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FLORA OF HOKKAIDO AND SAGHALIEN

PTERIDOPHYTA

OPHIOGLOSSACEÆ

Ophioglossum L.

1. **Ophioglossum vulgatum** L. Sp. Pl. ed. 1. 1062; Ledeb. Fl. Ross. IV. 504; Hook. & Bak. Syn. Fil. 445; Milde, Fil. Europ. Atl. 188; Makino, in Tokyo Bot. Mag. XII. (376); Bitter, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 504; Britt. & Br. Ill. Fl. I. 2; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 102; H. Chr. Farnk. d. Erde, 363; Hegi, Ill. Fl. Mittel-Europ. I. 44; Robinson & Fern. in Gray's New Man. 47; Underw. in North Am. Fl. XVI. 1. 12; C. Chr. Ind. Fil. 472; Fedtsch. et Flerow, Ill. Pl. Sib. I. 36; Nakai, in Tokyo Bot. Mag. XL. 375.

Ophioglossum nudicaule H. Chr. in Bull. Herb. Boiss. IV. 657; Makino, in Tokyo Bot. Mag. XII. (376), non L. f.

Ophioglossum japonicum Matsum. Ind. Pl. Jap. I. 330, nec Thunb. non Prantl.

Ophioglossum nipponicum Miyabe et Kudo, Mater. Fl. Hokkaido, n. 69, in Trans. Sapporo Nat. Hist. Soc. VI. 122.

NOM. JAP. *Hanayasuri, Ko-hanayasuri, Oh-hanayasuri.*

HAB. *Yezo.* Iburi, Hidaka.

DISTRIB. *Yezo, Honshu, Ural, Caucasus, Europe and North America.*

var. **alaskanum** C. Chr. apud Hult. Fl. Kamtchat. I. 45.

Ophioglossum alaskanum E. Britt. in Bull. Torr. Bot. Club. XXIV. 556, t. 319; C. Chr. Ind. Fil. Suppl. 1906-1912, 120.

Ophioglossum vulgatum Miyabe et Kudo, Mater. Fl. Hokkaido, n. 68, in Trans. Sapporo Nat. Hist. Soc. VI. 121.

NOM. JAP. *Yezo-no-hanayasuri.*

HAB. *Yezo.* Oshima, Ishikari.

Southern Saghalien. Toyohara.

DISTRIB. Saghalien, Yezo, Kamtchatka and Alaska.

***Botrychium* SWARTZ**

2. *Botrychium simplex* Hitch. in Amer. Jour. Sc. VI. 103; Milde, Fil. Europ. Atl. 197; Hook. & Bak. Syn. Fil. 447; Rupr. Bemerk. Botryc. 36; Britt. & Br. Ill. Fl. I. 2; H. Chr. Farnk. d. Erde, 366 et in Bull. Herb. Boiss. IV. 675; Aschers. u. Graebn. Syn. Mittel-europ. Fl. I. 107; Matsum. Ind. Pl. Jap. I. 297; Hegi, Ill. Fl. Mittel-Europ. I. 46; C. Chr. Ind. Fil. 163; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 70, in Trans. Sapporo Nat. Hist. Soc. VI. 122; Nakai, in Tokyo Bot. Mag. XL. 384.

NOM. JAP. *Ko-hanawarabi*, *Yezo-hime-hanawarabi*.

HAB. *Yezo*. Kitami.

DISTRIB. Hokkaido, Europe and North America.

3. *Botrychium Lunaria* Sw. in Schrad. Jour. (1800) 2. 110; Ledeb. Fl. Atl. IV. 324 et Fl. Ross. IV. 504; Rupr. Bemerk. Botryc. 35; Milde, Fil. Europ. Atl. 192; Fr. Schm. Fl. Sachal. 205; Hook. & Bak. Syn. Fil. 447; Miyabe, Fl. Kuril. 273; Britt & Br. Ill. Fl. I. 3; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 104; Bitter, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 470; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (172); Robinson & Fern. in Gray's New Man. 48; Underw. in North Am. Fl. XVI, 1. 5; Fedtsch. et Flerow, Ill. Pl. Sib. I. 36; C. Chr. Ind. Fil. 162; Takeda, Fl. Shikotan, 499; Miyabe & Miyake, Fl. Saghal. 616; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 72, in Trans. Sapporo Nat. Hist. Soc. VI. 123; Kudo, Fl. Param. 61., Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 37; Hult. Fl. Kamtchat. I. 47; Nakai, in Tokyo Bot. Mag. XL. 377; Tatewaki, Pl. Isl. Alaid. in Trans. Sapporo Nat. Hist. Soc. IX. 154 et Pl. Akan Reg. (39).

Osmunda Lunaria L. Spec. Pl. ed. 1. 1519.

NOM. JAP. *Hime-hanawarabi*, *Hebinoshita*.

HAB. *Yezo*. Ishikari, Rishiri, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Paramushir, Shimushu, Alaid.

Southern Saghalien. Odomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, Kamtchatka, Siberia, Dahuria, Mongolia, Himalaya, Europe, North and South America, Australia, Tasmania and New Zealand.

4. Botrychium lanceolatum Ångustr. Bot. Notis. 1854, 63; Rupr. Bemerk. Botryc. 38; Milde, Fil. Europ. Atl. 197; Fr. Schm. Fl. Sachal. 205; Britt. & Br. Ill. Fl. I. 4; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 109; H. Chr. Farnk. d. Erde, 366; Hegi, Ill. Fl. Mittel-Europ. I. 45; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (172); C. Chr. Ind. Fil. 162; Fedtsch. et Flerow, Ill. Pl. Sib. I. 37; Miyabe & Miyake, Fl. Saghal. 617; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 72, in Trans. Sapporo Nat. Hist. Soc. VI. 123; Kudo, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 37; Hult. Fl. Kamtchat. I. 47.

Osmunda lanceolata Gmel. in Nov. Comm. Acad. Petrop. XII. 516, t. 11, f. 2.

Botrychium palmatum Presl, Suppl. Pteridogr. 43; Nakai, in Tokyo Bot. Mag. XL. 379.

NOM. JAP. *Karafuto-hanawarabi*, *Miyama-hanawarabi*.

HAB. *Kuriles*. Shimushir, Shimushu.

Southern Saghalien. Toyohara.

Northern Saghalien. Alexandrowsk, Tim.

DISTRIB. Saghalien, Northern Kuriles, Honshu, Siberia, Kamtchatka, Europe and North America.

5. Botrychium robustum Underw. in Bull. Torrey Bot. Club, XXX. 51; Nakai, in Tokyo Bot. Mag. XXXIX, 192 et XL. 382.

Botrychium rutaefolium Sw. var. *robustum* Rupr. apud Milde, in Nov. Act. Caes. Leopold-Carol. XXVI. 763, pl. 55, f. 9.

Botrychium rutaefolium Fr. Schm. Fl. Saghal. 205, non A. Br.

Botrychium ternatum Miyabe, Fl. Kuril. 274; Matsum. Ind. Pl. Jap. I. 298, p.p., non Milde.

Botrychium Matricariæ Fedtsh. et Flerow, Ill. Pl. Sib. I. 38, p.p.; Miyabe & Miyake, Fl. Saghal. 617; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 72, in Trans. Sapporo Nat. Hist. Soc. VI. 123; Kudo, Fl. Param. 61, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 37, non Spr.

Botrychium multifidum Rupr. var. *robustum* C. Chr. apud Hult. Fl. Kamtchat. I. 48.

NOM. JAP. *Yezo-fuyuno-hanawarabi*.

NOM. AINU. *Ushishi-kina*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Teshio.

Kuriles. Etorofu, Urup, Paramushir, Shimushu.

Southern Saghalien. Odomari, Toyohara, Shikka.

Northern Saghalien. Alexandrowsk, Tim.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kamtchatka and Unalaska.

6. *Botrychium virginianum* Sw. in Schrad. Jour. Bot. (1800) 2. 111; Ledeb. Fl. Ross. IV. 506; Rupr. Bemerk. Botryc. 41; Miq. Prol. Fl. Jap. 346; Milde, Fil. Europ. Atl. 207; Hook. & Bak. Syn. Fil. 448; Fr. et Sav. Enum. Pl. Jap. II. 253; Britt. & Br. Ill. Fl. I. 4; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 111; Diels, Fl. C. China, 209; H. Chr. Farnk. d. Erde, 366; Hegi, Ill. Fl. Mittel-Europ. I. 46; Underw. in North Am. Fl. XVI, 1. 6; C. Chr. Ind. Fil. 163; Fedtsch. et Flerow, Ill. Pl. Sib. I. 39; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 74, in Trans. Sapporo Nat. Hist. Soc. VI. 124; Nakai, in Tokyo Bot. Mag. XL. 381.

Osmunda Virginianum L. Sp. Pl. ed. 1. 1064.

Botrychium strictum Matsum. Ind. Pl. Jap. I. 297, p. p., non Underw.

NOM. JAP. *Natsu-no-hanawarabi*.

HAB. *Yezo*. Oshima, Iburi, Hidaka, Ishikari.

DISTRIB. Yezo, Honshu, Shikoku, Kyushu, China, Baikal, Altai, Himalaya, Europe, North and South America, Tasmania and New Zealand.

7. *Botrychium strictum* Underw. in Bull. Torr. Bot. Club. XXX. 52; C. Chr. Ind. Fil. 163; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 75, in Trans. Sapporo Nat. Hist. Soc. VI. 125; Nakai, in Tokyo Bot. Mag. XL. 380.

Botrychium strictum Matsum. Ind. Pl. Jap. I. 297, p. p., non Underw.

NOM. JAP. *Nagaho-no-natsuno-hanawarabi*.

HAB. *Yezo*. Oshima, Shiribeshi, Ishikari.

DISTRIB. Yezo, Honshu and China.

HYMENOPHYLLACEÆ

Trichomanes L.

8. ***Trichomanes orientalis*** C. Chr. Ind. Fil. 646; Nakai, in Tokyo Bot. Mag. XL. 268.

Trichomanes japonicum Fr. et Sav. Enum. Pl. Jap. II. 207 et 618; Makino, in Tokyo Bot. Mag. XII. (193) et Phanerog. Pterid. Jap. Ic. *pl.* 21, non Thunb.

var. **abbreviatum** Miyabe et Kudo, Mater. Fl. Hokkaido, n. 134, in Trans. Sapporo Nat. Hist. Soc. IX. 61.

Trichomanes japonicum Fr. et Sav. var. *abbreviatum* H. Chr. in Bull. Herb. Boiss. VII. 817; Matsum. Ind. Pl. Jap. I. 349.

Hymenophyllum Wrightii Takeda, in Tokyo Bot. Mag. XXIV. 179, quoad Pl. Kuril.

NOM. JAP. *Kita-kogane-shinobu*.

HAB. *Yezo*. Shiribeshi.

Kuriles. Etorofu.

DISTRIB. var. Southern Kuriles, Yezo and Northern Honshu; *sp.* Kyushu, Quelpart, China and Himalaya.

Hymenophyllum SMITH

9. ***Hymenophyllum Wrightii*** V. D. Bosch, in Ned. Kruidk. IV. 391; Miq. Prol. Fl. Jap. 390; Hook. & Bak. Syn. Fil. 58, in nota *Hymenophyllum rarum* R. Br.; Fr. et Sav. Enum. Pl. Jap. II. 205, 617; Makino, Phanerog. Pterid. Jap. Ic. I. *Pl. XVII*; H. Chr. Farnk. d. Erde, 16, in nota *Hymenophyllum rarum* R. Br.; Matsum. Ind. Pl. Jap. I. 310; C. Chr. Ind. Fil. 369; Takeda, in Tokyo Bot. Mag. XXIV. 179, p. p.; Nakai, in Tokyo Bot. Mag. XL. 247; Tatewaki, Veg. Mt. Apoi, (24).

NOM. JAP. *Koke-shinobu*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Hidaka, Ishikari, Rebun, Rishiri, Kushiro.

DISTRIB. Yezo, Honshu and Quelpart.

POLYPODIACEÆ

Woodsia R. Br.

10. *Woodsia polystichoides* Eaton, in Proc. Amer. As. Art Sc. IV. 110; Miq. Prol. Fl. Jap. 343; Fr. Schm. Fl. Saghal. 206; Hook. & Bak. Syn. Fil. 48; Fr. et Sav. Enum. Pl. Jap. II. 205; Korsh. Pl. Amur. 430; H. Chr. Farnk. d. Erde, 283 et in Bull. Ac. Intern. Geogr. Bot. 18 ann. (1909), 166; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 161, f. 88, a-f; Kom. Fl. Mansh. I. 107; C. Chr. Ind. Fil. 657.

Physematium polytichoides Trev. Nu. Glorn. Bot. It. VII. 161.

var. **nudiuscula** Hook. Gard. Ferns, sub t. 32; Makino, in Tokyo Bot. Mag. XII. (14); Matsum. Ind. Pl. Jap. I. 352; Takeda, Fl. Shikotan, 500; Miyabe & Miyake, Fl. Saghal. 621; Kudo, Rep. Veg. N. Saghal. 30.

NOM. JAP. *Yezo-iwadenda*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro and Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup.

Southern Saghalien. Odomari, Mauka, Ushoro, Toyohara, Motodomari.

Northern Saghalien. Alexandrowsk.

DISTRIB. var. Saghalien, Kuriles, Yezo and Northern Honshu; *sp.* Honshu, Kyushu, Korea, Manchuria, China, Amur and Ussuri.

11. *Woodsia manchuriensis* Hook. 2nd. Cent. t. 98; Milde, Fil. Europ. Atl. 168; Hook. & Bak. Syn. Fil. 48; Fr. et Sav. Enum. Pl. Jap. II. 205; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 161; H. Chr. Farnk. d. Erde, 283; Kom. Fl. Mansh. I. 108; Matsum. Ind. Pl. Jap. I. 351; C. Chr. Ind. Fil. 657; Fedtsch. et Flerow, Ill. Pl. Sib. II. 9; Nakai, Fl. Korea. II. 386; Tatewaki, Pl. Akan Region, (38).

NOM. JAP. *Fukuroshida*.

HAB. *Yezo*. Oshima, Hidaka, Ishikari, Tokachi, Kushiro.

DISTRIB. Yezo, Honshu, Korea, Manchuria and North China.

12. *Woodsia ilvensis* R. Br. Prodr. (1810) 158 et in Trans. Linn. Soc. II. 175, t. 11; Ledeb. Fl. Ross. IV. 510; Trautv. et Mey. Fl. Ochot. 108;

Rgl. et Til. Fl. Ajan. n. 345; Maxim. Prim. Fl. Amur. 337; Rgl. Tent. Fl. Ussur. 176; Miq. Prol. Fl. Jap. 343, 390; Hook. & Bak. Syn. Fil. 46; Fr. et Sav. Enum. Pl. Jap. II. 204; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 161; Britt. & Br. Ill. Fl. I. 10; Kurtz, in Engl. Bot. Jahrb. XIX. 482; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 45; H. Chr. Farnk. d. Erde, 282; Kom. Fl. Mansh. I. 111; Matsum. Ind. Pl. Jap. I. 351; C. Chr. Ind. Fil. 656; Miyabe & Miyake, Fl. Saghal. 621; Fedtsch. et Flerow, Ill. Pl. Sib. I. 9; Kudo, Rep. Veg. N. Saghal. 30; Takeda, in Notes R. B. G. Eding. n. XXXIX. 230; Mak. & Nemoto, Fl. Jap. 1668; Printz, Veg. Sib.-Mong. Front. 102; Hult. Fl. Kamtchat. I. 29.

Acrostichum ilvense L. Sp. Pl. ed. 1. 1071.

Woodsia hyperborea Koch, *B. rufidula* Milde, Fil. Europ. Atl. 164; Korsh. Pl. Amur. 430.

NOM. JAP. *Miyama-ivadenda*, *Rishiri-denda*.

HAB. *Yezo*. Ishikari, Rishiri, Kushiro.

Southern Saghalien. Odomari, Motodomari, Shikka.

DISTRIB. Saghalien, Yezo, Shikoku, Korea, Manchuria, China, Kamtchatka, Siberia, Europe and North America.

13. *Woodsia glabella* R. Br. apud Richards. in Franklin Narr. of a Jour. 754; Ledeb. Fl. Ross. IV. 511; Turcz. Fl. Baic. Dah. II. 354; Hook. Spec. Fil. I. 64; Hook. & Bak. Syn. Fil. 47; Fr. Schm. Fl. Sachal. 206; H. Chr. Farnk. d. Erde, 282; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 161; Britt. & Br. Ill. Fl. I. 10; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 47; Kom. Fl. Mansh. I. 112; C. Chr. Ind. Fil. 656; Miyabe & Miyake, Fl. Saghal. 622; Hult. Fl. Kamtchat. I. 29.

NOM. JAP. *Karafuto-ivadenda*.

HAB. *Southern Saghalien*. Mauka, Motodomari.

DISTRIB. Saghalien, Manchuria, Siberia, Dahuria, Kamtchatka, Behring Strait, North and Central Europe and North America.

Cystopteris BERNH.

14. *Cystopteris fragilis* Bernh. in Schrad. neu. Journ. I. 2. 26, *t. 2*, *f. 9*; Ledeb. Fl. Ross. IV. 516; Trautv. et Mey. Fl. Ochot. 108; Rgl. et Til.

Fl. Ajan. 128; Maxim. Prim. Fl. Amur. 339, 479; Rgl. Tent. Fl. Ussur. 177; Fr. Schm. Fl. Saghal. 206; Hook. & Bak. Syn. Fil. 103; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 163, *f. 89 a-c*; H. Chr. in Bull. Herb. Boiss. IV. 664; Korsh. Pl. Amur. 429; Miyabe, Fl. Kuril. 274; Kurtz, in Engl. Bot. Jahrb. XIX. 482; Britt. & Br. Ill. Fl. I. 13; H. Chr. Farnk. d. Erde, 280 et in Bull. Acad. Intern. Géogr. Bot. 18 ann. 165; Kom. Fl. Mansh. I. 113; Matsum. Ind. Pl. Jap. I. 301; C. Chr. Ind. Fil. 203; Koidz. Pl. Sachal. 4; Miyabe & Miyake, Fl. Saghal. 622; Simpson, in Jour. Linn. Soc. Bot. XLI. 454; Smiley, in Univ. Calif. Publ. Bot. IX. 77; Printz, Veg. Sib.-Mong. Front. 102; Kudo, Rep. Veg. N. Saghal. 31; Mak. & Nemoto, Fl. Jap. 1597; Hult. Fl. Kamtchat. I. 29.

Polypodium fragile L. Sp. Pl. ed. 1. 1091.

NOM. JAP. *Nayoshida*.

HAB. *Yezo*. Kitami, Tokachi, Kushiro.

Kuriles. Kunashiri, Urup.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Tomarioro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, China, Mongolia, Amur, Ussuri, Okhotsk, Ajan, Kamtchatka, Dahuria, Siberia, Himalaya, Turkestan, Caucasus, Central Asia, Europe, Africa, Hawaiian Is., Madeira, Tasmania, New Zealand, America and Australia.

Matteuccia TODARO

15. *Matteuccia Struthiopteris* Todaro, Syn. Pl. Acot. Vasc. Sic. 30; C. Chr. Ind. Fil. 420; Nakai, Fl. Korea. II. 338; Takeda, Fl. Shikotan, 509; Miyabe & Miyake, Fl. Saghal. 623; Kudo, Rep. Veg. N. Saghal. 31; Mak. & Nemoto, Fl. Jap. 1634.

Osmunda Struthiopteris L. Sp. Pl. ed. 1. 1066.

Struthiopteris germanica Willd. Sp. Pl. V. 288; Ledeb. Fl. Ross. IV. 527; Maxim. Prim. Fl. Amur. 341; Fr. Schm. Fl. Sachal. 206; Korsh. Pl. Amur. 429; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 164, *f. 90, a-f*; H. Chr. Farnk. d. Erde, 285; Kom. Fl. Mansh. I. 115; Fedtsch. et Flerow, Ill. Pl. Sib. I. 12.

Struthiopteris flicastrum All. Fl. Pedem. II. 283; Hult. Fl. Kamtchat. I. 30.

Onoclea Struthiopteris Hoffm. Deutschl. Fl. II. 11; Britt. & Br. Ill. Fl. I. 9; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 43; Printz, Veg. Sib.-Mong. Front. 103.

Onoclea germanica Willd. l.c.; Hook. & Bak. Syn. Fil. 46; Miq. Prol. Fl. Jap. 343; Fr. et Sav. Enum. Pl. Jap. II. 204.

NOM. JAP. *Kusa-sotetsu, Kogomi.*

NOM. AINU. *Soroma, Airap-kina.*

HAB. *Yezo.* Oshima, Iburi, Ishikari, Teshio, Kushiro.

Kuriles. Kunashiri, Shikotan.

Southern Saghalien. Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim. Tymi.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, China, Manchuria, Amur, Siberia, Kamtchatka and Europe.

16. *Matteuccia orientalis* Trev. Atti. Ist. Veneto III. 14. 586; C. Chr. Ind. Fil. 420; Nakai, Fl. Korea. II. 387; Mak. & Nemoto, Fl. Jap. 1634.

Struthiopteris orientalis Hook. 2nd. Cent. t. 4; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 166; Palib. Consp. Fl. Korea. III. 39; Makino, Phanerog. Pterid. Jap. I. pl. 12; Matsum. Ind. Pl. Jap. I. 348.

Onoclea orientalis Hook. Syn. Fil. 46; Miq. Prol. Fl. Jap. 343; Fr. et Sav. Enum. Pl. Jap. II. 204.

NOM. JAP. *Inu-gansoku, O-kusasotetsu.*

HAB. *Yezo.* Oshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Kushiro.

Kuriles. Kunashiri.

DISTRIB. Kuriles, Yezo, Honshu, Korea, China and Eastern Himalaya.

Onoclea L.

17. *Onoclea sensibilis* L. Sp. Pl. ed. 1. 1062; Rgl. Tent. Fl. Ussur. 175; Miq. Prol. Fl. Jap. 343; Hook. & Bak. Syn. Fil. 46; Fr. et Sav. Enum. Pl. Jap. II. 204; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 166; Britt. & Br. Ill. Fl. I. 9; H. Chr. Farnk. d. Erde, 284; Kom. Fl. Mansh. I. 116; Matsum.

Ind. Pl. Jap. I. 330; C. Chr. Ind. Fil. 468; Fedtsch. et Flerow, Ill. Pl. Sib. I. 13; Nakai, Fl. Korea. 388; Miyabe & Miyake, Fl. Saghal. 623.

Onoclea sensibilis L. var. *interrupta* Maxim. Prim. Fl. Amur. 337; Korsh. Pl. Amur. 429.

NOM. JAP. *Koya-warabi*, *Zenmai-shinobu*.

NOM. AINU. *Kamui-soroma*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Tokachi, Kushiro.

Kuriles. Kunashiri.

Southern Saghalien. Todomoshiri, Odomari, Toyohara.

DISTRIB. Saghalien, Yezo, Honshu, Korea, Manchuria, Ussuri, Amur, Siberia and North America.

Dryopteris ADANSON

18. *Dryopteris Thelypteris* A. Gray, Man. ed. 1. 630; Britt. & Br. Ill. Fl. I. 15; C. Chr. Ind. Fil. 297; H. Chr. in Bull. Acad. Intern. Géogr. Bot. 18 ann. 164; Nakai, Fl. Korea. II. 388; Miyabe & Miyake, Fl. Saghal. 626; Kudo, Rep. Veg. N. Saghal. 32.

Acrostichum Thelypteris L. Sp. Pl. ed. 1. 1071.

Aspidium Thelypteris Sw. in Schrad. Jour. Bot. (1800) 2. 40; Rgl. Tent. Fl. Ussuri. 176; Korsh. Pl. Amur. 428; Fr. et Sav. Enum. Pl. Jap. II. 237; Printz, Veg. Sib.-Mong. Front. 103.

Polystichum Thelypteris Roth, Tent. Fl. Germ. III. 77; Ledeb. Fl. Ross. IV. 513; Maxim. Prim. Fl. Amur. 338; Fr. Schm. Fl. Saghal. 206.

Nephrodium Thelypteris Stempel, Fil. Berol. Syn. 32; Hook. & Bak. Syn. Fil. 271; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 172; Kom. Fl. Mansh. I. 325; Fedtsch. et Flerow, Ill. Pl. Sib. I. 15.

NOM. JAP. *Himeshida*, *Shorima*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Tokachi, Kushiro, Nemuro.

Southern Saghalien. Odomari, Toyohara.

Northern Saghalien. Alexandrowsk, Tymi.

DISTRIB. Saghalien, Yezo, Honshu, Shikoku, Korea, Manchuria, Amur,

Ussuri, China, Himalaya, India, Siberia, Europe, Africa, New Zealand and North America.

19. *Dryopteris japonica* C. Chr. Ind. Fil. 272.

Nephrodium japonicum Bak. in Ann. Bot. V. 318.

Aspidium japonicum Makino, in Tokyo Bot. Mag. X. (110); Matsum. Ind. Pl. Jap. I. 287.

NOM. JAP. *Hari-gane-warabi*.

HAB. *Yezo*. Oshima.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu and Tsushima.

20. *Dryopteris nipponica* C. Chr. Ind. Fil. 279; Nakai, Fl. Korea.

II. 395; Kodama, in Matsum. Icon. Pl. Koishikav. III. 55. *pl.* 173.

Aspidium nipponicum Fr. et Sav. Enum. Pl. Jap. II. 242, 636; Matsum. Ind. Pl. Jap. I. 288.

Nephrodium nipponicum Diels, Fl. C. China. 191.

