ilex rugosa Fr. Schm. Fl. Sachal. p. 122.

Hab. In woods: Sakanagawa (1928).

Hypericaceae

Hypericum paramushirense Kudo, Fl. Paramushir, p. 130.

Hab. In meadows and grassy places: Broughton Bay (1929);
Higashiura (1928).

Violaceae

Viola Selkirkii Pursh, apud Goldie in Edinbg. Phil. Journ. VI. p. 319.

Hab. In woods: Sakanagawa (1928).

Viola blanda Willd. Hort. Berol. I. t. 24.

Hab. In bogs: Wan-oku (1928).

Viola sachalinensis H. d. Boiss. in Bull. Soc. Bot. Fr. (1910), p. 188.

Hab. In meadows and heaths: Broughton-zaki (1928); Lake
Midori (1928); Shimushir (1928).

Viola kamtschadalarum B. et H. in Sv. Vet. Ak. Ark. f. Bot. 22 A. 3, p. 6.

Hab. In boggy places: Broughton Bay (1928); Wan-oku (1928).

Viola crassa Makino, in Tokyo Bot. Mag. XIX. p. 87.

Hab. In gravelly places: Nakayama (1928); Lake Midori (1928).

var. *vegeta* Nakai, in Tokyo Bot. Mag. XLII. p. 565.

Hab. In grassy places: Nakadomari (1928); Shimushir (1928).

Oenotheraceae

Epilobium Fauriei Lev'1. in Bull. Acad. Int. Geogr. Bot. XI. p. 211.

Hab. In dampy places: Nakadomari (1929).

Epilobium palustre L. Sp. Pl. ed. 1, p. 348.

Hab. In dampy places: Along the Sakanagawa (1928).

Epilobium glandulosum Lehm. Pug. II. p. 14.

Hab. In dampy places: Shimushir (1928).

Epilobium lactiflorum Hausskn. in Oester. Bot. Zeitschr. XXIX. p. 89.

Hab. In dampy places: Nakadomari (1928).

Epilobium ovale Takeda, Fl. Shikotan, p. 466.

Hab. In dampy places: Shimushir (1929).

Epilobium Hornemanni Reichb. Icon. Crit. II. p. 73.

Hab. In dampy places: Nakadomari (1928).

Circaea alpina L. Sp. Pl. ed. 1, p. 9.

Hab. In woods: Broughton Bay (1928).

Hippuridaceae

Hippuris vulgaris L. Sp. Pl. ed. 1, p. 4.

Hab. In ponds: Yamagoshizaki (1928); Wan-oku (1928).

Apiaceae

Pleurospermum camtschaticum Hoffm. Umbellif. praem. p. 8.

Hab. In meadows: Kamoiyama (1928).

Cnidium ajanense Drude, in Engl. u. Pr. Nat. Pfl.-fam. III. 8. p. 210.

Hab. In meadows, heaths and bogs: Broughton Bay (1928); Yamagoshizaki (1928); Nakadomari (1928).

Ligusticum Hultenii Fernald, in Rhodora XXXII. p. 7.

Hab. On shores: Broughton Bay (1928).

Conioselinum Gmelini Coult. et Rose, in Contr. Nat. Herb. VII. 1. p. 150.

Hab. In meadows and grassy places: Broughton Bay (1928); Shimushir (1928).

Phellopterus littoralis Benth. in Benth. et Hook. Gen. Pl. I. p. 905.

Hab. On sandy beaches: Nakadomari (C. Yumita, 1928).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In meadows: Broughton Bay (1928).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In boggy places: Broughton Bay (1928); Yamagoshizaki (1928).

Metachlamydeae

Diapensiaceae

Diapensia lapponica L. var. *obovata* Fr. Schm. Fl. Sachal. p. 161.

Hab. In meadows and heaths: Broughton Bay (1928); Broughton-zaki (1928); Nakayama (1928).

Pyrolaceae

Pyrola minor L. Sp. Pl. ed. 1, p. 396.

Hab. In meadows and heaths: Broughton Bay (1928); Yamagoshi-zaki (1928); Shimushir (1930).

Rhodoraceae

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729.

- Hab. In boggy places: Broughton Bay (1928); Shimushir (1930).
Rhododendron camtschaticum Pall. Fl. Ross. I. 1, p. 48.
 Hab. In grassy places, meadows and heaths: Broughton Bay (1928); Nakadomari (1928); Shimushir (1928; 1929; 1930).
Loiseleuria procumbens Desv. in Journ. Bot. III. p. 35.
 Hab. In heaths and bogs: Uratomine (1928); Nakayama (1928); Yamagoshizaki (1928).
Phyllodoce aleutica A. Heller, in Muelenb. I. p. 1.
 Hab. In heaths: Lake Midori (1928); Wan-oku (1928); Shimushir (1930).
Bryanthus musciformis Nakai, Tr. & Shr. Jap. I. ed. 1, p. 16.
 Hab. In bogs and heaths: Yamagoshizaki (1928); Nakayama (1928).
Cassiope lycopodioides Don, in Edinbg. New Phil. Journ. XVII. p. 158.
 Hab. In heaths and meadows: Broughton-zaki (1928); Yamagoshizaki (1928); Wan-oku (1928); Shimushir (1930).
Andromeda Polifolia L. Sp. Pl. ed. 1, p. 393.
 Hab. In bogs: Broughton Bay (1928); Yamagoshizaki (1928); Wan-oku (1928).
Gaultheria Miqueliana Takeda, in Tokyo Bot. Mag. XXXII. p. 195.
 Hab. In heaths: Shimushir (1928).
Arcteria nana Makino, in Tokyo Bot. Mag. XX. p. 85.
 Hab. In heaths: Uratomine (1928); Nakayama (1928); Lake Midori (1928); Shimushir (1928).
Arctous alpina Niedz. var. *japonica* Takeda, ex Tatewaki, in Res. Bull. Exp. For. Fac. Agr. Hokkaido, Imp. Univ. V. p. (56).
 Hab. In heaths and bogs: Broughton Bay (1928); Yamagoshizaki (1928); Uratomine (1928); Kamoizaki (1930).
Oxycoccus vulgaris Hill, Brit. Herbal, p. 324.
 Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928); Broughton Bay (1929).
Oxycoccus microcarpus Turcz. ex Rupr. Beitr. Pfl. Russ. Reich. IV. p. 56.
 Hab. In bogs: Yamagoshizaki (1928).
Vaccinium Vitis-idaea L. Sp. Pl. ed. 1, p. 351.
 Hab. In heaths, meadows, bogs and on hill-sides: Broughton Bay (1928; 1929); Yamagoshizaki (1928); Shimushir (1928).
Vaccinium uliginosum L. Sp. Pl. ed. 1, p. 350.
 Hab. In bogs and heaths: Broughton Bay (1928); Wan-oku (1928); Nakadomari (1928).

Vaccinium praestans Lamb. in Trans. Linn. Soc. X. p. 264.

Hab. In woods: Nakadomari (1929).

Primulaceae

Primula Fauriei Franch. in Bull. Soc. Phil. Paris, 7. Sér. X. p. 146.

Hab. In meadows and on rocky cliffs near the sea: Broughton-zaki (1928); Nakadomari (1928; 1929); Sakanagawa (1928); Shimushir (1930).

Primula cuneifolia Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.

Hab. On rocky cliffs, meadows, bogs and gravelly places: Broughton Bay (1928); Broughton-zaki (1928; 1930); Yamagoshizaki (1928); Nakayama (1928).

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237. p. 313.

Hab. In grassy places: Nakadomari (1929).

var. *arctica* Ledeb. Fl. Ross. III. p. 25.

Hab. In grassy places: Broughton Bay (1928).

Gentianaceae

Gentiana Kawakamii Makino, in Tokyo Bot. Mag. XVIII. p. 67.

Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).

Gentiana auriculata Pall. Fl. Ross. I. 2. p. 102.

Hab. In grassy places: Broughton Bay (1928); Lake Midori (1928); Shimushir (1928).

Swertia tetrapetala Pall. Fl. Ross. I. 2. p. 99.

Hab. In grassy places: Broughton Bay (1928); Nakadomari (1928); Shimushir (1928).

form. *variegata* Tatewaki

Folia variegata.

Hab. In boggy places: Broughton Bay (1928).

form. *albiflora* Tatewaki

Flores albi.

Hab. In grassy places: Broughton Bay (1928); Lake Midori (1928); Broughton-zaki (1928).

Halenia corniculata Druce, in Rep. Bot. Exch. Cl. Brit. Isl. III. 5. p. 419.

Hab. In grassy places: Broughton Bay (1928).

Menyanthes trifoliata L. Sp. Pl. ed. 1, p. 145.

Hab. In swampy places: Yamagoshizaki (1928).

Convolvulaceae

Convolvulus sepium R. Br. Prod. p. 483.

Hab. Along road-sides: Broughton Bay (1929).

Heliotropiaceae

Mertensia maritima G. Don, subsp. *asiatica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. On sandy beaches: Broughton Bay (1928).

Rhinanthaceae

Pentstemon frutescens Lamb. in Trans. Linn. Soc. X. p. 259.

Hab. In gravelly places: Nakadomari (1928); Lake Midori (1928); Shimushir (1928; 1929).

Veronica Stelleri Pall. ex Spreng. Schrad. u. Link, Jahrb. III. p. 40.

Hab. In meadows and grassy places: Broughton-zaki (1928); Nakadomari (1928); Lake Midori (1928); Shimushir (1928).

Veronica americana Schw. apud Benth. in DC. Prodr. X. p. 468.

Hab. In wet places: Nakadomari (1928).

Lagotis glauca Gaertn. in Nov. Comm. Ac. Sc. St. Pétersb. XIV. p. 533.

Hab. In meadows and heaths: Broughton-zaki (1928; 1930); Nakadomari (1928); Lake Midori (1928); Shimushir (1928).

Euphrasia mollis Wettst. Monogr. Euphr. p. 141.

Hab. In grassy places and meadows: Broughton Bay (1928); Shimushir (1928); Broughton-zaki (1928); Kamoiyama (1928); Yamagoshizaki (1928).

Pedicularis Chamissonis Stev. var. *Maximowiczii* Kudo, Fl. Paramushir, p. 156.

Hab. In meadows and grassy places: Broughton Bay (1928); Lake Midori (1928); Nakadomari (1928).

Pedicularis resupinata L. Sp. Pl. ed. 1, p. 608.

Hab. In grassy places: Broughton Bay (1928); Uratomine (1928).

Pedicularis euphrasiodes Steph. in Willd. Sp. Pl. III. p. 204.

Hab. In bogs and heaths: Broughton Bay (1928); Yamagoshizaki (1928); Uratomine (1928).

Orobanchaceae

Boschniakia rossica Hult. Fl. Kamtehat. IV. p. 126.

Hab. In heaths: Uratomine (1928).

Lentibulariaceae

Pinguicula vulgaris L. var. *macroceras* Herd. Pl. Radd. Monop. IV. 1. p. 98.

Hab. In bogs and heaths: Yamagoshizaki (1928); Nakadomari (1929); Nakayama (1928).

Plantaginaceae

Plantago camtschatica Cham. ex Link, Enum. Pl. Hort. Berol. I. p. 120.

Hab. On rocky cliffs near the sea: Kamoiyama (1928); Nakadomari (1928).

Rubiaceae

Galium trifidum L. Sp. Pl. ed. 1, p. 105.

Hab. In swampy places: Shimushir (1928).

Galium triflorum Michx. Fl. Bor. Am. I. p. 80.

Hab. In woods: Nakadomari (1928).

Galium kamtschaticum Stell. var. *hirsutum* Takeda, in Tokyo Bot. Mag. XXIV. p. 65.

Hab. In woods: Broughton Bay (1928); along the River Sakana-gawa (1928).

Rubia jesoensis Miyabe et Miyake, Fl. Saghal. p. 229.

Hab. In grassy places: Broughton Bay (1928).

Caprifoliaceae

Linnaea borealis L. form. *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7, p. 159.

Hab. In woods: Broughton Bay (1928; 1929); Uratomine (1928); Wan-oku (1928).

Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.

Hab. On hill-sides: Broughton Bay (1928); Uratomine (1928); Nakadomarii (1929); Shimushir (1930).

Lonicera Chamissoi Bunge, in Kiril. Lonie. Russ. Reich. p. 26.

Hab. On hill-sides: Broughton Bay (1928).

Diervilla Middendorffiana Carr. in Rév. Hort. XXV. p. 306.

Hab. Along the River Shimushir (1928).

Campanulaceae

Adenophora kurilensis Nakai, in Tokyo Bot. Mag. XLIV. p. 11.

Hab. In meadows: Broughton Bay (1928); Broughton-zaki

(1928); Kamoiyama (1928).

Campanula dasyantha Bieb. Fl. Taur. Cauc. III. p. 147.

Hab. In meadows and gravelly places: Between Kamoiyama and Uratomine (1928); Nakadomari (1928; 1929).

Campanula lasiocarpa Cham. in Linnaea IV. p. 39.

Hab. In meadows and gravelly places: Broughton Bay (1928); between Kamoiyama and Uratomine (1928); Lake Midori (1928); Shimushir (1928; 1929).

Peracarpa circaeoides H. Feer, in Engl. Bot. Jahrb. XII. p. 621.

Hab. In woods: Nakadomari (1928).

Asteraceae

Solidago Virgaurea L. Sp. Pl. ed. 1, p. 880.

Hab. In grassy places: Broughton Bay (1928).

Anaphalis margaritacea Benth. et Hook. f. Gen. Pl. II. p. 303.

Hab. In grassy places: Nakanoura (C. Yumita, 1928).

form. *latifolia* Kudo, Fl. Paramushir, p. 165.

Hab. In grassy places: Broughton Bay (1928).

Achillea sibirica Ledeb. in Ind. Sem. Hort. Dorpat. (1811).

Hab. In grassy places: Nakadomari (1928); Lake Midori (1928).

Achillea Ptarmica L. var. *speciosa* Herd. Pl. Radd. Monop. III. 2, p. 39.

Hab. In grassy places: Broughton Bay (1928).

Matricaria matricarioides Porter, in Mem. Torr. Club, V. p. 341.

Hab. On sandy beaches: Broughton Bay (1928).

Chrysanthemum arcticum L. var. *yezoense* Maekawa, in Trans. Sapporo Nat. Hist. Soc. VIII. p. 14.

Hab. In rocky places: Broughton Bay (1928).

Artemisia vulgaris L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.

Hab. In meadows: Broughton Bay (1928).

var. *coarctata* Bess. l. c. p. 53.

Hab. In meadows: Sakanagawa (1928).

Artemisia arctica Less. in Linnaea VI. p. 213.

Hab. In meadows: Broughton-zaki (1928); Broughton Bay (1928); between Kamoiyama and Uratomine (1928).

Artemisia Stelleriana Bess. in Nouv. Mém. Soc. Nat. Mosc. III. p. 79.

Hab. On sandy beaches: Nakanoura (C. Yumita, 1928); Shimushir (1928).

Petasites japonicus Miq. var. *giganteus* Makino, in Tokyo Bot. Mag. XXIII. p. 18.

- Hab. Along streams: Nakadomari (1928).
Arnica unalaschcensis Less. in *Linnaea* VI. p. 238.
 Hab. In meadows, grassy places and heaths: Broughton-zaki (1928); Shimushir (1928); Nakayama (1928).
Cacalia kamschatica Kudo, *Contr. Fl. N. Saghal.* p. 60.
 Hab. In meadows: Broughton Bay (1928).
Senecia palmatus Pall. *Reise Russ. Reich.* III. p. 321.
 Hab. In meadows: Shimushir (1928).
Senecio vulgaris L. *Sp. Pl. ed. 1,* p. 867.
 Hab. Along road-sides: Broughton Bay (1928).
Senecio pseudo-Arnica Less. in *Linnaea* VI. p. 240.
 Hab. On sandy beaches: Broughton Bay (1928).
Cirsium kamschaticum Ledeb. ex DC. *Prodr.* VI. p. 644.
 Hab. In meadows: Broughton Bay (1928).
Saussurea Riederi Herd. *Pl. Radd. Monop.* III. 3. p. 35.
 Hab. In grassy places and meadows: Broughton Bay (1928); Broughton-zaki (1928).
Saussurea kurilensis Tatewaki, in *Journ. Fac. Agr. Hokkaido Imp. Univ.* XXIX. p. 214.
 Hab. In meadows: Broughton-zaki (1928).
 var. *arachnoidea* Tatewaki, var. nov.
 Humior circ. 15 cm. alta; cauli arachnoideo; foliis supra fere glabris subtus arachnoideis.
 Nom. Jap. *Hime-urup-tôhiren.*
 Hab. In heaths: Near Broughton-zaki (1928).
Picris japonica Thunb. *Fl. Jap.* p. 299.
 Hab. In grassy places: Broughton Bay (1928); Lake Midori (1928).
Hieracium umbellatum L. subsp. *umbellatum* Zahn, var. *coronopifolium* Bernh. in *Engl. Pfl.-reich.* IV. 280. p. 914.
 Hab. In grassy places: Lake Midori (1928).
Taraxacum ceratophorum DC. *Prodr.* VII. p. 146.
 Hab. On rocky cliffs: Nakadomari (1928); Shimushir (1929).

Monocotyledoneae

Potamogetonaceae

- Phyllospadix Scouleri* Hook. *Fl. Bor. Am.* II. p. 171.
 Hab. In Broughton Bay (1928).

Potamogeton natans L. Sp. Pl. ed. 1, p. 126.

Hab. In ponds: Wan-oku (C. Yumita, 1928; M. Tatewaki, 1928).

Scheuchzeriaceae

Triglochin palustre L. Sp. Pl. ed. 1, p. 338.

Hab. In bogs: Yamagoshizaki (1928).

Poaceae

Hierochloe alpina Roem. et Schl. Syst. II. p. 515.

Hab. In grassy places: Uratomine (1928).

Phleum alpinum L. Sp. Pl. ed. 1, p. 59.

Hab. In grassy places: Broughton Bay (1928).

Phleum pratense L. Sp. Pl. ed. 1, p. 59.

Hab. Along road-sides: Broughton Bay (1928).

Agrostis flaccida Hack. in Bull. Herb. Boiss. VII. p. 649.

Hab. In heaths: Lake Midori (1928).

Agrostis canina L. Sp. Pl. ed. 1, p. 62.

Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).

form. *monstruosa* Tatewaki

Hab. Wan-oku (1928).

Agrostis Trinii Turcz. Fl. Baic-Dahur. II. 2, p. 305, in nota.

Hab. In grassy places, meadows and bogs: Broughton Bay (1928);
Broughton-zaki (1928); Yamagoshizaki (1928); Nakadomari
(1928).

Agrostis exarata Trin. Gram. Unifl. p. 207.

Hab. In dampy places: Sakanagawa (1928).

Calamagrostis Yendoana Honda, in Tokyo Bot. Mag. XLI. p. 635.

Hab. In grassy places: Broughton Bay (1928).

Calamagrostis Langsdorffii Trin. Gram. Unifl. p. 225.

Hab. In boggy and grassy places: Broughton Bay (1928).

Calamagrostis neglecta Gaertn. Fl. Wett. I. p. 94.

Hab. In bogs: Yamagoshizaki (1928).

var. *aculeolata* Miyabe et Kudo, Fl. Hok. & Saghal. II. p. 140.

Hab. In bogs: Wan-oku (1928).

Calamagrostis sachalinensis Fr. Schm. Fl. Sachal. p. 202.

Hab. Along the Sakanagawa (1928).

Calamagrostis purpurascens R. Br. in Richards. Bot. App. Frankl. Journ.
(1823), p. 731.

Hab. In grassy places: Broughton Bay (1928; 1929); Shimushir

- (1928); Nakadomari (1929).
 var. *parvigluma* Miyabe et Kudo, Fl. Hokkaido & Saghal. II. p. 145.
 Hab. In gravelly places: Nakadomari (1928).
 var. *pumila* Miyabe et Kudo, l. c.
 Hab. In heaths: Uratomine, Broughton Bay (1928).
Deschampsia caespitosa P. Beauv. Agrost. p. 91.
 Hab. In heaths and grassy places: Along the Sakanagawa (1928).
Deschampsia beringensis Hult. Fl. Kamtchat. I. p. 107.
 Hab. In grassy places: Shimushir (1928); Sakanagawa (1928).
Deschampsia flexuosa Trin. in Bull. Sc. Acad. St. Pétersb. I. p. 66.
 Hab. In heaths and gravelly places: Broughton Bay (1928; 1929); Sakanagawa (1928); Nakadomari (1929).
Trisetum spicatum Richt. Pl. Europ. I. p. 59.
 Hab. In meadows: Higashiura (1928).
Trisetum sibiricum Rupr. in Beitr. Pfl. Russ. Reich. II. p. 65.
 Hab. In grassy places and bogs: Broughton Bay (1928; 1929); Yamagoshizaki (1928).
Poa annua L. Sp. Pl. ed. 1, p. 68.
 Hab. Along road-sides: Broughton Bay (1928).
Poa bracteosa Kom. in Not. Syst. Herb. H. P. X. p. 146.
 Hab. In grassy places: Broughton Bay (1928).
Poa Komarovi Roshew. in Bull. Jard. Bot. U.R.S.S. XXVI. p. 285.
 Hab. In grassy places: Nakadomari (1928); Shimushir (1929).
Poa scabriflora Haek. in Fedde, Rep. III. p. 244.
 Hab. In grassy places: Broughton Bay (1928; 1929); between Kamoiyama and Uratomine (1928); Shimushir (1929).
Poa macrocalyx Trautv. et Mey. Fl. Ochot. p. 103.
 Hab. In grassy places and bogs: Broughton Bay (1928); Yamagoshizaki (1928); Lake Midori (1928); Nakayawa (1928); Shimushir (1929).
Poa pratensis L. Sp. Pl. ed. 1, p. 67.
 Hab. Along road-sides: Broughton Bay (1928).
Poa radula Fr. et Sav. Enum. Pl. Jap. II. p. 174.
 Hab. In grassy places: Broughton Bay (1928).
Glyceria lithuanica Lindman, in Engl. Bot. Jahrb. XLIV. p. 45.
 Hab. In dampy places: Along the Sakanagawa (1928).
Festuca ovina L. Sp. Pl. ed. 1, p. 73.
 Hab. On rocky cliffs: Broughton Bay (1928).
Festuca rubra L. Sp. Pl. ed. 1, p. 74.

- Hab. In grassy places: Broughton Bay (1928).
 var. *kitaibeliana* Piper, in Contr. Nat. Herb. X. p. 23.
 Hab. In grassy places: Broughton Bay (1928); Uratomine (1928);
 Sakanagawa (1928); Shimushir (1928).
Elymus mollis Trin. in Spr. Neue Entdeck. II. p. 72.
 Hab. On sandy beaches: Broughton Bay (1928).
Elymus villosissimus Scribn. in U. S. Dep. Agr. Div. Agrost. Bull. n.
 17. p. 326.
 Hab. In atrio of Lake Midori (1928).
Sasa kurilensis Makino et Shibata, var. *genuina* Nakai, in Miyabe &
 Kudo, Fl. Hok. & Saghal. II. p. 182.
 Hab. In woods: Broughton Bay (1928).

Cyperaceae

- Scirpus caespitosus* L. Sp. Pl. ed. 1, p. 48.
 Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).
Eleocharis palustris R. Br. Prodr. Fl. Nepal. p. 224.
 Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).
Carex gynocrates Wormskj. apud Drejer, Rev. Crit. p. 16.
 Hab. In bogs: Broughton Bay (1928); Yamagoshizaki (1928).
Carex pauciflora Lightf. Fl. Scot. II. p. 543.
 Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).
Carex pseudo-loriacea Fr. Schm. Fl. Sachal. p. 193.
 Hab. In bogs: Yamagoshizaki (1928).
Carex stellulata Good. in Trans. Linn. Soc. II. p. 114.
 Hab. In bogs: Wan-oku (1928).
Carex Lyngbyei Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtchat. I.
 p. 188.
 Hab. In swampy places: Nakadomari (1928); Yamagoshizaki
 (1928).
Carex Middendorffii Fr. Schm. Fl. Amg.-Burej. p. 70.
 Hab. In bogs: Yamagoshizaki (1928); Wan-oku (1928).
Carex Augutinowiczii Meinsh. apud Korsh. in Act. Hort. Petrop. XII. p.
 411.
 Hab. In swampy places: Takinoshita (1929); along the Sakana-
 gawa (1928); Shimushir (1928).
Carex Gmelinii Hook. et Arn. Bot. Beech. Voy. III. p. 118.
 Hab. In grassy places: Nakadomari (1929); Shimushir (1929);
 Broughton-zaki (1928).

- Carex macrochaeta* C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 224.
Hab. In heaths: Lake Midori (1928).
- Carex flavocuspis* Fr. et Sav. Enum. Pl. Jap. II. pp. 147, 574.
Hab. In heaths: Uratomine (1928); Nakayama (1928).
- Carex scita* Maxim. in Mém. Biol. XII. p. 564.
Hab. In grassy places: Yamagoshizaki (1928); Broughton Bay (1928); Nakadomari (1928).
- Carex oxyandra* Kudo, Rep. Veg. N. Saghal. p. 72.
Hab. In heaths: Wan-oku (1928).
- Carex verna* Chaix, in Vill. Hist. Pl. Dauph. II. p. 204.
Hab. In meadows: Broughton Bay (1928; 1929); Uratomine (1928).
- Carex ambryolepis* Trautv. et Mey. Fl. Ochot. p. 99.
Hab. In grassy places: Kamoizaki (1930); Shimushir (1930).
- Carex rariflora* Smith, Engl. Bot. t. 2516.
Hab. In bogs: Yamagoshizaki (1928).
- Carex vaginata* Tausch, in Regensb. Flora, IV. p. 557.
Hab. In grassy and boggy places: Broughton Bay (1928; 1929); Yamagoshizaki (1928).
- Carex stenantha* Fr. et Sav. var. *taisetsuensis* Akiyama, in Journ. Fac. Sc. Hokkaido Imp. Univ. Ser. V. I. p. 60.
Hab. In gravelly places of the upland: Nakayama (1928); Lake Midori (1928); Nakadomari (1929).
- Carex Michauxiana* Boeck. form. *asiatica* Akiyama, Consp. Car. Jap. p. 220.
Hab. In bogs: Wan-oku (1928).
- Carex rotundata* Wahlb. in Vet. Akad. Handl. XXIV. p. 153.
Hab. In bogs: Yamagoshizaki (1928).
- Carex saxatilis* L. Sp. Pl. ed. 1, p. 976.
Hab. In bogs: Wan-oku (1928).

Araceae

- Lysichiton camtschatcense* Schott, in Oester. Bot. Wochenbl. VII. p. 62.
Hab. In boggy places: Wan-oku (1928).

Juncaceae

- Luzula plumosa* E. Mey. in Linnaea XXII. p. 387.
Hab. In grassy places and meadows: Nakadomari (1929); Brough-

ton Bay (1928); Wan-oku (1928).

Luzula parviflora Desv. in Journ. Bot. I. p. 144.

Hab. In dampy places: Broughton Bay (1928); Nakadomari (1928).

Luzula capitata Nakai, Veg. Mt. Apoi, p. 76.

Hab. In grassy places: Shimushir (1929).

Luzula multiflora Lejeune, Fl. Envir. Spa I. p. 169.

Hab. In bogs: Wan-oku (1928).

Luzula Kjellmanniana Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 38.

Hab. In grassy places, meadows and bogs: Broughton Bay (1928); Yamagoshizaki (1928); Shimushir (1928); Nakadomari (1928; 1929).

Luzula oligantha G. Sam. in Hult. Fl. Kamtchat. I. p. 227.

Hab. In grassy places: Lake Midori (1928); Nakadomari (1928).

Luzula Wahlenbergii Rupr. in Beitr. Pfl. Russ. Reich. II. p. 58.

Hab. In heaths: Shimushir (1928; 1929).

Juncus filiformis Buch. var. *curvatus* Kudo, Contr. N. Saghal. p. 26.

Hab. In bogs: Yamagoshizaki (1928).

Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII. p. 164.

Hab. In boggy places: Yamagoshizaki (1928).

Juncus kamtchatcensis Kudo, Fl. Paramushir, p. 88.

Hab. In bogs: Yamagoshizaki (1928).

Liliaceae

Tofieldia nutans Willd. ex Schult. Syst. VII. p. 1573.

Hab. In heaths: Nakayama (1928).

var. *rubescens* Nakai, Veg. Daisetsu Mts. pp. 27, 60.

Hab. In heaths: Nakadomari (1928).

Tofieldia fusca Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 75.

Hab. In bogs and heaths: Yamagoshizaki (1928); Nakadomari (1928).

Veratrum album L. var. *oxysepalum* Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 484.

Hab. In meadows: Broughton Bay (1928).

Gagea lutea Ker-Gawl. in Bot. Mag. (1809), t. 1200.

Hab. In meadows and grassy places: Broughton Bay (1930).

Allium Victorialis L. subsp. *platyphyllum* Hult. Fl. Kamtchat. I. p. 239.

Hab. In grassy places and meadows: Broughton Bay (1930).

Lilium medeoloides A. Gray, Pl. Jap. p. 415.

Hab. In meadows and grassy places: Broughton-zaki (1928); Yamagoshizaki (1928).

Fritillaria camschatcensis Ker-Gawl. in Bot. Mag. XXX. sub t. 1216.

Hab. In meadows and grassy places: Broughton Bay (1928); Lake Midori (1928).

Lloydia serotina Reichb. Fl. Germ. Exc. p. 102.

Hab. In grassy places, meadows and heaths: Broughton Bay (1928); Nakadomari (1928); Kamoizaki (1930).

Majanthemum dilatatum Nels. et Macbr. in Bot. Gaz. LXI. p. 30.

Hab. In grassy places and meadows: Broughton Bay (1928).

Streptopus amplexifolius DC. in Lam. et DC. Fl. Fr. III. p. 174.

Hab. In meadows and woods: Broughton Bay (1928).

Trillium kamtschaticum Pall. var. *kurilense* Tatewaki, in Miyabe and

Kudo, Fl. Hok. & Saghal. III. p. 343.

Hab. In woods: Broughton Bay (1928).

Iridaceae

Iris setosa Pall. ex Link, Jahrb. I. 3. p. 71.

Hab. In grassy places and meadows: Broughton Bay (1928).

Orchidaceae

Cypripedium Yatabeanum Makino, in Tokyo Bot. Mag. XIII. p. 91.

Hab. In grassy places: Uratomine (1928).

Cypripedium macranthum Sw. in Act. Acad. Holm. (1800), p. 250.

Hab. In grassy places: Broughton Bay (Kodama, 1893).

Orchis aristata Fisch. ex Lindl. Gen. & Sp. Orchid. Pl. p. 262.

Hab. In grassy places and meadows: Tozansaki (1928); Wan-oku (1928); Broughton Bay (1929).

form. *punctata* Tatewaki, Pl. Alaid, p. 160.

Hab. In bogs, heaths and grassy places: Broughton Bay (1928); Nakayama (1928); Shimushir (1928).

Coeloglossum viride Hartm. var. *bracteatum* Richter, Pl. Europ. I. p. 278.

Hab. In meadows: Broughton-zaki (1928).

var. *interjectum* Miyabe et Kudo, Fl. Hok. & Saghal. III. p. 360.

