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Author(s)	KUDO, Yushun
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A Contribution to our Knowledge of the Flora of Northern Saghalien.

By

Yushun Kudo, *Rigakuhakushi*.

Assistant Professor of Botany in the Hokkaido Imperial University.

1. Prefatory note.

Since the publication of Fr. Schmidt's "Reisen in Amurland und auf der Insel Sachalin" in 1868, more than fifty years has passed, but our knowledge of the flora of Northern Saghalien still remains imperfect. The ground covered by Fr. Schmidt and his assistant Glehn in their investigation of the flora of Saghalien was chiefly in the southern half of the island, so that the world gained but little in knowledge of the vegetation of Northern Saghalien. The Flora of South Saghalien has, furthermore, been exhaustively described by Miyabe and Miyake.¹⁾

In the summer of 1922, an attempt was made by the Military Administration of the Saghalien Expeditionary Force to encourage the study of the animals, plants, forests, minerals, geology, insects and agriculture of Northern Saghalien. The scope of the investigation was determined by the Forestry Department of the Saghalien Military Administration. The botanical work undertaken by the writer, accompanied by Mr. M. Tatewaki, a student in the College of Agriculture, Hokkaido Imperial University, was to collect and identify plants, and also to make an ecological study of the vegetation of the region traversed. The results are recorded in this paper, arranged under the following heads:—

Itinerary.—A record of the writer's travels from day to day after leaving Alexandrowsk, with a few references to those prominent features of the route which are of especial botanical interest.

The Vegetation of Northern Saghalien.—A contribution towards the

1) Kingo Miyabe and Tsutome Miyake: Flora of Saghalin with thirteen plates and 703 pages, published by the Government of Saghalin in 1915.

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ecological study of the plants of Northern Saghalien, that is to say an explanation of prominent features of the vegetation of the area covered by the expedition.

Enumeration of Plants.—A list of plants of Northern Saghalien, based on the writer's collection of some 709 specimens obtained on this journey, on a smaller one of some 54 specimens from the vicinity of Chaiwo, made by Captain Kusano while stationed there in 1921, and lastly, on three interesting specimens found by Mr. Yoshie, the forestry expert, at Vjachtu in 1922. These collections are by no means exhaustive, but they extend over 67 families, comprising 221 genera and 402 species, as follows:—

	Families.	Genera.	Species.
Metachlamydeæ	16	69	105
Archichlamydeæ	33	91	166
<hr/>			
Dicotyledones	49	160	271
Monocotyledones	11	48	102
<hr/>			
Angiospermæ	60	208	373
Gymnospermæ	2	6	6
<hr/>			
Phanerogamæ	62	214	379
Pteridophyta	5	7	23
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Total	67	221	402

The writer wishes to express his sincere thanks to Professor K. Miyabe for his encouragement and advice, to Major-General S. Takasu for his kindness and care, to Mr. F. C. Greatrex, British Vice-Consul at Hakodate, for kindly reading the manuscript, to Mr. K. Konda, for the supply of some data on the dimensions of trees, also to Mr. S. Shoda, Mr. A. Yoshie, Mr. M. Arakawa and others for their kindness to the exploring party. Finally to Mr. M. Tatewaki, his companion and collaborator on the expedition, the writer takes this opportunity of expressing his appreciation and gratitude.

2. Itinerary.

My own visit to Northern Saghalien was paid in the summer of last year. I first arrived at Alexandrowsk by the steamer "Kaiwa-maru", in the evening of July 21. We remained there until the 27th exploring the neighbourhood and completing our equipment for the journey, and left that evening in a small boat for Pilwo (Porokotan), where we landed on the following morning. July 29 to August 1 we spent travelling from Pilwo (Porokotan) to Onory, passing through the hamlets of Hinaneki, Omieki, Aobaeki and

Kami-Onory. On a mountain pass which we crossed on this part of the trip, we made our first close acquaintance with the mountain-flora of the southern part of North Saghalien, passing through long stretches of *Picea* forests, and also deciduous forests along the bank of a river.

On August 1st we travelled from Onory to Rikowskoie, where we spent 3 days collecting, and in particular studying the vegetation of grasslands and river-banks. On the morning of August 6, we left this village and reached Adotimowo in the evening. On the following day, we set out for Nyiwo-Shubitai, and went down the Tymi river in a small Giliak log-canoe, camping twice, at Pubuny and Parukata, staying a day at each of these places to study tundras and *Larix* forests, and arriving at our destination on August 11th. On August 12, we went in a small motor-boat, to Agui-miss, where we collected and identified a number of specimens, and were able to study the coastal vegetation of the Otschotsk Sea side of Northern Saghalien. On the next day, we returned to Nyiwo-Shubitai by a little-used track, which, after running at first along the Otschotsk coast, strikes inland and passes through tundras and *Larix* forests. August 15 to 16, I made an excursion to Katangri, where outcrops of petroleum occur, with special vegetation along the margin. In that vicinity, I saw an extensive forest composed exclusively of *Larix*, and also a lake called Katangri—the only one I saw in Northern Saghalien—where I found two *Potamogetons* and one *Sparganium*.

From the 17 to 20 of August, we spent in sailing back up the Tymi, from Nyiwo-Shubitai to Pubuny. On the 21 of August, we went overland from Pubuny to Adotimowo, passing through some exceedingly beautiful forests of *Picea*, which skirt the mountain called Sarambar. Leaving Adotimowo on the 22nd of August, and passing through the villages Derbinskoie, Ver-shnij Armudan and Vtoroie Arcovo, we returned to Alexandrowsk on the afternoon of August 27th.

3. The Vegetation of Northern Saghalien.

Picea Forest. The general aspect of the forest is well portrayed by *Figs. 1, 2, 4*. *Picea jezoensis* is by far the most prominent species, forming 78 per cent of the whole. Individual trees of this species may attain a trunk diameter of more than 13 inches, with a height approaching 63 feet. The average age of such trees would scarcely exceed 140 years. Second in importance to *Picea jezoensis* in the climax forest is *Abies sachalinensis*, which is well represented in the southern part, and conspicuous by its relatively small size. Normally it grows to a diameter of 7 inches and a height of 40

feet, being thus proportionately shorter and slenderer than *Picea jezoensis*. These two species are the most important elements in the evergreen coniferous forest.

In these *Picea* forests is found a shrubby undergrowth, which, however, plays an unimportant part, being poorly developed, especially in the north (Fig. 15). *Ilex rugosa*, *Evonymus sachalinensis*, *Spiraea salicifolia* var. *lan- ceolata*, *Spiraea betulaeifolia* var. *Aemeliana*, *Vaccinium ovalifolium* are the common species in this association. Among others, less common, may be mentioned *Taxus cuspidata* growing under the shade of the trees, which is found only in the southern part, and we also saw a few specimens of *Pinus pumila* growing under the shade of *Picea jezoensis* in conjunction with other shrubby species but only in one locality between Omieki and Aobaeki.

Below is given a list of characteristic herbaceous vascular plants in the *Picea* forests.

- Athyrium crenatum* Rupr.
- Dryopteris amurensis* H. Chr.
- Dryopteris Linnaea* C. Chr.
- Equisetum sylvaticum* L.
- Lycopodium obscurum* L.
- Lycopodium annotinum* L. var. *latifolium* Takeda.
- Lycopodium complanatum* L. var. *anceps* Milde.
- **Smilacina davurica* Turcz.
- Majanthemum bifolium* F. W. Schmidt.
- Paris quadrifolia* L. var. *obovata* Rgl. et Til.
- Asarum Sieboldi* Miq.
- Anemone gracilis* Fr. Schm.
- **Corydalis gigantea* Trautv. et Mey. var. *amurensis* Rgl.
- Oxalis Acetosella* L.
- Viola Selkirkii* Pursh.
- Circaea alpina* L.
- Cortusa Matthioli* L.
- Cornus canadensis* L.

The ground of the *Picea* forest is usually occupied by an open growth of the various species mentioned above. Among these herbs, *Equisetum sylvaticum* is one of the most common species and in some places forms an exclusive association of its own, very beautiful with its pale green foliage (Fig. 13). It is worthy of note that some of these species, distinguished by an asterisk in the list above, are not yet known on the main island of Hokkaido or in the Southern Kuriles.

But the most conspicuous herbaceous elements are the mosses, their maximum development in the *Picea* forest being in striking contrast to their scarcity in the deciduous broadleaf forest. Almost everywhere the ground is overlaid with a soft carpet of mosses. They occur in great profusion, covering logs and stumps and the lower portions of the growing trees. The rich virgin forest between Pubuny and Akita bridge affords an excellent example of this feature (*Fig. 13*).

The Broadleaf Forest. The broadleaf forest of low altitudes reaches its maximum development along the alluvial banks of streams or rivers (*Figs. 17, 18, 19, 20*). Notable differences in the composition of the woodlands occur in different localities, but the predominating trees, both in size and number, are:—

Populus Maximowiczii A. Henry (*Figs. 5, 6*).

Populus tremula L. var. *Davidiana* C. K. Schn.

Salix macrolepis Turcz.

Salix Caprea L.

Salix vorida Lacks.

Betula japonica Sieb.

Ulmus japonica Sarg. var. *levigata* C. K. Schn. (*Fig. 48*).

and other common ones are:—

Salix viminalis L. and its variety *yesoensis* C. K. Schn.

Alnus hirsuta Turcz.

Sorbus commixta Hedl. var. *Takasui* Kudo.

Crataegus Maximowiczii C. K. Schn.

Acer ukurunduense Trautv. et Mey.

These species occur in various combinations, but sometimes form exclusive associations, *e. g.*, of *Betula japonica* or *Populus Maximowiczii*.

Where the forest is very dense, as for example, along the river valleys, there is not very much undergrowth. On the otherhand where there is more space typical shrubs and underbrush occur more or less abundantly. This underbrush is made up chiefly of the following.

Salix hastata L.

Salix cinerea L.

Spiraea salicifolia L. var. *lanceolata* Torr. et Gr.

Spiraea media Schm. var. *sericea* Rgl.

Spiraea betulaefolia Pall.

Sorbaria sorbifolia A. Br. var. *glabra* Maxim.

Rubus idaeus L. var. *aculeatissimus* Rgl. et Til.

Rosa Marretii Lev'l.

Cornus tatarica Mill. (Fig. 16).

Lonicera Glehni Fr. Schm.

Lianes are very scarce in the broadleaf forests of Northern Saghalien. We saw one species of *Actinidia* in the southern part.

The following list includes the more characteristic ferns and herbaceous seed-plants of the woodland.

Dryopteris dilatata A. Gray, var. *oblonga* Takeda.

Dryopteris Phegopteris C. Chr.

Athyrium Filix-femina Roth. var. *melanolepis* Makino.

Phalaris arundinacea L.

Calamagrostis sachalinensis Fr. Schm.

Glyceria debilior Kudo.

Allium Victorialis L.

Trillium kamtschaticum Pall.

Stellaria nemorum L. var. *Bungeana* Rgl.

Stellaria sachalinensis Takeda.

Moehringia lateriflora Fenzl.

Pleurospermum austriacum Hoffm.

Angelica ursina Benth.

Galium trifloriforme Kom.

Schizopepon bryoniaefolius Maxim.

Cacalia hastata L. var. *pubescens* Ledeb.

Petasites japonicus Miq. var. *giganteus* Makino (Fig. 3).

Petasites palmatus A. Gray (Fig. 19).

It will be appreciated at once on inspection of the above list how many of the species are constituents of grassland vegetation. Another point that will quickly be noted is that all these species, with the single exception of *Petasites palmatus*, are found in the deciduous woodlands of Hokkaido.

The broadleaf forest of higher altitudes differs from the lower, consisting mainly of *Betula Ermani*, with *Sasa kurilensis* for undergrowth. A typical example may be seen at an altitude of about 1800 feet between Omieki and Aobaeki (Fig. 7).

Near Djonkier, on an upper slope, we saw a typical *Alnus* Association,¹⁾ the main feature of which is *Alnus Maximowiczii*, associated with *Sorbus sambucifolia*. The height of this alder varies according to surroundings, but it may be said to range from 5 to 10 feet. It is irregular in the shape of the crown, and much branched from the base, forming dense bushes. The herbaceous vascular plants seen in the undergrowth of this association are

1) Kudo, Fl Params. p. 31.

nearly the same as those of the broadleaf forest, but their number is reduced.

The Larix Forest. This is characteristically developed on tundra, which is very common in the northern part. The general aspect of these forests is well portrayed by *figs. 21, 22, 26*. The Saghalien larch is the only predominating species, and these forests are a very conspicuous feature of the landscape in the regions where they occur, giving a serrated edge to the sky-line when viewed at a distance. The Saghalien larch is a variety of *Larix dahurica*. The Dahurian larch is distributed over an immense tract of country from near the eastern shores of Lake Baical northward and eastward, and extends in the south into Manchuria, where, as well as in the extreme north-east of China, it is represented by a variety *Principis-Ruprechtii*.

In South Saghalien this larch sometimes occurs in conjunction with *Abies sachalinensis*, *Picea jezoensis*, *Alnus hirsuta*, *Betula japonica*, *Betula Ermani* and sometimes it dominates the forest to the exclusion of all other trees. In the Southern Kuriles it is found only on the two islands Etorofu and Shikotan; in Etorofu, according to Kawakami, it forms an almost exclusive association of its own between Rubetsu and Toshimoi, growing luxuriantly in rather swampy places, and it also preponderates over other trees in the forests between Rubetsu and Shana, the northern limit of its distribution being at Otoimaushi on the north-west coast, and the southern at Onnenokka on the east coast; in Shikotan, according to Takeda, it grows only in the vicinity of Kompu-ushi and Kiridoshi, forming a beautiful forest in more or less humid places. In Northern Saghalien the species most commonly occurs by itself in extensive forests where the trees are either all of one age or else accompanied by others of secondary growth.

The common undershrubs of these forests are:—

Ledum palustre L. var. *vulgare* Ledeb. (*Fig. 23, 29*).

Ledum palustre L. var. *dilatatum* Wahlb. (*Fig. 23, 29*).

Chamaedaphne calyculata Moench.

Myrica Gale L. var. *tomentosa* C. DC.

Vaccinium uliginosum L.

Vaccinium Vitis-idaea L.

Empetrum nigrum L.

Salix minutiflora Turcz. var. *pubescens* Wolf.

Andromeda polifolia L.

Oxycoccus palustris Pers.

Oxycoccus microcarpa Turcz.

Lonicera Chamissoi Bge.

Betula Middendorffii Trautv. et Mey.

Pinus pumila forms a small tree, with a dense ovoid-pyramidal crown, attaining a height of 10 feet or more, or a large shrub with stout ascending branches (Fig. 32). The cinnamon-fern (*Osmunda cinnamomea*) is locally distributed along the margin of the forest (Fig. 9). In more or less swampy places grow two interesting plants: *Smilacina davurica* and *Smilacina trifolia* (Fig. 30). Along the banks of the streams that run through these forests, where the sunlight can penetrate during the greater part of the day, are found such deciduous trees as *Alnus hirsuta*, *Sorbus sambucifolia*, *Betula japonica*, *Alnus Maximowiczii*, and *Lonicera Chamissoi*. The water's edge is marked by the presence of *Caltha palustris* var. *sibirica* (Fig. 31), *Eriophorum vaginatum* and *Trautvetteria japonica*. The small and almost circular pools of water that occur here and there are the primeval habitat of *Lysichiton camtschatcense* (Fig. 27).

The following is a list of the species of vascular herbaceous plants inhabiting the Larix forests so far as has been observed.

Lycopodium obscurum L.

Lycopodium annotinum L. var. *pungens* Desv.

Carex globularis L.

Angelica Maximowiczii Benth.

Cornus canadensis L.

Myosotis silvatica Hoffm.

Linnaea borealis L.

Antennaria dioica Gärtn.

Scorzonera radiata Fisch.

The Tundra Vegetation. Tundra consists of peat covered by a layer of mosses, mostly *Sphagnum*. The layer of living and dead, but still undecomposed, moss is often 2—3 feet or more in thickness. The depth of the peat varies from 1 ft. upwards, averaging 3—5 feet. Xerophytic seed-plants are a conspicuous feature of this association. The commonest and most characteristic plants of the tundra, other than mosses, are *Ledum palustre* and its variety (Fig. 34). Other Ericaceous plants are well represented, such as :—

Loiseleuria procumbens Desv.

Andromeda polifolia L.

Chamaedaphne calyculata Moench.

Oxycoccus palustris Pers.

Oxycoccus microcarpa Turcz.

Vaccinium uliginosum L.

Vaccinium Vitis-idaea L.

The baked-apple (*Rubus Chamaemorus*) is one of the commonest species, and others of interest are the two little sundews *Drosera rotundifolia* and *Drosera anglica*. Herbaceous plants belonging to Cyperaceae, although subordinate in importance to shrubs, locally occupy quite a prominent position, the cotton-grasses, for instance, being very conspicuous when in fruit (Fig. 25). The following are the characteristic species of Cyperaceae in Saghalien tundra.

- Carex canescens* L.
- Carex traiziscana* Fr. Schm.
- Carex tenella* Schkuhr.
- Carex tenuiflora* Wahlenb.
- Carex pseudo-loliacea* Fr. Schm.
- Carex Schmidtii* Meins.
- Carex caespitosa* L. var. *minuta* Kük.
- Carex Lyngbyei* Hornem.
- Carex prinocarpa* Franch.
- Carex Middendorffii* Fr. Schm.
- Carex rariflora* Sm.
- Carex rusanensis* Kudo.
- Carex limosa* L.
- Carex laevirostris* Brytt.
- Eriophorum vaginatum* L.
- Eriophorum Scheuchzeri* Hoppe.
- Eriophorum gracile* Koch (Fig. 25).
- Scirpus caespitosus* L.

Other plants found in this habitat are as follows:—

- Dryopteris Thelypteris* A. Gray.
- Equisetum palustre* L.
- Veratrum album* L. var. *oxysepalum* Miyabe et Kudo.
- Iris setosa* Pall. (Fig. 26).
- Salix phleobophylla* Anders.
- Myrica Gale* L. var. *tomentosa* C. DC.
- Coptis trifolia* Salisb.
- Cardamine pratensis* L.
- Rubus arcticus* L.
- Comarum palustre* L.
- Geum pentapetalum* Makino.
- Sanguisorba tenuifolia* Fisch. var. *alba* Trautv. et Mey.
- Cornus suecica* L.
- Pyrola minor* L.

Menyanthes trifoliata L.

Polemonium coeruleum L. var. *racemosum* Miyabe et Kudo.

Lycopus parviflorus Maxim.

Scutellaria yezoensis Kudo.

Pedicularis euphrasioides Steph.

Pedicularis sudetica Willd.

Galium trifidum L.

Rubia jesoensis Miyabe et Miyake.

Senecio palmatus Pall. var. *cannabifolius* Kudo.

The Aquatic Vegetation. As to the aquatic vegetation of Northern Saghalien, there has been but little opportunity for investigation. Besides the trip up and down the Tymi by boat, our experience is based only on visits to Lake Katangri and to some small ponds near Nyiwo.

So far as the higher forms of plant-life are concerned, this is perhaps the smallest division of the flora. Only two species have been found in salt water, namely *Phyllospadix Scouleri* and *Zostera marina*, the former being collected at Pilwo (Porokotan) and the latter at Agui-miss. The fresh-water plants are a kind of water-lily (*Nymphaea tetragona*, var. *lata*), three species of *Potamogeton* (*Potamogeton natans*, *alpinus* and *perfoliatus*), a burr-reed (*Sparganium affine* var. *zosterifolium*) and a water-crowfoot (*Ranunculus trichophyllus*).

The River-bank Vegetation. The influence of a river on the vegetation along its course is exerted mainly at times when the water is high, and works in two ways: firstly through the deposit of sediment, which leads to the development of flood-areas, and secondly through the erosive activity of the current, which may affect the vegetation directly by forming cliffs along its banks. Areas which are uncovered at low water, but which may be completely inundated at high water are occupied by a kind of wet-marsh association, in which the following are more or less prominent species.

Equisetum Heleocharis Ehrh.

Equisetum scirpoides Michx.

Eleocharis palustris Roem. et Schult.

Eleocharis uniglumis Schult.

Carex tuminensis Kom.

On the portions of the flood-area where sand-deposits have been formed, the general aspect of the association is like that of sandy beaches, although the characteristics are quite different. Below is a list of the plants noted as typical:—

Equisetum hiemale L.

Agrostis scabra Willd.

Scirpus radicans L.

Carex vesicaria L.

Juncus filiformis L. var. *curvatus* Kudo.

Erysimum cheilanthoides L. var. *japonicum* Boiss.

Lathyrus palustris L. var. *pilosus* Lebeb.

Mentha sachalinensis Kudo.

On the banks of the Tymi River, we often saw perpendicular cliffs with the typical *Larix* forest extending to the brink (Fig. 39). A vertical section of the tundra can be seen in many places where the Tymi river has cut through it, notably in the vicinity of Nyiwo (Fig. 37). We also met with similar cuttings through the broadleaf forest and the *Picea* forest on the Tymi as well as the Pilwo.

The Maritime Vegetation. Included in this group are the species that are found only, or most abundantly, on the sea beaches or in their immediate vicinity. Some of these species occur in more or less swampy places, and others thrive on rocks where there is scarcely any soil visible. At Nyiwo, on the Otschotsk side, we had ample scope for studying the maritime vegetation of the sandy beaches of Northern Saghalien. The vegetation is sparse and xerophytic; the only plants ordinarily present are herbaceous perennials such as *Lathyrus maritimus* and *Mertensia maritima* subsp. *asiatica*. The last-named species, with its glaucous foliage and rose-pink or blue flowers, growing in low circular patches a foot or more in diameter, is by far the most striking of the beach plants. *Lactuca repens* with its long runners and yellow flowers is nearly always found. Another common sea-shore plant is *Elymus mollis*. Cyperaceae are represented by *Carex macrocephala*. Among the Gramineae peculiar to the sea-shore are *Poa glumaris*, *Poa arctica* and *Hierochloa odorata*. Umbelliferous plants to be found in most places are *Ligusticum scoticum* and *Phellopteris littoralis*. Besides the species already mentioned, the following are also met with on the sandy beaches: *Thermopsis fabacea*, *Rubus arcticus*, *Empetrum nigrum*, *Andromeda polifolia*, *Stellaria humifusa* var. *oblongata*, *Arabis Stelleri*, *Artemisia Stelleriana* and *Geranium subumbelliforme*.

Of the shrubs, *Rosa rugosa* forms low bushes, *Salix sibirica* forms a carpet (Fig. 44), *Sorbus sambucifolia* usually forms small groves, and special mention should be made of the peculiar association of *Pinus pumila*, which is a low shrub creeping along the ground, having no trunk and lateral branches ascending or ascending-spreading, commonly 1-2 feet high, producing a

dense tangle like a thick carpet. Connected with this Pumila-association is a Dwarf-shrubby Heath association,¹⁾ which is composed of the following interesting species of an arctic-alpine nature, *e. g.*,

- Empetrum nigrum* L.
Vaccinium uliginosum L.
Vaccinium Vitis-idaea L.
Cnidium ajanense Drude.
Cornus suecica L.
Arctuos alpina Niedz.
Loiseleuria procumbens Desv.
Ledum palustre L. var. *vulgare* Ledeb.
Linnaea borealis L.
Antennaria dioica Gärtn. (Fig. 40).
Artemisia norvegica Fries.
Geum pentapetalum Makino.
Polygonum polymorphum Ledeb. var. *ajanense* Rgl. et. Til.
 form. *divaricatum* Kudo.
Fritillaria camtschatcensis Ker.-Gawl.
Chrysanthemum arcticum L. var. *Gmelini* Kudo.

The most conspicuous trees on the sandy beaches are *Larix dahurica* var. *kamtschatica* and *Picea jezoensis*. They become remarkably dwarfed as compared with their growth in tundra or in the climax forest. The forms of growth are very peculiar,—some being *Krummholz*-like: trunk not more than about 4 feet high with lateral branches on the lee side only (Fig. 41),—others being bush-like, with slender irregular branches and intricately interlaced branchlets, or even matted into a solid mass in the shape of a tumulus (Fig. 42).

Between the sandy beaches and the lowlands or forest zone, in lagoons and swamps occasionally swept by the tide, we found a very limited range of species, including, however, some of considerable interest, *e. g.*,

- Festuca thalassica* Kunth.
Juncus balticus Willd. var. *Haenkei* Buch.
Cochlearia oblongifolia DC.
Atriplex patula L.
Triglochin maritimus L.
Glaux maritima L.
Potentilla Anserina L.
Chrysanthemum arcticum L. var. *Gmelini* Kudo (Fig 43).

1) Kudo, Fl. Param. p. 39.

On the rocks near the sea at Pilwo (Porokotan) and Alexandrowsk, I noted the following:

Chrysanthemum Weyrichii Miyabe et Miyake.

Artemisia Stelleriana Bess.

Allium lineare L.

Sedum pluricaule Kudo.

Draba sachalinensis Fr. Schm.

Saxifraga yezoensis Engl.

Grasslands. On the slopes of hills and mountains, or on the plains where the soil is dry and furnishes an abundance of plant-food, grasses are well established, and produce areas of natural pasture. In Northern Saghalien I saw natural pastures in three different localities: the first on sloping ground in the vicinity of Pilwo (Porokotan), the second near Djonkier, likewise on a slope, and the third a stretch of prairie-land in the district of Rikowskoie.

Generally speaking there is no fundamental difference between one of these grasslands and another, but the vegetation varies somewhat according to the locality, and is sometimes so far from being typical that it must be regarded as an invasion of species from aquatic, tundra, or forest associations. The following is a list of common vascular plants that we found in these pastures: —

Botrychium Matricariae Spr.

Hemerocallis Middendorffii Trautv. et Mey.

Lilium dahuricum Ker.-Gawl.

Lilium medeoloides A. Gray.

Asparagus schoberioides Kunth.

Polygonatum officinale All. var. *Maximowiczii* Maxim.

Spiranthes australis Lindl.

Stellaria radians L.

Aconitum neo-sachalinense Lev'l.

Aconitum arcuatum Maxim.

Anemone dichotoma L.

Aruncus sylvester Koster. var. *vulgaris* Maxim.

Filipendula palmata Maxim.

Hypericum Gebleri Ledeb. (Fig. 12).

Epilobium angustifolium L.

Conioselinum kamtschaticum Rupr.

Heracleum lanatum Michx.

Pedicularis resupinata L.

Galium boreale L.
Valeriana officinalis L. var. *pubescens* Fr. Schm.
Aster Glehni Fr. Schm.
Artemisia vulgaris L. vars.
Artemisia sacrorum Ledeb. var. *angustiloba* Kudo.
Artemisia laciniata Willd. var. *latifolia* Maxim.
Cacalia auriculata DC. var. *ochotensis* Maxim.
Ligularia speciosa Fisch. et Mey.
Cirsium Weyrichii Maxim.
Saussurea duiensis Fr. Schm.
Serratula atriplicifolia Benth. et Hook.
Hieracium umbellatum L. subsp. *umbellatum* Zahn var.
linearifolium Wallr.

The weeds of artificial pasture-land differ but little from those of the natural pastures, but the former are usually less numerous. The following list includes all the introduced species collected in Northern Saghalien on this journey.

Urtica urens L.
Rumex Acetosella L.
Polygonum aviculare L.
Spergula arvensis L.
Silene venosa Aschers.
Lepidium Draba L.
Rhinanthus minor L. (Fig. 45).

4. Enumeration of Plants.

Pteridophyta.

Polypodiaceæ.

1. ***Dryopteris Thelypteris** A. Gray, Man. ed. 1, p. 630; Miyabe and Miyake, Fl. Saghal. p. 626. (= *Nephrodium Thelypteris* Desv.: Hook. et Bak. Syn. Fil. p. 271. = *Polystichum Thelypteris* Roth.: Fr. Schm. Fl. Sachal. p. 206.)

In tundra prope Alexandrowsk (n. 6053, 26 Jul.), et in sylvis laricetis prope Pubuny (n. 6330, 8 Aug.) nobis lecta est.

2. ***Dryopteris amurensis** H. Christ, in Bull. Géogr. Bot. Mans. 1909 p. 35, et mém. XX. p. 164; Miyabe-Miyake, l. c. p. 628. (= *Aspidium spinulosum* Sw. subsp. *genuinum* Milde, var. *amurense* Milde, Fil. Europ. p. 133.)

In sylvis picetis inter Pubuny et Adotimowo (n. 6614, 20 Aug.), inter Aobaeki et Kami-Onory (n. 6179, 31 Jul.): in tundra prope Alexandrowsk (n. 6054, 26 Jul.) in conspectum venit.

3. **Dryopteris dilatata** A. Gray, var. **oblonga** Takeda: Miyabe-Miyake, l. c. p. 628; Kudo, Fl. Paramushir. ¹⁾ p. 59. (= *Polystichum spinulosum* DC. var. *dilatatum* Rupr.: Fr. Schm. l. c. p. 206.)

In sylvis deciduis prope Katangri (n. 6555, 15 Aug.) reperta est.

4. **Dryopteris Phegopteris** C. Chr. Ind. p. 284; Miyabe-Miyake, l. c. p. 625; Kudo, l. c. p. 60. (= *Polypodium Phegopteris* L.: Fr. Schm. l. c. p. 205.)

In sylvis inter Adotimowo et Derbinskoie (n. 6628, 23 Aug.), et prope Pilwo (Porokotan) (n. 6145, 28 Jul.) inventa est.

5. **Dryopteris Linnaeana** C. Chr. Ind. Fil. p. 275; Miyabe-Miyake, l. c. p. 625. (= *Polypodium Dryopteris* L.: Hook. et Bak. Syn. Fil. p. 309; Fr. Schm. l. c. p. 205.)