NOM. JAP. *Nikko-shida*.

HAB. *Yezo*. Iburi, Ishikari, Kushiro.

DISTRIB. *Yezo*, Honshu, Korea, China and Eastern Tibet.

21. *Dryopteris oreopteris* Maxon, in Proc. U. S. Nat. Mus. XXIII. 336; C. Chr. Ind. Fil. 281.

Polypodium oreopteris Ehrh. apud. Willd. Fl. Berol. Prod. 292; Ehrh. Beitr. IV. 44.

Aspidium oreopteris Sw. in Schrad. Journ. Bot. (1800) 2. 35; Willd. Sp. Pl. V. 247.

Nephrodium oreopteris Desv. Prodr. 257; Hook. Spec. Fil. IV. 89, et Brit. Ferns, t. 14.

Polypodium montanum J. A. Vogler, Dissert. Polyp. Mont., non Lam.

Nephrodium montanum Bak. in Hook. & Bak. Syn. Fil. 271; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 173.

Lastera montana Moore, Hand. Brit. Ferns, ed. 2. 100.

Dryopteris montana O. Ktze. Rev. Gen. Pl. II. 813.

var. **Fauriei** Miyabe et Kudo, Mater. Fl. Hokkaido, n. 61, in Trans. Sapporo Nat. Hist. Soc. VI. 119; Kudo, Pl. Param. 59; Mak. & Nemoto, Fl. Jap. 1620; Hult. Fl. Kamtchat. I. 34.

Nephrodium montanum Bak. var. *Fauriei* H. Chr. in Bull. Herb. Boiss. IV. 671; Matsum. Ind. Pl. Jap. I. 322.

Dryopteris Christiana Kodama, apud Koidz. in Tokyo Bot. Mag. XXXVIII. 107.

Dryopteris kamtschatica Kom. in Fedde Rep. Nov. Sp. XIII. 84.

NOM. JAP. *Oba-shorima*.

HAB. *Yezo*. Shiribeshi, Iburi, Ishikari, Teshio, Rishiri, Tokachi.

Kuriles. Etorofu, Urup, Paramushir.

DISTRIB. var. *Kuriles*, *Yezo*, Honshu and Kamtchatka. *sp.* Europe, Madeira, Asia minor and N.W. North America.

22. *Dryopteris Dickinsii* C. Chr. Ind. Fil. 262; Mak. & Nemoto, Fl. Jap. 1612.

Aspidium Dickinsii Fr. et Sav. Enum. Pl. Jap. II. 236, 629.

Nephrodium Dickinsii Baker, in Ann. Bot. V. 316; Matsum. Ind. Pl. Jap. I. 317; Makino, in Tokyo Bot. Mag. XII. (87).

Dryopteris okushirensis Miyabe et Kudo, Mater. Fl. Hokkaido, n. 102, in Trans. Sapporo Nat. Hist. Soc. VII. 24.

NOM. JAP. *O-kujakushida*, *Okushiri-iwahego*.

HAB. *Yezo*. Okushiri.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu and China.

It is very unexpected to find in Hokkaido the present fern, which has been known to grow only in the warmer region of Honshu, Shikoku and Kyushu, and also in China. We considered it once as a new species and described it under the name of *Dryopteris okushiriensis* Miyabe et Kudo. Prof. S. Kodama, a well known Pterigraphist, had one time kindly suggested to one of the authors a probable identity of our species to *D. Dickinsii*, judging from our description. However, we have not been able to compare our specimens with those of *D. Dickinsii* in order to settle the question, until quite recently. Prof. Nakai of the Tokyo Imperial University has most kindly loaned to us at our request the only specimen of *D. Dickinsii* C. Chr. in the Herbarium of the Botanical Institute of the University. The specimen was one collected by Dr. T. Makino at Mt. Yokogura, Shikoku, in 1896. On comparison, we found them completely identical, and could not even detect any characters, by which we might find a new forma or

varietas on this plant, which grows at the isolated extreme limit of the distribution area of the species.

The Island of Okushiri is situated in the Sea of Japan not far off the coast of Prov. Shiribeshi. It is bathed by a warm branch of the Tsushima Current. It has a mild climate. Consequently, among its flora, we find many interesting southern elements, which are either very rare or entirely absent in the mainland of Hokkaido. For example, we may cite *Dryopteris lacera* O. Ktze. var. *subtripartita* Miyabe et Kudo, *Selaginella involvens* Spring, form. *minor* Milde, *Ischaemum antheptroides* Miq., *Cymbidium virens* Lindl. and *Ardisia japonica* Bl.

23. *Dryopteris tokyoensis* C. Chr. Ind. Fil. 298; Kodama, in Matsum. Icon. Koishikav. I. 25, 26, *pl.* 13; Miyabe & Kudo, Mater. Fl. Hokkaido n. 62, in Trans. Sapporo Nat. Hist. Soc. VI. 120; Mak. & Nemoto, Fl. Jap. 1627.

Aspidium tokyoense Matsum. MSS.

Nephrodium tokyoense Makino, in Tokyo Bot. Mag. XII. (87), *ibidem* XIII. 81; Matsum. Ind. Pl. Jap. I. 326.

Aspidium transitorium H. Chr. in Bull. Herb. Boiss. VII. 822.

NOM. JAP. *Tanihego*.

HAB. *Yezo*. Shiribeshi, Iburi, Ishikari.

DISTRIB. *Yezo* and Honshu.

24. *Dryopteris fragrans* Schott, Gen. Fil. ad *t.* 9; Britt. & Br. Ill. Fl. I. 16; C. Chr. Ind. Fil. 266; Takeda, in Tokyo Bot. Mag. XXIV. 318 et Fl. Shikotan 500; Miyabe & Miyake, Fl. Saghal. 626; Kudo, Rep. Veg. N. Saghal. 32; Hult. Fl. Kamtchat. I. 32; Tatewaki, Pl. Akan Region, (36).

Polypodium fragrans L. Sp. Pl. ed. 1. 1089.

Aspidium fragrans Sw. in Schrad. Jour. Bot. (1800) 2. 35; Milde, Fil. Europ. Atl. 117; Rgl. Tent. Fl. Ussuri. 176; Korsh. Pl. Amur. 428; Miyabe, Fl. Kuril. 274; Kurtz, in Engl. Bot. Jahrb. XIX. 482.

Polystichum fragrans Ledeb. Fl. Ross. IV. 514; Trautv. et Mey. Fl. Ochot. 108; Rgl. et Til. Fl. Ajan. 128; Maxim. Prim. Fl. Amur. 339; Fr. Schm. Fl. Saghal. 206.

Nephrodium fragrans Rich. in Franklin Narr. of a Jour. 754; Hook. & Bak. Syn. Fil. 275; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 173; Kom. Fl. Mansh. I. 121; Matsum. Ind. Pl. Jap. I. 319; Fetdsch. et Flerow, Ill. Pl. Sib. I. 16.

NOM. JAP. *Nioi-shida*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Ishikari, Kitami, Kushiro. *Kuriles*. Kunashiri, Shikotan.

Southern Saghalien. Todomoshiri, Odomari, Ushoro, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, Amur, Ussuri, Okhotsk, Ajan, Kamtchatka, Siberia, Caucasus, Europe and North America.

25. *Dryopteris subtripinnata* O. Ktze. Rev. Gen. Pl. II. 811; C. Chr. Ind. Fil. 296; Nakai, Fl. Korea. II. 390; Makino & Nemoto, Fl. Jap. 1626.

Aspidium subtripinnatum Miq. Prol. Fl. Jap. 343; Fr. et Sav. Enum. Pl. Jap. II. 240.

Nephrodium subtripinnatum Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 174; Matsum. Ind. Pl. Jap. I. 325.

Nephrodium chinense Bak. in Hook. & Bak. Syn. Fil. 278.

NOM. JAP. *Hosobano-itachishida*, *Misaki-kaguma*.

HAB. *Yezo*. Without locality, (Herb. Tok. Imp. Univ.)

DISTRIB. Yezo, Honshu, Kyushu, Korea and China.

26. *Dryopteris crassirhizoma* Nakai, in Cat. Sem. et Spor. Hort. Bot. Univ. Imp. Tokyo, (1920), 32; Mak. & Nemoto, Fl. Jap. 1610.

Aspidium Filix-mas A. Gray, Bot. Jap. 421; Miq. Prol. Fl. Jap. 341, 390; Fr. et Sav. Enum. Pl. Jap. II. 238; H. Chr. in Bull. Herb. Boiss. VII. 821, non Swartz.

Nephrodium Filix-mas Hook. & Bak. Syn. Fil. 272, p. p.; Kom. Fl. Mansh. I. 119; Matsum. Ind. Pl. Jap. I. 318, non Rich.

Dryopteris Filix-mas Lev'l. in Bull. Acad. Int. Géogr. Bot. 19. ann. 6; Nakai, Fl. Korea. II. 390, non Schott.

Dryopteris polylepis Kudo, Rep. Veg. Tomakomai Forest, 2 et Rep. Veg. Nopporo Forest, 2, non C. Chr.

Dryopteris setosa Kudo, Medical Pl. Hokkaido, n. 1.

NOM. JAP. *Miyama-inode*, *Yezo-memma*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro.

Kuriles. Kunashiri.

DISTRIB. S. Kuriles, Yezo, Honshu, Shikoku, Korea, Dagelet and Manchuria.

var. **setosa** (H. Chr.) Miyabe et Kudo, *comb. nov.*

Dryopteris Filix-mas Schott, var. *setosa* H. Chr. in Bull. Acad. Intern. Géogr. Bot. 18 ann. 164.

NOM. JAP. *Karafuto-memma*.

HAB. *Southern Saghalien*. Toyohara, Motodomari, Shikka.

DISTRIB. An endemic plant!

27. *Dryopteris monticola* C. Chr. Ind. Fil. 278; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 63, in Trans. Sapporo Nat. Hist. Soc. VI. 120; Mak. & Nemoto, Fl. Jap. 1618.

Nephrodium monticola Makino, in Tokyo Bot. Mag. XII. 80; Matsum. Ind. Pl. Jap. I. 322.

NOM. JAP. *Miyama-benishida*.

HAB. *Yezo*. Oshima, Iburi, Ishikari, Teshio, Kitami.

DISTRIB. Yezo and Honshu.

28. *Dryopteris lacera* O. Ktze. Rev. Gen. Pl. II. 813; H. Chr. in Bull. Herb. Boiss. (1902), 828; C. Chr. Ind. Fil. 273; Nakai, Fl. Korea. II. 291.

var. **subtripartita** Miyabe et Kudo, Mater. Fl. Hokkaido, n. 64, in Trans. Sapporo Nat. Hist. Soc. VI. 120; Mak. & Nemoto, Fl. Jap. 1616.

Aspidium lacerum Sw. var. *subtripartitum* Fr. et Sav. Enum. Pl. Jap. II. 238.

Nephrodium Filix-mas Rich. var. *lacerum* H. Chr. form. *subtripartitum* Matsum. Ind. Pl. Jap. I. 319.

NOM. JAP. *O-kumawarabi*.

HAB. *Yezo*. Okushiri.

DISTRIB. *var.* *Yezo* and Honshu; *sp.* Honshu and Kyushu.

29. *Dryopteris Sabaei* C. Chr. Ind. Fil. 290; Takeda, in Tokyo Bot. Mag. XXIX. 319; Kodama, in Matsum. Icon. Koishikav. I. 137, 138, *pl.* 69; Ogata, Icon. Fil. Jap. I. *pl.* 24.

Aspidium Sabaei Fr. et Sav. Enum. Pl. Jap. II. 239, 632.

Nephrodium Filix-mas Rich. *var.* *Sabaei* H. Chr. in Bull. Herb. Boiss. VII. 822; Matsum. Ind. Pl. Jap. I. 319, 384.

NOM. JAP. *Miyama-itachishida*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Hidaka.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu and China.

30. *Dryopteris mutica* C. Chr. Ind. Fil. 297; Mak. & Nemoto, Fl. Jap. 1619; Tatewaki, Veg. Mt. Apoi, (25).

Aspidium muticum Fr. et Sav. Enum. Pl. Jap. II. 240, 635; Matsum. Ind. Pl. Jap. I. 288.

NOM. JAP. *Shinobu-kaguma*, *Miyama-kanawarabi*.

HAB. *Yezo*. Shiribeshi, Ishikari, Hidaka, Tokachi, Kushiro.

Kuriles. Etorofu.

DISTRIB. Kuriles, *Yezo* and Honshu.

31. *Dryopteris Miqueliana* C. Chr. Ind. Fil. 273; Takeda, in Tokyo Bot. Mag. XXIV. 319; Nakai, Fl. Korea. II. 391; Tatewaki, Fl. Akan Region, (37).

Aspidium Miquelianum Maxim. apud Fr. et Sav. Enum. Pl. Jap. II. 240, 634; Matsum. Ind. Pl. Jap. I. 288.

Nephrodium Miquelianum Kom. Fl. Mansh. I. 123; Yabe, in Tokyo Bot. Mag. XVII. 65.

NOM. JAP. *Narai-shida*.

HAB. *Yezo*. Okushiri, Iburi, Hidaka, Ishikari, Teshio, Kushiro.

DISTRIB. *Yezo*, Honshu, Korea and Manchuria.

32. *Dryopteris viridescens* O. Ktze. Rev. Gen. Pl. II. 814; C. Chr. Ind. Fil. 330; Nakai, Fl. Korea. II. 396.

Aspidium viridescens Miq. Cat. Mus. Lugd.-Bat. 1272; Fr. et Sav. Enum. Pl. Jap. II. 241.

Nephrodium viridescens Bak. in Hook. & Bak. Syn. Fil. 275; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 173; Matsum. Ind. Pl. Jap. I. 327.

NOM. JAP. *Kogane-warabi, Ryomen-shida.*

HAB. *Yezo.* Shiribeshi, Ihuri, Ishikari, Teshio.

DISTRIB. *Yezo, Honshu, Kyushu, Liukiu, Korea and China.*

33. *Dryopteris amurensis* H. Chr. in Bull. Géogr. Bot. Mans (1909) 35 et Mém. XX. 164; C. Chr. Ind. Fil. Suppl. 29; Kudo, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 33.

Aspidium spinulosum Sw. subsp. *genuinum* Milde var. *amureuse* Milde, Fil. Europ. Atl. 133.

Nephrodium euspinulosum Diels var. *amureuse* Kom. Fl. Mansh. I. 122.

Dryopteris amurensis Takeda, in Tokyo Bot. Mag. XXIV. 113; Miyabe & Miyake, Fl. Saghal. 623; Mak. & Nemoto, Fl. Jap. 1608.

? *Nephrodium subtripinnatum* Matsum. Ind. Pl. Jap. I. 325, non Diels, quoad pl. *Yezo.*

NOM JAP. *Okuyama-shida.*

HAB. *Yezo.* Shiribeshi, Ishikari, Kitami, Tokachi, Kushiro, Nemuro.

Southern Saghalien. Odomari, Honto, Mauka, Tomarioro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Oha, Schmidt-Penn.

DISTRIB. *Saghalien, Yezo and Amur.*

34. *Dryopteris dilatata* A. Gray, Man. (1848) 631; H. Chr. in Bull. Acad. Géogr. Bot. (1909) 164 et ibidem (1910) 7; Nakai, Fl. Korea. II. 392.

Polypodium dilatatum Hoffm. Deutsch. Fl. II. 7.

Polystichum spinosum DC. δ . *dilatatum* Rupr. Distr. Crypt. 37; Maxim. Prim. Fl. Amur. 339; Fr. Schm. Fl. Sachal. 206.

Aspidium dilatatum Willd.: Miq. Prol. Fl. Jap. 342.

Aspidium spinulosum Sw. β . *dilatatum* Rgl. Tent. Fl. Ussuri. 177.

Nephrodium dilatatum Desv. Prodr. 261; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 174; Kom. Fl. Mansh. I. 123; Matsum. Ind. Pl. Jap. I. 317.

Nephrodium spinulosum Hook. β . *dilatatum* Hook. Sp. Fil. IV. 127; Hook. & Bak. Syn. Fil. 275.

Dryopteris spinulosa O. Ktze. var. *dilatatum* Underw. Nat. Ferns, ed. 4. 166; Britt. & Br. Ill. Fl. I. 18; Makino & Nemoto, Fl. Jap. 1625.

Aspidium spinulosum Miyabe, Fl. Kuril. 275, non Bak.

Aspidium spinulosum Sw. subsp. *dilatatum* Röper varr. *deltoideum* et *oblongum* Milde, Fil. Eur. 137.

Dryopteris dilatata A. Gray var. *oblonga* Takeda in Tokyo Bot. Mag. XXIV. 179; Miyabe & Miyake, Fl. Saghal. 628; Kudo, Fl. Param. 59, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 33.

Dryopteris dilatata A. Gray var. *deltoidea* Takeda in Tokyo Bot. Mag. XXIV. 179 et Fl. Shikotan, 500; Tatewaki, Pl. Isl. Alaid, 153.

Dryopteris austriaca Woynar, Schinz et Thellung, Vierteljahrschr. d. Zürich Naturf. Ges. LX. (1915) 339; Hult. Fl. Kamtch. I. 31.

NOM. JAP. *Shirane-warabi*, *Nagaba-shirane-warabi*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Paramushir, Shumushu, Alaid.

Southern Saghalien. Odomari, Honto, Mauka, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Nyiwo, Oha, Pronge-Baikal, Schmidt-Penn.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, Amur, Ussuri, China, Kamtchatka, Siberia, Asia Minor, Europe and North America.

In our floral region, the form of the *oblonga* type is most common and is very widely distributed. In fact, it is the only form of *Dryopteris dilatata* A. Gray that has been found so far in Saghalien, where the plant was collected even in its northernmost extremity.

The form referable to the *deltoidea* type is not so common but is found here and there throughout Yezo and Kuriles, often growing mixed with the *oblonga* form. There are, however, several intermediate forms connecting these two extremes, making it really difficult to decide to which of these forms some of our materials should be allotted.

35. *Dryopteris Phegopteris* C. Chr. Ind. Fil. 284; H. Chr. in Bull.

Acad. Intern. Géogr. Bot. 18 ann. (1909) 163; Nakai, Fl. Korea. II. 390; Takeda, Fl. Shikotan, 500; Miyabe & Miyake, Fl. Saghal. 625; Kudo, Fl. Param. 60, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 33; Ogata, Icon. Fil. Jap. I. *pl.* 22.

Polypodium Phegopteris L. Sp. Pl. ed. 1. 1089; Ledeb. Fl. Ross. IV. 508; Hook. & Bak. Syn. Fil. 308; Maxim. Prim. Fl. Amur. 339; Rgl. et Til. Fl. Ajan. 128; Fr. Schm. Fl. Saghal. 205.

Phegopteris polypodioides Fée, Gen. Fil. 243; Milde, Fil. Europ. 110; Korsh. Pl. Amur. 428; H. Chr. Farnk. d. Erde, 275.

Nephrodium Phegopteris Prantl, Exkursionsflora v. Baiern, 23; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 170; Kom. Fl. Mansh. I. 117; Matsum. Ind. Pi. Jap. I. 323; Fedtsch. et Flerow, Ill. Pl. Sib. I. 15.

Dryopteris Phegopteris C. Chr. var. *cruciata* C. Chr. apud Hult. Fl. Kamtch. I. 36.

NOM. JAP. *Miyama-warabi*, *Usu-warabi*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Rebun, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Urup, Paramushir.

Southern Saghalien. Odomari, Mauka, Ushoro, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, N. Korea, Manchuria, Amur, Ajan, Kamtchatka, Siberia, Kashmir, Sikkim, Asia Minor, Europe and North America.

The plant referable to the var. *cruciata* (Kaulf.) C. Chr., which is known to have a limited distribution area in the Northern Kuriles, Kamtchatka and Unalaska, grows also in the alpine regions of Yezo and Saghalien. It was collected in Yezo on Mt. Yubari (Yanagisawa and Hamana, 1912) and on Mt. Memoro (Nishida, 1914); on Mts. Kashipo and Tosso (Hiratsuka, 1928) in S. Saghalien; and in the Northern Kuriles, in Paramushir (Kudo, 1920) and in Urup (Tatewaki, 1927).

36. *Dryopteris Linnaeana* C. Chr. Ind. Fil. 275; Miyabe & Miyake, Fl. Saghal. 625; Kudo, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 34; Hult. Fl. Kamtch. I. 33; Tatewaki, Pl. Akan Region, (37).

Polypodium Dryopteris L. Sp. Pl. ed. 1. 1093; Ledeb. Fl. Ross. IV.

509; Rgl. et Til. Fl. Ajan. 128; Maxim. Prim. Fl. Amur. 337; Rgl. Tent. Fl. Ussuri. 175; Hook. & Bak. Syn. Fil. 309; Fr. et Sav. Enum. Pl. Jap. II. 243; Simpson, in Jour. Linn. Soc. Bot. XLI. 454.

Nephrodium Dryopteris Michx. Fl. Bor. Am. II. 270; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 173; Makino, Icon. Phanerog. Pterid. Jap. I. *pl.* 18; Matsum. Ind. Pl. Jap. I. 317; Fedtsch. et Flerow, Ill. Pl. Sib. I. 17.

Phegopteris Dryopteris Fée, Gen. Fil. 243; Miq. Prol. Fl. Jap. 340; Milde, Fil. Europ. 98; Britt. & Br. Ill. Fl. 19; Printz, Veg. Sib.-Mong. Front. 103.

Dryopteris Dryopteris H. Chr. in Bull. Acad. Intern. Géogr. Bot. 18 ann. (1909) 163.

NOM. JAP. *Usagi-shida*.

HAB. *Yezo*. Shiribeshi, Ishikari, Teshio, Tokachi, Kushiro.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Tomarioro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Oha, Pronge-Baikal, Schmidt-Penn.

DISTRIB. Saghalien, Yezo, Honshu, China, Amur, Manchuria, Ussuri, Okhotsk, Kamtschatka, Siberia, Mongolia, Himalaya, Little Tibet, Europe, N. Africa and N. America.

37. *Dryopteris jessoensis* G. Koidz. in Tokyo Bot. Mag. XXXVIII. (1924) 104; Mak. & Nemoto, Fl. Jap. 1615.

Dryopteris Miyabei H. Koidz. in Shinano-kyoiku, No. 324 (1922) 29.

NOM. JAP. *Iwa-usagishida*, *Yezo-usagishida*, *Ao-usagishida*.

HAB. *Yezo*. Ishikari, Teshio.

DISTRIB. An endemic species!

38. *Dryopteris crenulato-serrulata* C. Chr. Ind. Fil. 259; Miyabe & Kudo, Mater. Fl. Hokkaido n. 101, in Trans. Sapporo Nat. Hist. Soc. VII. 23; Makino & Nemoto, Fl. Jap. 1611.

Athyrium crenulato-serrulatum Makino, in Tokyo Bot. Mag. XIII. 26; Matsum. Ind. Pl. Jap. I. 293.

Phegopteris crenulato-serrulata Makino, in Tokyo Bot. Mag. XVII. 78.

Asplenium crenulato-serrulatum Makino, in Tokyo Bot. Mag. XIII. (35).

NOM. JAP. *O-miyama-inuwarabi*.

HAB. *Yezo*. Iburi, Teshio, Kitami.

DISTRIB. *Yezo* and Honshu.

39. *Dryopteris africana* C. Chr. Ind. Fil. 251; Nakai, Fl. Korea. II. 394; Ogata, Icon. Fil. Jap. I. *pl.* 20.

Gymnogramme Totta Schlecht. Adumbr. Pl. 15, *t.* 6; Hook. Sp. Fil. V. 138; Hook. & Bak. Syn. Fil. 376; Fr. et Sav. Enum. Pl. Jap. II. 247.

Gymnogramme Lowei Hook. et Grev. Icon. Fil. *t.* 89.

Nephrodium Totta Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 170; Matsum. Ind. Pl. Jap. I. 326.

Phegopteris Totta Mett. Pheg. u. Asp. n. 31; Miq. Prol. Fl. Jap. 340.

NOM. JAP. *Mizo-shida*.

HAB. *Yezo*. Oshima, Shiribeshi, Ishikari, Teshio.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu, Liukiu, Formosa, Korea, China, India, Java and Africa.

Polystichum Roth

40. *Polystichum craspedosorum* Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 189; Kom. Fl. Mansh. I. 127; C. Chr. Ind. Fil. 580; Matsum. Ind. Pl. Jap. I. 341; Fedtsch. et Flerow, Ill. Pl. Sib. I. 19; Nakai, Fl. Korea. II. 398; Miyabe & Kudo, Mater. Fl. Hokkaido n. 65, in Trans. Sapporo Nat. Hist. Soc. VI. 120; Tatewaki, Pl. Teshio Exp. Forest. (8); Ogata, Icon. Fil. Jap. I. *pl.* 41.

Aspidium craspedosorum Maxim. in Mém. Biol. VII. 341; Hook. & Bak. Syn. Fil. 492; Makino, Phanerog. Pterid. Jap. Ic. Ill. I. *t.* 44.

NOM. JAP. *Tsuru-denda*.

HAB. *Yezo*. Ishikari, Teshio, Kitami.

DISTRIB. *Yezo*, Honshu, Shikoku, Korea, Manchuria, China and Siberia.

41. *Polystichum tripterum* Presl, Epim. 55; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 191; Kom. Fl. Mansh. I. 129; Yabe, in Tokyo Bot. Mag.

XVII. 65; C. Chr. Ind. Fil. 588; Matsum. Ind. Pl. Jap. I. 344; Fedtsch. et Flerow, Ill. Pl. Sib. I. 20; Nakai, Fl. Korea. II. 399.