Hab. In heaths and meadows: Uratomine (1928); Nakayama

- (1928); Broughton-zaki (1928).
Gymnadenia camtschatica Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 450.
 Hab. In grassy places: Tozansaki (1928).
Platanthera Ditmariana Kom. in Fedde, Rep. XIII. p. 165.
 Hab. In grassy places, meadows, woods and heaths: Tozansaki (1928); Broughton Bay (1928); Sakanagawa (1928); Lake Midori (1928).
Platanthera hyperborea Lindl. Gen. & Sp. Orchid. Pl. p. 287.
 Hab. In bogs: Wan-oku (1928).
Platanthera tipuloides Lindl. Gen. & Sp. Orchid. Pl. p. 285.
 Hab. In bogs and heaths: Broughton Bay (1928); Wan-oku (1928); Lake Midori (1928); Nakadomari (1928; 1929); Shimushir (1928).
Listera cordata R. Br. in Ait. Hort. Kew. ed. 2, V. p. 201.
 Hab. In woods: Nakadomari (1929).
Listera nipponica Makino, in Tokyo Bot. Mag. XIX. p. 9.
 Hab. In meadows: Broughton Bay (1928); Yamagoshizaki (1928).

C. FLORISTIC COMPOSITION OF THE ISLAND OF KETOI

PTERIDOPHYTA

Polypodiaceae

- Cystopteris fragilis* Bernh. in Schrad. N. Journ. Bot. I. 2. p. 26.
 Hab. On rocky cliffs: Ishikuzurehama (1929).
Dryopteris oreopteris Maxon, var. *Fauriei* Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. VI. p. 119.
 Hab. In woods and on margins of the bog: Kodakigawa (1929); Minamidai (1929); Shimizugawa (1929).
Dryopteris dilatata A. Gray, var. *deltoidea* Takeda, in Tokyo Bot. Mag. XXIV. p. 179.
 Hab. In woods: Kodakigawa (1929).
 var. *oblonga* Takeda, l. c.
 Hab. In woods: Ishikuzurehama (1929); Minamidai (1929).
Dryopteris Phegopteris C. Chr. Ind. Fil. p. 284.
 Hab. In meadows: Ishikuzurehama (1929); Minamiura (1929).

Polystichum Braunii Fée, Gen. Filic. p. 278.

Hab. In woods: Shimizugawa (1929).

Polystichum microchlamys Kodama, in Tokyo Bot. Mag. XXIX. p. (326).

Hab. In woods: Minamidai (1929); Nishiura (1929).

Athyrium Filix-femina Roth, var. *melanolepis* Makino, in Tokyo Bot. Mag. XIII. p. 30.

Hab. In woods: Nishiura (1929).

Equisetaceae

Equisetum arvense L. Sp. Pl. ed. 1, p. 1061.

Hab. In dampy places: Ishikuzurehama (1929); Shimizugawa (1929).

var. *boreale* Rupr. in Beitr. Pfl. Russ. Reich. III. p. 19.

Hab. In dampy places: Minamiura (1929; 1930); Ishikuzurehama (1929).

Equisetum palustre L. Sp. Pl. ed. 1, p. 1061.

Hab. Along streams: Minamiura (1929); Kombuzaki (1929).

Equisetum littorale Kuehlew. apud Rupr. Beitr. Pfl. Russ. Reich. IV. p. 91.

Hab. Near shores: Ishikuzurehama (1929).

Equisetum hyemale L. Sp. Pl. ed. 1, p. 1062.

Hab. Along valleys: Shimuzugawa (1929).

Lycopodiaceae

Lycopodium Selago L. Sp. Pl. ed. 1, p. 1102.

Hab. In heaths: Kodakigawa (1929).

Lycopodium obscurum L. form. *juniperoideum* Takeda, in Tokyo Bot. Mag. XXIII. p. 213.

Hab. In bogs and woods: Isozaki (1929); Shimizugawa (1929).

Lycopodium annotinum L. var. *latifolium* Takeda, l. c. p. 215.

Hab. In bogs and grassy places: Isozaki (1929); Kodakigawa (1929).

Lycopodium clavatum L. Sp. Pl. ed. 1, p. 1101.

Hab. In woods, bogs and meadows: Kodakigawa (1929); Isozaki (1929); Minamidai (1929).

Lycopodium sitchense Rupr. in Beitr. Pfl. Russ. Reich. III. p. 30.

Hab. In heaths and bogs: Kodakigawa (1929); Minamidai (1929).

Lycopodium complanatum L. Sp. Pl. ed. 1, p. 1104.

Hab. In heaths: Minamidai (1929).

Selaginellaceae

Selaginella selaginoides Link, Fil. Spec. Hort. Berol. p. 158.

Hab. In bogs and meadows: Minamiura (1929); Ishikuzurehama (1929); Nishiura (1929).

PHANEROGAMAE

Gymnospermae

Taxaceae

Taxus cuspidata Sieb. et Zucc. Fl. Jap. Fam. Nat. II. p. 108.

Hab. In woods: Kodakigawa (1929); Shimizugawa (1929).

Pinaceae

Pinus pumila Regel, in Ind. Sem. Hort. Petrop. (1858) p. 23.

Hab. Minami (1929).

Cupressaceae

Juniperus communis L. var. *montana* Ait. Hort. Kew. III. p. 414.

Hab. In bogs: Isozaki (1929).

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

Salix Reini Fr. et Sav. Enum. Pl. Jap. I. p. 459 et II. p. 503.

Hab. In woods: Lake Ketoi (1929).

Salix kurilensis Koidz. in Tokyo Bot. Mag. XXXII. p. 62.

Hab. In heaths: Ashizaki (1929).

Salix longipetiolata Flod. in Sv. Vet. Ak. Ark. f. Bot. 20, A. No. 6, p. 14.

Hab. In heaths: Todozaki (1929).

Betulaceae

Betula Ermani Cham. in Linnaea VI. p. 537.

Hab. In woods: Minamiura (1928; 1929); Kodakigawa (1929);

Shimizugawa (1929).

Alnus fruticosa Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.

Hab. Kodakigawa (1929); Lake Ketoi (1929).

Urticaceae

Urtica Takedana Ohwi, in Phytotax. et Geobot. I. p. 129.

Hab. In meadows: Minamiura (1928; 1929).

Polygonaceae

Rumex Acetosa L. var. *alpina* Hartm. in Handb. Skand. Fl. ed. 1, p. 146.

Hab. In grassy places and meadows: Minamidai (1929); Minamiura (1928; 1929); Ishikuzurehama (1929).

Oxyria digyna Hill, Hort. Kew. p. 158.

Hab. On disintegrated slopes and gravelly places near the shore: Minamiura (1928; 1929); Ishikuzurehama (1929); Lake Ketoi (1929); Nishiura (1929).

Polygonum viviparum L. Sp. Pl. ed. 1, p. 360.

Hab. In meadows and heaths: Minamiura (T. Nishida, 1927; M. Tatewaki, 1928; 1929); Ashizaki (1929).

Polygonum Weyrichii Fr. Schm. var. *alpinum* Maxim. in Mém. Biol. IX. p. 617.

Hab. In meadows, grassy and gravelly places: Minamiura (1929); Nishiura (1929); Shimizugawa (1929).

Portulacaceae

Montia lamprosperma Cham. in Linnaea VI. p. 564.

Hab. In dampy places: Minamiura (1928; 1929); Ishikuzurehama (1929).

Caryophyllaceae

Stellaria calycantha Bong. in Mém. Acad. Imp. Sc. St. Pétersb. Sér. VI. 2, p. 127.

Hab. In gravelly places: Minamiura (1928).

Stellaria lancifolia Kom. Fl. Pen. Kamtschat. II. p. 86.

Hab. Near shores: Shimizugawa (1929).

Stellaria Fenzlii Regel, in Pl. Radd. Dicotyl. Polypet. pp. 264, 280.

Hab. In woods and meadows: Minamiura (1929); Minamidai (1929); Shimizugawa (1929); Nishiura (1929).

Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII. p. 194.

Hab. On sea-cliffs and in gravelly places: Ishikuzurehama (1929); Ashizaki (1929); Minamiura (1929).

Cerastium boreale Takeda, in Kew Bull. (1911), p. 105.

Hab. In meadows: Minamiura (1929); Nishiura (1929); Ashizaki (1929); Ishikuzurehama (1929).

Sagina Linnaei Presl, Real. Haenk. II. p. 14.

Hab. On rocky cliffs: Minamiura (1928).

Sagina crassicaulis Watson, in Proc. Am. Acad. XVIII. p. 191.

Hab. Near shores: Ishikuzurehama (1929).

Ammodenia oblongifolia Rydb. var. *maxima* Nakai, in Tokyo Bot. Mag. XLIII. p. 458.

Hab. On sea-shores: Minamiura (1929).

Moehringia lateriflora Fenzl, Verb. Alsin. pp. 18, 38.

Hab. In grassy places: Minamidai (1929); Minamiura (1930).

Ranunculaceae

Trollius Riederianus Fisch. et Mey. in Ind. Sem. Hort. Petrop. IV. p. 48.

Hab. In meadows and bogs: Ishikuzurehama (1929).

Coptis trifolia Salisb. in Trans. Linn. Soc. VIII. p. 305.

Hab. In bogs and meadows: Minamiura (1929; 1930); Lake Kotoi (1929); Kodakigawa (1929); Kombuzaki (1929).

Aconitum kamtschaticum Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.

Hab. In meadows: Minamiura (1928); Ishikuzurehama (1929).

Anemone narcissiflora L. Sp. Pl. ed. 1, p. 542.

Hab. In meadows: Minamiura (1929).

Pulsatilla angustifolia Turcz. in Bull. Soc. Nat. Imp. Mosc. XIII. p. 61.

Hab. In meadows: Nishiura (1929).

Thalictrum Thunbergii A. P. DC. Syst. I. p. 183.

Hab. In grassy places: Nishiura (1929).

Papaveraceae

Corydalis ambigua Cham. et Schlech. in Linnaea I. p. 558.

Hab. In meadows: Minamiura (T. Nishida, 1928; M. Tatewaki, 1928).

Brassicaceae

Cochlearia oblongifolia DC. Syst. II. p. 363.

- Hab. On rocky cliffs near the sea: Minamiura (1928).
Barbarea orthoceras Ledeb. Fl. Ross. I. p. 114.
 Hab. In dampy places: Minamiura (T. Nishida, 1927); Ishikuzurehama (1929); Lake Ketoi (1929); Ashizaki (1929); Nishiura (1929).
Cardamine umbellata Greene, Pittonia III. p. 154.
 Hab. In meadows and wet places: Ashizaki (1929); Minamiura (1929); Shimizugawa (1929); Ishikuzurehama (1929).
Cardamine Regeliana Miq. Prol. Fl. Jap. p. 73.
 Hab. In dampy places: Minamiura (1928; 1930); Ashizaki (1929).
 **Draba hyperborea* Desv. in Journ. Bot. III. p. 172.
 Hab. On sea-cliffs: Ishikuzurehama (1929).
Draba borealis DC. Syst. II. p. 342.
 Hab. On sea-cliffs: Minamiura (1929).
Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.
 Hab. In meadows: Shimizugawa (1929); Nishiura (1929).

Droseraceae

- Drosera rotundifolia* L. Sp. Pl. ed. 1, p. 281.
 Hab. In bogs: Kodakigawa (1929); Isozaki (1929).

Crassulaceae

- Sedum elongatum* Ledeb. Fl. Ross. II. p. 178.
 Hab. On rocky cliffs near the sea: Ishikuzurehama (1929); Nishiura (1929).

Saxifragaceae

- Saxifraga bracteata* D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.
 Hab. On rocky cliffs near the sea: Minamiura (1928; 1930); Ishikuzurehama (1929); Nishiura (1929).
Saxifraga Merckii Fisch. in Sternb. Rev. Sax. Suppl. I. p. 1.
 Hab. In gravelly places: Lake Ketoi (1929).
Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

* *Draba hyperborea* DESV. in Journ. Bot. III. (1814), p. 172; WATSON, in A. GRAY, Syn. Fl. N. Am. I. 1. (1895), p. 110; MACCOUN, Cat. Canad. Pl. I. (1883), p. 52; O. E. SCHULZ, in ENGL. Pfl.-reich. IV. 105. (1927), p. 198, fig. 24; HULT. Fl. Kamtchat. II. (1928), p. 161, in nota.

NOM. JAP. Ishino-nazuna, Ishinoso.

- Hab. On rocky cliffs: Minamiura (1930); Ishikuzurehama (1929); Lake Ketoi (1929); Shimizugawa (1929).
Chrysosplenium kamtschaticum Fisch. in DC. Prodr. IV. p. 48.
 Hab. Along streams: Minamiura (1929); Shimizugawa (1929).
Parnassia palustris L. Sp. Pl. ed. 1, p. 273.
 Hab. In meadows: Ishikuzurehama (1929); Nishiura (1929).

Rosaceae

- Aruncus sylvester* Kostel. var. *kamtschatica* Maxim. in Act. Hort. Petrop. VI. p. 170.
 Hab. In meadows: Nishiura (1929).
Sorbus sambucifolia Roem. Syn. Monogr. III. p. 139.
 Hab. In bogs: Minamiura (1928; 1929); Kodakigawa (1929); Ashizaki (1929).
Sorbus kamtschaticensis Kom. in Not. Syst. Herb. Hort. Bot. Petrop. II. p. 135.
 Hab. In woods: Kodakigawa (1929).
Sorbus sambucifolia × *S. kamtschaticensis*.
 Hab. In woods: Kodakigawa (1929).
Rubus Chamaemorus L. Sp. Pl. ed. 1, p. 494.
 Hab. In bogs: Isozaki (1929).
Comarum palustre L. Sp. Pl. ed. 1, p. 502.
 Hab. In swampy places: Kodakigawa (1929).
Potentilla Miyabei Makino, in Tokyo Bot. Mag. XVI. p. 28.
 Hab. In gravelly places: Lake Ketoi (1929).
Potentilla stolonifera Lehm. in Delect. Sem. Hort. Hamb. Bot. (1831), p. 56.
 Hab. In meadows: Nishiura (1929).
Potentilla megalantha Takeda, in Kew Bull. (1911), p. 255.
 Hab. On sea-cliffs: Minamiura (1929); Todozaki (1929).
Geum calthaefolium Menz. ap. Sm. in Rees Cyclop. 16. Geum n. 13.
 Hab. In heaths, meadows and bogs: Minamiura (1928; 1929); Kodakigawa (1929); Lake Ketoi (1929).
Geum pentapetalum Makino, in Tokyo Bot. Mag. XXIV. p. 32.
 Hab. In bogs and heaths: Kodakigawa (1929); Lake Ketoi (1929); Isozaki (1929); Ishikuzurehama (1929).
Filipendula kamtschatica Maxim. form. *typica* Koidz. in Tokyo Bot. Mag. XXIII. p. 179.
 Hab. In meadows: Minamiura (1928).

form. *pilosa* Koidz. l. c.

Hab. In meadows: Ishikuzurehama (1929).

Rosa rugosa Thunb. Fl. Jap. p. 213.

Hab. On marine terraces: Ishikuzurehama (1929).

Fabaceae

Oxytropis retusa Matsum. in Tokyo Bot. Mag. XV. p. 116.

Hab. In heaths: Minamiura (1928); Ashizaki (1929); Todozaki (1929); Shimizugawa (1929).

Hedysarum obscurum L. var. *neglectum* Trautv. et Mey. in Bull. Soc. Nat. Mose. XXXIII. 2, p. 516.

Hab. On rocky cliffs and in heaths: Minamiura (1929); Shimizugawa (1929).

Lathyrus maritimus Bigel. Fl. Bost. ed. 2, p. 268.

Hab. On sea-shores: Minamiura (1929); Nishiura (1929); Ashizaki (1929).

Geraniaceae

Geranium erianthum DC. Prodr. I. p. 641.

Hab. In grassy places and meadows: Minamiura (1928; 1929).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths, bogs and on rocky cliffs: Minamiura (1928; 1929); Shimizugawa (1929); Isozaki (1929); Ashizaki (1929); Kodakigawa (1929); Todozaki (1929); Ishikuzurehama (1929).

Aquifoliaceae

Ilex rugosa Fr. Schm. Fl. Sachal. p. 122.

Hab. In woods: Kodakigawa (1929); Shimizugawa (1929).

Hypericaceae

Hypericum kamtschaticum Ledeb. in Denkschr. Bot. Ges. Regensb. III. p. 131.

Hab. In grassy places and meadows: Nishiura (1929); Lake Kotoi (1929).

Hypericum paramushirense Kudo, Fl. Paramushir. p. 130.

Hab. In meadows: Nishiura (1929).

Violaceae

- Viola Selkirkii* Pursh, apud Goldie in Edinbg. Phil. Journ. VI. p. 319.
Hab. In woods: Nishiura (1929).
- Viola sachalinensis* H. d. Boiss. in Bull. Soc. Bot. Fr. (1910), p. 188.
Hab. In meadows: Nishiura (1929); Minamidai (1929); Shimizugawa (1929).
- Viola kamtschadalorum* B. et H. in Sv. Vet. Ak. Ark. f. Bot. 22 A. 3, p. 6.
Hab. In boggy places and meadows: Nishiura (1929); Minamidai (S. Itagaki, M. Tatewaki, 1929); Kodakigawa (1929).
- Viola crassa* Makino, var. *vegeta* Nakai, in Tokyo Bot. Mag. XLII. p. 565.
Hab. In meadows: Minamiura (1929); Ishikuzurehama (1929).
- Viola biflora* L. Sp. Pl. ed. 1, p. 936.
Hab. In meadows: Minamiura (1928).

Oenotheraceae

- Epilobium glandulosum* Lehm. Pug. II. p. 14.
Hab. In dampy, gravelly places and meadows: Minamiura (1929); Shimizugawa (1929).
- Epilobium ovale* Takeda, Fl. Shikotan, p. 466.
Hab. In meadows: Minamiura (1929).
- Epilobium Hornemanni* Reichb. Icon. Crit. II. p. 73.
Hab. In dampy places: Minamiura (1929); Shimizugawa (1929).
- Epilobium kurilense* Nakai, in Tokyo Bot. Mag. XXII. p. 83.
Hab. In dampy places: Ishikuzurehama (1929).
- Epilobium Behringianum* Hausskn. Monogr. Epilob. p. 277.
Hab. In dampy places: Minamiura (1929).

Hippuridaceae

- Hippuris vulgaris* L. Sp. Pl. ed. 1, p. 4.
Hab. In ponds and swamps: Isozaki (1929); Minamiura (1929); Kodakigawa (1929).

Apiaceae

- Pleurospermum camtschaticum* Hoffm. Umbellif. praem. p. 8.
Hab. In meadows: Ashizaki (1929).
- Cnidium ajanense* Drude, in Engl. u. Pr. Nat. Pfl.-fam. III. 8. p. 210.
Hab. In heaths, meadows and bogs: Minamiura (1928); Ashizaki (1929); Isozaki (1929); Shimizugawa (1929); Nishiura (1929).
- Ligusticum Hultenii* Fernald, in Rhodora XXXII. p. 7.

Hab. On sea-cliffs and shores: Minamiura (1928); Ishikuzurehama (1929).

Coelopleurum Gmelini Ledeb. Fl. Ross. II. p. 361.

Hab. In meadows: Kodakigawa (1929).

Conioselinum Gmelini Coult. et Rose, in Contr. Nat. Herb. VII. 1, p. 150.

Hab. In meadows and gravelly places in the sea-shore: Minamiura (1928); Ishikuzurehama (1929).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In meadows: Shimizugawa (1929).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In meadows, grassy places and bogs: Minamiura (1928; 1929); Kodakigawa (1929); Ashizaki (1929).

Cornus canadensis L. Sp. Pl. ed. 1, p. 118.

Hab. In boggy places: Kodakigawa (1929); Isozaki (1929); Shimizugawa (1929).

Metachlamydeae

Diapensiaceae

Diapensis lapponica L. var. *obovata* Fr. Schm. Fl. Sachal. p. 161.

Hab. In heaths: Minamiura (1929); Ashizaki (1929); Ishikuzurehama (1929); Nishiura (1929).

Rhodoraceae

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729.

Hab. In heaths and boggy places: Minamiura (1928; 1929); Lake Ketoi (1929); Kodakigawa (1929).

Rhododendron camtschaticum Pall. Fl. Ross. I. 1. p. 48.

Hab. In heaths and on rocky cliffs near the sea: Ishikuzurehama (1929); Lake Ketoi (1929).

Loiseleuria procumbens Desv. in Journ. Bot. III. p. 35.

Hab. In heaths and bogs: Minamiura (1928; 1929); Nishiura (1929); Isozaki (1929); Lake Ketoi (1929).

Phyllodoce aleutica A. Heller, in Muelenb. I. p. 1.

Hab. In heaths and boggy places: Kodakigawa (1929); Lake Ketoi (1929); Minamiura (1929); Shimizugawa (1929).

Cassiope lycopodioides Don, in Edinbg. New Phil. Journ. XVII. p. 158.

- Hab. In heaths and on sea-cliffs: Minamiura (T. Nishida, 1928; M. Tatewaki, 1928; 1929); Ashizaki (1929); Shimizugawa (1929); Lake Ketoi (1929).
- Bryanthus musciformis* Nakai, Tr. & Shr. Jap. I. ed. 1, p. 16.
Hab. In heaths and bogs: Kodakigawa (1929); Ishikuzurehama (1929); Isozaki (1929).
- Harrimanella Stelleriana* Cov. in Proc. Wash. Acad. Sc. III. p. 574.
Hab. In heaths: Lake Ketoi (1929); Kodakigawa (1929).
- Andromeda Polifolia* L. Sp. Pl. ed. 1, p. 393.
Hab. In bogs: Kodakigawa (1929); Isozaki (1929); Lake Ketoi (1929).
- Gaultheria Miqueliana* Takeda, in Tokyo Bot. Mag. XXXII. p. 195.
Hab. In heaths: Kodakigawa (1929); Lake Ketoi (1929); Shimizugawa (1929).
- Arcteria nana* Makino, in Tokyo Bot. Mag. XX. p. 85.
Hab. In bogs: Kodakigawa (1929).
- Arctous alpina* Niedz. var. *japonica* Takeda, ex Tatewaki, in Res. Bull. Exp. For. Agr. Hok. Imp. Univ. V. p. (56).
Hab. In heaths, meadows and bogs: Minamiura (1928; 1929); Ishikuzurehama (1929); Isozaki (1929).
- Oxycoccus vulgaris* Hill, Brit. Herbal, p. 324.
Hab. In bogs: Isozaki (1929); Kodakigawa (1929).
- Oxycoccus microcarpus* Turcz. ex Rupr. Beitr. Pfl. Russ. Reich. IV. p. 56.
Hab. In bogs: Isozaki (1929).
- Vaccinium Vitis-idaea* L. Sp. Pl. ed. 1, p. 351.
Hab. In heaths and meadows: Minamiura (1928; 1929); Todozaki (1929).
- Vaccinium uliginosum* L. Sp. Pl. ed. 1, p. 350.
Hab. In heaths and bogs: Minamiura (1928; 1929); Lake Ketoi (1929); Kodakigawa (1929); Ashizaki (1929); Shimizugawa (1929).
- Vaccinium praestans* Lamb. in Trans. Linn. Soc. X. p. 264.
Hab. In woods: Minamiura (1929); Kodakigawa (1929).

Primulaceae

- Primula cuneifolia* Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.
Hab. In heaths, bogs and meadows: Minamiura (1928; 1929); Kodakigawa (1929); Ashizaki (1929); Shimizugawa (1929); Ishikuzurehama (1929).

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237, p. 313.

Hab. In heaths, meadows and grassy places: Minamiura (1929); Nishiura (1929).

var. *arctica* Ledeb. Fl. Ross. III. p. 25.

Hab. In bogs: Minamiura (1929); Kodakigawa (1929); Isozaki (1929).

Gentianaceae

Gentiana Kawakamii Makino, in Tokyo Bot. Mag. XVIII. p. 67.

Hab. In heaths, bogs and meadows: Kodakigawa (1929); Lake Ketsui (1929); Isozaki (1929); Kombuzaki (1929); Ashizaki (1929); Minamidai (1929).

Gentiana auriculata Pall. Fl. Ross. I. 2, p. 102.

Hab. In meadows and grassy places: Minamiura (1928; 1929).
form. *albiflora* Tatewaki.

Hab. In grassy places: Todozaki (1929).

Swertia tetrapetala Pall. Fl. Ross. I. 2, p. 99.

Hab. In meadows and grassy places: Minamiura (1928; 1929); Kodakigawa (1929); Ashizaki (1929); Ishikuzurehama (1929).
form. *albiflora* Tatewaki.

Hab. In grassy places: Nishiura (1929).

Halenia corniculata Druce, in Rep. Bot. Exch. Club. Brit. Isl. III. 5, p. 419.

Hab. In grassy places: Minamiura (1928; 1929); Ashizaki (1929); Shimizugawa (1929).

Menyanthes trifoliata L. Sp. Pl. ed. 1, p. 145.

Hab. In bogs: Kombuzaki (1929).

Heliotropiaceae

Mertensia maritima G. Don, subsp. *asiatica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. On sandy beaches: Minamiura (1928).

Rhinanthaceae

Pentstemon frutescens Lamb. in Trans. Linn. Soc. X. p. 259.

Hab. In gravelly places: Lake Ketsui (1929).

Veronica Stelleri Pall. ex Spreng. Schrad. u. Link, Jahrb. III. p. 40.

Hab. In meadows: Minamiura (1929); Ashizaki (1929); Ishi-

kuzurehama(1929) ; Shimizugawa(1929) ; Lake Ketoi(1929).
Veronica americana Schw. apud Benth. in DC. Prodr. X. p. 468.

Hab. In wet places: Minamiura (1928; 1929); Ishikuzurehama (1929).

form. *albiflora* Tatewaki.

Hab. In dampy places: Ishikuzurehama (1929).

Lagotis glauca Gaertn. in Nov. Comm. Ac. Sc. St. Pétersb. XIV. p. 533.

Hab. In meadows and heaths: Nishiura (1929); Todozaki (1929).

Euphrasia mollis Wettst. Monogr. Euphr. p. 141.

Hab. In grassy places and meadows: Minamidai (1929); Ashizaki (1929); Shimizugawa (1929); Ishikuzurehama (1929).

Pedicularis Chamissonis Stev. var. *Maximowiczii* Kudo, Fl. Paramushir, p. 156.

Hab. In heaths and meadows: Minamiura (1928; 1929); Shimizugawa (1929); Todozaki (1929); Ishikuzurehama (1929).

Pedicularis resupinata L. Sp. Pl. ed. 1, p. 608.

Hab. In meadows: Minamiura (1928; 1929); Ishikuzurehama (1929).

Pedicularis euphrasioides Steph. in Willd. Sp. Pl. III. p. 204.

Hab. In bogs and heaths: Minamiura (1929); Isozaki (1929); Ishikuzurehama (1929).

Orobanchaceae

Boschniakia rossica Hult. Fl. Kamtchat. IV. p. 126.

Hab. In heaths: Todozaki (1929).

Lentibulariaceae

Pinguicula vulgaris L. var. *macroceras* Herd. Pl. Radd. Monop. IV. 1, p. 98.

Hab. In bogs and heaths: Todozaki (1929); Kombuzaki (1929).

Rubiaceae

Galium kamtschaticum Stell. var. *hirsutum* Takeda, in Tokyo Bot. Mag. XXIV. p. 65.

Hab. In woods: Nishiura (1929); Kodakigawa (1929).

Caprifoliaceae

Linnaea borealis L. form *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7, p. 159.

Hab. In heaths and meadows: Minamiura (1928; 1929); Ashizaki (1929).

Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.

Hab. On hill-sides: Minamiura (1919).

Campanulaceae

Campanula dasyantha Bieb. Fl. Taur. Cauc. III. p. 147.

Hab. In heaths: Todozaki (1929).

Campanula lasiocarpa Cham. in Linnaea IV. p. 39.

Hab. In heaths and meadows: Minamiura (T. Nishida, 1927; M. Tatewaki, 1928; 1929); Ishikuzurehama (1929); Shimizugawa (1929); Ashizaki (1929); Todozaki (1929).

Peracarpa circaeoides H. Feer, in Engl. Bot. Jahrb. XII. p. 621.

Hab. In woods: Nishiura (1929).

Asteraceae

Solidago Virgaurea L. Sp. Pl. ed. 1, p. 880.

Hab. In grassy places and meadows: Minamiura (1928; 1929); Lake Ketoi (1929).

Anaphalis margaritacea Benth. et Hook. f. Gen. Pl. II. p. 303.

Hab. In grassy places: Minamiura (1929).

form. *latifolia* Kudo, Fl. Paramushir, p. 165.

Hab. In meadows and on gravelly shores: Minamiura (1928; 1929); Ishikuzurehama (1929).

Achillea sibirica Ledeb. in Sem. Hort. Dorpat. (1811).

Hab. In grassy places: Nishiura (1929).

Achillea Ptarmica L. var. *speciosa* Herd. Pl. Radd. Monop. III. 2, p. 39.

Hab. In grassy places and meadows: Minamiura (1928; 1929).

Chrysanthemum arcticum L. Sp. Pl. ed. 1, p. 889.

Hab. In heaths: Minamiura (1929); Ashizaki (1929).

var. *Gmelini* Kudo, Fl. Paramushir, p. 167.

Hab. In grassy places: Nishiura (1929).

var. *yezoense* Maekawa, in Trans. Sapporo Nat. Hist. Soc. VIII. p. 14.

Hab. In heaths and on rocky cliffs: Minamiura (1928); Ashizaki (1929).

Artemisia vulgaris L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.

Hab. In meadows: Minamiura (1928; 1929).

var. *coarctata* Bess. l. c. p. 53.

Hab. In meadows: Nishiura (1929).

Petasites japonicus Miq. var. *giganteus* Makino, in Tokyo Bot. Mag. XXIII. p. 18.

Hab. In meadows: Minamiura (1928; 1930); Ashizaki (1929).

Arnica unalaschcensis Less. in Linnaea VI. p. 238.

Hab. In meadows: Minamiura (1928); Ishikuzurehama (1929); Nishiura (1929).

Cacalia kamtschatica Kudo, Contr. Fl. N. Saghal. p. 60.

Hab. In meadows: Minamiura (1928); Todozaki (1929).

Senecio palmatus Pall. Reise Russ. Reich. III. p. 321.

Hab. In meadows: Minamiura (1928; 1929); Shimizugawa (1929).

Senecio pseudo-Arnica Less. in Linnaea VI. p. 240.

Hab. Near shores: Minamiura (1929).

Cirsium kamtschaticum Ledeb. ex DC. Prodr. VI. p. 644.

Hab. In meadows: Minamiura (1928; 1929).

Saussurea Riederi Herd. Pl. Radd. Monop. III. 3, p. 35.

Hab. In meadows: Minamiura (1928); Shimizugawa (1929); Nishiura (1929).

Picris kamtschatica Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 577.

Hab. In grassy places and meadows: Minamiura (1928).

Taraxacum ceratophorum DC. Prodr. VII. p. 146.

Hab. On sea-cliffs: Kombuzaki (1929); Ishikuzurehama (1929); Nishiura (1929).

Monocotyledoneae

Sparganiaceae

Sparganium minimum Fries, Summa Veg. Scand. p. 560.

Hab. In ponds: Kodakigawa (1929); Minamidai (1929).

Potamogetonaceae

Potamogeton Franchetii A. Benn. et Baag. in Journ. Bot. XLV. p. 234.

Hab. In pools: Kombuzaki (1929).

Scheuchzeriaceae

Triglochin palustre L. Sp. Pl. ed. 1, p. 338.