In sylvis picetis prope Pilwo (Porokotan) (n. 6147, 27 Jul.): et in sylvis laricetis prope Pubuny (n. 6331, 8 Aug.) obviam facta est.

6. **Athyrium Filix-femina** Roth.: Fr. Schm. l. c. p. 206; Kudo, l. c. p. 60. — *var. **melanolepis** Makino, Bot. Mag. Tokyo, XIII. p. 30; Miyabe-Miyake, l. c. p. 631.

In sylvis laricetis prope Pubuny (n. 6329, 8 Aug.); in herbis prope Vershnij-Armudan (n. 6635, 24 Aug.) decerptum est.

7. **Athyrium crenatum** Rupr.: Fr. Schm. l. c. ed. ross. p. 225; Miyabe-Miyake, l. c. p. 631; Fedt. et Flerow, Fl. Sib. I. p. 24, t. 2.

In sylvis picetis inter Pilwo (Porokotan) et Aobaeki (n. 6160, 30 Jul.),

*) New to Northern Saghalien. 1) Kudo, Flora of the Island of Paramushir, in Jour. of the College of Agric., Hokkaido Imp. Univ., Sapporo, Vol. XI. Pt. 2.

inter Aobaeki et Kami-Onory (n. 6178, 31 Jul.), et inter Kami-Onory et Onory (n. 6210, 1 Aug.) in conspectum venit.

8. *Athyrium spinulosum* Milde, Bot. Zeit. (1866) p. 276; Miyabe-Miyake, l. c. p. 632; Fedt. et Flerow, Fl. Sib. I. p. 24, t 3; (= *Athyrium Hookerianum* Moore: Fr. Schm. l. c. p. 206.)

In herbidis prope Pilwo (Porokotan) (n. 6116, 28 Jul.) inventum est.

9. *Pteridium aquilinum* Kuhn, v. Deck. Reisen III. 3. Bot. p. 11; Miyabe-Miyake, l. c. p. 634. (= *Pteris aquilina* L.: Fr. Schm. l. c. p. 206.)

In sylvis laricetis prope Parukata (n. 6439, 10 Aug.), et prope Pubuny (n. 6332, 8 Aug.) visum est.

Osmundaceæ.

10. *Osmunda cinnamomea* L.: Hook. et Bak. Syn. Fil. p. 426; Fr. Schm. l. c. p. 205; Miyabe-Miyake, l. c. p. 618.

In sylvis laricetis prope Pubuny (n. 6333, 8 Aug.); et in tundra prope Alexandrowsk (n. 6055, 26 Jul.) observata est.

Ophioglossaceæ.

11. *Botrychium Lunaria* L.: Fr. Schm. l. c. p. 205; Miyabe-Miyake, l. c. p. 616; Miyabe-Kudo, in Trans. Sapporo Nat. Hist. Soc. VI. p. 123; Kudo, l. c. p. 61.

In sylvis prope Rikowskoie (n. 6705, 4 Aug.) repertum est.

12. *Botrychium lanceolatum* Ångstr.: Fr. Schm. l. c. p. 205; Miyabe-Miyake, l. c. p. 617; Miyabe-Kudo, l. c. p. 123.

In sylvis prope Rikowskoie (n. 5705, 4 Aug.) inventum est.

13. *Botrychium Matricariae* Spr.: Miyabe-Miyake, l. c. p. 617; Miyabe-Kudo, l. c. p. 124; Kudo, l. c. p. 61. (= *Botrychium rutaefolium* A. Br.: Fr. Schm. l. c. p. 205.)

In herbidis inter Rikowskoie et Adotimowo (n. 6304, 6 Aug.), et prope Vershnij Armudan (n. 6636, 24 Aug.) collectum est.

Equisetaceæ.

14. **Equisetum pratense* Ehrh.: Milde, Fil. Europ. Atl. p. 221; Miyabe-Miyake, l. c. p. 612.

In paludibus prope Alexandrowsk (n. 6019, 23 Jul.) repertum est.

15. **Equisetum sylvaticum* L.: Fr. Schm. l. c. p. 204; Miyabe-Miyake, l. c. p. 613; Kudo, l. c. p. 62.

In tundra prope Alexandrowsk (n. 6106, 26 Jul.), et sylvis picetis inter Pilwo (Porokotan) et Hinaneki (n. 6148, 29 Jul.) decerptum est.

16. ***Equisetum palustre** L.: Miyabe-Miyake, l. c. p. 613; Kudo, l. c. p. 62.
In tundra prope Parukata (n. 6383, 10 Aug.) in conspectum venit.
17. ***Equisetum Heleocharis** Ehrh. Mannöv. Mag. (1783) p. 286; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. p. 134. (= *Equisetum fluviatile* L. Spec. Pl. ed. 1, p. 1062; Miyabe-Miyake, l. c. p. 614.)
form. **fluviatile** Aschers. u. Graebn. l. c. p. 135.
In pratis paludosis ad flumen Onory inter Kami-Onory et Onory (n. 6212, 1 Aug.) lectum est.
form. **limosum** Aschers.: Aschers. u. Graebn. l. c. p. 136.
In pratis paludosis ad fl. Tymi inter Pubuny et Parukata (n. 6598, 18 Aug.) obviam factum est.
18. **Equisetum hyemale** L.: Fr. Schm. l. c. p. 204; Miyabe-Miyake, l. c. p. 615; Kudo, l. c. p. 63.
Ad ripas fl. Onory inter Aobaeki et Kami-Onory (n. 6180, 31 Jul.) lectum est.
19. ***Equisetum scirpoides** Michx. Fl. Bor. Am. II. p. 281; Milde, Fil. Europ. Atl. p. 250; Miyabe-Miyake, l. c. p. 615, pl. XIII. f. 6-9.
Ad ripas paludosas inter Kami-Onory et Onory (n. 6211, 1 Aug.) inventum est.

Lycopodiaceæ.

20. **Lycopodium obscurum** L. Spec. Pl. ed. 1, p. 1102. (= *Lycopodium dendroideum* Spr.: Fr. Schm. l. c. p. 204.)
form. **flabellatum** Takeda, Bot. Mag. Tokyo, XXIII. p. 212; Miyabe-Miyake, l. c. p. 607.
In sylvis laricetis prope Pubuny (n. 6334, 8 Aug.) decerptum est.
form. **juniperoidium** Takeda, l. c.; Miyabe-Miyake, l. c. p. 607.
In sylvis laricetis prope Nyiwo-Shubitai (n. 6558, 13 Aug.), et prope Parukata (n. 6440, 10 Aug.) repertum est.
21. **Lycopodium annotinum** L.: Fr. Schm. l. c. p. 204; Kudo, l. c. p. 64.
var. **latifolium** Takeda, l. c.; Miyabe-Miyake, l. c. p. 609.
In sylvis picetis inter Pubuny et Adotimowo (n. 6615, 20 Aug.) et inter Kami-Onory et Onory (n. 6213, 1 Aug.) visum est.
var. **punegnus** Desv.: Milde, Fil. Europ. Atl. p. 253; Takeda, l. c.; Miyabe-Miyake, l. c. p. 609.
In sylvis laricetis prope Nyiwo-Shubitai (n. 6539, 13 Aug.); in tundra prope Parukata (n. 6384, 10 Aug.) repertum est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectum est.
Specimina nostra a descriptione varietatis *pungentis* nullo modo differunt. Tamen unum specimen in tundra prope Parukata lectum folios patentissimos vel reflexos habet.
22. **Lycopodium clavatum** L.: Fr. Schm. l. c. p. 240; Miyabe-

Miyake, l. c. p. 609; Kudo, l. c. p. 65.

In sylvis laricetis prope Nyiwo-Shubitai (n. 6576, 15 Aug.), et inter Rikowskoie et Adotimowo (n. 6305, 6 Aug.) observatum est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectum est.

23. Lycopodium complanatum L.: Fr. Schm. l. c. p. 204.—var. **anceps** Milde: Miyabe-Miyake, l. c. p. 610; Kudo, l. c. p. 65.

In sylvis laricetis prope Nyiwo-Shubitai (n. 6540, 13 Aug.), prope Pubuny (n. 6335, 8 Aug.), inter Onory et Rikowskoie (n. 6243, 2 Aug.); et in sylvis picetis inter Pubuny et Adotimowo (n. 6615, 20 Aug.) lectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

Phanerogamae.

Gymnospermae.

Taxaceae.

24. Taxus cuspidata Sieb. et Zucc.: Miyabe-Miyake, l. c. p. 570; Miyabe-Kudo, Icon. Ess. For. Trees Hokkaido, p. 1, t. 1. (= *Taxus baccata* L. var. *microsperma* Trautv.: Fr. Schm. l. c. p. 175.)

In sylvis picetis inter Pilwo (Porokotan) et Aobaeki (n. 6161, 30 Jul.) et inter Aobaeki et Kami-Onory (n. 6181, 31 Jul.) collecta est.

Pinaceae.

25. Abies sachalinensis Fr. Schm.: Miyabe-Miyake, l. c. p. 598; Miyabe-Kudo, Icon. Ess. For. Trees Hokkaido, p. 5, t. 2. (= *Abies Veitchii* Lindl. var. *sachalinensis* Fr. Schm. l. c. p. 175.)

In sylvis laricetis prope Pubuny (n. 6336, 8 Aug.), et in tundra prope Alexandrowsk (n. 6056, 26 Jul.) in conspectum venit.

26. Picea jezoensis Carr.: Miyabe-Kudo, l. c. p. 20, t. 6. (= *Abies ajanensis* Fisch.: Fr. Schm. l. c. p. 177. = *Picea ajanensis* Mast.: Miyabe-Miyake, l. c. p. 596.)

In sylvis prope Vigrechi (n. 6556, 15 Aug.), et prope Pubuny (n. 6338, 8 Aug.), inter Pubuny et Adotimowo (n. 6686, 20 Aug.); et in tundra prope Alexandrowsk (n. 6057, 26 Jul.) collecta est.

Specimina prope Vigrechi lecta, strobilis maturis onusta sunt, quae longitudine 4.2 cm. attingunt et procul dubio ad *Piceae jezoensis* formam parvicornam spectant.

27. Larix dahurica Turcz.: Fr. Schm. l. c. p. 177; Miyabe-Miyake, l. c. p. 599, pl. XI, f. 4-6. — var. **kamtschatica** Miyabe-Kudo, l. c. p. 26.

In arenosis litoralibus prope Agui miss (n. 6468, 12 Aug.); in sylvis prope Pubuny (n. 6337, 8 Aug.), inter Pubuny et Adotimowo (n. 6617, 2 Aug.) reperta est.

28. *Pinus pumila* Rgl.: Fr. Schm. l. c. p. 177; Miyabe-Miyake, l. c. p. 595; Miyabe-Kudo, l. c. p. 31, t. 9.

In arenosis litoralibus prope Agui-miss (n. 6638, 12 Aug.); in silvis laricetis prope Pubuny (n. 6339, 22 Aug.); in sylvis picetis inter Pilwo (Porokotan) et Aobaeki (n. 6162, 30 Jul.) collecta est.

29. *Juniperus rebunensis* Kudo; Medical Plants of Hokkaido, n. 6. (= *Juniperus communis* Fr. Schm. l. c. p. 175, non L. = *Juniperus nana* Miyabe-Miyake, l. c. p. 593, non Willd.)

In sylvis laricetis prope Parukata (n. 6446, 10 Aug.), et inter Onory et Rikowskoie (n. 6244, 2 Aug.) inventa est.

Angiospermae.

MONOCOTYLEDONES.

Sparganiaceae.

30. **Sparganium affine* Schnizl.: Miyabe-Miyake, l. c. p. 498. — **var. ***zosterifolium*** Neuman, in Hartman, Skand. Fl. p. 12. Uppl. p. 110; Graebn. in Engl. Pfl.-reich, IV. 10. p. 21.

In lacu Katangri (n. 6572, 15 Aug.) inventum est.

Potamogetonaceae.

31. *Zostera marina* L.: Fr. Schm. l. c. p. 179; Aschers. u. Graebn. in Engl. Pfl.-reich. IV. 11. p. 28.

In arenosis litoralibus prope Agui miss (n. 6476, 12 Aug.) lecta est.

32. **Phyllospadix Scouleri* Hook. Fl. Bor. Am. II. p. 171, t. 186; Aschers. u. Graben. l. c. p. 36; Miyabe-Miyake, l. c. p. 515.

In rupestribus litoralibus prope Pilwo (Porokotan) (n. 6128, 28 Jul.) inventus est.

33.*Potamogeton Morongii*** A. Bennett, in Journ. Bot. XL. (1902) p. 145; Aschers. u. Graebn. in Engl. Pfl.-reich. IV. 11. p. 45.

In flumine prope Nyiwo-Shubitai (n. 6587, 15 Aug.) inventus est.

Hujus speciei exemplaria nostra, etsi incompleta, sed quod ad habitus et foliorum formam attinet, congruunt cum descriptione Aschersonii et Graebneri. Stipulae et folia natantia iis *Potamogetonis polygonifolii* similes sunt, sed facile differt ea foliis submersis linearibus.

34. **Potamogeton alpinus* Balb.: Miyabe-Miyake, l. c. p. 511; Kudo, l. c. p. 67.

In aquis fl. prope Nyiwo-Shubitai (n. 6588, 15 Aug.), et fl. Tymi inter

**) New to Saghalien.

Nyiwo-Shubitai et Parukata (n. 6593, 18 Aug.) in conspectum venit.

35. *Potamogeton perfoliatus L.: Fr. Schm. l. c. p. 179; Miyabe-Miyake, l. c. p. 512; Aschers. u. Graebn. l. c. p. 92.

In lacu Katangri (n. 6573, 15 Aug.); in aquis fl. Tymi inter Parukata et Nyiwo-Shubitai (n. 6457, 11 Aug.), et inter Adotimowo et Pubuny (n. 6320, 7 Aug.) repertus est.

Scheuchzeriaceae.

36. Triglochin maritima L.: Fr. Schm. l. c. p. 179; Miyabe-Miyake, l. c. p. 507; Aschers. u. Graebn. Syn. Mitteleurop. Fl. I. p. 376.

In arenosis litoralibus prope Agui miss (n. 6475, 12 Aug.) lecta est.

37. Triglochin palustre L.: Fr. Schm. l. c. p. 179; Miyabe-Miyake, l. c. p. 508; Kudo, l. c. p. 67.

In tundra prope Alexandrowsk (n. 6071, 26 Jul.) decerptum est.

Alismataceae.

38. *Alisma Plantago L.: Kunth, Enum. III. p. 148; Ledeb. Fl. Ross. IV. p. 39; Britt. & Br. III. I. p. 85; Fr. Schm. l. c. p. 179. — * var. **pavriflorum** Torr.: Buch. in Engl. Pfl.-reich. IV. 15. p. 14; Miyabe-Miyake, l. c. p. 505.

In locis lutosis prope Rikowskoie (n. 6294, 4 Aug.) lectum est.

Gramineae.

39. Phalaris arundinacea L.: Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. I. p. 23; Miyabe-Miyake, l. c. p. 558. (= *Digraphis arundinacea* Trin.: Fr. Schm. l. c. p. 203.)

In herbis inter Adotimowo et Pubuny (n. 6618, 20 Aug.) visa est.

var. **japonica Hack. Bull. Herb. Boiss. VII. p. 646.

Ad ripas fl. inter Aobaeki et Kami-Onory (n. 6182, 31 Jul.) collecta est.

40. Hierochloa odorata Wahlb.: Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. I. p. 29; Miyabe-Miyake, l. c. p. 559. (= *Hierochloa borealis* Roem. et Schl.: Fr. Schm. l. c. p. 201.)

In arenosis litoralibus prope Agui miss (n. 6502, 13 Aug.); ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6374, 9 Aug.), fl. Pilwo (n. 6163, 30 Jul.) nobis lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 collecta est.

41. *Alopecurus fulvus Sm. Engl. Bot. XXI. t. 1497; Fr. Schm. l. c. p. 203; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. I. p. 137; Miyabe-Miyake, l. c. p. 562.

Ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6371, 9 Aug.)

in tundra prope Alexandrowsk (n. 6059, 26 Jul.) repertus est.

42. *Phleum pratense L.: Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. 1. p. 141; Miyabe-Miyake, l. c. p. 561.

In herbidis prope Tim (n. 6253, 2 Aug.) inventum est.

43. *Agrostis scabra Willd. Spec. Pl. I. p. 370; Miyabe-Miyake, l. c. p. 565. (= *Agrostis hyemalis* B. S. P. Presl. Cat. N. Y. p. 68; Britt. & Br. Ill. Fl. I. p. 161. = *Agrostis laxiflora* R. Br.: Fr. Schm. l. c. p. 203.)

In arenosis ad fl. Tymi inter Pubuny et Parukata (n. 6372, 9 Aug.); et in tundra prope Alexandrowsk (n. 6058, 26 Jul.) observata est.

44. Calamagrostis villosa Mutel.: Miyabe-Miyake, l. c. p. 568; Kudo, l. c. p. 68. (= *Calamagrostis Langsdorffii* Trin.: Fr. Schm. l. c. p. 202).

Ad lacum Katangri (n. 6574, 15 Aug.); ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6373, 9 Aug.); in tundra prope Parukata (n. 6385, 10 Aug.); in herbidis inter Pubuny et Adotimowo (n. 6619, 20 Aug.) obviam facta est.

45. Calamagrostis sachalinensis Fr. Schm. l. c. p. 202, t. 8, f. 8-14; Miyabe-Miyake, l. c. p. 567.

In herbidis inter Kamisheff et Vtoroie Arcovo (n. 6667, 25 Aug.) inventa est.

46.Calamagrostis hakonensis** Fr. et Sav. Enum. Pl. Jap. II. pp. 168, 599.

In sylvis laricetis prope Pubuny (n. 6340, 8 Aug.) lecta est.

47. Trisetum flavescens P. Beauv.: Fr. Schm. l. c. p. 202; Miyabe-Miyake, l. c. p. 570; Kudo, l. c. p. 72.

In tundra prope Parukata (n. 6386, 10 Aug.) collectum est.

48. Melica nutans L.: Fr. Schm. l. c. p. 201; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. 1. p. 350; Miyabe-Miyake, l. c. p. 574.

In sylvis laricetis prope Pubuny (n. 6341, 8 Aug.) visa est.

49. Poa pratensis L.: Fr. Schm. l. c. p. 200; Miyabe-Miyake, l. c. p. 576; Kudo, l. c. p. 72.

Prope Alexandrowsk (n. 6692, 23 Jul.) lecta est.

50. Poa glumaris Trin.: Fr. Schm. l. c. p. 200; Miyabe-Miyake, l. c. p. 578; Kudo, l. c. p. 73.

In arenosis litoralibus prope Agui miss (n. 6471, 12 Aug.) visa est.

51. Poa nemoralis L.: Fr. Schm. l. c. p. 200; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. 1. p. 407; Miyabe-Miyake, l. c. p. 577.

In herbidis prope Pilwo (Porokotan) (n. 6120, 28 Jul.) reperta est.

52.Poa arctica** R. Br.: Kudo, l. c. p. 74.

In arenosis litoralibus prope Agui miss (n. 6710, 13 Aug.) inventa est.

53. Glyceria debilior Kudo, l. c. p. 74. (= *Glyceria aquatica* Sm. u. *debilior* Trin.: Fr. Schm. l. c. p. 201.)

In herbidis inter Kamisheff et Vtoroie Arcovo (n. 6668, 25 Aug.) lecta est.

54. *Festuca thalassica* Kunth, Rev. Gram. I. p. 129 et Enum. Pl. I. p. 394; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. p. 460; Miyabe-Miyake, l. c. p. 580. (= *Glyceria maritima* Fr. var. *festucaeformis* Fr. Schm. l. c. p. 200, non Heynh.)

In arenosis litoralibus prope Agui miss (n. 6469, 12 Aug.) lecta est.

55. *Festuca rubra* L.: Fr. Schm. l. c. p. 200; Miyabe-Miyake, l. c. p. 581; Kudo, l. c. p. 74.

In arenosis litoralibus prope Agni miss (n. 6470, 12 Aug.) lecta est.

56. *Festuca gigantea* Vill.: Fr. Schm. l. c. p. 200; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. p. 510; Miyabe-Miyake, l. c. p. 582.

In herbidis inter Aobaeki et Kami-Onory (n. 6702, 31 Jul.) inventa est.

57. **Bromus ciliatus* L.: Fr. Schm. l. c. p. 200; Britt. & Br. Ill. Fl. I. p. 219; Miyabe-Miyake, l. c. p. 583.

In herbosis prope Vershnij Armudan (n. 6637, 24 Aug.) collectus est.

58. **Agropyrum repens* Beauv. Agrost. p. 146; Britt. & Br. Ill. Fl. I. p. 226; Miyabe-Miyake, l. c. p. 584.

Prope Alexandowsk (n. 6024, 25 Jul.) inventum est.

59. *Elymus mollis* Trin.: Fr. Schm. l. c. p. 198; Miyabe-Miyake, l. c. p. 585; Kudo, l. c. p. 75.

In arenosis litoralibus prope Agui miss (n. 6501, 13 Aug.); et in glareosis litoralibus prope Djonkier (n. 6005, 23 Jul.) decerptus est.

60. **Elymus sibiricus* L. Spec. Pl. ed. 1, p. 83; Ledeb. Fl. Ross. IV. p. 330; Fr. Schm. l. c. p. 198; Miyabe-Miyake, l. c. p. 586.

Ad ripas arenosas fl. Tymi inter Parukata et Pubuny (n. 6599, 18 Aug.) et fl. Onory inter Kami-Onory et Onory (n. 6221, 1 Aug.); in herbidis inter Adotimowo et Pubuny (n. 6321, 7 Aug.) observatus est.

61. *Sasa kurilensis* Makino et Shibata, Bot. Mag. Tokyo, XV. p. 27; Miyabe-Miyake, l. c. p. 588. (= *Arundinaria kurilensis* Rupr.: Fr. Schm. l. c. p. 198.)

In herbidis prope Vershnij Armudan (n. 6638, 24 Aug.); et in sylvis betuletis inter Hinaneki et Aobaeki (n. 6164, 30 Jul.) lecta est.

Cyperaceae

62. *Eriophorum vaginatum* L.: Fr. Schm. l. c. p. 191; Miyabe-Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 66; Miyabe-Miyake, l. c. p. 521.

In tundra prope Agui miss (n. 6520, 13 Aug.) nobis lectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 collectum est.

63.*Eriophorum Scheuchzeri*** Hoppe: Ledeb. Fl. Ross. IV. p. 253; Hook. f. Fl. Brit. Ind. VI. p. 664; Britt. & Br. Ill. Fl. I. p. 272; Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. 2. p. 332; Hegi, Ill. Fl. Mitteleurop. II. p. 19; Miyabe-Kudo, l. c. p. 66.

In tundra prope Alexandrowsk (n. 6061, 27 Jul.) repertum est.

64. *Eriophorum gracile Koch: Fr. Schm. l. c. p. 191; Miyabe-Kudo, l. c. p. 67; Miyabe-Miyake, l. c. p. 522.

In tundra prope Parukata (n. 6397, 10 Aug.), et prope Alexandrowsk (n. 6060, 26 Jul.) in conspectum venit.

65. Scirpus caespitosus L.: Fr. Schm. l. c. p. 190; Miyabe-Miyake, l. c. p. 518; Kudo, l. c. p. 79.

In tundra prope Agui miss (n. 6521, 13 Aug.) repertus est.

66. *Scirpus radicans Schkuhr.: Aschers. u. Graebn. Syn. Mitteleurop. Fl. II. 2. p. 327; Miyabe-Miyake, l. c. p. 520. (= *Scirpus silvatica* L. var. *Maximowiczii* Rgl.: Fr. Schm. l. c. p. 190.)

Ad ripas fl. Tymi inter Pubuny et Parukata (n. 6600, 18 Aug.) lecta est.

67. *Eleocharis palustris R. Br.: Fr. Schm. l. c. p. 190; Miyabe-Miyake, l. c. p. 516; Kudo, l. c. p. 77.

Ad ripas humidus inter Parukata et Pubuny (n. 6601, 18 Aug.) visus est.

68. *Eleocharis uniglumis Schult. Mant. II. p. 88; Ledeb. Fl. Ross. IV. p. 245; Fr. Schm. l. c. p. 190; Miyabe-Miyake, l. c. p. 517.

In tundra ins. Mobio (n. 6545, 14 Aug.) in conspectum venit.

69. Carex pallida C. A. Mey.: Ledeb. Fl. Ross. IV. p. 272; Fr. Schm. l. c. p. 192; Kük. Cyp.-Car. in Engl. Pfl.-reich. IV. 20. p. 134; Miyabe-Miyake, l. c. p. 531.

In sylvis laricetis prope Parukata (n. 6441, 10 Aug.) et prope Pubuny (n. 6344, 8 Aug.); in herbidis inter Kamisheff et Vtoroie Arcovo (n. 6669, 25 Aug.) collecta est.

70. Carex macrocephala Willd.: Kunth, Enum. II. p. 428; Fr. Schm. l. c. p. 193; Miyabe-Miyake, l. c. p. 531; Kük. l. c. p. 187.

In arenosis litoralibus prope Agui miss (n. 6473, 12 Aug.) lecta est

71. *Carex glareosa Wahlenb.: Kunth, l. c. p. 394; Boott, Ill. IV. p. 153; Kük. l. c. p. 215.—form. **elegantissima* Kük. in All. Bot. Zeitschl. XV. p. 35; Miyabe-Miyake, l. c. p. 532.

In arenosis litoralibus prope Agui miss (n. 6472, 12 Aug.) visa est.

72. *Carex canescens L.: Fr. Schm. l. c. p. 193; Boott, Ill. IV. p. 154; Kük. l. c. p. 216; Miyabe-Miyake, l. c. p. 533.

In tundra prope Parukata (n. 6389, 10 Aug.) decerpta est.

var. **fallax* F. Kurtz: Kük. l. c. p. 217; Miyabe-Miyake, l. c. p. 533.

In tundra prope Parukata (n. 6390, 10 Aug.), prope Alexandrowsk (n. 6064, 25 Jul.); et in paludibus prope Djonkier (n. 6021, 23 Jul.) reperta est.

73. *Carex traiziscana Fr. Schm. l. c. p. 192; Kük. l. c. p. 218; Miyabe-Miyake, l. c. p. 533.

In tundra prope Parukata (n. 6391, 10 Aug.) et prope Alexandrowsk (n. 6066, 26 Jul.); et ad ripas fl. inter Aobaeki at Kami-Onory (n. 6183, 31 Jul.) collecta est.

74. Carex tenella Schkuhr.: Fr. Schm. l. c. p. 193; Boott, Ill. I. p. 47; Kük. l. c. p. 223; Miyabe-Miyake, l. c. p. 534.

In tundra prope Parukata (n. 6388, 10 Aug.) inventa est.

75. *Carex tenuifolia Wahlenb. : Kunth, l. c. p. 405; Boott, Ill. IV. p. 144; Kük. l. c. p. 224; Miyabe-Miyake, l. c. p. 535.

In tundra prope Parukata (n. 6387, 10 Aug.) et prope Alexandrowsk (n. 6062, 26 Jul.) inventa est.

76. Carex pseudo-loliacea Fr. Schm. l. c. p. 193; Kük. l. c. p. 225; Miyabe-Miyake, l. c. p. 536.

In sylvis laricetis prope Nyiwo-Shubitai (n. 6541, 13 Aug.); in tundra prope Pubuny (n. 6362, 8 Aug.) et prope Alexandrowsk (n. 6063, 26 Jul.) collecta est.

form. **sejuncta Kük. l. c.

In turfosis inter Aobaeki et Kami-Onory (n. 6185, 26 Jul.) visa est.

77. *Carex Schmidtii Meinsh. : Kük. l. c. p. 326 et Car. Sachal. p. 36; Miyabe-Miyake, l. c. p. 537.

In tundra prope Agui miss (n. 6516, 13 Aug.) visa est.

78. *Carex caespitosa L. var. **minuta** Kük. l. c. p. 329 et Car. Sachal. p. 36; Miyabe-Miyake, l. c. p. 538.

In tundra prope Parukata (n. 6393, 10 Aug.) lecta est.

79. Carex Lyngbyei Hornem. : Miyabe-Miyake, l. c. p. 538; Kudo, l. c. p. 79. (= *Carex cryptocarpa* C. A. Mey. : Fr. Schm. l. c. p. 197.)

In sylvis laricetis prope Parukata (n. 6444, 10 Aug.); in humidis prope Djonkier (n. 6012, 23 Jul.) observata est. Prope Chaiwo a Y. Kusano anno 1921 lecta est.

80.Carex prinocarpa** Franch. in Bull. Soc. Philom. Paris 8 sér. VII. p. 87 et Nouv. Arch. Mus. Paris 3 sér. VIII. t. 8, f. 1, et IX. p. 128. (= *Carex Lyngbyei* Hornem. var. *prinocarpa* Kük. l. c. p. 364.)

In tundra inter Vigrechi et Katangri (n. 6568, 15 Aug.) et prope Parukata (n. 6394, 10 Aug.) obviam facta est.

81. Carex Middendorffii Fr. Schm. l. c. p. 197; Miyabe-Miyake, l. c. p. 539; Kudo, l. c. p. 80.

In tundra prope Agui miss (n. 6519, 13 Aug.), ins. Mobio (n. 6546, 14 Aug.), prope Nyiwo-Shubitai (n. 6459, 12 Aug.), prope Parukata (n. 6392, 10 Aug.) et prope Alexandrowsk (n. 6067, 26 Jul.) reperta est.

82. *Carex tuminensis Kom. in Act. Hort. Petrop. XVIII. p. 444 et Fl. Mansh. I. p. 369; Kük. l. c. p. 369; Miyabe-Miyake, l. c. p. 539.

Ad ripas humiditas inter Kami-Onory et Onory (n. 6214, 1 Aug.) visa est.