Aspidium tripterum Kze. in Bot. Zeit. VI. 569; Miq. Prol. Fl. Jap. 340; Hook. Spec. Fil. IV. 15 et 2nd. Cent. Ferns, t. 57; Hook. & Bak. Syn. Fil. 254; Fr. et Sav. Enum. Pl. II. 232; H. Chr. Farnk. d. Erde, 237.

NOM. JAP. *Jumonji-shida*, *Shumoku-shida*, *Mitsude-kaguma*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro.

Kuriles. Kunashiri.

Southern Saghalien. Toyohara.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kyushu, Formosa, Korea, Manchuria and China.

42. *Polystichum aculeatum* Schott, Gen. Fil. t. 9; Fr. Schm. Fl. Sachal. 206; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 197; H. Chr. in Bull. Acad. Géogr. Bot. 18 ann. (1909) 165; Matsum. Ind. Pl. Jap. I. 340; Fedtsch. et Flerow, Ill. Pl. Sib. I. 19; C. Chr. Ind. Fil. 575; Nakai, Fl. Korea. II. 398 et in Tokyo Bot. Mag. XXXIX. 112; Kudo, Rep. Veg. N. Saghal. 34.

Polypodium aculeatum L. Sp. Pl. ed. 1. 1090.

Aspidium aculeatum Sw. in Schrad. Jour. (1800, 2.) 39; Hook. Sp. Fil. IV. 18; Hook. & Bak. Syn. Fil. 252; H. Chr. Farnk. d. Erde, 237.

NOM. JAP. *Oku-inode*.

HAB. *Northern Saghalien*. Alexandrowsk.

DISTRIB. Saghalien, China, Tonquin, India, Ceylon, Persia, Europe, North Africa and Tropical America.

var. **retroso-paleaceum** Kodama, in Tokyo Bot. Mag. XXIX. (339).

NOM. JAP. *Sakage-inode*.

HAB. *Yezo*. Okushiri, Iburi, Hidaka, Ishikari, Teshio, Kitami.

Kuriles. Urup.

DISTRIB. Yezo, Kuriles and Honshu.

43. *Polystichum Braunii* Fée, Gen. Fil. 273; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 192; Kom. Fl. Mansh. I. 129; Matsum. Ind. Pl. Jap. I.

341; C. Chr. Ind. Fil. 579; Takeda, in Tokyo Bot. Mag. XXIV. 178 et Fl. Shikotan, 500; Miyabe & Miyake, Fl. Saghal. 629; Kodama, in Tokyo Bot. Mag. XXIX. (325); Tatewaki, Pl. Isl. Alaid, 153.

Aspidium Braunii Spenner Fl. Frib. I. 9.

Aspidium aculeatum Sw. subsp. *Braunii* Milde, Sporenpfl. 67 et Fil. Europ. 108; Fedtsch. et Flerow, Ill. Pl. Sib. I. 20.

Dryopteris Braunii Underw. Native Ferns, ed. 4. 112; Britt. & Br. Ill. Fl. I. 15.

NOM. JAP. *Hoso-inode*.

HAB. *Yezo*. Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro, Nemuro.

Kuriles. Shikotan, Alaid.

Southern Saghalien. Todomoshiri, Odomari, Motodomari.

DISTRIB. Saghalien, Kuriles, Yezo, Korea, Manchuria, Amur, China, Caucasus, Europe and North America.

44. *Polystichum microchlamys* Kodama, in Tokyo Bot. Mag. XXIX. (326); Makino & Nemoto, Fl. Jap. 1659.

Aspidium microchlamys H. Chr. in Bull. Herb. Boiss. VII. 820.

Polystichum Bakerianum C. Chr. Ind. Filic. 599, quoad specimen ex Japonia, non Diels.

Polystichum Braunii var. *kamtschaticum* C. Chr. et Hult. apud Hult. Fl. Kamtch. I. 38, pl. 2.

? *Aspidium aculeatum* Sw. var. *lobatum* Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (172).

NOM. JAP. *Karakusa-inode*, *Shinobu-inode*.

HAB. *Yezo*. Ishikari.

Kuriles. Shumushu.(?)

DISTRIB. Kamtchatka, Kuriles(?), Yezo and Honshu.

On inquiry about the Shumushu specimens of *Aspidium aculeatum* Sw. var. *lobatum* Yabe et Yendo, Prof. Nakai kindly answered us that the specimens have long been lost from the Herbarium of Tokyo Imperial University, and he could not therefore express any opinion on its identity with *Polystichum Braunii* var. *kamtschaticum* C. Chr. et Hult. But he is of the opinion, that the Kamtchatkan plant itself, judging from the description

and photograph given in Dr. Hultén's masterly work on the Flora of Kamtchatka, seems to correspond exactly to our *Polystichum microchlamys* Kodama. We have here accepted his judgment on the subject.

45. *Polystichum varium* Presl, Epim. 59; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 193; Kom. Fl. Mansh. I. 130; Palib. Consp. Fl. Korea. III. 41; Matsum. Ind. Pl. Jap. I. 344; C. Chr. Ind. Fil. 588; Nakai, Fl. Korea. II. 399 et in Tokyo Bot. Mag. XXXIX. 118.

Polypodium varium L. Sp. Pl. ed. 1, 1090.

Polypodium setosum Thunb. Fl. Jap. 337.

Aspidium varium Sw. Schrad. Jour. (1800,2.) 35; Hook. Sp. Fil. 30, t. 226; Hook. & Bak. Syn. Fil. 254; Miq. Prol. Fl. Jap. 342; Fr. et Sav. Enum. Pl. Jap. II. 233; H. Chr. Farnk. d. Erde, 259.

Polystichum Thunbergii Koidz. in Tokyo Bot. Mag. XXXVIII. 106; Makino & Nemoto, Fl. Jap. 1661.

NOM. JAP. *Itachi-shida*.

HAB. *Yezo*. Oshima, Iburi, Hidaka, Ishikari.

DISTRIB. *Yezo*, Honshu, Kyushu, Liukiu, Formosa, Korea, Manchuria, China and Assam.

46. *Polystichum falcatum* Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 194; C. Chr. Ind. Fil. 581; Yabe, in Tokyo Bot. Mag. XVII. 65; Nakai, Fl. Korea. II. 399 et in Tokyo Bot. Mag. XXVIII. 77.

Polypodium falcatum L. f. Suppl. 446; Thunb. Fl. Jap. 336, t. 36.

Aspidium falcatum Sw. in Schrad. Journ. (1800, 2) 31; Miq. Prol. Fl. Jap. 340; Hook. Sp. Fil. IV. 40; Hook. & Bak. Syn. Fil. 257; Fr. et Sav. Enum. Pl. Jap. II. 234.

Cyrtomium falcatum Presl, Tent. Pter. 86.

Polystichum falcatum Diels var. *genuinum* Makino, in Tokyo Bot. Mag. X. (212); Matsum. Ind. Pl. Jap. I. 342; Takeda, in Tokyo Bot. Mag. XXIV. 25; Tatewaki, Veg. Mt. Apoi (25).

NOM. JAP. *Oni-yabu-sotetsu*, *Oni-shida*.

HAB. *Yezo*. Oshima, Iburi, Hidaka.

DISTRIB. *sp.* *Yezo*, Honshu, Kyushu, Liukiu, Bonin, Formosa, Korea, China, Hawaii, Tonquin, North India, Madagascar and South Africa.

Davallia Smith

47. ***Davallia Mariesii*** Moore, apud Baker in Ann. of Bot. V. 201; C. Chr. Ind. Fil. 212; Nakai, in Tokyo Bot. Mag. XXXIX. 120.

NOM. JAP. *Shinobu*.

HAB. *Yezo*. Oshima: upper Shirigishinai R. (Tatewaki, 1926).

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu, Korea and China.

Microlepia Presl

48. ***Microlepia Wilfordii*** Moore, Ind. Fil. 299; Kom. Fl. Mansh. I. 131; Diels, Fl. C. China, 195; H. Chr. in Bull. Herb. Boiss. (1901) 830; Yabe, in Tokyo Bot. Mag. XVII. 65; C. Chr. Ind. Fil. 428; Matsum. Ind. Pl. Jap. 315; Fedtsch. et Flerow, Ill. Pl. Sib. I. 21; Nakai, Fl. Korea. II. 401; Tatewaki, Pl. Akan Region (38).

Davallia Wilfordii Baker, Hook. & Bak. Syn. Fil. 98; Fr. et Sav. Enum. Pl. Jap. II. 208; H. Chr. Farnk. d. Erde, 305.

Davallia rhomboidea Hook. Sp. Cent. t. 48; Miq. Prol. Fl. Jap. 344, non Wall.

NOM. JAP. *Orenshida*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Kitami, Tokachi, Kushiro.

DISTRIB. *Yezo*, Honshu, Kyushu, Korea, Manchuria, China and Maritime Province.

49. ***Microlepia pilosella*** Moore, Ind. Fil. 298; C. Chr. Ind. Fil. 427; Nakai, in Tokyo Bot. Mag. XXVIII. 80.

Trichomanes hirsutum Thunb. Fl. Jap. 339, non L.

Davallia pilosella Hook. 2nd. Cent. t. 96.

Davallia hirsuta Sw. in Schrad. Jour. (1800, 2.) 81; Hook. & Bak. Syn. Fil. 98; Fr. et Sav. Enum. Pl. Jap. II. 209.

Microlepia hirsuta Diels, Fl. Centr. China, 196; Kom. Fl. Mansh. I. 131; H. Chr. in Bull. Herb. Boiss. (1901) 831; Matsum. Ind. Pl. Jap. I. 313; Nakai, Fl. Korea. II. 402, non Presl.

Dennstaedia hirsuta Miq. Prol. Fl. Jap. 345.

NOM. JAP. *Inu-shida*.

HAB. *Yezo*. Iburi, Hidaka, Ishikari.

DISTRIB. *Yezo*, Honshu, Kyushu, Korea, Manchuria and Central China.

Athyrium Roth

50. *Athyrium acrostichoides* Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 223; Kom. Fl. Mansh. I. 132; C. Chr. Ind. Fil. 139; Fedtsch. et Flerow. Ill. Pl. Sib. I. 24; Nakai, Fl. Korea. II. 404; Koidz. in Tokyo Bot. Mag. XXXVIII. 110.

Asplenium acrostichoides Sw. in Schrad. Jour. (1800, 2.) 54; Britt. & Br. Ill. Fl. I. 26.

Asplenium thelypteroides Michx. Fl. Bor. Amer. II. 265; Maxim. Prim. Fl. Amur. 340; Rgl. Tent. Fl. Ussuri. 178; Hook. Sp. Fil. III. 229; Hook. & Bak. Syn. Fil. 226; Fr. et Sav. Enum. Pl. Jap. II. 223.

Athyrium thelypteroides Desv. Prodr. 266; H. Chr. in Bull. Herb. Boiss. IV. 667; Makino, in Tokyo Bot. Mag. XIII. (35); Matsum. Ind. Pl. Jap. I. 296.

Athyrium pycnosorum H. Chr. in Bull. Herb. Boiss. 2. sér. II. 827.

Diplazium thelypteroides Presl, Tent. 114.

NOM. JAP. *Miyama-shikeshida*, *Hakumo-inode*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri.

Southern Saghalien. Toyohara.

DISTRIB. *Saghalien*, *Kuriles*, *Yezo*, Honshu, Shikoku, Bonin, Korea, Manchuria, Amur, China, Penang, Himalaya and North America.

51. *Athyrium yokoscense* H. Chr. in Bull. Herb. Boiss. IV. 668; Makino, in Tokyo Bot. Mag. XVII. 44; Yabe, in Tokyo Bot. Mag. XVII. 66; C. Chr. Ind. Fil. 147; Koidz. in Tokyo Bot. Mag. XXXVIII. 111.

Asplenium yokoscense Fr. et Sav. Enum. Pl. Jap. II. 225, 622.

Athyrium yokoscense Makino, in Tokyo Bot. Mag. XIII. (80); Matsum. Ind. Pl. Jap. I. 296; Nakai, Fl. Korea. II. 403 et in Tokyo Bot. Mag. XXVIII. 82.

Athyrium flaccidum H. Chr. in Fedde Repert. V. 11.

NOM. JAP. *Hebi-no-negoza*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Tokachi, Kushiro.

Southern Saghalien. Motodomari.

DISTRIB. Saghalien, Yezo, Honshu, Kyushu, Liukiu and Korea.

52. *Athyrium rupestre* Kodama, in Matsum. Icon. Koishikav. IV. 63, *pl.* 224; Makino & Nemoto, Fl. Jap. 1590.

NOM. JAP. *Miyama-hebino-negoza*.

HAB. *Yezo*. Oshima, Ishikari.

DISTRIB. Yezo and Northern Honshu.

53. *Athyrium Fauriei* Makino, in Tokyo Bot. Mag. XVII. 160; C. Chr. Ind. Fil. 142; Koidz. in Tokyo Bot. Mag. XXXVIII. 110; Makino & Nemoto, Fl. Jap. 1587.

Nephrodium Fauriei H. Chr. in Bull. Herb. Boiss. VI. 671; Matsum. Ind. Pl. Jap. I. 318.

Athyrium nikkoense Makino, in Tokyo Bot. Mag. XVII. 43.

Athyrium demissum H. Chr. in Fedde Repert. V. 284; Lev'l. in Bull. Acad. Géogr. Bot. (1910) 5; Nakai, Fl. Korea. II. 406; C. Chr. Ind. Fil. Suppl. 14.

NOM. JAP. *Iwa-inuvarabi*.

HAB. *Yezo*. Nemuro.

Kuriles. Kunashiri.

DISTRIB. Kuriles, Yezo, Honshu, Korea, Formosa and China.

54. *Athyrium nipponicum* Hance, in Jour. Linn. Soc. Bot. XIII. 92; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 224 et Fl. C. China 196; Makino, in Tokyo Bot. Mag. XIII. (79); Palib. Consp. Fl. Korea. III. 42; Kom. Fl. Mansh. I. 134; Matsum. Ind. Pl. Jap. I. 295; Fedtsch. et Flerow, Ill. Pl. Sib. I. 25; Nakai, Fl. Korea. II. 404 et in Tokyo Bot. Mag. XXVIII. 81; Makino & Nemoto, Fl. Jap. 1589.

Asplenium nipponicum Mett. in Ann. Mus. Bot. Lugd. Bat. II. 240; Hook. & Bak. Syn. Fil. 227; Miq. Prol. Fl. Jap. 339; Fr. et Sav. Enum.

Pl. Jap. II. 224.

NOM. JAP. *Inuwarabi*.

HAB. *Yezo*. Ishikari.

DISTRIB. *Yezo*, Honshu, Korea, Manchuria, China and Maritime Province.

55. *Athyrium pterorachis* H. Chr. in Bull. Herb. Boiss. IV. 10, 668 et ibidem. VI. 819 et in Bull. Acad. Intern. Géogr. Bot. 18 ann. (1909) 166; Makino, in Tokyo Bot. Mag. XIII. (77); Matsum. Ind. Pl. Jap. I. 296; C. Chr. Ind. Fil. 145; Nakai, Fl. Korea. II. 405; Kodama, in Matsum. Icon. Koishikav. I. 79, *pl.* 40; Takeda, Fl. Shikotan, 500.

NOM. JAP. *O-meshida*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Ishikari.

Kuriles. Kunashiri, Shikotan.

DISTRIB. *Kuriles*, *Yezo*, Honshu, and Korea.

56. *Athyrium Filix-femina* Roth, Röm. Mag. II₁. 106; Milde, Fil. Eur. 49; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 224; H. Chr. in Bull. Herb. Boiss. (1896) 667; Kom. Fl. Mansh. I. 133; C. Chr. Ind. Fil. 142; Matsum. Ind. Pl. Jap. I. 293; Fedtsch. et Flerow, Ill. Pl. Sib. I. 23; Lev'l. in Bull. Acad. Intern. Géogr. Bot. (1910) 4; Koidz. Pl. Sachal. 6; Nakai, Fl. Korea. II. 404 et in Tokyo Bot. Mag. XXVII. 81; Takeda, Fl. Shikotan, 500; Miyabe & Miyake, Fl. Saghal. 631; Printz, Veg. Sib.-Mong. Front. 104; Kudo, Fl. Param. 60 et Rep. Veg. N. Saghal. 35; Hult. Fl. Kamtch. I. 40.

Polypodium Filix-femina L. Sp. Pl. ed. 1. 1090.

Asplenium filix-femina Bernh. in Schrad. Jour. Bot. I.2. 26; Ledeb. Fl. Ross. IV. 58; Hook. & Bak. Syn. Fil. 227; Rgl. et Til. Fl. Ajan. 128; Maxim. Prim. Fl. Amur. 341; Rgl. Tent. Fl. Ussuri. 177; Fr. et Sav. Enum. Pl. Jap. II. 226; Korsh. Pl. Amur. 423; Miyabe, Fl. Kuril. 274; Britt. & Br. Ill. Fl. I. 26.

HAB. *Kuriles*. Paramushir.

var. **melanolepis** Makino, in Tokyo Bot. Mag. XIII. 30, (80); Matsum. Ind. Pl. Jap. I. 294; Miyabe & Miyake, Fl. Saghal. 632; Kudo, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 35; Makino & Nemoto, Fl.

Jap. 1588.

Asplenium melanolepis Fr. et Sav. Enum. Pl. Jap. II. 226, 623.

Athyrium melanolepis H. Chr. in Bull. Herb. Boiss. IV. 668.

Asplenium Filix-femina Bernh. var. *cyclosorum* Fr. Schm. Fl. Sachal. 206, non Ledeb.

? *Athyrium Filix-femina* Roth var. *multidentata* H. Chr. l. c. 166, non Doell.

NOM. JAP. *Meshida, O-inuwarabi*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Rishiri, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan.

Southern Saghalien. Todomoshiri, Odomari, Honto, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Oha, Pronge-Baikal.

DISTRIB. *sp.* Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, China, Himalaya, Siberia, Europe, North Africa and America.

var. **sitchense** Rupr. Beitr. III. (1845) 41; Milde, Fil. Eur. 50; Kudo, Fl. Paramushir, 60.

HAB. *Kuriles*. Paramushir.

DISTRIB. *var.* Northern Kuriles and the Islands of Sitcha.

57. *Athyrium alpestre* Rylands, in Moore, Ferns Gr. Br. Nat. Pr. I. t. 7; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 224; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 13; Hegi, Ill. Fl. Mittel.-Europ. I. 34; C. Chr. Ind. Fil. 139; Smiley, Univ. Calif. Publ. Bot. IX. 78; Printz, Veg. Sib.-Mong. Front. 104; Hult. Fl. Kamtch. I. 40.

Aspidium alpestre Hoppe, Neu. Bot. Taschenb. 216.

Polypodium alpestre Spenner, Fl. Freb. I. 12; Hook. Sp. Fil. IV. 251 et Brit. Ferns, t. 6; Hook. & Bak. Syn. Fil. 311.

Athyrium rhaeticum Dalla Torre, Anl. Wissen. Sch. Beob. Alpenr. II. 348; H. Chr. Farnk. d. Erde. 224.

Phegopteris alpestre Mett. Fil. Lips. (1856) 85.

NOM JAP. *Okuyama-warabi*.

HAB. *Yezo*. Oshima, Ishikari.

DISTRIB. Yezo, Honshu, Kamtchatka, Asia Minor, Caucasus, Europe and North America.

58. *Athyrium Yamadae* Miyabe et Kudo, Mater. Fl. Hokkaido n. 124, in Trans. Sapporo Nat. Hist. Soc. VIII. 1; Makino & Nemoto, Fl. Jap. 1591.

Stipes ascending, sparingly scaly, strameous, grayish-strameous towards the base, lustrous, sulcate, about 30 cm. long; scales linear or linear-lanceolate, chestnut-brown. Fronds subcoriaceous, broadly ovate, 47 cm. long, 26 cm. broad, bipinnatifid. Pinnae erect-patent, the middle ones oblong-lanceolate, 20–23 cm. long, 7–8 cm. broad, rachæ of the pinnae very narrowly winged, smooth, gray. Pinnules erect-patent, rather distantly set, alternate, short-petioled, rhomboid-lanceolate, 3–6 cm. long, 1.5–2 cm. wide, attenuate toward the tip, spinoso-obtuse at the apex, broadly cuneate at the base, pinnatifid or pinnatisect; segments ovate-rhomboid, oblong, subdeltoid, spinoso-dentate, glabrous on both sides. Ultimate veins simple or twice forked. Sori oblong or linear-oblong, in two regular rows placed somewhat nearer to the midrib. Indusium membranaceous, fimbriate on the margin.

Closely related to *Athyrium Vidalii* Nakai var. *confusum* Miyabe et Kudo, from which the present species is easily distinguished by its larger and rather distantly set subcoriaceous pinnules.

NOM JAP. *Yezo-inuwarabi*.

HAB. *Yezo*. Shiribeshi: Raidentōge (G. Yamada, 1901).

DISTRIB. An endemic species!

59. *Athyrium Vidalii* Nakai, in Tokyo Bot. Mag. XXXIX. 110.

Asplenium Vidalii Fr. et Sav. Enum. Pl. Jap. II. 229.

Athyrium macrocarpum Makino, in Tokyo Bot. Mag. X. (109) et XIII. (78); Matsum. Ind. Pl. Jap. I. 294; Nakai, Fl. Korea. II. 407 et in Tokyo Bot. Mag. XXVIII. 82, non Bedd.

Asplenium macrocarpum Fr. et Sav. Enum. Pl. Jap. II. 223, non Bl.

Athyrium Wardii Koidz. in Tokyo Bot. Mag. XXXVIII. 110, p. p., non Makino.

NOM. JAP. *Yama-inuwarabi*, *O-inuwarabi*, *Hosoba-inuwarabi*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Ishikari, Tokachi.

DISTRIB. Yezo, Honshu, Shikoku, Kyushu and Korea.

var. **confusum** Miyabe et Kudo, *var. nov.*

Sori minores et angustiores. Pinnulæ margine spinuloso-denticulatæ. Frons membranacea.

HAB. *Yezo*. Ishikari: Foot of Mt. Teine (E. Tokubuchi, 1894).

DISTRIB. An endemic plant!

60. *Athyrium crenatum* Rupr. Nyland. Spicil. Pl. Fenn. II. (1844) 14; Fr. Schm. Fl. Sachal. 225 (editio rossico); H. Chr. Farnk. d. Erde, 225; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 224; Kom. Fl. Mansh. I. 135; C. Chr. Ind. Fil. 140; Fedtsch. et Flerow, Ill. Pl. Sib. I. 24; Miyabe & Miyake, Fl. Saghal. 631; Miyabe & Kudo, Mater. Fl. Hokkaido n. 103, in Trans. Sapporo Nat. Hist. Soc. VIII. 24; Kudo, Contr. Fl. N. Saghal. 15 et Rep. Veg. N. Saghal. 35; Makino & Nemoto, Fl. Jap. 1586; Koidz. in Tokyo Bot. Mag. XXXVIII. 110; Printz, Veg. Sib.-Mong. Front. 104.

Aspidium crenatum Sommerf. Veg. Ak. Hand. (1834) 104.

Asplenium crenatum Fries, Summa Veg. I. 253; Hook. & Bak. Syn. Fil. 224; Ledeb. Fl. Ross. IV. 518; Rgl. et Til. Fl. Ajan. 128; Maxim. Prim. Fl. Amur. 340; Fr. Schm. Fl. Amg. Bur. 74; Korsh. Pl. Amur. 427.

Asplenium crenulatum Fries, Summa Veg. Scand. 82, 253; Turcz. Fl. Baic.-Dah. II. 1. 367; Hook. Sp. Fil. III. 225.

Athyrium mite H. Chr. in Bull. Acad. Intern. Géogr. Bot. XX. 36, 166; C. Chr. Ind. Fil. Suppl. 15.

NOM. JAP. *Miyama-shida*.

HAB. *Yezo*. Ishikari, Kitami.

Southern Saghalien. Odomari, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim.

DISTRIB. Saghalien, Yezo, Honshu, Manchuria, Amur, Kamtchatka, Dahuria, Siberia and Europe.

61. *Athyrium spinulosum* Milde, Bot. Zeit. XXIV. 376; H. Chr. Farnk. d. Erde, 226; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 224; Kom. Fl. Mansh. I. 136; C. Chr. Ind. Fil. 146; Nakai, Fl. Korea. II. 405; Takeda, in Tokyo Bot. Mag. XXIV. 179; Miyabe & Miyake, Fl. Saghal. 632; Fedtsch.

et Flerow, Fl. Sib. I. 24, *t.* 3; Kudo, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 33; Mak. & Nemoto, Fl. Jap. 1590.

Cystopteris spinulosa Maxim. Prim. Fl. Amer. 340; Rgl. Tent. Fl. Ussuri. 177.

Asplenium spinulosum Bak. apud Hook. & Bak. Syn. Fil. 225; in Ann. Bot. V. 306.

Athyrium Hookerianum Moore, Ind. Fil. (1857) 185, f. s. o; Milde, Fil. Europ. 57; Fr. Schm. Fl. Sachal. 206.

Asplenium subtriangulare Hook. in Hook. & Bak. Syn. Fil. 225.

NOM. JAP. *Karafuto-miyamashida*.

Southern Saghalien. Tomarioro.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Korea, Manchuria, Amur, Ussuri, China and Himalaya.

Diplazium Swartz

62. *Diplazium Oldhami* H. Chr. in Bull. Herb. Boiss. VII. 819; Matsum. Ind. Pl. Jap. I. 304; Nakai, Fl. Korea. II. 409 et in Tokyo Bot. Mag. XXVIII. 85; Miyabe et Kudo, Mater. Fl. Hokkaido n. 66, in Trans. Sapporo Nat. Hist. Soc. VI. 121.

