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CONTRIBUTIONS TO THE FLORA OF NORTHERN JAPAN V

BY

KINGO MIYABE AND MISAO TATEWAKI

(宮 部 金 吾 • 館 藤 操)

(With 4 text-figures)

61. *Phymatopsis Veitchii* H. ITO, in Journ. Jap. Bot. XI. (1935), 100.

Polypodium Veitchii BAK. in Gard. Chr. n. s. XIV. (1880), 494; MATSUM. Ind. Pl. Jap. I. (1904), 340; OGATA, Icon. Fil. Jap. I. (1928), *pl.* 40; MAKINO & NEMOTO, Fl. Jap. ed. 2, (1931), 96.

Polypodium senanense MAXIM. in Mém. Biol. XII. (1886), 571.

Polypodium trifidum FRANCH. ET SAV. Enum. Pl. Jap. II. (1879), 247, (non DON).

NOM. JAP. *Miyama-uraboshi*.

HAB. *Yezo*: Mt. Kurodake, Daisetsu, Prov. Ishikari (H. OHTANI & I. KIKUCHI, VIII. 1931; U. KIMOTO, VII. 26, 1932).

62. *Cerastium rishirense* MIYABE ET TATEWAKI, sp. nov.

Perenne; caulis 15-25 cm. altus, crassus, a basi ramosus, declinato-adscendens, geniculatus, ferrugineo-pubescent, in parte superiore pilis glanduliferis immixtis. Folia crassiuscula, basilaria obovata, parva, basin versus attenuata, inferiora oblongo-obovata, media superioraque ovata vel oblongo-ovata, apice rotundata, obtusa, pilis eglandulosis obsita. Dichasium 3-5 (-7)-florum; pedicelli gracili, erecto-patentes vel suberecti, calyce duplo- vel triplo-longiores; bractee infimae foliaceae, omnes herbaceae. Sepala 7-8 mm. longa, elliptico-lanceolata, acuta, margine albo-scariosa, dorso parte glanduloso-hirsuta. Petala obovato-oblancheolata vel obovata, 8-9 mm. longa, apice lobis rotundatis in $\frac{1}{2}$ parte biloba. Stamina petalis triplo-breviora, filamentis ad basin parce pilosis.

NOM. JAP. *Rishiri-miminagusa*, (n. n.).

HAB. *Yezo*: Oniwaki, Isl. Rishiri, Prov. Kitami (M. TATEWAKI, V. 30, 1934 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.).

Remarks. The present species is related to *Cerastium rigidulum* TAKEDA, [in Kew. Bull. (1911), 105], from which it is distinguished by the broader

leaves, the longer petals with deeper lobes and the filaments sparsely pilose at the base.

63. *Coptis trifolia* SALISB. in Trans. Linn. Soc. VIII. (1807), 305.

var. ***sempilena* MIYABE ET TATEWAKI, var. nov.**

Coptis daisetsuensis TATEWAKI, mss.

Sepala et petala petaloidea, persistentia, oblonga, oblanceolata, rarius late ovata, 7-8 mm. longa, 2-4 mm. lata. Flores semiplenus, 1.5-2 cm. in diametro. Stamina petalis breviora. Carpella longe stipitata cum styli stipisque 8-10 mm. longa.

NOM. JAP. *Yaezaki mitsubaworen*, (n. n.).

HAB. *Yezo*: Mt. Daisetsu, Prov. Ishikari (A. KIMURA, VIII. 16, 1934).

64. *Miyakea* MIYABE ET TATEWAKI, gen. nov.

Herbae caudice perenni. *Folia radicalia integra et sempervirens*. Scapi radicales, praeter involucrum flori approximatum aphylli. Flores terminales. Sepala 6, petaloidea. Petala 0. Stamina sepalis breviora; exteriora sterilia, in glandulas stipitatas mutata. Carpella uniovulata, in caudam longam barbatum producta. Ovulum pendulum.

NOM. JAP. *Hitotsuba-okinagusa-zoku*. (n. n.).

The present genus is closely related to *Pulsatilla* in the character of the involucre and floral parts, but they differ from each other most decidedly in the character of the radical leaves which are simple and entire and evergreen in the present case. The genus *Miyakea* is named after Mr. TSUTOME MIYAKE, the indefatigable collector of the Saghalien plants during the years extending from 1906 to 1908 and the joint author of the Flora of Saghalin published in 1915.

***Miyakea integrifolia* MIYABE ET TATEWAKI, sp. nov. (Fig. 1).**

Pulsatilla integrifolia TATEWAKI ET OHWI, mss.

Caulis ca. 10 cm. altus, villosi. Folia radicalia coriacea, petiolata, integra, oblonga, apice apiculata, supra glabra, subtus adpresse sericeo-pubescentia, prominente 3-5-nervia, 3-5 cm. longa, 1.5-2 cm. lata; petioli sursum parce basin dense villosi 1-1.5 cm. longi. Folia involucri ultra medium cauli inserta, digitato-multipartita, laciniis anguste linearibus dense villosis. Sepala 6, oblonga vel ovato-oblonga, mucronata, 3-4 cm. longa, 1.2-1.8 cm. lata, intus puberula, extus villosa. Stamina sepalis breviora; staminibus exterioribus mutatis, glanduliformibus, glandulis stipitatis. Carpella in caudam longam barbatam producta.

NOM. JAP. *Hitotsuba-okinagusa*, (n. n.).



Fig. 1. *Miyakea integrifolia* MIYABE ET TATEWAKI
Flower is spread open to show its component parts.

HAB. *S. Saghalien*: The Upper Asase, Prov. Shikka (N. INOUE, V. 22, 1934 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.)

Remarks. This striking plant was collected by Mr. NOBORU INOUE on the mountain range of the paleozoic formation situated on the Ochotsk Sea side of the Shikka District of S. Saghalien near the 50° boundary line on May 22, 1934. The specimen was presented by the collector to Mr. S. SUGAWARA, the curator of the Saghalien Government Museum who most kindly sent it to us for examination.

The specimen was in the flowering stage, with sepals folded apparently in a campanulate form. According to the collector, their color is said to be dark purple. The stem is nearly equal to the length of the radical leaves, and is villosa-tomentose. Involucral leaves are situated nearly at the end of the stem enclosing a young flower. The length of the peduncle in this stage is about $\frac{1}{2}$ the length of the involucral leaves. The involucral leaves are digitately multi-parted, each division being narrowly linear tapering to the long acuminate

tip, densely villose on the underside, and glabrous on the upper. Radical leaves are simple, entire, elliptical-oblong or oval-oblong, bluntly apiculate at the tip, and rounded at the base, petiolate, coriaceous, evergreen, 3-5-nerved, glabrous more or less shining on the upper surface, and grooved at nerves, light-green colored and appressedly hairy and prominent-veined on the undersurface. Petioles are about $\frac{1}{2}$ the length of the blade, appressed hairy, grooved on the upper side, and more or less cornute at the tip and dilatate at the base. Sepals are obovate or oblong-obovate, apiculate, and tapering towards the base, short pubescent on the inner surface and villose on the outer surface, and dark colored at the base. Stamens are numerous, longest in the inner circles, getting lower and lower toward the outside, until reduced to stipitate glands. Glands are ellipsoidal with stalks of about the same or twice their length. Pistils numerous forming a thick bundle, longer than stamens. Ovary is elliptic, glabrous, with one pendent ovule; style is caudate, very long, villose, denser and longer toward the base.

65. *Pulsatilla Sugawarai* MIYABE ET TATEWAKI, sp. nov. (Fig. 2).

Caulis 10-15 cm. altus, villosi. Folia radicalia petiolata, ambitu ovato-orbicularia, 5-7 cm. longa, 4.5-7 cm. lata, ternatisecta, supra glabra et scabriuscula, subtus ad venas longe et sparse villosa, margine ciliata; segmento intermedio brevissime stipitato 1-2 mm., orbiculari, trilobato, lobo intermedio

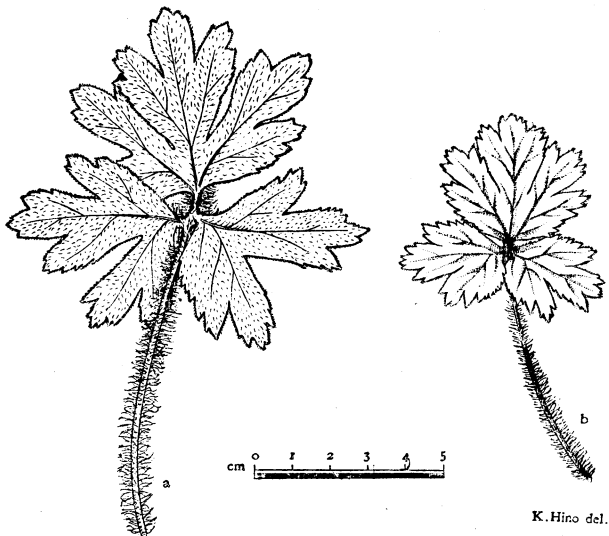


Fig. 2. a. Radical leaf of *Pulsatilla Tatewakii* KUDO.
b. That of *Pulsatilla Sugawarai* MIYABE ET TATEWAKI.

trilobato, simpliciter vel subdupliciter mucronato-dentato; segmentis lateralibus oblique ambitu ovatis vel ovato-orbicularibus, aequaliter vel inaequaliter trilobatis, sessilis, lobis simpliciter vel subdupliciter mucronato-dentatis. Folia involucri infra medium cauli inserta, multipartita, laciniis lineari-lanceolatis, acuminatis, subtus dense albo-villosis.