83.Carex soyaeensis** Kük. in Bull. Herb. Boiss. 2 sér. IV. p. 53 et l. c. p. 388.

In sylvis laricetis prope Parukata (n. 6442, 10 Aug.) lecta est.

84. Carex flaccidior Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. VII. p. 28; Kudo, l. c. p. 80. (= *Carex eleusinoides* Trucz. var. *flaccidior* Fr. Schm. l. c. p. 196. = *Carex Augustinowiczii* Meinsh. : Miyabe-Miyake, l. c. p. 540.)

In humidis prope Pubuny (n. 6368, 8 Aug.); ad ripas fl. inter Aobaeki et Kami-Onory (n. 6184, 31 Jul.) et inter Kami-Onory et Onory (n. 6216, 1 Aug.) in conspectum venit.

85. *Carex Gmelini Hook. et Arn.: Fr. Schm. l. c. p. 193; Miyabe-Miyake, l. c. p. 540; Kudo, l. c. p. 80.

In herbidis prope Pilwo (Porokotan) (n. 6134, 28 Jul.) collecta est.

86. *Carex globularis L. Spec. Pl. ed. 1, p. 976; Kunth, l. c. p. 441; Boott, Ill. IV. p. 209; Fr. Schm. l. c. p. 196; Kük. l. c. p. 437; Miyabe-Miyake, l. c. p. 542.

In sylvis laricetis inter Vigrechi et Katangri (n. 6557, 15 Aug.), prope Nyiwo-Shubitai (n. 6577, 15 Aug.), prope Parukata (n. 6443, 10 Aug.), prope Pubuny (n. 6342, 8 Aug.) et inter Pubuny et Adotimowo (n. 6620, 20 Aug.) decerpta est.

87. **Carex amblyolepis Trautv. et Mey.: Kudo, l. c. p. 82.

In sylvis laricetis prope Nyiwo-Shubitai (n. 6578, 15 Aug.) visa est.

88. Carex sachalinensis Fr. Schm. l. c. p. 194, t. VI. f. 14-17. (= *Carex pisiformis* Boott, var. *sachalinensis* Kük. l. c. p. 477; Miyabe-Miyake, l. c. p. 546.)

Ad ripas fl. inter Kami-Onory et Onory (n. 6217, 1 Aug.) lecta est.

89. Carex rariflora Smith: Fr. Schm. l. c. p. 196; Miyabe-Miyake, l. c. p. 547; Kudo, l. c. p. 82.

In tundra prope Agui miss (n. 6518, 13 Aug.), prope Nyiwo-Shubitai (n. 6583, 15 Aug.) et inter Vigrechi et Katangri (n. 6567, 15 Aug.) collecta est.

90. **Carex ruesanensis Kudo, l. c. p. 83.

In tundra prope Agui miss (n. 6517, 13 Aug.) observata est.

91. *Carex limosa L.: Kunth, Enum. II. p. 461; Boott, Ill. II. p. 78, t. 216; Kük. l. c. p. 504 et Car. Sachal. p. 36; Miyabe-Miyake, l. c. p. 547.

In tundra prope Nyiwo-Shubitai (n. 6582, 15 Aug.) et prope Parukata (n. 6395, 10 Aug.) inventa est.

92. Carex dispalata Boott, in A. Gray, Pl. Jap. p. 325 et Ill. IV. p. 205; Kük. l. c. p. 616; Fr. Schm. l. c. p. 196; Miyabe-Miyake, l. c. p. 548.

In sylvis laricetis prope Pubuny (n. 6343, 8 Aug.) reperta est.

93. *Carex parciflora Boott, in Mem. Am. Acad. (n. ser.) IV. p. 418. (= *Carex Jackiana* Boott, subsp. *parciflora* Kük. l. c. p. 638; Miyabe-Miyake, l. c. p. 550. = *Carex Glehnii* Fr. Schm. l. c. p. 194.)

In herbidis prope Pilwo (Porokotan) (n. 6109, 28 Jul.) reperta est.

94. Carex laevirostris Brytt.: Kük. l. c. p. 724; Miyabe-Miyake, l. c. p. 551. (= *Carex rhynchophysa* C. A. Mey.: Fr. Schm. l. c. p. 197.)

In tundra prope Parukata (n. 6396, 10 Aug.) inventa est.

95. *Carex vesicaria L.: Miyabe-Miyake, l. c. p. 552; Kudo, l. c. p. 84.

In pratis humidis prope Pubuny (n. 6367, 8 Aug.); et in herbidis prope Vershnij Armudan (n. 6639, 24 Aug.) collecta est.

96. *Carex drymophila Turcz.: Miyabe-Miyake, l. c. p. 553; Kük. l. c. p. 755.

Ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6375, 9 Aug.); et in pratis humidis inter Onory et Rikowskoie (n. 6245, 2 Aug.) observata est.

Araceæ.

- 97. *Lysichiton camtschatcense*** Schott: Fr. Schm. l. c. p. 178; Krause, in Engl. Pfl.-reich. IV. 23B. p. 148; Miyabe-Miyake, l. c. p. 501.
In humidis prope Vershnij Armudan (n. 6642, 24 Aug.) decerptum est.
- 98. *Symplocarpus foetidus*** Salisb.: Fr. Schm. l. c. p. 178; Krause, l. c. p. 151; Miyabe-Miyake, l. c. p. 502.
In humidis prope Vershnij Armudan (n. 6641, 24 Aug.) repertus est.

Juncaceæ.

- 99. *Luzula rufescens*** Fisch.: Fr. Schm. l. c. p. 189; Buch. Monogr. in Engl. Bot. Jahrb. XII. p. 81 et Juncac. in Engl. Pfl.-reich. IV. 36. p. 46.-var. **macrocarpa** Buch. Juncac. p. 47; Miyabe-Miyake, l. c. p. 493.
In sylvis picetis prope Pubuny (n. 6345, 3 Aug.) et inter Pubuny et Adotimowo (n. 6621, 20 Aug.) in conspectum venit.
- 100.**Luzula campestris*** DC. var. **multiflora** Celakov.: Buch. Monogr. p. 161 et Juncac. p. 94; Miyabe-Miyake, l. c. p. 493.
In tundra prope Alexandrowsk (n. 6070, 26 Jul.) lecta est.
- 101.**Juncus bufonius*** L.: Fr. Schm. l. c. p. 189; Buch. Monogr. p. 174 et Juncac. p. 105; Miyabe-Miyake, l. c. p. 489.
In tundra prope Alexandrowsk (n. 6068, 26 Jul.); in humidis inter Rikowskoie et Adotimowo (n. 6306, 6 Aug.) et prope Pilwo (Porokotan) (n. 6149, 29 Jul.) collectus est.
- 102. *Juncus filiformis*** L.: Fr. Schm. l. c. p. 189; Buch. Monogr. p. 224 et Juncac. p. 172. - *var. **curvatus** Kudo. (= *Juncus curvatus* Buch. Juncac. p. 128; Miyabe-Miyake, l. c. p. 490.)
Ad ripas fl. Tymi inter Pubuny et Parukata (n. 6602, 18 Aug.); et in tundra prope Alexandrowsk (n. 6069, 26 Jul.) inventus est.
- 103.**Juncus effusus*** L.: Fr. Schm. l. c. p. 189.-var. **decipiens** Buch. Monogr. p. 299 et Juncac. p. 136; Miyabe-Miyake, l. c. p. 491.
In tundra sicca prope Alexandrowsk (n. 6043, 25 Jul.); et in herbis prope Vershnij Armudan (n. 6640, 24 Aug.) decerptus est.
- 104. *Juncus balticus*** Willd.: Fr. Schm. l. c. p. 189.-var. ***Haenkei** Buch. Monogr. p. 215 et Juncac. p. 145; Miyabe-Miyake, l. c. p. 491.
In arenosis litoralibus prope Agui miss (n. 6474, 20 Aug.) vesa est.

Liliaceæ.

- 105. *Stenanthium sachalinense*** Fr. Schm. l. c. p. 188; Miyabe-Miyake, l. c. p. 485.
In decliviis herbosis prope Djonkier (n. 6004, 23 Jul.) lectum est.

106. *Veratrum album* L.: Fr. Schm. l. c. p. 189.—*var. **oxysepalum** Miyabe et Kudo, in Miyabe-Miyake, l. c. p. 484; Kudo, l. c. p. 90.
In tundra prope Parukata (n. 6400, 10 Aug.); et sylvis laricetis prope Pubuny (n. 6349, 8 Aug.) decerptum est.

107. *Hemerocallis Middendorffii* Trautv. et Mey. Fl. Ochot. p. 94; Fr. Schm. l. c. p. 187; Miyabe-Miyake, l. c. p. 470.
In decliviis herbosis prope Pilwo (Porokotan) (n. 6131, 28 Jul.) lecta est.

108. *Allium lineare* L.: Fr. Schm. l. c. p. 187; Rgl. All. Monogr. p. 166; Miyabe-Miyake, l. c. p. 472.

In rupestribus prope Pilwo (Porokotan) (n. 6124, 28 Jul.) nobis collectum est. Etiam prope locum eundem a S. Ishino anno 1922 lectum est.

109. **Allium splendens* Willd.: Rgl. All. Monogr. p. 168; Miyabe-Miyake, l. c. p. 472.

In herbidis prope Rikowskoie (n. 6270, 4 Aug.) inventum est.

110. *Allium Victorialis* L.: Fr. Schm. l. c. p. 187; Miyabe-Miyake, l. c. p. 473; Kudo, l. c. p. 90.

In sylvis picetis inter Kami-Onory et Onory (n. 6219, 1 Aug.); et in rupestribus prope Pilwo (Porokotan) (n. 6125, 28 Jul.) repertum est. Etiam prope Pilwo (Porokotan) a S. Ishino anno 1922 inventum est.

111. *Lilium davuricum* Ker.-Gawl. Bot. Mag. t. 1210; Bak. in Jour. Linn. Soc. XIV. p. 238; Miyabe-Miyake, l. c. p. 476. (= *Lilium spectabile* Link.: Fr. Schm. l. c. p. 186.)

In herbidis prope Rikowskoie (n. 6271, 4 Aug.) et prope Pilwo (Porokotan) (n. 6133, 28 Jul.) collectum est.

112. *Lilium medeoloides* A. Gray: Miyabe-Miyake, l. c. p. 477; Kudo, l. c. p. 91. (= *Lilium avenaceum* Fisch.: Fr. Schm. l. c. p. 186.)

Ad ripas herbosas fl. Tymi inter Nyiwo-Shubitai et Parukata (n. 6591, 18 Aug.); in tundra prope Alexandrowsk (n. 6072, 26 Jul.); et in herbidis prope Pilwo (Porokotan) (n. 6132, 28 Jul.) repertum est.

113. *Fritillaria camschatcensis* Ker.-Gawl.: Fr. Schm. l. c. p. 186; Miyabe-Miyake, l. c. p. 478; Kudo, l. c. p. 91.

Prope Chaiwo a Y. Kusano anno 1921 inventa est.

114. *Asparagus schoberioides* Kunth, Enum. Pl. V. p. 70; Bak. in Jour. Linn. Soc. XIV. p. 604; Miyabe-Miyake, l. c. p. 462. (= *Asparagus Sieboldi* Fr. Schm. l. c. p. 188, non Maxim.)

In herbidis prope Pilwo (Porokotan) (n. 6108, 28 Jul.) lectus est.

115. *Smilacina trifolia* Desf.: Ledeb. Fl. Ross. IV. p. 128; Miyabe-Miyake, l. c. p. 465, pl. 12, f. 2-3. (= *Convallaria trifolia* L. Spec. Pl. ed. 1, p. 316. = *Tovaria trifolia* Neck. in Jour. Linn. Soc. XIV. p. 565. = *Asteranthemum trifoliatum* Kunth, Enum. Pl. V. p. 153; Fr. Schm. l. c. p. 185. = *Vaguera trifolia* Morong.: Britt. & Br. Ill. Fl. I. p. 430.)

In sylvis laricetis inter Vigrechi et Katangri (n. 6558, 15 Aug.); in tundra prope Nyiwo-Shubitai (n. 6460, 12 Aug.), prope Parukata (n. 6399, 10 Aug.) et prope Pubuny (n. 6363, 8 Aug.) inventa est.

116. *Smilacina davurica* Turcz.: Ledeb. Fl. Ross. IV. p. 128;

Miyabe-Miyake, l. c. p. 465. (= *Asteranthemum daluricum* Kunth, Enum. Pl. V. p. 153; Fr. Schm. l. c. p. 185. = *Tovaria davurica* Bak. in Jour. Linn. Soc. XIV. p. 567.)

In sylvis laricetis prope Pubuny (n. 6348, 8 Aug.); in tundra prope Alexandrowsk (n. 6073, 26 Jul.); in sylvis picetis inter Kami-Onory et Onory (n. 6220, 1 Aug.) decerpta est.

117. *Majanthemum bifolium F. W. Schmidt: Aschers. u. Graebn. Syn. Mitteleurop. Fl. III. p. 304; Miyabe-Miyake, l. c. p. 466.

In tundra prope Parukata (n. 6398, 10 Aug.); in sylvis laricetis prope Pubuny (n. 6346, 8 Aug.); in sylvis picetis inter Pilwo (Porokotan) et Aobaeki (n. 6185, 30 Jul.) inventum est.

118. Majanthemum canadense Desf. - var. **kamtschaticum** Kudo, l. c. p. 92. (= *Majanthemum bifolium* DC. var. *kamtschaticum* Trautv. et Mey.: Fr. Schm. l. c. p. 185; Miyabe-Miyake, l. c. p. 467.)

In sylvis laricetis prope Pubuny (n. 6347, 8 Aug.) lectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

119. Polygonatum officinale All. - var. **Maximowiczii** Maxim. Mél. Biol. XI. p. 847; Miyabe-Miyake, l. c. p. 463. (= *Polygonatum Maximowiczii* Fr. Schm. l. c. p. 185.)

In herbidis prope Rikowskoie (n. 6272, 4 Aug.) lectum est.

120. Convallaria majalis L.: Fr. Schm. l. c. p. 185; Bak. in Jour. Linn. Soc. XIV. p. 552; Miyabe-Miyake, l. c. p. 468.

In herbidis inter Pubuny et Adotimowo (n. 6622, 20 Aug.) visa est.

121. Paris quadrifolia L. Spec. Pl. ed. 1, p. 367. - var. **obovata** Rgl. et Til. Fl. Ajan. p. 121; Miyabe-Miyake, l. c. p. 482. (= *Paris obovata* Ledeb. Fl. Ross. IV. p. 120. = *Paris hexaphylla* Cham.: Fr. Schm. l. c. p. 184.)

In sylvis picetis inter Kami-Onory et Onory (n. 6218, 1 Aug.) visa est.

122. Trillium kamtschaticum Pall.: Miyabe-Miyake, l. c. p. 481; Kudo, l. c. p. 93. (= *Trillium obovatum* Fr. Schm. l. c. p. 185, non Pursh.)

In sylvis deciduis prope Katangri (n. 6559, 15 Aug.) lecta est.

Iridaceæ.

123. Iris setosa Pall.: Fr. Schm. l. c. p. 184; Miyabe-Miyake, l. c. p. 458; Kudo, l. c. p. 93.

In tundra prope Parukata (n. 6402, 10 Aug.) lecta est.

124. *Iris laevigata Fisch.: Ledeb. Fl. Ross. IV. p. 97.

In tundra prope Parukata (n. 6401, 10 Aug.) inventa est.

Orchidaceæ.

125. *Coeloglossum viride Hartm. - var. **bracteatum** Richt.: Aschers. u. Graebn. Syn. Mitteleurop. Fl. III. p. 807; Miyabe-Miyake, l. c. p. 455.

In herbidis inter Kamisheff et Vtoroie Arcovo (n. 6670, 25 Aug.) repertum est.

126. *Gymnadenia cucullata Rich.: Ledeb. Fl. Ross. IV. p. 66; Fr. Schm. l. c. p. 181; Miyabe-Miyake, l. c. p. 449.

Prope Alexandrowsk (n. 6691, 28 Aug.) inventa est.

127. Gymnadenia conopsea R. Br.: Ledeb. Fl. Ross. IV. p. 64; Fr. Schm. l. c. p. 181; Miyabe-Miyake, l. c. p. 449.

In herbidis prope Rikowskoie (n. 6273, 4 Aug.); et in humidis prope Djonkier (n. 6023, 23 Jul.) decerpta est.

128. Platanthera tipuloides Lindl.: Fr. Schm. l. c. p. 182; Miyabe-Miyake, l. c. p. 453; Kudo, l. c. p. 94.

In tundra prope Agui miss (n. 6522, 13 Aug.), ins. Mobio (n. 6554, 14 Aug.) et prope Parukata (n. 6403, 10 Aug.) observata est.

129. Platanthera chlorantha Custor: Ledeb. Fl. Ross. IV. p. 70; Fr. Schm. l. c. p. 181; Miyabe-Miyake, l. c. p. 451.

In herbidis prope Vershnij Armudan (n. 6643, 24 Aug.) et inter Onory et Kami-Onory (n. 6246, 1 Aug.) reperta est.

130. *Spiranthes australis Lindl.: Ledeb. Fl. Ross. IV. p. 84; Fr. Schm. l. c. p. 183; Miyabe-Miyake, l. c. p. 445.

In herbidis prope Vershnij Armudan (n. 6665, 24 Aug.) collecta est.

131. *Microstylis monophyllos Lindl.: Ledeb. Fl. Ross. IV. p. 50. Prope Alexandrowsk (n. 6693, 23 Jul.) lecta est.

DICOTYLEDONES.

Archichlamydeæ.

Salicaceæ.

132. Populus Maximowiczii A. Henry: Miyabe-Kudo, Icon. Ess. For. Trees Hokkaido p. 39, t. II. (= *Populus suaveolens* Fr. Schm. l. c. p. 174; Miyabe-Miyake, l. c. p. 431, non Fisch.)

Ad ripas fl. Tymi inter Pubuny et Parukata (n. 6603, 18 Aug.) visa est.

133. Populus tremula L.: Fr. Schm. l. c. p. 174. - var. **Davidiana** C. K. Schn. in Sarg. Pl. Wilson. III. p. 24. (= *Populus Davidiana* Dode, Monogr. Inéd. Populus p. 31, t. II, f. 31.)

In sylvis prope Parukata (n. 6445, 10 Aug.) et ad fl. Onory (n. 6222, 1 Aug.); in opp. Alexandrowsk (n. 6028, 25 Jul.) lecta est.

134. Salix macrolepis Turcz.: Anders. in DC. Prodr. XVI. 2. p. 213; Fr. Schm. l. c. p. 172; Miyabe-Miyake, l. c. p. 424; C. K. Schn. in Sarg. Pl. Wilson. III. p. 102.

Ad ripas fl. Tymi inter Pubuny et Adotimowo (n. 6609, 21 Aug.); et ad ripas fl. prope Rikowskoie (n. 6296, 4 Aug.) collecta est.

135. *Salix hastata* L.: Fr. Schm. l. c. p. 173; Seem. in Aschers. u. Graebn. Syn. Mitteleurop. Fl. IV. p. 152; Miyabe-Miyake, l. c. p. 427.

In sylvis prope Parukata (n. 6447, 10 Aug.) inventa est.

136.*Salix phleobophylla* Anders.:** Kudo, l. c. p. 96.

In arenosis litoralibus prope Agui miss (n. 6477, 12 Aug.); in tundra prope Agui miss (n. 6524, 13 Aug.) et prope Nyiwo-Shubitai (n. 6589, 15 Aug.) nobis lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

137. *Salix cinerea* L. Spec. Pl. ed. 1, p. 1021; Fr. Schm. l. c. p. 173; Seem. in Aschers. u. Graebn. Syn. Mitteleurop. Fl. IV. p. 93; Miyabe-Miyake, l. c. p. 426.

In sylvis inter Rikowskoie et Adotimowo (n. 6319, 6 Aug.) visa est.

138. *Salix Caprea* L.: Fr. Schm. l. c. p. 173; Miyabe-Miyake, l. c. p. 425; Miyabe-Kudo, l. c. p. 51, t. 15.

In sylvis deciduis ad ripas laci Katangri (n. 6561, 15 Aug.) nobis decerpta est. Etiam prope Pilwo (Porokotan) a S. Ishino Anno 1922 lecta est.

139.*Salix sibirica* Pall. Fl. Ross. I. 2. p. 72, t. 81, f. 3; C. K. Schn. in Sarg. Pl. Wilson. III. p. 154. (= *Salix repens* L. var. *flavicans* Anders. in DC. Prodr. XVI. 2. p. 238; Seem. in Aschers. u. Graebn. Syn. Mitteleurop. Fl. IV. p. 128.)**

In arenosis litoralibus prope Agui miss (n. 6478, 12 Aug.) lecta est.

140. *Salix rorida* Lacks.: Miyabe-Kudo, l. c. p. 55, t. 16. (= *Salix praecox* Fr. Schm. l. c. p. 172, non Hoppe. = *Salix daphnoides* Ledeb.: Miyabe-Miyake, l. c. p. 427.)

Ad ripas. fl. prope. Rikowskoie (n. 6295, 4 Aug.) et inter Aobaeki et Kami-Onory (n. 6186, 31 Jul.) collecta est.

141. *Salix viminalis* L.: Fr. Schm. l. c. p. 172; Miyabe-Miyake, l. c. p. 428.

Ad ripas fl. Tymi inter Nyiwo et Parukata (n. 6592, 18 Aug.) et fl. inter Onory et Rikowskoie (n. 6247, 2 Aug.) reperta est.

*var. **yezoensis** C. K. Schn.: Miyabe-Miyake, l. c. p. 57, t. 17.

Ad ripas fl. inter Aobaeki et Kami-Onory (n. 6187, 31 Jul.) visa est.

142. *Salix sachalinensis* Fr. Schm. l. c. p. 173; Miyabe-Miyake, l. c. p. 59, t. 18. (= *Salix sptipularis* Sm.: Fr. Schm. l. c. p. 172. = *Salix opaca* Anders.: Miyabe-Miyake, l. c. p. 429.)

In sylvis deciduis ad ripas laci Katangri (n. 6560, 15 Aug.) lecta est.

143.*Salix minutiflora* Turcz.-var. *pubescens* Wolf, in Acta Hort. Petrop. XXIII. p. 143. (= *Salix caesia* Vill. var. *pubescens* Turcz. in Bull. Soc. Nat. Mosc. XXVII. p. 394.)**

In sylvis laricetis prope Nyiwo-Shubitai (n. 6579, 15 Aug.) collecta est.

Myricaceæ.

144. *Myrica Gale* L.: Fr. Schm. l. c. p. 175. - var. **tomentosa** DC. Prodr. XVI. 2. p. 148; Miyabe-Miyake, l. c. p. 411.

In tundra prope Agui miss (n. 6523, 13 Aug.), ins. Mobio (n. 6547, 14 Aug.) et prope Parukata (n. 6404, 10 Aug.) reperta est.

Betulaceæ.

145. *Betula japonica* Sieb.: Miyabe-Miyake, l. c. p. 416; Miyabe-Kudo, l. c. p. 91, t. 27. (= *Betula alba* L. var. *typica* Fr. Schm. l. c. p. 177, p. p.)

In tundra prope Parukata (n. 6406, 10 Aug.); opp. Alexandrowsk (n. 6030, 25 Jul.); et ad ripas fl. inter Kami-Onory et Onory (n. 6224, 1 Aug.) inventa est.

146. *Betula Ermani* Cham.: Fr. Schm. l. c. p. 174; Miyabe-Miyake, l. c. p. 413; Miyabe-Kudo, l. c. p. 87, t. 26.

Ad ripas fl. inter Kamisheff et Vtoroie Arkovo (n. 6671, 25 Aug.) lecta est.

147. *Betula Middendorffii* Trautv. et Mey. Fl. Ochot. p. 84, t. 21; Rgl. Monogr. Betulac. p. 40 et DC. Prodr. XVI. 2. p. 170; Fr. Schm. l. c. p. 174; C. K. Schn. in Sarg. Pl. Wilson. II. p. 481; Miyabe-Miyake, l. c. p. 415. (= *Betula rotundifolia* Rgl. et Til. Fl. Ajan. p. 118, non Spach.)

In arenosis litoralibus prope Agui miss (n. 6504, 13 Aug.); in tundra prope Parukata (n. 6407, 10 Aug.) et in sylvis laricetis prope Parukata (n. 6448, 10 Aug.) decerpta est.

148. *Alnus hirsuta* Turcz.: Miyabe-Miyake, l. c. p. 419; C. K. Schn. in Sarg. Pl. Wilson. II. p. 496. (= *Alnus incana* Willd. var. *hirsuta* Ledeb.: Fr. Schm. l. c. p. 175.)

In tundra prope Parukata (n. 6405, 10 Aug.) et prope Alexandrowsk (n. 6071, 26 Jul.); in opp. Alexandrowsk (n. 6029, 25 Jul.); ad ripas fl. inter Kami-Onory et Onory (n. 6223, 1 Aug.) collecta est.

149. *Alnus Maximowiczii* Call.: Miyabe-Miyake, l. c. p. 416; Kudo, l. c. p. 98. (= *Alnaster fruticosa* Fr. Schm. l. c. p. 175, non Ledeb.)

In arenosis litoralibus prope Agui miss (n. 6503, 13 Aug.); in decliviis prope Djonkier (n. 6009, 23 Jul.) observata est.

Ulmaceæ.

150. *Ulmus japonica* Sarg. - *var. *levigata* C. K. Schn. in Sarg. Pl. Wilson. III. p. 260.

Prope Rikowskoie (n. 6274, 4 Aug.), Tim (n. 6254, 3 Aug.) et opp. Alexandrowsk (n. 6031, 25 Jul.) lecta est.

Urticaceæ.

151. *Urtica platyphylla* Wedd.: Miyabe-Miyake, l. c. p. 408; Kudo,

l. c. p. 98. (= *Urtica dioica* Fr. Schm. l. c. p. 174, non L.).
In herbis inter Kamisheff et Vtoroie Arcovo (n. 6672, 25 Aug.) inventa est.

152.Urtica urens** L. Spec. Pl. ed. 1, p. 984; Aschers. u. Graebn. Syn. Mitteleurop. Fl. IV. p. 603.

Ad vias vici Adotimowo (n. 6687, 21 Aug.) reperta est.

Aristolochiaceæ.

153. Asarum Sieboldi Miq. Prodr. Fl. Jap. p. 66; Fr. Schm. l. c. ed. ross. p. 187; Miyabe-Miyake, l. c. p. 399. (= *Asarum heterotropoides* Fr. Schm. l. c. p. 171.)

In sylvis picetis prope Pubuny (n. 6350, 8 Aug.), inter Pilwo (Porokotan) et Aobaeki (n. 6166, 30 Jul.) et inter Aobaeki et Kami-Onory (n. 6188, 31 Jul.) lectum est.

Polygonaceæ.

154. *Rumex domesticus Hartm. Scand. Fl. p. 148; Ledeb. Fl. Ross. III. p. 506; Fr. Schm. l. c. p. 167; Miyabe-Miyake, l. c. p. 396; Aschers. u. Graebn. Syn. Mitteleurop. Fl. IV. p. 725.

In herbis inter Adotimowo et Pubuny (n. 6322, 7 Aug.) et prope Vershnij Armudan (n. 6645, 24 Aug.) inventus est.

155.Rumex aquaticus** L. Spec. Pl. ed. 1, p. 336; Aschers. u. Graebn. l. c. p. 734.

In sylvis laricetis prope Nyiwo-Shubitai (n. 6542, 13 Aug.); in tundra prope Parukata (n. 6408, 10 Aug.) inventus est.

156. Rumex Acetosella L.: Fr. Schm. l. c. ed. ross. p. 183; Miyabe-Miyake, l. c. p. 398; Kudo, l. c. p. 99.

In herbis prope Tim (n. 6255, 3 Aug.) lecta est.

157. *Polygonum aviculare L.: Ledeb. Fl. Ross. III. p. 531; Hook. f. Fl. Brit. Ind. V. p. 26; Aschers. u. Graebn. l. c. p. 846; Miyabe-Miyake, l. c. p. 385.

In herbis inter Adotimowo et Pubuny (n. 6323, 7 Aug.) visa est.

158. Polygonum lapathifolium L.: DC. Prodr. XIV. p. 119; Fr. Schm. l. c. p. 168; Hook. f. Fl. Brit. Ind. V. p. 35; Hegi, Ill. Fl. III. p. 198, t. 93, f. 4.

*var. **incanum** Ledeb. Fl. Ross. III. p. 521; Miyabe-Miyake, l. c. p. 387.

In arenosis inter Pubuny et Parukata (n. 6376, 9 Aug.) lectum est.

var. **maximum Rgl. Tent. Fl. Ussuri. p. 124.

In tundra prope Alexandrowsk (n. 6075, 26 Jul.) inventum est.

159. *Polygonum nodosum Pers. apud Meisn. in DC. Prodr. XIV.

p. 118; Ledeb. Fl. Ross. III. p. 521; Fr. Schm. l. c. p. 168; Miyabe-Miyake, l. c. p. 386.

In herbidis inter Adotimowo et Pubuny (n. 6324, 7 Aug.) visum est.

160. *Polygonum sagittatum L.: Ledeb. Fl. Ross. III. p. 529; Hook. f. Fl. Brit. Ind. V. p. 47. — *var. **sibiricum** Meisn. in DC. Prodr. XIV. p. 132; Miyabe-Miyake, l. c. p. 388.

In humidis inter Rikowskoie et Adotimowo (n. 6308, 6 Aug.) repertum est.

161. *Polygonum Thunbergii S. et Z.: Meisn. in DC. Prodr. XIV. p. 132; Miyabe-Miyake, l. c. p. 389.

In tundra prope Alexandrowsk (n. 6076, 26 Jul.) in conspectum venit.