Asplenium japonicum Thunb. var. *Oldhami* Hook. et Bak. Syn. Fil. 235; Fr. et Sav. Enum. Pl. Jap. II. 227.

Diplazium japonicum Bedd. var. *Oldhami* C. Chr. Ind. Fil. 236.

Diplazium Conilii Nakai, var. *Oldhami* Nakai, in Tokyo Bot. Mag. XXXIX. 112.

NOM. JAP. *Hosoba-shikeshida*.

HAB. *Yezo*. Oshima, Iburi, Ishikari.

DISTRIB. *Yezo*, Honshu, Kyushu, and Korea.

Scolopendrium Smith

63. *Scolopendrium vulgare* Sm. Mem. Acad. Turin. V. 421; Miq. Prol. Fl. Jap. 337; Hook. Sp. Fil. IV. 2 et Brit. Ferns, *t.* 37; Hook. & Bak. Syn. Fil. 246; Fr. et Sav. Enum. Pl. Jap. II. 229; H. Chr. Farnk. d. Erde.

211; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4 230, *f. 123, AB*; Makino, in Tokyo Bot. Mag. IX. (246); Matsum. Ind. Pl. Jap. I. 347.

Asplenium Scolopendrium L. Sp. Pl. ed. 1. 1079.

Scolopendrium Scolopendrium Karst. Deutschl. Fl. 278; Britt. & Br. Ill. Fl. I. 21; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 50.

Phyllitis Scolopendrium Newm. Hist. Brit. Ferns, ed. 2. 10; C. Chr. Ind. Fil. 492; Miyabe & Miyake, Fl. Saghal. 633; Makino & Nemoto, Fl. Jap. 1640; Ogata, Icon. Fil. Jap. I. *pl. 37*.

NOM. JAP. *Ko-taniwatari, Takanoha*.

NOM. AINU. *Ehurupesh-kina, Shutukere-kina*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Ishikari, Teshio, Kitami.

Kuriles. Kunashiri.

Southern Saghalien. Todomoshiri, Mauka, Toyohara.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Northern Persia, Asia Minor, North Turkestan, Caucasus, Europe, North America and Mexico.

Camptosorus Link

64. *Camptosorus sibiricus* Rupr. Distr. Vasc. Ross. (1845) 45; Ledeb. Fl. Ross. IV. 522; Turcz. Fl. Baic.-Dah. II. 1. 369; Milde, Fil. Eur. 92; Fr. et Sav. Enum. Pl. Jap. II. 230; Korsh. Pl. Amur. 428; C. Chr. Ind. Fil. 166; Nakai, Fl. Korea. II. 410; Takeda, in Tokyo Bot. Mag. XXIV. 319; Hult. Fl. Kamtch. I. 42.

Scolopendrium sibiricum Hook. Sp. Fil. IV. 4 et 2nd. Cent. *t. 35*; Hook. & Bak. Syn. Fil. 248; Miq. Prol. Fl. Jap. 337; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 231; Kom. Fl. Mansh. I. 137; Matsum. Ind. Pl. Jap. I. 347; Fedtsch. et Flerow, Ill. Pl. Sib. I. 25.

NOM. JAP. *Kumonosu-shida*.

HAB. *Yezo*. Iburi, Hidaka, Ishikari.

DISTRIB. Yezo, Honshu, Kyushu, Korea, China, Manchuria, Amur and Baical.

Asplenium L.

65. *Asplenium incisum* Thunb. in Trans. Linn. Soc. Bot. II. 342;

Miq. Prol. Fl. Jap. 337; Hook. & Bak. Syn. Fil. 217; Fr. et Sav. Enum. Pl. Jap. II. 221; H. Chr. Farnk. d. Erde, 203 et in Bull. Acad. Intern. Géogr. Bot. XX. 167; Kom. Fl. Mansh. I. 139; Matsum. Ind. Pl. Jap. I. 290; C. Chr. Ind. Fil. 116; Nakai, Fl. Korea. II. 407 et in Tokyo Bot. Mag. XXVIII. 87; Miyabe & Miyake, Fl. Saghal. 630; Hult. Fl. Kamtch. I. 42.

Asplenium Trichomanes Thunb. Fl. Jap. 334, non L.

Asplenium elegantulum Hook. Sp. Fil. III. 190 et 2nd. Cent. Ferns, t. 28.

NOM. JAP. *Toranowo-shida*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rebun, Tokachi, Kushiro.

Kuriles. Etorofu.

Southern Saghalien. Todomoshiri, Honto, Toyohara.

DISTRIB. Saghalien, Kuriles, *Yezo*, Honshu, Shikoku, Kyushu, Tsushima, Korea, Manchuria, China and Kamtchatka.

66. *Asplenium varians* Hook. et Grev. Icon. Fil. t. 172; Milde, Fil. Eur. 73; Hook. & Baker, Syn. Fil. 216; Fr. et Sav. Enum. Pl. Jap. II. 220; H. Chr. Farnk. d. Erde, 204; Matsum. Ind. Pl. Jap. I. 292; C. Chr. Ind. Fil. 137; Makino & Nemoto, Fl. Jap. 1585.

form. ***obtusiloba*** Miyabe et Kudo, *form. nov.*

Planta pumila, 5–9 (–13) cm. alta. Pinnæ flabellato-deltoidæ, pinnatim partitæ vel sectæ. Pinnulæ lobi apice obtusi.

NOM. JAP. *Hime-toranowoshida*.

HAB. *Yezo*. Ishikari: at Kamuikotan (Y. Takenouchi, 1902).

DISTRIB. *form.* *Yezo*, north and middle Honshu; *sp.* Honshu, Shikoku, Kyushu, China and India.

Blechnum L.

67. *Blechnum Spicant* Wither. Bot. Arr. ed. 3. 765; Milde, Fil. Eur. 46; H. Chr. Farnk. d. Erde, 179; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 249; Makino, in Tokyo Bot. Mag. XI. 82; Hegi, Ill. Fl. Mitteleurop. I. 35, t. 6, f. 3; C. Chr. Ind. Fil. 159; Hult. Fl. Kamtch. I. 42.

Osmunda Spicant L. Sp. Pl. ed. 1. 1066.

Lomaria Spicant Desv. Berl. Mag. V. 325; Hook. Sp. Fil. III. 14; Hook. & Bak. Syn. Fil. 178.

Blechnum boreale Sw. in Schrad. Jour. (1800, 2) 75; Willd. Sp. Pl. V. 408; Hook. Brit. Ferns, t. 40.

var. **nipponicum** (Kunze) Miyabe et Kudo.

Lomaria nipponica Kunze, Pterid. Jap. 508; Miq. Prol. Fl. Jap. 336; Fr. et Sav. Enum. Pl. Jap. II. 215.

Blechnum nipponicum Makino, in Tokyo Bot. Mag. XI. 82; C. Chr. Ind. Fil. Suppl. 16; Makino & Nemoto, Fl. Jap. 1592.

Blechnum Spicant Roth, var. *subserratum* Matsum. Ind. Pl. Jap. I. 297, non Lowe.

Blechnum Spicant A. Gray, Bot. Jap. 421, non Roth.

Lomaria Spicant Desv. var. *japonica* Hook. Sp. Fil. III. 16.

Blechnum amabile Kudo, Rep. Veg. Nopporo Forest 3, non Makino.
NOM. JAP. *Shishigashira*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Tokachi.

Kuriles. Etorofu.

DISTRIB. var. *Kuriles*, *Yezo*, Honshu, Shikoku and Liukiu; *sp.* Europe, N. Asia, N. America and Brazil.

Anogramma Link

68. **Anogramma Makinoi** H. Chr. in C. Chr. Ind. Fil. 58; Nakai, in Tokyo Bot. Mag. XXVIII. 89; Miyabe & Kudo, Mater. Fl. Hokkaido n. 104, in Trans. Sapporo Nat. Hist. Soc. VII. 25; Makino & Nemoto, Fl. Jap. 1574; Ogata, Icon. Fil. Jap. I. pl. 2.

Gymnogramme Makinoi Maxim. apud Makino in Tokyo Bot. Mag. VIII. 481, t. 9 et ibidem IX. (246); H. Chr. in Bull. Herb. Boiss. IV. 647; Matsum. Ind. Pl. Jap. I. 308.

NOM. JAP. *Karakusa-shida*.

HAB. *Yezo*. Ishikari.

DISTRIB. *Yezo*, Honshu, Shikoku and Korea.

Coniogramme Fée

69. Coniogramme fraxinea Fée, ex Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 262 et Fl. C. China, 199; Kom. Fl. Mansh. I. 140; Yabe, in Tokyo Bot. Mag. XII. 67; Matsum. Ind. Pl. Jap. I. 299; C. Chr. Ind. Fil. 185; Fedtsch. et Flerow, Ill. Pl. Sib. I. 29; Nakai, Fl. Korea. II. 410 et in Tokyo Bot. Mag. XXVIII. 89; Takeda, Fl. Shikotan, 501; Miyabe & Miyake, Fl. Saghal. 633.

Diplazium fraxineum Don, Prodr. Nepal. 12.

Gymnogramme javanica Bl. Enum. Pl. Fil. 112; Hook. Sp. Fil. V. 145; Hook. & Bak. Syn. Fil. 381; Miq. Prol. Fl. Jap. 335; Fr. Schm. Fl. Sachal. 205; Fr. et Sav. Enum. Pl. Jap. II. 248; Kawakami, in Tokyo Bot. Mag. XIV. 106.

Neurogramme fraxinea H. Chr. Farnk. d. Erde, 63; Makino, Phanerog. Pterid. Jap. Ic. I. 4. *pl. XV, XVI.*

NOM. JAP. *Iwagane-semmai.*

НАБ. *Yezo.* Oshima, Iburi, Hidaka, Ishikari, Teshio, Rishiri, Rebun, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan.

Southern Saghalien. Odomari, Mauka.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kyushu, Liukiu, Formosa, Korea, Manchuria, China, Himalaya, Ceylon, Philippine, Java, Sumatra, Hawaii, Madagascar, Africa and Australia.

Cryptogramme R. Br.

70. Cryptogramme crispa R. Br. in Franklin Journey (1823) 767, *t. 1153*; Hook. et Grev. Ic. Fil. *t. 158*; Hook. Sp. Fil. II. 129; Hook. & Bak. Syn. Fil. 144; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 279; H. Chr. Farnk. d. Erde, 156 et in Bull. Herb. Boiss. IV. 666; Matsum. Ind. Pl. Jap. I. 300; Kawakami, in Tokyo Bot. Mag. XIV. 106; Makino, in Tokyo Bot. Mag. XIX. 105; C. Chr. Ind. Fil. 187; Fedtsch. et Flerow, Ill. Pl. Sib. I. 30; Takeda, Fl. Shikotan, 501; Makino & Nemoto, Fl. Jap. 1595; Tatewaki, Pl. Teshio Exp. For. (9).

Osmunda crispa L. Sp. Pl. ed. I. 1067.

Allosorus crispus Roehl. Deutschl. Fl. ed. 2. III. 1. 31; Spr. Syst. IV. 1. 65.

NOM. JAP. *Rishiri-shinobu*, *Iwa-shinobu*.

HAB. *Yezo*. Ishikari, Teshio, Rishiri.

Kuriles. Shikotan.

Southern Saghalien. Motodomari.

DISTRIB. Saghalien, Kuriles, *Yezo*, Honshu, Siberia, Asia Minor and Europe.

The plant in our floral region is most closely related to *C. crispus* R. Br. in its general habit and especially in the character of the ultimate segments of the fertile frond, which are never explanate at maturity. The latter character separates our plant at once from *C. acrostichoides* R. Br. and *C. Brunoniana* Wall.

Compared with the European typical form of *C. crispus* R. Br., the Japanese plant has invariably prominent foveolæ at the ends of the veinlets of the sterile frond, and even more so in the involucre portion of the fertile segments, giving to them sometimes a somewhat lomentaceous appearance. The old frond has a thicker consistence, but basal scales are light brown and concolorous. The ultimate segments of the sterile frond are obovate to obovate-oblong, more or less distantly 2-5 dentate towards the apex and cuneate at the base.

We wish to consider our plant as a distinct local variety of *C. crispus* R. Br. and call it provisionally by the name of var. *japonica* Miyabe et Kudo.

Plagiogyria Mettenius

71. *Plagiogyria Matsumureana* Makino, in Tokyo Bot. Mag. VIII. 333 et Pterid. Jap. I. 15. *pl. XIX.*; Matsum. Ind. Pl. Jap. I. 332; C. Chr. Ind. Fil. 496; Takeda, in Tokyo Bot. Mag. XXIV. 319; Kodama, in Matsum. Ic. Koishikav. II. 119, 120, *pl. 144*; Makino & Nemoto, Fl. Jap. 1641; Nakai, in Tokyo Bot. Mag. XLII. 209.

Lomaria Matsumureana Makino, in Tokyo Bot. Mag. VIII. 90.

Lomaria Fauriei H. Chr. in Bull. Herb. Boiss. IV. 666.

Plagiogyria Fauriei Matsum. l. c.; C. Chr. Ind. Fil. 495.

Blechnum Fauriei Tokubuchi, in Tokyo Bot. Mag. XIX. 231.

NOM. JAP. *Yama-sotetsu*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Ishikari.

Kuriles. Etorofu.

DISTRIB. Kuriles, Yezo, Honshu and Shikoku.

Adiantum L.

72. *Adiantum pedatum* L. Sp. Pl. ed. 1, 1095; Thunb. Fl. Jap. 339; Sw. Syn. Fil. 121; Willd. Sp. Pl. V. 438; Ledeb. Fl. Ross. IV. 526; Maxim. Prim. Fl. Amur. 341; Rgl. Tent. Fl. Uss. 178; Miq. Prol. Fl. Jap. 335; Milde, Fil. Eur. 31; Hook. Sp. Fil. II. 28; Hook. & Bak. Syn. Fil. 125; Fr. et Sav. Enum. Pl. Jap. II. 211; Korsh. Pl. Amur. 427; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 284 et Fl. C. China 200; H. Chr. Farnk. d. Erde, 140; Kom. Fl. Mansh. I. 142; Makino, Pterid. Jap. I. *pl. I, II*; Matsum. Ind. Pl. Jap. I. 285; C. Chr. Ind. Fil. 31; Takeda, in Tokyo Bot. Mag. XXIV. 236; Nakai, in Tokyo Bot. Mag. XXVIII. 91; Hult. Fl. Kamtch. I. 44.

NOM. JAP. *Kujaku-shida, Kujaku-so*.

HAB. *Yezo*. Oshima, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Tokachi, Kushiro.

Southern Saghalien. Honto, Mauka, Motodomari.

DISTRIB. Saghalien, Yezo, Honshu, Shikoku, Korea, Manchuria, Amur, China, Himalaya and North America; ?Kamtchatka (var. *kamtschaticum* Rupr.)

Pteridium Gleditsch

73. *Pteridium aquilinum* Kuhn, Bot. Ost.-Afr. in V. Deck. Reis. III. 3. 11; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 296; Palib. Consp. Fl. Korea. III. 42; Kom. Fl. Mansh. I. 144; Matsum. Ind. Pl. Jap. I. 345; C. Chr. Ind. Fil. 591; Fedtsch. et Flerow, Ill. Pl. Sib. I. 32; Nakai, Fl. Korea. II. 412 et in Tokyo Bot. Mag. XXVIII. 92; Miyabe & Miyake, Fl. Saghal. 634; Kudo, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 36; Hult. Fl. Kamtch. I. 44.

Pteris aquilina L. Sp. Pl. ed. 1, 1075; Thunb. Fl. Jap. 332; Ledeb. Fl.

Ross. IV. 524; Willd. Sp. Pl. V. 402; Turcz. Fl. Baic.-Dah. II. 367; Miq. Prol. Fl. Jap. 336; Hook. Sp. Fil. II. 196; Hook. & Bak. Syn. Fil. 162; Maxim. Prim. Fl. Amur. 341; Fr. Schm. Fl. Sachal. 206; Fr. et Sav. Enum. Pl. Jap. II. 215; H. Chr. Farnk. d. Erde, 164; Miyabe, Fl. Kuril. 275; Printz, Veg. Sib.-Mong. Front. 105.

var. **japonicum** Nakai in Tokyo Bot. Mag. XXXIX. 106.

Pteridium aquilinum Kuhn var. *osmundaceum* H. Chr. Farnk. d. Schweiz, 54; Takeda, Fl. Shikotan, 501.

NOM. JAP. *Warabi*.

NOM. AINU. *Tuwa, Warambi*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Todomoshiri, Odomari, Tomarioro, Toyohara, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Pronge-Baikal, Schmidt-Penins.

DISTRIB. *sp.* Saghalien, Kuriles, Yezo, Honshu, Shikoku, Kyushu, Formosa, Korea, Manchuria, Amur, Kamtchatka, Siberia, China, Annam, Himalaya, Persia, Caucasus, Europe, Africa, America, New Zealand, Australia and Polynesia.

Polypodium L.

74. ***Polypodium vulgare*** L. Sp. Pl. ed. 1. 1085; Ledeb. Fl. Ross. IV. 508; Hook. Brit. Ferns, t. 2 et Sp. Fil. IV. 205; Hook. & Bak. Syn. Fil. 334; Milde, Fil. Eur. 18; Maxim. Prim. Fl. Amur. 337; Rgl. Tent. Fl. Uss. 175; Miq. Prol. Fl. Jap. 334; Fr. Schm. Fl. Saghal. 205; Fr. et Sav. Enum. Pl. Jap. II. 244; Miyabe, Fl. Kuril. 274; Korsh. Pl. Amur. 426; Britt. & Br. Ill. Fl. I. 320; Makino, in Tokyo Bot. Mag. XIII. (201); H. Chr. Farnk. d. Erde, 83 et in Bull. Ac. Géogr. Bot. XX. 163; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 311; Kom. Fl. Mansh. I. 145; Matsum. Ind. Pl. Jap. I. 340; C. Chr. Ind. Fil. 574; Fedtsch. et Flerow, Ill. Pl. Sib. I. 33; Koidz. Pl. Sachal. 4; Miyabe & Miyake, Fl. Saghal. 634; Printz, Veg. Sib.-Mong. Front. 106; Hult. Fl. Kamtch. I. 44.

NOM. JAP. *Yezo-denda*.

HAB. *Yezo*. Okushiri, Iburi, Hidaka, Ishikari, Kitami, Kushiro, Nemuro.

Kuriles. Kunashiri, Etorofu, Urup.

Southern Saghalien. Odomari, Mauka, Ushoro, Motodomari.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, Ussuri, Amur, China, Tibet, Dahuria, Siberia, Caucasus, Europe, Africa and North America.

75. *Polypodium Fauriei* H. Chr. in Bull. Herb. Boiss. IV. 672; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 312; H. Chr. Farnk. d. Erde, 83; C. Chr. Ind. Fil. 526; Nakai, Fl. Korea. II. 414 et in Tokyo Bot. Mag. XXIX. 94.

Polypodium vulgare L. var. *japonicum* Fr. et Sav. Enum. Fl. Jap. II. 340.

Polypodium japonicum Maxon, Fern Bull. X. 42; Makino, in Tokyo Bot. Mag. XIX. 139; Takeda et Nakai, in Tokyo Bot. Mag. XXIII. 47; Makino & Nemoto, Fl. Jap. 1616, non Hoult.

NOM. JAP. *Oshaguji-denda*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Tokachi, Kushiro.

Kuriles. Kunashiri.

DISTRIB. Kuriles, Yezo, Honshu, Shikoku, Kyushu, Liukiu and Korea.

76. *Polypodium hastatum* Thunb. Fl. Jap. 335 et Icon. Fl. Jap. 10; Hook. Sp. Fil. V. 74; Mett. Ann. Bot. Ludg. Bat. II. 227; Miq. Prol. Fl. Jap. 335, 389; Hook. & Bak. Syn. Fil. 361; Harringt. in Jour. Linn. Soc. Bot. XVI. 33; Fr. et Sav. Enum. Pl. Jap. II. 247; Maxim. Fl. As. Or. Fragm. 73; Baker, in Jour. Bot. XXIII. 106; Makino, in Tokyo Bot. Mag. IX. (246); Hemsl. in Kew Bull. (1896) 215; Henry, List Pl. Formosa 115; H. Chr. in Bull. Herb. Boiss. IV. 673 et Farnk. d. Erde, 109; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 318 et Fl. C. China 205; Hemsl. Fl. Tibet, in Jour. Linn. Soc. Bot. XXXV. 206; Yabe, in Tokyo Bot. Mag. XVII. 67; C. Chr. Ind. Fil. 532; Matsum. Ind. Pl. Jap. I. 334; Matsum. et Hayata, Enum. Pl. Formos. 631; Nakai, Fl. Korea. II. 415; Takeda, in Notes R. B. G.

Edinbg. VIII. 308; Ogata, Icon. Fil. Jap. I. *pl.* 39.

Drynaria hastata Fée, Gen. Fil. 271; Eaton, in A. Gray Pl. Jap. 329.

Pleopeltis hastata Moore, Ind. Fil. II. 346.

form. **pygmaea** Maxim. Fl. As. Or. Fragm. 73; Matsum. Ind. Pl. Jap. I. 334.

NOM. JAP. *Chabo-mitsude-uraboshi*.

HAB. *Yezo*. Oshima, Iburi.

DISTRIB. form. *Yezo*, Honshu and Kyushu: *sp.* Honshu, Kyushu, Formosa, Korea, China, Himalaya, Ceylon and Philippine.

77. *Polypodium lineare* Thunb. Fl. Jap. 335 et Icon. *t.* 19; Miq. Prol. Fl. Jap. 334; Hook. & Bak. Syn. Fil. 354; Fr. et Sav. Enum. Pl. Jap. II. 245; H. Chr. Farnk. d. Erde, 102; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 315 et Fl. C. China 204; Kom. Fl. Mansh. I. 146; Matsum. Ind. Pl. Jap. I. 335; Matsum. et Hayata, Enum. Pl. Formosa. 632; C. Chr. Ind. Fil. 540; Nakai, Fl. Korea. II. 414 et in Tokyo Bot. Mag. XXVIII. 96; Makino & Nemoto, Fl. Jap. 1646.

Polypodium lineare Thunb. *α. Thunbergianum* Takeda, in Notes R. B. G. Edinbg. VIII. 268.

NOM. JAP. *Noki-shinobu, Yatsume-ran*.

HAB. *Yezo*. Oshima, Iburi, Hidaka.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu, Bonin, Liukiu, Formosa, Korea, Manchuria, Amur, Ussuri, China, Malay, India, Ceylon, Africa and Hawaiian Islands.

78. *Polypodium ussuriense* Rgl. in Acta Hort. Petrop. VII. 663; Nakai, in Tokyo Bot. Mag. XXVIII. 96; Makino & Nemoto, Fl. Jap. 1652.

Pleopeltis ussuriensis Rgl. et Maack, Tent. Fl. Uss. 175.

Polypodium lineare Thunb. var. *ussuriense* C. Chr. Ind. Fil. 572 et in Bull. Acad. Géogr. Bot. XXI. 71; Takeda, in Notes R. B. G. Edinbg. VIII. 271.

Polypodium leiopteris Makino, in Tokyo Bot. Mag. XII. (88), non Kze.

Polypodium sesquipedale form. *leiopteris* Makino, Phan. Pter. Jap. Ic. III. I. *t.* 8.

Polypodium lineare Thunb. var. *distans* Makino, in Tokyo Bot. Mag. XV. 60.

Polypodium distans Makino, in Tokyo Bot. Mag. XX. 33.

Polypodium lineare Thunb. var. *coraiense* H. Chr. in Fedde Repert. V. 10.

Polypodium coraiense H. Chr. l. c. 285.

Polypodium annuifrons Makino var. *distans* Nakai, Fl. Korea. II. 414. NOM. JAP. *Miyama-nokishinobu*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Tokachi, Kushiro.

Southern Saghalien. Honto.

DISTRIB. Saghalien, Yezo, Honshu, Shikoku, Kyushu, Korea, Manchuria and Ussuri.

79. *Polypodium annuifrons* Makino, Phan. Pter. Jap. Ic. Ill. I. t. 7 et in Tokyo Bot. Mag. XIII. 48; C. Chr. Ind. Fil. 509; Takeda, in Notes R. B. G. Edingb. VIII. 281, 306.

Polypodium japonense Makino, in Tokyo Bot. Mag. XII. (165); Matsum. Ind. Pl. Jap. II. 335.

NOM. JAP. *Hotei-shida*, *O-nokishinobu*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Tokachi, Kushiro.

DISTRIB. Yezo, Honshu, Shikoku, Kyushu and Korea.

Cyclophorus Desvaux

80. *Cyclophorus hastatus* C. Chr. Ind. Fil. 199; Nakai, Fl. Korea. II. 417; Makino & Nemoto, Fl. Jap. 1595; Ogata, Icon. Fil. Jap. I. pl. 14.

Acrostichum hastatum Thunb. Fl. Jap. 331, t. 34.

Polypodium tricuspe Sw. in Schrad. Jour. (1800, 2) 21; Hook. Sp. Fil. V. 44; Hook. & Bak. Syn. Fil. 350; Fr. et Sav. Enum. Pl. Jap. II. 245; H. Chr. Farnk. d. Erde, 97, f. 270.

Nipholobus tricuspis J. Sm. Hist. Fil. 98; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 325, f. 168, B-C; Matsum. Ind. Pl. Jap. I. 329.

NOM. JAP. *Iwa-omodaka*.

HAB. *Yezo.* Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Tokachi, Kushiro.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu and Korea.