Hab. In bogs: Kombuzaki (1929).

Poaceae

Hierochloe alpina Roem. et Schl. Syst. II. p. 515.

- Hab. In heaths: Minamidai (1929).
Milium effusum L. Sp. Pl. ed. 1, p. 61.
 Hab. In grassy places: Shimizugawa (1929).
Phleum pratense L. Sp. Pl. ed. 1, p. 59.
 Hab. Along roads: Minamiura (1928).
Agrostis canina L. Sp. Pl. ed. 1, p. 62.
 Hab. In bogs: Minamiura (1929).
Agrostis Trinii Turcz. Fl. Baic.-Dahur. II. 2, p. 305, in nota.
 Hab. In grassy places: Minamidai (1929); Shimizugawa (1929);
 Nishiura (1929).
Agrostis exarata Trin. Gram. Unifl. p. 207.
 Hab. In dampy places: Minamiura (1928; 1929); Shimizugawa
 (1929).
Calamagrostis Langsdorffii Trin. Gram. Unifl. p. 225.
 Hab. In grassy places: Minamidai (1928; 1929).
Calamagrostis neglecta Gaertn. Fl. Wett. I. p. 94.
 Hab. In bogs: Kodakigawa (1929); Isozaki (1929).
Calamagrostis sachalinensis Fr. Schm. Fl. Sachal. p. 202.
 Hab. Along the Shimizugawa (1929).
Calamagrostis purpurascens R. Br. in Richards. Bot. App. Frankl. Journ.
 (1823), p. 731.
 Hab. In heaths and on rocky cliffs: Minamiura (1928; 1929); Lake
 Kotoi (1929); Shimizugawa (1929); Ashizaki (1929).
Erioblastus flexuosus Honda, ex Nakai, Rep. Veg. Daisetsu Mts. pp. 58,
 73.
 Hab. In bogs: Minamiura (1929); Kodakigawa (1929); Ashizaki
 (1929).
Deschampsia caespitosa P. Beauv. Agrost. p. 91.
 Hab. In heaths: Todozaki (1929).
Deschampsia flexuosa Trin. in Bull. Sc. Acad. St. Pétersb. I. p. 66.
 Hab. In heaths, grassy places and meadows: Minamiura (1928;
 1929); Ashizaki (1929); Shimizugawa (1929); Nishiura
 (1929).
Trisetum spicatum Richt. Pl. Europ. I. p. 59.
 Hab. In meadows: Minamidai (1929); Kodakigawa (1929).
Trisetum sibiricum Rupr. in Beitr. Pfl. Russ. Reich. II. p. 65.
 Hab. In grassy places: Minamiura (1928; 1929).
Poa annua L. Sp. Pl. ed. 1, p. 68.
 Hab. Along road-sides: Minamiura (1928; 1929).

- Poa arctica* R. Br. in Parry's 1st. Voy. Suppl. p. 288.
 Hab. In heaths and bogs: Ashizaki (1929); Isozaki (1929).
- Poa Komarovi* Roshew. in Bull. Jard. Bot. U. R. S. S. XXVI. p. 285.
 Hab. On gravelly shores: Minamiura (1928); Ishikuzurehama (1929).
- Poa bracteosa* Kom. in Not. Syst. Herb. H. P. X. p. 146.
 Hab. In grassy places: Ishikuzurehama (1929).
- Poa stenantha* Trin. Fund. Agrost. p. 376.
 Hab. In grassy places: Nishiura (1929).
- Poa scabriflora* Haek. in Fedde, Rep. III. p. 244.
 Hab. In grassy places, meadows and on gravelly shores: Minamiura (1928); Kodakigawa (1929); Ashizaki (1929).
- Poa radula* Fr. et Sav. Enum. Pl. Jap. II. pp. 174, 602.
 Hab. In grassy places: Minamiura (1929).
- Glyceria lithuanica* Lindman, in Engl. Bot. Jahrb. XLIV. p. 45.
 Hab. In dampy places: Minamiura (1929); Ishikuzurehama (1929).
- Festuca rubra* L. Sp. Pl. ed. 1, p. 74.
 Hab. In grassy places: Minamiura (1928; 1929).
 var. *kitaibeliana* Piper, in Contr. Nat. Herb. X. p. 23.
 Hab. In grassy places: Minamiura (1928; 1929); Kodakigawa (1929).
- Elymus mollis* Trin. in Spr. Neue Entdeck. II. p. 72.
 Hab. On beaches: Minamiura (1928).
- Sasa kurilensis* Makino et Shibata, var. *genuina* Nakai, in Miyabe & Kudo, Fl. Hok. & Saghal. II. p. 182.
 Hab. In woods: Kodakigawa (1928).
 var. *cernua* Nakai, l. c. p. 183.
 Hab. In valleys: Shimizugawa (1928).

Cyperaceae

- Eriophorum vaginatum* L. Sp. Pl. ed. 1, p. 51.
 Hab. In bogs: Isozaki (1929).
- Eriophorum Scheuchzeri* Hoppe, Bot. Taschenb. p. 104.
 Hab. In bogs: Isozaki (1929).
- Eriophorum angustifolium* Roth, Fl. Germ. II. p. 63.
 Hab. In bogs: Kodakigawa (1929); Ashizaki (1929); Isozaki (1929); Nishiura (S. Itagaki, 1929); Kombuzaki (1929).
- Scirpus caespitosus* L. Sp. Pl. ed. 1, p. 48.

- Hab. In bogs: Kodakigawa (1929); Isozaki (1929).
Eleocharis palustris R. Br. Prodr. Fl. Nepal. p. 224.
 Hab. In ponds: Kodakigawa (1929).
Carex gynocrates Wormskj. apud Drejer, Rev. Crit. p. 16.
 Hab. In bogs: Minamidai (1929).
Carex hakkodensis Franch. in Bull. Soc. Philom. Paris, 3 sér. VII. p. 28.
 Hab. In bogs: Minamiura (1929); Kodakigawa (1929).
Carex pauciflora Lightf. Fl. Scot. II. p. 543.
 Hab. In bogs: Kodakigawa (1929); Isozaki (1929).
Carex pyrenaica Wahlb. in Vet. Akad. Handl. Stockholm. XXIV. p. 139.
 Hab. In heaths: Lake Ketoi (1929).
 var. *altior* Kuek. Cyp.-Car. p. 106.
 Hab. In meadows: Ashizaki (1929).
Carex pseudo-loliacea Fr. Schm. Fl. Sachal. p. 193.
 Hab. In bogs: Minami (1929); Kodakigawa (1929); Isozaki (1929).
 **Carex rigida* Good. in Trans. Linn. Soc. II. p. 193.
 Hab. In heaths: Minamidai (1929); Kodakigawa (1929); Isozaki (1929).
Carex caespitosa L. var. *minuta* Kuek. Cyp.-Car. p. 329.
 Hab. In bogs: Isozaki (1929).
Carex Lynbyei Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtchat. I. p. 188.
 Hab. In swampy places: Ashizaki (1929); Minamiura (1929); Kodakigawa (1929).
Carex Middendorffii Fr. Schm. Fl. Amg.-Burej. p. 70.
 Hab. In bogs: Kodakigawa (1929); Isozaki (1929).
Carex Gmelini Hook. et Arn. Bot. Beech. Voy. III. p. 118.
 Hab. In grassy places and meadows: Nishiura (1929); Ashizaki (1929); Shimizugawa (1929).
Carex macrochaeta C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 224.
 Hab. In heaths: Tobiishizaki (1929).
Carex flavocuspis Fr. et Sav. Enum. Pl. Jap. II. pp. 147, 574.
 Hab. In heaths: Lake Ketoi (1929); Todozaki (1929); Ashizaki (1929).
Carex scita Maxim. in Mém. Biol. XII. p. 564.

* *Carex rigida* Good. in Trans. Linn. Soc. II. (1794), p. 193; Ostenf. Fl. Arc. I. (1902), p. 77, f. 52; Kuek. Cyp.-Car. (1909), p. 299, fig. 46, A-E; Hult. Fl. Kamtchat. I. (1927), p. 185; Ohwi, in Mem. Coll. Se. Kyoto Imp. Univ. Ser. B, VI. No. 5, (1931), p. 261.

- Hab. In meadows, grassy places, heaths and on rocky cliffs near the sea: Minamiura (1929); Ishikuzurehama (1929).
- Carex oxyandra* Kudo, Rep. Veg. N. Saghal. p. 72.
Hab. In meadows: Kodakigawa (1929).
- Carex ambryolepis* Trautv. et Mey. Fl. Ochot. p. 99.
Hab. In grassy places: Minami (1930).
- Carex variflora* Sm. Engl. Bot. t. 2516.
Hab. In bogs: Minamiura (1929); Kodakigawa (1929).
- Carex limosa* L. var. *fusco-cuprea* Kuek. Cyp.-Car. p. 505.
Hab. In bogs: Kodakigawa (1929).
- Carex livida* Willd. Sp. Pl. IV. p. 285.
Hab. In bogs: Kombuzaki (1929).
- Carex vaginata* Tausch, in Regensb. Flora, IV. p. 557.
Hab. In meadows and boggy places: Kodakigawa (1929); Minamiura (1929).
- Carex vesicaria* L. Sp. Pl. ed. 1, p. 979.
Hab. In bogs: Kodakigawa (1929); Isozaki (1929).
var. *Grahami* Kuek. Cyp.-Car. p. 727.
Hab. In bogs: Isozaki (1929).

Juncaceae

- Luzula plumosa* E. Mey. in *Linnaea* XXII. p. 387.
Hab. In grassy places and meadows: Minamiura (1929); near Ashizaki (1929).
- Luzula Jimboi* Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. 1, p. 37.
Hab. In grassy places: Minamiura (1929; 1930); Nishiura (1929).
- Luzula parviflora* Desv. in Journ. Bot. I. p. 144.
Hab. In dampy places and meadows: Minamiura (1928; 1929); Shimizugawa (1929).
- Luzula Kjellmanniana* Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. 1, p. 38.
Hab. In grassy places and meadows: Sonrakuwan (1929).
- Luzula oligantha* G. Sam. in Hult. Fl. Kamtchat. I. p. 227.
Hab. In heaths: Nishiura (1929); Lake Ketoi (1929).
- Luzula Wahlenbergii* Rupr. in Beitr. Pfl. Russ. Reich. II. p. 58.
Hab. In heaths: Lake Ketoi (1929).
- Juncus filiformis* L. var. *curvatus* Kudo, Contr. N. Saghal. p. 26.
Hab. In bogs: Minamiura (1929); Kodakigawa (1929).

Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII. p. 164.

Hab. In dampy places near the shore: Minamiura (1928; 1929).

Juncus kamtschaticensis Kudo, Fl. Paramushir, p. 88.

Hab. In bogs: Isozaki (1929).

Liliaceae

Tofieldia nutans Willd. ex Schult. Syst. VII. p. 1573.

Hab. In heaths: Minamiura (1929).

var. *rubescens* Nakai, Veg. Daisetsusan Mts. 27, 60.

Hab. In heaths: Nishiura (1929).

Gagea lutea Ker-Gawl. in Bot. Mag. (1809), t. 1200.

Hab. In grassy places and meadows: Minamiura (1929).

Allium Victorialis L. subsp. *platyphyllum* Hult. Fl. Kamtchat. I. p. 239.

Hab. In meadows and woods: Kodakigawa (1929); Minamiura (1929).

Lilium medealoides A. Gray, Pl. Jap. p. 415.

Hab. In meadows: Minamiura (1929); Ashizaki (1929); Ishikuzurehama (1929).

form. *kurilense* Kudo, Fl. Paramushir, p. 91.

Hab. In meadows: Minamidai (1929).

Fritillaria camschatcensis Ker-Gawl. in Bot. Mag. XXX. sub t. 1216.

Hab. In grassy places: Kodakigawa (1929).

Lloydia serotina Reichb. Fl. Germ. Exc. p. 102.

Hab. In meadows and heaths: Nishiura (S. Itagaki, 1929); Ashizaki (1929); Ishikuzurehama (1929).

Majanthemum dilatatum Nels. et Macbr. in Bot. Gaz. LXI. p. 30.

Hab. In meadows and grassy places: Minamiura (1929); Ishikuzurehama (1929); Nishiura (1929).

Streptopus amplexifolius DC. in Lam. et DC. Fl. Fr. III. p. 174.

Hab. In meadows and woods: Kodakigawa (1929); Nishiura (1929).

Trillium kamtschaticum Pall. var. *kurilense* Tatewaki, in Miyabe and Kudo, Fl. Hok. & Saghal. III. p. 343.

Hab. In meadows, grassy places and woods: Minamiura (1929); Kodakigawa (1929).

Iridaceae

Iris setosa Pall. ex Link, Jahrb. I. 3, p. 71.

Hab. In dampy places: Minamiura (1929).

Orchidaceae

- Cypripedium Yatabeanum* Makino, in Tokyo Bot. Mag. XIII. p. 91.
 Hab. In meadows: Minamiura (1929); Nishiura (1929); Shimizugawa (1929).
- Cypripedium macranthum* Sw. in Act. Acad. Holm. (1800) p. 250.
 Hab. In meadows and grassy places: Nishiura (1929).
- Orchis aristata* Fisch. ex Lindl. Gen. & Sp. Orchid. Pl. p. 262.
 Hab. In grassy places and meadows: Minamiura (1929); Shimizugawa (1929).
- Coeloglossum viride* Hartm. var. *bracteatum* Richter, Pl. Europ. I. p. 278.
 Hab. In heaths: Minamidai (1928).
 var. *interjectum* Miyabe et Kudo, Fl. Hok. & Saghal. III. p. 360.
 Hab. In heaths: Minamidai (1929); Ishikuzurehamadai (1929); Nishiura (1929).
- Gymnadenia camtschatica* Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 450.
 Hab. Along valleys: Shimizugawa (1929).
- Platanthera Ditmariana* Kom. in Fedde, Rep. XIII. p. 165.
 Hab. In meadows and heaths: Minamiura (1929); Ishikuzurehama (1929); Takinosawa (1929); Ashizaki (1929); Shimizugawa (1929); Kodakigawa (1929).
- Platanthera hyperborea* Lindl. Gen. & Sp. Orchid. Pl. p. 287.
 Hab. In meadows: Near Ashizaki (1929); near Ishikuzurehama (1929); near Shimizugawa (1929).
- Platanthera tipuloides* Lindl. Gen. & Sp. Orchid. Pl. p. 285.
 Hab. In bogs: Kodakigawa (1929); Isozaki (1929); Ishikuzurehama (1929).
- Listera cordata* R. Br. in Ait. Hort. Kew. ed 2, V. p. 201.
 Hab. In meadows: Minamiura (1929).
- Listera nipponica* Makino, in Tokyo Bot. Mag. XIX. p. 9.
 Hab. In meadows: Minamiura (1929).

D. FLORISTIC COMPOSITION OF THE
 ISLAND OF USHISHIR

PTERIDOPHYTA

Polypodiaceae

- Dryopteris dilatata* A. Gray, var. *deltoidea* Takeda, in Tokyo Bot. Mag.

XXIV. p. 179.

Hab. In meadows: Minamijima (1929).

var. *oblonga* Takeda, l. c.

Hab. In meadows: Kitajima (1928).

Lycopodiaceae

Lycopodium Selago L. Sp. Pl. ed. 1, p. 1102.

Hab. In grassy places: Minamijima (1929).

PHANEROGAMAE

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

Salix kurilensis Koidz. in Tokyo Bot. Mag. XXXII. p. 62.

Hab. In heaths: Kitajima (1929).

Salix longipetiolata Flod. in Sv. Vet. Ak. Ark. f. Bot. 20, A. No. 6, p. 14.

Hab. On rocky cliffs and in heaths: Minamijima (1929); Kitajima (1929).

Betulaceae

Alnus fruticosa Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.

Hab. On hill-sides: Minamijima.

Urticaceae

Urtica Takedana Ohwi, in Phytotax. et Geobot. I. p. 129.

Hab. In meadows: Minamijima (1929).

Polygonaceae

Rumex Acetosa L. var. *alpina* Hartm. in Handb. Skand. Fl. ed. 1, p. 146.

Hab. In meadows: Minamijima (1929).

Oxyria digyna Hill, Hort. Kew. p. 158.

Hab. In gravelly places: Minamijima (1929).

Polygonum viviparum L. Sp. Pl. ed. 1, p. 360.

Hab. In grassy places and heaths: Kitajima (1928); Minamijima (1929).

Chenopodiaceae

Chenopodium album L. Sp. Pl. ed. 1, p. 219.

Hab. Near the cottage: Minamijima (1929).

Portulacaceae

Montia lamprosperma Cham. in Linnaea VI. p. 564.

Hab. In dampy places: Kitajima (1929); Minamijima (1929).

Caryophyllaceae

Stellaria calycantha Bong. in Mém. Acad. Imp. Sc. St. Pétersb. Sér. VI. 2, p. 127.

Hab. In gravelly places near the shore: Kitajima (1928).

Stellaria Fenzlii Regel, in Pl. Radd. Dicotyl. Polypet. pp. 264, 280.

Hab. In meadows and grassy places: Kitajima (1928); Minamijima (1929).

Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII. p. 194.

Hab. On rocky cliffs near the shore: Kitajima (1928; 1929); Minamijima (1928).

Cerastium boreale Takeda, in Kew Bull. (1911), p. 105.

Hab. In grassy places: Minamijima (1928; 1929); Kitajima (1929).

Sagina Linnaei Presl, Real. Haenk. II. p. 14.

Hab. On shores: Kitajima (1928); Minamijima (1929).

Sagina crassicaulis Watson, in Proc. Am. Acad. XVIII. p. 191.

Hab. On sea-shores: Minamijima (1929).

Moehringia lateriflora Fenzl, Verb. Alsin. pp. 18, 38.

Hab. In grassy places: Kitajima (1928); Minamijima (1929).

Ranunculaceae

Trollius membranostylis Hult. Fl. Kamtchat. II. p. 99.

Hab. In meadows: Minamijima (1929).

Coptis trifolia Saisb. in Trans. Linn. Soc. VIII. p. 305.

Hab. In meadows: Kitajima (1928; 1929).

Aconitum kamtschaticum Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.

Hab. In meadows: Minamijima (1928; 1929).

Ranunculus acris L. var. *japonicus* Maxim. form. *vulgaris* Makino, in Journ. Jap. Bot. I. 3, p. 70.

Hab. In grassy places: Minamijima (1929).

var. *subcorymbosus* Tatewaki, com. nov. *Ranunculus subcorymbosus*
Kom. in Fedde, Rep. XIII. p. 234 et Fl. Pen. Kamtschat. II. p.
145, Pl. XIV.

Hab. In meadows: Minamijima (1929).

Brassicaceae

Cochlearia oblongifolia DC. Syst. II. p. 363.

Hab. On rocky cliffs near the shore: Kitajima (1928); Minami-
jima (1928; 1930).

Cardamine umbellata Greene, Pittonia III. p. 154.

Hab. In dampy places: Kitajima (1928; 1929).

Draba hyperborea Desv. in Journ. Bot. III. p. 172.

Hab. On rocky cliffs near the sea-shore: Kitajima (1928; 1929);
Minamijima (1930).

Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.

Hab. In meadows and grassy places: Minamijima (1929; 1930).

Crassulaceae

Sedum elongatum Ledeb. Fl. Ross. II. p. 178.

Hab. On rocky cliffs near the shore: Kitajima (1928); Minami-
jima (1928; 1929).

Saxifragaceae

Saxifraga bracteata D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.

Hab. On rocky cliffs: Kitajima (1928; 1929); Minamijima
(1928).

Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

Hab. On rocky cliffs: Minamijima (1928; 1929); Kitajima
(1929).

Chrysosplenium kamtschaticum Fisch. in DC. Prodr. IV. p. 48.

Hab. In dampy places: Minamijima (1929).

Rosaceae

Sorbus sambucifolia Roem. Syn. Monogr. III. p. 139.

Hab. In heaths: Kitajima (1928; 1929); Minamijima (1930).

Rubus Chamaemorus L. Sp. Pl. ed. 1, p. 494.

Hab. In heaths: Kitajima (1928; 1929).

Potentilla megalantha Takeda, in Kew Bull. (1911), p. 255.

Hab. On rocky cliffs: Kitajima (1929); Minamijima (1928;
1929).

Geum calthaefolium Menz. ap. Sm. in Rees Cyclop. 16. Geum n. 13.

Hab. In heaths: Kitajima (1928); Minamijima (1929).

Filipendula kamtschatica Maxim. form. *pilosa* Koidz. in Tokyo Bot.

Mag. XXIII. p. 179.

Hab. In meadows: Minamijima (1929).

Geraniaceae

Geranium erianthum DC. Prodr. I. p. 641.

Hab. In grassy places: Kitajima (1929); Minamijima (1928; 1929).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths: Kitajima (1928); Minamijima (1928).

Hypericaceae

Hypericum kamtschaticum Ledeb. in Denkschr. Bot. Ges. Regensb. III. p. 131.

Hab. In grassy places: Kitajima (1929).

Oenotheraceae

Epilobium Behringianum Hausskn. Monogr. Epilob. p. 277.

Hab. In dampy places: Kitajima (1929).

Epilobium Hornemanni Reichb. Icon. Crit. II. p. 73.

Hab. In dampy places: Minamijima (1929).

Apiaceae

Cnidium ajanense Drude, in Engl. u. Pr. Nat. Pfl.-fam. III. 8. p. 210.

Hab. In grassy places: Minamijima (1929).

Ligusticum Hulteni Fernald, in Rhodora XXXII. p. 7.

Hab. On sea-shores: Minamijima (1928).

Coelopleurum Gmelini Ledeb. Fl. Ross. II. p. 361.

Hab. In meadows: Minamijima (1928; 1929); Kitajima (1928).

Conioselinum Gmelini Coult. et Rose, in Contr. Nat. Herb. VII. 1, p. 150.

Hab. In meadows: Kitajima (1928); Minamijima (1929).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In meadows: Minamijima (1929).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In grassy places: Kitajima (1928); Minamijima (1929).

Metachlamydeae

Diapensiaceae

Diapensia lapponica L. var. *obovata* Fr. Schm. Fl. Sachal. p. 161.

Hab. In heaths: Kitajima (1928; 1929).

Rhodoraceae

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729.

Hab. In heaths: Kitajima (1928; 1929).

Rhododendron camtschaticum Pall. Fl. Ross. I. 1, p. 48.

Hab. In heaths: Minamijima (1929).

Loiseleuria procumbens Desv. in Journ. Bot. III. p. 35.

Hab. In heaths: Kitajima (1929).

Cassiope lycopodioides Don, in Edinbg. New Phil. Journ. XVII. p. 158.

Hab. In heaths: Kitajima (1928; 1929); Minamijima (1929).

Arctous alpina Niedz. var. *japonica* Takeda, ex Tatewaki, in Res. Bull.

Exp. For. Fac. Agr. Hok. Imp. Univ. V. p. (56).

Hab. In heaths: Kitajima (1928; 1929).

Vaccinium Vitis-idaea L. Sp. Pl. ed. 1, p. 351.

Hab. In heaths: Kitajima (1928; 1929); Minamijima (1930).

Vaccinium uliginosum L. Sp. Pl. ed. 1, p. 350.

Hab. In heaths: Kitajima (1928; 1929).

Primulaceae

Primula cuneifolia Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.

Hab. In heaths: Kitajima (1928; 1929); Minamijima (1928; 1929).

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237, p. 313.

Hab. In meadows: Kitajima (1928; 1929); Minamijima (1929).

var. *arctica* Ledeb. Fl. Ross. III. p. 25.

Hab. In meadows and grassy places: Kitajima (1928); Minamijima (1929).

Gentianaceae

Gentiana auriculata Pall. Fl. Ross. I. 2. p. 102.

Hab. In meadows and grassy places: Minamijima (1928; 1929); Kitajima (1929).

Rhinanthaceae

Veronica Stelleri Pall. ex Spreng. Schrad. u. Link, III. p. 40.

Hab. In grassy places and meadows: Kitajima (1928; 1929);
Minamijima (1929).

Euphrasia mollis Wetts. Mongr. Euphr. p. 141.

Hab. In grassy places: Kitajima (1929); Minamijima (1928;
1929).

Pedicularis Chamissonis Stev. var. *Maximowiczii* Kudo, Fl. Paramushir,
p. 156.

Hab. In meadows: Minamijima (1928; 1929).

Pedicularis euphrasioides Steph. in Willd. Sp. Pl. III. p. 204.

Hab. In heaths: Kitajima (1928; 1929).

Plantaginaceae

Plantago camtschatica Cham. ex Link, Enum. Pl. Hort. Berol. I. p. 120.

Hab. On sea-cliffs and in grassy places: Minamijima (1929).

Rubiaceae

Galium trifidum L. Sp. Pl. ed. 1, p. 105.

Hab. In dampy places: Kitajima (1929).

Caprifoliaceae

Linnaea borealis L. form. *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7,
p. 159.

Hab. In heaths: Kitajima (1928; 1929); Minamijima (1929).

Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.

Hab. In meadows: Kitajima (1928).

Campanulaceae

Campanula lasiocarpa Cham. in Linnaea IV. p. 39.

Hab. In grassy places: Kitajima (1928); Minamijima (1928;
1929).

Asteraceae

Soligago Virgaurea L. Sp. Pl. ed. 1, p. 880.

Hab. In grassy places and meadows: Kitajima (1928; 1929);
Minamijima (1928; 1929).

Anaphalis margaritacea Benth. et Hook. f. Gen. Pl. II. p. 303.

Hab. In grassy places: Kitajima (1928).

- form. *latifolia* Kudo, Fl. Paramushir, p. 165.
 Hab. In grassy places: Kitajima (1928).
Achillea sibirica Ledeb. in Ind. Sem. Hort. Dorpat. (1811).
 Hab. In grassy places: Minamijima (1928; 1929); Kitajima (1928).
Chrysanthemum arcticum L. var. *yezoense* Maekawa, in Trans. Sapporo Nat. Hist. Soc. VIII. p. 14.
 Hab. Near shores: Minamijima (1929).
 var. *flabelliforme* Kudo, Fl. Paramushir, p. 168.
 Hab. Near shores: Minamijima (1928).
Artemisia vulgaris L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.
 Hab. Kitajima (1929); Minamijima (1929).
Petasites japonicus Miq. var. *giganteus* Makino, in Tokyo Bot. Mag. XXIII. p. 18.
 Hab. In meadows: Minamijima (1928; 1929).
Arnica unalaschcensis Less. in Linnaea VI. p. 238.
 Hab. In grassy places: Minamijima (1928; 1929).
Cacalia kamtschatica Kudo, Contr. Fl. N. Saghal. p. 60.
 Hab. In meadows: Kitajima (1928; 1929); Minamijima (1929).
Senecio palmatus Pall. Reise Russ. Reich. III. p. 321.
 Hab. In meadows: Minamijima (1930).
Senecio pseudo-Arnica Less. in Linnaea VI. p. 240.
 Hab. On beaches: Kitajima (1929).
Cirsium kamtschaticum Ledeb. ex DC. Prodr. VI. p. 644.
 Hab. In meadows: Minamijima (1929).
Taraxacum ceratophorum DC. Prodr. VII. p. 146.
 Hab. Near shores: Minamijima (1928; 1929); Kitajima (1928).

Monocotyledoneae

Poaceae

- Agrostis canina* L. Sp. Pl. ed. 1, p. 62.
 Hab. In heaths: Kitajima (1928; 1929).
Calamagrostis Langsdorffii Trin. Gram. Unifl. p. 225.
 Hab. In grassy places: Minamijima (1928).
Calamagrostis purpurascens R. Br. in Richards. Bot. App. Frankl. Journ. (1823), p. 731.
 Hab. In grassy places and heaths: Kitajima (1928; 1929); Minamijima (1929).

Erioblastus flexuosus Honda, ex Nakai, Rep. Veg. Daisetsu Mts. pp. 58, 73.

Hab. In heaths: Kitajima (1928; 1929).

Deschampsia caespitosa P. Beauv. Agrost. p. 91.

Hab. In grassy places: Minamijima (1929); Kitajima (1929).
subsp. *orientalis* Hult. Fl. Kamtchat. I. p. 109.

Hab. In heaths and grassy places: Minamijima (1929); Kitajima (1929).

Deschampsia flexuosa Trin. in Bull. Sc. Acad. St. Pétersb. I. p. 66.

Hab. In heaths: Kitajima (1928; 1929).

Poa arctica R. Br. in Parry's 1st. Voy. Suppl. p. 288.

Hab. In grassy places: Kitajima (1929).

Poa bracteosa Kom. in Not. Syst. Herb. H. P. X. p. 146.

Hab. In grassy places: Kitajima (1929).

Poa Komarovi Roshew. in Bull. Jard. Bot. U. R. S. S. XXVI. pp. 285, 286.

Hab. On gravelly shores: Kitajima (1928).

Poa stenantha Trin. var. *leptocoma* Grieseb. in Ledeb. Fl. Ross. IV. p. 373.

Hab. In grassy places: Minamijima (1929).

Poa scabriflora Hack. in Fedde, Repert. III. p. 244.

Hab. In grassy places: Minamijima (1928; 1929); Kitajima (1928).

Festuca rubra L. Sp. Pl. ed. 1, p. 74.

Hab. In grassy places: Kitajima (1928; 1929); Minamijima (1929).

Elymus mollis Trin. in Spr. Neue Entdeck. II. p. 72.

Hab. On beaches: Minamijima (1928).

Cyperaceae

Carex lagopina Wahlenb. in Vet. Akad. Handl. Stockholm. XXIV. p. 149.

Hab. In grassy places: Kitajima (1929).

Carex rigida Good. in Trans. Linn. Soc. II. p. 193.

Hab. In heaths: Kitajima (1928; 1929).

Carex Lyngbyei Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtchat. I. p. 188.

Hab. In dampy places: Kitajima (1928; 1929).

Carex Gmelini Hook. et Arn. Bot. Beech. Voy. III. p. 118.

- Hab. In grassy places: Kitajima (1928); Minamijima (1929).
Carex macrochaeta C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 224.
 Hab. In heaths: Kitajima (1928).
Carex rariflora Smith, Engl. Bot. t. 2516.
 Hab. In heaths: Kitajima (1928).
Carex vaginata Tausch, in Regensb. Flora, IV. p. 557.
 Hab. In grassy places: Kitajima (1928).

Juncaceae

- Luzula plumosa* E. Mey. in Linnaea XXII. p. 387.
 Hab. In grassy places: Kitajima (1928).
Luzula Kjellmanniana Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 38.
 Hab. In grassy places: Minamijima (1929); Kitajima (1928; 1929).
Luzula Wahlenbergii Rupr. in Beitr. Pfl. Russ. Reich. II. p. 58.
 Hab. In heaths: Kitajima (1928; 1929).
Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII. p. 164.
 Hab. In dampy places: Kitajima (1928; 1929).

Liliaceae

- Fritillaria camschatcensis* Ker-Gawl. in Bot. Mag. XXX. sub t. 1216.
 Hab. In meadows: Minamijima (1929).
Lloydia serotina Reichb. Fl. Germ. Exc. p. 102.
 Hab. In meadows: Kitajima (1928); Minamijima (1929).
Majanthemum dilatatum Nels. et Macbr. in Bot. Gaz. LXI. p. 30.
 Hab. In grassy places and meadows: Kitajima (1928); Minamijima (1928; 1929).
Streptopus amplexifolius DC. in Lam. et. DC. Fl. Fr. III. p. 174.
 Hab. In meadows: Minamijima (1929).