162. Polygonum stoloniferum Fr. Schm. l. c. p. 168.

In herbidis inter Rikowskoie et Adotimowo (n. 6307, 6 Aug.) et prope Vershnij Armudan (n. 6644, 24 Aug.) inventum est.

Optime quadrat in descriptionem Fr. Schmidt, ita ut de identitate plantae nostrae minime dubius sim, quamvis specimina authentica nullibi in herbario nostro comparare licuit. A proximo *Polygono Thunbergii* optime differt, caulibus rigidis creberrime retro-aculeatis, basi stolones saepe filiformes emissis, superne glanduloso-setosis, foliis remotis, superioribus brevius petiolatis, etc. Variat caule plus-minus crasso, elato foliis majoribus (form. *typica*) et caule filiforme humile foliis minoribus (form. *humile*).

163. Polygonum Weyrichii Fr. Schm. l. c. p. 169; Miyabe-Miyake, l. c. p. 391.

In herbidis ad fl. Tymi inter Pubuny et Parukata (n. 6382, 9 Aug.) et in herbosis inter Onory et Kami-Onory (n. 6225, 1 Aug.); in decliviis prope Djonkier (n. 6008, 23 Jul.) lectum est.

164. **Polygonum frigidum (Cham. et Schl.) Kudo. (= *Polygonum alpinum* All. *δ. frigidum* Cham. et Schl. in Linnaea. III. p. 38. = *Polygonum polymorphum* Ledeb. var. *frigidum* Lebeb. Fl. Ross. III. p. 525.)

Caulis simplex, humilis, 12–13 cm altus, glaber, usque apicem foliatus. Ochreae cylindricae, apice obliquae, tenuiter membranaceae, nervosae, castaneae, glabrae, basi foliigerae. Folia oblonga, oblongo-lanceolata, vel sursum linearia, breviter petiolata, crassa, utrinque glabra, margine ciliata et revoluta, 3–5.5 cm longa, 3–9 cm lata. Spica cylindrica una terminalis vel lateralibus duabus addita, 1–1.3 cm longa, densa vel subdensiuscula. Perigonium quiquepartitum, basi in pedicellum attenuatum, laciniis oblongo-ellipticis, obtusis, tri-nervatis. Stamina 8, perigyna, filamentis subulato-filiformibus, basi glandulis totidem obovatis minutis interjectis. Germen triquetrum, actangulum, stylis tribus, in fundo tubi muntum.

Prope Chaiwo a Y. Kusano anno 1921 inventum est.

Specimina perpauca et manca nec determinationem accuratam nec descriptionem plenam admittunt. Primo a me *Polygoni Kusanoi* nominatur, tamen bene quadrat in descriptionem *Polygoni polymorphi* var. *frigidi*. Sed planta nostra multo differt *Polygono polymorpha*, caulibus simplicibus, humilibus, foliis ochreisque glabris, paniculis parvis et contractis.

- 165. Polygonum polymorphum** Ledeb. Fl. Ross. III. p. 524. - var. **aianense** Rgl. et Til. Fl. Ajan. p. 116. - form. **divaricatum** Kudo. (= *Polygonum polymorphum* Ledeb. var. *divaricatum* Fr. Schm. l. c. p. 169.)
In arenosis litoralibus prope Agui miss (n. 6505, 13 Aug.) visum est.

Chenopodiaceæ.

- 166. Atriplex patula** L. : Fr. Schm. l. c. p. 166; Miyabe-Miyake, l. c. p. 378; Kudo, l. c. p. 101.
In arenosis litoralibus prope Agui miss (n. 6479, 12 Aug.) lecta est.

**Portulacaceæ.

- 167. *Montia rivularis** C. C. Gmel. : Kudo, l. c. p. 101.
In tundra prope Alexandrowsk (n. 6077, 26 Jul.) et in tundra sicca prope Alexandrowsk (n. 6033, 25 Jul.) collecta est.

Caryophyllaceæ.

- 168. Stellaria radians** L. : Ledeb. Fl. Ross. I. p. 378; Miyabe-Miyake, l. c. p. 71. (= *Stellaria radiata* L. : Fr. Schm. l. c. p. 117.)
In decliviis herbosis prope Djonkier (n. 6013, 23 Jul.); in herbidis prope Tim (n. 6257, 3 Aug.), inter Onory et Kami-Onory (n. 6242, 1 Aug.) decerpta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

- 169. *Stellaria nemorum** L. : Ledeb. Fl. Ross. I. p. 375. - var. **Bungeanum** Rgl. Pl. Radd. I. p. 269; Miyabe-Miyake, l. c. p. 70.
In sylvis picetis inter Pilwo (Porokotan) et Hinaneki (n. 6150, 29 Jul.), inter Aobaeki et Kami-Onory (n. 6190, 31 Jul.) et inter Kami-Onory et Onory (n. 6226, 1 Aug.) collecta est.

- 170. Stellaria longifolia** Mühl. : Fr. Schm. l. c. p. 118; Aschers. u. Graebn. Syn. Mitteleurop. Fl. V. p. 560; Miyabe-Miyake, l. c. p. 72. (= *Stellaria Friesiana* Ser. in DC. Prodr. I. p. 395; Miyabe-Miyake, l. c. p. 72.)

In tundra prope Parukata (n. 6410, 10 Aug.) et prope Alexandrowsk (n. 6080, 26 Jul.); in herbidis prope Pilwo (Porokotan) (n. 6117, 28 Jul.) visa est.

- 171. Stellaria sachalinensis** Takeda : Kudo, l. c. p. 102. (= *Stellaria borealis* Big. var. *corollina* Fr. Schm. l. c. p. 117, non Fenzl. = *Stellaria jezoensis* Maxim. : Miyabe-Miyake, l. c. p. 71.)

In herbidis inter Pilwo (Porokotan) et Hinaneki (n. 6071, 29 Jul.) lecta est.

- 172. Stellaria humifusa** Rottb. : Torr. et Gr. N. Am. I. p. 184; Fr. Schm. l. c. p. 181. - var. **oblongata** Fenzl. in Ledeb. Fl. Ross. I. p. 384;

Miyabe-Miyake, l. c. p. 72.

In arenosis litoralibus prope Agui-miss (n. 6480, 12 Aug.); in tundra prope Alexandrowsk (n. 6079, 26 Jul.); ad ripas fl. prope Alexandrowsk (n. 6051, 25 Jul.) inventa est.

173. *Cerastium caespitosum* Gilib. : Hegi, Ill. Fl. III. p. 366, t. 105, f. 2.-var. ***glandulosum*** (Koch). (= *Cerastium triviale* Link. var. *glandulosum* Koch. : Miyabe-Miyake, l. c. p. 68. = *Cerastium vulgatum* L. var. *brachypetalum* Fr. Schm. l. c. p. 118, non Fenzl.)

In tundra prope Alexandrowsk (n. 6078, 2 Jul.) observatum est.

174. **Cerastium Schmidtianum* Takeda, in Kew Bull. (1911) p. 106; Miyabe-Miyake, l. c. p. 69. (= *Cerastium Fischerianum* Fr. Schm. l. c. p. 118, non DC.)

In herbidis inter Aobaeki et Kami-Onory (n. 6189, 31 Jul.) visum est.

175. *Ammodenia major* Kudo, l. c. p. 104. (= *Honckeneja peploides* Fr. Schm. l. c. p. 117, non Ehrh. = *Ammodenia peploides* Rupr. var. *oblongifolia* Fenzl. : Miyabe-Miyake, l. c. p. 75.)

In rupestribus prope Pilwo (Porokotan) (n. 6123, 28 Jul.) decerpta est.

176. *Moehringia lateriflora* Fenzl. : Fr. Schm. l. c. p. 117; Miyabe-Miyake, l. c. p. 74; Kudo, l. c. p. 104.

In tundra prope Parukata (n. 6409, 10 Aug.) et prope Alexandrowsk (n. 6081, 26 Jul.) nobis lecta : et prope Chaiwo a Y. Kusano anno 1921 inventa est.

177. **Spergula arvensis* L. Spec. Pl. ed. 1, p. 440; Aschers. u. Graebn. Syn. Mitteleurop. Fl. V. p. 817; Miyabe-Miyake, l. c. p. 76.

In herbidis prope Tim (n. 6256, 3 Aug.) inventa est.

178. **Silene venosa* Aschers. Fl. Prov. Brandenb. II. Fl. Berlin. p. 23; Aschers. u. Graebn. l. c. V. 2. p. 64. (= *Silene vulgaris* Garcke : Miyabe-Miyake, l. c. p. 64.)

In decliviis herbosis prope Djonkier (n. 6006, 23 Jul.) lecta est.

179. *Dianthus superbus* L. : Ledeb. Fl. Ross. I. p. 285; Fr. Schm. l. c. p. 116; Miyabe-Miyake, l. c. p. 63.

In rupestribus prope Djonkier (n. 6022, 23 Jul.); in herbidis prope Rikowskoie (n. 6275, 4 Aug.); prope Rikowskoie (n. 6275, 4 Aug.) nobis lectus : et prope Pilwo (Porokotan) a S. Ishino anno 1922 inventus est.

Nymphaeaceae.

180. **Nymphaea tetragona* Georgi : Caspary Ann. Mus. Lugd. Bat. II. p. 251, t. 7. -*var. ***lata*** Casp. l. c. : Miyabe-Miyake, l. c. p. 29. (= *Nymphaea pygmaea* Ait. : Fr. Schm. l. c. p. 110.)

In aquis prope Nyiwo- Shubitai (n. 6584, 15 Aug.) reperta est.

Ranunculaceae.

181. *Caltha palustris* L. : Kudo, l. c. p. 105.

var. **sibirica** Rgl. Pl. Radd. 1. p. 53; Fr. Schm. l. c. p. 105.

In tundra prope Parukata (n. 6411, 10 Aug.), prope Pubuny (n. 6364, 8 Aug.); in pratis humidis prope Tim (n. 6259, 3 Aug.) inventa est.

*var. **gigas** Lev'l. in Fedde Repert. 1909 p. 102. (= *Caltha palustris* L. var. *typica* Miyabe-Miyake, l. c. p. 16, non Rgl.)

Prope Pilwo (Porokotan) a S. Ishino anno 1922 lecta est.

182. Trollius patulus Salisb.: Fr. Schm. l. c. p. 106; Miyabe-Miyake, l. c. p. 17.-var. **Riderianus** Kudo, l. c. p. 105.

In fruticetis umbrosis inter Aobaeki et Kami-Onory (n. 6191, 31 Jul.) lectus est.

183. Coptis trifolia Salisb.: Fr. Schm. l. c. p. 106; Miyabe-Miyake, l. c. p. 18; Kudo, l. c. p. 106.

In tundra prope Alexandrowsk (n. 6082, Jul.) decerpta est.

184. Actaea spicata L. Spec. Pl. ed. 1, p. 504; A. Gray, Bot. Jap. p. 379.-var. **erythrocarpa** Turcz.: Ledeb. Fl. Ross. I. p. 71; Fr. Schm. l. c. p. 108; Miyabe-Miyake, l. c. p. 22.

In sylvis picetis inter Aobaeki et Kami-Onory (n. 6704, 31 Jul.) in conspectum venit.

185. Cimicifuga yezoensis Kudo. (= *Cimicifuga simplex* Wormsk. var. *yezoensis* Nakai, Bot. Mag. Tokyo, XXX. p. 146. = *Cimicifuga simplex* Fr. Schm. l. c. p. 109; Miyabe-Miyake, l. c. p. 23, non Wormsk.)

In sylvis laricetis inter Adotimowo et Derbinskoie (n. 6708, 23 Aug.) in conspectum venit.

186. Aconitum umbrosum Kom. Fl. Mansh. II. p. 250; Nakai, Bot. Mag. Tokyo, XXXI. p. 223. (= *Aconitum Lycotomum* Fr. Schm. l. c. p. 106, non L. = *Aconitum pallidum* Miyabe-Miyake, l. c. p. 20, non Rchb.)

In sylvis umbrosis inter Derbinskoie et Adotimowo (n. 6309, 6 Aug.) observatum est.

187. Aconitum arcuatum Maxim. Prim. Fl. Amur. p. 27; Nakai, Bot. Mag. Tokyo, XXXI. p. 228.

In herbis inter Parukata et Pubuny (n. 6684, 18 Aug.) inter Pubuny et Adotimowo (n. 6623, 20 Aug.) et inter Adotimowo et Derbinskoie (n. 6629, 23 Aug.) lectum est.

188. Aconitum neo-sachalinense Lev'l. in Fedde Repert. 1909 p. 101; Nakai, Bot. Mag. Tokyo, XXXI. p. 229.

In herbis prope Pilwo (Porokotan) (n. 6144, 28 Jul.) obviam factum est.

189. Anemone gracilis Fr. Schm. l. c. p. 102. (= *Anemone debilis* Fisch.: Miyabe-Miyake, l. c. p. 8.)

In sylvis picetis inter Aobaeki et Kami-Onory (n. 6200b, 31 Jul.) lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

190. Anemone dichotoma L. Spec. Pl. ed. 1, p. 540; Fr. Schm. l. c. p. 103; Miyabe-Miyake, l. c. p. 7.

In herbis prope Tim (n. 6258, 3 Aug.) lecta est.

191 **Pulsatilla Tatewakii Kudo, sp. nov. (= *Anemone Tatewakii*

Kudo, in Herb. of the Military Administration of the Saghalien Expeditionary Force. =? *Pulsatilla ajanensis* Fr. Schm. l. c. ed. ross. p. 111, non Rgl. et Til.)

Caulis 1-1.5 pedalis, villosi. Folia petiolata, ambitu ovato-orbicularia vel deltoideo-rotundata, 6-8 cm longa, 7-9.5 cm lata, ternati-secta; segmento intermedio trilobato, lobis ternatim vel subpinnatim laciniatis laciniis oblongis vel obovato-oblongis margine simpliciter vel subdupliciter mucronato-dentatis: segmentis lateralibus oblique ovatis vel ovato-orbicularibus bilobatis vel trilobatis, lobis profunde bi-vel tri-laciniatis, laciniis simpliciter vel subdupliciter mucronato-dentatis: subtus longe subvillosa, supra subscabra; petioli sursum parce basin dense villosi, 7-9 cm longi. Folia involucri medio vel ultra medium cauli inserta, multi-partita, laciniis linearibus linearilanceolatis, subtus densissime flavo-villosa. Flores et fructus mihi ignota.

In herbis prope Rikowskoie (n. 6276, 4 Aug.) lecta est.

Proxime affinis est *Pulsatillae ajanensi* Rgl. et Til. (= *Anemone ajanensis* Prantl, in Engl. Bot. Jahrb. IX. p. 249. = *Pulsatilla vernalis* L. var. *ajanensis* Rgl. Pl. Radd. I. p. 24.) differe videtur a specie mea foliis radicalibus bipinnati-sectis, habitu minore.

192. Clematis alpina Mill.: DC. Prodr. I. p. 10.-var. **ochotensis** Rgl. Pl. Radd. I. p. 5; Fr. Schm. l. c. p. 101; Makino, Bot. Mag. Tokyo, XI. p. (330); Miyabe-Miyake, l. c. p. 3.

In sylvis laricetis inter Rikowskoie et Adotimowo (n. 6310, 6 Aug.) lecta est.

193. Trautvetteria japonica Sieb. et Zucc. Fl. Jap. Fam. Nat. I. p. 184; Fr. Schm. l. c. p. 108; Miyabe-Miyake, l. c. p. 11.

In sylvis laricetis prope Pubuny (n. 6351, 3 Aug.) decerpta est; et etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

194. *Ranunculus trichophyllus Chaix: Miyabe-Miyake, l. c. p. 12; Miyabe-Kudo, in Trans. Sapporo Nat. Hist. Soc. VII. p. 30. (= *Ranunculus aquatilis* L. var. *longifolius*, Fr. Schm. l. c. p. 104, non Rossm.)

In aquis fl. Tymi inter Pubuny et Adotimowo (n. 6610, 2 Aug.) et fl. prope Rikowskoie (n. 6297, 4 Aug.) inventus est.

195. Ranunculus sceleratus L. Spec. Pl. ed. 1, p. 551; Ledeb. Fl. Ross. I. p. 45; Fr. Schm. l. c. p. 105; Miyabe-Miyake, l. c. p. 14.

Ad ripas fl. prope Alexandrowsk (n. 6048, 25 Jul.) observatus est.

196. Ranunculus acris L. Spec. Pl. ed. 1, p. 554; DC. Prodr. I. p. 36.-var. **borealis** Trautv. in Rgl. Tent. Fl. Ussuri p. 7, n. 18, in adnotat. et Pl. Radd. I. p. 48. (= *Ranunculus borealis* Trautv. a. *typicus* Trautv. Pl. Schrenck. p. 72)

In paludibus siccis prope Alexandrowsk (n. 6040, 25 Jul.) visus est.

197. Ranunculus repens L.: Fr. Schm. l. c. p. 105; Miyabe-Miyake, l. c. p. 14; Kudo, l. c. p. 108.

In tundra prope Alexandrowsk (n. 6083, 26 Jul.) inventus est.

198 *Thalictrum sachalinense Lecoyer, Monogr. Thalict. p. 77, t. 3, f. 6; Miyabe-Miyake, l. c. p. 5.

In decliviis herbosis prope Alexandrowsk (n. 6020, 23 Jul.) lectum est.

199. *Thalictrum minus* L.: Kudo, l. c. p. 109.—var. **elatum** Lecoyer, Monogr. Thalict. p. 127; Miyabe-Miyake, l. c. p. 5. (= *Thalictrum kemense* Fr. Schm. l. c. p. 101. non Fr.)

In herbidis inter Kamisheff et Vtoroie Arcovo (n. 6673, 25 Aug.), prope Vershnij Armudan (n. 6646, 24 Aug.), inter Onory et Rikowskoie (n. 6248, 2 Aug.) obviam factum est.

Papaveraceæ.

200. *Corydalis gigantea* Rgl. et Til. Fl. Ajan. p. 13; Fr. Schm. l. c. p. 111.—var. **amurensis Rgl. Pl. Radd. I. p. 150; Miyabe-Miyake, l. c. p. 33, pl. 2, f. 5; Busch, Papaver. in Fl. Sib. Or. Extr. p. 5.**

In sylvis picetis inter Aobaeki et Kami-Onory (n. 6193, 31 Jul.) et inter Kami-Onory et Onory (n. 6228, 1 Aug.) lecta est.

201 *Corydalis ochotensis* Turcz. Bull. Moscou. (1846) p. 62; Busch, Papaver. in Fl. Sib. Or. Extr. p. 43.**

In ripas humiditas inter Hinaneki et Aobaeki (n. 6151, 29 Jul.) lecta est.

Specimen nostrum etsi floribus fructibusque caret, tamen de specie dubitationis nihil reliquit.

202. *Corydalis Maximowiczii* Nakai, Bot. Mag. Tokyo, XXXIII. p. 51. (= *Corydalis speciosa* Maxim. Prim. Fl. Amur. p. 39, non Willd.; Miyabe-Miyake, l. c. p. 32. = *Corydalis aurea* Fr. Schm. l. c. p. 111, non Willd.)

In herbidis inter Kami-Onory et Onory (n. 6227, 1 Aug.) lecta est.

Cruciferæ.

203.*Lepidium Draba* L. Spec. Pl. ed. 1, p. 645; Hegi, Ill. Fl. Mittel-Europ. IV. p. 78, t. 126, f. 3.**

Ad ripas fl. prope Alexandrowsk (n. 6050, 25 Aug.) collectum est.

204. *Cochlearia oblongifolia* DC.: Fr. Schm. l. c. p. 114; Miyabe-Miyake, l. c. p. 49; Kudo, l. c. p. 110.

In arenosis litoralibus prope Agui miss (n. 6482, 2 Aug.) lecta est.

205. *Isatis tinctoria* L. Spec. Pl. ed. 1, p. 670; Fr. Schm. l. c. p. 115.—subsp. **japonica Busch, l. c. p. 159. (= *Isatis oblongata* Miyabe-Miyake, l. c. p. 54, non DC.)**

In decliviis herbosis prope Djonkier (n. 6002, 23 Jul.) inventa est.

206. *Nasturtium palustre* DC.: Fr. Schm. l. c. p. 111; Miyabe-Miyake, l. c. p. 37; Kudo, l. c. p. 111.

In herbidis prope Vershnij Armudan (n. 6647, 24 Aug.) lectum est.

207. *Cardamine leucantha* Schulz, Monogr. Cardam. p. 403; Busch, l. c. p. 239. (= *Dentaria dasyloba* Turcz. : Fr. Schm. l. c. p. 112.

= *Cardamine dasyloba* Miq. : Miyabe-Miyake, l. c. p. 44.)

In herbis prope Pilwo (Porokotan) (n. 6112, 28 Jul.) lecta est.

208. **Cardamine impatiens* L. Spec. Pl. ed. 1, p. 655; DC. Prodr. I. p. 152; Fr. Schm. l. c. p. 112; Miyabe-Miyake, l. c. p. 43; Busch, l. c. p. 242.

In herbis prope Pilwo (Porokotan) (n. 6122, 28 Jul.); in humidis inter Hinaneiki et Aobaeki (n. 6167, 30 Jul.) reperta est.

209. *Cardamine Regeliana* Miq. : Fr. Schm. l. c. p. 112; Kudo, l. c. p. 112. (= *Cardamine flexuosa* With. var. *Regeliana* Maxim. : Miyabe-Miyake, l. c. p. 42.)

Ad ripas humidas inter Kami-Onory et Onory (n. 6229; 1 Aug.) lecta est.

210. *Cardamine pratensis* L.** : Kudo, l. c. p. 112.

In tundra prope Parukata (n. 6412, 10 Aug.) inventa est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

211. *Cardamine bellidifolia* L.** : DC. Prodr. I. p. 150, p. p.; Ledeb. Fl. Ross. I. p. 123; Kurtz, Engl. Bot. Jahrb. XIX. p. 453; Schulz, l. c. p. 553; Busch, l. c. p. 268.

Prope Chaiwo a Y. Kusano anno 1921 lecta est.

212. *Draba sachalinensis* Fr. Schm. l. c. ed. ross. p. 122; Miyabe-Miyake, l. c. p. 48, pl. 3, f. 4-5.

In rupestribus prope Pilwo (Porokotan) (n. 6126, 28 Jul.) lecta est.

213. *Arabis pendula* L. : Ledeb. Fl. Ross. I. p. 122; Fr. Schm. l. c. p. 112; Miyabe-Miyake, l. c. p. 40.

In herbis prope Pilwo (Porokotan) (n. 6114, 28 Jul.) in conspectum venit.

214. *Arabis Stelleri* DC. Prodr. I. p. 148; Ledeb. Fl. Ross. I. p. 122.-var. ***genuina*** Fr. Schm. l. c. p. 11; Miyabe-Miyake, l. c. p. 39.

In arenosis litoralibus prope Agui miss (n. 6448, 14 Aug.) lecta est.

215. *Erysimum cheilanthoides* L. : Ledeb. Fl. Ross. I. p. 189; Fr. Schm. l. c. p. 115.-var. ***japonicum*** Boiss. Bull. Herb. Boiss. VII. p. 795; Miyabe-Miyake, l. c. p. 50.

In glareosis litoralibus prope Djonkier (n. 6007, 23 Jul.) reperta est.

Droseraceæ.

216. *Drosera rotundifolia* L. : Fr. Schm. l. c. p. 116; Miyabe-Miyake, l. c. p. 169; Kudo, l. c. p. 115.

In tundra prope Agui miss (n. 6525, 13 Aug.), prope Parukata (n. 6416, 10 Aug.) et prope Alexandrowsk (n. 6084, 28 Jul.) lecta est.

217. *Drosera anglica* Huds. : DC. Drodr. I. p. 318; Miyabe-Miyake, l. c. p. 169. (= *Drosera longifolia* L. : Fr. Schm. l. c. p. 116.)

In tundra prope Agui miss (n. 6526, 13 Aug.) lecta est.

Crassulaceæ.

218. *Sedum verticillatum L.: Ledeb. Fl. Ross. II. p. 181; Fr. Schm. l. c. p. 131; Miyabe-Miyake, l. c. p. 165.

In humidis inter Kami-Onory et Onory (n. 6192, 31 Jul.) observatum est.

219. *Sedum Telephium L. Spec. Pl. ed. 1, p. 430.—*var. **purpureum** L.; Maxim. Mém. Biol. XI. p. 752; Miyabe-Miyake, l. c. p. 166.

In herbis prope Rikowskoie (n. 6274, 4 Aug.) lectum est.

220.Sedum pluricaule** Kudo. sp. nov. (= ?*Sedum Telephium* L. *δ. pluricaule* Maxim. Mém. Biol. XI. p. 754; Miyabe-Miyake, l. c. p. 166, pl. 6, f. 5-6. = *Sedum cyaneum* Fr. Schm. l. c. p. 132; Miyabe-Miyake, l. c. p. 167, non Rud.)

Caulis procumbens, radio ad 18 cm longus, e nodis fere omnibus radicans, ramis ascendentibus, 3-5 cm altis, pluribus, dense foliatis, apice inflorescentiam magnam gerentibus. Folia crassa, opposita vel alterna, sessilia, obovata vel orbiculari-obovata, margine integerrima, 7-10 mm longa, 5-8 mm lata. Cyma densiflora, semi-rotundata vel planiuscula, ad 3 cm lata. Flores hermaphroditi, purpurei, pedicellis 4 mm longis demum elongatis gracilibus. Sepala lineari-subulata, uni-nervia, ca. 2 mm longa, 0.8 mm lata. Petala oblongo-lanceolata, apice longe acuminata, uni-nervia, ca. 5 mm longa, 2 mm lata. Stamina 10, petalis paulo breviora, quorum 5, petalis opposita, $\frac{1}{4}$ petali adnata quam stamina sepalis opposita disco inserta leviter breviora; antheris intense fusco-purpureis, ovatis, orbiculari-ovatis vel oblongo-ovatis. Squamæ hypogynæ trapezoides, 0.8 mm longæ, 10 mm latae. Ovaria 5, oblongo-fusiformia, ca. 4 mm longa. Folliculus oblongo-fusiformis, stylo triporo brevior subulato-filiforme continuo terminatus, polyspermis, seminibus anguste obovato-oblongis, pallide castaneis, longitudinaliter paralleliterque fusco-lineatis.

In rupestribus prope Pilwo (Porokotan) a nobis (n. 6129, 28 Jul.) et S. Ishino anno 1922 collectum est.

Proximum videtur *Sedo cyaneo* Rudolph, sed differt petalis non ovatis, sepalis multo minoribus, foliis inferne suboppositis. Multo differt *Sedo Telephio* et speciei hujus varietatibus omnibus habitu speciale.

221. Sedum Aizoon L.: Ledeb. Fl. Ross. II. p. 183; Fr. Schm. l. c. p. 132; Miyabe-Miyake, l. c. p. 168.—**var. **latifolium** Maxim. Prim. Fl. Amur. p. 115 et Mém. Biol. XI. p. 757.

In rupestribus prope Pilwo (Porokotan) (n. 6130, 28 Jul.) lectum est.

Saxifragaceæ.

222. Saxifraga sachalinesis Fr. Schm. l. c. p. 133; Engl. in Pfl.-reich. IV. 117. I. p. 44. (= *Saxifraga reflexa* Miyabe-Miyake, l. c. p. 151, non Hook. f.)

In rupestribus prope Djonkier (n. 6694, 23 Jul.) nobis inventa est. Etiam prope Pilwo (Porokotan) a S. Ishino anno 1922 lecta est.

223. *Chrysosplenium flagelliferum Fr. Schm. l. c. p. 134; Miyabe-Miyake, l. c. p. 154.

In tundra prope Parukata (n. 6413, 10 Aug.) inventum est.

224. Chrysosplenium alternifolium L.: Ledeb. Fl. Ross. II. p. 226; Fr. Schm. l. c. p. 133; Britt. & Br. Ill. Fl. 181; Miyabe-Miyake, l. c. p. 155.

In humidis inter Onory et Kami-Onory (n. 6230, 1 Aug.) lectum est.

225. Parnassia palustris L.: Fr. Schm. l. c. p. 116; Miyabe-Miyake, l. c. p. 155; Kudo, l. c. p. 118.

In tundra prope Parukata (n. 6414, 10 Aug.) lecta est.

226. *Ribes triste Pall.: Miyabe-Miyake, l. c. p. 158; Miyabe-Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 147.

In herbidis prope Onory (n. 6232, 1 Aug.) et prope Vershnij Armudan (n. 6674, 24 Aug.) reperta est.

227. Ribes latifolium Jancz. Monogr. p. 294; Miyabe-Miyake, l. c. p. 159. (= *Ribes petraeum* Wulf. β . *tomentosum* Maxim.: Fr. Schm. l. c. ed. ross. p. 144.)

In opp. Alexandrowsk (n. 6025, 25 Jul.) lectum est.

228. Ribes sachalinense Nakai, Bot. Mag. Tokyo, XXX. p. 144. (= *Ribes affine* Bong. var. *sachalinense* Fr. Schm. l. c. p. 132. = *Ribes laxiflorum* Miyabe-Miyake, l. c. p. 159, non Pursh.)

In sylvis deciduis inter Pilwo (Porokotan) et Hinaneki (n. 6152, 29 Jul.); in sylvis laricetis prope Pubuny (n. 6352, 8 Aug.) observatum est.

229. *Ribes procumbens Pall. Fl. Ross. II. p. 35, t. 65; Ledeb. Fl. Ross. II. p. 189; Miyabe-Miyake, l. c. p. 161.

In tundra prope Parukata (n. 6415, 10 Aug.) lectum est.

Rosaceæ.

230. Spiraea salicifolia L. Spec. Pl. ed. 1, p. 489; Fr. Schm. l. c. p. 126. -var. **lanceolata** Torr. et Gr. Fl. North Am. I. p. 415; Miyabe-Miyake, l. c. p. 123.