Neoniphopsis Nakai

81. *Neoniphopsis linearifolia* Nakai, in Tokyo Bot. Mag. XLII. 217.

Nipholobus linearifolius Hook. 2nd. Cent. *t.* 58; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 326 et Fl. C. China 207; Palib. Consp. Fl. Korea. III. 43; Kom. Fl. Mansh. I. 148; Gies. Niph. 171; Matsum. Ind. Pl. Jap. I. 328; Matsum. et Hayata, Enum. Pl. Formos. 638.

Polypodium linearifolium Hook. Sp. Fil. V. 53; Hook. & Bak. Syn. Fil. 356; Makino, in Tokyo Bot. Mag. IX. (246).

Cyclophorus linearifolius C. Chr. Ind. Fil. 199; Nakai, Fl. Korea. II. 416 et in Tokyo Bot. Mag. XXVIII. 97; Makino & Nemoto, Fl. Jap. 1596; Ogata, Icon. Fil. Jap. I. *pl.* 15.

NOM. JAP. *Birodo-shida*.

HAB. *Yezo.* Iburi.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu, Tsushima, Formosa, Quelpart, Korea, Manchuria and China.

OSMUNDACEÆ

Osmunda L.

82. *Osmunda cinnamomea* L. Sp. Pl. ed 1. 1066; Milde, Fil. Eur. 181; Maxim. Prim. Fl. Amur. 336; Hook. & Bak. Syn. Fil. 426; Fr. Schm. Fl. Sachal. 205; Fr. et Sav. Enum. Pl. Jap. II. 251; Korsh. Pl. Amur. 430; H. Chr. Farnk. d. Erde, 332 et in Bull. Acad. Géogr. Bot. XX. 166; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 379; Britt. & Br. Ill. Fl. I. 5; Kom. Fl. Mansh. I. 149; Matsum. Ind. Pl. Jap. I. 331; C. Chr. Ind. Fil. 473; Fedtsch. et Flerow, Ill. Pl. Sib. I. 34; Nakai, Fl. Korea. II. 418; Miyabe & Miyake, Fl. Saghal. 618; Kudo, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 36; Nakai, in Tokyo Bot. Mag. XLI. 676.

NOM. JAP. *Yamadori-zemmai*.

NOM. AINU. *Soroma*.

HAB. *Yezo*. Oshima, Iburi, Hidaka, Ishikari, Teshio, Kushiro.

Kuriles. Kunashiri.

Southern Saghalien. Odomari, Honto, Mauka, Tomarioro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Pronge-Baikal, Schmidt-Penins.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kyushu, Korea, Manchuria, Amur, Ussuri, China and America.

83. *Osmunda regalis* L. Sp. Pl. ed. 1. 1065; Willd. Sp. Pl. V. 97; Hook. Brit. Ferns, *t.* 45; Hook. & Bak. Syn. Fil. 427; Ledeb. Fl. Ross. IV. 506; H. Chr. Farnk. d. Erde, 332; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 380.

var. **japonica** Milde, Fil. Eur. 179; Fr. et Sav. Enum. Pl. Jap. II. 251; Makino, in Tokyo Bot. Mag. X. (317); Matsum. Ind. Pl. Jap. I. 331.

Osmunda japonica Thunb. Fl. Jap. 330; Nakai, in Tokyo Bot. Mag. XLI. 679.

Osmunda regalis L. var. *biformis* Benth. Fl. Hongk. 440; Miq. Prol. Fl. Jap. 345.

Osmunda biformis Makino, in Jour. Jap. Bot. IV. 4.

NOM. JAP. *Zemmai*.

NOM. AINU. *Kamui-soroma*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Ishikari, Teshio, Kushiro.

DISTRIB. Yezo, Honshu, Kyushu, Formosa, Hongkong, China, Himalaya; the type of this species is widely spread throughout Asia, Europe, Africa and America.

84. *Osmunda lancea* Thunb. Fl. Jap. 330; Miq. Prol. Fl. Jap. 346, Milde, Fil. Eur. 181; Hook. & Bak. Syn. Fil. 427; Fr. et Sav. Enum. Pl. Jap. II. 250; Diels, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 380; Matsum. Ind. Pl. Jap. I. 331; C. Chr. Ind. Fil. 474; Miyabe & Kudo, Mater. Fl. Hokkaido n. 67, in Trans. Sapporo Nat. Hist. Soc. VI. 121; Nakai, in Tokyo Bot. Mag. XLI. 679.

NOM. JAP. *Yasha-zemmai*.

HAB. *Yezo*. Iburi, Hidaka.

DISTRIB. *Yezo*, Honshu and Shikoku.

EQUISETACEÆ

Equisetum L.

85. *Equisetum arvense* L. Sp. Pl. ed. 1. 1060; Ledeb. Fl. Alt. IV. 320 et Fl. Ross. IV. 486; Milde, Monogr. Equiset. 218, *t. I-III* et Fil. Eur. 215; Maxim. Prim. Fl. Amur. 333; Rgl. Tent. Fl. Ussuri. 173; Fr. Schm. Fl. Sachal. 204; Fr. et Sav. Enum. Pl. Jap. II. 202; Miyabe, Fl. Kuril. 273; Korsh. Pl. Amur. 426; F. Kurtz, in Engl. Bot. Jahrb. XIX. 482; Sadebeck, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 545; Franch. Pl. David. 243; Britt. & Br. Ill. Fl. I. 36; Aschers. u. Graebn. Syn. Mitteleur. Fl. I. 128; Diels, Fl. C. China, 209; Baker, Fern Allies, 2; Kom. Fl. Mansh. I. 152; Palib. Consp. Fl. Korea. III. 38; Fedtsch. et Flerow, Ill. Pl. Sib. I. 45; Hegi, Ill. Fl. I. 57; Nakai, Fl. Korea. II. 421; Takeda, Fl. Shikotan, 499; Miyabe & Miyake, Fl. Saghal. 621; Kudo, Fl. Paramushir, 61, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 37; Hult. Fl. Kamtch. I. 50; Tatewaki, Pl. Isl. Alaid, 154.

NOM. JAP. *Sugina*, *Tsukushi*, *Tsukuzukushi*.

NOM. AINU. *Ota-shipship*. *Chikap-tokosa*. (Sagh.)

HAB. *Yezo*. Oshima, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Paramushir, Shumushu.

Southern Saghalien. Todomoshiri, Odomari, Tomarioro, Toyohara, Motodomari.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Kuriles, *Yezo*, Honshu, Kyushu, Korea, Manchuria, China, Amur, Kamtchatka, Dahuria, Siberia, Himalaya, Europe, North America, Africa and the Canaries.

var. **boreale** Rupr. in Beitr. Pflanz. Russ. Reich. III. 19; Ledeb. Flora Ross. IV. 486; Fledtsch. et Flerow, Ill. Fl. Sib. I. 45; Marie-Victorin, Équisét. du Québec, 29, 115, *f. 4*.

Equisetum boreale Bong. Végét. de Sitcha, 174.

Equisetum arvense L. variat. *ster. boreale* Milde, Monogr. Equis. 221 et Fil. Eur. 216.

Equisetum arvense L. f. *boreale* Klinge, in Arch. Naturk. Kurl. II. 375.

NOM. JAP. *Okuyezo-sugina*.

HAB. *Yezo*. Okushiri, Tokachi.

Kuriles. Etorofu, Paramushir, Shumushu, Alaid.

Southern Saghalien. Toyohara, Shikka.

DISTRIB. Saghalien, Kuriles, Yezo, Northern Asia to Kamtchatka, N. America (Alaska to Eastern Canada), and North and Central Europe.

86. *Equisetum pratense* Ehrh. Hannöv. Mag. IX. (1784) 138 et Beiträge III. 77; Ledeb. Fl. Ross. IV. 488; Milde, Monogr. Equiset. 263, *t. VII-VIII* et Fil. Eur. 221; Trautv. et Mey. Fl. Ochot. 106; Rgl. et Til. Fl. Ajan. 127; Maxim. Prim. Fl. Amur. 334; Rgl. Tent. Fl. Ussuri. 174; Baker, Fern Allies, 2; Sadebeck, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 545; Britt. & Br. Ill. Fl. I. 36; Kom. Fl. Mansh. I. 153; Yabe & Yendo, Fl. Shumshu (173); Aschers. u. Graebn. Syn. Mitteleur. Fl. I. 122; Nakai, Fl. Korea. II. 421; Hegi, Ill. Fl. Mittel-Eur. I. 54; Fedtsch. et Flerow, Ill. Fl. Sib. I. 44; Miyabe & Miyake, Fl. Saghal. 612; Printz, Veg. Sib.-Mong. Front. 106; Kudo, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 38; Makino & Nemoto, Fl. Jap. 1559; Hult. Fl. Kamtch. I. 54; Marie-Victorin, Équisét. du Québec, 38, 118.

NOM. JAP. *Karafuto-sugina*.

HAB. *Yezo*. Teshio, Kushiro.

Kuriles. Shumushu.

Southern Saghalien. Odomari, Toyohara, Motodomari, Shikka.

Northern Saghalien. Tim.

DISTRIB. Saghalien, Kuriles, Yezo, Korea, Manchuria, Amur, Ajan, Okhotsk, Kamtchatka, Siberia, Europe and North America.

87. *Equisetum silvaticum* L. Sp. Pl. ed. 1. 1061; Ledeb. Fl. Alt. 321 et Fl. Ross. IV. 487; Milde, Monogr. Equiset. 287, *t. IX-X* et Fil. Eur. 222; Trautv. et Mey. Fl. Ochot. 106; Maxim. Prim. Fl. Amur. 334; Fr. Schm. Fl. Sachal. 204; Sadebeck, in Engl. u. Pr. Nat. Pfl.-fam. 1. 4. 545; Baker, Fern

Allies, 2; Korsh. Pl. Amur. 426; Makino, in Tokyo Bot. Mag. XIX. 137; Kom. Fl. Mansh. I. 154; Nakai, Fl. Korea. II. 422; Aschers. u. Graebn. Syn. Mitteleur. Fl. I. 121; Hegi, Ill. Fl. Mittel-Eur. I. 54; Britt. & Br. Ill. Fl. I. 36; H. Chr. in Bull. Acad. Géogr. Bot. XX. 168 (var. *serotina*); Fedtsch. et Flerow, Ill. Pl. Sib. I. 43; Printz, Veg. Sib.-Mong. Front. 107; Koidz. Pl. Sachal. 6; Miyabe & Miyake, Fl. Saghal. 613; Kudo, Fl. Paramushir, 62, Contr. Fl. N. Saghal. 16 et Rep. Veg. N. Saghal. 38; Makino & Nemoto, Fl. Jap. 1559; Hult. Fl. Kamtchat. I. 55; Marie-Victorin, Équis. du Québec, 41, 119.

NOM. JAP. *Fusa-sugina*.

HAB. *Yezo*. Shiribeshi.

Kuriles. Paramushir.

Southern Saghalien. Odomari, Tomarioro, Toyohara, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Schmidt-Penins.

DISTRIB. Saghalien, Kuriles, Yezo, Korea, Manchuria, Amur, Ussuri, Okhotsk, Kamtchatka, Siberia, Europe and North America.

88. *Equisetum palustre* L. Sp. Pl. ed. 1. 1061; Ledeb. Fl. Ross. IV. 488; Milde, Mongr. Equiset. 323, *t. XIII-XIV* et Fil. Eur. 224; Miq. Prol. Fl. Jap. 389; Fr. et Sav. Enum. Pl. Jap. II. 202; Korsh. Pl. Amur. 462; Aschers. u. Graebn. Syn. Mitteleur. Fl. I. 132; Britt. & Br. Ill. Fl. I. 37; Kom. Fl. Mansh. I. 154; Matsum. Ind. Pl. Jap. I. 356; Baker, Fern Allies, 3; Hegi, Ill. Fl. Mittel-Eur. I. 58; H. Chr. in Bull. Acad. Géogr. Bot. XX. 168; Nakai, Fl. Korea. II. 421; Takeda, Fl. Shikotan, 499; Fedtsch. et Flerow, Ill. Pl. Sib. I. 45; Miyabe & Miyake, Fl. Saghal. 613; Printz, Veg. Sib.-Mong. Front. 107; Kudo, Fl. Paramushir 62, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 38; Makino & Nemoto, Fl. Jap. 1559; Hult. Fl. Kamtchat. I. 54.

Equisetum palustre var. *japonicum* Nakai, in Tokyo Bot. Mag. XXXIX. 194.

NOM. JAP. *Inu-sugina*.

HAB. *Yezo*. Oshima, Iburi, Ishikari, Kushiro.

Kuriles. Kunashiri, Paramushir.

Southern Saghalian. Todomoshiri, Odomari, Tomarioro, Ushoro.

Northern Saghalien. Alexandrowsk, Tymi, Oha, Schmidt-Penins.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Shikoku, Formosa, Korea, Manchuria, China, Dahuria, Kamtchatka, Siberia, Turkestan, Asia Minor, Europe and North America.

89. Equisetum littorale Kuchlew. apud. Rupr. Beitr. Pfl. Russ. Reich. IV. 91; Ledeb. Fl. Ross. IV. 487; Milde, Monog. Equis. 365 et Fil. Eur. 228; Fr. Schm. Fl. Saghal. 204 et (ed. Russ.) 222; Britt. & Brown, Ill. Fl. I. 37; Fledtsch. et Flerow, Ill. Fl. Sib. I. 49; Miyabe & Miyake, Fl. Saghal. 614; Marie-Victorin, Équis. du Québec, 63, 122.

NOM. JAP. *Hama-sugina*.

HAB. *Southern Saghalien*. Tomarioro, (Kusunnai, Brylkin, 1860).

Northern Saghalien. Tim, (Upper Source of Poronai R., Mitzul, 1872).

DISTRIB. Saghalien, Maritime Province, Siberia, Europe and N. America.

90. Equisetum Heleocharis Ehrh. Hannöv. Mag. (1783) 286 et Beiträge II. 159; Klinge, Archiv. Naturk. Kurl. II. 8. 410; Aschers. u. Graebn. Syn. Mitteleur. Fl. I. 134; Printz, Veg. Sib.-Mong. Front. 107; Kudo, Contr. Fl. N. Saghal. 17.

Equisetum fluviatile L. Sp. Pl. ed. 1. 1062; Britt. & Br. Ill. Fl. I. 37; Miyabe & Miyake, Fl. Saghal. 614; Makino & Nemoto, Fl. Jap. 1559.

Equisetum limosum L. Sp. Pl. ed. 1. 1062; Ledeb. Fl. Alt. IV. 322 et Fl. Ross. IV. 489; Milde, Monogr. Equiset. 339, t. XV-XVI et Fil. Eur. 227; Rgl. et Til. Fl. Ajan. 127; Maxim. Prim. Fl. Amur. 334; Korsh. Pl. Amur. 426; Miyabe, Fl. Kuril. 273; Baker, Fern Allies, 4; Kom. Fl. Mansh. I. 155; Matsum. Ind. Pl. Jap. I. 356; H. Chr. in Bull. Acad. Géogr. Bot. XX. 168; Koidz. Pl. Sachal. 7; Fedtsch. et Flerow, Ill. Pl. Sib. I. 46; Hult. Fl. Kamtchat. I. 52; Marie-Victorin, Equis du Québec, 73, 125.

form. **fluviatile** Aschers. Fl. Brand. I. 900; Aschers. u. Graebn. l. c. 135; Kudo, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 39.

Equisetum limosum L. var. *verticillatum* Döll. Gefass. Crypt. (1855) 64; Milde, Monogr. Equiset. 342, t. XV. f. 1; Nakai, in Tokyo Bot. Mag. XXXIX. 195.

NOM. JAP. *Midzu-sugina*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Ishikari, Teshio, Rebus, Kitami, Kushiro.

Kuriles. Kunashiri.

Southern Saghalien. Todomoshiri, Odomari, Tomarioro, Toyohara, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Oha, Schmidt-Penn.

form. **limosum** Aschers. l. c.; Aschers. u. Graebn. l. c. 136; Kudo, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 39.

Equisetum limosum L. var. *Linnaeanum* Döll. Gefäss. Krypt. 64; Milde, Monogr. Equiset. 342, t. XV. f. 2.

Equisetum limosum L. β . *aphyllum* Roth, Tent. Fl. Germ. I. 9; Nakai, in Tokyo Bot. Mag. XXXIX. 195.

NOM. JAP. *Mizu-dokusa*.

NOM. AINU. *To-shipship*, *Ota-shipship*, *Tekui-shipship*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Ishikari, Kushiro.

Kuriles. Kunashiri.

Southern Saghalien. Odomari, Toyohara, Mauka, Tomarioro.

Northern Saghalien. Tim, Tymi, Schmidt-Penn.

DISTRIB. *sp.* Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, Amur, Ajan, Kamtchatka, Dahuria, Siberia, Europe and North America.

91. Equisetum hyemale L. Sp. Pl. ed. 1, 1062; Ledeb. Fl. Alt. IV. 322 et Fl. Ross. IV. 490; Milde, Monogr. Equiset. 511, t. XXIX-XXX et Fil. Eur. 243; Trautv. et Mey. Fl. Ochot. 106; Miq. Prol. Fl. Jap. 389; Maxim. Prim. Fl. Amur. 334; Rgl. Tent. Fl. Uss. 174; Fr. Schm. Fl. Sachal. 204; Miyabe, Fl. Kuril. 389; Korsh. Pl. Amur. 426; Baker, Fern Allies, 5; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 141; Britt. & Br. Ill. Fl. I. 38; Sadebeck, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 547; Kom. Fl. Mansh. I. 156; Matsum. Ind. Pl. Jap. I. 356; Hegi, Ill. Fl. Mittel-Europ. I. 60; Koidz. Pl. Sachal. 7; Nakai, Fl. Korea. II. 421; Takeda, Fl. Shikotan, 499; Fedtsch. et Flerow, Ill. Pl. Sib. I. 47; Miyabe & Miyake, Fl. Saghal. 615; Printz, Veg. Sib.-Mong. Front. 108; Kudo, Fl. Paramushir, 63, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 39; Hult. Fl. Kamtchat. I. 52.

NOM. JAP. *Tokusa*.

NOM. AINU. *Shipship*.

HAB. *Yezo*. Oshima, Okushiri, Shiribeshi, Iburi, Ishikari, Teshio, Kitami, Rebun, Hidaka, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Paramushir, Shumushu.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Schmidt-Penn.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Korea, Manchuria, Amur, Ussuri, Okhotsk, Kamtchatka, Siberia, Turkestan, Himalaya, Europe and North America.

var. **Schleicheri** Milde, in Nova Act. Gaes. Leop.-Carol. XXVI. 465; Monogr. Equiset. 511, 521, *t.* 29. *f.* 3-7, *t.* 30. *f.* 20, 23, 24; Baker, Fern Allies, 5; Nakai, in Tokyo Bot. Mag. XXXIX. 194.

Equisetum trachyodon Boreau, Fl. Centr. ed. 2, II. 623.

Equisetum trachyodon Boreau b. *Moorei* Loudon, Catal. Brit. Pl. 14.

Equisetum Moorei Newm. apud. Sow. et Johnst. Suppl. Ferns Great Brit. 19, *t.* 12.

Equisetum intermedium Schur. Enum. Pl. Crypt. Transsylv. 822.

NOM. JAP. *Hama-dokusa*. (*nov.*).

HAB. *Yezo*. Rebun, Ishikari, Kitami.

Kuriles. Shikotan.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Asia Minor and Europe.

92. *Equisetum variegatum* Schleich. Catal. Pl. Helv. ed. 2, (1807) 27, nom. nud.; Weber u. Mohr. Bot. Deutschl. Crypt. Gew. 60, 447; Luerssen, Farnpfl. 765, *f.* 218, 219; Ledeb. Fl. Ross. IV. 490; Milde, Monogr. Equiset. 571, *t.* 34 et Fil. Eur. 247; Trautv. et Mey. Fl. Ochot. 106; Kurtz, in Engl. Bot. Jahrb. XIX. 482; Miyabe, Fl. Kuril. 273; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 145; Britt. & Br. Ill. Fl. I. 39; Baker, Fern Allies, 6; Sadebeck, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 548; Hegi, Ill. Fl. Mittel-Eur. I. 61; Fedtsch. et Flerow, Ill. Pl. Sib. I. 47; Makino & Nemoto, Fl. Jap. 1560; Printz, Veg. Sib.-Mong. Front. 108; Hult. Fl. Kamtchat. I. 56.

NOM. JAP. *Chishima-himedokusa*.

HAB. *Kuriles*. Urup. (fide Ruprecht).

Saghalien. (fide Hultén).

DISTRIB. Saghalien, Kuriles, Kamtchatka, Siberia, Mongolia, Europe and North America.

93. *Equisetum scirpoides* L. C. Rich. apud Michx. Fl. Bor. Am. II. 281; Luerssen, Farnpfl. 779, f. 220, 221; Ledeb. Fl. Ross. IV. 491; Trautv. et Mey, Fl. Ochot. 106; Milde, Monogr. Equiset. 596, t. 35 et Fil. Eur. 250; Kurtz, in Engl. Bot. Jahrb. XIX. 482; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 148; Britt. & Br. Ill. Fl. I. 39; Baker, Fern Allies, 6; Hegi, Ill. Fl. I. 62; Fedtsch. et Flerow, Ill. Pl. Sib. I. 48; Miyabe & Miyake, Fl. Saghal. 615, pl. 13. f. 6-9; Printz, Veg. Sib.-Mong. Front. 108; Kudo, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 39; Hult. Fl. Kamtchat. I. 55; Tatewaki, Pl. Akan Reg. (40).

Equisetum variegatum Schleicher B. minus Hook. Fl. Bor. Am. II. 270.

Equisetum variegatum Koidz. in Tokyo Bot. Mag. XXVII. (507), non Schleicher.

NOM. JAP. *Hime-dokusa*.

HAB. *Yezo*. Ishikari, Kushiro.

Southern Saghalien. Mauka.

Northern Saghalien. Tim.

DISTRIB. Saghalien, Yezo, Kamtchatka, Chukchees, Okhotsk, Siberia, Manchuria, Europe and North America.

LYCOPODIACEÆ

Lycopodium L.

94. *Lycopodium Selago* L. Sp. Pl. ed. 1. 1102; Ledeb. Fl. Alt. IV. 323 et Fl. Ross. IV. 496; A. Gray, Bot. Jap. 436; Rgl. et Til. Fl. Ajan. 127; Miq. Profl. Fl. Jap. 348; Milde, Fil. Europ. Atl. 251; Maxim. in Mém. Biol. VII. 341; Fr. et Sav. Enum. Pl. Jap. II. 196; Britt. & Br. Ill. Fl. I. 40; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 151; Baker, Fern Allies, 9; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 593; Diels, Fl. C. China, 210; Matsum. Ind. Pl. Jap. I. 359; Hegi, Ill. Fl. Mittel-Europ. I. 65; Fedtsch.

et Flerow, Ill. Pl. Sib. I. 50; Takeda, in Tokyo Bot. Mag. XXIII. 203 (form. *laxum* Desv.); Printz, Veg. Sib.-Mong. Front. 108; Hult. Fl. Kamtch. I. 61; Tatewaki, Pl. Isl. Alaid, 154 (form. *appressum* Desv.)

Lycopodium Selago var. *chinense* Kudo, Fl. Paramushir, 63.

NOM. JAP. *Chishima-sugiran*.

Kuriles. Shikotan, Urup, Paramushir, Shumushu, Alaid.

DISTRIB. Kuriles, Honshu, China, Kamtchatka, Chukchees, Siberia, Asia Minor, Unalaska, Sitcha, N. America and Europe.

95. *Lycopodium chinense* H. Chr. in Nouv. Giorn. Bot. Ital. Nouv. ser. IV. (1897) 101, *t.* 3, *f.* 4, in Bull. Herb. Boiss. VII. 824 et in Bull. Acad. Geogr. Bot. XX. 168; Kom. Fl. Mansh. I. 157; Diels, Fl. C. China, 210; Herter, in Engl. Bot. Jahrb. 1909, Beibl. n. 98, 31; Takeda, in Tokyo Bot. Mag. XXIII. 204, 241 et Fl. Shikotan, 498; Nakai, Fl. Korea. II. 423; Miyabe & Miyake, Fl. Saghal. 676; Makino & Nemoto, Fl. Jap. 1555.

Lycopodium Miyoshianum Makino, in Tokyo Bot. Mag. XII. 36; Yabe, in Tokyo Bot. Mag. XVII. 69.

Lycopodium Selago L. var. *Miyoshianum* Makino, in Tokyo Bot. Mag. XVI. 199; Matsum. Ind. Pl. Jap. I. 359.

Lycopodium Selago Fr. Schm. Fl. Sachal. 204; Kawakami, in Tokyo Bot. Mag. XIV. 106; H. Chr. in Bull. Herb. Boiss. IV. 675; Hanzawa, in Trans. Sapporo Nat. Hist. Soc. I. 153, non Linn.

Lycopodium Selago L. form. *chinense* Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 593.

NOM. JAP. *Hime-sugiran*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Rebun, Rishiri, Kushiro, Nemuro.

Kuriles. Kunashiri, Urup.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Toyohara, Moto-domari.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Shikoku, Kyushu, Korea, Manchuria and China.

96. *Lycopodium serratum* Thunb. Fl. Jap. 341; A. Gray, Bot. Jap. 436; Miq. Prol. Fl. Jap. 348, excl. syn. Michx.; Maxim. in Mél. Biol. VII.