Orchidaceae

- Orchis aristata* Fisch. form. *punctata* Tatewaki, Pl. Alaid, p. 160.
 Hab. In meadows: Minamijima (1929).
Platanthera Ditmariana Kom. in Fedde, Rep. XIII. p. 165.
 Hab. In meadows: Minamijima (1929).
Platanthera hyperborea Lindl. Gen. & Sp. Orchid. Pl. p. 287.
 Hab. In meadows: Kitajima (1928); Minamijima (1929).

Microstylis monophylla Lindl. form. *diphyllos* Makino et Nemoto, Fl. Jap. p. 1188.

Hab. In meadows: Minamijima (1929).

E. FLORISTIC COMPOSITION OF THE ISLAND OF RASHUWA

PTERIDOPHYTA

Ophioglossaceae

Botrychium Lunaria Sw. in Schrad. Journ. Bot. II. p. 110.

Hab. Without locality (N. Shitomi, 1932).

Polypodiaceae

Dryopteris dilatata A. Gray, var. *oblonga* Takeda, in Tokyo Bot. Mag. XXIV. p. 179.

Hab. In woods and meadows: Yotsuiwahama (1928); Sonrakuwan (1929).

Athyrium Filix-femina Roth, var. *melanolepis* Makino, in Tokyo Bot. Mag. XIII. p. 30.

Hab. In woods: Tobiishizaki (1929).

Equisetaceae

Equisetum arvense L. var. *boreale* Rupr. in Beitr. Pfl. Russ. Reich. III. p. 19.

Hab. In dampy places: Higashiura (1929).

Equisetum pratense Ehrh. Hannov. Mag. IX. p. 138.

Hab. In meadows: Sonrakuwan (1929); Tobiishizaki (1929).

Equisetum palustre L. Sp. Pl. ed. 1, p. 1061.

Hab. In wet places: Higashiura (1929).

Equisetum hyemale L. Sp. Pl. ed. 1, p. 1062.

Hab. Along rivers: Mt. Choto (1929).

Lycopodiaceae

Lycopodium Selago L. Sp. Pl. ed. 1, p. 1102.

Hab. In boggy places, heaths, meadows and on sea-cliffs: Sonrakuwan (1929); Mt. Choto (1929); Nakadomari (1929); Tobiishizaki (1929).

Lycopodium obscurum L. form. *juniperoideum* Takeda, in Tokyo Bot. Mag. XXIII. p. 213.

Hab. In heaths: Higashiura (N. Shitomi, 1929).

Lycopodium annotinum L. var. *latifolium* Takeda, l. c. p. 215.

Hab. In heaths: Sonrakuwan (1928; 1929); Nakadomari (1929); Higashiura (1929).

Lycopodium clavatum L. Sp. Pl. ed. 1, p. 1101.

Hab. In meadows: Tobiishizaki (1929).

Lycopodium sitchense Rupr. in Beitr. Pfl. Russ. Reich. III. p. 30.

Hab. In meadows, heaths and bogs: Mt. Choto (1929).

Lycopodium alpinum L. Sp. Pl. ed. 1, p. 1104.

Hab. In heaths and grassy places: Tobiishizaki (1929); Mt. Choto (1929); Onuma (1929).

Selaginellaceae

Selaginella selaginoides Link, Fil. Sp. Hort. Berol. p. 158.

Hab. In boggy places: Mt. Choto (1929).

PHANEROGAMAE

Gymnospermae

Taxaceae

Taxus cuspidata Sieb. et Zucc. Fl. Jap. Fam. Nat. II. p. 108.

Hab. In woods: Kitsune-zaki (M. Tatewaki, 1928; N. Shitomi, 1929).

Pinaceae

Pinus pumila Regel, in Ind. Sem. Hort. Petrop. (1858), p. 23.

Hab. Sonrakuwan (1928).

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

Salix kurilensis Koidz. in Tokyo Bot. Mag. XXXII. p. 62.

- Hab. In heaths: Sonrakuwan (1929); Mt. Choto (1929).
Salix arctica × *S. fuscescens*.
Hab. In boggy places: Onuma (1929).
Salix longipetiolata Flod. in Sv. Vet. Ak. Ark. f. Bot. 20, A. No. 6, p. 14.
Hab. In heaths and on sea cliffs: Sonrakuwan (1928); Nakadomari (1929); Minamikado (1929); Mt. Choto (1929).

Betulaceae

- Betula Ermani* Cham. in Linnaea VI. p. 537.
Hab. In woods: Tobiishizaki (1929); Onuma (1929).
Alnus fruticosa Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.
Hab. In woods: Sonrakuwan (1928); Kitakado (1928); Mt. Choto (1929).

Urticaceae

- Urtica Takedana* Ohwi, in Phytotax. et Geobot. I. p. 129.
Hab. In meadows: Sonrakuwan (1928; 1929).

Polygonaceae

- Rumex Acetosa* L. var. *alpina* Hartm. in Handb. Skand. Fl. ed. 1, p. 146.
Hab. In meadows: Sonrakuwan (1928; 1929).
Oxyria digyna Hill, Hort. Kew. p. 158.
Hab. In gravelly places: Kitakado (1928); Sonrakuwan (1929).
Polygonum viviparum L. Sp. Pl. ed. 1, p. 360.
Hab. In heaths and meadows: Sonrakuwan (1928; 1929); Nakadomari (1929); Minamikado (1929); Higashiura (1929).
Polygonum Weyrichii Fr. Schm. var. *alpinum* Maxim. in Mém. Biol. IX. p. 617.
Hab. In meadows: Sonrakuwan (1928; 1929).

Portulacaceae

- Montia lamprosperma* Cham. in Linnaea VI. p. 564.
Hab. In dampy places: Higashiura (1929).

Caryophyllaceae

- Stellaria calycantha* Bong. in Mém. Acad. Imp. Sc. St. Pétersb. Sér. VI. 2, p. 127.
Hab. In dampy places: Sonrakuwan (1929).

Stellaria Fnezlil Regel, in Pl. Radd. Dicotyl. Polypet. pp. 264, 280.

Hab. In meadows: Sonrakuwan (1928; 1929); Higashiura (1929).
Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII.
 p. 194.

Hab. In meadows: Sonrakuwan (1928); Nakadomari (1929).
Stellaria humifusa Rottb. in Act. Hafn. X. p. 447.

Hab. In dampy places: Higashiura (1929).
Cerastium boreale Takeda, in Kew Bull. (1911), p. 105.

Hab. In grassy places and meadows: Sonrakuwan (1928).
Sagina Linnaei Presl, Real. Haenk. II. p. 14.

Hab. On sea-cliffs: Sonrakuwan (1929).
Ammodenia oblongifolia Rydb. var. *maxima* Nakai, in Tokyo Bot. Mag.
 XLIII. p. 458.

Hab. On beaches: Sonrakuwan (1928; 1929).
Moehringia lateriflora Fnezl, Verb. Alsin. pp. 18, 38.

Hab. In grassy places and meadows: Sonrakuwan (1928; 1929);
 Tobiishizaki (1929).

Ranunculaceae

Trollius Riederianus Fisch. et Mey. in Ind. Sem. Hort. Petrop. IV. p. 48.

Hab. In meadows: Sonrakuwan (1928); Yotsuiwahama (1928);
 Nakadomari (1929).

Trollius membranostylis Hult. Fl. Kamtchat. II. p. 99.

Hab. In meadows: Sonrakuwan (1929).

Coptis trifolia Salisb. in Trans. Linn. Soc. VIII. p. 305.

Hab. In bogs: Mt. Choto (1929); Onuma (1929).

Aconitum kamtschaticum Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.

Hab. In meadows: Yotsuiwahama (1928).

Anemone narcissiflora L. Sp. Pl. ed. 1, p. 542.

Hab. In heaths and meadows: Sonrakuwan (1928; 1929); Yotsuiwahama (1928); Kotomari (1929).

Ranunculus acris L. var. *Steveni* Rgl. et Til. Fl. Ajan. p. 32.

Hab. In meadows and grassy places: Sonrakuwan (1928); Nakadomari (1929); Onuma (1929); Higashiura (1929); Tobiishizaki (1929).

form. *plenus* Tatewaki.

Hab. In meadows: Tobiishizaki (1929).

Thalictrum Thunbergii A. P. DC. Syst. I. p. 183.

Hab. In grassy places: Onuma (N. Shitomi, 1929).

Papaveraceae

Corydalis ambigua Cham. et Schlech. in Linnaea I. p. 558.

Hab. In meadows: Sonrakuwan (1930).

Brassicaceae

Cochlearia oblongifolia DC. Syst. II. p. 363.

Hab. On rocky cliffs: Kitakado (1929); Sonrakuwan (1929); Higashiura (1929).

Barbarea orthoceras Ledeb. Fl. Ross. I. p. 114.

Hab. In dampy places: Yotsuiwahama (1928); Higashiura (1929).

Cardamine umbellata Greene, Pittonia III. p. 154.

Hab. In meadows: Sonrakuwan (1928); Nakadomari (1929).

Cardamine Regeliana Miq. Prol. Fl. Jap. p. 73.

Hab. In meadows: Sonrakuwan (1929); Higashiura (1929).

Draba hyperborea Desv. in Journ. Bot. III. p. 172.

Hab. On rocky cliffs near the sea: Sonrakuwan (1929).

Draba borealis DC. Syst. II. p. 342.

Hab. On rocky cliffs: Sonrakuwan (1929).

Arabis lyrata L. var. *kamtschatica* Fisch. apud DC. Prodr. I. p. 146.

Hab. In meadows: Sonrakuwan (1929).

Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.

Hab. In meadows: Sonrakuwan (1929); Tobiishizaki (1929).

Droseraceae

Drosera rotundifolia L. Sp. Pl. ed. 1, p. 281.

Hab. In bogs: Onuma (1929).

Crassulaceae

Sedum elongatum Ledeb. Fl. Ross. II. p. 178.

Hab. On rocky cliffs: Sonrakuwan (1928).

Saxifragaceae

Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

Hab. On rocky cliffs: Sonrakuwan (1928); Nakadomari (1929); Higashiura (1929).

Saxifraga bracteata D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.

Hab. On rocky cliffs near the sea: Sonrakuwan (1928; 1929); Yotsuiwahama (1928); Higashiura (1929).

Chrysosplenium kamtschaticum Fisch. in DC. Prodr. IV. p. 48.

Hab. In meadows: Sonrakuwan (1929); Higashiura (1929).

Parnassia palustris L. Sp. Pl. ed. 1, p. 273.

Hab. In meadows and boggy places: Sonrakuwan (1928; 1929);
Onuma (1929).

Rosaceae

Aruncus sylvester Kostel. var. *kamtschatica* Maxim. in Act. Hort. Petrop.
VI. p. 170.

Hab. In meadows: Kitakado (1928); Sonrakuwan (N. Shitomi,
1929).

Sorbus sambucifolia Roem. Syn. Monogr. III. p. 139.

Hab. In bogs and heaths: Sonrakuwan (1928); Nakadomari
(1929); Minamikado (1929).

Rubus Chamaemorus L. Sp. Pl. ed. 1, p. 494.

Hab. In bogs and heaths: Sonrakuwan (1928; 1929); Naka-
domari (1929); Onuma (1929).

Rubus arcticus L. Sp. Pl. ed. 1, p. 494.

Hab. In bogs: Mt. Choto (1929); Onuma (1929).

Comarum palustre L. Sp. Pl. ed. 1, p. 502.

Hab. In swampy places: Onuma (1929).

Potentilla megalantha Takeda, in Kew Bull. (1911), p. 255.

Hab. On sea-cliffs and in meadows near the sea: Kitakado (1928);
Sonrakuwan (1929).

Potentilla Matsumurae Wolf, in Bibl. Bot. Hft. 72, p. 508.

Hab. In heaths: Minamikado (1929); Mt. Choto (1929).

Geum calthaefolium Menz. ap. Sm. in Rees Cycl. 16. Geum n. 13.

Hab. In heaths, bogs and meadows: Sonrakuwan (1928; 1929)
Nakadomari (1929); Minamikado (1929); Higashiura (1929);
Mt. Choto (1929).

Geum pentapetalum Makino, in Tokyo Bot. Mag. XXIV. p. 32.

Hab. In bogs and heaths: Sonrakuwan (1929); Tobiishizaki
(1929); Mt. Choto (1929).

Filipendula kamtschatica Maxim. form. *typica* Koidz. in Tokyo Bot.
Mag. XXIII. p. 179.

Hab. In meadows: Sonrakuwan (1928); Higashiura (1929);
Nakadomari (1929).

Sanguisorba tenuifolia Fisch. var. *kurilensis* Kudo, Fl. Paramushir, p.
125.

Hab. In bogs: Onuma (1929).

Rosa rugosa Thunb. Fl. Jap. p. 213.

Hab. Kitakado (1928); Onuma (1929).

Fabaceae

Astragalus frigidus Bunge, subsp. *parviflorus* Hult. Fl. Kamtchat. III. p. 98.

Hab. In meadows: Sonrakuwan (1928); Nakadomari (1929).

Oxytropis nigrescens Fisch. in DC. Prodr. II. p. 278.

Hab. In meadows: Kodomari (1929).

Oxytropis retusa Matsum. in Tokyo Bot. Mag. XV. p. 116.

Hab. In heaths: Sonrakuwan (1929); Nakadomari (1929); Minamikado (1929).

Lathyrus maritimus Bigel. Fl. Bost. ed. 2, p. 268.

Hab. On beaches: Sonrakuwan (1928; 1929).

Geraniaceae

Geranium erianthum DC. Prodr. I. p. 641.

Hab. In meadows: Sonrakuwan (1928; 1929); Yotsuiwahama (1928).

Oxalidaceae

Oxalis Acetosella L. Sp. Pl. ed. 1, p. 433.

Hab. In woods: Tobiishizaki (1929); Mt. Choto (1929).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths, bogs and meadows: Sonrakuwan (1928; 1929); Nakadomari (1929); Minamikado (1929).

Aquifoliaceae

Ilex rugosa Fr. Schm. Fl. Sachal. p. 122.

Hab. In woods: Kitsunezaki (N. Shitomi, 1928; 1929).

Hypericaceae

Hypericum kamschaticum Ledeb. in Denkschr. Bot. Ges. Regensb. III. p. 131.

Hab. In meadows: Sonrakuwan (1928); Yorikihama (1929).

Violaceae

- Viola Selkirkii* Pursh, apud Goldie in Edinbg. Phil. Journ. VI. p. 319.
 Hab. In meadows: Tobiishizaki (1929); Onuma (1929); Mt. Choto (1929).
- Viola kamtschadalarum* Bckr. et Hult. in Sv. Vet. Ak. Ark. f. Bot. 22, A. No. 3, p. 6.
 Hab. In meadows: Mt. Choto (1929); Higashiura (1929); Kotomari (1929); Sonrakuwan (1929).
- Viola crassa* Makino, in Tokyo Bot. Mag. XIX. p. 87.
 Hab. In heaths: Minamikado (1929).
 var. *vegeta* Nakai, in Tokyo Bot. Mag. XLII. p. 565.
 Hab. In heaths: Minamikado (1929); Nakadomari (1929).
- Viola biflora* L. Sp. Pl. ed. 1, p. 936.
 Hab. In grassy places: Sonrakuwan (1929).

Oenotheraceae

- Epilobium palustre* L. Sp. Pl. ed. 1, p. 348.
 Hab. In bogs: Onuma (1929).
- Epilobium glandulosum* Lehm. Pug. II. p. 14.
 Hab. In dampy places: Higashiura (1929).
- Epilobium Hornemanni* Reichb. Icon. Crit. II. p. 73.
 Hab. In dampy places: Yotsuiwahama (1928).

Hippuridaceae

- Hippuris vulgaris* L. Sp. Pl. ed. 1, p. 4.
 Hab. In swamps: Higashiura (1929).

Apiaceae

- Pleurospermum camtschaticum* Hoffm. Umbellif. praem. p. 8.
 Hab. In meadows: Sonrakuwan (1928); Nakadomari (1929).
- Cnidium ajanense* Drude, in Engl. u. Pr. Nat. Pfl.-fam. III. 8, p. 210.
 Hab. In meadows, bogs and heaths: Sonrakuwan (1928); Kitakado (1928); Nakadomari (1929); Onuma (1929); Mt. Choto (1929).
- Ligusticum Hultenii* Fernald, in Rhodora XXXII. p. 7.
 Hab. On sea-cliffs: Sonrakuwan (1928).
- Coelopleurum Gmelini* Ledeb. Fl. Ross. II. p. 361.
 Hab. In meadows: Sonrakuwan (1929).

Angelica refracta Fr. Schm. Fl. Sachal. p. 138.

Hab. In swampy places: Yotsuiwahama (1928).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In meadows: Sonrakuwan (1928; 1929).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In meadows, bogs and heaths: Sonrakuwan (1928; 1929); Nakadomari (1929); Mt. Choto (1929).

Metachlamydeae

Diapensiaceae

Diapensia lapponica L. var. *obovata* Fr. Schm. Fl. Sachal. p. 161.

Hab. In heaths and on rocky cliffs: Sonrakuwan (1928; 1929); Nakadomari (1929); Mt. Choto (1929); Minamikado (1929).

Pyrolaceae

Pyrola minor L. Sp. Pl. ed. 1, p. 396.

Hab. In meadows and heaths: Mt. Choto (1929); Nakadomari (1929).

Rhodoraceae

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729.

Hab. In heaths: Sonrakuwan (1928; 1929); Kitakado (1928); Nakadomari (1929); Minamikado (1929); Mt. Choto (1929).

Rhododendron camtschaticum Pall. Fl. Ross. I. 1, p. 48.

Hab. In heaths and meadows: Sonrakuwan (1928; 1929); Nakadomari (1929); Minamikado (1929); Mt. Choto (1929).

Loiseleuria procumbens Desv. in Journ. Bot. III. p. 35.

Hab. In heaths: Minamikado (1929); Sonrakuwan (1929); Kotomari (1929); Mt. Choto (1929).

Phyllodoce aleutica A. Heller, in Muelenb. I. p. 1.

Hab. In heaths and bogs: Sonrakuwan (1929); Mt. Choto (1929).

Cassiope lycopodioides Don, in Edinbg. New Phil. Journ. XVII. p. 158.

Hab. In heaths, meadows and on rocky cliffs: Sonrakuwan (1928; 1929); Kitakado (1928); Nakadomari (1929); Mt. Choto (1929); Minamikado (1929).

- Bryanthus musciformis* Nakai, Tr. & Shr. Jap. I. ed. 1, p. 16.
 Hab. In heaths: Mt. Choto (1929); Sonrakuwan (1929).
Harrimanella Stelleriana Cov. in Proc. Wash. Acad. Sc. III. p. 574.
 Hab. In heaths: Sonrakuwan (1929); Mt. Choto (1929).
Andromeda Polifolia L. Sp. Pl. ed. 1, p. 393.
 Hab. In bogs: Onuma (1929).
Arcteria nana Makino, in Tokyo Bot. Mag. XX. p. 85.
 Hab. In heaths: Sonrakuwan (1929); Mt. Choto (1929).
Arctous alpina Niedz. var. *japonica* Takeda ex Tatewaki, in Res. Bull.
 Exp. For. Fac. Agr. Hok. Imp. Univ. V. p. (56).
 Hab. In heaths and on sea-cliffs: Sonrakuwan (1928; 1929);
 Nakadomari (1929); Minamikado (1929); Mt. Choto (1929).
Oxycoccus vulgaris Hill, Brit. Herbal, p. 324.
 Hab. In bogs: Mt. Choto (1929); Onuma (1929).
Vaccinium Vitis-idaea L. Sp. Pl. ed. 1, p. 351.
 Hab. In heaths, bogs and on rocky cliffs: Sonrakuwan (1928;
 1929); Kitakado (1928); Nakadomari (1929); Onuma
 (1929); Mt. Choto (1929).
Vaccinium uliginosum L. Sp. Pl. ed. 1, p. 350.
 Hab. In heaths and bogs: Sonrakuwan (1928; 1929); Kitakado
 (1929); Nakadomari (1929); Mt. Choto (1929); Onuma
 (1929).

Primulaceae

- **Primula sibirica* Jacq. var. *arctica* Pax, in Engl. Pfl.-reich. IV. 237,
 p. 77.
 Hab. In meadows and on rocky places: Sonrakuwan (1928; 1929).
Primula Fauriei Franch. in Bull. Soc. Phil. Paris, 7. sér. p. 146.
 Hab. In meadows: Sonrakuwan (1928; 1929).
Primula cuneifolia Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.
 Hab. In meadows, heaths and bogs: Sonrakuwan (1928; 1929);
 Nakadomari (1929); Minamikado (1929); Kotomari (1929);
 Mt. Choto (1929); Onuma (1929).

* *Primula sibirica* Jacq. Misc. Austr. I. (1778), p. 161; Duby, in DC. Prodr.
 VIII. (1844), p. 43; Ledeb. Fl. Ross III. (1847-49), p. 14; Hook. f. Fl. Brit. Ind.
 III. (1882), p. 487; Pax u. Knuth, in Engl. Pfl.-reich. IV. 237. (1905), p. 76; Hult.
 Fl. Kamtehat. IV. (1930), p. 52.

var. *arctica* Pax, in Engl. Pfl.-reich. IV. 237, (1905), p. 77.

NOM. JAP. Rashuwa-kozakura.

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237, p. 313.

Hab. In grassy places: Yotsuiwahama (1928); Sonrakuwan (1929).
var. *arctica* Ledeb. Fl. Ross. III. p. 25.

Hab. In bogs: Sonrakuwan (1928); Onuma (1929).

Gentianaceae

Gentiana Kawakamii Makino, in Tokyo Bot. Mag. XVIII. p. 67.

Hab. In bogs, meadows and heaths: Tobiishizaki (1929); Onuma (1929); Higashiura (1929); Mt. Choto (1929).

Gentiana auriculata Pall. Fl. Ross. I. 2, p. 102.

Hab. In meadows: Sonrakuwan (1928); Onuma (1929).

form. *albiflora* Tatewaki

Hab. In meadows and grassy places: Onuma (N. Shitomi, 1929).

Swertia tetrapetala Pall. Fl. Ross. I. 2, p. 99.

Hab. In meadows and grassy places: Sonrakuwan (1928); Tobiishizaki (1929); Higashiura (1929); Nakadomari (1929); Onuma (1929); Mt. Choto (1929).

Halenia corniculata Druce, in Rep. Bot. Exch. Cl. Brit. Isl. III. 5, p. 419.

Hab. In grassy places and meadows: Sonrakuwan (1928); Tobiishizaki (1929); Nakadomari (1929); Mt. Choto (1929); Onuma (1929).

Menyanthes trifoliata L. Sp. Pl. ed. 1, p. 145.

Hab. In swampy places: Near Onuma (1928; 1929).

Heliotropiaceae

Mertensia maritima G. Don, subsp. *asiatica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. On sandy beaches: Sonrakuwan (1928; 1929).

Rhinanthaceae

Veronica Stelleri Pall. ex Spreng. Schrad. u. Link, Jahrb. III. p. 40.

Hab. In meadows: Sonrakuwan (1928); Kitakado (1928); Nakadomari (1929); Onuma (1929); Higashiura (1929).

Veronica americana Schw. apud Benth. in DC. Prodr. X. p. 468.

Hab. In dampy places: Yotsuiwahama (1928); Higashiura (1929).

Lagotis glauca Gaertn. in Nov. Comm. Ac. Sc. St. Pétersb. XIV. p. 533.

Hab. In meadows and heaths: Sonrakuwan (1928; 1929); Naka-

domari (1929); Mt. Choto (1929).

Euphrasia mollis Wettst. Monogr. Euphr. p. 141.

Hab. In grassy places: Sonrakuwan (1928; 1929); Higashiura (N. Shitomi, 1929).

Pedicularis Chamissonis Stev. var. *Maximowiczii* Kudo, Fl. Paramushir, p. 156.

Hab. In meadows: Sonrakuwan (1928; 1929); Yotsuiwahama (1928); Nakadomari (1929); Mt. Choto (1929).

form. *albiflora* Tatewaki, form. nov.

Hab. In meadows: Onuma (N. Shitomi, 1929).

Pedicularis resupinata L. Sp. Pl. ed. 1, p. 608.

Hab. In meadows: Nakadomari (1929); Higashiura (1929); Sonrakuwan (1929).

Pedicularis euphrasioides Steph. in Willd. Sp. Pl. III. p. 204.

Hab. In meadows: Sonrakuwan (1928; 1929); Mt. Choto (1929); Higashiura (1929).

Orobanchaceae

Boschniakia rossica Hult. Fl. Kamtchat. IV. p. 126.

Hab. In heaths: Nakadomari (1929); M. Choto (1929).

Lentibulariaceae

Pinguicula vulgaris L. var. *macroceras* Herd. Pl. Radd. Monop. VI. 1, p. 98.

Hab. In meadows, bogs and heaths: Sonrakuwan (1929); Minami-kado (1929); Tobiishizaki (1929).

Plantaginaceae

Plantago camtschatica Cham. ex Link, Enum. Pl. Hort. Berol. I. p. 120.

Hab. On sea-cliffs: Sonrakuwan (N. Shitomi, 1932).

Rubiaceae

Galium trifidum L. Sp. Pl. ed. 1, p. 105.

Hab. In bogs: Mt. Choto (1929); Onuma (1929).

Galium kamtschaticum Stell. var. *hirsutum* Takeda, in Tokyo Bot. Mag. XXIV. p. 65.

Hab. In woods: Tobiishizaki (1929).

Caprifoliaceae

Diervilla Middendorffiana Carr. in Rév. Hort. XXV. p. 306.

- Hab. In woods: Near Onuma (N. Shitomi, 1932).
Linnaea borealis L. form. *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7, p. 159.
 Hab. In woods and heaths: Sonrakuwan (1928); Nakadomari (1929); Tobiishizaki (1929); Higashiura (1929).
Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.
 Hab. On hill-sides: Sonrakuwan (1928; 1929); Kitakado (1929); Mt. Choto (1929).

Campanulaceae

- Adenophora kurilensis* Nakai, in Tokyo Bot. Mag. XLIV. p. 11.
 Hab. In meadows: Yotsuiwahama (1928).
Campanula dasyantha Bieb. Fl. Taur. Cauc. III. p. 147.
 Hab. In heaths and meadows: Sonrakuwan (1928; 1929); Nakadomari (1929); Minamikado (1929); Mt. Choto (1929); Higashiura (1929).
Campanula lasiocarpa Cham. in Linnaea IV. p. 39.
 Hab. In meadows: Sonrakuwan (1928); Kitakado (1928).
Peracarpa circaeoides H. Feer, in Engl. Bot. Jahrb. XII. p. 621.
 Hab. In woods: Tobiishizaki (1929); Onuma (1929).

Asteraceae

- Solidago Virgaurea* L. Sp. Pl. ed. 1, p. 880.
 Hab. In grassy places and meadows: Sonrakuwan (1928); Kitakado (1928); Tobiishizaki (1929); Mt. Choto (1929).
Anaphalis margaritacea Benth. et Hook. f. Gen. Pl. II. p. 303.
 Hab. In grassy places: Sonrakuwan (1928); Kitakado (1928).
 form. *latifolia* Kudo, Fl. Paramushir, p. 165.
 Hab. In grassy places: Higashiura (1929); Sonrakuwan (1929).
Achillea sibirica Ledeb. in Ind. Sem. Hort. Dorpat. (1811).
 Hab. In grassy places and meadows: Sonrakuwan (1928; 1929); Kitakado (1928).
Achillea Ptarmica L. var. *speciosa* Herd. Pl. Radd. Monop. III. 2, p. 39.
 Hab. In meadows: Sonrakuwan (1928); Tobiishizaki (1929).
Chrysanthemum arcticum L. Sp. Pl. ed. 1, p. 889.
 Hab. In meadows and on sea-cliffs: Sonrakuwan (1928; 1929).
 var. *yezoense* Maekawa, in Trans. Sapporo Nat. Hist. Soc. VIII. p. 14.
 Hab. In meadows: Nakadomari (1929).
Artemisia vulgaris L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.

- Hab. In meadows: Sonrakuwan (1928; 1929).
Petasites japonicus Miq. var. *giganteus* Makino, in Tokyo Bot. Mag. XXIII. p. 18.
 Hab. In meadows: Sonrakuwan (1928; 1929).
Arnica unalschcensis Less. in Linnaea VI. p. 238.
 Hab. In meadows: Sonrakuwan (1928; 1929); Nakadomari (1929).
Cacalia kamtschatica Kudo, Contr. Fl. N. Saghal. p. 60.
 Hab. In meadows: Sonrakuwan (1928; 1929).
Senecio palmatus Pall. Reise Russ. Reich. III. p. 321.
 Hab. In meadows: Sonrakuwan (1928).
Senecio pseudo-Arnica Less. in Linnaea V. p. 240.
 Hab. On beaches: Sonrakuwan (1928).
Cirsium kamtschaticum Ledeb. ex DC. Prodr. VI. p. 644.
 Hab. In meadows: Sonrakuwan (1929).
Saussurea Riederi Herd. Pl. Radd. Monop. III. 3, p. 35.
 Hab. In meadows: Sonrakuwan (1928); Higashiura (1929).
Picris kamtschatica Ledeb. in Mém. Acad. Imp. Sc. St. Pétersb. V. p. 577.
 Hab. In meadows: Kitakado (1929); Sonrakuwan (1929).
Taraxacum ceratophorum DC. Prodr. VII. p. 146.
 Hab. In meadows: Sonrakuwan (1928); Nakadomari (1929).

Monocotyledoneae

Sparganiaceae

- Sparganium minimum* Fries, Summa Veg. Scand. p. 560.
 Hab. In swamps: Onuma (N. Shitomi, 1928; M. Tatewaki, 1929).

Potamogetonaceae

- Potamogeton Franchetii* A. Benn. et Baag. in Journ. Bot. XLV. p. 234.
 Hab. In pools: Higashiura (1929).

Poaceae

- Phleum alpinum* L. Sp. Pl. ed. 1, p. 59.
 Hab. In grassy places and meadows: Sonrakuwan (1928; 1929); Tobiishizaki (1929).
Agrostis canina L. Sp. Pl. ed. 1, p. 62.
 Hab. In heaths: Kitakado (1928).
Agrostis Trinii Turcz. Fl. Baic.-Dahur. II. 2, p. 305, in nota.
 Hab. In grassy places: Sonrakuwan (1928); Tobiishizaki (1929).