In sylvis laricetis prope Parukata (n. 6449, 10 Aug.), prope Pubuny (n. 6354, 8 Aug.) et inter Adotimowo et Derbinskoie (n. 6631, 23 Aug.); in tundra sicca prope Alexandrowsk (n. 6043, 25 Jul.); in tundra prope Alexandrowsk (n. 6090, 26 Jul.); in herbidis prope Tim (n. 6269, 3 Aug.) et inter Onory et Rikowskoie (n. 6251, 2 Aug.) lecta est.

231. Spiraea media Schmidt. var. **sericea** Rgl. apud Maxim. in Act. Hort. Petrop. VI. p. 187; Miyabe-Miyake, l. c. p. 122. (= *Spiraea confusa* Rgl. et Körn. var. *sericea* Rgl.: Fr. Schm. l. c. p. 125.)

In fruticetis prope Rikowskoie (n. 6280, 4 Aug.) lecta est.

232. Spiraea betulaeifolia Pall.: Fr. Schm. l. c. p. 126; Miyabe-Miyake, l. c. p. 123; Kudo, l. c. p. 118.

In arenosis litoralibus prope Agui miss (n. 6507, 13 Aug.); in sylvis

laricetis prope Nyiwo-Shubitai (n. 6580, 15 Aug.) et inter Vigrechi et Katangri (n. 6563, 15 Aug.); in tundra sicca prope Alexandrowsk (n. 6044, 25 Jul.) inventa est.

var. **Aemiliana Koidz. : Kudo, l. c. p. 119.

In tundra prope Parukata (n. 6422, 10 Aug.); in sylvis laricetis prope Pubuny (n. 6353, 8 Aug.); in sylvis picetis inter Aobaeki et Kami-Onory (n. 6197, 31 Jul.) et inter Hinaneki et Aobaeki (n. 6168, 30 Jul.) inventa est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

233. Aruncus sylvester Kostel. : Miyabe-Miyake, l. c. p. 121; Kudo, l. c. p. 119. (= *Spiraea Aruncus* L. : Fr. Schm. l. c. p. 126.) - var. **vulgaris** Maxim. in Act. Hort. Petrop. VI. p. 169; Miyabe-Miyake, l. c.

In decliviis herbosis prope Djonkier (n. 6010, 23 Jul.); et in herbidis prope Pilwo (Porokotan) (n. 6136, 28 Jul.) decerptus est.

234. Sorbaria sorbifolia R. Br. : Maxim. Act. Hort. Petrop. VI. p. 222. (= *Spiraea sorbifolia* L. : Fr. Schm. l. c. p. 126.) - var. **glabra** Maxim. l. c. ; Miyabe-Miyake, l. c. p. 124.

In fruticetis prope Rikowskoie (n. 6299, 4 Aug.) lecta est.

235. Sorbus sambucifolia Roem. : Miyabe-Miyake, l. c. p. 146; Kudo, l. c. p. 119. (= *Pyrus sambucifolia* Cham. et Schl. : Fr. Schm. l. c. p. 129.)

In arenosis litoralibus prope Agui miss (n. 6486, 12 Aug.); in tundra prope Nyiwo-Shubitai (n. 6461, 12 Aug.) et prope Katangri (n. 6421, 15 Aug.); in sylvis laricetis inter Vigrechi et Katangri (n. 6565, 15 Aug.) inventus est.

236. Sorbus commixta Hedl. Monogr. Sorb. p. 38. (= *Pyrus Aucu paria* Fr. Schm. l. c. p. 129, non L. = *Sorbus japonica* Koehne : Miyabe Miyake, l. c. p. 145.) - **var. **Takasui** Kudo, var. nov. (= *Sorbus Takasui* Kudo, MS.)

Trunco intense rubro, fructibus majoribus pulchrioribus. Species in vivo facile a *S. commixta* distinguenda.

In sylvis inter Rikowskoie et Adotimowo (n. 6311, 6 Aug.), inter Adotimowo et Derbinskoie (n. 6630, 23 Aug.) et opp. Alexandrowsk (n. 6032, 25 Jul.) inventus est.

237. Malus baccata Borkh. (= *Pyrus baccata* L. : Fr. Schm. l. c. p. 129.) - var. **mandshurica** C. K. Schn. Ill. Handb. Laubholzk. I. p. 721, f. 397 n. ; Miyabe-Miyake, l. c. p. 144.

Prope Rikowskoie (n. 6278, 4 Aug.) obviam facta est.

238. Crataegus sanguinea Pall. : Miyabe-Miyake, l. c. p. 148; Sarg. Pl. Wilson. III. pp. 180, 182.

In opp. Alexandrowsk (n. 6033, 25 Jul.) lecta est.

239. Crataegus Maximowiczii C. K. Schn. Ill. Handb. Laubholzk. I. p. 771; Miyabe-Miyake, l. c. p. 148, pl. 5, f. 1-2. (= *Crataegus sanguinea* Pall. var. *villosa* Rupr. et Maxim. : Fr. Schm. l. c. p. 128.)

Ad ripas prope Rikowskoie (n. 6298, 4 Aug.) et inter Kami-Onory et Onory (n. 6194, 31 Jul.) inventa est.

240. *Rubus Chamaemorus* L.: Fr. Schm. l. c. p. 128; Miyabe-Miyake, l. c. p. 127; Kudo, l. c. p. 120.

In tundra prope Agui miss (n. 6528, 13 Aug.), prope Parukata (n. 6418, 10 Aug.), prope Alexandrowsk (n. 6037, 25 Jul.; n. 6088, 26 Jul.) nobis lectus; et prope Chaiwo a Y. Kusano anno 1921 inventus est.

241. *Rubus arcticus* L.: Fr. Schm. l. c. p. 128; Miyabe-Miyake, l. c. p. 127; Kudo, l. c. p. 120.

In arenosis litoralibus prope Agui miss (n. 6485, 12 Aug.); in tundra prope Parukata (n. 6419, 10 Aug.) et prope Alexandrowsk (n. 9087, 26 Jul.) lectus; et prope Chaiwo a Y. Kusano anno 1921 visus est.

242. *Rubus idaeus* L.: DC. Prodr. II. p. 558. – var. **aculeatissimus** Rgl. et Til. Fl. Ajan. p. 87; Fr. Schm. l. c. p. 128. (= *Rubus melanolasius* Focke, var. *discolor* Kom.: Miyabe-Miyake, l. c. p. 129.)

In sylvis laricetis prope Vigrechi et Katangri (n. 6564, 15 Aug.); in herbidis inter Kamisheff et Vtoroie Arcovo (n. 6676, 25 Aug.) lectus est.

243. *Comarum palustre* L.: Fr. Schm. l. c. p. 127; Miyabe-Miyake, l. c. p. 138; Kudo, l. c. p. 121.

In tundra prope Agui miss (n. 6527, 13 Aug.), prope Parukata (n. 6417, 10 Aug.) et prope Alexandrowsk (n. 6086, 26 Jul.) observatum est.

244. *Potentilla Anserina* L.: Fr. Schm. l. c. p. 127; Miyabe-Miyake, l. c. p. 136; Kudo, l. c. p. 121.

In arenosis humidis litoralibus prope Agui miss (n. 6484, 12 Aug.) lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

245. *Potentilla fragarioides* L. – var. *stolonifera* Maxim.: Miyabe-Miyake, l. c. p. 135; Kudo, l. c. p. 122. (= *Potentilla stolonifera* Ledeb.: Fr. Schm. l. c. p. 172.)

In herbidis prope Rikowskoie (n. 6279, 4 Aug.) inventa est.

246. *Geum Aleppicum* Jacq.: Miyabe-Miyake, l. c. p. 130; Kudo, l. c. p. 123. (= *Geum strictum* Ait.: Fr. Schm. l. c. p. 126.)

In herbidis prope Tim (n. 6260, 3 Aug.) nobis lectum; et prope Pilwo (Porokotan) a S. Ishino anno 1922 inventum est.

247. *Geum pentapetalum* Makino: Miyabe-Miyake, l. c. p. 131; Kudo, l. c. p. 124. (= *Sieversia anemonoides* Pall.: Fr. Schm. l. c. p. 127.)

In tundra prope Katangri (n. 6569, 15 Aug.); in sylvis laricetis inter Vigrechi et Katangri (n. 6562, 15 Aug.); in herbidis prope Nyiwo-Shubitai (n. 6543, 13 Aug.) observatum est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectum est.

248. *Filipendula kamtschatica* Maxim.: Miyabe-Miyake, l. c. p. 125; Kudo, l. c. p. 124. (= *Spiraea kamtschatica* Pall.: Fr. Schm. l. c. p. 126.)

In tundra prope Alexandrowsk foliis dense pubescentibus (n. 6085, 26 Jul.) et in herbidis prope Vershnij Armudan foliis subtus praeter nervos glabratis (n. 6649, 24 Aug.) lecta est.

249. **Filipendula palmata* Maxim. in Act. Hort. Petrop. VI. p. 248; Miyabe-Miyake, l. c. p. 126.

In herbis fl. Tymi inter Nyiwo-Shubitai et Parukata (n. 6594, 18 Aug.), inter Adotimowo et Pubuny foliis fere glabratis (n. 6325, 7 Aug.) et inter Onory et Rikowskoie (n. 6250, 2 Aug.) inventa est.

250. Agrimonia pilosa Ledeb. Fl. Ross. II. p. 32; Fr. Schm. l. c. p. 127; Miyabe-Miyake, l. c. p. 139.

In herbis prope Vershnij Armudan (n. 6548, 24 Aug.) et inter Onory et Rikowskoie (n. 6249, 2 Aug.) lecta est.

251. *Sanguisorba sitchensis Trautv. et Mey. Fl. Ochot. p. 35. (= *Sanguisorba canadensis* L. var. *media* Maxim. Mém. Biol. IX. p. 151, p. p.; Miyabe-Miyake, l. c. p. 639. = *Sanguisorba canadensis* L. var. *β*. Fr. Schm. l. c. ed. ross. p. 138.)

Prope Chaiwo a Y. Kusano anno 1921 lecta est.

252. Sanguisorba tenuifolia Fisch.: Fr. Schm. l. c. p. 126; Kudo, l. c. p. 125. - var. **alba** Trautv. et Mey. Fl. Ochot. p. 35; Miyabe-Miyake, l. c. p. 140.

In tundra prope Agui miss. (n. 6529, 13 Aug.), prope Parukata (n. 6420, 10 Aug.), prope Alexandrowsk (n. 6089, 26 Jul.); in herbis prope Vershnij Armudan (n. 6650, 24 Aug.) decerpta est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

253. Rosa rugosa Thunb.: Fr. Schm. l. c. p. 128; Miyabe-Miyake, l. c. p. 143; Kudo, l. c. p. 125.

In arenosis litoralibus prope Agui miss (n. 6506, 13 Aug.) lecta est.

254. *Rosa Marretii Lev'l. in Fedde Repert. VIII. p. 281. (= *Rosa davurica* Miyabe-Miyake, l. c. p. 142, pl. 5, f. 4. non Pall.)

In herbis inter Kamisheff et Vtoroie Arcovo (n. 6675, 25 Aug.); in sylvis deciduis inter Aobaeki et Kami-Onory (n. 6196, 31 Jul.) et inter Pilwo (Porokotan) et Hinaneki (n. 6153, 29 Jul.) reperta est.

255. Prunus Padus L. Spec. Pl. ed. 1, p. 473; Koehne, in Sarg. Pl. Wilson. II. p. 72; Miyabe-Miyake, l. c. p. 118.

In sylvis deciduis inter Pubuny et Adotimowo (n. 6624, 20 Aug.) et inter Aobaeki et Kami-Onory (n. 6195, 31 Jul.); in opp. Alexandrowsk (n. 6035, 25 Jul.) lecta est.

Leguminosæ.

257. Thermopsis fabacea DC.: Fr. Schm. l. c. p. 123; Miyabe-Miyake, l. c. p. 101; Kudo, l. c. p. 126.

In arenosis litoralibus prope Agui miss (n. 6509, 13 Aug.) lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

258. Astragalus Schelichowiczii Turcz. in Bull. Soc. Nat. Mosc. (1840) p. 68; Ledeb. Fl. Ross. I. p. 605; Trautv. et Mey. Fl. Ochot. p. 27; Fr. Schm. l. c. p. 123; Miyabe-Miyake, l. c. p. 105.

Ad ripas fl. Tymi inter Nyiwo et Parukata (n. 6595, 18 Aug.) inventus est.

259. *Vicia japonica* A. Gray, Pl. Jap. p. 385; Miyabe-Miyake, l. c. p. 111. – form. b. ***sylvatica*** Kom. Fl. Mansh. II. p. 613. (= *Vicia pallida* Fr. Schm. l. c. ed. ross. p. 134.)

In herbidis prope Pilwo (Porokotan) (n. 6135, 28 Jul.) lecta est.

260. *Vicia Cracca* L.: Ledeb. Fl. Ross. I. p. 674; Fr. Schm. l. c. p. 124. – form. ***canescens*** Maxim. Prim. Fl. Amur. p. 82; Miyabe-Miyake, l. c. p. 110.

Ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6378, 9 Aug.); in herbidis prope Tim (n. 6261, 3 Aug.) observata est.

261. *Lathyrus maritimus* Biegl.: Fr. Schm. l. c. p. 124; Miyabe-Miyake, l. c. p. 112; Kudo, l. c. p. 127.

In arenosis litoralibus prope Agui miss (n. 6483, 12 Aug.) et prope Pilwo (Porokotan) (n. 6142, 28 Jul.) inventus est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectus est.

262. *Lathyrus palustris* L.: Kudo, l. c. p. 128. – var. ***pilosus*** Ledeb. Fl. Ross. I. p. 686; Fr. Schm. l. c. p. 124; Miyabe-Miyake, l. c. p. 123. (= *Lathyrus pilosus* Cham. in Linnaea. VI. p. 548.)

In arenosis litoralibus prope Agui miss (n. 6508, 13 Aug.); ad ripas herbosas fl. Tymi inter Nyiwo-Shubitai et Parukata (n. 6596, 18 Aug.); in arenosis et herbidis ripariis fl. Tymi inter Pubuny et Parukata (n. 6377 et 6381, 9 Aug.) lectus est. Etiam prope Chaiwo a Y. Kusano, anno 1921 inventus est.

Geraniaceæ.

263. *Geranium erianthum* DC.: Fr. Schm. l. c. p. 120; Miyabe-Miyake, l. c. p. 83; Kudo, l. c. p. 128.

Prope Chaiwo a Y. Kusano anno 1921 lectum est.

264. *Geranium subumbelliforme*** R. Knuth, in Engl. Pfl.-reich. IV. 129. p. 123.

In arenosis litoralibus prope Agui miss (n. 6488, 12 Aug.); in decliviis herbidis prope Djonkier (n. 6003, 23 Jul.); in herbidis prope Rikowskoie (n. 6281, 4 Aug.) repertum est.

Oxalidaceæ.

265. *Oxalis Acetosella* L. Spec. Pl. ed. 1, p. 433; Ledeb. Fl. Ross. I. p. 482; Fr. Schm. l. c. p. 120; Miyabe-Miyake, l. c. p. 85.

In sylvis picetis inter Hinaneki et Aobaeki (n. 6169, 30 Jul.) et inter Pubuny et Adotimowo (n. 6625, 20 Aug.) lecta est.

Empetraceæ.

266. *Empetrum nigrum* L.: Fr. Schm. l. c. p. 171; Miyabe-Miyake,

l. c. p. 433; Kudo, l. c. p. 129.

In arenosis litoralibus prope Agui miss (n. 6487, 12 Aug.); in tundra prope Agui miss (n. 6530, 13 Aug.), prope Nyiwo-Shubitai (n. 6462, 12 Aug.) et prope Parukata (n. 6423, 10 Aug.) observatum est.

Aquifoliaceæ.

267. *Ilex rugosa Fr. Schm. l. c. p. 122, t. 3, f. 1-7; Miyabe-Miyake, l. c. p. 90.

In sylvis picetis inter Hinaneki et Aobaeki (n. 6170, 30 Jul.) et inter Aobaeki et Kami-Onory (n. 6198, 31 Jul.) reperta est.

Celastraceæ.

268. *Evonymus sachalinensis Maxim. Mém. Biol. XI. p. 185; Miyabe-Miyake, l. c. p. 93. (= *Evonymus latifolius* Scop. var. *sachalinensis* Fr. Schm. l. c. p. 121.)

In sylvis picetis inter Hinaneki et Aobaeki (n. 6171, 30 Jul.) lecta est.

Aceraceæ.

269. Acer ukurunduense Trautv. et Mey. Fl. Ocoht. p. 24. (= *Acer spicatum* Lam. var. *ukurunduense* Maxim.: Fr. Schm. l. c. p. 119; Miyabe-Miyake, l. c. p. 96.)

In sylvis laricetis prope Pubuny (n. 6355, 8 Aug.) inventum est.

270. Acer pictum Thunb. Fl. Jap. p. 161. - var. **Mono** Pax, in Engl. Bot. Jahrb. VII. p. 236. (= *Acer Mono* Maxim.: Fr. Schm. l. c. p. 119. = *Acer pictum*, var. *typicum* Schwerin, subvar. *Mono* Pax: Miyabe-Miyake, l. c. p. 97.)

In sylvis prope Pilwo (Porokotan) (n. 6157, 28 Jul.) lectum est.

Balsaminaceæ.

271. Impatiens Noli-tangere L. Spec. Pl. ed. 1, p. 938; Ledeb. Fl. Ross. I. p. 481; Fr. Schm. l. c. p. 120; Miyabe-Miyake, l. c. p. 86.

In herbidis inter Kamisheff et Vtoroie Arkovo (n. 6677, 25 Aug.) visum est.

Theaceæ.

272. Actinidia Kolomikta Maxim. Prim. Fl. Amur. p. 63; Fr. Schm. l. c. p. 118; Miyabe-Miyake, l. c. p. 81.

In sylvis picetis inter Aobaeki et Kami-Onory (n. 6199, 31 Jul.) lecta est.

Guttiferae.

- 273. *Hypericum Gebleri*** Ledeb. Fl. Alt. III. p. 364 et Fl. Ross. I. p. 446; Fr. Schm. l. c. p. 119; Miyabe-Miyake, l. c. p. 78.
In herbidis prope Tim. (n. 6262, 3 Aug.) lectum est.

Violaceae.

- 274. *Viola Selkirkii*** Pursh. : Miyabe-Miyake, l. c. p. 57; Kudo, l. c. p. 130. (= *Viola umbrosa* Fr. Schm. l. c. p. 115.)
In sylvis picetis inter Hinaneki et Aobaeki (n. 6172, 30 Jul.) inventum est.
- 275. *Viola repens*** Turcz. : Fr. Schm. l. c. ed. ross. p. 124; Kudo, l. c. p. 131. (= *Viola epipsilla* Miyabe-Miyake, l. c. p. 57, non Ledeb.)
In tundra prope Parukata (n. 6424, 10 Aug.) et prope Alexandrowsk (n. 6091, 26 Jul.) lecta est.
- 276. *Viola Langsdorfii*** Fisch. : Fr. Schm. l. c. p. 115; Miyabe-Miyake, l. c. p. 58; Kudo, l. c. p. 132.
In humidis prope Vershnij Armudan (n. 6651, 24 Aug.) visa est. Etiam prope Pilwo (Porokotan) a S. Ishino anno 1922 lecta est.

Oenotheraceae.

- 277. *Epilobium angustifolium*** L. : Fr. Schm. l. c. p. 129; Miyabe-Miyake, l. c. p. 175; Kudo, l. c. p. 133.
In herbidis prope Rikowskoie (n. 6282, 4 Aug.) obviam factum est.
Et etiam prope Chaiwo a Y. Kusano 1921 lectum est.
- 278. *Epilobium palustre*** L. : Fr. Schm. l. c. p. 129; Miyabe-Miyake, l. c. p. 179; Kudo, l. c. p. 134.
Ad ripas fluviorum (n. 6047, 25 Jul.) et in tundra (n. 6093, 26 Jul.) prope Alexandrowsk obviam factum est
- 279. *Epilobium glandulosum*** Lehm. : Miyabe-Miyake, l. c. p. 179; Kudo, l. c. p. 134. (= *Epilobium affine* Bong. : Fr. Schm. l. c. p. 129.)
In tundra prope Alexandrowsk (n. 6092, 26 Jul.); in herbidis prope Vershnij Armudan (n. 6652, 24 Aug.); in humidis inter Aobaeki et Kami-Onory (n. 6201, 31 Jul.) decerptum est.
- 280. **Epilobium Behringianum*** Hausskn. : Miyabe-Miyake, l. c. p. 180; Kudo, l. c. p. 135.
In humidis inter Pilwo (Porokotan) et Hinaneki (n. 6154, 22 Jul.) inventum est.
- 281. *Circaea alpina*** L. : Fr. Schm. l. c. p. 129; Miyabe-Miyake, l. c. p. 181; Kudo, l. c. p. 136.
In sylvis picetis inter Aobaeki et Kami-Onory (n. 6200, 31 Jul.) lecta est.

Hippuridaceæ.

282. *Hippuris vulgaris L. : Miyabe-Miyake, l. c. p. 170; Kudo, l. c. p. 136. (= *Hippuris montana* Fr. Schm. l. c. p. 130, non Ledeb.)

In tundra prope Agui miss (n. 6531, 13 Aug.) et in aquis tundrae prope Alexandrowsk (n. 6096, 26 Jul.) inventa est.

Umbelliferae.

283. *Anthriscus sylvestris Hoffm. : Miyabe-Miyake, l. c. p. 190; Kudo, l. c. p. 136.

In herbis inter Kami-Onory et Onory (n. 6233, 1 Aug.) visa est.

var. **nemorosa** Kudo, l. c. p. 137. (= *Anthriscus nemorosa* Spr. : Fr. Schm. l. c. p. 140; Miyabe-Miyake, l. c. p. 191.)

In herbis inter Rikowskoie et Adotimowo (n. 6312, 6 Aug.) lecta est.

284. Pleurospermum austriacum Hoffm. : Miyabe-Miyake, l. c. p. 196; Kudo, l. c. p. 137. (= *Pleurospermum kamtschaticum* Hoffm. : Fr. Schm. l. c. p. 140.)

In decliviis herbis prope Pilwo (Porokotan) (n. 6107, 29 Jul.) inventa est.

385. Bupleurum longiradiatum Turcz. var. **breviradiatum** Fr. Schm. in Maxim. Prim. Fl. Amur. p. 125; Wolf, in Engl. Pfl.-reich. IV. 228. p. 53; Miyabe-Miyake, l. c. p. 186. (= *Bupleurum sachalinense* Fr. Schm. l. c. p. 135.)

In herbis prope Pilwo (Porokotan) (n. 6110, 28 Jul.) lectum est.

286. *Sium cicutaeifolium Gmel. : Ledeb. Fl. Ross. II. p. 260; Rupr. Rev. Umb. Kamts. p. 25; Fr. Schm. l. c. p. 135; Miyabe-Miyake, l. c. p. 189.

In tundra prope Parukata (n. 6425, 10 Aug.), prope Alexandrowsk (n. 6097, 26 Jul.); in ripariis prope Tim (n. 6263, 3 Aug.) decerptum est.

287. Cnidium ajanense Drude : Miyabe-Miyake, l. c. p. 195; Kudo, l. c. p. 137. (= *Tilingia ajanense* Rgl. : Fr. Schm. l. c. p. 135.)

In arenosis litoralibus prope Agui miss (n. 6510, 3 Aug.) nobis lectum, etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

288. Aegopodium alpestre Ledeb. Fl. Alt. I. p. 354, et Fl. Ross. II. p. 248; Fr. Schm. l. c. p. 135; Miyabe-Miyake, l. c. p. 188.

In sylvis picetis inter Hinaneki et Aobaeki (n. 6173, 30 Jul.) observatum est.

289. *Ligusticum scoticum L. : Miyabe-Miyake, l. c. p. 193; Kudo, l. c. p. 138. (= *Haloscias scoticum* Fries : Fr. Schm. l. c. p. 185.)

In rupestribus prope Djonkier (n. 6018, 23 Jul.) in conspectum venit.

290. Conioselinum kamtschaticum Rupr. Umbell. Kamtsch. p. 22; Fr. Schm. l. c. p. 135; Miyabe-Miyake, l. c. p. 194, pl. 7, f. 1-2.

In herbis prope Rikowskoie (n. 6706, 4 Aug.) lectum est.

291. *Angelica usrina* Benth. in Benth. et Hook. Gen. Pl. I. p. 916; Maxim. Mém. Biol. IX. p. 652; Miyabe-Miyake, l. c. p. 197. (= *Angelophyllum ursinum* Rupr.: Fr. Schm. l. c. p. 136.)

In herbis prope Vershnij Armudan (n. 6654, 24 Aug.) lectum est.

292. *Angelica refracta* Fr. Schm. l. c. p. 138; Miyabe-Miyake, l. c. p. 198; Kudo, l. c. p. 139.

In tundra prope Alexandrowsk (n. 6697, 26 Jul.) inventa est.

293. *Angelica Maximowiczii* Benth. in Benth. et Hook. Gen. Pl. I. p. 916; Miyabe-Miyake, l. c. p. 199, pl. 7, f. 3-5. (= *Gomphopetalum Maximowiczii* Fr. Schm. in Maxim. Prim. Fl. Amur. p. 126 et l. c. p. 136.)

In sylvis laricetis prope Pubuny (n. 6356, 8 Aug.), inter Rikowskoie et Adotimowo (n. 6313, 6 Aug.); in herbis prope Vershnij Armudan (n. 6653, 24 Aug.) inventa est.

294. *Phellopterus littoralis* Benth. in Benth. et Hook. Gen. Pl. I. p. 905; Fr. Schm. l. c. p. 138; Miyabe-Miyake, l. c. p. 192.

In arenosis litoralibus prope Agui miss (n. 6682, 12 Aug.) lectus est.

295. *Heracleum lanatum* Michx.: Miyabe-Miyake, l. c. p. 202; Kudo, l. c. p. 139. (= *Heracleum barbatum* Ledeb.: Fr. Schm. l. c. p. 138.)

In herbis prope Pilwo (Porokotan) (n. 6699, 28 Jul.) inventum est.

Cornaceæ.

296. *Cornus tatarica* Mill. Gard. Dict. ed. 8, n. 7; Koehne, Deutsch. Dendrol. (1893) p. 436 et in Mitt. Deutsch. Dendrol. Gesellsch. XII. p. 38. (= *Cornus sibirica* Lodd. in Loud. Hort. Brit. (1830) p. 50; Fr. Schm. l. c. p. 141. = *Cornus alba* L. subsp. *tatarica* Wang. in Engl. Pfl.-reich. IV. 229. p. 55; Miyabe-Miyake, l. c. p. 208. =? *Cornus subumbellata* Komatsu, in Matsum. Icon. Koishikav. II. p. 57, pl. 113.)

In sylvis deciduis ripariis fl. Tymi inter Pubuny et Parukata (n. 6604, 18 Aug.); in humidis prope Pubuny (n. 6369, 8 Aug.); in sylvis picetis inter Kami-Onory et Onory (n. 6243, 1 Aug.) lecta est.

Figula *Corni subumbellatae* bene respondet speciminibus nostris et omnibus sachalinensibus in herbario nostro servatis, praeter inflorescentias glaberrimas. Inflorescentia speciminum nostrorum rufo-villosae sunt.

297. *Cornus suecica* L.: Fr. Schm. l. c. p. 141; Miyabe-Miyake, l. c. p. 210; Kudo, l. c. p. 139.

In arenosis litoralibus prope Agui miss (n. 6489, 12 Aug.); in tundra prope Nyiwo-Shubitai (n. 6463, 12 Aug.); ad ripas fluviorum prope Alexandrowsk (n. 6049, 25 Jul.) observata est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

298. *Cornus canadensis* L.: Fr. Schm. l. c. p. 141; Miyabe-Miyake, l. c. p. 209; Kudo, l. c. p. 140.

In sylvis laricetis prope Parukata (n. 6450, 10 Aug.); in tundra prope Parukata (n. 6426, 10 Aug.) et in sylvis picetis inter Aobaeki et Kami-Onory (n. 6202, 31 Jul.) collectum est.

Metachlamydeæ.

Piraceæ.

299. Moneses uniflora A Gray, Man. p. 273; Britt. & Br. Ill. Fl. II. p. 553; Miyabe-Miyake, l. c. p. 315. (= *Moneses grandiflora* Salisb.: Fr. Schm. l. c. p. 158.)

In sylvis fl. Vjachtu a Yoshie 24 Juli anni 1922 lecta est.

300. Pyrola minor L.: Fr. Schm. l. c. p. 158; Miyabe-Miyake, l. c. p. 314; Kudo, l. c. p. 140.

In tundra prope Parukata (n. 6707, 4 Aug.) inventa est.

Ericaceæ.

301. Ledum palustre L.: Kudo, l. c. p. 141.

var. **vulgare** Ledeb. Fl. Ross. II. p. 923; Fr. Schm. l. c. p. 158; Busch, Ericac. in Fl. Sib. Or. Extr. p. 7; Miyabe-Miyake, l. c. p. 308.

In arenosis litoralibus prope Agui miss (n. 6511, 13 Aug.); in tundra ins. Mobio (n. 6550, 14 Aug.), prope Nyiwo-Shubitai (n. 6465, 12 Aug.) et prope Parukata (n. 6429, 10 Aug.) lectum est.

var. **dilatatum** Wahlenb.: Fr. Schm. l. c. p. 158; Miyabe-Miyake, l. c. p. 308; Kudo, l. c. p. 141.