NOM. JAP. *Kashipo-okinagusa*, (n. n.).

HAB. *S. Saghalien*: Horonai-po at Kashipo, Motodomari Distr. (H. ABUMIYA, Y. HOSHINO & G. TAKEE, VIII. 15, 1932 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.); Kabutoiwa (S. SUGAWARA, VI. 24, 1933).

Remarks. The present species is closely related to *Pulsatilla Tatewakii* KUDO [in Journ. Coll. Agr. Hokkaido Imp. Univ. XII. (1932), 36], from which it is easily distinguished by the shape of the leaves. In *Pulsatilla Tatewakii*, the terminal segment of the leaf has a longer stalk, 5-14 mm. in length, and the lobes of the segments are more or less divergent, giving to the leaf a loose aspect. While in our species, the segments and lobes are far more closely set, giving to the leaf a compact character. Moreover in our species, the leaf is glabrous and slightly scabrous on the upper surface, while in *Pulsatilla Tatewakii*, it is puberulous and subscabrous. The species is named after Mr. SHIGEZO SUGAWARA, the curator of the Saghalien Government Museum, and the arduous collector and investigator of the Saghalien plants.

66. *Papaver nudicaule* L. subsp. *xanthopetalum* FEDDE, in ENGL. Pfl.-reich. IV.-104. (1909), 379.

var. ***typicum*** FEDDE, l. c. 380.

NOM. JAP. *Karafuto-hinageshi*, (n. n.).

HAB. *S. Saghalien*: The Upper Kashipo, Motodomari Distr. (S. SUGAWARA, VI. 20, 1933).

var. ***shimshirense*** MIYABE ET TATEWAKI, var. nov.

Papaver Miyabeianum TATEWAKI, in sched.

Herba (scapis inclusis) 10-20 cm. alta. Folia supra parce hirsuto-setulosa, infra adpresse hirsuto-setulosa, pinnatipartita, segmentis aut integris obovatis vel oblongo-oblancheolatis aut interdum pinnatilobatis apice rotundatis, rotundato-obtusis vel rarius rotundato-subacutis, corniculatis. Scapi elongati infra patenter, supra adpresse flavidio-setulosi. Capsulae late ovoideae, distincte striato-costatae, ca. 1 cm. longae, adpresse setulosae.

NOM. JAP. *Chishima-hinageshi*.

HAB. *M. Kuriles*: Broughton-zaki, Isl. Shimshir (M. TATEWAKI & Y. TOKUNAGA, VIII. 13, 1928 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.); Near Lake Midori, Isl. Shimshir (M. TATEWAKI & Y. TOKUNAGA, VIII. 18,

1928); Nakadomari, Isl. Shimshir (M. TATEWAKI & Y. TOKUNAGA, VIII. 17, 1928); Shimshir, Isl. Shimshir (M. TATEWAKI & Y. TOKUNAGA, IX. 13, 1928; M. TATEWAKI & K. TAKAHASHI, VII. 25, 1929); Isl. Shimshir (J. TOCHINAI, VI. 19, 1900). Otoimaoibet, Isl. Urup (K. UCHIDA, VI. 16, 1891). Hokutozaki, Isl. Matua (M. TATEWAKI & Y. TOKUNAGA, IX. 5, 1928).

Remarks. The present variety is closely related to *Papaver nudicaule* L. subsp. *xanthopetalum* FEDDE, var. *Fauriei* FEDDE, from which it differs by the pinnatipartite leaves and their broader segments with rounded more or less corniculate but not mucronate apex, and by its larger flowers (4-6 cm. in diameter) and rounded capsules. It is a local form of the Middle Kuriles extending from the Island of Urup to the Island of Matua. The habits of this plant vary considerably according to the environs.

67. *Prunus Sargentii* REHD. in Mit. Deut. Dendr. Ges. XVII. (1908), 159, et in FEDDE, Rep. Sp. Nov. VIII. (1910), 344; MIYABE & KUDO, Icon. Ess. For. Tr. Hokkaido, II. (1927), 45, *pl.* 53.

var. ***pubescens*** TATEWAKI, var. nov.

A typo differt, pedicellis pubescentibus, foliis subtus ad venas parce hirsutis; ceterum ut in typo.

NOM. JAP. *Ke-yezoyamazakura*, (n. n.).

HAB. *Yezo*: Oniwaki, Isl. Rishiri, cult. (M. TATEWAKI, V. 27, 1934-type in Herb. Fac. Agr. Hokkaido Imp. Univ.).

DISTR. Hidaka, Ishikari.

var. ***intermedia*** TATEWAKI, var. nov.

Flores rosei foliis coactanei, in umbellam 2-3-floram breve pedunculatum.

NOM. JAP. *Hidaka-yamazakura*, (n. n.).

HAB. *Yezo*: Oiwake Pass, near Shoya, Prov. Hidaka (M. TATEWAKI, V. 23, 1927-type in Herb. Fac. Agr. Hokkaido Imp. Univ.).

68. *Aruncus kamtschaticus* RYDB. in Nor. Am. Fl. XXII.-3. (1908), 256; TATEWAKI & KOBAYASHI, Contr. Fl. Aleut. Isl. (1934), 54.

var. ***tomentosa*** MIYABE ET TATEWAKI, com. nov.

Aruncus sylvester KOSTEL. var. *tomentosa* KOIDZ. in Tokyo Bot. Mag. XXIII. (1909), 167, et Consp. Rosac. Jap. (1913), 28.

NOM. JAP. *Oni-yamabukishôma*.

HAB. *Yezo*: Otaru, Prov. Shiribeshi (ex G. KOIDZUMI); Ochiishi, Prov. Nemuro (H. IWAMOTO, VII. 30, 1933).

69. *Primula Fauriae* FRANCH. in Bull. Soc. Philom. Paris, 7. sér. X.

(1886), 146; PAX, in ENGL. Bot. Jahrb. X. (1889), 211, et in ENGL. Pfl.-reich. IV.-237. (1905), 111, (sub *Fauriei*).

Primula farinosa L. var. *Fauriae* MIYABE, Fl. Kuril. (1890), 249; MATSUM. Ind. Pl. Jap. II.-2. (1912), 480.

Primula modesta BISS. ET MOORE, var. *Faurieae* TAKEDA, in Not. Bot. Gard. Edinbg. VIII. (1913), 88, pl. XIX.

form. ***albiflora*** TATEWAKI, form. nov.

Flores albi.

NOM. JAP. *Shiobana-yukiwarikozakura*, (n. n.).

HAB. *S. Kuriles*: Kiritōshi, Isl. Shikotan (M. TATEWAKI, VI. 22, 1934-type in Herb. Fac. Agr. Hokkaido Imp. Univ.).

Yezo: Ochiishi, Prov. Nemuro (M. TATEWAKI, VI. 15, 1934).

70. *Ajuga shikotanensis* MIYABE ET TATEWAKI, sp. nov. (Fig. 3)

Herba stolonifera. Caulis ascendens, 15-20 cm. altus, lineis albo-villosis.