- Agrostis hiemalis* B. S. P. Prel. Cat. N. Y. p. 68.
Hab. In grassy places: Yotsuiwahama (1928).
- Calamagrostis Langsdorffii* Trin. Gram. Unifl. p. 225.
Hab. In grassy places: Sonrakuwan (1928).
- Calamagrostis pupurascens* R. Br. in Richards. Bot. App. Frankl. Journ. (1823), p. 731.
Hab. In heaths and on rocky cliffs: Sonrakuwan (1928; 1929); Nakadomari (1929).
var. *parvigluma* Miyabe et Kudo, Fl. Hokkaido & Saghal. II. p. 145.
Hab. In heaths and on upper sea-cliffs: Sonrakuwan (1928); Nakadomari (1929); Minamikado (1929); Mt. Choto (1929).
- Erioblastus flexuosus* Honda, ex Nakai, Rep. Veg. Daisetsu Mts. pp. 58, 73.
Hab. In bogs, meadows and grassy places: Sonrakuwan (1928; 1929); Higashiura (1929); Onuma (1929).
- Deschampsia caespitosa* P. Beauv. subsp. *orientalis* Hult. Fl. Kamtchat. I. p. 109.
Hab. In grassy places: Sonrakuwan (1928).
- Deschampsia flexuosa* Trin. in Bull. Se. Acad. St. Pétersb. I. p. 66.
Hab. In grassy places, meadows and heaths: Sonrakuwan (1928; 1929); Nakadomari (1929); Mt. Choto (1929); Higashiura (1929).
- Trisetum spicatum* Richt. Pl. Europ. I. p. 59.
Hab. In grassy places and meadows: Sonrakuwan (1928; 1929); Tobiishizaki (1929); Higashiura (1929).
- Trisetum sibiricum* Rupr. in Beitr. Pfl. Russ. Reich. II. p. 65.
Hab. In meadows and grassy places: Sonrakuwan (1928; 1929); Higashiura (1929); Nakadomari (1929).
- Poa paucispicula* Scribn. et Merr. in Contr. Nat. Herb. XIII. 3, p. 69.
Hab. In heaths: Nakadomari (1929); Sonrakuwan (1929).
- Poa bracteosa* Kom. in Not. Syst. Herb. H. P. X. p. 146.
Hab. In grassy places and meadows: Sonrakuwan (1929).
- Poa Komarovi* Roshew. in Bull. Jard. Bot. U. R. S. S. XXVI. pp. 285, 286.
Hab. In grassy places and meadows: Sonrakuwan (1929); Higashiura (1929).
- Poa scabriflora* Hack. in Fedde, Rep. III. p. 244.
Hab. In grassy places: Sonrakuwan (1928).
- Poa radula* Fr. et Sav. Enum. Pl. Jap. II. p. 174.

- Hab. In meadows: Sonrakuwan (1928; 1929).
Festuca ovina L. Sp. Pl. ed. 1, p. 73.
 Hab. On rocky cliffs: Sonrakuwan (1929).
Festuca rubra L. Sp. Pl. ed. 1, p. 74.
 Hab. In grassy places and meadows: Sonrakuwan (1928); Nakadomari (1929).
 var. *Kitaibeliana* Piper, in Contr. Nat. Herb. X. p. 23.
 Hab. In grassy places: Kitakado (1928); Higashiura (1929).
Elymus mollis Trin. in Spr. Neue Entdeck. II. p. 72.
 Hab. On sea-shores: Sonrakuwan (1928; 1929).

Cyperaceae

- Eriophorum angustifolium* Roth, Fl. Germ. II. p. 63.
 Hab. In bogs: Onuma (1929); Sonrakuwan (1929).
Scirpus caespitosus L. Sp. Pl. ed. 1, p. 48.
 Hab. In bogs: Mt. Choto (1929); Onuma (1929).
Eleocharis palustris R. Br. Prodr. Fl. Nepal. p. 224.
 Hab. In bogs: Onuma (1929).
Carex gynocrates Wormskj. apud Drejer, Rev. Crit. p. 16.
 Hab. In bogs: Mt. Choto (1929).
Carex hakkodensis Franch. in Bull. Soc. Philom. Paris, 3. sér. VII. p. 28.
 Hab. In bogs and meadows: Sonrakuwan (1928; 1929); Yotsuwahama (1928); Mt. Choto (1929); Higashiura (1929).
Carex pyrenaica Wahlenb. in Vet. Akad. Handl. Stockholm. XXIV. p. 139.
 Hab. In meadows: Sonrakuwan (1929).
Carex pauciflora Lightf. Fl. Scot. II. p. 543.
 Hab. In bogs: Onuma (1929); Mt. Choto (1929).
Carex lagopina Wahlenb. in Vet. Akad. Handl. Stockholm. XXIV. p. 149.
 Hab. In meadows: Sonrakuwan (1929).
Carex Schmidtii Meinsh. in Baer et Helm. Beitr. Kenntn. Russ. Reich. XXVI. p. 224.
 Hab. In bogs: Onuma (1929).
Carex appendiculata Kuek. in Bull. Herb. Boiss. 2. sér. IV. p. 54.
 Hab. In bogs: Onuma (1929).
Carex Lyngbyei Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtschat. I. p. 188.
 Hab. In bogs: Sonrakuwan (1928; 1929); Nakadomari (1929).
Carex Middendorffii Fr. Schm. Fl. Amg.-Burej. p. 70.

- Hab. In bogs: Onuma (1929).
Carex Augustinowiczii Meinsh. apud Korsh. Act. Hort. Petrop. XII. p. 411.
 Hab. In bogs: Onuma (1929).
Carex Gmelinii Hook. et Arn. Bot. Beech. Voy. III. p. 118.
 Hab. In grassy places: Sonrakuwan (1928; 1929); Yotsuiwahama (1928); Nakadomari (1929).
Carex macrochaeta C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 224.
 Hab. In heaths: Mt. Choto (1929).
Carex flavocuspis Fr. et Sav. Enum. Pl. Jap. II. pp. 147, 574.
 Hab. In heaths: Minamikado (1929); Mt. Choto (1929).
Carex scita Maxim. in Mém. Biol. XII. p. 564.
 Hab. In grassy places and meadows: Sonrakuwan (1928; 1929); Higashiura (1929).
Carex ambryolepis Trautv. et Mey. Fl. Ochot. p. 99.
 Hab. In meadows: Sonrakuwan (1929).
Carex verna Chaix, in Vill. Hist. Pl. Dauph. II. p. 204.
 Hab. In meadows: Onuma (1929); Sonrakuwan (1929).
Carex rariflora Smith, Engl. Bot. t. 2516.
 Hab. In bogs: Sonrakuwan (1928); Nakadomari (1929).
Carex limosa L. var. *fusco-cuprea* Kuek. Cyp.-Car. p. 505.
 Hab. In bogs: At the foot of Mt. Porochanupuri (1929).
Carex vaginata Tausch, in Regensb. Flora, IV. p. 557.
 Hab. In grassy places and meadows: Sonrakuwan (1928); Nakadomari (1929); Mt. Choto (1929).
Carex stenantha Fr. et Sav. var. *taisetsuensis* Akiyama, in Journ. Fac. Sc. Hokkaido Imp. Univ. Ser. V. I. p. 60.
 Hab. In heaths: Sonrakuwan (1929); Mt. Choto (1929).
Carex Michauxiana Boek. form. *asiatica* Akiyama, Consp. Car. Jap. p. 220.
 Hab. In bogs: Onuma (1929).
Carex saxatilis L. Sp. Pl. ed. 1, p. 976.
 Hab. In bogs: Onuma (1929).

Juncaceae

- Luzula plumosa* E. Mey. in Linnaea XXII. p. 387.
 Hab. In meadows: Sonrakuwan (1928; 1929); Higashiura (1929).
Luzula parviflora Desv. in Journ. Bot. I. p. 144.
 Hab. In meadows: Sonrakuwan (1928; 1929); Higashiura (1929).

Luzula Kjellmanniana Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 38.

Hab. In meadows: Sonrakuwan (1928).

Luzula oligantha G. Sam. in Hult. Fl. Kamtchat. I. p. 227.

Hab. In heaths: Onuma (1929).

Luzula arcuata Wahlenb. var. *unalaschkensis* Buch. Monogr. June. p. 124.

Hab. In meadows: Nakadomari (1929).

Luzula Wahlenbergii Rupr. in Beitr. Pfl. Russ. Reich. II. p. 58.

Hab. In gravelly places: Minamikado (1929).

Juncus filiformis L. var. *curvatus* Kudo, Contr. N. Saghal. p. 26.

Hab. In bogs: Onuma (1929).

Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII. p. 164.

Hab. In dampy places and bogs: Yotsuiwahama (1928); Nakadomari (1929); Higashiura (1929).

Liliaceae

Tofieldia nutans Willd. ex. Schult. Syst. VII. p. 1573.

Hab. In heaths and meadows: Kotomari (1929); Mt. Choto (1929).

Tofieldia fusca Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. 2, p. 75.

Hab. In heaths and meadows: Sonrakuwan (1928; 1929); Mt. Choto (1929); Nakadomari (1929).

Veratrum album L. var. *oxysepalum* Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. p. 484.

Hab. In meadows: Sonrakuwan (1928; 1929).

Gagea lutea Ker-Gawl. in Bot. Mag. (1809), t. 1200.

Hab. In meadows: Sonrakuwan (1930).

Allium Victorialis L. subsp. *platyphyllum* Hult. Fl. Kamtchat. I. p. 239.

Hab. In meadows: Yotsuiwahama (1928); Nakadomari (1929).

Lilium medeoloides A. Gray, Pl. Jap. p. 415.

Hab. In meadows and grassy places: Yotsuiwahama (1928).

form. *kurilense* Kudo, Fl. Paramushir, p. 91.

Hab. In grassy places and meadows: Sonrakuwan (1928); Tobiishizaki (1929); Nakadomari (1929).

Fritillaria camschatcensis Ker-Gawl. in Bot. Mag. XXX. sub t. 1216.

Hab. In meadows: Sonrakuwan (1928; 1929); Yotsuiwahama (1928).

Lloydia serotina Reichb. Fl. Germ. Exc. p. 102.

Hab. In meadows and heaths: Sonrakuwan (1928; 1929); Minamikado (1929).

Majanthemum dilatatum Nels. et Macbr. in Bot. Gaz. LXI. p. 30.

Hab. In meadows: Sonrakuwan (1928; 1929); Higashiura (1929).

Streptopus amplexifolius DC. in Lam. et DC. Fl. Fr. III. p. 174.

Hab. In meadows: Yotsuiwahama (1928); Sonrakuwan (1929); Tobiishizaki (1929).

Trillium kamschaticum Pall. var. *kurilense* Tatewaki, in Miyabe and Kudo, Fl. Hok. and Saghal. III. p. 343.

Hab. In meadows: Onuma (1929).

Iridaceae

Iris setosa Pall. ex Link, Jahrb. I. 3, p. 71.

Hab. In meadows: Sonrakuwan (1928; 1929); Nakadomari (1929).

Orchidaceae

Cypripedium Yatabeanum Makino, in Tokyo Bot. Mag. XIII. p. 91.

Hab. In grassy places: Tobiishizaki (1929).

Orchis aristata Fisch. ex Lindl. Gen. & Sp. Orchid. Pl. p. 262.

Hab. In meadows: Sonrakuwan (1928; 1929); Nakadomari (1929).
form. *albiflora* Tatewaki, Pl. Alaid, p. 160.

Hab. In grassy places and meadows: Sonrakuwan (1929); Tobiishizaki (1929); Nakadomari (1929).
form. *punctata* Tatewaki, l. c.

Hab. In meadows: Sonrakuwan (1928; 1929); Nakadomari (1929).

Coeloglossum viride Hartm. var. *bracteatum* Richter, Pl. Europ. I. p. 278.

Hab. In meadows and heaths: Sonrakuwan (1928; 1929); Nakadomari (1929).

var. *interjectum* Miyabe et Kudo, Fl. Hok. & Saghal. III. p. 360.

Hab. In grassy places: Sonrakuwan (1929); Minamikado (1929).

Platanthera Ditmariana Kom. in Fedd. Rep. XIII. p. 165.

Hab. In meadows and grassy places: Nakadomari (1929); Tobiishizaki (1929).

Platanthera hyperborea Lindl. Gen. & Sp. Orchid. Pl. p. 287.

Hab. In meadows: Sonrakuwan (1928; 1929); Yotsuiwahama (1928); Nakadomari (1929); Higashiura (1929).

Platanthera tipuloides Lindl. Gen. & Sp. Orchid. Pl. p. 285.

Hab. In bogs: Mt. Choto (1929); Onuma (1929).

Microstylis monophylla Lindl. Gen. & Sp. Orchid. Pl. p. 19.

- Hab. In meadows: Sonrakuwan (N. Shitomi, 1929).
 form. *diphyllus* Makino et Nemoto, Fl. Jap. p. 1188.
 Hab. In meadows: Sonrakuwan (1929).
Listera cordata R. Br. in Ait. Hort. Kew. ed. 2, V. p. 201.
 Hab. In meadows: Sonrakuwan (1929); Onuma (1929).
Ephippianthus sachalinensis Reichb. f. apud Fr. Schm. Fl. Sachal. p. 180.
 Hab. In meadows and heaths: Yotsuiwahama (1929); Onuma
 (1929); Sonrakuwan (1929).

F. FLORISTIC COMPOSITION OF THE
 ISLAND OF MATUWA

PTERIDOPHYTA

Polypodiaceae

- Dryopteris dilatata* A. Gray, var. *deltoidea* Takeda, in Tokyo Bot. Mag.
 XXIV. p. 179.
 Hab. In woods: Yamatowan (1928).
Polystichum Braunii Fée, Gen. Filic. p. 278.
 Hab. In woods: Miharashidai (1928).
Athyrium Filix-femina Roth, var. *melanopeis* Makino, in Tokyo Bot.
 Mag. XIII. p. 30.
 Hab. In woods: Nakadomari (1928).

Equisetaceae

- Equisetum arvense* L. var. *boreale* Rupr. in Beitr. Pfl. Russ. Reich. III.
 p. 19.
 Hab. In dampy places: Yamatowan (1928).
Equisetum palustre L. Sp. Pl. ed. 1, p. 1061.
 Hab. In bogs: AINUWAN (1928).
Equisetum hyemale L. Sp. Pl. ed. 1, p. 1062.
 Hab. In dampy places: YOMATOWAN (1928).

Lycopodiaceae

- Lycopodium annotinum* L. var. *latifolium* Takeda, in Tokyo Bot. Mag.
 XXIII. p. 215.

- Hab. In heaths: Yamatowan (1928).
Lycopodium complanatum L. Sp. Pl. ed. 1, p. 1104.
 Hab. In heaths: Yamatowan (1930).

PHANEROGAMAE

Angiospermae

Dicotyledoneae

Archichlamydeae

Salicaceae

- Salix kurilensis* Koidz. in Tokyo Bot. Mag. XXXII. p. 62.
 Hab. In heaths: Between Yamatowan and Ainuwan (1928).
Salix longipetiolata Flod. in Sv. Vet. Ak. Ark. f. Bot. 20, A, No. 6, p. 14.
 Hab. On rocky cliffs: Mt. Fuyo (1928).

Betulaceae

- Alnus fruticosa* Rupr. in Beitr. Pfl. Russ. Reich. II. p. 53.
 Hab. In woods: Yamatowan (1930).

Urticaceae

- Urtica Takedana* Ohwi, in Phytotax. et Geobot. I. p. 129.
 Hab. In meadows: Yamatowan (1928).

Polygonaceae

- Rumex crispus* L. var. *japonicus* Makino, in Tokyo Bot. Mag. VIII. p. 174.
 Hab. Along road-sides: Yamatowan (1928).
Oxyria digyna Hill, Hort. Kew. p. 158.
 Hab. In gravelly slopes: Mt. Fuyo (1928).
Polygonum viviparum L. Sp. Pl. ed. 1, p. 360.
 Hab. In heaths: Ainuwan (1928); Banjo (1928).

Portulacaceae

- Montia lamprosperma* Cham. in Linnaea VI. p. 564.
 Hab. In boggy places: Ainuwan (1928).

Caryophyllaceae

- Stellaria media* Cyrill, Char. Comm. p. 36.

- Hab. Along road-sides: Yamatowan (1928).
Stellaria calycantha Bong. in Mém. Acad. Imp. Sc. St. Pétersb. Sér. VI. 2, p. 127.
 Hab. In boggy places: Ainuwan (1928).
Stellaria Fenzlii Regel, in Pl. Radd. Dicotyl. Polypet. pp. 264, 280.
 Hab. In woods: Nakadomari (1928); Hokutozaki (1928).
Stellaria ruscifolia Willd. ex Schlecht. in Mag. Ges. Nat. Fr. Berl. VII. p. 194.
 Hab. On gravelly slopes: Hokutozaki (1928).
Cerastium boreale Takeda, in Kew Bull. (1911), p. 105.
 Hab. In grassy places: Yamatowan (1928).
Sagina Linnæi Presl, Real. Haenk. II. p. 14.
 Hab. Near beaches: Yamatowan (1928).
Ammodenia oblongifolia Rydb. var. *maxima* Nakai, in Tokyo Bot. Mag. XLIII. p. 458.
 Hab. On sandy beaches: Yamatowan (1928; 1929).
Moehringia lateriflora Fenzl, Verb. Alsin. pp. 18, 38.
 Hab. In woods and boggy places: Yamatowan (1928); Ainuwan (1928).

Ranunculaceae

- Aconitum kamtschaticum* Willd. ex Reichb. Ueber Gatt. Aconit. p. 39.
 Hab. In meadows: Yamatowan (1928).
Anemone narcissiflora L. Sp. Pl. ed. 1, p. 542.
 Hab. In meadows and heaths: Hokutozaki (1928).

Papaveraceae

- Papaver nudicaule* L. subsp. *xanthopetalum* Fedde, var. *Fauriei* Fedde, Repert. VII. p. 257.
 Hab. In gravelly slopes: Hokutozaki (1928).

Brassicaceae

- Cochlearia oblongifolia* DC. Syst. II. p. 363.
 Hab. On rocky cliffs near the sea: Yamatowan (1928; 1930).
Barbarea orthoceras Ledeb. Fl. Ross. I. p. 114.
 Hab. In dampy places: Yamatowan (1928).
Nasturtium palustre DC. Syst. II. p. 191.
 Hab. Along road-sides: Yamatowan (1928).
Cardamine Regeliana Miq. Prol. Fl. Jap. p. 73.

Hab. In dampy places: Yamatowan (1928; 1930).

Draba hyperborea Desv. in Journ. Bot. III. p. 172.

Hab. On sea-cliffs: Banjo (1928).

Arabis lyrata L. var. *kamtschatica* Fisch. apud DC. Prodr. I. p. 146.

Hab. In grassy places: Yamatowan (1930).

Arabis glauca Boiss. in Bull. Herb. Boiss. VII. p. 786.

Hab. In meadows: Yamatowan (1930).

Crassulaceae

Sedum elongatum Ledeb. Fl. Ross. II. p. 178.

Hab. On rocky cliffs: Banjo (1928).

Saxifragaceae

Saxifraga Merckii Fisch. in Sternb. Rev. Sax. Suppl. I. p. 1.

Hab. On gravelly slopes: Mt. Fuyo (1928).

Saxifraga bracteata D. Don, in Trans. Linn. Soc. XIII. 2, p. 367.

Hab. On sea-cliffs: Yamatowan (1928; 1930).

Saxifraga punctata L. Sp. Pl. ed. 1, p. 401.

Hab. In dampy places and rocky places: Yamatowan (1928).

Chrysosplenium kamtschaticum Fisch. in DC. Prodr. IV. p. 48.

Hab. In boggy places: Ainuwan (1928).

Rosaceae

Aruncus sylvester Kostel. var. *kamtschatica* Maxim. in Act. Hort. Petrop.

VI. p. 170.

Hab. In meadows: Yamatowan (1928).

Sorbus sambucifolia Roem. Syn. Monogr. III. p. 139.

Hab. In heaths: Ainuwan (1928); Yamatowan (1930).

Rubus Chamaemorus L. Sp. Pl. ed. 1, p. 494.

Hab. In heaths: Ainuwan (1928).

Rubus arcticus L. Sp. Pl. ed. 1, p. 494.

Hab. In swampy places: Miharashidai (1928).

Comarum palustre L. Sp. Pl. ed. 1, p. 502.

Hab. In boggy and swampy places: Nakadomari (1928); Ainuwan (1928).

Geum calthaefolium Menz. ap. Sm. in Rees Cyclop. 16. Geum n. 13.

Hab. In heaths: Yamatowan (1928); Ainuwan (1928).

Filipendula kamtschatica Maxim. form. *typica* Koidz. in Tokyo Bot. Mag.

XXIII. p. 180.

Hab. In meadows: Yamatowan (1928).

Rosa rugosa Thunb. Fl. Jap. p. 213.

Hab. On sandy beaches: Yamatowan (1928).

Fabaceae

**Astragalus alpinus* L. Sp. Pl. ed. 1. p. 760.

Hab. In gravelly places: Hokutozaki (1928).

Astragalus frigidus Bunge, subsp. *parviflorus* Hult. Fl. Kamtchat. III. p. 98.

Hab. In heaths: Between Yamatowan and Ainuwan (1928); Ainuwan (1928).

Oxytropis retusa Matsum. in Tokyo Bot. Mag. XV. p. 116.

Hab. On gravelly slopes and in heaths: Hokutozaki (1928); Ainuwan (1928).

Lathyrus maritimus Bigel. Fl. Bost. ed. 2, p. 268.

Hab. On sandy beaches: Yamatowan (1928).

Geraniaceae

Geranium erianthum DC. Prodr. 1. p. 641.

Hab. In meadows and grassy places: Yamatowan (1928).

Empetraceae

Empetrum nigrum L. Sp. Pl. ed. 1, p. 1022.

Hab. In heaths: Between Yamatowan and Ainuwan (1928); Ainuwan (1928); Banjo (1928).

Violaceae

Viola repens Turcz. in Bull. Soc. Nat. Mose. (1838), p. 88.

Hab. In bogs: Ainuwan (1928).

Viola sachalinensis H. d. Boiss. in Bull. Soc. Bot. Fr. (1910), p. 188.

Hab. In grassy places: Yamatowan (1928; 1930).

Viola kamtschadalorum B. et H. in Sv. Vet. Ak. Ark. f. Bot. 22 A. 3, p. 6.

Hab. In meadows: Yamatowan (1928).

Oenotheraceae

Epilobium glandulosum Lehm. Pug. II. p. 14.

* *Astragalus alpinus* L. Sp. Pl. ed. 1, (1753), p. 760; Ledeb. Fl. Rosa. I. (1842), p. 601; Bunge, Gen. Astragali (1868), n. 117; Britt. & Br. III. Fl. N. Am. II. (1897), p. 304; Hegi, Ill. Fl. Mit.-Europ. IV. 3. p. 1414; Hult. Fl. Kamtchat. III. (1929), p. 96.

NOM. JAP. Hime-momenzuru.

Hab. In dampy places: Ainuwan (1928).

Epilobium Hornemanni Reichb. Icon. Crit. II. p. 73.

Hab. In dampy places: Yamatowan (1928).

Circaea alpina L. Sp. Pl. ed. 1, p. 9.

Hab. In woods: Yamatowan (1928).

Hippuridaceae

Hippuris vulgaris L. Sp. Pl. ed. 1, p. 4.

Hab. In swampy places: Nakadomari (1928); Ainuwan (1928).

Apiaceae

Ligusticum Hultenii Fernald, in Rhodora XXXII. p. 7.

Hab. Near shores: Yamatowan (1928).

Pleurospermum camtschaticum Hoffm. Umbellif. praem. p. 8.

Hab. In meadows: Hokutozaki (1928).

Conioselinum Gmelini Coult. et Rose, in Contr. Nat. Herb. VII. 1, p. 150.

Hab. In grassy places: Banjo (1928).

Heracleum lanatum Michx. Fl. Bor. Am. I. p. 166.

Hab. In grassy places: Banjo (1928).

Cornaceae

Cornus suecica L. Sp. Pl. ed. 1, p. 118.

Hab. In heaths: Between Yamatowan and Ainuwan (1928);
Ainuwan (1928).

Metachlamydeae

Pyrolaceae

Pyrola minor L. Sp. Pl. ed. 1, p. 396.

Hab. In heaths: Between Yamatowan and Ainuwan (1928);
Yamatowan (1928).

Rhodoraceae

Rhododendron chrysanthum Pall. Reise Russ. Reich. III. p. 729.

Hab. In heaths: Hokutozaki (1928); Mt. Fuyo (1928); Yamato-
wan (1930).

Rhododendron camtschaticum Pall. Fl. Ross. I. 1, p. 48.

Hab. In heaths and on rocky cliffs: Nakadomari (1928); Mt. Fuyo
(1930).

Loiseleuria procumbens Desv. in Journ. Bot. III. p. 35.

Hab. In heaths: Ainuwan (1928).

Cassiope lycopodioides Don, in Edinbg. New Phil. Journ. XVII. p. 158.

Hab. In heaths and on rocky cliffs: Between Yamatowan and Ainuwan (1928); Mt. Fuyo (1928).

Arcteria nana Makino, in Tokyo Bot. Mag. XX. p. 85.

Hab. On rocky cliffs: Mt. Fuyo (1928).

Vaccinum Vitis-idaea L. Sp. Pl. ed. 1, p. 351.

Hab. In heaths: Ainuwan (1928); Yamatowan (1928).

Vaccinium uliginosum L. Sp. Pl. ed. 1, p. 350.

Hab. In heaths: Hokutozaki (1928); Ainuwan (1928).

Primulaceae

Primula cuneifolia Ledeb. in Mém. Ac. Imp. Sc. St. Pétersb. V. p. 522.

Hab. In heaths: Nakadomari (1928); Hokutozaki (1928); Yamatowan (1930).

Trientalis europaea L. var. *eurasiatica* R. Knuth, in Engl. Pfl.-reich. IV. 237, p. 313.

Hab. In heaths: Yamatowan (1928); Ainuwan (1928).

Gentianaceae

Gentiana auriculata Pall. Fl. Ross. I. 2, p. 102.

Hab. In grassy places: Yamatowan (1928); Miharashidai (1928).

Swertia tetrapetala Pall. Fl. Ross. I. 2, p. 99.

Hab. In grassy places: Yamatowan (1928).

Halenia corniculata Druce, in Rep. Bot. Exch. Cl. Brit. Isl. III. 5, p. 419.

Hab. In grassy places: Nakadomari (1928).

Heliotropiaceae

Mertensia maritima L. subsp. *asiatica* Takeda, in Journ. Bot. XLIX. p. 222.

Hab. On beaches: Yamatowan (1928).

Rhinanthaceae

Pentstemon frutescens Lamb. in Trans. Linn. Soc. X. p. 259.

Hab. In gravelly places: Nakadomari (1928); Mt. Fuyo (1928).

Veronica Stelleri Pall. ex Spreng. Schrad. u. Link, Jahrb. III. p. 40.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

Euphrasia mollis Wettst. Monogr. Euphr. p. 141.

Hab. In heaths: Yamatowan (1928).

Pedicularis Chamissonis Stev. var. *Maximowiczii* Kudo, Fl. Paramushir, p. 156.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

Rubiaceae

Galium trifidum L. Sp. Pl. ed. 1, p. 105.

Hab. In swampy places: Miharashidai (1928).

Caprifoliaceae

Linnaea borealis L. form. *arctica* Wittrock, in Act. Hort. Berg. IV. n. 7, p. 159.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

Lonicera coerulea L. subsp. *edulis* Hult. Fl. Kamtchat. IV. p. 144.

Hab. In woods: Yamatowan (1928).

Diervilla Middendorffiana Carr. in Rev. Hort. XXV. p. 306.

Hab. In heaths: Yamatowan (1928).

Campanulaceae

Campanula lasiocarpa Cham. in Linnaea IV. p. 39.

Hab. In gravelly places and heaths: Nakadomari (1928); Hokutozaki (1928); Ainuwan (1928); Yamatowan (1928).

Asteraceae

Anaphalis margaritacea Benth. et Hook. f. form. *latifolia* Kudo, Fl. Paramushir, p. 165.

Hab. In meadows and grassy places: Yamatowan (1928); Hokutozaki (1928).

Achillea sibirica Ledeb. in Ind. Sem. Hort. Dorpat. (1811).

Hab. In grassy places: Yamatowan (1928); Banjo (1928).

Achillea Ptarmica L. var. *speciosa* Herd. Pl. Radd. Monop. III. 2, p. 39.

Hab. In grassy places: Yamatowan (1928).

Matricaria matricarioides Porter, in Mem. Torr. Club, V. p. 341.

Hab. Along road-sides: Yamatowan (1928).

Chrysanthemum arcticum L. Sp. Pl. ed. 1, p. 889.

Hab. On sea-cliffs: Banjo (1928).

var. *flabelliforme* Kudo, Fl. Paramushir, p. 168.

Hab. On rocks near the sea: Yamatowan (1928).

Artemisia vulgaris L. var. *kamtschatica* Bess. Tent. Abrot. p. 54.

- Hab. In meadows: Yamatowan (1928).
 var. *coarctata* Bess. l. c. p. 53.
 Hab. In meadows: Hokutozaki (1928).
Petasites japonicus Miq. var. *giganteus* Makino, in Tokyo Bot. Mag.
 XXIII. p. 18.
 Hab. In meadows: Yamatowan (1928; 1930).
Senecio palmatus Pall. Reise Russ. Reich. III. p. 321.
 Hab. In meadows: Yamatowan (1928).
Senecio pseudo-Arnica Less. in Linnaea VI. p. 240.
 Hab. On beaches: Yamatowan (1928).
Cirsium kamschaticum Ledeb. ex DC. Prodr. VI. p. 644.
 Hab. In meadows: Yamatowan (1928).
Saussurea Riederi Herd. Pl. Radd. Monop. III. 3, p. 35.
 Hab. In meadows: Yamatowan (1928).
Taraxacum ceratophorum DC. Prodr. VII. p. 146.
 Hab. Near beaches: Yamatowan (1928).

Monocotyledoneae

Poaceae

- Phleum alpinum* L. Sp. Pl. ed. 1, p. 59.
 Hab. In grassy places: Ainuwan (1928).
Agrostis canina L. Sp. Pl. ed. 1, p. 62.
 Hab. In heaths: Mt. Fuyo (1928).
Calamagrostis Langsdorffii Trin. Gram. Unifl. p. 225.
 Hab. In grassy places: Mt. Fuyo (1928).
Calamagrostis neglecta Gaertn. Fl. Wett. I. p. 94.
 Hab. In bogs: Ainuwan (1928).
 var. *aculeolata* Miyabe et Kudo, Fl. Hok. & Saghal. II. p. 140.
 Hab. In bogs: Ainuwan (1928); Miharashidai (1928).
Calamagrostis purpurascens R. Br. in Richards. Bot. App. Frankl. Journ.
 (1823), p. 731.
 Hab. In gravelly places and heaths: Hokutozaki (1928); between
 Yamatowan and Ainuwan (1928); Banjo (1928).
 var. *parvigluma* Miyabe et Kudo, Fl. Hok. & Saghal. II. p. 145.
 Hab. In heaths: Banjo (1928); Hokutozaki (1928).
Erioblastus flexuosus Honda, ex Nakai, Rep. Veg. Daisetsu Mts. pp. 58,
 73.
 Hab. In bogs: Ainuwan (1928).

- Deschampsia caespitosa* P. Beauv. Agrost. p. 91.
 Hab. In bogs and grassy places: Yamatowan (1928); Ainuwan (1928).
 subsp. *orientalis* Hult. Fl. Kamtchat. I. p. 109.
 Hab. In bogs: Ainuwan (1928).
- Deschampsia beringensis* Hult. Fl. Kamtchat. I. p. 107.
 Hab. In bogs: Ainuwan (1928).
- Deschampsia flexuosa* Trin. in Bull. Sc. Acad. St. Pétersb. I. p. 66.
 Hab. In bogs: Ainuwan (1928).
- Trisetum sibiricum* Rupr. in Beitr. Pfl. Russ. Reich. II. p. 65.
 Hab. In grassy places: Yamatowan (1928).
- Poa annua* L. Sp. Pl. ed. 1, p. 68.
 Hab. Along road-sides: Yamatowan (1928; 1930).
- Poa bracteosa* Kom. in Not. Syst. Herb. H. P. X. p. 146.
 Hab. Near shores: Yamatowan (1928).
- Poa macrocalyx* Trautv. et Mey. Fl. Ochot. p. 103.
 Hab. On sandy beaches: Yamatowan (1928).
- Poa radula* Fr. et Sav. Enum. Pl. Jap. II. pp. 174, 602.
 Hab. In dampy places: Yamatowan (1928).
- Festuca rubra* L. Sp. Pl. ed. 1, p. 74.
 Hab. In grassy places: Yamatowan (1928); Miharashidai (1928).
- Elymus mollis* Trin. in Spr. Neue Entdeck. II. p. 72.
 Hab. On sandy beaches: Yamatowan (1928).