In arenosis litoralibus prope Agui miss (n. 6521, 13 Aug.); in tundra prope Parukata (n. 6429, 10 Aug.), prope Pubuny (n. 6365, 8 Aug.); in sylvis laricetis prope Parukata (n. 6451, 10 Aug.), prope Rikowskoie (n. 6300, 4 Aug.); et in sylvis picetis inter Hinaneki et Aobaeki (n. 6174, 30 Jul.) lectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

302. Rhododendron parvifolium Adams.: Maxim. Rhod. As. Or. p. 17; Fr. Schm. l. c. p. 158; Miyabe-Miyake, l. c. p. 309, pl. 9, f. 3-7.

Prope Chaiwo a Y. Kusano anno 1921 lectum est.

303. Loiseleuria procumbens Desv.: Fr. Schm. l. c. p. 157; Miyabe-Miyake, l. c. p. 306; Kudo, l. c. p. 142.

In arenosis litoralibus prope Agui miss (n. 6513, 13 Aug.) in tundra ins. Mobio (n. 6551, 14 Aug.) obviam facta est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

304. Phyllodoce coerulea Babington: Britt. & Br. Ill. II. p. 565; Miyabe-Miyake, l. c. p. 307. (= *Phyllodoce taxifolia* Salisb.: DC. Prodr. VII. p. 713; Maxim. Rhod. As. Or. p. 6; Fr. Schm. Fl. Amg.-Bur. p. 54.)

In litoralibus prope Vjachtu a Yoshie 13 Jul. anni 1922 lecta; prope Chaiwo a Y. Kusano anno 1921 lecta est.

305. Andromeda polifolia L.: Fr. Schm. l. c. p. 157; Miyabe-Miyake, l. c. p. 306; Kudo, l. c. p. 144.

In tundra prope Agui miss (n. 6532, 13 Aug.), ins. Mobio (n. 6548, 14 Aug.), et prope Nyiwo-Shubitai (n. 6585, 15 Aug.) lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

306. Chamaedaphne calyculata Moench.: Britt. & Br. III. Fl. II. p. 570; Miyabe-Miyake, l. c. p. 305; Busch, l. c. p. 75. (= *Cassandra calyculata* Don: Ledeb. Fl. Ross. II. p. 911; Fr. Schm. l. c. p. 157.)

In tundra ins. Mobio (n. 6549, 14 Aug.), prope Nyiwo-Shubitai (n. 6464, 12 Aug.), prope Parukata (n. 6427, 10 Aug.) inventa est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

307. Arctuos alpina Niedenzu: Miyabe-Miyake, l. c. p. 302; Kudo, l. c. p. 145. (= *Arctostaphylos alpina* Spr.: Fr. Schm. l. c. p. 157.)

In arenosis litoralibus prope Agui miss (n. 6490, 12 Aug.) reperta est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

308. Arctostaphylos uva-ursi L.: DC. Prodr. VII. p. 584; Ledeb. Fl. Rcss. II. p. 909; Fr. Schm. l. c. p. 157; Miyabe-Miyake, l. c. p. 303.

Prope Chaiwo a Y. Kusano anno 1921 lecta est.

309. Oxycoccus palustris Pers.: Fr. Schm. l. c. p. 157; Kudo, l. c. p. 145. (= *Vaccinium Oxycoccus* L.: Miyabe-Miyake, l. c. p. 298.)

In tundra prope Agui miss (n. 6533, 13 Aug.), prope Parukata (n. 6430, 10 Aug.), et prope Alexandrowsk (n. 6099, 20 Jul.) lectus est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventus est.

310. Oxycoccus microcarpus Turcz.: Fr. Schm. l. c. p. 157. (= *Vaccinium microcarpum* Miyabe-Miyake, l. c. p. 299.)

In tundra ins. Mobio (n. 6552, 14 Aug.) et prope Parukata (n. 6431, 10 Aug.) collectus est.

311. Vaccinium Vitis-idaea L.: Fr. Schm. l. c. p. 155; Miyabe-Miyake, l. c. p. 299; Kudo, l. c. p. 146.

In arenosis litoralibus prope Agui miss (n. 6491, 12 Aug.); in tundra prope Nyiwo-Shubitai (n. 6467, 12 Aug.); in sylvis laricetis prope Parukata (n. 6452, 10 Aug.); in sylvis picetis Hinaneki et Aobaeki (n. 6176, 30 Jul.), inter Aobaeki et Kami-Onory (n. 6204, 31 Jul.) lectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

312. Vaccinium uliginosum L.: Fr. Schm. l. c. p. 156; Miyabe-Miyake, l. c. p. 300; Kudo, l. c. p. 146.

In arenosis litoralibus prope Agui miss (n. 6514, 13 Aug.); in tundra prope Agui miss (n. 6534, 13 Aug.), ins. Mobio (n. 6553, 14 Aug.), prope Nyiwo-Shubitai (n. 6466, 12 Aug.), inter Vigrechi et Katangri (n. 6570, 15 Aug.), prope Parukata (n. 6453, 10 Aug.) et Pubuny (n. 6266, 8 Aug.) collectum est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventum est.

313. Vaccinium ovalifolium Sm.: Fr. Schm. l. c. p. 156; Miyabe-Miyake, l. c. p. 301; Kudo, l. c. p. 147.

In sylvis laricetis prope Pubuny (n. 6358, 8 Aug.); in sylvis picetis inter Hinaneki et Aobaeki (n. 6175, 30 Jul.) et inter Aobaeki et Kami-Onory (n. 6203, 31 Jul.) lectum est.

314. Vaccinium praestans Lamb.: DC. Prodr. VII. p. 574; Ledeb. Fl. Ross. II. p. 904; Fr. Schm. l. c. p. 156; Miyabe-Miyake, l. c. p. 300.

In sylvis laricetis prope Pubuny (n. 6357, 8 Aug.); in tundra prope

Alexandrowsk (n. 6098, 26 Jul.) obviam factum est.

Primulaceæ.

315. *Cortusa Matthioli* L.: Ledeb. Fl. Ross. III. p. 22; Fr. Schm. l. c. p. 159; Ito, Icon. Pl. Jap. I. t. 18; Miyabe-Miyake, l. c. p. 319.

In herbidis prope Pilwo (Porokotan) (n. 6118, 28 Jul.); in sylvis picetis inter Hinaneki et Aobaeki (n. 6177, 30 Jul.) lecta est.

316. *Naumburgia thyrsoflora* Duby, in DC. Prodr. VII. p. 60; Ledeb. Fl. Ross. III. p. 25; Fr. Schm. l. c. p. 159. (= *Lysimachia thyrsoflora* L.: Pax u. Knuth, in Engl. Pfl.-reich. IV. 237. p. 302; Miyabe-Miyake, l. c. p. 320.

In tundra prope Parukata (n. 6433, 10 Aug.) et prope Alexandrowsk (n. 6100, 26 Jul.) inventa est.

317. *Trientalis europaea* L.: Fr. Schm. l. c. p. 159; Kudo, l. c. p. 149.

var. *arctica* Ledeb.: Miyabe-Miyake, l. c. p. 322.

Prope Pilwo (Porokotan) a S. Ishino anno 1922 lecta est.

var. *eurasiatica* R. Knuth: Miyabe-Miyake, l. c. p. 321.

In arenosis litoralibus prope Agui miss (n. 6359, 13 Aug.); in tundra prope Nyiwo-Shubitai (n. 6467, 12 Aug.); in sylvis laricetis prope Pubuny (n. 6359, 8 Aug.) reperta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

318. *Glaux maritima* L.: Ledeb. Fl. Ross. III. p. 23; Fr. Schm. l. c. p. 159; Pax et Knuth, l. c. p. 319; Miyabe-Miyake, l. c. p. 322.

In arenosis litoralibus prope Agui miss (n. 6492, 12 Aug.) lecta est.

Gentianaceæ.

319. **Gentiana auriculata* Pall.: Fr. Schm. l. c. p. 160; Miyabe-Miyake, l. c. p. 329; Kudo, l. c. p. 150.

Prope Chaiwo a Y. Kusano anno 1921 inventa est.

320. **Gentiana axillariflora* Lev'l. et Vnt. in Bull. Soc. Bot. France (1906) p. 648. (= *Gentiana jesoana* Nakai, Bot. Mag. Tokyo, XXIII. p. 106; Miyabe-Miyake, l. c. p. 328.)

In humidis inter Adotimowo et Derbinskoie (n. 6632, 23 Aug.); in herbidis prope Vershnij Armudan (n. 6655, 24 Aug.) decerpta est.

321. *Halenia sibirica* Borkh.: Fr. Schm. l. c. p. 160; Miyabe-Miyake, l. c. p. 330; Kudo, l. c. p. 151.

In herbidis prope Pilwo (Porokotan) (n. 6700, 28 Jul.) inventa est.

322. **Menyanthes trifoliata* L.: Fr. Schm. l. c. p. 160; Miyabe-Miyake, l. c. p. 331; Kudo, l. c. p. 151.

In tundra prope Alexandrowsk (n. 6698, 26 Jul.) inventa est.

Polemoniaceæ.

- 323. *Polemonium coeruleum* L.:** Fr. Schm. l. c. p. 160.
*var. **racemosum** Miyabe et Kudo, in Trans. Sapporo Nat. Hist. Soc. IV. p. 99; Miyabe-Miyake, l. c. p. 332.
In tundra prope Parukata (n. 6434, 10 Aug.) et prope Alexandrowsk (n. 6122, 26 Jul.) lectum est.
*var. **laxiflorum** Miyabe et Kudo, l. c. p. 100; Miyabe-Miyake, l. c. p. 333.
In sylvis prope Pilwo (Porokotan) (n. 6143, 28 Jul.) inventum est.
324. **Polemonium villosum* Rud.: Miyabe-Miyake, l. c. p. 333; Kudo, l. c. p. 152.
Prope Chaiwo a Kusano anno 1921 lectum est.

Borraginaceæ.

- 325. *Myosotis silvatica* Hoffm.:** Fr. Schm. l. c. p. 161; Miyabe-Miyake, l. c. p. 336.
In sylvis laricetis inter Rikowskoie et Adotimowo (n. 6314, 6 Aug.) et prope Rikowskoie (n. 6301, 4 Aug.); in sylvis picetis inter Aobaeki et Kami-Onory (n. 6205, 31 Jul.) a nobis, prope Pilow (Porokotan) a S. Ishino anno 1922 lecta est.
326. *Mertensia maritima* G. Don.: Fr. Schm. l. c. p. 161; Miyabe-Miyake, l. c. p. 336.—subsp. **asiatica** Takeda: Kudo, l. c. p. 152.
In arenosis litoralibus prope Agui miss (n. 6494, 12 Aug.) visa est.

Labiatae.

- 327. **Scutellaria yezoensis* Kudo,** Labiat. Yezo. in Journ. Coll. Sc. Imp. Univ. Tokyo, XLIII. 8. p. 12.
Ad ripas humidias fl. Tymi inter Pubuny et Parukata (n. 6605, 17 Aug.); in tundra sicca prope Alexandrowsk (n. 6036, 25 Jul.) inventa est.
328. **Prunella vulgaris* L. var. *japonica* Kudo, Lab. Yezo. p. 23.
In tundra inter Kamisheff et Vtoroie Arcovo (n. 6678, 25 Aug.) collecta est.
329. **Galeopsis Tetrahit* L. var. *bifida* Syme: Kudo, Lab. Yezo. p. 26.
In herbis prope Vershnij Armudan (n. 6709, 24 Aug.) inventa est.
330. *Lamium album* L.: Kudo, Lab. Yezo: p. 27.
In herbis inter Pilwo (Porokotan) et Hinaneki (n. 6156, 29 Jul.) lectum est.
331. *Stachys japonica* Miq.—form. c. *villosa* Kudo, Lab. Yezo. p. 32.

In herbis ripariis fl. Tymi inter Pubuny et Adotimowo (n. 6612, 21 Aug.) obviam facta est.

332. *Lycopus parviflorus Maxim. : Kudo, Lab. Yezo. p. 42.

In tundra prope Alexandrowsk (n. 6102, 26 Jul.) collectus est.

333. *Mentha sachalinensis Kudo, Lab. Yezo. p. 47.

Ad ripas arenosas fl. Tymi inter Pubuny et Parukata (n. 6379, 9 Aug.) reperta est.

Scrophulariaceae.

334. Linaria japonica Miq. Procl. Fl. Jap. p. 47; Miyabe-Miyake, l. c. p. 342. (= *Linaria geminiflora* Fr. Schm. l. c. p. 161.)

In arenosis litoralibus prope Agui miss (n. 6495, 12 Jul.) decerpta est.

335. *Veronica longifolia L.: Ledeb. Fl. Ross. III. p. 232. -var. **subsessilis** Miq. : Miyabe-Miyake, l. c. p. 345.

In herbis prope Pilwo (Porokotan) (n. 6111, 28 Jul.) lecta est.

336. *Veronica serpyllifolia L. Spec. Pl. ed. 1, p. 12; Ledeb. Fl. Ross. III. p. 248; Fr. Schm. l. c. p. 163; Miyabe-Miyake, l. c. p. 348.

In sylvis laricetis prope Pubuny (n. 6360, 8 Aug.); in tundra prope Alexandrowsk (n. 6103, 26 Jul.); in herbis prope Vershnij Armudan (n. 6656, 24 Aug.) lecta est.

337. Veronica Schmidtiana Rgl.: Fr. Schm. l. c. p. 162; Miyabe-Miyake, l. c. p. 348.

In herbis inter Onory et Kami-Onory (n. 6236, 1 Aug.) lecta est.

338. Rhinanthus minor Ehrh. Beitr. VI. p. 144; DC. Prodr. X. p. 557; Miyabe-Miyake, l. c. p. 350.

In herbis prope Djonkier (n. 6011, 23 Jul.) et prope Pilwo (Porokotan) (n. 6107, 28 Jul.); in opp. Alexandrowsk (n. 6027, 25 Jul.) lectus est.

339. Pedicularis resupinata L.: Fr. Schm. l. c. p. 163; Miyabe-Miyake, l. c. p. 352; Kudo, l. c. p. 156.

In herbis ripariis fl. Tymi inter Parukata et Pubuny (n. 6606, 19 Aug.), prope Pilwo (Porokotan) (n. 6137, 28 Jul.) et inter Kami-Onory et Onory (n. 6235, 1 Aug.) inventa est.

340. Pedicularis euphrasioides Steph.: Fr. Schm. l. c. p. 163; Miyabe-Miyake, l. c. p. 354; Kudo, l. c. p. 157.

In tundra prope Agui miss (n. 6535, 13 Aug.); prope Nyiwo-Shubitai (n. 6586, 15 Aug.) reperta est. - Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

341. Pedicularis sudetica Willd.: Fr. Schm. l. c. p. 163; Kudo, l. c. p. 157. (= *Pedicularis villosa* Ledeb. var. *glabrata* Maxim. Mém. Biol. X. p. 115; Miyabe-Miyake, l. c. p. 355.)

In tundra prope Agui miss (n. 6536, 13 Aug.) decerpta est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

Corolla rosea, glabra, galea rostro dentibus brevibus buobus praedita. Spica brevis, densa.

Orobanchaceæ.

- 342. **Boschniakia glabra*** C. A. Mey.: Fr. Schm. l. c. p. 164; Miyabe-Miyake, l. c. p. 357; Kudo, l. c. p. 158.
In sylvis deciduis inter Aobaeki et Kami-Onory (n. 6206, 31 Jul.), inter Kami-Onory et Onory (n. 6237, 1 Aug.) lecta est.

Plantaginaceæ.

- 343. **Plantago japonica*** Fr. et Sav. Enum. Pl. Jap. I. p. 384; Miyabe-Miyake, l. c. p. 372.
In herbis prope Tim (n. 6264, 3 Aug.) lecta est.
- 344. *Plantago kamtschatica*** Link.: Ledeb. Fl. Ross. III. p. 478; Fr. Schm. l. c. p. 165; Miyabe-Miyake, l. c. p. 373.
Prope Pilwo (Porokotan) a S. Ishino anno 1922 inventa est.

Rubiaceæ.

- 345. **Galium trifloriforme*** Kom. Fl. Mansh. III. p. 497, t. XI. f. *sinistr*; Miyabe-Miyake, l. c. p. 227. (= *Galium triflorum* Michx. f. *europaea* Fr. Schm. l. c. p. 144.)
In herbis inter Pilwo (Porokotan) et Hinaneki (n. 6157, 29 Jul.) inventum est.
- 346. *Galium trifidum*** L.: Fr. Schm. l. c. p. 144; Miyabe-Miyake, l. c. p. 227; Kudo, l. c. p. 159.
In tundra inter Vigrechi et Katangri (n. 6571, 15 Aug.), prope Parukata (n. 6435, 10 Aug.) et prope Alexandrowsk (n. 6104, 26 Jul.) repertum est.
- 347. *Galium verum*** L. Spec. Pl. ed. I, p. 106; Ledeb. Fl. Ross. II. p. 414; Fr. Schm. l. c. p. 145; Miyabe-Miyake, l. c. p. 228.
In herbis prope Rikowskoie (n. 6283, 4 Aug.), inter Kami-Onory et Onory (n. 6238, 1 Aug.) et prope Pilwo (Porokotan) (n. 6138, 28 Jul.) nobis collectum est. Prope Pilwo (Porokotan) a S. Ishino anno 1922 lectum est.
- 348. *Galium boreale*** L.: Kudo, l. c. p. 160. - var. **genuinum** Maxim. Prim. Fl. Amur. p. 141; Miyabe-Miyake, l. c. p. 225.
In herbis prope Tim. (n. 6265 et 6266, 3 Aug.) et prope Pilwo (Porokotan) (n. 6119, 28 Jul.) inventum est.
- 349. *Rubia jesoensis*** Miyabe et Miyake, l. c. p. 229. (= *Rubia tatarica* Trev. var. *grandis* Fr. Schm. l. c. p. 144.)
In tundra prope Parukata (n. 6436, 10 Aug.) lecta est.

Caprifoliaceæ.

- 350. *Sambucus latipinna*** Nakai, Bot. Mag. Tokyo, XXX. p. 290. -

var. **Miqueli** Nakai, in Jour. Coll. Sc. Imp. Univ. Tokyo, XLII. 2. p. 11. (= *Sambucus racemosa* L. var. *pubens* Trautv. et Mey.: Fr. Schm. l. c. p. 124. = *Sambucus racemosa* L. var. *pubescens* Miq.: Miyabe-Miyake, l. c. p. 214.)—form. **latifolia** Nakai, in Journ. Coll. Sc. Imp. Univ. Tokyo, XLII. 2. p. 12.

Inter Kamisheff et Vtoroie Arcovo (n. 6689, 26 Aug.) lecta est.

351 *Linnaea borealis* L.: Fr. Schm. l. c. p. 143; Miyabe-Miyake, l. c. p. 217; Kudo, l. c. p. 161.

In sylvis laricetis prope Parukata (n. 6454, 10 Aug.), prope Pubuny (n. 6361, 8 Aug.), prope Rikowskoie (n. 6302, 4 Aug.) observata est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

352. *Lonicera coerulea* L.: Kudo, l. c. p. 161.—var. **edulis** Rgl. Russk. Dendr. p. 144; Rehd. Syn. Lonic. p. 72; Miyabe-Miyake, l. c. p. 221. (= *Lonicera coerulea* L. var. *villosa* Fr. Schm. l. c. p. 143, non Torr. et Gr.)

In sylvis laricetis inter Onory et Rikowskoie (n. 6252, 2 Aug.) inventa est.

Folia saepe oblonga utrinque hirsuta. Bacca ovoideo-oblonga.

353. *Lonicera Glehni* Fr. Schm. l. c. p. 143, t. 3, f. 8–13; Miyabe-Miyake, l. c. p. 219.

In fruticetis inter Kamisheff et Vtoroie Arcovo (n. 5678, 25 Aug.), prope Vershnij Armudan (n. 6679, 24 Aug.), inter Pilwo (Porokotan) et Hinaneki (n. 6155, 29 Jul.) lecta est.

354. *Lonicera Chamissoi* Bge.: Fr. Schm. l. c. p. 142; Rehd. Syn. Lonic. p. 117; Miyabe-Miyake, l. c. p. 220.

In sylvis laricetis inter Vigrechi et Katangri (n. 6566, 15 Aug.), prope Nyiwo-Shubitai (n. 6581, 15 Aug.), inter Rikowskoie et Adotimowo (n. 6315, 6 Aug.) et prope Rikowskoie (n. 6393, 4 Aug.); in tundra prope Alexandrowsk (n. 6105, 26 Jul.) observata est. Etiam prope Chaiwo a Y. Kusano anno 1921 lecta est.

355. *Lonicera chrysantha* Turcz.: Fr. Schm. l. c. p. 142; Rehd. Syn. Lonic. p. 139; Miyabe-Miyake, l. c. p. 220.

In herbis Kami-Onory et Onory (n. 6239, 1 Aug.) inventa est.

Valerianaceæ.

356. *Valeriana officinalis* L.: DC. Prodr. IV. p. 641; Ledeb. Fl. Ross. II. p. 438; Miyabe-Miyake, l. c. p. 231.—var. **pubescens** Fr. Schm. l. c. p. 145.

In herbis prope Pilwo (Porokotan) (n. 6115, 28 Jul.) lecta est.

Cucurbitaceæ.

357. *Schizopepon bryoniaefolium* Maxim. Prim. Fl. Amur. p. 111,

- t. 6; Fr. Schm. l. c. p. 131; Miyabe-Miyake, l. c. p. 182.
In fruticetis inter Rikowskoie et Adotimowo (n. 6307, 6 Aug.) et inter
Pilwo (Porokotan) et Hinanecki (n. 6158, 29 Jul.) lectus est.

Campanulaceæ.

- 358. *Lobelia sessilifolia*** Lamb. in Trans. Linn. Soc. X. p. 260, t. 5;
Fr. Schm. l. c. p. 154; Miyabe-Miyake, l. c. p. 291.
In humidis inter Rikowskoie et Adotimowo (n. 6316, 6 Aug.) lecta est.

Compositæ.

- 359. *Solidago Virgaurea*** L.: Fr. Schm. l. c. p. 147; Miyabe-Miyake,
l. c. p. 236; Kudo, l. c. p. 163.
In tundra prope Parukata (n. 6438, 10 Aug.) lecta est. Etiam prope
Chaiwo a Y. Kusano anno 1921 inventa est.
- 360. *Aster Glehni*** Fr. Schm. l. c. p. 146; Miyabe-Miyake, l. c. p.
239.
In herbidis prope Vershnij Armudan (n. 6659, 24 Aug.) repertus est.
- 361. ***Erigon acre*** L.: Kudo, l. c. p. 164.
In herbidis inter Kami-Onory et Onory (n. 6241, 1 Aug.) inventum. est.
- 362. *Erigeron kamschaticum*** DC.: Fr. Schm. l. c. p. 147; Kudo,
l. c. p. 164. (= *Erigeron acre* L. var. *kamschaticum* Herd.: Miyabe-Miyake,
l. c. p. 240.)
In herbidis prope Vershnij Armudan (n. 6662, 24 Aug.), prope Tim (n.
6267, 3 Aug.) repertum est.
- 363. *Antennaria dioica*** Gärtn.: Fr. Schm. l. c. p. 151; Miyabe-
Miyake, l. c. p. 242; Kudo, l. c. p. 164.
In sylvis laricetis prope Parukata (n. 6455, 10 Aug.); in rupestribus et
glareosis prope Djonkier (n. 6014, 23 Jul.) collecta est. Etiam prope Chaiwo
a Y. Kusano anno 1921 inventa est.
- 364. *Anaphalis margaritacea*** Benth. et Hook.: Fr. Schm. l. c. p.
151; Miyabe-Miyake, l. c. p. 243; Kudo, l. c. p. 165.
In sylvis laricetis inter Pubuny et Adotimowo (n. 6626, 20 Aug.) et
tundra sicca prope Alexandrowsk (n. 6039, 25 Jul.) inventa est.
- 365. *Gnaphalium uliginosum*** L. Spec. Pl. ed. 1, p. 856; Ledeb. Fl.
Ross. II. p. 609; Fr. Schm. l. c. p. 150; Miyabe-Miyake, l. c. p. 243.
In humidis inter Adotimowo et Pubuny (n. 6328, 7 Aug.); in tundra
sicca prope Alexandrowsk (n. 6046, 25 Jul.) inventum est.
- 366. ***Gnaphalium norvegicum*** Gunner, Fl. Norweg. II. p. 105;
Britt. & Br. III. Fl. III. p. 403.
In herbidis prope Vershnij Armudan (n. 6658, 24 Aug.); et in tundra
sicca prope Alexandrowsk (n. 6045, 25 Jul.) collectum est.

367. *Inula britannica L. Spec. Pl. ed. 1, p. 882; Ledeb. Fl. Ross. II. p. 505; Miyabe-Miyake, l. c. p. 245.

var. **intermedia Rgl. Tent. Fl. Ussuri. p. 85.

In opp. Alexandrowsk (n. 6034, 25 Jul.) lecta est.

var. **tymiensis Kudo, var. nov. (= *Inula tymiensis* Kudo, in Schid. Herb. Milit. Admin. Saghalien Exped. Fors.)

Caulis ultra pedalis, 2-oligo-cephalus, sericeo-hirsutus. Folia lineari-lanceolata, apice obtusa et prominente punctata, supra parce subtus plusminus dense sericeo-hirsuta, margine minute denticulata. Involucri squamae subulato-lineares vel lanceolato-lineares, apice acuminatae, sericeo-villosae. Capitula majora, ca. 4. 2 cm in diametro longa.

In arenosis ripariis fl. Tymi inter Pubuny et Parukata (n. 6380, 9 Aug.); et in herbosis ripariis fl. Tymi inter Parukata et Pubuny (n. 6608, 18 Aug.) lecta est.

368. *Bidens radiata Thuil. : Fr. Schm. l. c. p. 147; Miyabe-Miyake, l. c. p. 246.

In humidis prope Pubuny (n. 6370, 8 Aug.); et in herbidis prope Vershnij Armudan (n. 6660, 24 Aug.) reperta est.

369. Achillea sibirica Ledeb. : Miyabe-Miyake, l. c. p. 247; Kudo, l. c. p. 165. (= *Achillea mongolica* DC. : Fr. Schm. l. c. p. 147.)

In herbidis ripariis fl. Tymi inter Pubuny et Adotimowo (n. 6613, 21 Aug.) lecta est.

370. **Achillea Millefolium L. Spec. Pl. ed. 1, p. 899. - var. **occidentalis** DC. Prodr. VI. p. 24; Ledeb. Fl. Ross. II. p. 532.

In herbidis prope Rikowskoie (n. 6284, 4 Aug.) inventa est.

371. Matricaria ambigua Miyabe, Fl. Kuril. p. 242; Miyabe-Miyake, l. c. p. 249. (= *Pyrethrum ambiguum* Ledeb. Fl. Alt. IV. p. 11. = *Chamaemelum tetragonospermum* Fr. Schm. l. c. p. 148.)

372. *Matricaria matricarioides Porter : Kudo, l. c. p. 166. (*Matricaria descoides* DC. : Miyabe-Miyake, l. c. p. 249.)

Prope Chaiwo a Y. Kusano anno 1921 lecta est.

373. **Matricaria limosa Kudo. (= *Chamaemelum limosum* Maxim. Prim. Fl. Amur. p. 156.)

In paludibus litoralibus prope Alexandrowsk (n. 6001, 23 Jul.) inventa est.

374. Chrysanthemum Weyrichii Miyabe et Miyake, l. c. p. 251. (= *Leucanthemum?* *Weyrichii* Maxim. Prim. Fl. Amur. p. 156; Fr. Schm. l. c. p. 147.)

In rupestribus prope Pilwo (Porokotan) (n. 5127, 28 Jul.) et prope Alexandrowsk (n. 6690, 28 Aug.) lectum est. Etiam prope Pilwo (Porokotan) a S. Ishino anno 1922 inventum est.

Species distinctissima! Tamen hujus speciei una varietas (*Chrysanthemum Weyrichii*, var. *littorale* [Maekawa] = *Chrysanthemum littorale* Maekawa) ad rupes Provinciae Shiribeshi Insulae Yezo crescit.

375. Chrysanthemum arcticum L. : Fr. Schm. l. c. p. 147. - var.

Gmelini Kudo, l. c. p. 169. (= *Chrysanthemum Gmelini* Miyabe apud Miyabe-Miyake, l. c. p. 251.)

In arenosis litoralibus prope Agui miss (n. 6499, 12 Aug. et n. 6515, 13 Aug.); in tundra prope Agui miss (n. 6537, 13 Aug.) observatum est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectum est.

Si varietas haec pro specie disputaretur, secundum reges nominandi, nomen novum *Chrysanthemum Miyabeianum* ea datum esse mihi videtur.

376. *Tanacetum vulgare L.: Ledeb. Fl. Ross. II. p. 601. — var. **boreale** Trautv. et Mey. Fl. Ochot. p. 51; Fr. Schm. l. c. p. 150; Miyabe-Miyake, l. c. p. 252.

Ad ripas herbosas fl. Tymi inter Parukata et Pubuny (n. 6685, 18 Aug.); in herbidis prope Rikowskoie (n. 6293, 4 Aug.) decerptum est. Etiam prope Chaiwo a Y. Kusano anno 1921 lectum est.

377. Artemisia vulgaris L.: Kudo, l. c. p. 168.

var. **latiloba** Ledeb. Fl. Alt. IV. p. 83; Fr. Schm. l. c. p. 149; Miyabe-Miyake, l. c. p. 258.

In herbidis prope Pilwo (Porokotan) (n. 6113, 29 Jul.) lecta est.

var. **kamtschaticum** Bess.: Fr. Schm. l. c. p. 259; Kudo, l. c. p. 168. In herbidis prope Rikowskoie (n. 6285, 4 Aug.) observata est.

*var. **coarctata** Bess.: Ledeb. Fl. Ross. II. p. 587; Miyabe-Miyake, l. c. p. 259.