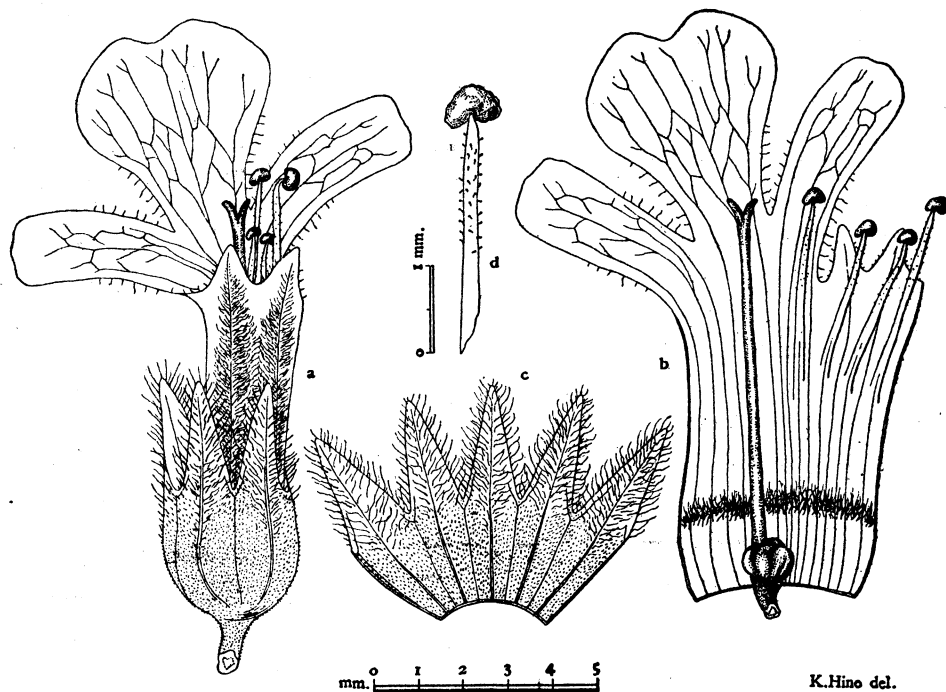


Fig. 3 *Ajuga shikotanensis* MIYABE ET TATEWAKI
a. Entire flower.
b. Flower laid open to show its inner character as well as its pistil and stamens.
c. Calyx spread out to show its outer character.
d. Stamen.

Folia radicalia petiolata, spatulata, apice rotundata, margine subintegra vel leviter repanda, supra praeter nervos sparse hirsuta, subtus glabriuscula, cum petiolis 5-8 cm. longa; caulina inferiora petiolata, spatulata, apice rotundata, subintegra vel leviter repanda, superiora et floralia sessilia, graditum minora, oblonga vel oblongo-ovata, subintegra, apice obtusa, supra sparse hirsuta, subtus glabriuscula. Verticillastri 5-7-flori. Calyx campanulatus, subaequaliter 5-fidus, tubo subglabro, lobis lanceolato-triangularibus pubescentibus. Corolla puberula, sparse longe ciliata, ca. 13 cm. longa, tubo erecto intus piloso-annulato, limbo inaequaliter bilabiato; labio superiore recto bifido, lobis ovato-triangularibus; inferiore magno patente trilobato, lobo medio maximo emarginato obcordato-trapezoideo, lobis lateralibus oblongis apice subtruncatis. Stamina 4, didynamia, inferiora longiora, ascendentia, hirtella, leviter exserta. Stylus glaber, leviter exsertus, apice subaequaliter bifidus.

NOM. JAP. *Shikotan-tsurukakosô*. (n. n.)

HAB. *S. Kuriles*: At the foot of Mt. Masuba, Isl. Shikotan (M. TATEWAKI, VI. 24, 1934 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.)

Remarks. The present species is closely related to *Ajuga glabrescens* MAKINO, from which it is distinguished by the rounder apex of the leaves, and by the shape of the corolla, the shorter calyx and its broader lobes, and the less villose stem.

71. *Micromeria yezoensis* MIYABE ET TATEWAKI, sp. nov. (Fig. 4)

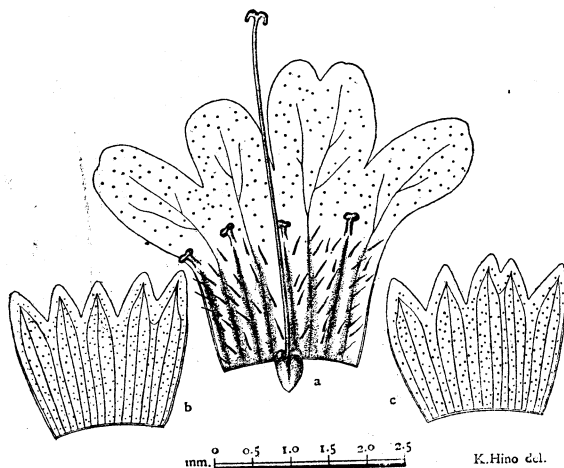


Fig. 4 *Micromeria yezoensis* MIYABE ET TATEWAKI

- a. Flower laid open to show its inner character as well as its pistil and stamens.
- b. Calyx with its sublobate lobes.
- c. Calyx with its inferior coalescent lobes.

Caulis simplex, purpureus, erectus vel adscendens, puberulus, 5-12 cm. altus. Folia subsessilia, ovato-elliptica, apice obtusa, basi obtusa vel rotundata, 7-13 mm. longa, 3-5 mm. lata, margine integra, leviter revoluta, scaberula, utrinque glabra, impresso-punctata, subtus pallidiora, prominente nervia primaria. Verticillastri multiflori in capitulum terminalem vel apice ramorum approximati, fasciculato-conferti. Bracteolae lineares pedicellis breviores. Calyx erectus, campanulatus, breviter tubulosus,

glaber, glanduloso-punctatus, ca. 2 mm. longus, 13-15-nervus, subaequaliter 5-dentatus, vel sub-bilabiatus, labio superiore 3-, inferiore 2-dentato, dentibus rectis brevibus ovato-triangularibus, integris. Corollae tubus rectus, inclusis vel leviter exsertus, intus hirsutus; limbus bilabiatus; labium superius rectum, emarginatum, inferius trifidum, lobis subaequalibus apice rotundatis integris vel subretusis. Stamina 4, ascendentia, inclusa; filamenta brevissima; antherae abortivae. Stylus glaber, filiformis, exsertus, apice 2-fidus, lobis aequalibus recurvis.

NOM. JAP. *Yezo-himehakka*, (n. n.).

HAB. *Yezo*: Otanoshike, Prov. Kushiro (F. KASAI, VIII. 19, 1934 - type in Herb. Fac. Agr. Hokkaido Imp. Univ.).

Remarks. The type specimen of the present species is of a female flowered form. It is related to *Micromeria japonica* MIQ., from which it is easily distinguished by the purplish and minute puberulent stem, the dwarf habit and the subcapitate inflorescence.

72. *Poa bracteosa* KOMAR. in Not. Syst. Herb. H. P. (1924), 10; MIYABE & KUDO, Fl. Hok. & Saghal. II. (1931), 157; TATEWAKI, Phytogeogr. M. Kuril. (1933), 216, 240, 261, 273, 289, 303.

NOM. JAP. *Chishima-nagahagusa*, (n. n.).

HAB. *Yezo*: Ochiishi, Prov. Nemuro (M. TATEWAKI, VI. 17, 1934).

Remarks. New to the flora of *Yezo*.

摘 要

北 日 本 植 物 誌 料 五

61. ミヤマハデンダ

北大農学部腊葉庫所蔵の標本で石狩大雪山の産を明記する。

62. リシリミミナグサ (新種)

シコタンミミナグサに似てゐるが葉の幅廣く、花瓣がより長くその切れ込みがより深く、花絲の基部に毛を生ずる新種である。

63. ヤヘザキミツバウレン (新變種)

木村有香氏の大雪山に採集せられたもので、瓣片及び萼片が花瓣様をなし宿存性。或る場所にはこの形のもののみ生じてゐると言ふ。

64. ヒトツバオキナグサ屬とヒトツバオキナグサ (新屬、新種)

樺太國境近き東海岸近くの山岳に産する高山植物である。オキナグサ屬に極めて近いが、根出葉が單葉で、常綠、且草質といふ著しい特徴を以てゐる。一屬一種、屬名は樺太植物誌の共著者なる三宅勉氏の業績に對して命名したものである。

65. カシボオキナグサ (新種)

邦領樺太植物名産地のカシボ山に採集されたルキコフィチゲに近い新種である。概型、葉型を著しく異にし、南樺太に固有種である。種名は熱心な樺太植物研究家菅原繁蔵氏の姓を附したものである。

66. カラフトヒナゲシとチシマヒナゲシ (新變種)

北日本の黄花を持つケシ属のものをよく見るとカラフトヒナゲシ、リシリヒナゲシ、チシマヒナゲシの三型になる。カラフトヒナゲシとリシリヒナゲシは極めて近いもので、リシリヒナゲシは大陸系統であるカラフトヒナゲシの地方的變形で、利尻に特有な變種型と考へられる。チシマヒナゲシは中部千島の産で、前二者と葉形、花形、果實の形を異にしてゐる。尙1928年、牧野富太郎博士が植物研究雜誌第五卷第一號に紹介されたる飯沼慾齋の寫生せるエゾヒナゲシに概當するものは遂に見出し得なかつた。従つてエゾヒナゲシの和名はいづれにも採用せず、以上の様な和名を下した次第である。