Cyperaceae

- Carex hakkodensis* Franch. in Bull. Soc. Philom. Paris, 3. sér. VII. p. 28.
 Hab. In bogs and heaths: Between Yamatowan and Ainuwan (1928); Ainuwan (1928).
- Carex pyrenaica* Wahlenb. in Vet. Akad. Handl. Stockholm. XXIV. p. 139.
 Hab. In heaths: Between Yamatowan and Ainuwan (1928).
- Carex lagopina* Wahlenb. in Vet. Akad. Handl. Stockholm. XXIV. p. 149.
 Hab. In bogs: Ainuwan (1928).
- Carex Lyngbyei* Hornem. subsp. *cryptocarpa* Hult. Fl. Kamtchat. I. p. 188.
 Hab. In swampy places: Nakadomari (1928); Ainuwan (1928); Miharashidai (1928).
- Carex Gmelinii* Hook. et Arn. Bot. Beech. Vog. III. p. 118.
 Hab. In grassy places: Nakadomari (1928); Miharashidai (1928).

Carex macrochaeta C. A. Mey. in Mém. Acad. St. Pétersb. I. p. 224.

Hab. On gravelly slopes: Mt. Fuyo (1928).

Carex scita Maxim. in Mém. Biol. XII. p. 564.

Hab. In grassy places: Yamatowan (1928); Hokutozaki (1928);
Miharashidai (1928).

Carex rariflora Sm. Engl. Bot. t. 2516.

Hab. In bogs: Ainuwan (1928).

Juncaceae

Luzula parviflora Desv. in Journ. Bot. I. p. 144.

Hab. In dampy places: Nakadomari (1928); Yamatowan (1928).

Luzula Jimboi Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. V. 1,
p. 37.

Hab. In grassy places: Yamatowan (1930).

Luzula Kjellmanniana Miyabe et Kudo, l. c. p. 38.

Hab. In grassy places: Yamatowan (1928).

Luzula Wahlenbergii Rupr. in Beitr. Pfl. Russ. Reich. II. p. 58.

Hab. In grassy places: Miharashidai (1928).

Juncus balticus Willd. var. *Haenkei* Makino, in Tokyo Bot. Mag. XII.
p. 164.

Hab. In bogs and dampy places: Yamatowan (1928); Ainuwan
(1928); Banjo (1928).

Juncus castaneus Smith, Fl. Brit. ed. 1, I. p. 383.

Hab. In bogs: Ainuwan (1928).

Liliaceae

Veratrum album L. var. *oxysepalum* Miyabe et Kudo, in Miyabe &
Miyake, Fl. Saghal. p. 484.

Hab. In meadows: Yamatowan (1928).

Allium Victorilais L. subsp. *platyphyllum* Hult. Fl. Kamtchat. I. p. 239.

Hab. In meadows: Yamatowan (1930).

Lilium medeoloides A. Gray, Pl. Jap. p. 415.

Hab. In meadows: Yamatowan (1928).

form. *kurilense* Kudo, Fl. Paramushir, p. 91.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

Fritillaria camschatcensis Ker-Gawl. in Bot. Mag. XXX. sub. t. 1216.

Hab. In meadows: Yamatowan (1930).

Streptopus amplexifolius DC. in Lam. et DC. Fl. Fr. III. p. 174.

Hab. In woods: Nakadomari (1928).

Trillium kamschaticum Pall. var. *kurilense* Tatewaki, in Miyabe and Kudo, Fl. Hok. & Saghal. III. p. 343.

Hab. In woods: Yamatowan (1928).

Iridaceae

Iris setosa Pall. ex Link, Jahrb. I. 3, p. 71.

Hab. In swampy places: Nakadomari (1928).

Orchidaceae

Orchis aristata Fisch. ex Lindl. Gen. & Sp. Orchid. Pl. p. 262.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

form. *punctata* Tatewaki, Pl. Alaid, p. 160.

Hab. In heaths: Between Yamatowan and Ainuwan (1928).

Listera cordata R. Br. in Ait. Hort. Kew. ed. 2, V. p. 201.

Hab. In woods: Yamatowan (1928).

G. STATISTICS OF THE FLORA OF THE MIDDLE KURILES

The estimate of the number of species of the indigenous higher plants of the Middle Kuriles amounts to 408 as shown in the foregoing chapters and they belong to the different families as follows:—

Table I. Showing the number of genera, species, varieties and forms belonging to different families, subclasses, classes, subphyla and phyla.

TABLE I.

	Families	Genera	Species	Varieties	Forms
Ophioglossaceae	—	1	3	—	—
Polypodiaceae	—	6	10	1	—
Equisetaceae	—	1	6	1	—
Lycopodiaceae	—	1	8	—	—
Selaginellaceae	—	1	2	—	—
Pteridophyta	5	10	29	2	—
Taxaceae	—	1	1	—	—
Pinaceae	—	1	1	—	—
Cupressaceae	—	1	1	—	—

TABLE I. (Continued)

	Families	Genera	Species	Varieties	Forms
Gymnospermae	3	3	3		
Salicaceae	—	1	5	—	—
Betulaceae	—	2	2	—	—
Urticaceae	—	1	1	—	—
Polygonaceae	—	3	5	—	—
Chenopodiaceae	—	1	2	—	—
Portulacaceae	—	1	1	—	—
Caryophyllaceae	—	6	12	1	—
Ranunculaceae	—	10	14	2	1
Papaveraceae	—	2	2	—	—
Brassicaceae	—	6	11	—	—
Droseraceae	—	1	1	—	—
Crassulaceae	—	1	1	—	—
Saxifragaceae	—	3	8	—	—
Rosaceae	—	11	19	3	1
Fabaceae	—	7	12	1	—
Geraniaceae	—	1	2	—	—
Oxalidaceae	—	1	1	—	—
Rutaceae	—	1	1	—	—
Empetraceae	—	1	1	—	—
Aquifoliaceae	—	1	1	—	—
Aceraceae	—	1	1	—	—
Balsaminaceae	—	1	1	—	—
Hypericaceae	—	1	2	—	—
Violaceae	—	1	7	1	—
Oenotheraceae	—	2	12	—	—
Halorrhagaceae	—	1	1	—	—
Hippuridaceae	—	1	1	—	—
Araliaceae	—	1	1	—	—
Apiaceae	—	9	10	—	—
Cornaceae	—	1	2	—	—
Archichlamydeae	30	80	140	8	2
Diapensiaceae	—	1	1	—	—
Pyrolaceae	—	1	1	—	—

TABLE I. (Continued)

	Families	Genera	Species	Varieties	Forms
Rhodoraceae	—	13	18	1	—
Primulaceae	—	4	6	1	—
Gentianaceae	—	5	7	—	3
Convolvulaceae	—	1	1	—	—
Heliotropiaceae	—	1	2	—	—
Lamiaceae	—	2	2	—	—
Rhinanthaceae	—	6	12	—	2
Orobanchaceae	—	1	1	—	—
Lentibulariaceae	—	1	1	—	—
Plantaginaceae	—	1	1	—	—
Rubiaceae	—	2	6	1	—
Caprifoliaceae	—	3	4	1	—
Valerianaceae	—	1	1	—	—
Campanulaceae	—	4	5	—	—
Asteraceae	—	17	25	6	1
Metachlamydeae	17	64	94	10	6
Dicotyledoneae	47	144	234	18	8
Sparganiaceae	—	1	2	—	—
Potamogetonaceae	—	2	6	—	—
Scheuchzeriaceae	—	1	1	—	—
Poaceae	—	16	39	7	1
Cyperaceae	—	4	44	3	—
Araceae	—	1	1	—	—
Juncaceae	—	2	17	1	1
Liliaceae	—	13	17	2	1
Iridaceae	—	1	1	—	—
Orchidaceae	—	9	14	1	3
Monocotyledoneae	10	50	142	14	6
Angiospermae	57	199	376	32	14
Phanerogamae	60	202	379	32	14
Total	65	212	408	35	14

Table II. Showing the number of the species represented in different genera.

with one species:

Woodsia; Cystopteris; Athyrium; Polypodium; Taxus; Pinus; Juniperus; Betula; Alnus; Urtica; Oxyria; Montia; Ammodenia; Moehringia; Dianthus; Coptis; Cimicifuga; Aquilegia; Aconitum; Pulsatilla; Trautvetteria; Thalictrum; Papaver; Corydalis; Cochlearia; Barbarea; Parrya; Drosera; Sedum; Parnassia; Spiraea; Aruncus; Comarum; Filipendula; Rosa; Prunus; Thermopsis; Trifolium; Hedysarum; Vicia; Oxalis; Skimmia; Empetrum; Ilex; Acer; Impatiens; Circaea; Myriophyllum; Hippuris; Aralia; Anthriscus; Pleurospermum; Cnidium; Ligusticum; Coelopleurum; Angelica; Phellopterus; Heracleum; Diapensia; Pyrola; Ledum; Loiseleuria; Phyllodoce; Bryanthus; Cassiope; Harrimanella; Andromeda; Arcteria; Gaultheria; Arctous; Androsace; Naumburgia; Trientalis; Crawfurdia; Halenia; Menyanthes; Calystegia; Scutellaria; Mentha; Linaria; Pentstemon; Lagotis; Euphrasia; Boschniakia; Pinguicula; Plantago; Rubia; Linnaea; Diervilla; Patrinia; Adenophora; Peracarpa; Lobelia; Solidago; Aster; Anaphalis; Chrysanthemum; Petasites; Arnica; Ligularia; Cirsium; Hieracium; Lactuca; Taraxacum; Phyllospadix; Trigloch; Miscanthus; Phalaris; Hierochloe; Milium; Phleum; Erioblastus; Phragmites; Glyceria; Sasa; Lysichiton; Veratrum; Hemerocallis; Gagea; Fritillaria; Lloydia; Majanthemum; Disporum; Streptopus; Polygonatum; Iris; Orchis; Coeloglossum; Microstylis; Ehippianthus; Oreorchis.

with two species:

Selaginella; Rumex; Polygonum; Atriplex; Cerastium; Sagina; Trollius; Anemone; Cardamine; Chrysosplenium; Sorbus; Rubus; Geum; Sanguisorba; Lathyrus; Geranium; Hypericum; Conioselinum; Cornus; Rhododendron; Oxycoccus; Gentiana; Swertia; Mertensia; Lonicera; Campanula; Achillea; Cacalia; Senecio; Saussurea; Picris; Sparganium; Trisetum; Elymus; Scirpus; Eleocharis; Tofieldia; Allium; Lilium; Trillium; Cypripedium; Gymnadenia; Listera.

with three species:

Botrychium; Dryopteris; Polystichum; Ranunculus; Draba; Arabis; Astragalus; Oxytropis; Primula; Veronica; Deschampsia; Festuca; Platanthera.

with four species:

Vaccinium; Artemisia; Eriophorum.

with five species:

Salix; Stellaria; Saxifraga; Potentilla; Pedicularis; Galium; Potamogeton; Calamagrostis.

with six species: *Equisetum; Agrostis.*

with seven species: *Viola; Juncus.*

with eight species: *Lycopodium.*

with nine species: *Poa.*

with ten species: *Luzula.*

with eleven species: *Epilobium.*

with thirty six species: *Carex.*

II. Geographical Distribution.

(Excluding Cosmopolitan Adventives).

The flora of the Middle Kuriles is, on the whole, a rather recent formation which has been in process of growth since the Neozoic Period. It shows at present the transitional features of migration indicated partly by the influence of the Kamtchatka region through the Northern Kuriles, and partly by that of the southern elements through the Southern Kuriles. Therefore, the floristic elements of the Middle Kuriles are composed of a complex combination as seen in the geographical position. It is worth noting to compare their relationship from the phytogeographical point of view.

A. THE PHYTOGEOGRAPHICAL DISTRIBUTION IN THE ISLANDS OF THE MIDDLE KURILES

The following table shows the number of the species belonging to Spermatophyta and Pteridophyta with their relative share in each island in the Middle Kuriles.

TABLE III.

	Urup	Shimushir	Ketoi	Ushishir	Rashuwa	Matuwa
	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.
Ophioglossaceae	1 2	1 2	— —	— —	1 1	— —
Polypodiaceae	6 9	3 3	4 7	1 1	2 2	3 3
Equisetaceae	1 4	1 4	1 4	— —	1 4	1 3
Lycopodiaceae	1 5	1 7	1 6	1 1	1 6	1 2
Sellaginellaceae	1 2	1 1	1 1	— —	1 1	— —
Pteridophyta	10 22	7 17	7 18	2 2	6 14	5 8
Taxaceae	1 1	1 1	1 1	— —	1 1	— —
Pinaceae	1 1	1 1	1 1	— —	1 1	— —
Cupressaceae	1 1	— —	1 1	— —	— —	— —
Gymnospermae	3 3	2 2	3 3	— —	2 2	— —
Salicaceae	1 4	1 5	1 3	1 2	1 3	1 2
Betulaceae	2 2	2 2	2 2	1 1	2 2	1 1
Urticaceae	1 1	1 1	1 1	1 1	1 1	1 1
Polygonaceae	3 6	3 4	3 4	3 3	3 4	2 2
Chenopodiaceae	1 1	1 1	— —	— —	— —	— —
Portulacaceae	1 1	1 1	1 1	1 1	1 1	1 1
Caryophyllaceae	6 8	5 8	5 9	4 7	5 8	5 7
Ranunculaceae	10 13	7 8	6 6	4 4	6 7	2 2
Papaveraceae	2 2	2 2	1 1	— —	1 1	1 1
Brassicaceae	6 9	5 7	5 7	4 4	5 8	5 6
Droseraceae	1 1	1 1	1 1	— —	1 1	— —
Crassulaceae	1 1	1 1	1 1	1 1	1 1	1 1
Saxifragaceae	3 8	3 6	3 5	2 3	3 4	2 4
Rosaceae	11 17	7 12	8 12	5 5	9 12	7 8
Fabaceae	7 9	4 5	3 3	— —	3 4	3 4
Geraniaceae	1 2	1 2	1 1	1 1	1 1	1 1
Oxalidaceae	1 1	1 1	— —	— —	1 1	— —
Rutaceae	1 1	— —	— —	— —	— —	— —
Empetraceae	1 1	1 1	1 1	1 1	1 1	1 1
Aquifoliaceae	1 1	1 1	1 1	— —	1 1	— —
Aceraceae	1 1	— —	— —	— —	— —	— —
Balsaminaceae	1 1	— —	— —	— —	— —	— —
Hypericaceae	1 1	1 1	1 2	1 1	1 1	— —
Violaceae	1 5	1 5	1 5	— —	1 4	1 3
Oenotheraceae	2 7	2 7	1 5	1 2	1 3	2 3
Halorrhagaceae	1 1	— —	— —	— —	— —	— —
Hippuridaceae	1 1	1 1	1 1	— —	1 1	1 1
Araliaceae	1 1	— —	— —	— —	— —	— —
Apiaceae	9 10	6 6	6 6	5 5	6 6	4 4
Cornaceae	1 2	1 1	1 2	1 1	1 1	1 1

TABLE III. (Continued)

	Urup	Shimushir	Ketoi	Ushishir	Rashuwa	Matuwa
	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.	Gen. Sp.
Archichlamydeae	80 119	60 90	55 80	37 43	57 77	43 54
Diapensiaceae	1 1	1 1	1 1	1 1	1 1	— —
Pyrolaceae	— —	1 1	— —	— —	1 1	1 1
Rhodoraceae	11 16	11 15	12 16	5 7	11 13	5 7
Primulaceae	4 5	2 3	2 2	2 2	2 4	2 2
Gentianaceae	5 7	4 5	4 5	1 1	4 5	3 3
Convolvulaceae	1 1	— —	— —	— —	— —	— —
Heliotropiaceae	1 2	1 1	1 1	— —	1 1	1 1
Lamiaceae	2 2	— —	— —	— —	— —	— —
Rhinanthaceae	5 10	5 8	5 8	3 4	4 7	4 4
Orobanchaceae	1 1	1 1	1 1	— —	1 1	— —
Lentibulariaceae	1 1	1 1	1 1	— —	1 1	— —
Plantaginaceae	1 1	1 1	— —	1 1	1 1	— —
Rubiaceae	2 4	2 4	1 1	1 1	1 2	1 1
Caprifoliaceae	3 4	3 4	2 2	2 2	3 3	3 3
Valerianaceae	1 1	— —	— —	— —	— —	— —
Campanulaceae	4 4	3 4	2 3	1 1	3 4	1 1
Asteraceae	18 25	14 19	13 15	11 12	13 15	9 11
Metachlamydeae	61 85	50 68	45 56	28 32	47 59	30 34
Dicotyledoneae	141 204	110 158	100 136	65 75	104 136	73 88
Sparganiaceae	1 1	— —	1 1	— —	1 1	— —
Potamogetonaceae	1 4	2 2	1 1	— —	1 1	— —
Scheuchzeriaceae	1 1	1 1	1 1	— —	— —	— —
Poaceae	12 26	11 27	12 24	7 13	9 19	9 15
Cyperaceae	4 23	3 12	4 25	1 7	4 25	1 8
Araceae	1 1	1 1	— —	— —	— —	— —
Juncaceae	2 11	2 10	2 9	2 4	2 8	2 6
Liliaceae	13 16	10 11	9 9	4 4	10 11	6 6
Iridaceae	1 1	1 1	1 1	— —	1 1	1 1
Orchidaceae	10 13	6 10	6 10	3 4	7 9	1 2
Monocotyledoneae	46 97	37 85	37 81	17 32	35 75	20 38
Angiospermae	187 301	147 243	137 217	82 107	139 211	93 126
Phanerogamae	190 304	149 245	140 220	82 107	141 213	93 126
Total	200 326	156 262	147 238	84 109	147 227	98 134

The number of species is principally influenced by the geological formation, especially by the age of the volcanic eruptions. The Islands of Matuwa and Ushishir, judging from the number in species and the absence of *Pinus pumila*, may be much younger from the point of view of the age of their vegetation than any of the other islands of the Middle Kuriles. Of these two islands, the Island of Ushishir has the poorest number in its flora, partly owing to its small area. On the other hand, the Island of Urup has the richest flora in the Middle Kuriles, from its southernmost position as well as its largest area and varied topography.

It is very interesting to notice that the following species should find their northern or southern limits in the Middle Kuriles.

Northern or north-eastern limits:

- | | |
|---|---|
| <i>Woodsia polystichoides</i> Eat. | <i>Epilobium Fauriei</i> Lévl.: Shimushir |
| var. <i>nudiuscula</i> Hook.: Urup. | <i>Aralia cordata</i> Thunb.: Urup. |
| <i>Polystichum aculeatum</i> Schott, | <i>Primula Fauriei</i> Franch.: Rasuwa. |
| var. <i>retroso-paleaceum</i> Kodama: | <i>Crawfordia japonica</i> Sieb. et Zucc.: |
| Urup. | Urup. |
| <i>Selaginella helvetica</i> Link: Urup. | <i>Scutellaria yezoensis</i> Kudo: Urup. |
| <i>Taxus cuspidata</i> Sieb. et Zucc. | <i>Mentha sachalinensis</i> Kudo: Urup. |
| Rashuwa. | <i>Linaria japonica</i> Miq.: Urup. |
| <i>Salix Reinii</i> Franch. et Sav.: Ketoi. | <i>Rubia jesoensis</i> Miyabe et Miyake: |
| <i>Polygonum Weyrichii</i> Fr. Schm.: | Shimushir. |
| Rashuwa. | <i>Diervilla Middendorffiana</i> Carr.: |
| <i>Cerastium rigidulum</i> Takeda: | Matuwa. |
| Shimushir. | <i>Patrinia sibirica</i> Juss.: Urup. |
| <i>Dianthus superbus</i> L. | <i>Adenophora kurilensis</i> Nakai: |
| var. <i>speciosa</i> Reichb.: Urup. | Rashuwa. |
| <i>Aquilegia akitensis</i> Huth: Urup. | <i>Aster Glehni</i> Fr. Schm.: Urup. |
| <i>Trautvetteria japonica</i> Sieb. et | <i>Artemisia sericea</i> Aeber: Urup. |
| Zucc.: Urup. | <i>Petasites japonicus</i> Miq. |
| <i>Chrysosplenium flagelliferum</i> Fr. | var. <i>giganteus</i> Makino: Matuwa. |
| Schm.: Urup. | <i>Ligularia sibirica</i> Cass. |
| <i>Potentilla Miyabei</i> Makino: Ketoi. | var. <i>vulgaris</i> DC.: Urup. |
| <i>Potentilla Matsumurae</i> Wolf: | <i>Miscanthus sinensis</i> Anders. |
| Rashuwa. | var. <i>purpurascens</i> Rendle: Urup. |
| <i>Prunus kurilensis</i> Miyabe: Urup. | <i>Sasa kurilensis</i> Makino et Shibata: |
| <i>Trifolium Lupinaster</i> L.: Urup. | Ketoi. |
| <i>Astragalus kurilensis</i> Matsum.: | <i>Carex oxyandra</i> Kudo: Ketoi. |
| Urup. | <i>Carex sachalinensis</i> Fr. Schm.: Urup. |
| <i>Vicia unijuga</i> Al. Br.: Urup. | <i>Luzula Jimboi</i> Miyabe et Kudo: |
| <i>Geranium yesoense</i> Fr. et Sav.: | Matuwa. |
| Shimushir. | <i>Juncus Fauriensis</i> Buch.: Urup. |
| <i>Ilex rugosa</i> Fr. Schm.: Rashuwa. | <i>Hemerocallis Middendorffii</i> Trautv. |
| <i>Acer ukurunduense</i> Trautv. et Mey.: | et Mey.: Urup. |
| Urup. | <i>Disporum smilacinum</i> A. Gray: Urup. |

<i>Polygonatum humile</i> Fisch.: Urup.	<i>Listera nipponica</i> Makino: Rashuwa.
<i>Trillium Smatii</i> Maxim.: Urup.	<i>Ephippianthus sachalinensis</i> Reichb. f.: Rashuwa.
<i>Gymnadenia conopsea</i> R. Br.: Urup.	

The plants mentioned above show affinity to the flora of the warmer climate and indicate a mode of distribution through the Southern Kuriles. Among them, the Japanese element is dominant whilst the East Asiatic element maintains subordinate rank. On account of the geographical position and the geological formation of the Island of Urup, one would expect to find in this island more representatives of the southern elements than in any other islands of the Middle Kuriles.

Southern limits:

<i>Salix kurilensis</i> Koidz.: Urup.	<i>Epilobium Behringianum</i> Hausskn.: Urup.
<i>Salix paramushirensis</i> Kudo: Urup.	
<i>Stellaria lancifolia</i> Komar.: Shimushir.	<i>Agrostis exarata</i> Trin.: Urup.
<i>Cardamine umbellata</i> Greene: Shimushir.	<i>Calamagrostis Yendoana</i> Honda: Shimushir.
<i>Draba hyperborea</i> Desv.: Ketoi.	<i>Deschampsia beringensis</i> Hult.: Urup.
<i>Oxytropis nigrescens</i> Fisch.: Shimushir.	<i>Poa arctica</i> R. Br.: Ketoi.
<i>Hypericum paramushirensis</i> Kudo: Shimushir.	<i>Festuca eriantha</i> Honda: Urup.
	<i>Luzula Kjellmanniana</i> Miyabe et Kudo: Urup.
	<i>Luzula arcuata</i> Walhenb. var. <i>unalaschkensis</i> Buch.: Matuwa.

The plants mentioned above have thus far been found only in the islands lying northward of Urup in the Kuriles. Among them, the Northern Pacific elements is dominant, whilst the Western Americo-Eastern Asiatic element maintains subordinate rank. It is also worth while to notice that *Draba hyperborea* are not known elsewhere in Japan except in the Middle Kuriles and the adjacent islands.

The following species are also noteworthy in their distribution.

<i>Botrychium lanceolatum</i> Angustr.: Shimushir.	<i>Rubus arcticus</i> L.: Matuwa.
<i>Polystichum microchlamys</i> Kodama: Ketoi.	<i>Astragalus alpinus</i> L.: Matuwa.
<i>Polypodium vulgare</i> L.: Urup.	<i>Skinmia repens</i> Nakai: Urup.
<i>Equisetum littorale</i> Kuehlew.: Shimushir and Ketoi.	<i>Epilobium latifolium</i> L.: Urup.
<i>Lycopodium alpinum</i> L.: Shimushir.	<i>Gaultheria Miqueliana</i> Takeda: Ketoi.
<i>Stellaria calycantha</i> Bong.: Shimushir.	<i>Primula sibirica</i> Jacq.: Rashuwa.
<i>Papaver nudicaule</i> L. var. <i>Fauriei</i> Fedde: Urup.	<i>Swertia perennis</i> L. var. <i>obtusa</i> Griseb.: Urup.
<i>Parrya nudicaulis</i> R. Br.: Urup.	<i>Calystegia Soldanella</i> R. Br.: Urup.
	<i>Eriophorum alpinum</i> L.: Urup.
	<i>Eriophorum angustifolium</i> Roth: Ketoi.
	<i>Carex gynocrates</i> Wormskj.: Urup.
	<i>Carex rigida</i> Good.: Ketoi.

<i>Carex rariflora</i> Smith:	Shimushir.	<i>Luzula parviflora</i> Desv.:	Urup.
<i>Carex rotundata</i> Wahlenb.:		<i>Juncus prismatocarpus</i> R. Br.	
	Shimushir.	var. <i>Leschenaultii</i> Buch.:	Urup.
<i>Carex saxatilis</i> L.:	Shimushir.		

The records of certain species, such as *Draba hyperborea*, *Primula sibirica*, *Astragalus alpinus*, etc. from the isolated localities in the Kuriles indicate the possibility of these plants having a wider distribution than they are known at present.

B. FLORISTIC RELATIONSHIPS BETWEEN THE MIDDLE KURILES AND OTHER REGIONS

The following table indicates the relationships of the flora of the Middle Kuriles to those of other regions. It shows the approximate figures and percentages to give a reasonable basis for discussion on the distribution.

TABLE IV.

Name of Species	Region													
	Kamchatka	Northern Kuriles	Southern Kuriles	Yezo	Saghalien	Honshu	Shikoku and Kyushu	Korea	Liukiu and Formosa	Manchuria, Amur and Ussuri Region	China and Mongolia	Okhotsk to Siberia	North America	Europe
<i>Botrychium lunaria</i> Sw.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Botrychium lanceolatum</i> Ängstr.	+	+			+	+					+	+	+	+
<i>Botrychium robustum</i> Underw.	+	+	+	+	+	+							+	
<i>Woodsia polystichoides</i> Eat.			+	+	+	+	+	+		+	+	+		
<i>Cystopteris fragilis</i> Bernh.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Dryopteris oreopteris</i> Maxon	+	+	+	+		+	+	+					+	+
<i>Dryopteris dilatata</i> A. Gray	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Dryopteris Phegopteris</i> C. Chr.	+	+	+	+	+	+	+	+		+		+	+	+
<i>Polystichum aculeatum</i> Schott				+	+	+	+	+	+	+	+		+	+
<i>Polystichum Braunii</i> Fée		+	+	+	+	+		+		+	+		+	+
<i>Polystichum microchlamys</i> Kodama	+			+		+								
<i>Athyrium filix-femina</i> Roth	+	+	+	+	+	+				+	+	+	+	+
<i>Polypodium vulgare</i> L.	+		+	+	+	+		+		+	+	+	+	+
<i>Equisetum arvense</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Equisetum pratense</i> Ehrh.	+	+		+	+			+		+		+	+	+
<i>Equisetum palustre</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Equisetum littorale</i> Kuehlew.					+							+	+	+
<i>Equisetum hyemale</i> L.	+	+	+	+	+	+		+		+		+	+	+
<i>Equisetum variegatum</i> Schreieb	+	+		+	+							+	+	+
<i>Lycopodium Selago</i> L.	+	+	+	+		+		+			+	+	+	+
<i>Lycopodium chinense</i> H. Christ.			+	+	+	+	+	+		+	+			
<i>Lycopodium obscurum</i> L.	+	+	+	+	+	+	+	+	+	+		+	+	
<i>Lycopodium annotinum</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Lycopodium clavatum</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Lycopodium sitchense</i> Rupr.	+	+	+	+		+				+			+	
<i>Lycopodium complanatum</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Lycopodium alpinum</i> L.	+	+				+		+		+		+	+	+

Name of Species	Region													
	Kamchatka	Northern Kuriles	Southern Kuriles	Yezo	Saghalien	Honshu	Shikoku and Kyushu	Korea	Liukiu and Formosa	Manchuria, Amur and Ussuri Region	China and Mongolia	Okhotsk to Siberia	North America	Europe
<i>Sagina Linnaei</i> Presl	+	+	+	+	+			+		+	+	+	+	+
<i>Sagina crassicaulis</i> Watson	+	+	+	+	+	+	+	+		+			+	
<i>Ammodenia oblongifolia</i> Rydb.	+	+	+	+	+	+		+		+		+	+	
<i>Moehringia lateriflora</i> Fenzl	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Dianthus superbus</i> L.			+	+	+	+	+	+	+	+	+			+
<i>Trollius Riederianus</i> Fisch. et Mey.	+	+	+	+	+	+						+		
<i>Trollius membranostylis</i> Hult.	+	+										+		
<i>Coptis trifolia</i> Salisb.	+	+	+	+	+	+				+		+	+	
<i>Cimicifuga simplex</i> Wormskj.	+		+	+	+	+	+	+		+				
<i>Aquilegia akitensis</i> Huth			+	+	+	+								
<i>Aconitum kamtschaticum</i> W. et R.	+	+	+	+									+	
<i>Anemone debilis</i> Fisch.	+		+	+	+	+	+			+		+		
<i>Anemone narcissiflora</i> L.	+	+	+	+	+	+		+		+		+	+	+
<i>Pulsatilla angustifolia</i> Turcz.	+	+	+	+		+				+		+		
<i>Troutvetteria japonica</i> Sieb. et Zucc.			+	+	+	+				+		+		
<i>Ranunculus trichophyllos</i> Chaix			+	+	+	+		+		+	+		+	+
<i>Ranunculus acris</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Ranunculus repens</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Thalictrum Thunbergii</i> A. P. DC.		+	+	+	+	+	+	+		+				
<i>Papaver nudicaule</i> L.	+	+		+				+		+	+	+	+	+
<i>Corydalis ambigua</i> Cham. et Schl.	+	+	+	+	+	+		+						
<i>Cochlearia oblongifolia</i> DC.	+	+	+	+	+					+			+	
<i>Barbarea orthoceras</i> Ledeb.	+	+	+	+	+	+		+		+		+	+	
<i>Cardamine umbellata</i> Greene	+	+											+	
<i>Cardamine Regeliana</i> Miq.	+	+	+	+	+	+	+	+				+	+	
<i>Draba hyperborea</i> Desv.												+	+	