In arenosis litoralibus prope Agui miss (n. 6497, 12 Aug.); in herbidis inter Parukata et Nyiwo-Shubitai (n. 6457, 11 Aug.), inter Adotimowo et Pubuny (n. 6326, 7 Aug.), prope Rikowskoie (n. 6286, 4 Aug.); in tundra sicca prope Alexandrowsk (n. 6041, 25 Jul.) collecta est.

378. Artemisia sacrorum Ledeb. Fl. Ross. II. p. 578.

var. **angustiloba Kudo, var. nov.

Caulis subbipedalis. Folia parce utrinque incana vel glabra, laciniis foliorum remotis linearibus apice mucronato-acutis.

In herbidis prope Rikowskoie (n. 6288, 4 Aug.) inventa est.

379. Artemisia laciniata Willd.: Ledeb. Fl. Ross. II. p. 581. — var. **latifolia** Maxim. Mél. Boil. VIII. p. 530; Miyabe-Miyake, l. c. p. 256. (= *Artemisia latifolia* Ledeb.: Fr. Schm. l. c. p. 149.)

In herbidis prope Rikowskoie (n. 6287, 4 Aug.) obviam facta est.

380. Artemisia norvegica Fries: Kudo, l. c. p. 168. (= *Artemisia arctica* Less. var. *sachalinensis* Fr. Schm. l. c. p. 150. = *Artemisia norvegica* Fries var. *sachalinensis* A. Gray: Miyabe-Miyake, l. c. p. 256.)

In arenosis litoralibus prope Agui miss (n. 6296, 12 Aug.) visa est.

381. Artemisia Stelleriana Bess.: Fr. Schm. l. c. p. 150; Miyabe-Miyake, l. c. p. 257; Kudo, l. c. p. 169.

In arenosis litoralibus prope Agui miss (n. 6017, 23 Jul.); et rupestribus prope Djonkier (n. 6017, 23 Jul.) lecta est.

382. Petasites japonicus Miq. Prol. Fl. Jap. p. 380; Fr. Schm. l. c. p. 145; Miyabe-Miyake, l. c. p. 261. — var. **giganteus** Makino, Bot. Mag. Tokyo, XXIII. p. 18.

In humidis inter Kamisheff et Votroie Arcovo (n. 6680, 25 Aug.) observatus est.

383. *Petasites palmatus* A. Gray, Bot. Calif. I. p. 407; Miyabe-Miyake, l. c. p. 261. (= *Nardosmia palmata* Hook. : Fr. Schm. l. c. p. 146.)

Ad ripas fluviorum inter Aobaeki et Kami-Onory (n. 6207, 31 Jul.) lectus est.

384. *Cacalia auriculata* DC. var. **ochotensis** Maxim. : Kudo, Bot. Mag. Tokyo, XXIX. p. 224.

In herbidis inter Adotimowo et Derbinskoie (n. 6633, 23 Aug.) lecta est.

385. **Cacalia kamtschatica* (Maxim.) Kudo. (= *Senecio dahuricus* Schultz-Bip. var. *kamtschaticus* Maxim. Mél. Biol. IX. p. 296. = *Cacalia auriculata* DC. β . *kamtschatica* Matsum. : Kudo, in Bot. Mag. Tokyo, XXIX. p. 225.)

In herbidis inter Kami-Onory et Onory (n. 6420, 1 Aug.) lecta est.

386. *Cacalia hastata* L. var. **pubescens** Ledeb. : Kudo, Bot. Mag. Tokyo, XXIX. p. 228.

In herbidis prope Rikowskoie (n. 6289, 4 Aug.) observata est.

387. **Senecio vulgaris* L. Spec. Pl. ed. 1, p. 867; Ledeb. Fl. Ross. II. p. 628; Britt. & Br. Ill. Fl. III. p. 482; Miyabe-Miyake, l. c. p. 265.

In opp. Alexandrowsk (n. 6026, 25 Jul.) lectus est.

388. *Senecio palmatus* Pall. : Fr. Schm. l. c. p. 151; Miyabe-Miyake, l. c. p. 266; Kudo, l. c. p. 171.

In herbidis inter Kamisheff et Vtoroie Arcovo (n. 6681, 25 Aug.) reperi-
tus est.

var. **cannabifolius Kudo. (= *Senecio cannabifolius* Less. in Linnaea. VI. p. 241; DC. Prodr. VI. p. 349.)

In tundra prope Parukata (n. 6437, 10 Aug.) lectus est.

389. *Senecio nemorensis* L. : Ledeb. Fl. Ross. II. p. 641; Maxim. Prim. Fl. Amur. p. 166 et Mél. Biol. VIII. p. 151. -var. **Fuchsii** Koch. : Miyabe-Miyake, l. c. p. 267.

In herbidis inter Aobaeki et Kami-Onory (n. 6209, 31 Jul.) visa est.

390. *Ligularia speciosa* Fisch. et Mey. Ind. Sem. Hort. Petropol. V. p. 38; Maxim. Prim. Fl. Amur. p. 164; Fr. Schm. l. c. p. 151; Miyabe-Miyake, l. c. p. 270.

In herbidis prope Vershnij Armudan (n. 6663, 24 Aug.) lecta est.

391. *Cirsium Weyrichii* Maxim. Prim. Fl. Amur. p. 174; Fr. Schm. l. c. p. 153; Miyabe-Miyake, l. c. p. 279.

In herbidis Vershnij Armudan (n. 6661, 24 Aug.) et prope Pilwo (Porokotan) (n. 6139, 28 Jul.) lectum est.

392. **Cirsium pectinellum* A. Gray, Pl. Jap. p. 395. -*var. **Mamiyanum** Miyabe et Kudo, apud Miyabe-Miyake, l. c. p. 273.

In herbidis prope Rikowskoie (n. 6290, 4 Aug.) obviam factum est.

393. *Saussurea duiensis* Fr. Schm. l. c. p. 152; Miyabe-Miyake, l. c. p. 278.

In herbidis prope Vershnij Armudan (n. 6664, 24 Aug.) et inter Aobaeki et Kami-Onory (n. 6208, 31 Jul.) lecta est.

394. *Saussurea acuminata* Turcz. : Ledeb. Fl. Ross. II. p. 667; Fr. Schm. l. c. p. 152; Miyabe-Miyake, l. c. p. 280.

In herbidis prope Pilwo (Porokotan) (n. 6130, 28 Jul.) obviam facta est.

395. *Serratula atriplicifolia* Benth. et Hook. Gen. Pl. II. p. 475. (= *Rhaponticum atriplicifolium* DC. Prodr. VI. p. 663; Fr. Schm. l. c. p. 153.)

In herbidis inter Adotimowo et Pubuny (n. 6327, 7 Aug. foliis profunde inciso-lobatis), prope Rikowskoie (n. 6292, 4 Aug. foliis subinciso-lobatis) prope Pilwo (Porokotan) (n. 6141, 28 Jul. foliis angulato-repandis) lecta est.

396. *Picris japonica* Thunb. : Fr. Schm. l. c. p. 154; Miyabe-Miyake, l. c. p. 283; Kudo, l. c. p. 173.

In herbidis prope Tim (n. 6268, 3 Aug.) lecta est.

397. *Crepis Tatewakii*** Kudo, sp. nov.

Caulis gracilis, erectus, ca. pedalis parce longe pilosus, trifolius, uniflorus, apice turbinatus, in capitulum sensim abeuns. Folia inferiora longe petiolata, elliptico-lanceolata usque late elliptica, supra saepius glabra, subtus pallidiora, ad nervos medios petiolisque albo-hirsuta, ceterum parce pilosa, margine longe ciliata, ad basin repando-dentata, apice calloso-apiculata, laminis 3-9 cm longis, 2.-3.2 cm latis, petiolis 2.5-3.5 cm longis, caulino inferiore petiolato, medio sessili, duobus basilaribus conformibus, caulino superiore sessili lineari-subulato minore. Involucri phylli 24, subulati, longitudine variables, margine scariosi, dorso nigro-pilosi et pilis albis immixti, glandulosi vel glabri. Flores ca. 40, flaves, pappo sordide albo denticulato, achaenia immatura anguste oblonga, castanea.

In sylvis laricetis prope Adotimowo (n. 6634, 23 Aug.) lectum est.

Species distinctissima *Crepide burejensi* affinis sed signis allatis abeunde diversa.

398. *Hieracium umbellatum* L. Spec. Pl. ed. 1, p. 804; Fr. Schm. l. c. p. 154; Miyabe-Miyake, l. c. p. 285. - subsp. ***umbellatum*** Zahn, var. ***lineariifolium*** Wallr. : Zahn, in Engl. Pfl.-reich. IV. 280. Compositae-Hieracium p. 941.

In herbosis prope Nyiwo-Shubitai (n. 6575, 15 Aug.) et prope Rikowskoie (n. 6291, 4 Aug.); ad ripas herbosas fl. Tymy inter Pubuny et Parukata (n. 6607, 18 Aug.); in sylvis picetis inter Pubuny et Adotimowo (n. 6627, 20 Aug.) collecta est.

399. *Taraxacum ceratophorum* DC. : Fr. Schm. l. c. p. 154; Kudo, l. c. p. 174.

In rupestribus prope Djonkier (n. 6015, 23 Jul.) lectum est.

400. *Lactuca sibirica* Benth. : Miyabe-Miyake, l. c. p. 287; Kudo, l. c. p. 173. (= *Mulgedium sibiricum* Less. : Fr. Schm. l. c. p. 154.)

Ad ripas fluviorum prope Alexandrowsk (n. 6695, 25 Jul.) visa est.

401. *Lactuca repens* Benth. in Benth. et Hook. Gen. Pl. II. p. 526; Miyabe-Miyake, l. c. p. 287. (= *Nabalus repens* Ledeb. : Fr. Schm. l. c. p. 153.)

In arenosis litoralibus prope Agui-miss (n. 6500, 12 Aug.) inventa est.

402. *Scorzonera radiata* Fisch. aq. Ledeb. Fl. Ross. II. p. 793; Maxim. Mém. Biol. XII. p. 733; Fr. Schm. l. c. p. 153; Miyabe-Miyake, l. c. p. 290; Miyabe-Kudo, in Trans. Sapporo Nat. Hist. Soc. V. p. 149.

In herbis prope Nyiwo-Shubitai (n. 6544, 13 Aug.); in sylvis laricetis prope Parukata (n. 6456, 10 Aug.), inter Rikowskoie et Adotimowo (n. 6318, 6 Aug.) lecta est. Etiam prope Chaiwo a Y. Kusano anno 1921 inventa est.

*var. **humilis** Miyabe et Kudo. (= *Scorzonera radiata* Fisch. f. *humilis* Koidz. in Matsum. Icon. Koishikav. III. p. 31, pl. 161.)

In rupestribus prope Djonkier (n. 6016, 23 Jul.) inventa est.

May 4, 1923.

Botanical Institute, College of Agriculture,

Hokkaido Imperial University, Sapporo, Japan.

INDEX

- Abies ajanensis* Fisch. 18
 — *sachalinensis* Fr. Schm. 18
 — *Veitchi* Lindl. v. *sachalinensis* Fr. Schm. 18
Aceraceae. 46
Acer Mono Maxim. 46
 — *pictum* Thunb. v. *Mono* Pax. 46
 — *pictum* Thunb. v. *typicum* Schwerin sbv. *Mono* Pax. 46
 — *spicatum* Lam. v. *ukuruinduense* Maxim. 46
 — *ukuruinduense* Trautv. et Mey. 46
Achillea mongolica DC. 58
 — *Millefolium* L. v. *occidentalis* DC. 58
 — *sibirica* Ledeb. 58
Aconitum arcuatum Maxim. 36
 — *Lycocotium* Fr. Schm. 36
 — *neo-sachalinense* Levl. 36
 — *pallidum* Miyabe et Miyake. 36
 — *umbrosum* Kom. 36
Actaea spicata L. v. *erythrocarpa* Turcz. 36
Actinidia Kolomikta Maxim. 46
Aegopodium alpestre Ledeb. 48
Agrimonia pilosa Ledeb. 44
Agropyrum repens Beauv. 22
Agrostis hyemalis B. P. S. Presl. 21
 — *laxiflora* R. Br. 21
 — *scabra* Willd. 21
Alnus fruticosa Fr. Schm. 31
Allium lineare L. 27
 — *splendens* Willd. 27
 — *Victorialis* L. 27
Alisma Plantago L. v. *parviflorum* Torr. 20
Alismataceae. 20
Alnus hirsuta Turcz. 31
 — *incana* Willd. v. *hirsuta* Ledeb. 31
 — *Maximowiczii* Call. 31
Alopecurus fulvus Sm. 20
Ammodenia major Kudo. 35
 — *peploides* Rupr. v. *oblongifolia* Fzl. 35
Anaphalis margaritacea Benth. et Hook. 57
Andromeda polifolia L. 50
Anemone ajanensis Prantl. 37
 — *debilis* Fisch. 36
 — *dichotoma* L. 36
 — *gracilis* Fr. Schm. 36
 — *Tatewakii* Kudo. 36
Angelica Maximowiczii Benth. et Hook. 49
 — *refracta* Fr. Schm. 49
 — *ursina* Benth. 49
Angelophyllum ursinum Rupr. 49
 Angiospermae. 19
Antennaria dioica Gärtn. 57
Anthriscus nemorosa Spr. 48
 — *sylvestris* Hoffm. 48
 v. *nemorosa* Kudo. 48
Aquifoliaceae. 46
Arabis pendula L. 39
 — *Stelleri* DC. v. *genuinum* Fr. Schm. 39
Araceae. 26
 Archichlamydeae 29
Arctostaphylos alpina Spr. 51
 — *uva-ursi* L. 51
Arctuos alpina Niedz. 51
Aristolochiaceae. 32
Artemisia arctica Less. v. *sachalinensis* Fr. Schm. 59
 — *laciniata* Willd. v. *latifolia* Maxim. 59
 — *latifolia* Ledeb. v. *Maximowiczii* Fr. Schm. 59
 — *norvegica* Fries. 59
 v. *sachalinensis* A. Gray. 59
 — *sacrorum* Ledeb. v. *angustiloba* Kudo. 59
 — *Stelleriana* Bess. 59
 — *vulgaris* L. 59
 v. *coarctata* Bess. 59
 v. *kamtschatica* Bess. 59
 v. *latiloba* Ledeb. 59
Aruncus sylvester Kostel. v. *vulgaris* Maxim. 42
Arundinaria kurilensis Rupr. 22
Asarum heterotropoides Fr. Schm. 32
 — *Sieboldi* Miq. 32
Asparagus schoberioides Kunth. 27
Aspidium spinulosum Sw. ssp. *genuinum* Milde, v. *amurense* Milde. 15
Asteranthemum dahuricum Kunth. 28
 — *trifoliatum* Kunth. 27
Aster Glehni Fr. Schm. 57
Astragalus Schelichowiczii Turcz. 44
Athyrium crenatum Rupr. 15
 — *Filix-femina* Roth. v. *mejanolepis* Mak. 15
 — *Hookerianum* Moore. 16
 — *spinulosum* Milde. 16
Atriplex patula L. 34
Balsaminaceae. 46
Betula alba L. v. *typica* Fr. Schm. 31
Betulaceae. 31
Betula Ermani Cham. 31
 — *japonica* Sieb. 31
 — *Middendorffii* Trautv. et Mey. 31
 — *rotundifolia* Rgl. et Til. 31
Bidens radiata Thuil. 58
Borraginaceae. 53
Boschniakia glabra C. A. Mey. 55
Botrychium lanceolatum Angstr. 16
 — *Lunaria* L. 16
 — *Matricariae* Spr. 16
 — *rutaeifolium* A. Br. 16
Bromus ciliatus L. 22
Bupleurum longiradiatum Turcz. v. *breviradiatum* Fr. Schm. 48
 — *sachalinense* Fr. Schm. 48

- Cacalia auriculata* DC. v.
ochotensis Maxim. 60
— *hastata* L. v. *pubescens*
Ledebr. 60
— *kamtschatica* Kudo. 60
Calamagrostis hakonenensis Fr. 21
— *Langsdorffii* Trin. 21
— *sachalinensis* Fr. Schm. 21
— *villosa* Mutel. 21
Caltha palustris L. 35
v. *gigas* Levl. 36
v. *sibirica* Rgl. 36
v. *typica* Miyabe et Miya-
ke. 36
Cardamine bellidifolia L. 39
— *dasyloba* Miq. 39
— *flexuosa* With. v. *Regeliana*
Maxim. 39
— *impatiens* L. 39
— *leucantha* Schulz. 38
— *pratense* L. 39
— *Regeliana* Miq. 39
Campanulaceae. 57
Caprifoliaceae. 55
Carex ambryolepis Trautv. et
Mey. 25
— *Augustinowiczii* Meinsh. 24
— *caespitosa* L. v. *minuta*
Kük. 24
— *canescens* L. 23
v. *fallax* F. Kurtz. 23
— *cryptocarpa* C. A. Mey. 24
— *dispalata* Boott. 25
— *drymophila* Turcz. 25
— *eleusinoides* Turcz. v. *flac-*
cidior Fr. Schm. 24
— *flaccidior* Miyabe et Kudo. 24
— *glareosa* Wahlb. f. *elegan-*
tissima Kük. 23
— *Glehnii* Fr. Schm. 25
— *globularis* L. 25
— *Gmelini* Hook. et Arn. 25
— *Jackiana* Boott, v. *parciflora*
Kük. 25
— *laevirostris* Brytt. 25
— *limosa* L. 25
— *Lyngbyei* Hornem. 24
v. *prinocarpa* Kük. 24
Carex macrocephala Willd. 23
— *Middendorffii* Fr. Schm. 24
— *pallida* C. A. Mey. 23
— *parciflora* Boott. 25
— *pisiformis* Boott, v. *sachali-*
nensis Kük. 25
— *prinocarpa* Franch. 24
— *pseudo-loliacea* Fr. Schm. 24
f. *sejuncta* Kük. 24
— *rariflora* Sm. 25
— *rhyngophysa* C. A. Mey. 25
— *ruenanensis* Kudo. 25
— *sachalinensis* Fr. Schm. 25
— *Schmidtii* Meins. 24
— *soyagensis* Kük. 24
— *tenella* Schkuhr. 23
— *tenuifolia* Wahlb. 24
— *traiziscana* Fr. Schm. 23
— *tuminensis* Kom. 24
— *vesicaria* L. 25
Caryophyllaceae. 34
Celastraceae. 46
Cerastium caespitosum Gilib.
v. *glandulosum* Kudo. 35
— *Fischerianum* Fr. Schm. 35
— *Schmidtianum* Takeda. 35
— *triviale* Link. v. *glandulo-*
sum Koch. 35
— *vulgatum* L. v. *brachypeta-*
lum Fr. Schm. 35
Chamaedaphne calyculata
Moench. 51
Chamaemelum limosum Maxim. 58
— *tetragonospermum* Fr.
Schm. 58
Chenopodiaceae. 34
Chrysanthemum arcticum L.
v. *Gmelini* Kudo. 59
— *Gmelini* Miyabe. 59
— *littorale* Maek. 58
— *Miyabea* Kudo. 59
— *Weyrichii* Miyabe et Miya-
ke. 58
v. *littorale* Kudo. 58
Chrysosplenium alternifolium
L. 41
— *flagelliterum* Fr. Schm. 41
Cimicifuga simplex Fr. Schm. 36
Cimicifuga simplex Wormsk.
v. *yezoensis* Nakai. 36
— *yezoensis* Kudo. 36
Circaea alpina L. 47
Cirsium pectinellum A. Gray
v. *Mamiyanum* Miyabe et
Kudo. 60
— *Weyrichii* Maxim. 60
Clematis alpina Mill. v. *ocho-*
tensis Rgl. 37
Cnidium ajanense Drude. 48
Cochlearia oblongifolia DC. 38
Coeloglossum viride Hartm.
v. *bracteatum* Richt. 28
Comarum palustre L. 43
Compositae. 57
Conioselinum kamtschaticum
Rupr. 48
Convallaria trifolia L. 27
— *majalis* L. 28
Coptis trifolia Salisb. 36
Cornaceae. 49
Cornus alba L. ssp. *tatarica*
Wang. 49
— *canadensis* L. 49
— *sibirica* Lodd. 49
— *subumbellata* Komatsu. 49
— *suecica* L. 49
— *tatarica* Mill. 49
— *tatarica* Mill. v. *sibirica*
Koehne. 49
Cortusa Matthioli L. 52
Corydalis aurea Fr. Schm. 38
— *gigantea* Rgl. et Til.
v. *amurensis* Rgl. 38
— *Maximowiczii* Nakai. 38
— *ochotensis* Turcz. 38
— *speciosa* Maxim. 38
Crassulaceae. 40
Crataegus Maximowiczii C. K.
Schn. 42
— *sanguinea* Pall. 42
— *sanguinea* Pall. v. *villosa*
Rupr. et Maxim. 42
Crepis Tatewakii Kudo. 61
Cruciferae. 38
Cucurbitaceae. 56
Cyperaceae. 22

- Dentaria dasyloba* Turcz. 38
Dianthus superbus L. 35
 Dicotyledones. 29
Digaphis arundinacea Trin. 20
Draba sachalinensis Fr. Schm. 39
Drosera anglica Huds. 39
Droseraceae. 39
Drosera longifolia L. 39
 — *rotundifolia* L. 39
Dryopteris amurensis H. Chr. 15
 — *dilatata* A. Gray, v. *oblonga*
 Takeda. 15
 — *Linnaeana* C. Chr. 15
 — *Phegopteris* C. Chr. 15
 — *Thelypteris* A. Gray. 15

Eleocharis palustris R. Br. 23
 — *umiglumis* Schult. 23
Elymus mollis Trin. 22
 — *sibiricus* L. 22
Empetraceae. 45
Empetrum nigrum L. 45
Epilobium affine Bong. 47
 — *angustifolium* L. 47
 — *behringianum* Hausskn. 47
 — *glandulosum* Lehm. 47
 — *palustre* L. 47
Equisetaceae. 16
Equisetum fluviatile L. 17
 — *Heleocharis* Ehrh. 17
 f. *fluviatile* Aschers. 17
 f. *limosum* Aschers. 17
 — *hyemale* L. 17
 — *palustre* L. 17
 — *pratense* Ehrh. 16
 — *scirpoides* Michx. 17
 — *sylvaticum* L. 16
Ericaceae. 50
Erigeron acre L. 57
 v. *kamtschaticum* Herd. 57
 — *kamtschaticum* DC. 57
Eriophorum gracile Koch. 23
 — *Scheuchzeri* Hoppe. 22
 — *vaginatum* L. 22
Erysimum cheilanthoides L.
 v. *japonicum* Bioss. 39
Evonymus sachalinensis
 Maxim. 46
Evonymus latifolius Scop. v.
 sachalinensis Fr. Schm. 46
Festuca gigantea Vill. 22
 — *rubra* L. 22
 — *thalassica* Kunth. 22
Filipendula kamtschatica
 Maxim. 43
 — *palmata* Maxim. 43
Fritillaria kamtschaticensis
 Ker. Gawl. 27
Galium boreale L. v. *genuinum*
 Maxim. 55
 — *trifidum* L. 55
 — *trifloriforme* Kom. 55
 — *triflorum* Michx. f. *europaea*
 Fr. Schm. 55
 — *verum* L. 55
Galeopsis Tetrahit L. v. *bifida*
 Syme. 53
Gentiana auriculata Pall. 52
 — *axillariflora* Levl. 52
Gentianaceae. 52
Gentiana jezoana Nakai. 52
Geraniaceae. 45
Geranium erianthum DC. 45
 — *subumbelliforme* R. Knuth. 45
Geum Aleppicum Jacq. 43
 — *pentapetalum* Makino. 43
 — *strictum* Ait. 43
Glaux maritima L. 52
Glyceria aquatica Sm. v. *debi-*
 lior Trin. 21
 — *debilior* Kudo. 21
 — *maritima* Fr. v. *festucae-*
 formis Fr. Schm. 22
Gnaphalium norvegicum
 Gunner. 57
 — *uliginosum* L. 57
Gomphopetalum Maximowii
 czii Fr. Schm. 49
Gramineae. 20
Guttiferae. 47
Gymnadenia conopsea R. Br. 29
 — *cucullata* Rich. 29
Gymnospermae. 18
Halenia sibirica Borkh. 52
Holoscias scoticum Fries. 48
Hemerocallis Middendorffii
 Trautv. et Mey. 27
Heracleum lanatum Michx. 49
 — *barbatum* Ledeb. 49
Hieracium umbellatum L. ssp.
 umbellatum Zahn v. *line-*
 arifolium Wallr. 61
Hierochloa borealis Roem. et
 Schl. 20
 — *odorata* Wahlb. 20
Hippuridaceae. 48
Hippris montana Fr. Schm. 48
 — *vulgaris* L. 48
Honckeneja peploides Fr.
 Schm. 35
Hypericum Gebleri Ledeb. 47

Ilex rugosa Fr. Schm. 46
Impatiens Noli-tangere L. 46
Inula britannica L. 58
 v. *intermedia* Rgl. 58
 v. *tymiensis* Kudo. 58
 — *tymiensis* Kudo. 58
Iridaceae. 28
Iris laevigata Fisch. 28
 — *setosa* Pall. 28
Isatis oblongata Miyabe et Mi-
 yake. 38
 — *tinctoria* L. ssp. *japonica*
 Busch. 38
Juncaceae. 26
Juncus balticus Willd. v.
 Haenkei Buch. 26
 — *Bufonius* L. 26
 — *curvatus* Buch. 26
 — *effusus* L. v. *decipiens*
 Buch. 26
 — *filiformis* L. v. *curvatus*
 Kudo. 26
Juniperus communis Fr. Schm. 19
 — *nana* Miyabe et Miyake. 19
 — *rebenensis* Kudo. 19
Labiatae. 53
Lactuca repens Benth. 61
 — *sibirica* Benth. 61
Lamium album L. 53

- Larix dahurica* Turcz. v. Schott. 26
kamtschatica Miyabe et Schott. 26
 Kudo. 18
Lathyrus maritimus Bieg. 45
 — *palustris* L. var. *pilosus* Schmitt, 28
 Ledeb. 45 v. *kamtschaticum* Trautv.
 — *pilosus* Cham. 45 . . . et Mey, 28
Ledum palustre L. 50 — *canadense* Desf. v. kam-
 v. *dilatatum* Wahlb. 50 tchaticum. Kudo. 28
 v. *vulgare* Ledeb. 50 *Malus haccata* Borkh. v.
Leguminosae. 44 mandshurica C. K. Schn. 42
Lepidium Draba L. 38 *Matricaria ambigua* Miyabe. 58
Leucanthemum Weyrichii — *dęsqideę* DC. 58
 Maxim. 58 — *liņosa* Kudo. 58
Ligularia speciosa Fisch. et — *matricarioides* Porter. 58
 Mey. 60 *Melica nutans* L. 21
Ligusticum scoticum L. 48 *Menħa saħalıņensis* Kudo. 54
Liliaceae. 26 *Menyanthes trifoliata* L. 52
Lilium davuricum Ker.-Gawl. 27 *Mertensia maritima* G. Don
 — *medeoloides* A. Gray. 27 ssp. *asiatica* Takeda. 53
 — *spectabile* Link. 27 **Metachlamydeae.** 50
Linaria geminiflora Fr. Schm. 54 **Microstylis monophyllos**
 — *japonica* Miq. 54 Lindl. 19
Linnaea borealis L. 56 *Moehringia lateriflora* Fzl. 35
Lobelia sessilifolia Lamb. 57 *Moneses grandiflora* Salisb. 50
Loiseleuria procumbens Desv. 50 — *uniflora* A. Gray. 50
Lonicera Chamissoi Bge. 56 **Monocotyledones.** 19
 — *chrysantha* Turcz. 56 *Montia rivularis* C. C. Gemel. 34
 — *coerulea* L. v. *edulis* Rgl. 56 *Mulgedium sibiricum* Less. 61
 v. *villosa* Fr. Schm. 56 *Myosotis silvatica* Hoffm. 53
 — *Glehni* Fr. Schm. 56 **Myricaceae.** 30
Luzula campestris DC. v. *Myrica Gale* L. v. *tomentosa*
 — *multiflora* Celak. 26 DC. 30
 — *rufescens* Fisch. v. *macro-*
carpa Buch. 26 *Nabalus repens* Ledeb. 61
Lycopodiaceae. 17 *Nardosmia palmata* Hook. 60
Lycopodium annotinum L. 17 *Nasturtium palustre* DC. 38
 v. *latifolium* Takeda. 17 *Naumburgia thyrsoflora* Duby. 52
 v. *pungens* Desv. 17 *Nephrodium Thelypteris* Desv. 15
 — *clavatum* L. 17 **Nymphaeaceae.** 35
 — *complanatum* L. v. *anceps* *Nymphaea pęgmaea* Ait. 35
 Milde. 18 — *tetragona*, Georgi v. *lata*
 — *dendroideum* Spr. 17 . Casp. 35
 — *obscurum* L.
 f. *flabellatum* Takeda. 17 **Oenotheraceae.** 47
 f. *juniperoideum* Takeda. 17 **Ophioglossaceae.** 16
Lycopus parviflorus Maxim. 54 **Orobanchaceae.** 55
Lysichiton camtschaticense **Orehidaceae.** 28
- Osmundaceae.** 16
Osmunda cinnamomea L. 16
Oxalidaceae. 45
Oxalis Acetosella L. 45
Oxycoocus microcarpa Turcz. 51
 — *palustris* Pers. 51
Papaveraceae. 38
Paris quadrifolia L. 28
Parnassia palustris L. 41
Pedicularis euphrasioides
 Steph. 54
 — *reşupinata* L. 54
 — *sudetica* Willd. 54
 — *villosa* Ledeb. v. *glabrata*
 Maxim. 54
Petasites japonicus Miq. v.
 — *giganteus* Makino. 59
 — *palmatus* A. Gray. 60
Phalaris arundinacea L. v.
 — *japonica* Hack. 20
Phanerogamae. 18
Phellopteris littoralis Benth. 49
Phleum pratense L. 21
Phyllodoce coerulea Bab. 50
Phyllospadix Scouleri Hook. 19
Picea ajanensis Mast. 18
 — *jezoensis* Carr. 18
Picris japonica Thunb. 61
Pinaceae. 18
Pinus pumila Rgl. 19
Plantaginaceae. 55
Plantago japonica Fr. et Sav. 55
 — *kamtschatica* Link. 55
Platanthera chlorantha Custr. 29
 — *tıpuloides* Lindl. 29
Pleurospermum austriacum
 Hoffm. 48
 — *kamtschaticum* Hoffm. 48
Poa arctica R. Br. 21
 — *glumaris* Trin. 21
 — *nemoralis* L. 21
 — *pratensis* L. 21
Polemoniaceae. 53
Polemonium coeruleum L. 53
 v. *laxiflorum* Miyabe et
 Kudo. 53
 v. *raçemosum* Miyabe et