67. ケエゾヤマザクラとヒダカヤマザクラ (新變種)

ケエゾヤマザクラはエゾヤマザクラの花梗と葉裏に毛の生ぜるもの、ヒダカヤマザクラは繖形花序梗の發達した變種である。

68. オニヤマブキシヤウマ**69. シロバナユキワリコザクラ (新品種)**

東北海道に時として發見せられるユキワリコザクラの白花品種である。

70. シコタンツルカコサウ (新種)

本州に産するツルカコサウに似た、色丹特有の新種である。同島でもあまり人の行かないマスバ山の南麓で採集したもので、ツルカコサウとは全株一層毛が少なく、葉形、花形を異にしてゐる。

71. エゾヒメハクカ (新種)

釧路附近海岸の砂丘上に生ずるヒメハクカに似た矮性な新種で、ヒメハクカとは帶紅紫色の莖が有毛なる事及び花序が頭狀に集合することに依つて容易に類別できる。

72. チシマナガハグサ

根室國落石に採集せるを以て、北海道本島の新産を報知する。

NOTAE MYCOLOGICAE ASIAE ORIENTALIS I.*

AUCTORIBUS

SEIYA ITO ET YOSIO TOKUNAGA

(伊藤誠哉・徳永芳雄)

1. *Olpidium Bothriospermi* SAWADA, Descrip. Catal. Formosan Fungi, II, p. 13, tab. I, fig. 1-13, 1922, nom. seminud.

Maculis in caulibus interdum deformatis et in foliis incrassatis, aurantinis vel brunneis; zoosporangiis in inflatis cellulis epidermidis 1-6 aggregatis, sphaeroideis vel oboideo-ellipsoideis, contentu hyalino dein cinnabarino, leptodermis, $64-120 \times 62-95 \mu$; zoosporis ovoideis, interdum elongatis, uno cilio praeditis, $4-5 \times 3-3.5 \mu$; sporangiis perdurantibus in cellulis epidermidis 1-5 evolutis, sphaericis vel oblongatis, $30-100 \times 28-56 \mu$, tunica crassa, exosporio brunneo.

Hab. in foliis caulibusque *Bothriospermi tenelli* F. et MEY.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

2. *Synchytrium Linderniae* S. Ito, sp. nov.

Gallis compositis, amphigenis vel cauliculis, sparsis vel aggregatis, interdum per totam superficiem foliorum subaequaliter distributis, hemisphaericis, minutis, brunneis; soris perdurantibus globosis vel subglobosis, $88-135 \mu$ diam., membrana externa brunnea, crassa, levi, interna hyalina, contentu flavo-aureo, glanuloso; soris zoosporangiorum globosis vel ellipsoideis, $130-176 \mu$ diam.; sporangiis solitariis, globosis vel mutua pressione angulosis, $28-46 \mu$ diam., protoplasmate flavo-aureo continentibus; zoosporis incognitis.

Hab. in foliis caulibusque *Linderniae Pyxidariae* ALL. Kirin, Manchuria (M. MIURA, 17 Aug. 1918—*typus*).

Distrib. Manchuria.

* The present series was intended to publish the descriptions of the species which are new to science and are newly named by the writers. In addition, some species described in Japanese only up to the present time are inserted in this paper. The new species and some of the others will be illustrated in the Mycological Flora of Japan which will be published by the senior author.

3. *Pythiogeton dichotomum* TOKUNAGA, sp. nov.

Mycelio intra- et extra-matricali, ex hyphis ramosis, hyalinis, gracilibus, $1.8-3\ \mu$ latis; sporangiis terminaliter in ramulo laterali non vel 1-2-ies dichotome ramoso evolutis, sphaericis vel globoso-ovoideis, $20-34 \times 18-28\ \mu$, proliferis, in apice vel lateraliter tubulo exitus brevi, $4.8-15\ \mu$ longo, $4-6\ \mu$ lato ornatis; vesiculis oblongo-ovoideis, membrana tenuissima tectis; zoosporis reniformibus, a latere binis ciliis praeditis; oogoniis oosporisque ignotis.

Hab. in plantis novellis marcidis *Oryzae sativae* L. Kuroishi, Prov. Mutsu (J. KIMURA, Maio 1930); Utsunomiya, Prov. Kozuke (Junio 1931); Shimoina, Prov. Shinano (Junio 1931).

Distrib. Honshu.

This species differs from *Pythiogeton uniforme* A. LUND in size of the exit tube and from the other species in the genus in shape of the sporangium.

4. *Pythium apleroticum* TOKUNAGA, sp. nov.

Mycelio entophyto vel interdum ultra cellulam hospitis crescenti, ex hyphis hyalinis, tenuibus, usque ad $3\ \mu$ latis; sporangiis filiformibus, ca. $3\ \mu$ latis, in apice vel lateraliter tubulo exitus longitudine vario, infra membranam non incrassato ornatis; zoosporis 2-25 vel plus in vesicula evolutis, reniformibus, ca. $8.4 \times 4.8\ \mu$, a latere biciliatis; oogoniis entophytis, terminalibus vel intercalaribus, sphaeroideis, $11-20\ \mu$ diam., membrana levi; antheridiis singulis vel binis, diclinis, ab caudicula per septum sectis; oosporis solitariis, apleroticis (oogonium numquam implentibus), sphaericis, $9-17\ \mu$ diam., episporio tenui, levi, $0.6-0.8\ \mu$ crasso tectis.

Hab. parasitice in cellulis *Spirogyrae* sp. Sapporo, Prov. Ishikari (Y. TOKUNAGA, 24 Junio 1931; 17 Maio 1933).

Hab. parasitice in cellulis *Sphaeropleae annulinae* (ROTH.) AGARDH. Takinosawa prope Jozankei, Prov. Ishikari (Y. TOKUNAGA, 12 Julio 1931).

Distrib. Hokkaido.

This species differs from *Pythium gracile* SCHENK in the small oogonium and the thin oospore wall and from *Pythium akanense* TOKUNAGA in the aplerotic oospore.

5. *Pythium diclinum* TOKUNAGA, sp. nov.

Pythium gracile SCHENK var. *b* BUTLER, Mem. Dept. Agr. India, I, 5, p. 68, 1907.

Mycelio intra- et extra-matricali, ex hyphis hyalinis, $1-5\ \mu$ latis, frequenter multos ramos gemmiformes formantibus; sporangiis filiformibus, simulate hyphae similibus, tubulo exitus longitudine vario ornatis; vesiculis sphaericis,

18-40 μ diam., paucas ad 50 vel plus zoosporas gignentibus; zoosporis reniformibus, lateraliter biciliatis, quiescentibus globosis, 7.2-9.6 μ diam.; oogoniis terminalibus vel intercalaribus, sphaeroideis, levibus, interdum prope apicem uno spiculo praeditis, 18-25.2 μ diam.; antheridiis 1-3 fere 2 quoque oogonio, diclinis, ovoideis vel clavatis, saepe curvatis, 6-12 μ longis, parte latissimo 3.6-7.2 μ latis, tubulo fertili tenuissimo, ca. 1 μ lato ornatis; oosporis solitariis, apertoticis, sphaericis vel interdum late ellipsoideis, 14.4-22.8 μ diam., episporio 2-2.4 μ crasso tectis.

Hab. in plantis novellis *Oryzae sativae* L. Kotoni, Prov. Ishikari (Y. TOKUNAGA, 21 Maio 1931).

Distrib. Hokkaido.

6. *Pythium Iwayamai* S. ITO, sp. nov.

Pythium sp. IWAYAMA, Toyama Agr. Exp. Sta. Pub. p. 1-18, tab. I-II, 1933.

Mycelio intra- et extra-matricali, ex hyphis hyalinis vel olivaceo-lutescentibus, ramosissimis, 2.9-8.9 μ , fere 6.6 μ latis; sporangiis terminalibus, sphaericis vel raro late ellipsoideis, ovoideis, citriformibus, etc., levibus, leviter olivaceo-luteolis, leptodermis, 28-48 $\times$ 44 μ , per hypham lateralem vel per zoosporas germinantibus; zoosporis 8-12 in vesicula evolutis, quiescentibus sphaericis, 9-15 μ diam.; chlamydosporis intercalaribus, ellipsoideis, leviter olivaceis, 36-48 $\times$ 24 μ , membrana plus minusve crassa; oogoniis terminalibus vel intercalaribus, sphaericis, levibus; antheridiis plerumque singulis, interdum binis, androgenis vel diclinis, clavatis; oosporis sphaericis, olivaceo-lutescentibus, levibus, pleroticis (perfecte oogonium implentibus), 19-24 μ diam.