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	Kamtschatka	Northern Kuriles	Southern Kuriles	Yezo	Saghalien	Honshu	Shikoku and Kyushu	Korea	Liukiu and Formosa	Manchuria, Amur and Ussuri Region	China and Mongolia	Okhotsk to Siberia	North America	Europe
<i>Potentilla Matsumurae</i> Wolf			+	+	+	+		+						
<i>Geum calthaefolium</i> Sm.	+	+	+	+		+	+				+		+	
<i>Geum pentapetalum</i> Makino	+	+	+	+	+	+							+	
<i>Filipendula kamtschatica</i> Maxim.	+	+	+	+	+	+				+			+	
<i>Sanguisorba sitchensis</i> Trautv. et Mey.			+	+	+			+				+	+	
<i>Sanguisorba tenuifolia</i> Fisch.	+	+	+	+	+	+	+	+	+	+	+	+		
<i>Rosa rugosa</i> Thunb.	+	+	+	+	+	+		+		+	+	+		
<i>Prunus kurilensis</i> Miyabe			+	+	+	+								
<i>Thermopsis fabacea</i> DC.	+	+	+	+	+	+	+	+	+			+		
<i>Trifolium Lupinaster</i> L.			+	+	+	+		+		+	+	+		+
<i>Astragalus frigidus</i> Bunge	+	+		+		+					+	+	+	+
<i>Astragalus alpinus</i> L.	+										+	+	+	+
<i>Astragalus kurilensis</i> Matsum.			+											
<i>Oxytropis nigrescens</i> Fisch.	+	+										+		
<i>Oxytropis retusa</i> Matsum.		+	+											
<i>Oxytropis Itoana</i> Tatewaki														
<i>Hedysarum obscurum</i> L.	+	+	+	+	+			+		+	+	+		+
<i>Vicia unijuga</i> Al. Br.			+	+	+	+	+	+		+	+	+		
<i>Lathyrus maritimus</i> Bigel.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Lathyrus palustris</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Geranium erianthum</i> DC.	+	+	+	+	+	+				+	+	+	+	
<i>Geranium yosoense</i> Fr. et Sav.			+	+										
<i>Oxalis Acetosella</i> L.	+		+	+	+	+		+		+	+	+	+	+
<i>Skimmia repens</i> Nakai		+	+	+	+	+	+							
<i>Empetrum nigrum</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Ilex rugosa</i> Fr. Schm.			+	+	+	+								
<i>Acer ukurunduense</i> Trautv. et Mey.			+	+	+	+		+		+	+	+		

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<i>Impatiens Noli-tangere</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Hypericum kamschaticum</i> Ledeb.	+	+	+	+		+								
<i>Hypericum paramushirense</i> Kudo		+												
<i>Viola Selkirkii</i> Pursh	+	+	+	+	+	+		+		+	+	+	+	+
<i>Viola blanda</i> Willd.	+	+	+									+	+	
<i>Viola repens</i> Turcz.	+	+	+	+	+					+		+	+	
<i>Viola sachalinensis</i> H. Boiss	+	+	+	+	+					+		+		
<i>Viola kamschadalarum</i> B. et H.	+	+	+	+	+	+								
<i>Viola crassa</i> Makino	+	+	+	+		+		+						
<i>Viola biflora</i> L.	+	+	+	+	+	+		+	+	+	+	+	+	+
<i>Epilobium angustifolium</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Epilobium latifolium</i> L.	+	+								+	+	+	+	+
<i>Epilobium Fauriei</i> Levl.			+	+		+								
<i>Epilobium Hornemanni</i> Reichb.	+	+	+	+		+						+	+	+
<i>Epilobium Bongardii</i> Hausskn.	+	+											+	
<i>Epilobium ovale</i> Takeda		+	+											
<i>Epilobium Behringianum</i> Hausskn.	+	+			+								+	
<i>Epilobium lactiflorum</i> Hausskn.	+	+											+	+
<i>Epilobium glandulosum</i> Lehm.	+	+	+	+	+	+				+			+	
<i>Epilobium kurilense</i> Nakai		+												
<i>Epilobium palustre</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Circaea alpina</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Myriophyllum spicatum</i> L.	+		+	+	+	+	+	+	+	+	+	+	+	+
<i>Hippuris vulgaris</i> L.	+	+	+	+	+	+				+	+	+	+	+
<i>Aralia cordata</i> Thunb.			+	+	+	+	+	+		+				
<i>Anthriscus sylvestris</i> Hoffm.	+	+	+	+	+	+	+	+		+	+	+		+
<i>Pleulospermum kamschaticum</i> Hoffm.	+	+	+	+	+	+		+		+	+	+		

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<i>Cnidium ajanense</i> Drude	+	+	+	+	+	+			+			+		
<i>Ligusticum Hultenii</i> Fernald	+	+	+	+	+	+		+		+		+	+	
<i>Coelopleurum Gmelini</i> Ledeb.	+	+	+	+	+					+		+	+	
<i>Conioselinum Gmelini</i> Coul. et Rose	+	+	+	+	+					+			+	
<i>Conioselinum univittatum</i> Turez.			+	+		+						+		
<i>Angelica refracta</i> Fr. Schm.	+	+	+	+	+	+		+						
<i>Phellopterus littoralis</i> Benth.		+	+	+	+	+	+	+	+	+				
<i>Heraclium lanatum</i> Michx.	+	+	+	+	+	+	+	+		+	+	+	+	
<i>Cornus suecica</i> L.	+	+	+	+	+					+		+	+	+
<i>Cornus canadensis</i> L.	+	+	+	+	+	+		+		+		+	+	
<i>Diapensia lapponica</i> L.	+	+	+	+	+	+		+				+	+	+
<i>Pylora minor</i> L.	+	+	+	+	+			+				+	+	+
<i>Ledum palustre</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Rhododendron chrysanthum</i> Pall.	+	+	+	+	+	+		+		+		+		
<i>Rhododendron camtschaticum</i> Pall.	+	+	+	+	+	+						+	+	
<i>Loiseleuria procumbens</i> Desv.	+	+	+	+	+	+				+		+	+	+
<i>Phyllodoce aleutica</i> A. Heller	+	+	+	+	+	+							+	
<i>Bryanthus musciformis</i> Nakai	+	+	+	+		+								
<i>Cassiope lycopodioides</i> Don.	+	+	+	+	+	+							+	
<i>Harrimanella Stelleriana</i> Cov.	+	+	+	+		+							+	
<i>Andromeda Polifolia</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Arcteria nana</i> Makino	+	+	+	+		+								
<i>Gaurtheria Miqueliana</i> Takeda			+	+		+								
<i>Arctous alpina</i> Niedz.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Oxycoccus vulgaris</i> Hill	+	+	+	+	+	+		+		+		+	+	+
<i>Oxycoccus microcarpus</i> Turez.	+		+	+	+	+		+		+		+	+	+
<i>Vaccinium Vitis-idaea</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+

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<i>Pedicularis Chamissonis</i> Stev.	+	+	+	+	+	+							+	
<i>Pedicularis resupinata</i> L.	+	+	+	+	+	+	+	+		+	+	+		+
<i>Pedicularis euphasioides</i> Steph.	+	+	+		+							+	+	
<i>Pedicularis venusta</i> Schang.		+	+	+	+					+	+	+		
<i>Pedicularis Oederi</i> Vahl	+	+		+	+						+	+	+	+
<i>Boschniakia rossica</i> Hult.	+	+		+	+	+		+		+		+	+	
<i>Pinguicula vulgaris</i> L.	+	+	+	+		+		+				+	+	+
<i>Plantago camtschatica</i> Cham.	+	+	+	+	+	+		+		+				
<i>Galium triflorum</i> Michx.	+		+	+	+	+						+	+	+
<i>Galium trifloriforme</i> Kom.			+	+	+	+	+	+		+				
<i>Galium trifidum</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Galium verum</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Galium kamtschaticum</i> Stell.	+	+	+	+	+	+	+	+					+	
<i>Rubia jesoensis</i> Miyabe et Miyake			+	+	+	+		+		+				
<i>Linnaea borealis</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Lonicera coerulea</i> L.	+	+	+	+	+	+		+		+	+	+		+
<i>Lonicera Chamissoi</i> Bunge	+	+	+	+	+	+				+		+		
<i>Diervilla Middendorffiana</i> Carr.			+	+	+	+				+		+		
<i>Patrinia sibirica</i> Juss.			+	+	+							+		
<i>Campanula dasyantha</i> Bieb.	+	+	+	+	+	+							+	
<i>Campanula lasiocarpa</i> Cham.	+	+	+	+		+						+	+	
<i>Adenophora kurilensis</i> Nakai			+											
<i>Peracarpa circaeoides</i> H. Feer	+		+	+	+	+	+	+	+	+				
<i>Lobelia sessilifolia</i> Lamb.	+		+	+	+	+	+	+	+	+	+	+		
<i>Solidago Virgaurea</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Aster Glehni</i> Fr. Schm.			+	+	+	+	+	+						
<i>Anaphalis margaritacea</i> Benth. et Hook. f.	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>Achillea sibirica</i> Ledeb.	+	+	+	+	+	+	+	+		+	+	+	+	

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<i>Achillea Ptarmica</i> L.	+	+	+	+	+	+		+		+		+		+
<i>Chrysanthemum arcticum</i> L.	+	+	+	+	+					+		+	+	+
<i>Artemisia vulgaris</i> L.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Artemisia arctica</i> Less.	+	+	+	+	+	+				+		+	+	
<i>Artemisia Stelleriana</i> Bess.	+	+	+	+	+	+		+		+				
<i>Artemisia sericea</i> Aeber			+	+	+							+		
<i>Petasites japonicus</i> Miq.			+	+	+	+	+	+			+			
<i>Arnica unalascensis</i> Less.	+	+	+	+		+							+	
<i>Cacalia kamtschatica</i> Kudo	+	+	+	+	+	+		+		+			+	
<i>Cacalia hastata</i> L.	+		+	+	+	+		+		+	+	+		+
<i>Senecio palmatus</i> Pall.	+	+	+	+	+	+		+		+	+	+	+	
<i>Senecio pseudo-Arnica</i> Less.	+	+	+	+	+	+		+		+		+	+	
<i>Ligularia sibirica</i> Cass.			+	+	+	+	+			+		+		
<i>Cirsium kamtschaticum</i> Ledeb.	+	+	+	+	+								+	
<i>Saussurea kurilensis</i> Tatewaki														
<i>Saussurea Riederi</i> Herd.	+	+	+	+		+	+					+		
<i>Pieris japonica</i> Thunb.			+	+	+	+	+	+	+	+	+			
<i>Pieris kamtschatica</i> Ledeb.	+	+	+	+	+							+		
<i>Hieracium umbellatum</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Lactuca repens</i> Benth. et Hook. f	+	+	+	+	+	+	+	+	+	+	+	+		
<i>Taraxacum ceratophorum</i> DC.	+	+	+	+	+	+						+	+	
<i>Sparganium glomeratum</i> Laestad.	+		+	+	+	+	+			+		+		+
<i>Sparganium minimum</i> Fries	+		+									+	+	+
<i>Phyllospadix Scouleri</i> Hook.			+	+	+	+		+					+	
<i>Potamogeton natans</i> L.	+		+	+	+	+	+	+	+	+		+	+	+
<i>Potamogeton Franchetii</i> A. Benn.	+	+	+	+	+	+	+	+						
<i>Potamogeton alpinus</i> Balbis	+	+		+	+					+		+	+	+

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<i>Potamogeton perfoliatus</i> L.	+	+	+	+	+	+	+	+		+		+	+	+
<i>Potamogeton Maackianus</i> A. Benn.	+		+	+		+		+		+	+			
<i>Triglochin palustre</i> L.	+	+	+	+	+	+		+		+	+	+	+	+
<i>Miscanthus sinensis</i> Anders.			+	+	+	+	+	+	+	+	+			
<i>Phalaris arundinacea</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Hierochloa alpina</i> Roem. et Schl.	+			+	+	+		+		+	+	+	+	+
<i>Milium effusum</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Phleum alpinum</i> L.	+	+		+		+		+	+	+	+	+	+	+
<i>Agrostis flaccida</i> Hack.			+	+	+	+	+	+	+					
<i>Agrostis canina</i> L.		+	+	+	+	+		+	+	+		+		+
<i>Agrostis Trinii</i> Turcz.	+	+	+							+		+		+
<i>Agrostis exarata</i> Trin.	+	+											+	
<i>Agrostis hiemalis</i> B.S.P.	+	+	+	+	+	+		+		+	+		+	
<i>Agrostis clavata</i> Trin.	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>Calamagrostis Langsdorffii</i> Trin.	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Calamagrostis Yendoana</i> Honda		+												
<i>Calamagrostis neglecta</i> Gaertn.	+	+	+	+	+	+				+		+	+	+
<i>Calamagrostis sachalinensis</i> Fr. Schm.	+		+	+	+	+	+	+		+				
<i>Calamagrostis pupurascens</i> R. Br.	+	+	+	+	+	+						+	+	
<i>Erioblastus flexuosus</i> Honda	+	+		+									+	
<i>Deschampsia caespitosa</i> P. Beauv.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Deschampsia beringensis</i> Hult.	+				+								+	
<i>Deschampsia flexuosa</i> Trin.	+	+	+	+	+	+	+		+	+		+	+	+
<i>Trisetum spicatum</i> Richt.	+	+	+	+	+	+		+	+	+	+	+	+	+
<i>Trisetum sibiricum</i> Rupr.	+	+	+	+	+	+		+		+	+	+	+	+

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<i>Carex pyrenaica</i> Wahlenb.	+	+		+		+						+	+	+
<i>Carex pauciflora</i> Lightf.	+	+	+	+	+	+		+				+	+	+
<i>Carex macrocephala</i> Willd.	+		+	+	+	+	+	+	+	+	+	+	+	
<i>Carex lagopina</i> Wahlenb.	+	+		+		+		+				+	+	+
<i>Carex pseudo-loliacea</i> Fr. Schm.			+	+	+									
<i>Carex stellulata</i> Good.	+	+	+	+	+	+	+	+			+		+	+
<i>Carex rigida</i> Good.	+				+			+				+	+	+
<i>Carex aperta</i> Boott				+	+								+	
<i>Carex caespitosa</i> L.	+		+	+	+	+		+		+		+	+	+
<i>Carex Schmidtii</i> Meinsh.	+			+	+	+		+		+		+		
<i>Carex appendiculata</i> Kuek.	+			+	+			+		+				
<i>Carex Lyngbyei</i> Hornem.	+	+	+	+	+	+	+	+		+		+	+	+
<i>Carex Middendorffii</i> Fr. Schm.	+	+	+	+	+	+				+		+		
<i>Carex Augustinowiczii</i> Meinsh.	+	+	+	+	+	+		+		+				
<i>Carex Gmelinii</i> Hook. et Arn.	+	+	+	+	+			+		+		+	+	
<i>Carex macrochaeta</i> C. A. Mey.	+	+			+								+	
<i>Carex flavocuspis</i> Fr. et Sav.			+	+		+								
<i>Carex seita</i> Maxim.	+	+	+	+	+	+						+		
<i>Carex oxyandra</i> Kudo			+	+	+	+	+							
<i>Carex ambryolepis</i> Trautv. et Mey.	+	+	+	+	+	+				+		+		
<i>Carex sachalinensis</i> Fr. Schm.			+	+	+	+								
<i>Carex verna</i> Chaix	+	+	+	+	+	+				+		+		+
<i>Carex rariflora</i> Smith	+	+			+							+	+	+
<i>Carex limosa</i> L.	+		+	+	+	+	+	+		+	+	+	+	+
<i>Carex livida</i> Willd.	+	+	+					+					+	+
<i>Carex vaginata</i> Tausch	+	+	+	+	+	+		+		+	+	+	+	+
<i>Carex stenantha</i> Fr. et Sav.		+	+	+	+	+	+			+				
<i>Carex longerostrata</i> C. A. Mey.	+		+	+	+	+	+	+		+		+		

Name of Species	Region													
	Kamchatka	Northern Kuriles	Southern Kuriles	Yezo	Saghalien	Honshu	Shikoku and Kyushu	Korea	Liukiu and Formosa	Manchuria, Amur and Ussuri Region	China and Mongolia	Okhotsk to Siberia	North America	Europe
<i>Carex Oederi</i> Ritz.	+		+	+	+			+				+	+	+
<i>Carex Michauxiana</i> Boeck.	+		+	+		+							+	
<i>Carex rotundata</i> Wahlenb.	+	+			+			+				+	+	+
<i>Carex laevirostris</i> Blytt	+		+	+	+	+		+		+	+	+		+
<i>Carex vesicaria</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Carex saxatilis</i> L.	+	+										+	+	+
<i>Lysichiton camtschatcense</i> Schott	+	+	+	+	+	+				+		+	+	
<i>Luzula plumosa</i> E. Mey.	+	+	+	+	+	+	+	+		+	+			
<i>Luzula Jimboi</i> Miyabe et Kudo			+											
<i>Luzula parviflora</i> Desv.	+										+	+	+	+
<i>Luzula capitata</i> Nakai		+	+	+	+	+	+	+		+				
<i>Luzula multiflora</i> Lejeune	+	+	+	+	+	+	+	+		+	+	+	+	+
<i>Luzula pallescens</i> Bess.	+		+	+	+	+		+		+	+	+	+	+
<i>Luzula Kjellmanniana</i> Miyabe et Kudo	+	+											+	
<i>Luzula origantha</i> G. Sam.	+	+	+	+		+		+			+			
<i>Luzula arcuata</i> Wahlenb.	+											+	+	+
<i>Luzula Wahlenbergii</i> Rupr.	+	+	+	+		+		+				+	+	+
<i>Juncus filiformis</i> L.	+	+	+	+	+	+				+		+	+	+
<i>Juncus balticus</i> Willd.	+	+	+	+	+	+	+					+	+	+
<i>Juncus Faurienseis</i> Buch.			+	+		+								
<i>Juncus kamtschateensis</i> Kudo	+	+	+											
<i>Juncus prismatocarpus</i> R. Br.	+		+	+	+	+	+	+	+	+	+	+		
<i>Juncus castaneus</i> Smith	+	+		+				+			+	+	+	+
<i>Juncus prominens</i> Miyabe et Kudo	+	+	+	+									+	
<i>Tofieldia nutans</i> Willd.	+	+	+	+	+	+		+				+	+	
<i>Tofieldia fusca</i> Miyabe et Kudo			+	+	+	+						+		
<i>Veratrum album</i> L.	+	+	+	+	+	+	+	+		+	+	+	+	+

Name of Species	Region													
	Kamtchatka	Northern Kuriles	Southern Kuriles	Yezo	Saghalien	Honshu	Shikoku and Kyushu	Korea	Iuikiu and Formosa	Manchuria, Amur and Ussuri Region	China and Mongolia	Okhotsk to Siberia	North America	Europe
<i>Microstylis monophylla</i> Lindl.	+		+	+	+	+		+		+	+	+	+	+
<i>Ephippianthus sachalinensis</i> Reichb. f.			+	+	+	+								
<i>Oreorchis patens</i> Lindl.	+		+	+	+	+	+	+		+				
	319	280	343	350	310	298	98	216	37	234	142	259	236	166
	78.2	68.6	84.1	85.8	76.0	73.0	24.0	52.9	9.1	57.4	34.8	62.5	58.1	40.7

1. Kamtchatka

The floral elements of Kamtchatka are well represented in the flora of the Middle Kuriles, comprising in all 319 species, or 78.2% of the whole number of the plants of the Middle Kuriles, most of which belong to the circumpolar and the Northern Pacific elements. These results and the plant-associations show the vegetation of the district under consideration as having a strong affinity to that of Kamtchatka. The following species common to the Middle Kuriles and Kamtchatka, are not yet known to come down to the Southern Kuriles.

Salix kurilensis Koidz.

Salix paramushirensis Kudo

Stellaria lancifolia Kom.

Cardamine umbellata Greene

Parrya nudicaulis Regel

Hypericum paramushirensis Kudo

Epilobium latifolium L.

Deschampsia beringensis Hult.

Agrostis exarata Trin.

Poa arctica R. Br.

Luzula Kjellmanniana Miyabe et Kudo

2. Northern Kuriles, (Alaid, Shumushu, Paramushir)

The species common to the Northern and the Middle Kuriles number in all 280 or 68.6% of the whole, to which the new additional species are to be expected by the future botanical explorations. The following species found in the Middle Kuriles are known to occur in Japan, but they have not been recorded from Kamtchatka.

(* Showing the species limited to the Middle and the Northern Kuriles).

<i>Atriplex patula</i> L.	* <i>Epilobium kurilense</i> Nakai
<i>Arabis japonica</i> A. Gray	<i>Phellopterus littoralis</i> Benth.
<i>Oxytropis retusa</i> Matsum.	* <i>Calamagrostis Yendoana</i> Honda
* <i>Hypericum paramushirens</i> Kudo	<i>Carex stenantha</i> Fr. et Sav.
<i>Epilobium ovale</i> Takeda	<i>Luzula capitata</i> Nakai

3. Southern Kuriles

The estimate of the total number of the species common to the Southern and the Middle Kuriles is next to that of Yezo, though the plant-associations of the Middle Kuriles is closely connected with the Kamtchatka region. The comparative closeness of the floristic relationship is not to be measured by the number of the common species, but their characters must be taken into account. The common species number in all 343 or 84.1% of the whole. Only three species, namely *Astragalus kurilensis* Matsum., *Adenophora kurilensis* Nakai and *Luzula Jimboi* Miyabe et Kudo, have been found in the Southern and the Middle Kuriles, but not elsewhere.

There are representatives migrated from the south through the Southern Kuriles to the Middle Kuriles and some of them are distributed further to the north.

<i>Arabis japonica</i> A. Gray	<i>Ilex rugosa</i> Fr. Schm.
<i>Trifolium Lupinaster</i> L.	<i>Gaultheria Miqueliana</i> Takeda
<i>Skimmia repens</i> Nakai	

A few species, such as *Oxytropis retusa* Matsum., *Sparganium minimum* Fries and *Agrostis Trinii* Turcz., are known as occurring through the Kuriles, but not in any other part of Japan.

There are several species distributed as far north as the Middle Kuriles in Japan, which have also been reported from Kamtchatka but not from the Northern Kuriles. Their distribution in the Middle Kuriles is most likely due to the migration of the Yezo elements through the floristic bridge of the Southern Kuriles.

<i>Polypodium vulgare</i> L.: Urup.	<i>Hieracium umbellatum</i> L.: Shimushir.
<i>Betula Ermani</i> Cham.: Rashuwa	<i>Cacalia hastata</i> L.: Urup.
<i>Cimicifuga simplex</i> Wormskj.: Urup.	<i>Lilium dauricum</i> Ker-Gawl.: Urup.
<i>Galium verum</i> L.: Urup.	

4. Yezo

The Yezo elements are the most well represented group in the flora of the Middle Kuriles, comprising as many as 350 species, or 85.8% of

the whole. It seems well to consider, just how much significance can be attached to the strong affinity between the flora of Yezo and that of the Middle Kuriles. It is very interesting to notice that some species are known from Yezo and Saghalien, but not from Honshu, while the others from Yezo and Honshu, but not from Saghalien. These points will be explained respectively in proper places. There are also the species occurring in Yezo and the Middle Kuriles, but not in Saghalien and Honshu. They are:—

<i>Cerastium rigidulum</i> Takeda	<i>Gentiana Kawakamii</i> Makino
<i>Aconitum kamtschaticum</i> Willd.	<i>Mertensia rivularis</i> DC.
<i>Papaver nudicaule</i> L.	var. <i>japonica</i> Takeda
subsp. <i>xanthopetalum</i> Fedde,	<i>Erioblastus flexuosus</i> Honda
var. <i>Fauriei</i> Fedde	<i>Juncus castaneus</i> Smith
<i>Saxifraga bracteata</i> D. Don.	<i>Juncus prominens</i> Miyabe et Kudo
<i>Geranium yezoense</i> Fr. et Sav.	<i>Platanthera hyperborea</i> Lindl.
<i>Androsace Lehmanniana</i> Spr.	

5. Saghalien

The number of the species common to both the Middle Kuriles and Saghalien is 310 or 76.0% of the whole. There are no species confined exclusively to Saghalien and the Middle Kuriles, but it is noteworthy that there are some species coming down from the north which reach only as far as Middle Kuriles and Saghalien, for instance:—

<i>Equisetum littorale</i> Kuehlew.	<i>Poa arctica</i> L.
<i>Draba cardaminiflora</i> Kom.	<i>Eleocharis uniglumis</i> Schult.
<i>Pedicularis euphrasioides</i> Steph.	<i>Carex rariflora</i> Sm.
	<i>Carex rotundata</i> Wahlenb.

These common species are mostly circumpolar and widely distributed in the North Asiatic Continent. There are also some species having their northern limits in Saghalien and the Middle Kuriles; they are:—

<i>Polygonum Weyrichii</i> Fr. Schm.	<i>Mentha sachalinensis</i> Kudo
<i>Potentilla Matsumurae</i> Wolf	<i>Aster Glehni</i> Fr. Schm.
<i>Ilex rugosa</i> Fr. Schm.	<i>Scirpus Maximowiczii</i> C. Clarke
<i>Scutellaria yezoensis</i> Kudo	<i>Eppiphianthus sachalinensis</i> Reichb. f.

The following species are common to the Middle Kuriles, Yezo and Saghalien, but not to Honshu.

<i>Equisetum pratense</i> Ehrh.	<i>Cochlearia oblongifolia</i> DC.
<i>Equisetum variegatum</i> Schleich.	<i>Saxifraga punctata</i> L.
<i>Stellaria humifusa</i> Rottb.	<i>Potentilla megalantha</i> Takeda

<i>Hedysarum obscurum</i> L.	<i>Patrinia sibirica</i> Juss.
var. <i>neglectum</i> Trautv. et Mey.	<i>Artemisia sericea</i> Aeber
<i>Viola repens</i> Turcz.	<i>Chrysanthemum arcticum</i> L.
<i>Conioselinum Gmelini</i> Coult. et Rose	<i>Poa eminens</i> Presl
<i>Cornus suecica</i> L.	<i>Glyceria lithuanica</i> Lindman
<i>Mentha sachalinensis</i> Kudo	<i>Eriophorum Scheuchzeri</i> Hoppe
<i>Veronica americana</i> Schw.	<i>Carex pseudo-loriacea</i> Fr. Schm.
<i>Pedicularis venusta</i> Schang.	<i>Carex Gmelini</i> Hook. et Arn.
var. <i>Schmidtii</i> Ito	<i>Carex Oederi</i> Retz. var. <i>viridula</i> Kuek.
<i>Pedicularis Oederi</i> Vahl	<i>Allium strictum</i> Schrad.

6. Honshu

The proportion of Honshu species found in the Middle Kuriles is 73.0% of the total for the latter islands, and they number as many as 298. Most of these common species are also found in the islands of Yezo. It is noteworthy that the alpine flora of Honshu includes a considerable number of plants that are found in the Middle Kuriles, where those arctic-alpine elements are commonly and widely distributed. There are species in the flora of the Middle Kuriles which have not been found in Saghalien, but which are known to occur in Honshu through Yezo. They are:—

<i>Dryopteris oreopteris</i> Maxon,	<i>Crawfordia japonica</i> Sieb. et Zucc.
var. <i>Fauriei</i> Miyabe et Kudo	<i>Calystegia Soldanella</i> R. Br.
<i>Polystichum microchlamys</i> Kodama	<i>Pinguicula vulgaris</i> L.
<i>Lycopodium sitchense</i> Rupr.	var. <i>macroceras</i> Herd.
<i>Selaginella selaginoides</i> Link	<i>Campanula lasiocarpa</i> Cham.
<i>Selaginella helvetica</i> Link	<i>Arnica unalaschcensis</i> Less.
<i>Salix Reinii</i> Fr. et Sav.	<i>Saussurea Riederi</i> Herd.
<i>Pulsatilla angustifolia</i> Turcz.	<i>Phleum alpinum</i> L.
<i>Saxifraga Merckii</i> Fisch.	<i>Eriophorum alpinum</i> L.
<i>Geum calthaefolium</i> Sm.	<i>Carex hakkodensis</i> Franch.
<i>Astragalus frigidus</i> Bunge,	<i>Carex pyrenaica</i> Wahlenb.
subsp. <i>parviflorus</i> Hult.	<i>Carex lagopina</i> Wahlenb.
<i>Hypericum kamtschaticum</i> Ledeb.	<i>Carex Michauxiana</i> Boek.
<i>Epilobium Fauriei</i> Lévl.	form. <i>asiatica</i> Akiyama
<i>Viola crassa</i> Makino	<i>Luzula origantha</i> G. Sam.
<i>Bryanthus musciformis</i> Nakai	<i>Luzula Wahlenbergii</i> Rupr.
<i>Harrimanella Stelleriana</i> Cov.	<i>Juncus Fauriensis</i> Buch.
<i>Arcteria nana</i> Makino	<i>Cypripedium Yatabeanum</i> Makino
<i>Gaultheria Miqueliana</i> Takeda	

7. Siberia including Ochotsk—Ajan

The species found in the Middle Kuriles and also in Siberia are as many as 255 species or 62.5% of the whole. It should be borne in mind that, owing to the scantiness of the floristic data for the distribution at hand, this number can not be more than an approximation, and it is very probable that the number of species known to be common to both regions will be hereafter increased. These common elements consist of subarctic or arctic-alpine elements, most of which are continental elements.

8. Korea

The common species to both regions are as many as 216 species, or 52.9% of the whole. There is no peculiar species for the phytogeography. Most of them occur in Honshu as well as in the Manchuria-Ussuri region.

9. America and Europe

The number of species and the ratio of the whole elements are shown in the following table.

	Number of species	Ratio to the whole number
America	236	57.8
Europe	166	40.7

The species of the Middle Kuriles common to those of Europe are mostly represented by the circumpolar elements, while those to America are represented not only by the circumpolar but also by the north-western American and the Pacific elements. The difference between the number of these common elements in the two regions, is striking as shown in the table. It is caused by the flora of the Bering Sea-region being included in North America. As to dispersal from the northerly direction, the preponderance of the elements found in common with the North American Flora is very interesting from the phytogeography point of view.

C. GEOGRAPHICAL ELEMENTS OF THE FLORA
OF THE MIDDLE KURILES

To give a better idea of the relative importance of the distribution in the flora of the Middle Kuriles, the following table will show the proportions of the distribution-type of the geographical elements, the species being taken as unit. It should be noted that, owing to the lack of the complete alpine floristic data of the Kuriles, the following number may hereafter require a slight alternation. But the writer believes that they are sufficiently representative to indicate the ranges of the distribution.

TABLE V.