Kudo.	53	Pteridophyta.	15	Rubus <i>melanolasius</i> Focke v.	
— villosum Rud.	53	<i>Pteris aquilina</i> L.	16	<i>discolor</i> Kom.	43
Polygonaceae.	32	Pulsatilla <i>ajanensis</i> Fr. Schm.	37	Rumex <i>Acetosella</i> L.	32
Polygonatum officinale All. v.		— <i>ajanensis</i> Rgl. et Til.	37	— aquaticus L.	32
Maximowiczii Maxim.	28	— Tatewakii Kudo.	36	— domesticus Hartm.	32
Polygonum <i>alpinum</i> All. v.		— <i>vernalis</i> L. v. <i>ajanensis</i> Rgl.	37	Salicaceae.	29
<i>frigidum</i> Cham. et Schl.	33	<i>Pyrethrum ambiguum</i> Ledeb.	58	<i>Salix caesia</i> Vill. v. <i>pubescens</i>	
— aviculare L.	32	Pirolaceae.	50	Turcz.	30
— frigidum Kudo.	33	Pyrola minor L.	50	— Caprea L.	30
— <i>Kusanoi</i> Kudo.	33	<i>Pyrus baccata</i> L.	42	— cinerea L.	30
— lapathifolium L.	32	— <i>sambucifolia</i> Cham. et Schl.	42	— <i>daphnoides</i> Ledeb.	30
v. <i>incanum</i> Ledeb.	32	Ranunculaceae.	35	— hastata L.	30
v. <i>maximum</i> Rgl.	32	Ranunculus <i>acris</i> L. v. borea-		— <i>macrolepis</i> Turcz.	29
— nodosum Pers.	32	lis Trautv.	37	— <i>minutiflora</i> Turcz. v. <i>pubes-</i>	
— polymorphum Ledeb. v.		— <i>aquatilis</i> L. v. <i>longifolius</i>		cens Wolf.	30
ajanense Rgl. et Til. f.		Fr. Schm.	37	— <i>opaca</i> Anders.	30
<i>divaricatum</i> Kudo.	34	— <i>borealis</i> Trautv. v. <i>typicus</i>		— <i>phleobophylla</i> Anders.	30
v. <i>divaricatum</i> Fr. Schm.	34	Trautv.	37	— <i>praecox</i> Fr. Schm.	30
v. <i>frigidum</i> Ledeb.	33	— <i>repens</i> L.	37	— <i>repens</i> L. v. <i>flavicans</i>	
— sagittatum L. v. <i>sibiricum</i>		— <i>sceleratus</i> L.	37	Anders.	30
Meisn.	33	— <i>trichophyllus</i> Chaix.	37	— <i>rorida</i> Lacks	30
— stoloniferum Fr. Schm.	33	<i>Rhaponticum atriplicifolium</i>		— <i>sachalinensis</i> Fr. Schm.	30
— Thunbergii S. et Z.	33	DC.	61	— <i>sibirica</i> Pall.	30
— Weyrichii Fr. Schm.	33	Rhododendron <i>paviflorum</i>		— <i>stipularis</i> Fr. Schm.	30
Polypodium <i>Dryopteris</i> L.	15	Adams.	50	— <i>viminalis</i> L.	30
— <i>Phegopteris</i> L.	15	Ribes <i>affine</i> Bong. v. <i>sachali-</i>		v. <i>yezoensis</i> C. K. Schn.	30
<i>Polystichum Thelypteris</i> Roth.	15	<i>nense</i> Fr. Schm.	41	Sambucus <i>latipinna</i> Nakai, var.	
— <i>spinulosum</i> DC. v. <i>dilata-</i>		— <i>latifolium</i> Jancz.	41	Miqueli Nakai, f. <i>latifolia</i>	
<i>tum</i> Rupr.	15	— <i>procumbens</i> Pall.	41	Nakai.	56
Populus <i>Davidiana</i> Dode.	29	— <i>petraeum</i> Wulf. v. <i>tomento-</i>		— <i>racemosa</i> L. v. <i>pubens</i>	
— Maximowiczii A. Henry	29	<i>sum</i> Maxim.	41	Trautv. et Mey.	56
— <i>suaveolens</i> Fr. Schm.	29	— <i>sachalinense</i> Nakai.	41	v. <i>pubescens</i> Miq.	56
— tremula L. v. <i>Davidiana</i> C.		— <i>triste</i> Pall.	41	Sanguisorba <i>canadensis</i> L. v.	
K. Schn.	29	Polypodiaceae.	15	Fr. Schm.	44
Portulacaceae.	34	Rosaceae.	41	v. <i>media</i> Maxim.	44
Potamogetonaceae.	19	Rosa <i>davurica</i> Miyabe et Mi-		— <i>sitchensis</i> Trautv. et Mey.	44
Potamogeton alpinus Balb.	19	yake.	44	— <i>tenuifolia</i> Fisch. v. <i>alba</i>	
— Morongii A. Benn.	19	— Marretii Levl.	44	Trautv. et Mey.	44
— <i>perfoliatus</i> L.	20	— rugosa Thunb.	44	Sasa <i>kurilensis</i> Makino et	
Potentilla <i>Anserina</i> L.	43	Rhinanthus minor Ehrh.	54	Shibata.	22
— <i>fragarioides</i> L. v. <i>stoloni-</i>		Rubiaceae.	55	Saussurea <i>acuminata</i> Turcz.	61
<i>fera</i> Maxim.	43	Rubia <i>jesoensis</i> Miyabe et Mi-		— <i>duiensis</i> Fr. Schm.	60
— <i>stolonifera</i> Ledeb.	43	yake.	55	Saxifragaceae.	40
Primulaceae.	52	Rubus <i>arcticus</i> L.	43	<i>Saxifraga reflexa</i> Miyabe et	
Prunella <i>vulgaris</i> L. v. <i>japo-</i>		— <i>Chamaemorus</i> L.	43	Miyake.	40
<i>nica</i> Kudo.	53	— <i>idaeus</i> L. v. <i>aculeatissimus</i>		— <i>sachalinensis</i> Fr. Schm.	40
Prunus <i>Padus</i> L.	44	Rgl. et Til.	43	Scheuchzeriaceae.	20
Pteridium <i>aquilinum</i> Kuhn.	16				

- Schizopepon bryoniaefolius Maxim. 56
- Scripus caespitosus L. 23
- radicans Schkuhr. 23
- *silvatica* L. v. *Maximowiczii* Rgl. 23
- Scorzonera radiata Fisch. 62
- v. *humilis* Miyabe et Kudo. 53
- f. *humilis* Koidz. 53
- Scrophulariaceae.** 54
- Scutellaria yezoensis Kudo. 53
- Sedum Aizoon L. v. *latifolium* Maxim. 40
- *cyaneum* Fr. Schm. 40
- *pluricaule* Kudo. 40
- *Telephium* L. v. *pluricaule* Maxim. 40
- v. *purpureum* L. 40
- *verticillatum* L. 40
- Senecio *cannabifolius* Less. 60
- *nemorensis* L. 60
- *palmatum* Pall. 60
- v. *cannabifolius* Kudo. 60
- *vulgare* L. 60
- Serratula atriplicifolia Benth. et Hook. 61
- Stevensia anemonoides* Pall. 43
- Silene venosa Aschers. 35
- Sium cicutaefolium Gmel. 48
- Smilacina davurica Turcz. 27
- *trifolia* Desf. 27
- Solidago virgaurea L. 57
- Sorbaria sorbifolia R. Br. v. *glabra* Maxim. 42
- Sorbus commixta Hedl. v. *Takasui* Kudo. 42
- *japonica* Koehne. 42
- *sambucifolia* Roem. 42
- *Takasui* Kudo. 42
- Sparganiaceae.** 10
- Sparganium affine Schnizl. v. *zosterifolium* Neuman. 19
- Spergula arvensis L. 35
- Spiraea *Aruncus* L. 42
- *betulaefolia* Pall. 41
- v. *Aemiliana* Koidz. 42
- Spiraea *confusa* Rgl. et Kōr. v. *sericea* Rgl. 41
- *kamtschatica* Pall. 43
- *media* Schmidt. v. *sericea* Rgl. 41
- *salicifolia* L. v. *lanceolata* Torr. et Gr. 42
- *sorbifolia* L. 42
- Spiranthes australis Lindl. 29
- Stachys japonica Miq. f. *villosa* Kudo. 53
- Stellaria borealis Big. v. *corollina* Fr. Schm. 34
- *Friesiana* Ser. 34
- *humifusa* Rottb. v. *oblongata* Fzl. 34
- *longifolia* Mühl. 34
- *nemorum* L. v. *Bungeana* Rgl. 34
- *radians* L. 34
- *radiata* L. 34
- *sachalinensis* Takeda. 34
- *yezoensis* Maxim. 34
- Stenanthium sachalinense Fr. Schm. 26
- Symplocarpus foetidus Salisb. 26
- Tanacetum vulgare L. v. *boreale* Trautv. et Mey. 59
- Taraxacum ceratophorum DC. **Taxaceae.** 18
- Taxus *baccata* L. v. *microsperma* Trautv. 18
- *cuspidata* S. et Z. 18
- Thalictrum *kemense* Fr. Schm. 38
- *minus* L. v. *elatum* Lecoy. 38
- *sachalinense* Lecoy. 37
- Theaceae.** 46
- Thermopsis fabacea DC. 44
- Tilingia ajanensis* Rgl. et Til. 48
- Tovaria davurica* Bak. 28
- *trifolia* Neck. 27
- Trautvetteria japonica S. et Z. 37
- Trientalis europaea L. 52
- v. *arctica* Ledeb. 52
- v. *eurasiatica* R. Knuth. 52
- Triglochin maritima L. 20
- *palustre* L. 20
- Trillium *obovatum* Fr. Schm. 28
- *kamtschaticum* Pall. 28
- Trisetum flavescens P. Beauv. 21
- Trollius patulus Salisb. v. *Riderianus* Kudo. 36
- Ulmaceae.** 31
- Ulmus japonica Sarg. v. *laevigata* C. K. Schn. 31
- Umbelliferae.** 48
- Urticaceae.** 31
- Urtica *dioica* Fr. Schm. 32
- *platyphylla* Wedd. 31
- *urens* L. 32
- Vagnera trifolia* Morong. 27
- Valerianaceae.** 56
- Valeriana officinalis L. v. *pubescens* Fr. Schm. 56
- Vaccinium *microcarpum* Miyabe et Miyake. 51
- *uliginosum* L. 51
- *ovalifolium* Sm. 51
- *Oxycoccus* L. 51
- *praestans* Lamb. 51
- *Vitis-idaea* L. 51
- Veratrum album L. v. *oxysepalum* Miyabe et Kudo. 27
- Veronica longifolia L. 54
- *Schmidtiana* Rgl. 54
- *serpyllifolia* L. 54
- Vicia Cracca L. f. *canescens* Maxim. 45
- *japonica* A. Gray. f. *sylvatica* Kom. 45
- *pallida* Fr. Schm. 45
- Violaceae.** 47
- Viola *epipsila* Miyabe. 47
- *Langsdorfii* Fisch. 47
- *repens* Turcz. 47
- *Selkirkii* Pursh. 47
- *umbrosa* Fr. Schm. 47
- Zostera marina L. 19



Fig. 1. *Picea* forest at Aobagoe; trees mostly *Picea jezoensis*. Photograph taken July 30.



Fig. 2. *Picea* forest at Akita bridge in vicinity of Pubuny; trees mostly *Picea jezoensis*. Photograph taken Aug. 22.

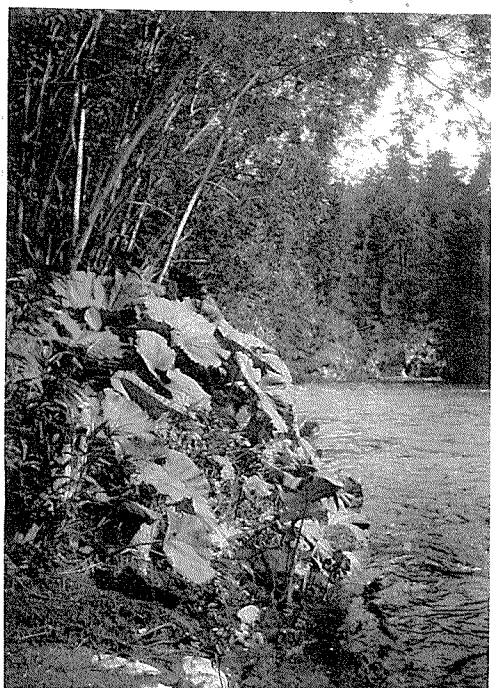


Fig. 3. *Petasites japonicus* var. *giganteus* and *Salix viminalis* var. *yezoensis* along River Pilwo. Photograph taken July 30.

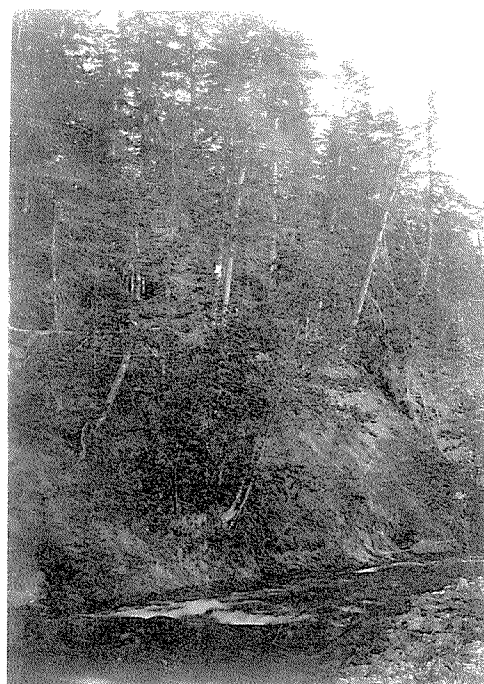


Fig. 4. *Picea* forest along River Pilwo; trees *Picea jezoensis* and *Abies sachalinensis*. Photograph taken July 31.

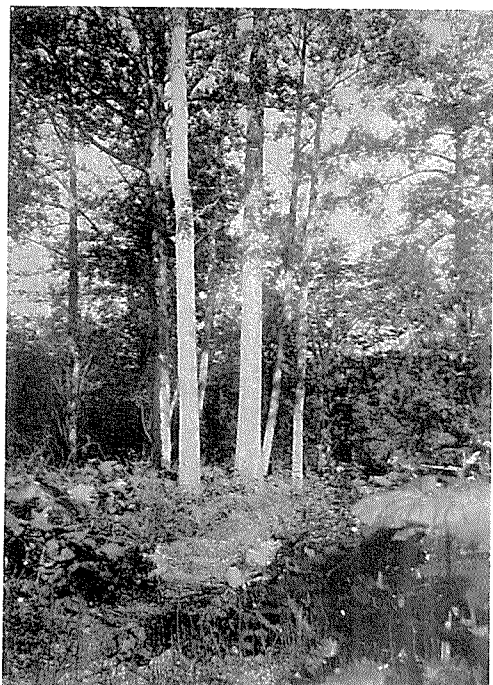


Fig. 5. *Populus Maximowiczii* in broadleaf forest along River Pilow. Photograph taken July 30.



Fig. 6. *Populus Maximowiczii* in broadleaf forest between Aobaeki and Kami-Onory. Photograph taken Aug. 1.



Fig. 7. Broadleaf forest at high altitude at Aobagoe: trees mostly *Betula Ermani*; undergrowth chiefly *Sasa kurilensis*. Photograph taken July 30.



Fig. 8. Vegetation of slope near sea-coast in vicinity of Pilow: *Alnus* association on upper slope, *Filipendula kamtschatica* below. Photograph taken July 29.



Fig. 9. Undergrowth in Larix Forest at Pubuny. *Osmunda cinnamomea*, *Ledum palustre* and *Equisetum sylvaticum* in association. Photograph taken Aug. 8.



Fig. 10. *Ribes procumbens* in fruit, in tundra at Parukata. Photograph taken Aug. 10.



Fig. 11. Vegetation near sea-coast in vicinity of Alexandrowsk. Photograph taken Aug. 12.



Fig. 12. *Hypericum Gebleri* in pasture at Tim. Photograph taken Aug. 3.

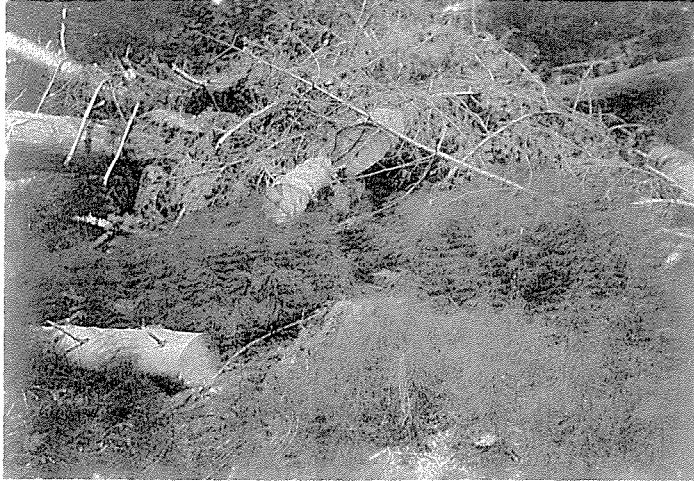


Fig. 13. *Equisetum sylvaticum* in *Picea* forest, on mountain pass between Pilow and Hinaneki. Photograph taken July 29.



Fig. 14. Soft carpet of mosses in *Picea* forest in vicinity of Pubuny: trees *Abies sachalinensis* and *Picea jezoensis*. Photograph taken Aug. 22.



Fig. 15. *Picea* forest at Adotimowo. Photograph taken Aug. 11.



Fig. 16. *Cornus tatarica* under *Populus Maximowiczii* in broadleaf forest along River Tymi between Pubuny and Parukata. Photograph taken Aug. 18.



Fig. 17. Broadleaf forest along River Onory : trees mostly *Salix*.
Photograph taken July 31.



Fig. 18. Broadleaf forest (interior) along River Pilwo : trees mostly
Betula japonica, *Alnus hirsuta* and *Prunus Ssiori* with *Rosa Marretii* and
Cacalia hastata var. *pubescens* in undergrowth. Photograph taken July 29.



Fig. 19. *Petasites palmatus* on bank of stream at Adot'mowo. Broad-
leaf forest in background. Photograph taken Aug. 21.



Fig. 20. Broadleaf forest on bank of River Tymi : trees mostly
Salix and *Populus*. Photograph taken Aug. 7.



Fig. 21. Larix forest (exterior) in vicinity of Katangri; tundra in foreground. Photograph taken Aug. 15.



Fig. 22. Marsh near edge of Lake Katangri: *Comarum palustre* in foreground, *Calamagrostis villosa* in middle distance, Larix forest in background. Photograph taken Aug. 15.



Fig. 23. Pure association of *Ledum palustre*, in Larix forest at Pubuny. Photograph taken Aug. 10.

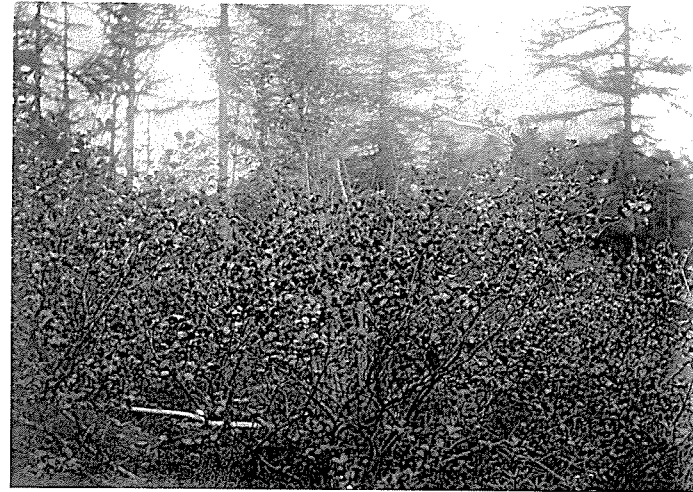


Fig. 24. *Betula Middendorffii* in Larix forest at Parukata. Photograph taken Aug. 10.



Fig. 25. *Eriophorum gracile* in tundra at Parukata. Photograph taken Aug. 10.



Fig. 26. Margin of tundra at Parukata: *Comarum palustre* in foreground with scattered clumps of *Iris*. Larix forest in background. Photograph taken Aug. 10.



Fig. 27. *Lysichiton camtschatcense* in Larix forest in vicinity of Alexandrowsk. Photograph taken July 26.



Fig. 28. Margin of Larix forest in vicinity of Alexandrowsk: *Osmunda cinnamomea* in association. Photograph taken July 26.



Fig. 29. Pure association of *Ledum palustre* in Larix forest at Pubuny. Photograph taken Aug. 8.



Fig. 30. *Smilacina trifolia* in Larix forest at Parukata. Photograph taken Aug. 10.



Fig. 31. *Caltha palustris* var. *sibirica* on bank of stream at Parukata. Photograph taken Aug. 10.



Fig. 32. *Pinus pumila* at edge of tundra on Mobio Island. Photograph taken Aug. 12.



Fig. 33. General view of tundra in vicinity of Nyiwo-Shubitai with sprinkling of *Larix dahurica* var. *kamschatica*. Photograph taken Aug. 13.



Fig. 34. Characteristic tundra on Mobio Island near mouth of Tymi: Sedges, Ericads and Sphagnum prominent. Photograph taken Aug. 14.



Fig. 35. Characteristic tundra on Mobio Island near mouth of Tymi: Sedges, Ericades and Sphagnum forming a prominent mound in center. Photograph taken Aug. 14.

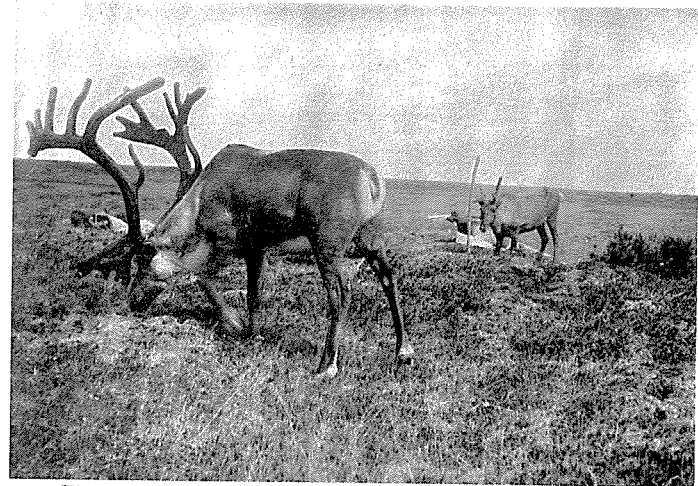


Fig. 36. Characteristic tundra in vicinity of Agui miss. Photograph taken Aug. 13.

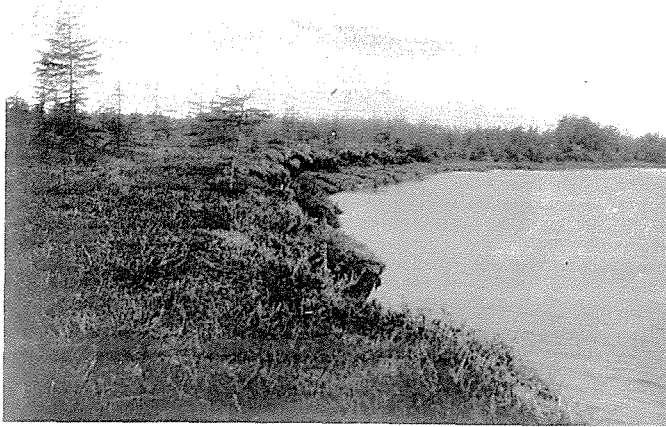


Fig. 37. Section of tundra on Mobio Island near mouth of Tymi. Photograph taken Aug. 14.



Fig. 38. Cliff on River Tymi with Larix forest above. Broadleaf forest on right in foreground. Photograph taken Aug. 18.

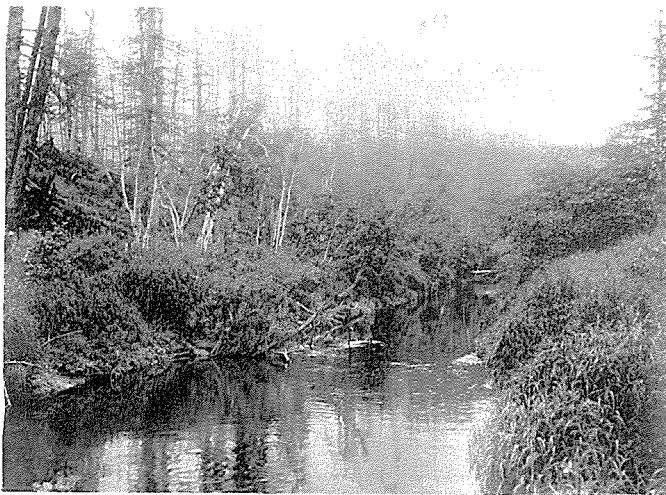


Fig. 39. Vegetation along stream at Parukata. Photograph taken Aug. 10.



Fig. 40. *Antennaria dioica* on sand-dune in vicinity of Alexandrowsk. Photograph taken July 26.



Fig. 41. Scrub-form of *Larix dahurica* var. *kamschatica* on coast at Agui miss. Photograph taken Aug. 13.

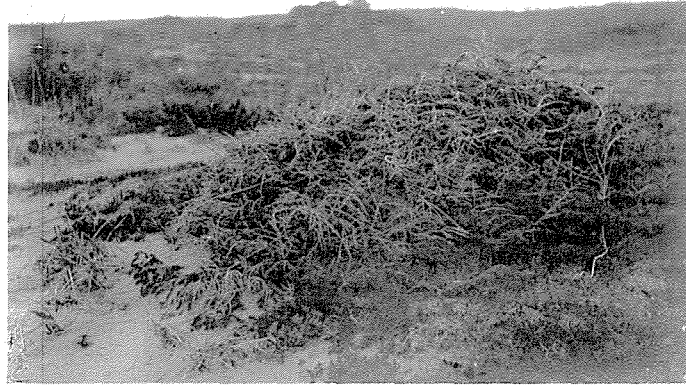


Fig. 42. Tumulus-form of *Larix dahurica* var. *kamschatica* on sandy beaches at Agui miss. Photograph taken Aug. 13.



Fig. 43. *Chrysanthemum arcticum* var. *Gmelini*, associated with *Elymus mollis*, *Potentilla Anserina* and *Stellaria humifusa* var. *oblonga* in semi-swamp on sea-coast at Agui miss. Photograph taken Aug. 13.



Fig. 44. *Salix sibirica* and *Elymus mollis* on sandy beaches at Agui miss. Photograph taken Aug. 13.

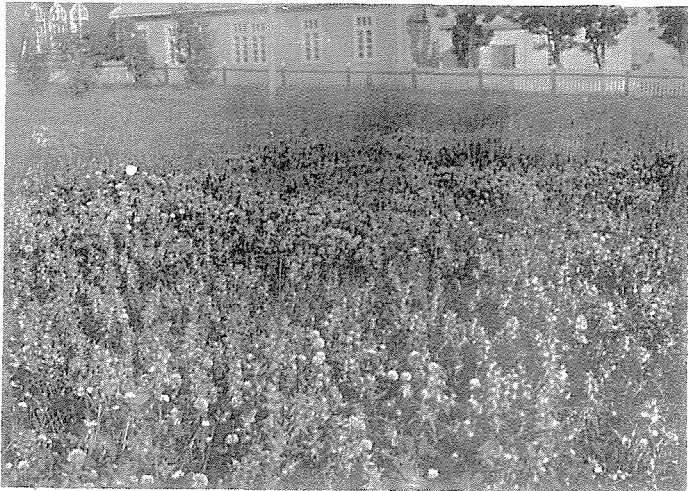


Fig. 45. *Rhinanthus minor* at Alexandrowsk. Photograph taken July 17.



Fig. 46. Vegetation on bank of River Tymi. Photograph taken Aug. 17.



Fig. 47. Pasture at Adotimowo. Photograph taken Aug. 21.



Fig. 48. *Ulmus japonica* var. *levigata* in pasture at Tim. Photograph taken Aug. 3.

ERRATA.

- p. 57, line 16 from top, *for* Erig ron *read* Erigeron.
- p. 58, between line 17 and 18 from bottom, *add* Ad ripas fl. prope Alexandrowsk (n. 6052, 25 July.); in opp. Pilwo (n. 6146, 28 Jul.) lecta est.
- p. 59, line 13 from bottom, after Ledeb. *add* var **Maximowiczii**.
- p. 72, bottom line, *for* Univerrity *read* University.