341, excl. syn.; Fr. et Sav. Enum. Pl. Jap. II. 196, excl. syn.; Baker, Fern Allies, 12; Diels, Fl. C. China 210; Pritzell in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 594.

var. **Thunbergii** Makino, in Tokyo Bot. Mag. XII. (12); Matsum. Ind. Pl. Jap. I. 359; Takeda et Nakai, in Tokyo Bot. Mag. XXII. 48; Takeda, in Tokyo Bot. Mag. XXIII. 206, 241; Nakai, Fl. Korea. II. 423; Miyabe & Miyake, Fl. Saghal. 607; Makino & Nemoto, Fl. Jap. 1557.

Lycopodium serratum Thunb. l. c., t. 38; Fr. Schm. Fl. Sachal. 204; Kom. Fl. Mansh. I. 158; Kawakami, in Tokyo Bot. Mag. XIV. 106.

NOM. JAP. *Hosoba-togeshiba*.

NOM. AINU. *Toi-shinrush*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rebun, Rishiri, Tokachi, Kushiro.

Kuriles. Kunashiri, Etorofu.

Southern Saghalien. Odomari, Mauka, Ushoro, Toyohara, Motodomari.

DISTRIB. Saghalien, Kuriles, *Yezo*, Honshu, Shikoku, Kyushu, Formosa, Korea, Manchuria, North China and Hawaii.

var. **intermedium** (Nakai).

Lycopodium serratum Thunb. form. *intermedium* Nakai, in Tokyo Bot. Mag. XXXIX. 198.

Lycopodium serratum Hook. et Grev. Ic. Fil. I. t. XXXVII; Matsum. et Hayata, Enum. Pl. Formos. 555; Hayata, in Tokyo Bot. Mag. XX. 20 et Fl. Mont. Formos. 242, non Thunb.

Lycopodium serratum Thunb. var. *javanicum* Makino, in Tokyo Bot. Mag. XII. (13); Matsum. l. c. 359; Takeda, l. c. 207.

NOM. JAP. *Togeshiba*, *Togehiba*, *Hirobano-togeshiba*, *O-togeshiba*.

HAB. *Yezo*. Oshima, Ishikari.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu and Formosa.

97. *Lycopodium cryptomerinum* Maxim. in Mél. Biol. VII. 340; Fr. et Sav. Enum. Pl. Jap. II. 195; Baker, Fern-Allies, 11; Pritzell in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 594; Matsum. Ind. Pl. Jap. I. 358; Herter, in Engl. Bot. Jahrb. (1909) Beibl. n. 9. 32; Makino, in Tokyo Bot. Mag. XXII. (236); Takeda, in Tokyo Bot. Mag. XXIII. 208; Makino & Nemoto,

Fl. Jap. 1555; Tatewaki, Veg. Mt. Apoi, (8), (28).

NOM. JAP. *Sugiran*.

HAB. *Yezo*. Oshima, Hidaka.

DISTRIB. *Yezo*, Honshu, Shikoku and Kyushu.

98. *Lycopodium inundatum* L. Sp. Pl. ed. 1, 1102; Ledeb. Fl. Ross. IV. 497; Milde, Fil. Europ. 256; H. Chr. in Bull. Herb. Boiss. IV. 657; Hook. Brit. Ferns, *t. 51*; Britt. & Br. Ill. Fl. I. 41; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 154; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 602; Makino, in Tokyo Bot. Mag. XIV. (84) et XVI. 193; Baker, Fern-Allies, 18; Matsum. Ind. Pl. Jap. I. 358; Hegi, Ill. Fl. Mittel-Europ. Fl. I. 66; Takeda, in Tokyo Bot. Mag. XXIII. 210; Makino & Nemoto, Fl. Jap. 1556

NOM. JAP. *Yachi-sugiran*, *Yachi-kazura*.

HAB. *Yezo*. Oshima, Ishikari.

DISTRIB. *Yezo*, Honshu, China, Europe and North America.

99. *Lycopodium cernuum* L. Sp. Pl. ed. 1, 1103; Miq. Prol. Fl. Jap. 348; Milde, Fil. Europ. 254; Maxim. in Mél. Biol. VII. 341; Fr. et Sav. Enum. Pl. Jap. II. 197; Henry, List Pl. Formos. 117; Baker, Fern-Allies, 23; Diels, Fl. C. China, 210; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 602; Matsum. Ind. Pl. Jap. I. 357; Matsum. et Hayata, Enum. Pl. Formos. 555; Makino, in Tokyo Bot. Mag. XXII. (236); Takeda, in Tokyo Bot. Mag. XXIII. 211; Makino & Nemoto, Fl. Jap. 1555.

NOM. JAP. *Mizu-sugi*, *Sawa-sugi*.

HAB. *Yezo*. Iburi.

DISTRIB. *Yezo*, Honshu, Shikoku, Kyushu, Formosa, China, Indo-China, Malay Peninsula, India, Philippine, Polynesia, Australia, New Zealand, C. America, West Indies, Azores and S. Africa.

This species is a cosmopolitan in the tropics of both hemispheres. In our floral region, it grows only in one locality, *e.g.* in a restricted place by the Noboribetsu Hot-spring in the province of Iburi. The presence of a tropical element in Hokkaido is very interesting from the point of view of Phyto-geography. This locality is the record of the northernmost limit in the distribution of the species.

100. *Lycopodium obscurum* L. Sp. Pl. ed. 1, 1102; Britt. & Br. Ill. Fl. I. 41; Baker. Fern-Allies, 24, excl. syn. Thunb.; Kom. Fl. Mansh. I. 159, excl. syn. Thunb.; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 603; Matsum. Ind. Pl. Jap. I. 358, excl. syn. Thunb.; Hayata, in Tokyo Bot. Mag. XX. 21 et Fl. Mont. Formos. 241, excl. syn. Thunb.; H. Chr. in Bull. Acad. Geogr. Bot. XX. (1909) 168; Fedtsch. et Flerow, Ill. Pl. Sib. I. 51; Takeda, in Tokyo Bot. Mag. XXIII. 211; Nakai, Fl. Korea. II. 423, excl. syn. Thunb.; Miyabe & Miyake, Fl. Saghal. 607; Kudo, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 40; Makino & Nemoto, Fl. Jap. 1556; Hult. Fl. Kamtch. I. 61.

Lycopodium dendroideum Spring, Monogr. Lycopod. II. 40; Ledeb. Fl. Ross. IV. 498; Trautv. et Mey. Fl. Ochot. 107; Rgl. Tent. Fl. Ussuri. 174; Miq. Prol. Fl. Jap. 348, excl. syn. Thunb.; Milde, Fil. Europ. Atl. 253; Hook. Exot. Fl. t. 7; Fr. Schm. Fl. Sachal. 204 et Fl. Amg.-Burej. 73.

Lycopodium japonicum Maxim. in Mél. Biol. VII. 341; Fr. et Sav. Enum. Pl. Jap. II. 197; Miyabe, Fl. Kuril. 272; Kawakami, in Tokyo Bot. Mag. XIV. 106, non Thunb.

form. *a. flabellatum* Takeda, l. c. 212; Miyabe & Miyake, l. c.; Kudo, 11. cc.

Lycopodium dendroideum Michx. form. *flabellatum* Milde, l. c. 254.

NOM. JAP. *Uchiwa-mannensugi*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi.

form. *b. juniperoideum* Takeda, l. c. 213; Miyabe & Miyake, l. c.; Kudo, 11. cc.

Lycopodium juniperoideum Sw. Syn. Fil. 178, 401.

Lycopodium dendroideum Spr. form. *stricta* Milde, Fil. Europ. Atl. 254.

NOM. JAP. *Tachi-mannensugi*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Yagishiri, Rishiri, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Nyiwo, Chaiwo, Pronge-Baikal.

DISTRIB. *sp.** Saghalien, Kuriles, Yezo, Honshu, Shikoku, Kyushu, Liukiu, Korea, Manchuria, Amur, Ussuri, Kamtchatka, Okhotsk, Ajan, Sitcha and North America.

101. *Lycopodium annotinum* L. Sp. Pl. ed. 1, 1103; Ledeb. Fl. Ross. IV. 497; Trautv. et Mey. Fl. Ochot. 106; Rgl. et Til. Fl. Ajan. 127; Maxim. Prim. Fl. Amur. 335; Hook. Brit. Ferns, *t.* 50; Milde, Fil. Europ. Atl. 252; Fr. Schm. Fl. Saghal. 204 et Fl. Amg.-Burej. 73; Bak. Fern-Allies, 25; H. Chr. in Bull. Herb. Boiss. IV. 675; Britt. & Br. Ill. Fl. I. 42; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 152; Kom. Fl. Mansh. I. 159; Diels, Fl. C. China, 210; Pritzel in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 604; Matsum. Ind. Pl. Jap. I. 357; Fedtsch. et Flerow, Ill. Pl. Sib. I. 51; H. Chr. in Bull. Intern. Georg. Bot. XX. (1909) 168; Hegi, Ill. Fl. Mittel-Europ. I. 65; Printz, Veg. Sib.-Mong. Front. 108; Koidz. Pl. Sachal. 65; Miyabe & Miyake, Fl. Saghal. 608; Hult. Fl. Kamtch. I. 57.

var. *α. angustatum* Takeda, in Tokyo Bot. Mag. XXIII. 214; Miyabe & Miyake, l. c. 609.

NOM. JAP. *Sugikazura, Shinno-sugikazura.*

HAB. *Yezo.* Shiribeshi, Iburi, Ishikari, Rishiri, Rebun, Tokachi, Kushiro.

Kuriles. Kunashiri, Etorofu.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Tomarioro, Toyohara, Shikka.

var. *β. latifolium* Takeda, l. c. 215; Miyabe & Miyake, l. c. 609; Kudo, Fl. Paramushir 64, Contrib. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 41.

Lycopodium annotinum Miyabe, Fl. Kuril. 272; Yabe & Yendo, in Tokyo Bot. Mag. XVIII. (172).

NOM. JAP. *Hirohano-sugikazura.*

HAB. *Yezo*. Rebun.

Kuriles. Kunashiri, Etorofu, Urup, Shasukotan, Paramushir, Shumushu.

Southern Saghalien. Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Oha, Pronge-Baikal, Schmidt-Penn.

var. γ . **pungens** Desv. Prodr. Fil. n. 36; Milde, l. c. 253; Britt. & Br. l. c. 42; Aschers. u. Graebn. l. c.; Hegi, l. c.; Takeda, l. c. 217; Kudo, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 41; Makino & Nemoto, Fl. Jap. 1555; Tatewaki, Pl. Akan Reg. (41).

NOM. JAP. *Takane-sugikazura*.

HAB. *Yezo*. Iburi, Hidaka, Ishikari, Rishiri, Kushiro.

Southern Saghalien. Odomari, Mauka, Tomarioro, Shikka.

Northern Saghalien. Tymi, Nyiwo, Chaiwo.

DISTRIB. *sp.* Saghalien, Kuriles, Yezo, Honshu, N. Korea, Manchuria, Amur, Mongolia, C. China, Himalaya, Siberia, Okhotsk, Ajan, Kamtchatka, North America and Europe.

102. *Lycopodium clavatum* L. Sp. Pl. ed. 1, 1101; Thunb. Fl. Jap. 341; Ledeb. Fl. Ross. IV. 499; Trautv. et Mey. Fl. Ochot. 107; Spring. Monogr. Lycopod. I. 88; Hook. Brit. Ferns, *t.* 49; Rgl. et Til. Fl. Ajan. 127; Maxim. Prim. Fl. Amur. 335 et in Mél. Biol. VII. 341; Miq. Prol. Fl. Jap. 348; Milde, Fil. Europ. et Atl. 255; Fr. Schm. Fl. Sachal. 204; Fr. et Sav. Enum. Pl. Jap. II. 197; Baker, Fern-Allies, 26; Britt. & Br. Ill. Fl. I. 43; Aschers. u. Graebn. Syn. Mittel-europ. Fl. I. 152; Miyabe, Fl. Kuril. 272; Kom. Fl. Mansh. I. 160; Pritzel, in Diels, Fl. C. China, 210 et in Engl. u. Pr. Nat. Pfl.-fam I. 4. 604; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (172); Matsum. Ind. Pl. Jap. I. 357; Hayata, in Tokyo Bot. Mag. XX. 20 et Fl. Mont. Formos. 241; Hegi, Ill. Fl. Mittel-europ. I. 66; Fedtsch. et Flerow, Ill. Pl. Sib. I. 52; Takeda et Nakai, in Tokyo Bot. Mag. XXIII. 48; Takeda, *ibidem* XXIII. 218 et Fl. Shikotan, 499; Koidz. Pl. Sachal. 7; Nakai, Fl. Korea. II. 422; Miyabe & Miyake, Fl. Saghal. 610; Kudo, Fl. Paramushir, 65, Contr. Fl. N. Saghal. 17 et Rep. Veg. N. Saghal. 41; Makino & Nemoto, Fl. Jap. 1555; Hult. Fl. Kamtch. I. 59.

var. **robustius** Nakai, in Tokyo Bot. Mag. XXXIX. 197.

Lycopodium japonicum Thunb. Fl. Jap. 341.

Lycopodium tristachyum Nutt. Gen. N. Am. II. 247, non Pursh.

Lycopodium aristatum Bong. Veg. Sitcha, 175.

Lycopodium aristatum var. *robustius* Hook. et Grev. Enum. Fil. n. 75.

Lycopodium clavatum var. *tristachyon* Hook. Fl. Bor.-Amer. II. 267.

Lycopodium clavatum var. *distachyum* Spring, Monogr. Lycop. I. 90.

Lycopodium clavatum var. *tristachyon* Spring, l. c.

NOM. JAP. *Yezo-hikagenokazura*.

HAB. *Yezo*. Oshima, Shiribeshi, Hidaka, Ishikari, Teshio, Kitami, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Paramushir.

Southern Saghalien. Todomoshiri, Odomari, Tomarioro, Toyohara, Shikka.

Northern Saghalien. Nyiwo?, Chaiwo?

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kamtchatka, Bering Strait, Siberia, Europe and North America.

The specimens collected by G. Yamada at Raiden in the province of Shiribeshi in 1901 have both motostachous and distachous peduncles on one and the same stem. The monostachous peduncles have longer spikes and peduncles compared with those of the North American var. *monostachyon* Grev. et Hook., but have considerably shorter ones than those of var. *megastachyon* Fern. et Bissell.

The specimens collected by Kudo and Tatewaki in Northern Saghalien in the forest at Nyiwo in 1922, and also those collected by Yoshiwo Kusano at the sea-coast of Chaiwo in 1921, are both sterile, but they have a striking common character. The creeping stems as well as erect-ascending branches are rather slender looking. The branches have erect patent and more or less appressed leaves with somewhat incurved long-aristate tips. Some of the young leaves on the branches and stems have sometimes evident denticulation, which is very rare to find in the case of other specimens of var. *robustius* Nakai.

var. **nipponicum** Nakai, in Tokyo Bot. Mag. XXXIX. 197.

Lycopodium clavatum var. *Wallichianum* Nakai, l. c. 198, non Spring,

quoad pl. Asariyama et Mori lect.

NOM. JAP. *Hikageno-kazura*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Rishiri, Kitami, Tokachi, Kushiro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup.

Southern Saghalien. Odomari, Toyohara, Shikka.

Northern Saghalien. Tim.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu and China.

Prof. Nakai has attempted to classify *Lycopodium clavatum* L. growing in Japan by studying the specimens in the European herbaria, and recognized the following four varieties:—vars. *nipponicum* Nakai, *robustius* Nakai, *monostachyum* Desv. and *Wallichianum* Spring. The second and fourth varieties are said to grow in Hokkaido. As we had a great difficulty in classifying our materials according to the view set forth by Prof. Nakai, we sent them all about eighty in number to him for his reinvestigation.

Among them, there is a specimen of U. Faurie's n. 2956 collected at Asariyama near Otaru. On further examination, he came to the conclusion that it was his var. *nipponicum* and not var. *Wallichianum* Spring, as he had once considered. The latter seems to grow only in the warmer part of Japan, in Shikoku, Kyushu and elsewhere.

DISTRIB. *sp.* Saghalien, Kuriles, Yezo, Honshu, Shikoku, Kyushu, Formosa, Korea, Manchuria, China, Mongolia, Dahuria, Amur, Okhotsk, Kamtchatka, **Siberia**, India, Java, New Guinea, Philippine, Sumatra, Polynesia, Hawaii, N. America, Europe and Africa.

103. *Lycopodium sitchense* Rupr. Beitr. Pflanzenk. Russ. III. 30; Ledeb. Fl. Ross. IV. 499; Kurtz, in Engl. Bot. Jahrb. XIX. 428; Piper, Fl. Washingt. 87; Robinson & Fernald, in Gray's New Manual, ed. 7, 56; Hult. Fl. Kamtch. I. 62.

Lycopodium alpinum Bong. Veg. Sitcha, 175.

Lycopodium alpinum var. *sitchense* Milde, Fil. Europ. Atl. 258; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 604.

var. **nikoense** Takeda, in Tokyo Bot. Mag. XXIII. 221; Makino & Nemoto, Fl. Jap. 1557.

Lycopodium nikoense Fr. et Sav. Enum. Pl. Jap. II. 198.

Lycopodium alpinum var. *nikoense* Fr. et Sav. Enum. Pl. Jap. II. 613; Bak. Fern-Allies, 27; Pritzel, in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 604; Makino, in Tokyo Bot. Mag. XII. 303 et ibidem XVI. 198; Yabe, in Tokyo Bot. Mag. XVII. 16; Matsum. Ind. Pl. Jap. I. 357.

Lycopodium sabinaefolium Willd. var. *sitchensis* Fernald, subvar. *nikoense* Koidz. in Tokyo Bot. Mag. XL. 330.

Lycopodium alpinum Hanazawa, in Trans. Sapporo Nat. Hist. Soc. I. 135; Tatewaki, Pl. Isl. Alaid, 155, non L.

Lycopodium alpinum L. var. *planiramulosum* Takeda, l. c. 229, p. p. quoad pl. Yezo.

NOM. JAP. *Takane-hikagenokazura*.

HAB. *Yezo*. Shiribeshi, Iburi, Ishikari, Tokachi.

Kuriles. Kunashiri, Etorofu, Alaid.

DISTRIB. var. *Kuriles*, *Yezo*, *Honshu*; *sp.* *Kamtchatka*, *Aleutian Is.* and *North America*.

104. *Lycopodium complanatum* L. Sp. Pl. ed. 1, 1104; Ledeb. Fl. Ross. IV. 499; Trautv. et Mey. Fl. Ochot. 107; Rgl. et Til. Fl. Ajan. 127; Maxim. Prim. Fl. Amur. 335 et in Mél. Biol. VII. 341; Milde, Fil. Europ. Atl. 257; Fr. Schm. Fl. Sachal. 204; Baker, Fern-Allies, 28; Miyabe, Fl. Kuril. 272; Britt. & Br. Ill. Fl. I. 43; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 155; Pritzel, in Diels, Fl. C. China, 210 et in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 604; Komar. Fl. Mansh. I. 161; H. Chr. in Bull. Acad. Intern. Geogr. Bot. XX. 168; Fedtsch. et Flerow, Ill. Pl. Sib. I. 53; Hegi, Ill. Fl. Mittel-Europ. I. 67; Nakai, Fl. Korea. II. 422 et in Tokyo Bot. Mag. XXXIX. 198; Hult. Fl. Kamtch. I. 59.

Lycopodium complanatum L. var. *anceps* Aschers. in Fl. v. Brand. I. 194; Milde, Sporenpl. 135 et Fil. Europ. et Atl. 257; Fedtsch. et Flerow, l. c.; Hegi, l. c.; Takeda, in Tokyo Bot. Mag. XXIII. 225; Miyabe & Miyake, Fl. Saghal. 610; Printz, Veg. Sib.-Mong. Front. 109, Kudo, Fl. Paramushir, 65, Contr. Fl. Saghal. 18 et Rep. Veg. N. Saghal. 42; Makino & Nemoto, Fl. Jap. 1555.

Lycopodium complanatum L. var. *chamaecyparissus* Fr. et Sav. Enum. Pl. Jap. II. 198; Kawakami, in Tokyo Bot. Mag. XIV. 106; Matsum. Ind. Pl. Jap. I. 358; Hayata, in Tokyo Bot. Mag. XX. 21 et Fl. Mont. Formos.

241, non A. Br.

NOM. JAP. *Asuhi-kazura*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Rishiri, Tokachi, Kushiro.

Kuriles. Kunashiri, Etorofu, Urup, Paramushir.

Southern Saghalien. Todomoshiri, Odomari, Mauka, Tomarioro, Ushoro, Toyohara, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Nyiwo, Chaiwo, Pronge-Baikal, Oha, Schmidt-Penn.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Shikoku, Formosa, Korea, Manchuria, China, Amur, Ajan, Okhotsk, Kamtchatka, Siberia, India, Europe and North America.

105. *Lycopodium alpinum* L. Sp. Pl. ed. 1, 1104; Willd. Sp. Pl. V. 20; Hook. & Arn. Brit. Fl. ed. 8, 597; Hook. Fl. Bor. Am. II. 267; Spring, Monogr. Lycop. I. 104; Ledeb. Fl. Alt. IV. 323 et Fl. Ross. IV. 498; Rgl. et Til. Fl. Ajan. 127; Schuk. Krypt. *t.* 161; Hook. Brit. Ferns, *t.* 53; Milde, Fil. Europ. et Atl. 258, excl. var.; Baker, Fern-Allies, 27; Britt. & Br. Ill. Fl. I. 42; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 156; F. Kurtz, in Engl. Bot. Jahrb. XIX. 482; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (172); Hegi, Ill. Fl. Mittel-Europ. I. 69, *t.* 11, *f.* 6; Fedtsch. et Flerow, Ill. Pl. Sib. I. 54; Matsum. Ind. Pl. Jap. I. 357; Printz, Veg. Sib.-Mong. Front. 109; Kudo, Fl. Paramushir, 64 et Rep. Veg. N. Saghal. 41; Hult. Fl. Kamtch. I. 56.

Lycopodium alpinum L. var. *genuinum* Takeda, in Tokyo Bot. Mag. XXIII. 227.

NOM. JAP. *Chishima-hikagenokazura*.

HAB. *Kuriles*. Paramushir, Shumushu.

Northern Saghalien. Schmidt-Penn.

DISTRIB. Saghalien, N. Kuriles, Kamtchatka, Ajan, Manchuria, Siberia, Europe and North America.

SELAGINELLACEÆ

Selaginella Spring

106. *Selaginella selaginoides* Link, Fil. Spec. Hort. Berol. 158;

Willd. Sp. Pl. V. 28; Hook. Brit. Ferns, *t.* 52; Sm. Engl. Bot. *t.* 1148; Britt. & Br. Ill. Fl. I. 44; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 159; H. Chr. in Bull. Herb. Boiss. IV. 675; Makino, in Tokyo Bot. Mag. XVII. 146; Hieron. in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 669, *f.* 401; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (173); Matsum. Ind. Pl. Jap. I. 363, 396; Hegi, Ill. Fl. Mittel-Europ. 1. 70, *t.* 11, *f.* 7; Fedtsch. et Flerow, Ill. Pl. Sib. I. 55; Takeda, in Tokyo Bot. Mag. XXIII. 235; Printz, Veg. Sib.-Mong. Front. 109; Kudo, Fl. Paramushir, 66; Hult. Fl. Kamtch. I. 64.

Lycopodium Selaginoides L. Sp. Pl. ed. 1, 1101.

Selaginella spinosa Beauv. Prodr. Aethéog. 112; Ledeb. Fl. Ross. IV. 501; Spring, Monogr. Lycop. II. 57; Baker, Fern-Allies, 34.

Selaginella spinulosa A. Br. in Doell. Rhein Flora, 38; Milde, Fil. Europ. Atl. 260.

NOM. JAP. *Koke-sugiran.*

HAB. *Yezo.* Ishikari.

Kuriles. Urup, Paramushir, Shumushu.

DISTRIB. Kuriles, Yezo, Honshu, Kamtchatka, Siberia, Unalaska, North America and Europe.

107. *Selaginella sibirica* Hieron. in Hedwigia XXXIX, 290 et in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 671.—(*Pl. II. Figs. 1–2; Pl. III. Figs. 1–6*).

Selaginella rupestris Spring form. *sibirica* Milde, Fil. Europ. 262; Takeda, in Tokyo Bot. Mag. XXIII. 236, *f.* 16, *a–r*; Miyabe & Miyake, Fl. Saghal. 604; Kudo, Rep. Veg. N. Saghal. 42; Makino & Nemoto, Fl. Jap. 1552.

Selaginella rupestris Ledeb. Fl. Ross. IV. 500; Rgl. et Til. Fl. Ajan. 127; Fr. Schm. Fl. Sachal. 204; Kawakami, in Tokyo Bot. Mag. XIV. 706; Fedtsch. et Flerow, Ill. Pl. Sib. I. 56, *t.* 5, *f.* 2, non Spring.

Selaginella Schmidtii Hieron. in Hedwigia XXXIX. 292 et in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 671; Hult. Fl. Kamtch. I. 63.

Selaginella Schmidtii var. *Krauseorum* Hieron. l.c. 293.

NOM. JAP. *Yezo-no-himokazura.* (nov.)

HAB. *Yezo.* Hidaka, Kitami, Rebun, Rishiri.

Southern Saghalien. Odomari, Motodomari, Tomarioro.

Northern Saghalien. Alexandrowsk.

DISTRIB. Yezo, Saghalien, N. Korea, E. Siberia, Dahuria, Ajan, Chukchees, Kamtchatka, Aleutian Islands and Alaska.