Hab. parasitice in plantis *Hordei sativi* JESS., *Tritici vulgaris* L. necnon in plantis plurimorum speciorum gramineorum.

Distrib. Honshu.

The above diagnosis is condensed and translated from the descriptions given by IWAYAMA.

7. *Phytophthora Cyperi* (IDETA) S. ITO, comb. nov.

Peronospora Cyperi IDETA, Shin-nôhô, n. 57, p. 30, 1903.

P. ? Cyperi MIYABE et IDETA, Handb. Phytopath. p. 122, fig. 20, 1904.

Kawakamia Cyperi MIYABE, New Gen. Peron. p. 1, 2 tab., 1904—PATTERSON, CHARLES & VEIHMAYER, Bull. Pl. Ind. U. S. Dept. Agr. n. 171, p. 8, 1910—SACC. Syll. XXI, p. 867—SAWADA, Descrip. Catal. Formosan Fungi, I, p. 83, tab. III, fig. 1-12, 1919—WILSON, Mycol. IV, p. 192, 1911.

Hab. in foliis calamisque *Cyperi malaccensis* LAM.

Distrib. Honshu, Kyushu, Formosa.

8. *Phytophthora Lepironiae* SAWADA, Bull. Form. Agr. n. 146, p. 8, 1919, nom. seminud.; Form. Agr. Exp. Sta. Bull. p. 131, 1919, nom. seminud.

Nozemia Lepironiae SAWADA, Descrip. Catal. Formosan Fungi, I, p. 88, tab. II, fig. 1-14, 1919, nom. seminud.

Maculis calamicolis, fusco-brunneis, elongatis; hyphis intercellularibus, 3-8 μ latis, haustriis obovoideis, ca. 7 $\times$ 8 μ instructis; conidiophoris e stomatibus erumpentibus, brevissimis, usque ad 13 μ longis, simulate hyphae similibus, rarissime ramosis; sporangiis ovoideis vel ovoideo-globosis, apice rotundatis, misere papillatis, basi brevissime pedicellatis, 40-64 $\times$ 36-52 μ , per zoosporas germinantibus; oogoniis sphaericis, dein plus minusve angulatis, 40-52 $\times$ 40-48 μ , membrana 4 μ crassa; antheridiis obovoideis, diclinis, paragenis, 22-24 $\times$ 14-16 μ ; oosporis sphaericis, flavo-brunneis, 30-38 μ diam., episporio levi, 3-4 μ crasso tectis.

Hab. in calamis *Lepironiae mucromatae* RICH.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

9. *Phytophthora Cyperi-Iriae* SAWADA, Descrip. Catal. Formosan Fungi, V, p. 13, tab. I, fig. 13-16, 1931, nom. seminud.

Maculis in foliis petiolisque primo fulvis dein brunneis; hyphis intercellularibus, 3.5-5 μ latis, haustriis ovoideis instructis; conidiophoris e stomatibus erumpentibus, brevibus, tenuibus, non ramosis; sporangiis ovoideo-ellipsoideis, basi rotundatis, papilla depressa ornatis, 49-62 $\times$ 29-33 μ , per zoosporas germinantibus; oogoniis inter cellulas hospitis, sphaericis, luteo- vel fusco-brunneis, 35-50 $\times$ 29-46 μ , membrana 2-3 μ crassa; antheridiis plerumque paragenis vel raro amphigenis, obovoideis vel ellipsoideis, 17-23 $\times$ 12-17 μ ; oosporis sphaericis, brunneolis, 25-43 μ diam., episporio levi, 1-3.5 μ crasso tectis.

Hab. in foliis petiolisque *Cyperi Iriae* L.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

10. *Phytophthora citricola* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 21, tab. II, fig. 10-19, 1927, nom. seminud.

Maculis fructiculis, primo rotundatis dein totam superficiem fructuorum occupantibus, brunneis; hyphis 4-10 μ latis, haustrio carentibus; conidiophoris simplicibus vel sympodice ramosis; sporangiis ovoideis vel obclavatis, basi rotundatis, papilla plana lataque ornatis, 21-70 $\times$ 15-39 μ , per zoosporas vel raro per tubum germinantibus; zoosporis ovoideis, a latere biciliatis, 13 $\times$ 8-9 μ ; oogoniis sphaericis, interdum basi corniformiter attenuatis, hyalinis vel brunneis,

21-44 μ diam., membrana levi, 1-1.5 μ vel raro 4 μ crasso; antheridiis obovoideis, paragenis vel rarissime amphigenis, 12-13 $\times$ 8-10 μ ; oosporis sphaericis, paene pleroticis, hyalinis vel luteis, 18-38 μ diam., episporio levi, 1-2 μ crasso tectis.

Hab. in fructis *Citri sinensis* OSB. f. *Sekkan* HAYATA necnon *C. Tankan* HAY form., etc.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

11. *Phytophthora Fagopyri* TAKIMOTO, Bull. Sc. Fak. Terk. Kjusu Imp. Univ. VI, p. 108, tab. II, 1935, nom. seminud.

Maculis cauliculis, fusco-brunneis; hyphis hyalinis, 4-12 μ latis; sporangiis globosis, ellipsoideis vel oblongo-ovoideis, papilla distincta ornatis, hyalinis, 35-45 $\times$ 24-35 μ , per tubum germinantibus; chlamydosporis hyalinis, dein flavo-brunneis, 40-50 $\times$ 40-46 μ ; membrana 4-8 μ crassa tectis; antheridiis diclinis, paragenis, clavatis.

Hab. in caulibus *Fagopyri vulgaris* HILL.

Distrib. Kyushu, Korea.

The above diagnosis is condensed and translated from the original.

12. *Phytophthora Cyperi-rotundati* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 26, tab. II, fig. 20-25, 1927, nom. seminud.

Maculis foliiculis, ellipticis, oblongo-ellipticis vel elongatis, margine pallide luteo-auranticis, medio brunneo-auranticis; hyphis intercellularibus, 3-7 μ latis, haustriis obovoideis instructis; conidiophoris e stomatibus exeuntibus, usque ad 30 μ longis, simplicibus vel raro sympodice ramosis; sporangiis oblongo-ovoideis, basi rotundatis vel attenuatis, 22-67 $\times$ 14-34 μ , per zoosporas vel per tubum germinantibus; oogoniis in parenchymate foliorum sphaericis, brunneis, leptodermis, 31-47 $\times$ 25-45 μ ; antheridiis paragenis vel amphigenis, obovoideis vel subsphaericis; oosporis sphaericis, hyalinis vel brunneolis, apleroticis, 22-39 μ diam., episporio levi, 1-3 μ crasso tectis.

Hab. in foliis *Cyperi rotundati* L.

Distrib. Kyushu, Formosa.

The above diagnosis is condensed and translated from the original.

13. *Phytophthora Boehmeriae* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 10, tab. I, fig. 15-24, 1927, nom. seminud.

Maculis foliiculis, rotundatis, brunneo-olivaceis; hyphis inter vel intra cellulas hospitis, 4-8 μ latis, haustriis cylindraceis instructis; conidiophoris non ramosis, gracilissimis, 15-16 μ longis, 2-3.5 μ latis; sporangiis ovoideo-globosis, ovoideis

vel oblongo-ovoideis, apice distincte papillatis, basi brevissime pedicellatis, $27-72 \times 20-46 \mu$, per zoosporas germinantibus; oogoniis sphaericis, hyalinis vel brunneis, $21-41 \mu$ diam.; antheridiis diclinis, amphigenis, sphaericis vel obovoideis, $12-16 \times 11-15 \mu$; oosporis sphaericis, hyalinis, $17-35 \mu$ diam., pleroticis vel apleroticis, per tubum germinantibus.

Hab. in foliis *Boehmeriae viveae* HOOK. et ARN.

Distrib. Formosa.

14. *Phytophthora Tabaci* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 35, tab. III, fig. 10-20, 1927, nom. seminud.

Maculis in foliis caulibusque, rotundatis, olivaceis dein brunneis; hyphis intercellularibus, $7-8 \mu$ latis, haustriis cylindraceis instructis; sporangiis ovoideis, ellipsoideis vel globoso-ovoideis, apice papilla distincta ornatis, $16-58 \times 12-45 \mu$, interdum $74 \times 64 \mu$, per zoosporas vel per tubum germinantibus; zoosporis ovoideis, a latere biciliatis, $13 \times 8-9 \mu$; chlamydosporis flavo-brunneis, sphaericis, $21-55 \mu$ diam., membrana $1.5-2 \mu$ crassa; oogoniis sphaericis, hyalinis, $26-30 \mu$ vel raro 43μ diam., membrana levi; antheridiis amphigenis, obovoideis vel sphaericis, $14-18 \times 11-18 \mu$; oosporis sphaericis, hyalinis, $21-24 \mu$ vel raro 30μ diam., episporio levi, tenuiusculo tectis.