	Circumpolar	Asiatic Pacific	N. Pacific	Japanese	Japanese-Machurian	Kuriles	American transgressing into Asia	Asiatic transgressing into America	Eastern Asiatic	Eurasian	Eurasian transgressing into America	Cosmopolite	Kamchatka
Ophioglossaceae	1	—	1	—	—	—	—	—	—	—	—	1	—
Polypodiaceae	5	—	—	1	1	—	—	—	—	—	—	3	—
Equisetaceae	6	—	—	—	—	—	—	—	—	—	—	—	—
Lycopodiaceae	4	—	—	—	1	—	2	—	—	—	—	1	—
Selaginellaceae	1	—	—	—	—	—	—	—	—	1	—	—	—
Pteridophyta	17	—	1	1	2	—	2	—	—	1	—	5	—
Taxaceae	—	—	—	—	1	—	—	—	—	—	—	—	—
Pinaceae	—	—	—	—	—	—	—	—	1	—	—	—	—
Cupressaceae	1	—	—	—	—	—	—	—	—	—	—	—	—
Gymnospermae	1	—	—	—	1	—	—	—	1	—	—	—	—
Salicaceae	—	1	2	1	—	—	—	—	—	—	—	—	1
Betulaceae	—	—	—	—	—	—	—	—	2	—	—	—	—
Urticaceae	—	1	—	—	—	—	—	—	—	—	—	—	—
Polygonaceae	3	—	—	1	—	—	—	—	1	—	—	—	—
Chenopodiaceae	1	—	1	—	—	—	—	—	—	—	—	—	—
Portulacaceae	1	—	—	—	—	—	—	—	—	—	—	—	—
Caryophyllaceae	4	3	3	—	—	1	—	—	—	1	—	—	—

	Circumpolar	Asiatic Pacific	N. Pacific	Japanese	Japanese-Machurian	Kuriles	American transgressing into Asia	Asiatic transgressing into America	Eastern Asiatic	Eurasitic	Eurasitic transgressing into America	Cosmopolite	Kamchatka
Heliotropiaceae	1	—	—	—	—	—	—	—	1	—	—	—	—
Lamiaceae	—	—	—	2	—	—	—	—	—	—	—	—	—
Rhinanthaceae	1	1	4	1	—	—	1	1	2	1	—	—	—
Orobanchaceae	—	—	—	—	—	—	—	1	—	—	—	—	—
Lentibulariaceae	1	—	—	—	—	—	—	—	—	—	—	—	—
Plantaginaceae	—	1	—	—	—	—	—	—	—	—	—	—	—
Rubiaceae	3	—	—	1	1	—	—	1	—	—	—	—	—
Caprifoliaceae	1	1	—	—	—	—	—	—	1	1	—	—	—
Valerianaceae	—	—	—	—	—	—	—	—	1	—	—	—	—
Campanulaceae	—	—	2	—	—	1	—	—	2	—	—	—	—
Asteraceae	3	4	3	2	2	1	1	3	3	3	—	—	—
Metachlamydeae	25	12	14	10	3	2	2	8	12	5	—	1	—
Dicotyledoneae	60	31	38	23	6	9	11	11	29	9	3	2	2
Sparganiaceae	1	—	—	—	—	—	—	—	—	1	—	—	—
Potamogetonaceae	—	—	1	1	1	—	—	1	—	—	—	2	—
Scheuchzeriaceae	1	—	—	—	—	—	—	—	—	—	—	—	—
Poaceae	11	2	5	3	1	1	4	1	1	4	2	1	3
Cyperaceae	19	1	5	7	—	—	2	—	5	3	1	1	—
Araceae	—	—	1	—	—	—	—	—	—	—	—	—	—
Juncaceae	6	3	1	1	1	1	—	—	1	1	—	1	1
Liliaceae	2	4	2	1	—	—	—	1	3	3	1	—	—
Iridaceae	—	—	—	—	—	—	—	1	—	—	—	—	—
Orchidaceae	2	4	1	2	—	—	1	—	1	2	1	—	—
Monocotyledoneae	42	14	16	15	3	2	7	4	11	14	5	5	4
Angiospermae	102	45	54	38	9	11	18	15	40	23	8	7	6
Phanerogamae	103	45	54	38	10	11	18	15	41	23	8	7	6
Total	120	45	55	39	12	11	20	15	41	24	8	12	6
Ratio	29.4	11.0	13.5	9.6	2.9	2.7	4.9	3.7	10.0	5.9	2.0	2.9	1.5

It will be well to analyze briefly the constituents of these groups. Based on the materials collected by the writer, the ranges of the distribution-type in the flora of the Middle Kuriles have been mainly arranged in thirteen groups, as shown in the above table. An examination of the distribution of these types suggests the prominent influence of the continental flora.

In the first place there is the preponderance of the circumpolar elements, most of which are subarctic or arctic-alpine. They are composed of 120 species in all. They should be considered in two groups, which are quite different in the mode of their distribution. One group has come from the south through the Southern Kuriles and Yezo. The other group contains the arctic or arctic-alpine elements which are related to those of the Northern Kuriles and Kamtchatka, for example:—

<i>Rubus arcticus</i> L.	<i>Astragalus alpinus</i> L.
<i>Epilobium latifolium</i> L.	<i>Poa arctica</i> R. Br.
<i>Eriophorum angustifolium</i> Roth	<i>Carex rigida</i> Good.
<i>Carex rariflora</i> Smith.	<i>Carex saxatilis</i> L.
<i>Luzula parviflora</i> Desv.	<i>Luzula arcuata</i> Wahlenb.

The influence of the Pacific elements, including the Northern Pacific and the Asiatic Pacific, come next in importance. They number 100 in all. The Northern Pacific elements composed of 55 species are distributed over the north-eastern Asia, Aleutian Islands and some of them range south-east to the western coast of North America. They are represented by the following species:—

(* Showing the Asiatic Pacific elements).

<i>Salix longipetiolata</i> Flod.	* <i>Salix sachalinensis</i> Fr. Schm.
<i>Stellaria lancifolia</i> Kom.	* <i>Stellaria ruscifolia</i> Willd.
* <i>Corydalis ambigua</i> Cham.	<i>Draba hyperborea</i> Desv.
<i>Draba borealis</i> DC.	* <i>Sorbus sambucifolia</i> Roem.
* <i>Potentilla megalantha</i> Takeda	* <i>Filipendula kamtschatica</i> Maxim.
* <i>Rosa rugosa</i> Thunb.	* <i>Hypericum kamtschaticum</i> Ledeb.
<i>Epilobium Behringianum</i> Hausskn.	<i>Ligusticum Hultenii</i> Fernald
<i>Phyllodoce aleutica</i> A. Heller	<i>Cassiope lycopodioides</i> Don
<i>Harrimanella Stellariana</i> Cov.	<i>Primula cuneifolia</i> Ledeb.
* <i>Swertia tetrapetala</i> Pall.	* <i>Pentstemon frutescens</i> Lamb.
<i>Pedicularis Chamissonis</i> Stev.	* <i>Plantago camtschatica</i> Cham.
<i>Campanula dasyantha</i> Bieb.	* <i>Artemisia Stelleriana</i> Bess.
<i>Arnica unalaschcensis</i> Less.	* <i>Lactuca repens</i> Benth. et Hook. f.
<i>Agrostis exarata</i> Trin.	<i>Erioblastus flexuosus</i> Honda
<i>Deschampsia beringensis</i> Hult.	* <i>Carex Middendorffii</i> Fr. Schm.
<i>Majanthemum dilatatum</i> Nels. et Maibr.	<i>Orchis aristata</i> Fisch.

The Japanese elements maintain the next rank as the table shows, dividing themselves into three groups:— i) Kuriles; ii) Japanese; iii) Japanese-Manchurian, including Japanese Chinese. This is partly due to the fact of the detailed study of the Flora of Japan. The representatives of the Japanese elements are as follows:—

(* Showing the Kuriles elements; ** the Japanese-Manchurian elements).	
** <i>Woodsia polystichoides</i> Eat.	<i>Carex stenantha</i> Fr. et Sav.
** <i>Chrysosplenium flagelliferum</i> Fr. Schm.	<i>Listera nipponica</i> Makino
** <i>Taxus cuspidata</i> Sieb. et Zucc.	<i>Prunus kurilensis</i> Miyabe
<i>Potentilla Miyabei</i> Makino	<i>Geranium yesoense</i> Fr. et Sav.
<i>Potentilla Matsumurae</i> Wolf	<i>Ilex rugosa</i> Fr. Schm.
* <i>Astragalus kurilensis</i> Matsum.	<i>Epilobium Fauriei</i> Lévl.
<i>Skimmia repens</i> Nakai	** <i>Phellopterus littoralis</i> Benth.
* <i>Hypericum paramushirens</i> Kudo	* <i>Adenophora kurilensis</i> Nakai
** <i>Aralia cordata</i> Thunb.	<i>Carex oxyandra</i> Kudo
<i>Primula Fauriei</i> Franch.	<i>Trillium Smallii</i> Maxim.
<i>Aster Glehni</i> Fr. Schm.	<i>Eppiphianthus sachalinensis</i> Reichb. f.

The eastern Asiatic elements form 10% of the whole. Some arctic and arctic-alpine flora is represented by the common elements to these regions. It is interesting to find that the dominant species of the forest-associations are limited in this category. The Eastern Asiatic elements are represented by the following species:—

<i>Pinus pumila</i> Regel	<i>Betula Ermani</i> Cham.
<i>Alnus fruticosa</i> Rupr.	<i>Trollius Riederianus</i> Fisch. et Mey.
<i>Pulsatilla angustifolia</i> Turc.	<i>Trautvetteria japonica</i> Sieb. et Zucc.
<i>Saxifraga Merckii</i> Fisch.	<i>Sanguisorba tenuifolia</i> Fisch.
<i>Vicia unijuga</i> Al. Br.	<i>Acer ukurunduense</i> Trautv. et Mey.
<i>Rhododendron chrysanthum</i> Pall.	<i>Patrinia sibirica</i> Juss.
<i>Diervilla Middendorffiana</i> Carr.	<i>Artemisia sericea</i> Aeber
<i>Carex Augustinowiczii</i> Meinsh.	<i>Lilium dauricum</i> Ker-Gawl.
<i>Disporum smilacinum</i> A. Gray	<i>Polygonatum humile</i> Fisch.

Next in importance come the Americo-Asiatic elements, containing two groups as shown in the table; the greater portion of which are restricted to the American elements transgressing into the eastern Asia. The representative species with the wide range belonging to this category are as follows:—

<i>Lycopodium sitchense</i> Rupr.	<i>Calamagrostis purpurascens</i> R. Br.
<i>Cardamine umbellata</i> Greene	<i>Poa eminens</i> Presl
<i>Viola blanda</i> Willd.	<i>Carex gynocrates</i> Wormskj.
<i>Cornus canadensis</i> L.	<i>Platanthera hyperborea</i> Lindl.
<i>Veronica americana</i> Schw.	

Another group of species is widely distributed from Europe to Eastern Asia, and some of them reach as far as Western America. They are represented by such species as:—

(* Showing the Eurasiatic-elements transgressing into America).

<i>Selaginella helvetica</i> Link	<i>Dianthus superbus</i> L.
* <i>Anemone narcissiflora</i> L.	<i>Trifolium Lupinaster</i> L.
* <i>Impatiens Noli-tangere</i> L.	* <i>Viola biflora</i> L.
<i>Lonicera coerulea</i> L.	<i>Cacalia hastata</i> L.
<i>Agrostis Trinii</i> Turcz.	<i>Glyceria lithuanica</i> Lindman
* <i>Carex Lyngbyei</i> Hornem.	<i>Carex laevirostris</i> Blytt
<i>Gagea lutea</i> Ker-Gawl.	<i>Allium strictum</i> Schrad.
<i>Cypripedium macranthum</i> Sw.	<i>Gymnadenia conopsea</i> R. Br.

The species of the tropical region common with the Middle Kuriles are the cosmopolites or wide ranging circumpolar elements, most of which belong to Pteridophyta and the lower Monocotyledoneae.

An addition to the plant population of the Middle Kuriles in connection with the fox-farming is somewhat considerable. The number of the secondary elements have been estimated as 14 species for the Middle Kuriles, as shown in the following list:—

<i>Rumex crispus</i> L.	<i>Convolvulus sepium</i> R. Br.
<i>Polygonum nodosum</i> Pers.	<i>Matricaria matricarioides</i> Porter
<i>Chenopodium album</i> L.	<i>Senecio vulgaris</i> L.
<i>Stellaria media</i> Cyrill.	<i>Alopecurus aequalis</i> Sobolowski
<i>Nasturtium palustre</i> DC.	<i>Phleum pratense</i> L.
<i>Trifolium pratense</i> L.	<i>Poa annua</i> L.
<i>Trifolium repens</i> L.	<i>Poa pratensis</i> L.

Conclusion

References have already been made to the phytogeography, especially to the migration of the plants in the Kuriles. In the important papers on the phytogeography, Profs. A. Engler²²⁾ and K. Miyabe⁸⁹⁾ first discussed on the question of distribution. The former announced his opinion that the Kuriles is an important archipelago for the migratory route of plants in the Neozoic Era, while the latter, expressing the same view of Milne's hypothesis, stated that Saghalien had more important role for the migration of the rich flora to Japan proper than the Kuriles. The study¹³⁵⁾ by Dr. H. Takeda agreed with Engler's opinion, indicating that the Kurile Archipelago was a very important route for the migration of plants. He called attention to the presence of wide spreading arctic-alpine elements in the Kuriles which are

common to those of the alpine regions of Japan. After Takeda's paper, Prof. Y. Kudo⁷⁰⁾ demonstrated on the remarkable difference in the flora and plant-communities between the Southern and the Northern Kuriles that the Southern Kuriles belongs to the Engler's²⁴⁾ "Temperate East Asiatic Region" and should form the northern limit of his "Provinz des mittleren und noerdlichen Japan", while the Northern Kuriles should be placed in his "Subarctic Region" next to the Subprovince of "Nordostsibirien mit Kamtschatka". He rendered a great service to the definite criteria for the phytogeography of the Kuriles.

In attempting to solve the comparative importance of the phytogeographical relations, the following two subjects must be taken into account and their relative value weighed:— i) the number of the common species, and ii) the character of the plant-associations. Passing over northly the Etorofu Strait, the physiognomy of the vegetation changes so strikingly as to draw immediately one's attention. As far as known to the writer, the vegetation of the Middle Kuriles is closely connected with that of Kamtschatka, as proved by the presence of the characteristic species for the plant-associations.

On the physiographically youthful soils of the Middle Kuriles, the subarctic vegetation is dominant in general. The growth of the vegetation has been slow for two main reasons:—the severe subarctic and the insular climate with its rather short growing season. And they are an efficient check retarding the life process of plants and bring about such developments of the plant-communities. As explained in the writer's paper,¹⁴³⁾ the most impressive feature of the plant-communities is well represented by the subarctic aspect of the forests, the heaths and the meadows developed on marine terraces or hill-sides.

Four times botanizing in the Middle Kuriles paying a special attention to the study of the plant-distribution, the writer has found that there is a conspicuous absence of *Abies*, *Picea*, *Populus*, *Ulmus*, etc. which are widely distributed in Yezo and the Southern Kuriles. The elements of the flora of the Middle Kuriles are represented by those of the circumpolar, the Northern Pacific, the Eastern Asiatic and the Americo-Asiatic, most of which are the prevailing groups with the subarctic or the arctic-alpine ranges. On the other hand, such genera as *Taxus*, *Acer*, *Sasa*, etc. having an undisrupted ranged in Japan, have their northward extension to the Middle Kuriles, disappearing gradually towards the north. Moreover, it will be found interesting to contain about 64 Japanese elements in the flora of the Middle Kuriles. These

facts indicate that the chain of the islands is considered to play a role of the floral bridge of introducing the northern elements to the south and the southern to the north at present. On account of the geographical position as well as the geological formation, such conclusion would be very natural that the floral elements of the Middle Kuriles are partly influenced by those of northern Japan, and partly by the flora of the Kamtchatka region including the Northern Kuriles, assuming the two contrary paths of migration.

On the whole, the number of the common species shows the strongest affinity to Yezo; but the Middle Kuriles would be better to be placed in the Engler's "Subarctic Region", when the associations are measured and the characters of their elements are considered. The writer believes that the Etorofu Strait is the most important boundary line between the Engler's Temperate East Asiatic Region and the Subarctic Region. He wishes to propose the name of the Miyabe's Line for the Strait between Etorofu and Urup, the importance of which was discussed for the first time by that author. According to the analysis of the land flora of the Kurile Archipelago, so far as the vascular plants are concerned, he arrived at the conclusion that the Kurile Archipelago may be divided into the following groups from the phytogeographical point of view.

- I) The District of the Southern Kuriles.
 - i) The Subdistrict of Kunashiri.
 - ii) The Subdistrict of Shikotan-Etorofu.
(belonging to the Temperate East Asiatic Region).
- II) The District of the Middle Kuriles.
 - i) The Subdistrict of Urup.
 - ii) The Subdistrict of Shimushir-Matuwa.
- III) The District of the Northern Kuriles.
 - i) The Subdistrict of Shashikotan-Onnekotan.
 - ii) The Subdistrict of Paramushir-Alaid.
(II and III belonging to the Subarctic Region).

Resumé

1. The present flora of the Middle Kuriles is made up largely of groups composed of the widely ranging species. The largest and most important elements are circumpolar.

2. The flora under consideration is distinguished from that of Yezo

by the preponderance of arctic-alpine groups, and from the Kamtchatka region including the Northern Kuriles, by the presence of the southern genera represented by *Sasa*, *Taxus*, *Acer*, etc. Though it is generally included in the Kamtchatka region, still it shares abundantly with the Japanese flora.

3. The Middle Kuriles is at present considered to be a floral bridge, which is serving to transport the southern elements to the north, and the northern to the south. The present distribution is, thereby, explained as the result of migration in two directions.

4. The physiognomy of the vegetation in the Middle Kuriles is different from that of Yezo. The plant communities are often found to have the ecologically youthful feature, due to the vegetation on the geologically recent formation. For example, they are the meadows, the heaths, etc., which are composed of the plants widely distributed in the extensive subarctic region.

5. Two floral subdistricts are segregated phytogeographically in the Middle Kuriles, namely the Urup and the Shimushir-Matuwa; they are distinguished from each other by the floristic composition.

6. The recent volcanic islands, such as Isl. Matuwa, are characterised by the paucity of the species and the predominance of the wide-ranging elements.

7. It is worthy of comment that to-day there are no relic species and very few endemic elements, owing to the region being a comparatively young area, with its slowly developing vegetation.

8. In the flora of the Middle Kuriles, there is no addition of genera to make to the rich flora of Japan. As to the species, there are the following eleven new to the flora of Japan, among which 2 are new to science:—*Salix longipetiolata*; *Stellaria lancifolia*; *Draba hyperborea*; *Sorbus kamtschaticensis*; *Astragalus alpinus*; **Oxytropis Itoana*; *Primula sibirica*; *Adenophora kurilensis*; **Saussurea kurilensis*; *Luzula parviflora*; *Luzula arcuata*.

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EXPLANATION OF MAPS

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PLATE I.

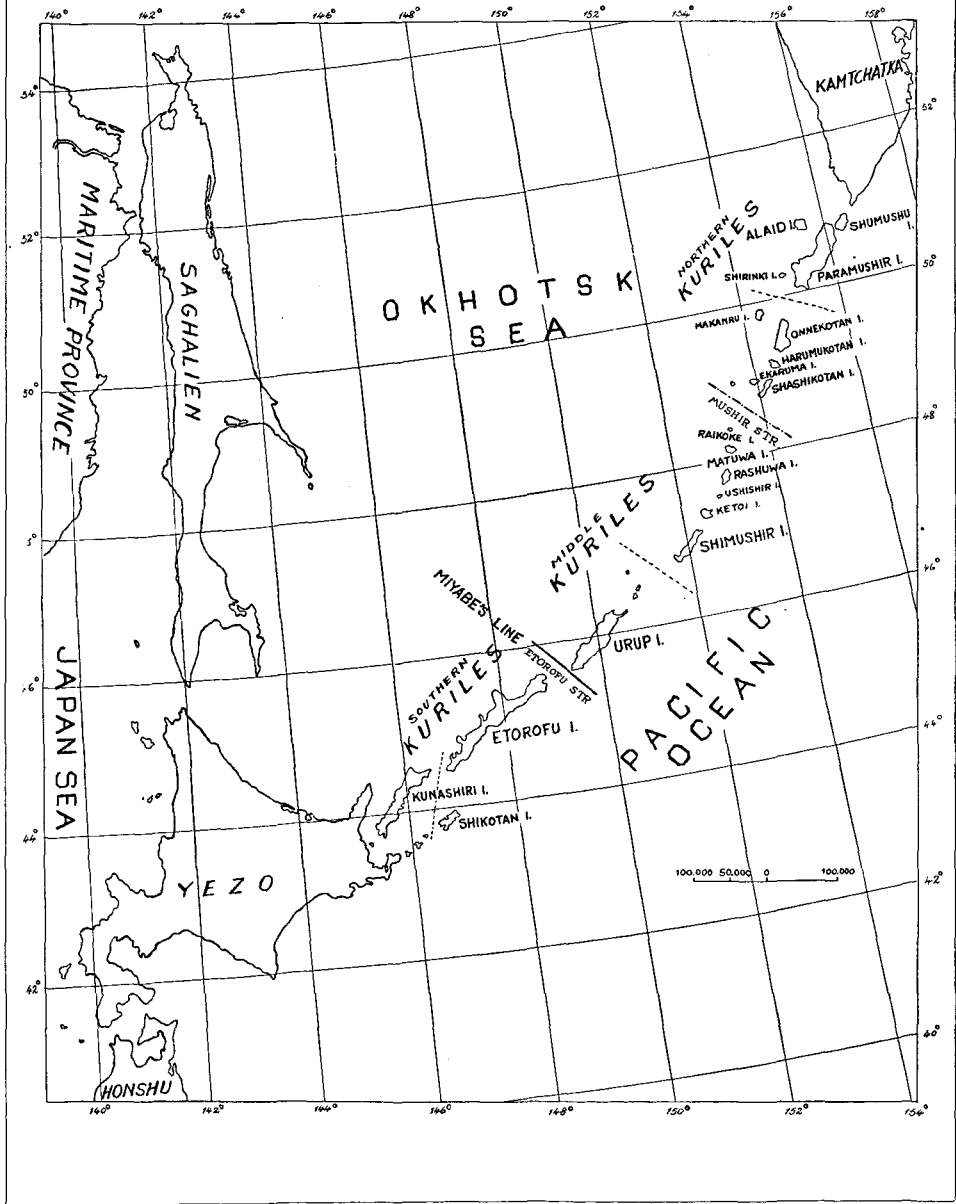
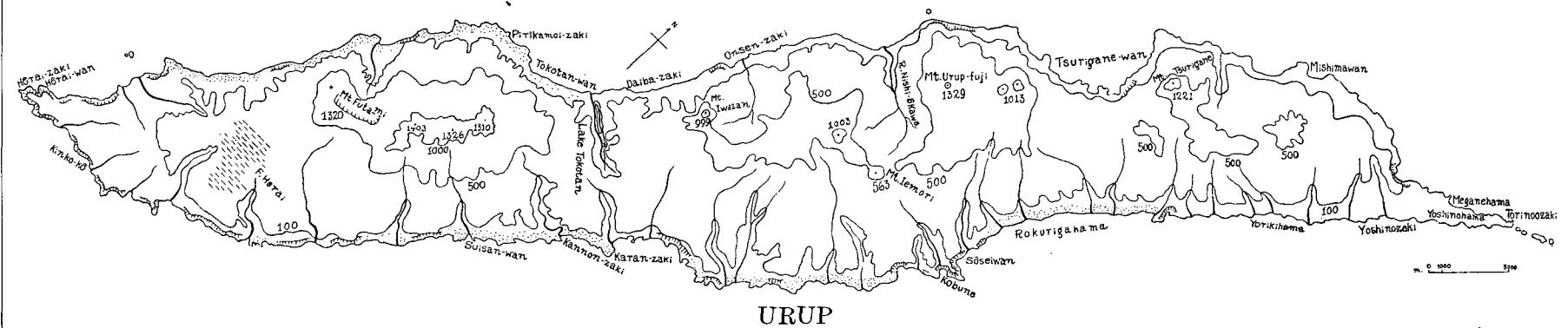
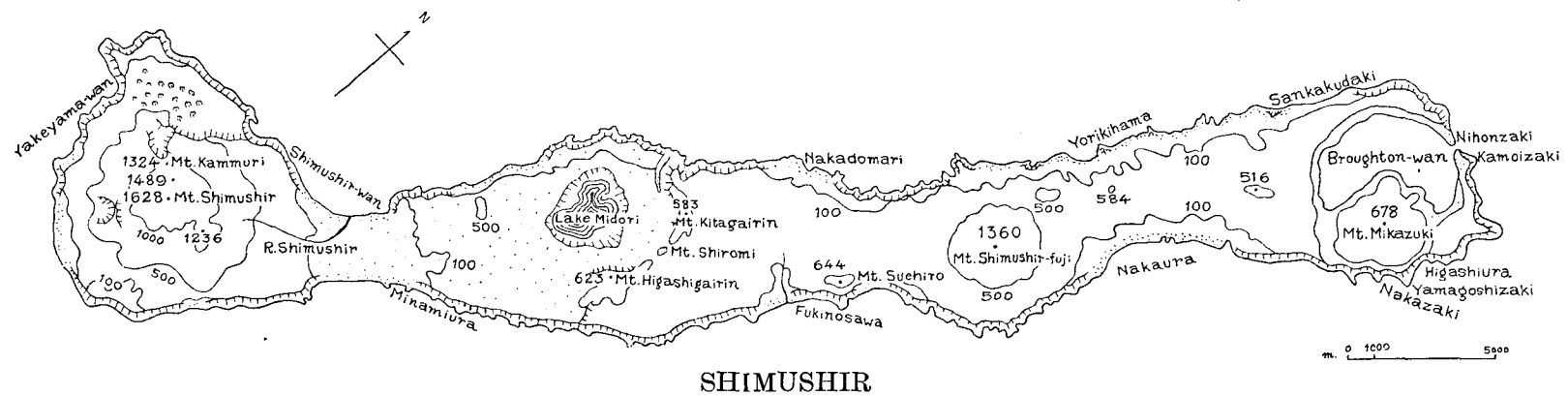


PLATE II.



URUP

PLATE III.



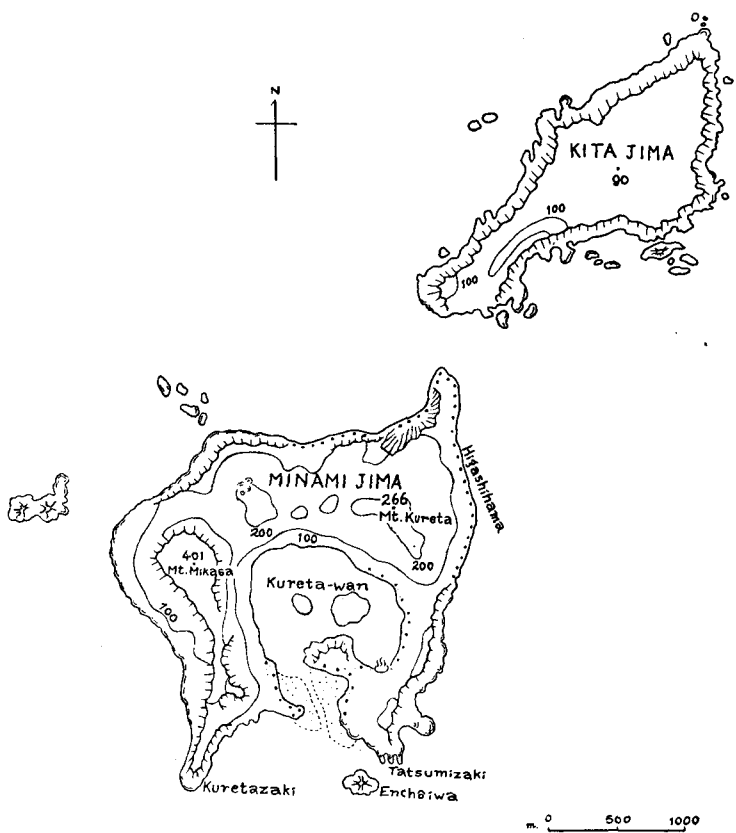
SHIMUSHIR

PLATE IV.



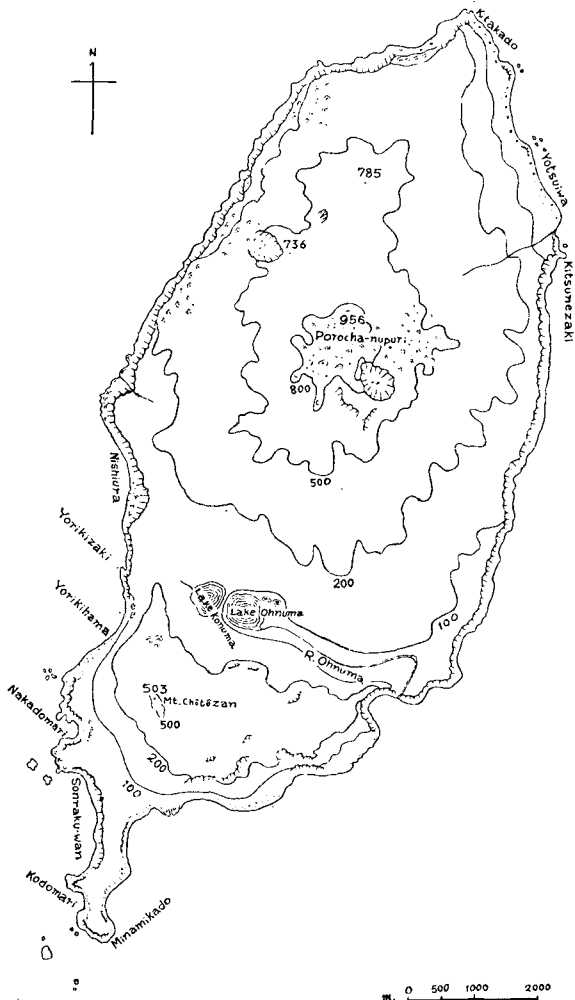
KETOI

PLATE V.



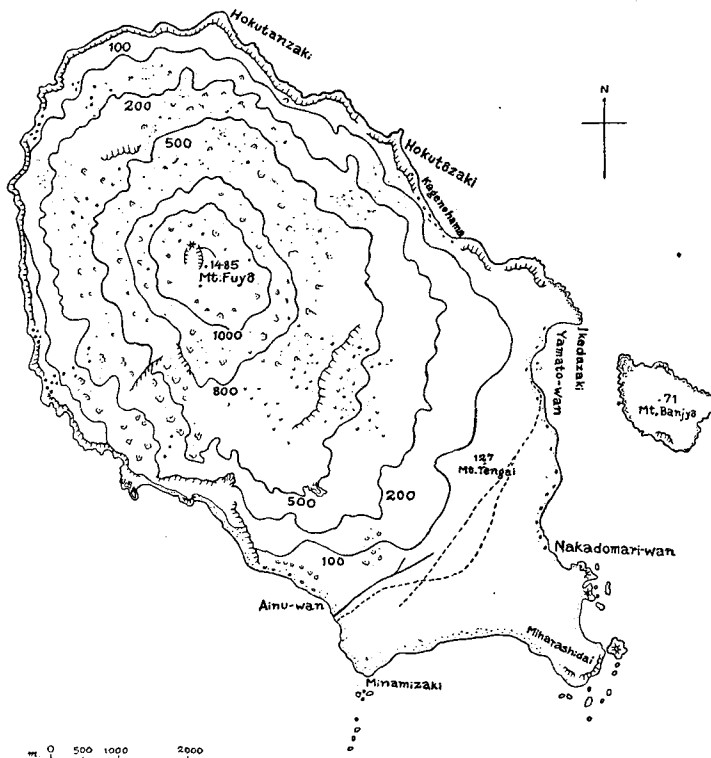
USHISHIR

PLATE VI.



RASHUWA

PLATE VII.



MATUWA