As has already been pointed out by Takeda, the Saghalien and Hokkaido specimens of *Selaginella rupestris* Spr. f. *sibirica* Milde coincide better with the detailed descriptions of *S. sibirica* Hieron. rather than with those of *S. Schmidtii* Hieron., the species based on the collections of Fr. Schmidt and Glehn in Saghalien, especially in regard to the markings of the macrospores. Hieronymus distinguished *Selaginella Schmidtii* from *S. sibirica* principally on the ground of the smooth or rarely foveolate surface of the macrospores in the former in contrast to the distinctly reticulated raised markings in the latter. However, all the matured macrospores of the Saghalien and Hokkaido specimens we have carefully examined were invariably distinctly reticulated, as shown in Takeda's figure cited above and also in a series of photographs in the *Plate III* (figs. 1-6) of the present paper. These excellent photographs were kindly taken for us by Mr. Isamu Suto, assistant in the Plant Physiology Laboratory of our University.

Only explanation, though of mere conjecture, we could possibly give for the statement made by Hieronymus on the point in question, is that the materials he had examined might have been unfortunately imperfect or immature. He also described a new variety of *S. Schmidtii* by the name of var. *Krauseorum* Hieron., (*Hedwigia* XXXIX. p. 293). It was collected by Krause in Chukchees Peninsula and Alaska. The macrospores of the plant are said to differ from the type by possessing irregularly ruguloso-tuberculate markings. Such markings are often observed also on the immature spores in some Hokkaido and Saghalien specimens, as shown in the *Plate III*. figs. 4 and 6.

Hultén referred the Kamtchatkan plants all to *Selaginella Schmidtii* Hieron. without making any remarks on the nature of the macrospores. They require the reexamination for the clearing up of this point in question.

The present species is not yet collected in the Kuriles and Honshu.

A specimen collected by T. Nakai in North Korea on Mt. Kamboho at the altitude of 2400 metres in July 1918, corresponds exactly with those from Saghalien and Hokkaido.

108. *Selaginella shakotanensis* (Franch.) Miyabe et Kudo—(*Pl. II*.

Figs. 3, 4; Pl. III. Figs. 8-12).

Selaginella rupestris Spring var. *shakotanensis* Franch. apud Takeda, in Tokyo Bot. Mag. XXIII. 237, f. 17; Makino & Nemoto, Fl. Jap. 1553; Tatewaki, Pl. Teshio Exp. Forest, (11) et Veg. Mt. Apoi, (28).

Selaginella rupestris Makino, in Tok. Bot. Mag. XII. (86); H. Chr. in Bull. Herb. Boiss. VII. 824; Yabe, in Tokyo Bot. Mag. XVII. 17; Hayata, ibidem 28; Matsum. Ind. Pl. Jap. I. 363, non Spring.

NOM. JAP. *Himokazura*, *Hime-hikagenokazura*.

HAB. *Yezo*. Shiribeshi, Hidaka, Ishikari, Teshio.

DISTRIB. *Yezo*, Honshu.

In the Herbarium of our Institution, there is a specimen of the plant under consideration collected by U. Faurie (No. 9895) in June 1893, on Mt. Shakotan, Prov. Shiribeshi, Hokkaido, labelled *Selaginella rupestris* var. *shakotanensis* Franch. Franchet seems, however, to have never published his description of this new variety. Takeda in his monograph of the Lycopodiales of Hokkaido and Saghalien gave for the first time a short description of the plant from the Faurie's specimens with the magnified figures of the leaves and sporophylls. Fig. 3 in the Pl. II. of the present paper is a natural sized photograph of the type specimen collected by Faurie, while fig. 4 is that of a larger and well developed specimen collected by Tatewaki on Mt. Panke, Prov. Teshio, in July 1928. The plant has also been collected in Prov. Ishikari, on Mt. Yubari (Yanagisawa, 1912), and in Prov. Hidaka at Fuyushima (Kawakami) and on Mt. Apoi (Tsushima, 1924).

All the Honshu specimens in the Herbarium of the Tokyo Imperial University labelled as *Selaginella rupestris* Spring (*Himokazura*, *Hime-hikagenokazura*), belong to our *Selaginella shakotanensis*. The plant is widely distributed in the alpine regions of the central and northern Honshu.

In general characters, the present species is allied to *Selaginella rupestris* Spring and *S. sibirica* Hieron., but it is considerably slender and wiry in appearance, (Pl. II. figs. 3, 4). Spikes are variable in length, ranging from 6 to 20 mm. with a diameter reaching hardly 1 mm. In the reticulation of the macrospores, the secondary thinner partition ridges are distinctly observable in the meshes of the primary more prominent net ridges. In this respect, the present species is nearly related to *S. rupestris* of North America rather than to *S. sibirica*. (Pl. III. Figs. 7-12).

109. *Selaginella helvetica* Link, Fil. Hort. Berol. 159; Ledeb. Fl. Ross. IV. 501; Maxim. Prim. Fl. Amur. 336; Rgl. Tent. Fl. Ussur. 175; Milde, Fil. Europ. Atl. 265; Fr. et Sav. Enum. Pl. Jap. 199; Miyabe, Fl. Kuril. 273; Baker, Fern-Allies, 37; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 162; Pritzel, in Diels, Fl. C. China, 211; Kom. Fl. Mansh. I. 166; Matsum. Ind. Pl. Jap. I. 361; Hegi, Ill. Fl. Mittel-Europ. I. 70; Fedtsch. et Flerow, Ill. Pl. Sib. I. 57; Takeda, in Tokyo Bot. Mag. XXIII. 238 et Fl. Shikotan, 499; Nakai, Fl. Korea. II. 424.

Lycopodium helveticum L. Sp. Pl. ed. 1, 1104.

NOM. JAP. *Yezo-no-himekuramagoke*.

HAB. *Yezo*. Shiribeshi, Hidaka, Ishikari, Rebun.

Kuriles. Kunashiri, Shikotan, Urup.

DISTRIB. Kuriles, Yezo, Honshu, Korea, Manchuria, China, Amur, Ussuri, Siberia, Persia, Asia Minor, Caucasus and Europe.

110. *Selaginella involvens* Spring, Monogr. II. 63; Milde, Fil. Europ. Atl. 268; Miq. Prol. Fl. Jap. 349; Fr. et Sav. Enum. Pl. Jap. II. 200; Korsh. Pl. Amur. 425; Kom. Fl. Mansh. I. 165; Baker, Fern-Allies, 87; Pritzel, in Diels, Fl. C. China, 211; Palib. Consp. Fl. Korea. III. 39; Hieron. in Engl. u. Pr. Nat. Pfl.-fam. I. 4. 676; Yabe, in Tokyo Bot. Mag. XVII. 69; Matsum. Ind. Pl. Jap. I. 361; Fedtsch. et Flerow, Ill. Pl. Sib. I. 57; Nakai, Fl. Korea. II. 424; Miyabe & Kudo, Mater. Fl. Hokkaido, n. 105, in Trans. Sapporo Nat. Hist. Soc. VII. 25; Makino & Nemoto, Fl. Jap. 1551.

Lycopodium circinale Thunb. Fl. Jap. 341, non L.

Selaginella pulvinata Maxim. Prim. Fl. Amur. 335; Rgl. Tent. Fl. Ussur. 175.

form. **minor** Milde, l.c. 269.

NOM. JAP. *Hime-Iwahiba*.

HAB. *Yezo*. Oshima, Okushiri.

DISTRIB. *sp.* Yezo, Honshu, Shikoku, Kyushu, Liukiu, Formosa, Korea, Manchuria, Amur, Ussuri, Mongolia, China, Himalaya, Philippine and Java.

ISOETACEÆ

Isoetis L.

111. *Isoetes asiatica* Makino, in Tokyo Bot. Mag. XXVIII. (1914)

184; Makino & Nemoto, Fl. Jap. 1519.—(*Pl. III. Figs. 13–18*).

Isoetes echinospora Durieu var. *asiatica* Makino, in Tokyo Bot. Mag. XVIII. 129; Pfeiffer, Monogr. Isoetac. in Ann. Mo. Bot. Gard. IX. 156.

Isoetes echinospora Kawakami, in Tokyo Bot. Mag. XII. (225), (267); Takeda, in Tokyo Bot. Mag. XXIII. 240; Koidz. Pl. Sachal. 8; Miyabe & Miyake, Fl. Saghal. 603; Makino & Nemoto, Fl. Jap. 1519, non Durieu.

NOM. JAP. *Hime-misunira*, *Yezo-misunira*.

HAB. *Yezo*. Iburi, (Lake Kuttara, K. Miyabe, 1914). Kushiro, (Lake Akan, Faurie, n. 10732, 1893; Kawakami, 1897); (Lake Kutcharo, H. Tanakadate, 1917).

Southern Saghalien. Odomari-District, (Lake Chipisani, G. Nakahara, 1906.)

DISTRIB. Saghalien, Yezo and Honshu.

Isoetes asiatica Makino is a good species and is quite distinct from *I. echinospora* Durieu. A specimen from the type locality, Lake Nojiri, Prov. Shinano, collected by Dr. K. Oguma in Aug. 1910, agrees very well with the detailed description of the plant by Makino. In our specimen, the leaves are erect-patent or somewhat recurved and 4–4.5 cm. in length. The velum covers the sporangium almost completely. The macrospores are densely covered with rather coarse spines, which are mostly broad and flattened, obtuse, truncate or irregularly toothed or furcate at the apex. With these are generally found intermixed single terete spines, obtuse and often slightly curved at the apex. (*Pl. III. figs. 13, 14*).

The habitat and general characters of the plants collected in Hokkaido and Saghalien coincide almost exactly with those of the Nojiri specimens. The spines on the macrospores are, however, more or less variable according to the locality. Those of the plant from Lake Chipisani, Saghalien are rather slender and densely produced. Numerous bifurcate flattened spines are found intermixed with many simple obtuse-pointed terete spines. (*Pl. III. figs. 15, 16*). While in those of the Kuttara Lake, simple rather elongated curved spines are predominant. (*Pl. III. figs. 17, 18*).

112. *Isoetes lacustris* L. Sp. Pl. 1100; Ledeb. Fl. Ross. IV. 495; Milde, Fil. Eur. Atl. 276; Baker, Fern-Allies, 125; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. 166; Kawakami, in Tokyo Bot. Mag. XV. (217);

Takeda, in Tokyo Bot. Mag. XXIII. 239; Pfeiffer, Monogr. Isoetac. 186.

NOM. JAP. *Chishima-mizunira*.

HAB. *Kuriles*. Etorofu, in a small swamp on Mt. Atoiya, at the alt. of 2200 ft. (Kawakami, 1897).

DISTRIB. *Kuriles*, Northern Honshu, Siberia and Europe.

The Etorofu specimen was sent to Prof. Dr. Graebner for identification. He determined it to be *Isoetes lacustris* L. The figure 19 in the Plate III. shows series of crested ridges formed by the confluent spines, together with many isolated simple ones intermixed.

A similar plant was collected by H. Takeda and M. Tatewaki in Yunuma, Tsuta, Prov. Mutsu, Aug. 4, 1925. In these specimens, the single spines with bifurcate apex are conspicuous, and commissural ridges are often provided with remarkable crested out-growths.

Our plant may form a good geographical variety of the European *Isoetes lacustris* L.

PHANEROGAMÆ

GYMNOSPERMÆ

TAXACEÆ

Taxus L.

113. *Taxus cuspidata* Sieb. et Zucc. Fl. Jap. Fam. Nat. II. 108 et Fl. Jap. II. 61, *t.* 108; Parl. in DC. Prodr. XVI. 2. 502; Miq. Prol. Fl. Jap. 333; Fr. et Sav. Enum. Pl. Jap. I. 472; Mast. in Jour. Linn. Soc. Bot. XVIII. 499 et in Bull. Herb. Boiss. VI. 274; Miyabe, Fl. Kuril. 261; Sargent, For. Fl. Jap. 76; Kawakami, Fig. & Descr. Hokkaido Trees, 179, *f.* 58; Shirasawa, Icon. For. Trees Jap. I. 49, *t.* 15, *f.* 1-8; Kom. Fl. Mansh. I. 210; Nakai, Fl. Korea. II. 384; Rehd. & Wils. in Sarg. Pl. Wilson. II. 8; Takeda, Fl. Shikotan, 486; Miyabe & Miyake, Fl. Saghal. 590; Wilson, Conif. and Tax. Jap. 11, *pl.* V; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, I. 1, *t.* 1; Kudo, Contr. Fl. N. Saghal. 18 et Rep. Veg. N. Saghal. 43.

Taxus baccata Thunb. Fl. Jap. 275, non L.

Cephalotaxus umbraculifera Sieb. apud Endl. Syn. Conif. 239; Parl. in DC. Prodr. XVI. 2. 504; Fr. et Sav. Enum. Pl. Jap. I. 473.

Taxus baccata L. var. *microcarpa* Trautv. in Maxim. Prim. Fl. Amur. 259; Fr. Schm.Fl. Sachal. 175.

Taxus baccata cuspidata Carr. Traité Conif. ed. 2, 733; Elwes & Henry, Trees Gr. Brit. & Irel. I. 100, *t.* 31; Beissn. Handb. Laubholzk. 2 Aufl. 51.

Taxus baccata L. subsp. 2. *cuspidata* Pilger, in Engl. Pfl.-reich, IV, 5. 112; Matsum. Ind. Pl. Jap. II. 1. 17.

Taxus baccata L. subsp. 2. *cuspidata* Pilger var. *latifolia* Pilger, l.c.; Matsum. l.c. 18; Fedtsch. et Flerow, Ill. Pl. Sib. II. 61.

Taxus baccata L. subsp. 3. *cuspidata* Pilger var. *latifolia* Pilg. in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 210.

NOM. JAP. *Ichii, Araragi, Onko.*

NOM. AINU. *Raramani, Rarumani, Taramani.*

HAB. *Yezo.* Oshima, Koshima, Shiribeshi, Okushiri, Iburi, Hidaka, Ishikari, Teshio, Yagishiri, Rebun, Rishiri, Kitami, Tokachi, Kushiro,

Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu, Urup, Shimushir, Ketoi, Rashuwa.

Southern Saghalien. Odomari, Mauka, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk.

DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Shikoku, Formosa, Korea, Amur, Manchuria and China.

The plant in our floral region belongs mostly to var. *latifolia* Pilger.

CEPHALOTAXACEÆ

Cephalotaxus Sieb. et Zucc.

114. *Cephalotaxus drupacea* Sieb. et Zucc. Fl. Jap. Fam. Nat. II. 108 et Fl. Jap. II. 66, t. 130, 131; Parl. in DC. Prodr. XVI. 2. 504; Miq. Prol. Fl. Jap. 333; Fr. et Sav. Enum. Pl. Jap. I. 473; Mast. in Jour. Linn. Soc. Bot. XVIII. 499, in Bull. Herb. Boiss. VI. 274 et in Gard. Chron. ser. 3, XXXIII. 228, f. 94; Mast. in Forb. et Hemsl. Ind. Fl. Sin. II. 544; Sarg. For. Fl. Jap. 75; Shirasawa, Icon. For. Trees Jap. I. 46, t. 14; Palib. Consp. Fl. Korea. III. 36; Diels, Fl. C. China, 214; Pilger, in Engl. Pfl.-reich, IV. 5. 100; Matsum. Ind. Pl. Jap. II. 1. 6; Beissn. Handb. d. Nadelholz. 2 Aufl. 68; Rehd. & Wilson, in Sarg. Pl. Wilson. II. 3; Wilson, Conif. & Tax. Jap. 6.

var. **nana** Kudo, Syst. Bot. Useful Trees Jap. (1920) 9; Rehd. in Jour. Arn. Arb. IV. (1923) 107.

Cephalotaxus pedunculata Beissn. l.c. 62, non Sieb. et Zucc. quoad pl. Yezo.

Cephalotaxus nana Nakai, in Tokyo Bot. Mag. XXXIII. 193.

Cephalotaxus nana Nakai, var. *adstringens* Nakai, l. c.

NOM. JAP. *Yezo-inugaya*, *Hai-inugaya*.

NOM. AINU. *Kanatni*, *Anatni*, *Anakni*.

HAB. *Yezo.* Oshima, Shiribeshi, Okushiri, Ishikari, Teshio.

DISTRIB. var. *Yezo*, Northern Honshu; *sp.* Honshu, Shikoku, Kyushu, Korea and China.

PINACEÆ

Larix Mill.

115. *Larix dahurica* Turcz. apud Trautv. Imag. Pl. Fl. Ross. (1844) 48, *t.* 32; Trautv. et Mey. Fl. Ochot. 88; Rgl. et Til. Fl. Ajan. 119; Maxim. Prim. Fl. Amur. 262; Gordon, Pinetum, 123; Fr. Schm. Fl. Sachal. 177; Rgl. in Gartenfl. XX. 105, *t.* 684, *f.* 9, 10 et Rev. Spec. Crataeg. Dracaen. Lar. 59; Mast. in Jour. Linn. Soc. Bot. XVIII. 522, p. p.; Korsh. Pl. Amur. 424; Kom. Fl. Mansh. I. 190; Beissn. Handb. Nadelholzk. 2 Aufl. 319, *f.* 77; Nakai, Fl. Korea. II. 382; Henry, in Gardn. Chron. ser. 3, LVIII. (1915) 178, *f.* 58-60; Miyabe & Miyake, Fl. Saghal. 620, *t.* 11, *f.* 4-8; Wilson, Conif. & Tax. Jap. 31; Hult. Fl. Kamtchat. I. 68.

Pinus dahurica Fisch. apud Turcz. in Bull. Soc. Nat. Mosc. XI. (1838) 101; Endl. Syn. Conif. 128; Ledeb. Fl. Ross. III. 673; Parl. in DC. Prodr. XVI. 2. 410.

Abies Gmelini Rupr. in Beitr. Pfl. Russ. Reich, II. (1845) 56.

Abies kamtschatica Rupr. in Beitr. Pfl. Russ. Reich, II. (1845) 57; Ledeb. Fl. Ross. III. 673.

Pinus kamtschatica Endl. Syn. Conif. (1847) 135; Ledeb. Fl. Ross. III. 673.

Larix Gmelini Ledeb. apud Gordon Pinet. 123; Pilger, in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 327.

Larix kamtschatica Carr. Traité Conif. 279.

Larix dahurica Turcz. var. *japonica* Maxim. apud Rgl. in Gartenfl. XX. 105, *t.* 685, *f.* 6; Rgl. Rev. Spec. Crataeg. Dracaen. Lar. 60; Miyabe, Fl. Kuril. 261; Beissn. Handb. Nadelholzk. 329, *f.* 91; Sarg. For. Fl. Jap. 84, *t.* 26; Patschke, in Engl. Bot. Jahrb. XLVIII. 651; Wilson, Conif. & Tax. Jap. 33, *pl.* 17, 18; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, I. 2, *t.* 7.

Larix kurilensis Mayr, Monogr. Abiet. Jap. 66, *t.* 5, *f.* 15; Shirasawa, Icon. For. Trees Jap. II. 4, *t.* 1, *f.* 1-16; Beissn. Handb. Nadelholzk. 2 Aufl. 321, *f.* 78; Takeda, Fl. Shikotan, 486; Makino & Nemoto, Fl. Jap. 1535.

Larix dahurica Turcz. var. *kurilensis* Sarg. Silva N. Am. XII. 4, in nota.

Larix sibirica Mast. in Bull. Herb. Boiss. VI. 272; Matsum. Ind. Pl. Jap. II. 1. 12, non Ledeb.

Larix dahurica Turcz. var. *pubescens* Patschke, in Engl. Bot. Jahrb. XLVIII. 651, 771.

Larix dahurica Turcz. var. *kamtschatica* Miyabe et Kudo, l. c. 26, in nota; Kudo, Contr. Fl. N. Saghal. 18 et Rep. Veg. N. Saghal. 44.

Larix olgensis A. Henry, in Gard. Chron. ser 3. LVII. 109.

NOM. JAP. *Gui-matsu*, *Shikotan-matsu*, *Karafuto-matsu*.

NOM. AINU. *Kui*.

HAB. *Kuriles*. Shikotan, Etorofu.

Southern Saghalien. Odomari, Tomarioro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Nyiwo, Pronge-Baikal, Schmidt-Penn.

DISTRIB. Saghalien, Southern Kuriles, Kamtschatka, Okhotsk, Siberia, Manchuria, Korea and China.

form. **ochrocarpa** (Wilson).

Larix dahurica Turcz. var. *japonica* Maxim. form. *ochrocarpa* Wilson, Tax. & Conif. Jap. 34.

Larix dahurica Turcz. form. *chlorocarpa* Miyabe & Miyake, Fl. Saghal. 600, non Schröder.

HAB. *Southern Saghalien*. Odomari, Toyohara.

DISTRIB. An endemic form!

Pinus L.

116. *Pinus pentaphylla* Mayr, Monogr. Abiet. Jap. 78, t. 6, f. 20; Mast. in Bull. Herb. Boiss. VI. 272 et in Jour. Linn. Soc. Bot. XXXV. 577; Sarg. For. Fl. Jap. 80; Kawakami, Fig. & Descrip. Hokkaido Trees 183, f. 58; Matsum. Ind. Pl. Jap. II. 1. 14; Beissn. Handb. Nadelholzk. 2 Aufl. 356; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, 27, t. 8; Makino & Nemoto, Fl. Jap. 1539; Patschke, in Engl. Bot. Jahrb. XLVIII. 657, 771.

Pinus parviflora Mast. in Bull. Herb. Boiss. VI. 271, p. p. et in Jour. Linn. Soc. Bot. XVIII. 504, p. p.; Kawakami, l. c. 182, f. 59; Matsum. l. c.

14, p. p.; Wilson, Conif. & Tax. Jap. 22, p. p.; Shaw, Genus *Pinus*, 32, p. p. *pl. XI. f. 114.*

Pinus parviflora Sieb. et Zucc. var. *pentaphylla* Henry, in Elwes and Henry, Trees Gr. Brit. and Irel. V. 1033.

NOM. JAP. *Goyo-matsu.*

NOM. AINU. *Chikap-hup.*

HAB. *Yezo.* Oshima, Okushiri, Hidaka, Tokachi.

DISTRIB. *Yezo* and *Honshu.*

117. *Pinus pumila* Rgl. in Ind. Sem. Hort. Petrop. (1858) 23 et in Bull. Soc. Nat. Mosc. XXXII. 1. 211; Fr. Schm. Fl. Sachal. 177; Miyabe, Fl. Kuril. 261; Mast. in Bull. Herb. Boiss. VI. 272; Sarg. For. Fl. Jap. 80; Kawakami, Fig. & Descrip. Hokkaido Trees, 186, *f. 61*; Yabe et Yendo, in Tokyo Bot. Mag. XVIII. (173); Matsum. Ind. Pl. Jap. II. 1. 14; Shirasawa, Icon. For. Trees Jap. II. 1, *t. 1, f. 17-31*; Jackson, in Gard. Chron. ser. 3, XLVI. 93, *f. 41*; Beissn. Handb. Nadelholzk. 358; Fedtsch. et Flerow, Ill. Pl. Sib. II. 63; Nakai, Fl. Korea. II. 379; Koidz. Pl. Sachal. 11; Miyabe & Miyake, Fl. Saghal. 595; Wilson, Conif. Tax. Jap. 17, *pl. 8*; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, 31, *t. IX*; Kudo, Fl. Paramushir, 66, Contr. Fl. N. Saghal. 19 et Rep. Veg. N. Saghal. 44; Makino & Nemoto, Fl. Jap. 1540; Hult. Fl. Kamtchat. I. 65. et in Hannig u. Winkler, Pfl.-areale, I.-2. 33, *K. 20.*

Pinus Cembra L. B. *pumila* Pall. Fl. Ross. I. 5, *t. 2, f. f-h*; Cham. et Schlecht. in Linnaea, VI. 534; Ledeb. Fl. Ross. III. 674; Parl. in DC. Prodr. XVI. 2. 403; Trautv. et Mey. Fl. Ochot. 88; Rgl. et Til. Fl. Ajan. 120; Maxim. Prim. Fl. Amur. 262; Mast. in Jour. Linn. Soc. Bot. XVIII. 505; Shaw, Gen. *Pinus*, 27; Patschke, in Engl. Bot. Jahrb. XLVIII. 657, 772.

Pinus pumila Mayr, Monogr. Abiet. Jap. 80, *t. 6, f. 21.*

Pinus parviflora Sieb. et Zucc. Fl. Jap. II. 27, p. p. *t. 115*, p. p.; Parl. in DC. Prodr. XVI. 2. 404; Miq. Prol. Fl. Jap. 330; Miyabe, Fl. Kuril. 261.

Pinus koraiensis Mast. in Bull. Herb. Boiss. VI. 271, non Sieb. et Zucc. quoad Pl. Rebunshiri.

NOM. JAP. *Hai-matsu.*

NOM. AINU. *Todonup, Henekkere, Numni.*

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Rishiri, Rebun, Kitami, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Etorofu, Urup, Ketoi, Paramushir, Shumushu.

Southern Saghalien. Odomari, Mauka, Tomarioro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Nyiwo, Pronge-Baikal, Oha, Schmidt-Penn.

DISTRIB. Saghalien, Kuriles, Yezo. Honshu, N. Korea, Manchuria, Amur, Dahuria, Eastern Siberia and Kamtchatka.