Hab. in foliis caulibusque *Nicotianae Tabaci* L.

Distrib. Honshu.

This species is closely related to *Phytophthora parasitica* DASTUR, and it may be a biologic species of the latter. The above diagnosis is condensed and translated from the original.

15. *Phytophthora Polygoni* SAWADA, Descrip. Catal. Formosan Fungi, II, p. 32, tab. I, fig. 32-34, tab. II, fig. 1-3, 1922, nom. seminud.

Maculis in foliis primo flavo-viridis dein fulvis vel brunneis, effusis; hyphis intercellularibus, $5-15 \mu$ latis; conidiophoris tenellissimis, $4-20$ e stomatibus coalitis, simplicibus vel infra sporangium sympodice ramosis, $15-75 \mu$ longis, $1.5-5 \mu$ latis; sporangiis oblongatis vel citriformibus, forma variis, apice papilla conica ornatis, $17-41 \times 4-20 \mu$, per zoosporas vel per tubum germinantibus; zoosporis ovoideis, apice obtusatis, basi rotundatis, $11-15 \times 6-9 \mu$, a latere biciliatis; oogoniis oosporisque ignotis.

Hab. in foliis *Polygoni japonici* MEISN.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

16. *Phytophthora Canavaliae* HARA, Pathol. Agr. Plant. p. 845, fig. 361-362, 1930, nom. seminud.

Maculis in foliis, caulibus et fructicis, fusco-brunneis; hyphis intercellularibus, 3-8.8 μ latis, haustriis cylindricis vel globosis instructis; conidiophoris singulis vel plurimis coalitis, simplicibus vel sympodice ramosis, longitudine variis, plerumque 5-35 μ longis, 2.2-4.4 μ latis; sporangiis forma variis, fere 55 $\times$ 25 μ , per zoosporas vel raro per tubum germinantibus; zoosporis ellipsoideis, biciliatis, 10-12 $\times$ 7-9 μ ; oogoniis oosporisque ignotis.

Hab. in foliis caulibus et fructicis *Canavaliae ensiformis* DC.

Distrib. Honshu.

The above diagnosis is condensed and translated from the original.

17. *Albugo Wasabiae* HARA, Path. Agr. Plant. p. 721, fig. 306-307, 1930, nom. seminud.

Soris in foliis, petiolis, caulibus et floribus, albidis vel pallidissime luteis, distinctis, magnitudine formaque variis, saepe confluentibus; conidiophoris hyalinis, clavatis, cylindraceis vel oblongo-ovoideis, interdum medio plus minusve incrassatis, parallere dense stipatis, 28-51 μ longis, 10-19 μ latis; conidiis catenulatis, omnibus forma magnitudineque aequalibus, globosis vel late ovoideis, hyalinis, 13-24 $\times$ 11-22 μ , media 18.29 $\times$ 16.76 μ , membrana tenui, circumcirca aequali tectis; oosporis ignotis.

Hab. in foliis, petiolis, caulibus et floribus vivis *Eutremae Wasabi* MAXIM. = *Wasabiae japonicae* BOIS.

Distrib. Hokkaido, Honshu.

18. *Albugo macrospora* (TOGASHI) S. ITO, comb. nov.

Albugo candida (PERS.) O. KUNTZE var. *macrospora* TOGASHI, Agr. & Hortic. V, p. 880, 1930; Bull. Imp. Coll. Agr. & Forest. Morioka, n. 18, p. 84, 1934.

A. Brassicae SAWADA, Descrip. Catal. Formosan Fungi, VI, p. 16, 1933, nom. nudum.

Soris in foliis, petiolis, caulibus, floribus et fructis, albidis vel vix lutescentibus, forma valde irregularibus, saepe confluentibus, magnitudine variis, interdum plantam hospitem deformantibus; conidiophoris hyalinis, clavatis, parallere dense stipatis, 21-48 μ longis, 9-18 μ latis; conidiis catenulatis, omnibus forma magnitudineque aequalibus, sphaericis vel globoso-ellipsoideis, hyalinis, 12-29 $\times$ 10-27 μ , media 20.03 $\times$ 18.18 μ , membrana tenui, circumcirca aequali tectis; oosporis creberrimis in caulibus fructisque, sphaericis, flavo-brunneis, 30-48 μ diam., episporio crasso, irregulariter rugoso tectis.

Hab. in foliis, petiolis, caulibus, floribus et fructis vivis *Brassicae chinensis* L., *B. chinensis* var. *amplexicaulis* MAKINO, *B. chinensis* var. *Komatsuna* MATSUM.

et NAKAI, *B. chinensis* var. *oleiferae* MAKINO, *B. cernuae* FORBES et HEMSL, *B. japonicae* SIEB., *B. juncea* COSS., *B. oleraceae* L., *B. pekinensis* RUPR., *B. pekinensis* var. *dentatae* MATSUM. et NAKAI, *B. Rapae* L., *Raphani sativi* L. var. *macropodi* MAKINO, etc.

Distrib. Sachalin austr., Hokkaido, Honshu, Shikoku, Kyushu, Loochoo, Formosa, Korea, Manchuria.

19. *Albugo Molluginis* S. ITO, sp. nov.

Soris hypophyllis vel cauliculis, pallide lutescentibus, prominulis, superficialibus, rotundatis vel elongatis, 0.5–2.5 mm. diam., saepe confluentibus; conidiophoris hyalinis, cylindraceis, parallere dense stipatis, 28.8–38.4 μ longis, 9.6–12 μ latis; conidiis catenulatis, omnibus forma magnitudineque aequalibus, globosis, hyalinis, 12–19.2 μ diam., membrana tenui, circumcirca aequali tectis; oosporis in parenchymate foliorum, sphaericis, flavo-brunneis vel castaneo-brunneis, 40.8–52.8 μ diam., episporio reticulato, areolis plerumque 6–15 μ diam., interdum $24 \times 7.2 \mu$.

Hab. in foliis caulibusque vivis *Molluginis strictae* L. Higashiyata-mura, Prov. Tamba (Y. IMAI, 22 Aug. 1931—*typus*); Kumamoto, Prov. Higo (K. YOSHINO, 20 Julio 1907).

Distrib. Honshu, Kyushu.

20. *Albugo Ipomoeae-aquaticae* SAWADA, Descrip. Catal. Formosan Fungi, II, p. 27, tab. II, fig. 4–16, 1922, nom. seminud.

Soris hypophyllis, cauliculis floricolisque, forma rotundatis vel irregularibus, 1–3 mm. diam. vel usque ad 7 mm. longis, albis, demum epidermide rupta pulverulentis, interdum plantam hospitem deformantibus; conidiophoris hyalinis, clavatis, 32–72 μ longis, 18–23 μ latis; conidiis catenulatis, magnitudine aequalibus, globoso-cuboideis, hyalinis, 18–26 $\times$ 16–23 μ , media 21 $\times$ 18.9 μ , membrana aequali vel ad medium intus annulatim leviter incrassata tectis; oosporis hyalinis, sphaericis, 39–48 μ diam., episporio levi, 6–8 μ crasso tectis.

Hab. in foliis, caulibus et floribus vivis *Ipomoeae aquaticae* FORSK.

Distrib. Formosa.

21. *Albugo Ipomoeae-Hardwickii* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 7, tab. I, fig. 9–14, 1927, nom. seminud.

Soris in foliis, caulibus floribusque, albis vel vix brunneis, rotundatis vel oblongatis, subsuperficialibus, pulverulentis, 0.5–1 mm. diam., interdum plantam hospitem deformantibus; conidiophoris hyalinis, clavatis, 28–48 μ longis, 16–19 μ latis; conidiis catenulatis, globoso-cuboideis, 17–24 $\times$ 16–21 μ , fere 20 $\times$ 19 μ ,

membrana ad medium annulo transverse plus minusve incrassato praeditis, per zoosporas germinantibus; oosporis sphaericis, hyalinis, $29-39 \times 29-36 \mu$, episporio levi, $3-4 \mu$ vel raro 6μ crasso tectis; oogoniis tunica interne tuberculoso-rugosa tectis.

Hab. in foliis, caulibus et floribus vivis *Ipomoeae Hardwickii* HESML.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

22. *Albugo Achyranthis* (P. HENN.) MIYABE, in sched.

Cystopus Bliti DE BARY f. *Achyranthis* P. HENN. in ENGL. Bot. Jahrb. XXVIII, p. 259, 1901; ibid. XXXI, p. 728, 1902, nom. nud.—SACC. Syll. XXI, p. 858, nom. nud.

Albugo Bliti O. KUNTZE, f. *Achyranthis* SAWADA, Descrip. Catal. Formosan Fungi, II, p. 25, 1922, nom. seminud.

Soris hypophyllis, albidis vel pallide brunneis, rotundatis vel oblongatis, distinctis, pulverulentis, 0.5–3 mm. diam.; conidiophoris hyalinis, clavatis, $28-48 \mu$ longis, $12-19 \mu$ latis; conidiis catenulatis, obovoideis vel globosis, interdum angulatis, hyalinis, $12-34 \times 9-20 \mu$, membrana ad medium annulo transverse incrassato praeditis; oosporis ignotis.

Hab. in foliis vivis *Achyranthis japonicae* NAKAI necnon *A. obtusifoliae* LAM.

Distrib. Honshu, Shikoku, Kyushu, Formosa, Africa.

23. *Sclerospora Miscanthi* T. MIYAKE, in SACC. Syll. XXIV, p. 65, nom. nud.

Sclerospora macrospora (?) T. MIYAKE, Rep. Sugar Exp. Sta. Formosa, I, p. 58, tab. IX, 1911, nom. seminud.

Maculis in foliis calamisque, primo albo-lutescentibus, dein brunneis, ut in *Sclerospora graminicola* longitudinaliter filamentose dissilientibus; conidiophoris conidiisque nonvisis; oogoniis sphaeroideis vel irregulariter polyedricis, $48-72 \mu$ vel raro 34μ diam., tunica castaneo-brunnea vel rubro-brunnea, latitudine inaequali, $3-17 \mu$ crassa praeditis; oosporis sphaericis, $40-56 \mu$ vel raro 28μ diam., episporio pallide lutescenti, levi, $2.5-3.5 \mu$ crasso tectis.

Hab. in foliis calamisque vivis *Miscanthi japonici* ANDERS. Hokuto, Formosa (T. MIYAKE, 16 Junio 1911).

Hab. in foliis calamisque vivis *Sacchari officinali* L. Nagomura, Loochoo (T. MIYAGI, Aug. 1907; 3 Sept. 1907).

Distrib. Kyushu, Loochoo, Formosa.

This species is closely related to *Sclerospora graminicola* (SACC.) SCHRÖT. but it differs in larger oogonium and oospore.

24. *Plasmopara* (Rhysotheca) *Elatostematis* (TOGASHI et ONUMA) S. ITO et TOKUNAGA, comb. nov.

Peronoplasmopara Elatostemae TOGASHI et ONUMA, SAITO Ho-on Kai Mus. Res. Bull. n. 1, p. 2, fig. 1, 1934.

Maculis in foliis, pallide lutescentibus, angulatis, dein totum folium occupantibus, caespitulis hypophyllis, mollibus, albidis, floccosis insidentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, gracilibus, 240-570 μ altis, superne 4-6-ies monopodice vel subdichotome ramosis, stipite (parte axis subter ramo infimo) $\frac{1}{2}$ - $\frac{2}{3}$ totius altitudinis efficienti, 5-11 μ crasso, basi leviter incrassato, ramis laxe ramosis, longis, ramulis ultimis fere bifurcatis, subulatis, 5-17 μ vel raro 24 μ longis; conidiis late ellipsoideis vel ellipsoideis, hyalinis, 16-24 $\times$ 12-18 μ ; oosporis ignotis.

Hab. in foliis vivis *Elatostematis umbellati* BL. var. *involutrelati* MAKINO. Monte Hayachine, Prov. Rikuchu (K. TOGASHI, 7 Sept. 1929).

Distrib. Honshu.

This fungus has been described as a member of *Peronoplasmopara* by TOGASHI and ONUMA, but after examination of the original specimen the writers propose to remove the species into the genus *Plasmopara* and emend the description of the species as above.

25. *Plasmopara* (Rhysotheca) *Miyakeana* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, sparsis, albidis, mollibus, dein totum folium occupantibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 350-900 μ altis, superne monopodice ramosis, sub apice ramos 5-8 gerentibus, patentibus, stipite $\frac{1}{2}$ - $\frac{3}{4}$ totius altitudinis efficienti, 7-17 μ crasso, ramis primariis longis, laxe ramosis, secundariis 1-4-ies ramosis, ramulis ultimis frequenter trifurcatis vel interdum verticillatis, conico-subulatis, 6-15 μ longis; conidiis ovoideis, ellipsoideis vel globosis, hyalinis, 15-29 $\times$ 13-21 μ , media 18.88 $\times$ 15.86 μ ; oosporis ignotis.

Hab. in foliis vivis *Urticae Thunbergianae* SIEB. et ZUCC. Tokyo, Prov. Musashi (T. MIYAKE, 18 Julio 1903-typus).

Distrib. Honshu.

This species differs from *Plasmopara Elatostematis* in the branching of conidiophores. In the former the ultimate branchlets are frequently three forked, while in the latter they are usually two forked.

26. *Plasmopara* (Rhysotheca) *Pileae* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, sparsis, albidis, plus minusve densis, floccosis, dein totum folium occupantibus; conidiophoris singulis vel plurimis e stomatibus ex-

euntibus, gracilibus, 430-820 μ altis, superne monopodice ramosis, sub apice ramos 5-7 gerentibus, patentibus, stipite $\frac{1}{2}$ - $\frac{3}{4}$ totius altitudinis efficienti, 7-12 μ crasso, ramis primariis longis, laxe ramosis, ramulis ultimis bifurcatis vel trifurcatis, conico-subulatis, brevissimis, 2.5-10 μ longis; conidiis late ovoideis vel globosis, hyalinis, 12-21 $\times$ 12-17 μ , media 15.34 $\times$ 13.61 μ ; oosporis ignotis.

Hab. in foliis vivis *Pileae viridissimae* MAKINO. Monte Kariyose, Prov. Musashi (T. OGAWA, 24 Sept. 1933—*typus*).

Distrib. Honshu.

This species differs from *Plasmopara Miyakeana* in the smaller dimensions of conidium and ultimate branchlet than those of the latter species.

27. *Plasmopara* (Rhysotheca) *Vernoniae-chinensis* SAWADA, Trans. Formosan Nat. Hist. Soc. XXV, p. 125, 1916, nom. seminud.; Descrip. Catal. Formosan Fungi, I, p. 98, tab. III, fig. 13-15, 1919, nom. seminud.

Maculis foliicolis, pallide viridis, dein brunneis, nervuli foliorum limitatis, angularibus, 2-10 μ diam., caespitulis hypophyllis, albidis insidentibus; conidiophoris e stomatibus egredientibus, 360-760 μ altis, superne 5-9-ies ramosis, stipite 280-470 μ longo, 7-12 μ crasso, ramis inferis longis, ceteris plus minusve breviusculis, ramulis ultimis interdum 3-4 verticillatis, conico-subulatis, 9-20 μ longis; conidiis ovoideo-ellipsoideis, apice papilla depressa et basi pedicella brevi praeditis, hyalinis, 17-24 $\times$ 13-17 μ ; oosporis ignotis.

Hab. in foliis vivis *Vernoniae chinensis* LESS.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original.

28. *Plasmopara* (Rhysotheca) *Petasitidis* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, effusis, albidis, densiusculis, interdum totum folium occupantibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, 180-700 μ altis, superne monopodice ramosis, sub apice ramos 3-6 gerentibus, patentibus, stipite $\frac{2}{3}$ - $\frac{4}{5}$ totius altitudinis efficienti, 130-580 μ longo, 7-15 μ crasso, ramis primariis longis, secundariis plerumque breviusculis, ramulis ultimis plerumque bifurcatis, conico-subulatis, rectis, 7-24 μ longis; conidiis late ellipsoideis, ovoideis vel globosis, hyalinis, 16-30 $\times$ 15-26 μ , media 22.58 $\times$ 18.89 μ ; oosporis ignotis.

Hab. in foliis vivis *Petasitidis gigantei* FR. SCHM. Nopporo, Prov. Ishikari (Y. TOKUNAGA, 26 Maio 1929—*typus*); Maruyama prope Sapporo, Prov. Ishikari (I. TANAKA, 28 Maio 1926); Ebetsu, Prov. Ishikari (D. MURAYAMA, 19 Junio 1931).

Distrib. Hokkaido.

This species differs from *Plasmopara Halstedii* (FARL.) BERL. et DE TONI in the shape of conidiophores. In the former species the ultimate branchlets are usually two forked and never verticillate.