Picea A. Dietrich

118. *Picea Glehni* Mast. in Gard. Chron. n. ser. XIII. 300, *f.* 54, in Jour. Linn. Soc. Bot. XVIII. 512, *f.* 13 et in Bull. Herb. Boiss. VI. 272; Mayr, Monogr. Abiet. Jap. 56, *t.* 4, *f.* 11; Sarg. For. Fl. Jap. 81; Kawakami, Fig. & Descrip. Hokkaido Trees, 191, *f.* 63; Matsum. Ind. Pl. Jap. II. 1. 12; Shirasawa, Icon. For. Trees Jap. II. 10, *t.* 3, *f.* 19-42; Beissn. Handb. Nadelholzk. 255; Fedtsch. et Flerow, Ill. Pl. Sib. II. 70; Koidz. Pl. Sachal. 10; Miyabe & Miyake, Fl. Saghal. 597; Bot. Mag. *t.* 9020; Wilson, Conif. Tax. Jap. 40, *pl.* 25, 26; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, I. 15, *t.* 5, *f.* 15-26; Makino & Nemoto, Fl. Jap. 1536; Pilg. in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 324; Patschke, in Engl. Bot. Jahrb. XLVIII. 632, 765.

Abies Glehni Fr. Schm. Fl. Sachal. 176, *t.* 4, *f.* 8-12.

Pinus Glehnii Voss, in Mitt. Deutsch. Dendr. Ges. XVI. 93.

Picea Alcockiana Mast. in Bull. Herb. Boiss. VI. 272; Matsum. Ind. Pl. Jap. II. 1. 12, non Carr. quoad pl. Kushiro Akan lect.

NOM. JAP. *Aka-yezomatsu*, *Aka-yezo*, *Teshio-matsu*, *Yachi-yezo*, *Shinko-matsu*.

NOM. AINU. *Chikap-shunku*, *Chikap-shungu*.

HAB. *Yezo*. Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri.

Southern Saghalien. Odomari.

DISTRIB. Southern parts of Saghalien, Southern Kuriles and Yezo.

form. **chlorocarpa** Miyabe et Kudo, l. c. 16, t. 5, f. 1-14.

NOM. JAP. *Aomino-akayezo*.

HAB. *Yezo*. Iburi.

DISTRIB. An endemic form!

119. *Picea jezoensis* Carr. *Traité Conif.* 255; *Beiss. Handb. Nadelholz.* 389; *Sarg. Silva N. Am.* XII. 21; *Rehd. in Bailey, Stand. Cycl. Hort.* V. 2620; *Wilson, Conif. and Tax. Jap.* 44, pl. 27, 28; *Takeda, in Tokyo Bot. Mag.* XXXII. (117); *Miyabe et Kudo, Icon. Ess. For. Trees Hokkaido*, 20, t. 6; *Kudo, Contr. Fl. N. Saghal.* 18 et *Rep. Veg. N. Saghal.* 43; *Makino & Nemoto, Fl. Jap.* 1536; *Hult. Fl. Kamtchat.* I. 68.

Abies jezoensis *Sieb. et Zucc. Fl. Jap.* II. 19, t. 110; *Murray, Pines and Firs Jap.* 72, f. 137-144, 146.

Abies ajanensis *Fisch. in Fr. Schm. Fl. Sachal.* 177.

Picea ajanensis *Fisch. apud Trautv. et Mey. Fl. Ochot.* 87; *Carr. Traité Conif.* 259; *Reg. et Til. Fl. Ajan.* 119; *Mast. in Jour. Linn. Soc. Bot.* XVIII. 508, p. p. et in *Bull. Herb. Boiss.* VI. 272; *Mayr, Monogr. Abiet. Jap.* 53, t. 4, f. 10; *Sarg. For. Fl. Jap.* 81; *Matsudaira, in Tokyo Bot. Mag.* IX. 470; *Kawakami, Fig. & Descrip. Hokkaido Trees*, 188, f. 62; *Matsum. Ind. Pl. Jap.* II. 1. 12; *Shirasawa, Icon. Ess. For. Trees Jap.* II. 9, t. 3, f. 1-8; *Beissn. Handb. Nadelholz.* 2 Aufl. 289, p. p.; *Koidz. Pl. Sachal.* 9; *Takeda, Fl. Shikotan*, 486; *Miyabe & Miyake, Fl. Saghal.* 596; *Patschke, in Engl. Bot. Jahrb.* XLVIII. 632, 764.

Abies microsperma *Lindl. in Gardn. Chron.* (1861) 22; *Veitch, in ibidem* (1862) 308; *Murray, Pines and Firs Jap.* 69, f. 129-136.

Picea microsperma *Carr. Traité Conif.* ed. 2, 339.

Picea ajanensis *Fisch. var. microsperma* *Mast. in Gard. Chron. n. ser.* XIII. 115 et in *Jour. Linn. Soc. Bot.* XVIII. 509.

Picea obovata *Parl. in DC. Prodr.* XVI. 2. 415, non *Ledeb. quoad Pl. Kuril. lect.*; *Miyabe, Fl. Kuril.* 261, excl. syn.

NOM. JAP. *Yezo-matsu*, *Kuro-yezomatsu*, *Kuro-yezo*.

NOM. AINU. *Shunku*, *Shungu*, *Shi-shunku*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Todomoshiri, Odomari, Honto, Mauka, Tomari-oro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Nyiwo, Pronge-Baikal, Oha, Schmidt-Penn.

DISTRIB. Saghalien, Yezo, Kuriles, Kamtchatka, Okhotsk, Ajan, Maritime Prov. and Manchuria.

Abies Juss.

120. *Abies Wilsonii* Miyabe et Kudo, Mater. Fl. Hokkaido, n. 123, in Trans. Sapporo Nat. Hist. Soc. VII. 132 et Icon. Ess. For. Trees Hokkaido, 13, t. 4, f. 20-42.

Abies nemorensis Miyabe et Kudo, in Miyabe & Miyake, Fl. Saghal. 598.

Abies sachalinensis Mast. var. *nemorensis* Wilson, Conif. Tax. Jap. 63, non Mayr.

NOM. JAP. *Karafuto-shirabiso*, *Yezo-shirabiso*.

HAB. *Southern Saghalien.* Toyohara, Ushoro, Shikka.

DISTRIB. An endemic species!

121. *Abies sachalinensis* Fr. Schm. Fl. Sachal. 85, 86; Miyabe & Miyake, Fl. Saghal. 598; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, 5, t. 2; Kudo, Contr. Fl. N. Saghal. 18 et Rep. Veg. N. Saghal. 43.

Abies sachalinensis Mast. in Gard. Chron. (1878) 588, f. 97, in Jour. Linn. Soc. Bot. XVIII. 517, f. 26 et in Bull. Herb. Boiss. VI. 273; Veitch, Man. Conif. 106, f. 26; Sarg. For. Fl. Jap. 83; Matsudaira, in Tokyo Bot. Mag. IX. 470; Kawakami, Fig. & Descrip. Hokkaido Trees, 193, f. 64; Matsum. Ind. Pl. Jap. II. 1. 5; Beissn. Handb. Nadelholzk. 2 Aufl. 188, f. 41; Wilson, Conif. Tax. Jap. 62; Koidz. Pl. Sachal. 9; Takeda, Fl. Shikotan, 486; Patschke, in Engl. Bot. Jahrb. XLVIII. 643, 769.

Abies Veitchii Lindl. var. *sachalinensis* Fr. Schm. Fl. Sachal. 175, t. 4, f. 13-17.

Abies sachalinensis Mast. var. *nemorensis* Mayr, Monogr. Abiet. Jap. 43, t. 3, f. 6, inferiore; Shirasawa, Icon. For. Trees Jap. I. 22; Beissn. Handb. Nadelholzk. 2. Aufl. 189.

Abies Veitchii Mast. in Bull. Herb. Boiss. VI. 273, non Lindl. quoad

Pl. in ins. Kunashiri lect.

Abies Akatodo Miyabe, apud Sarg. Gard. and For. VI. 525 et For. Fl. Jap. 83.

Abies sachalinensis Fr. Schm. var. *typica* Miyabe et Kudo, Mater. Fl. Hokkaido, n. 122, in Trans. Sapporo Nat. Hist. Soc. VII. 128.

NOM. JAP. *Todomatsu*, *Akatodo*, *Nemuro-todomatsu*, *Nemuro-todo*.

NOM. AINU. *Hup*, *Yayup*.

HAB. *Yezo*. Hidaka, Ishikari, Teshio, Kitami, Rishiri, Tokachi, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Odomari, Mauka, Tomarioro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tymi, Pronge-Baikal, Oha.

DISTRIB. Saghalien, Southern Kuriles and Yezo.

122. *Abies Mayriana* Miyabe et Kudo, Icon. Ess. For. Trees Hokkaido, 9, t. 3, f. 1-25, t. 4, f. 1-19.

Abies sachalinensis Fr. Schm. var. *Mayriana* Miyabe et Kudo, Mat. Fl. Hokkaido, n. 122, in Trans. Sapporo Nat. Hist. Soc. VII. 131.

Abies sachalinensis Mast. form. *typica* Mayr, Monogr. Abiet. Jap. 42, t. 3, f. 6, superiore; Shirakawa, Icon. For. Trees Jap. I. 21, t. 6, f. 22-43.

NOM. JAP. *Aotodomatsu*, *Todomatsu*, *Todo*, *Aotodo*.

NOM. AINU. *Hup*.

HAB. *Yezo*. Oshima, Shiribeshi, Iburi, Hidaka, Ishikari, Teshio, Kitami, Tokachi, Kushiro.

Southern Saghalien. Toyohara.

DISTRIB. An endemic species!

CUPRESSACEÆ

Thujopsis Sieb. et Zucc.

123. *Thujopsis dolabrata* Sieb. et Zucc. Fl. Jap. II. 34, t. 119, 121; Parl. in DC. Prodr. XVI. 2. 460; Lindl. in Gard. Chron. (1855) 241, cum fig.; Miq. Prol. Fl. Jap. 322; J. G. Veitch, in Gard. Chron. (1862) 309; Fr. et Sav. Enum. Pl. Jap. I. 469; Veitch, Man. Conif. 265; Sarg.

For. Fl. Jap. 72; Shirasawa, Icon. For. Trees Jap. I. 36, *t.* 11, *f.* 1-17; Matsum. Ind. Pl. Jap. II. 1. 19; Beissn. Handb. Nadelholzk. 2 Aufl. 486; Wilson, Conif. Tax. Jap. 71.

Thuja dolabrata L. f. Suppl. 420; Thunb. Fl. Jap. 266; Mast. in Jour. Linn. Soc. Bot. XVIII. 486 et in Gard. Chron. n. ser. XVIII. 556. *f.* 95.

var. **Hondai** Makino, in Tokyo Bot. Mag. XV. 104; Wilson, l. c. 72; Miyabe & Kudo, Icon. Ess. For. Trees Hokkaido, 35, *t.* 10; Pilger, in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 386.

Thujopsis dolabrata Kawakami, Fig. and Descrip. Hokkaido Trees, 176, *f.* 57.

Thujopsis Hondai Henry, in Elwes & Henry, Trees Gr. Brit. and Irel. II. 202.

NOM. JAP. *Asunaro*, *Asunaro-Hinoki*, *Asurope*, *Hiba*.

HAB. *Yezo*. Oshima.

DISTRIB. var. *Yezo* and Northern and Middle Honshu; *sp.* Honshu, Shikoku and Kyushu.

Juniperus L.

124. *Juniperus chinensis* L. Mantiss. 127; Sieb. et Zucc. Fl. Jap. Fam. Nat. II. 109; Miq. Prol. Fl. Jap. 331; Parl. in DC. Prodr. XVI. 2. 487; Shirasawa, Icon. For. Trees Jap. I. 41, *t.* 12, *f.* 14-27; Wilson, Conif. Tax. Jap. 84.

var. **Sargentii** Henry, in Elwes & Henry, Trees Gr. Brit. & Irel. VI. 1432; Wilson, l. c. 85; Hayata, in Tokyo Bot. Mag. XXXI. (142); Pilger, in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 400; Rehder, Man. Cult. Trees & Shrubs, 14.

Juniperus dahurica Fr. Schm. Fl. Sachal. 178; Nakai, in Tokyo Bot. Mag. XXXI. 22, non Pall.

Juniperus chinensis L. var. Sarg. For. Fl. Jap. 78.

Juniperus chinensis Matsum. Pl. Nikko 9 et Ind. Pl. Jap. II. 1. 10, p. p.; Mast. in Bull. Herb. Boiss. VI. 274; Nakai, Fl. Korea. II. 383, p. p. non L.

Juniperus procumbens Sarg. in Gard. & Forest, X. 421, non Sieb.

Juniperus chinensis L. var. *procumbens* Takeda, Fl. Shikotan, 466; Miyabe & Miyake, Fl. Saghal. 593; Nakai, Rep. Veg. Isl. Quelp. 13, non Endl.

Juniperus sabina Patschke, in Engl. Bot. Jahrb. XLVIII. 678, 682, 694, quoad pl. Sachalin., non. L.

Juniperus Sargentii Takeda, MSS.; Tatewaki, Veg. Mt. Apoi, (29).

NOM. JAP. *Miyama-ibukibyakushin*, *Miyama-haibyakushin*, *Shimpaku*.

HAB. *Yezo*. Oshima, Shiribeshi, Okushiri, Hidaka, Ishikari, Teshio, Rebun, Kushiro, Nemuro.

Kuriles. Kunashiri, Shikotan, Etorofu.

Southern Saghalien. Todomoshiri, Honto, Mauka, Tomarioro, Ushoro, Odomari, Toyohara, Motodomari, Shikka.

DISTRIB. *var.* Saghalien, Southern Kuriles, Yezo, Honshu, Shikoku, Quelpart and Korea.

125. *Juniperus conferta* Parl. Nov. Conif. 1 et in DC. Prodr. XVI. 2. 481; Sarg. For. Fl. Jap. 78; Wilson, Conif. Tax. Jap. 83; Pilger, in Engl. u. Pr. Nat. Pfl.-fam. 2 Aufl. XIII. 398; Rehd. Man. Cult. Trees & Shrubs, 10.

Juniperus litoralis Maxim. in Mél. Biol. VI. 375; Fr. et Sav. Enum. Pl. Jap. I. 471; Mast. in Jour. Linn. Soc. Bot. XVIII. 496 et XXVI. 542; Matsum. Ind. Pl. Jap. II. 1. 10; Beissn. Handb. Nadelholzk. 2. Aufl. 614; Nakai, Fl. Korea. II. 383 et in Tokyo Bot. Mag. XXXI. 24; Miyabe & Miyake, Fl. Saghal. 594.

Juniperus rigida Nakai, in Tokyo Bot. Mag. XXXI. 23, non Sieb. et Zucc. quod pl. Yambetsu.

Juniperus rigida Sieb. et Zucc. *var. conferta* Patschke, in Engl. Bot. Jahrb. XLVIII. 678, 680, 775.

NOM. JAP. *Hai-nezu*.

HAB. *Yezo*. Oshima, Okushiri, Teshio, Kitami, Rebun, Nemuro.

Southern Saghalien. Mauka, Ushoro.

DISTRIB. Saghalien, Yezo, Honshu, Shikoku and Kyushu.

126. *Juniperus communis* L. Sp. Pl. ed. 1, 1040; Ledeb. Fl. Ross. III. 684; Parl. in DC. Prodr. XIV. 2. 479.

var. montana Aiton, Hort. Kew. III. 414; Wilson, Conif. Tax. Jap. 80; Hult. Fl. Kamtch. 70; Pilger, in Engl. u. Pr. Nat. P.-fam. 2 Aufl. XIII. 398; Rehd. Man. Cult. Trees & Shrubs, 10; Tatewaki, Veg. Mt. Apoi, (29).

Juniperus communis Fr. Schm. Fl. Sachal. 178; Miyabe, Fl. Kuril. 260; Kawakami, in Tokyo Bot. Mag. XIV. (111), 106; Koidz. Pl. Sachal. 8; Matsum. Ind. Pl. Jap. II. 1. 10, non L.

Juniperus sibirica Burgsdorf, Anleit. II. 124.

Juniperus nana Willd. Berl. Baumz. 159 et Sp. Pl. IV. 854: Ledeb. Fl. Ross. III. 683; Turcz. Fl. Baical-Dahur. II. 145; Miyabe & Miyake, Fl. Saghal. 593; Fedtsch. et Flerow, Ill. Pl. Sib. II. 80, f. 92; Nakai, in Tokyo Bot. Mag. XXXI. 24.

Juniperus communis L. var. *nana* Baumg. Enum. Stirp. Transsylv. II. 308.

Juniperus communis L. var. *alpina* Wahlenb. Fl. Lapp. 276.

Juniperus alpina J. E. Gray, Nat. Arr. Brit. Pl. II. 226.

Juniperus nana Willd. *A. montana* Engl. Syn. Conif. 14.

Juniperus communis L. var. *sibirica* Rydberg, in Contr. U. S. Nat. Herb. III. 533; Sargent, Silva N. Am. X. 76, in nota, t. 516, f. 12.

Juniperus rebunensis Kudo, Medical Plants of Hokkaido, No. 6, t. 6, Contr. Fl. N. Saghal. 19 et Rep. Veg. N. Saghal. 44.

NOM. JAP. *Rishiri-byakushin*.

HAB. *Yezo*. Oshima, Hidaka, Ishikari, Teshio, Rishiri, Rebun, Tokachi, Nemuro.

Kuriles. Kunashiri, Etorofu, Urup, Ketoi.

Southern Saghalien. Todomoshiri, Odomari, Tomarioro, Ushoro, Toyohara, Motodomari, Shikka.

Northern Saghalien. Alexandrowsk, Tim, Tymi, Chaiwo, Oha, Schmidt-Penn.

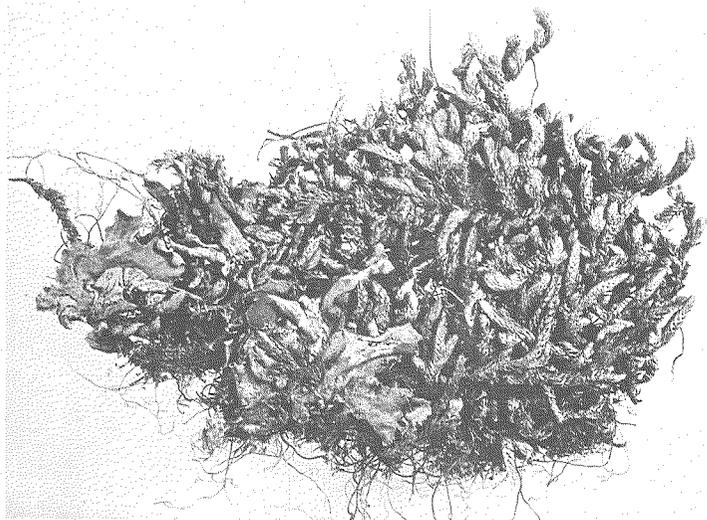
DISTRIB. Saghalien, Kuriles, Yezo, Honshu, Kamtchatka, Maritime Province, Korea, Arctic and Alpine regions of Europe, Asia and N. America.

Explanation of Plate

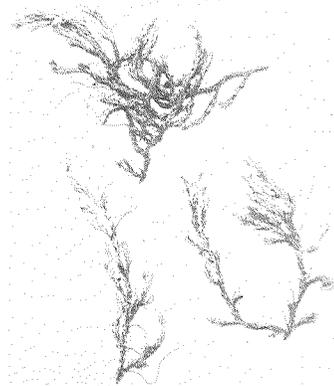
Plate II.

(All in natural size)

- Fig. 1. *Selaginella sibirica* Hieron. Rebun Island, Prov. Kitami, Aug. 23, 1894, K. Miyabe.
- Fig. 2. *Selaginella sibirica* Hieron. Makunkotan, Motodomari District, Saghalien, Sept. 16, 1906, T. Miyake.
- Fig. 3. *Selaginella shakotanensis* Miyabe et Kudo. Mt. Shakotan, Prov. Shiribeshi, June 9, 1893, Faurie, n. 9895.
- Fig. 4. *Selaginella shakotanensis* Miyabe et Kudo. Mt. Panke, Prov. Teshio, July 14, 1928, M. Tatewaki.



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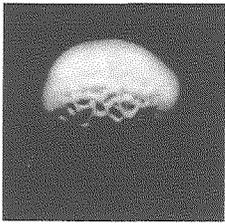
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Explanation of Plate

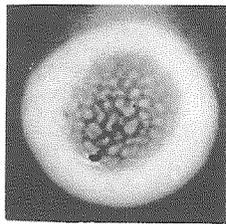
Plate III.

(Photographs of the macrospores of *Selaginella* and *Isoetes*, taken by Mr. Isamu Suto, using a darkfield illumination with the exception of fig. 1. Magnified 54 times).

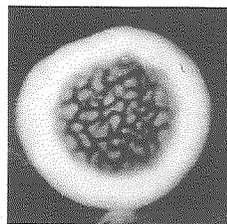
- Figs. 1-4. Macrospores of *Selaginella sibirica* Hieron. collected in Rebun Isl., Prov. Kitami, Aug. 23, 1894, K. Miyabe.
- Figs. 5, 6. *Ditto*, collected at Makunkotan, Motodomari District, Saghalien, Sept. 16, 1906, T. Miyake.
- Fig. 7. Macrospore of *Selaginella rupestris* Spring, collected at Manchester, Mass., U.S.A., Oct. 13, 1887, K. Miyabe.
- Fig. 8. Macrospore of *Selaginella shakotanensis* Miyabe et Kudo, collected on Mt. Panke, Prov. Teshio, July 14, 1928, M. Tatewaki.
- Figs. 9, 10. Macrospores of *Selaginella shakotanensis* Miyabe et Kudo, collected on Mt. Shakotan, Prov. Shiribeshi, June 9, 1893, U. Faurie, n. 9895.
- Figs. 11, 12. *Ditto*, collected on Mt. Yubari, Prov. Ishikari, Aug. 6, 1912, H. Yanagisawa and Y. Hamana.
- Figs. 13, 14. Macrospores of *Isoetes asiatica* Makino, collected in Lake Nojiri, Prov. Shinano, Honshu, Aug. 13, 1910, K. Oguma.
- Figs. 15, 16. *Ditto*, collected in Lake Chipisani, Odomari District, Saghalien, July 1906, G. Nakahara.
- Figs. 17, 18. *Ditto*, collected in Lake Kuttara, Prov. Iburi, Sept. 2, 1914, K. Miyabe.
- Figs. 19, 20. Macrospores of *Isoetes lacustris* L. collected in a small swamp on Mt. Atoiya, Etorofu, Kuriles, at the altitude of 2200 ft., Aug. 11, 1897, T. Kawakami.



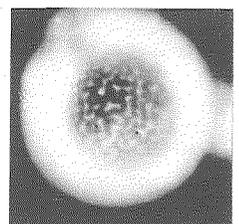
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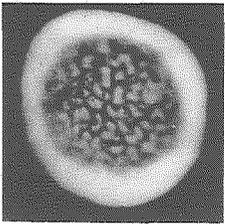
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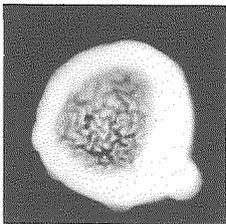
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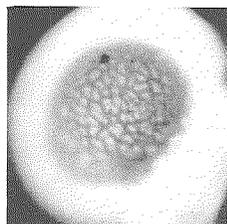
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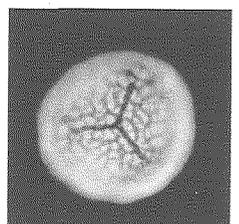
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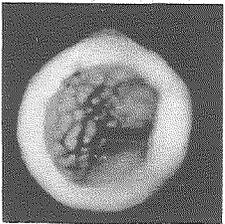
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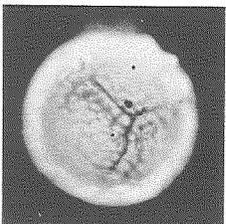
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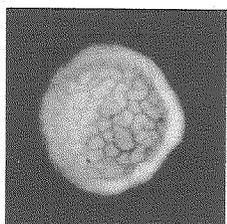
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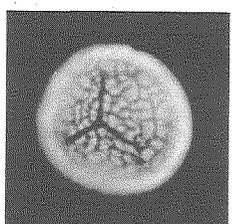
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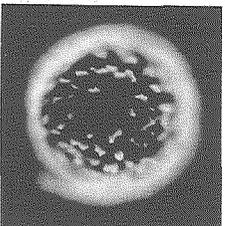
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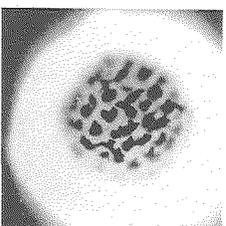
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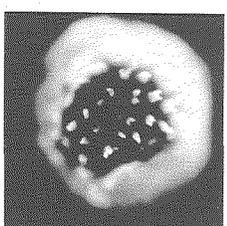
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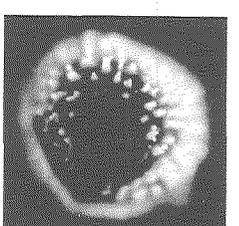
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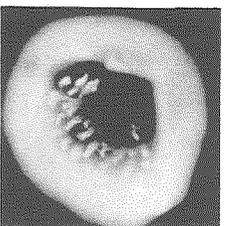
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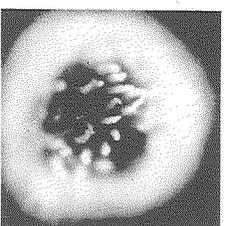
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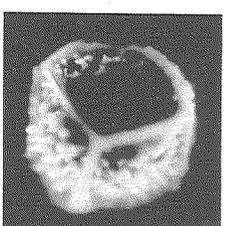
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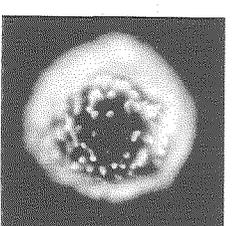
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