29. *Plasmopara* (Rhysotheca) *Cimicifugae* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, sparsis, albidis, floccosis, densissimis; conidiophoris plurimis e stomatibus coalitis, 140-480 μ altis, superne monopodice ramosis, sub apice ramos 2-5 gerentibus, stipite gracili, 4-12 μ crasso, basi leniter incrassato, ramis primariis rectis, longiusculis, 2-3-ies ramosis, ramulis ultimis conico-subulatis, 5-20 μ vel interdum 27 μ longis; conidiis ellipsoideis, hyalinis, 12-24 $\times$ 10-21 μ ; oosporis ignotis.

Hab. in foliis vivis *Cimicifugae foetidae* L. var. *intermediae* REGEL. Uenetsu, ins. Etorofu, Kuriles (M. NAGAI, 24 Julio 1934—*typus*).

Distrib. Kuriles.

This species differs from *Plasmopara pygmaea* (UNG.) SCHRÖT. and *P. alpina* (JOHANS.) ROSENB. in the shape of conidiophores. In the former species they are very slender and possess long distinct branches.

***Pseudoplasmodium* SAWADA**

Descrip. Catal. Formosan Fungi, II, p. 40, 1922, nom. seminud.

Mycelium ramosum, intercellulare, haustriis ovoideis instructum. Conidiophori erecti, solitarii vel fasciculati e stomatibus foliorum egredientes, superne pluries ramosi, ramis monopodice dispositis, patulis, fere rectangulo-divaricatis, ultime ramulos apice truncatos productis. Conidia ovoidea, hyalina, per tubum germinantia. Oosporae ignotae.

30. *Pseudoplasmodium* *Justiciae* SAWADA. Descrip. Catal. Formosan Fungi, II, p. 40, tab. II, fig. 17-25, 1922, nom. seminud.

Plasmopara Wildemaniana P. HENN. var. *macrospora* SAWADA, Trans. Formosan Nat. Hist. Soc. n. 16, p. 2, 1914; Descrip. Catal. Formosan Fungi, I, p. 105, tab. III, fig. 16-19, 1919, nom. seminud.

Maculis foliicolis, lutescentibus, rotundatis vel irregularibus; caespitulis hypophyllis, albidis, mollibus; conidiophoris 1-5 e stomatibus erumpentibus, 320-720 μ altis, superne monopodice ramosis, sub apice ramos 5-9 gerentibus, stipite 170-400 μ longo, 7-12 μ crasso, basi saepe incrassato, usque 17 μ crasso, ramis primariis longis, pluries ramosis, inferioribus ramis secundariis longiusculis ramosis praeditis, ramulis ultimis fere bi- vel tri-furcatis, conico-subulatis, 5-17 μ longis; conidiis ovoideis vel ovoideo-ellipsoideis, apice rotundatis, basi brevissime pedicellatis, hyalinis, 12-18 $\times$ 11-14 μ , per tubum germinantibus; oosporis ignotis.

Hab. in foliis vivis *Justiciae procumbentis* L. Taihoku, Formosa (K. SAWADA, 25 Oct. 1923).

Distrib. Formosa.

31. *Peronospora Cucubali* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, mollibus, difficile visibilibus, leviter fulvescentibus, effusis; conidiophoris singulis vel plurimis e stomatibus erumpentibus, $450-780\ \mu$ altis, trunco $\frac{3}{5}-\frac{3}{4}$ totius altitudinis efficienti, $7-10\ \mu$ crasso, basi non incrassato, ramis 6-10-ies dichotome ramosis, patentibus, primariis oblique erectis, paenultimis plerumque arcuatis, ramulis ultimis bifurcatis, rectangulis, arcuatis vel sigmatim curvatis, $4.5-18\ \mu$ longis, aut omnibus aequilongis aut uno plus minusve brevioribus; conidiis hyalinis vel leviter griseo-violaceis, late ellipsoideis vel ovoideis, fere brevissime pedicellatis, $15-27 \times 13-20\ \mu$, fere $17-24 \times 15-17\ \mu$, media $20.28 \times 16.24\ \mu$; oosporis creberrimis in foliis marcidis, laete brunneis, globosis, $35-50\ \mu$ diam., episporio $6-8\ \mu$ crasso, dense verrucoso tectis.

Hab. in foliis vivis *Cucubali bacciferi* L. var. *japonici* MIQ. Sapporo, Prov. Ishikari (Y. TOKUNAGA, 13 Junio 1930—*typus*; K. MIYABE, 6 Junio 1890; Y. TOCHINAI et Y. HOMMA, 15 Junio 1934).

Distrib. Hokkaido.

32. *Peronospora Cerastii-glandulosi* S. ITO et TOKUNAGA, sp. nov.

Caespitulis in foliis floribusque, densis, griseo-violaceis, totum tergum foliorum tegentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, patentibus, $250-600\ \mu$ altis, superne 4-8-ies dichotome ramosis, trunco $\frac{1}{2}-\frac{3}{4}$ totius altitudinis efficienti, $7-14\ \mu$ crasso, basi leviter tumido, ramis acutangulo divergentibus, plerumque arcuatis, ramulis ultimis rectangulis, leviter curvatis vel rectis, plerumque aequilongis, $3-26\ \mu$, fere $6-14\ \mu$ longis; conidiis hyalinis vel leviter flavis, late ellipsoideis, $14-29 \times 13-23\ \mu$, fere $18-24 \times 15-19\ \mu$ latis, media $21.97 \times 17.73\ \mu$; oosporis creberrimis in floribus, laete brunneis, globosis, $30-46\ \mu$, fere $35-42\ \mu$ diam., episporio reticulato tectis.

Hab. in foliis et quoque pedunculis calycibusque vivis *Cerastii vulgati* L. var. *glandulosi* REGEL. Sapporo, Prov. Ishikari (Y. TOKUNAGA, 21 Maio 1928—*typus*; S. ITO, 17 Maio 1930); Maruyama prope Sapporo, Prov. Ishikari (H. OTANI, 27 Maio 1929).

Distrib. Hokkaido, Honshu, Kyushu.

This species is closely related to *Peronospora trivialis* GÄUM., but they differ from each other in the size of conidium. In the latter the conidia are $19-36 \times 12-38\ \mu$, average $26.40 \times 21.18\ \mu$.

33. *Peronospora Stellariae-aquaticae* SAWADA, Trans. Formosan Nat. Hist. Soc. n. 79-80, p. 204, 1925, nom. seminud.; Descrip. Catal. Formosan Fungi, III, p. 58, tab. IV, fig. 19-21, 1927, nom. seminud.

Maculis in foliis, flavescentibus, subrotundatis, caespitulis hypophyllis, albidis, effusis insidentibus; conidiophoris singulis vel plurimis e stomatibus egredientibus, 150-500 μ altis, trunco $\frac{1}{2}$ - $\frac{2}{3}$ totius altitudinis efficienti, 80-300 μ longo, 6-15 μ crasso, ramis 4-8-ies vel raro novies dichotome ramosis, rectis vel leniter arcuatis, ramulis ultimis fere rectangulis, rectis vel leviter curvatis, 4-17 μ longis; conidiis late ellipsoideis vel ellipsoideis, hyalinis, 14-26 $\times$ 12-19 μ , fere 17-22 $\times$ 14-17 μ , media 19.29 $\times$ 16.07 μ ; oosporis in foliis petiolisque, sphaericis, 34-42 μ diam., episporio flavo-brunneo, reticulato tectis.

Hab. in foliis vivis *Stellariae aquaticae* Scop.

Distrib. Hokkaido, Honshu, Kyushu, Formosa.

34. *Peronospora Stellariae-radiantis* S. ITO et TOKUNAGA, sp. nov.

Caespitulis mollibus, griseo-violaceis, totum tergum foliorum tegentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 200-550 μ altis, superne 3-8-ies dichotome ramosis; trunco $\frac{2}{5}$ - $\frac{4}{5}$ totius altitudinis efficienti, 100-400 μ longo, 7-17 μ crasso, basi leviter incrassato, ramis paene rectis vel curvatis, tenuibus, ramulis ultimis rectangulis, 4-20 μ longis, arcuatis vel sigmatim curvatis; conidiis hyalinis vel pallide brunneis, saepe ellipsoideis vel late ellipsoideis, interdum ovoideis, raro basi brevissime pedicellatis, magnitudine variabilibus, 15-34 $\times$ 14-21 μ , fere 19-24 $\times$ 16-19 μ , media 21.31 $\times$ 17.23 μ ; oosporas invenire non potui.

Hab. in foliis vivis *Stellariae radiantis* L. Shikka, Sachalin austr. (Y. HOSHINO, 8 Julio 1933—*typus*).

Distrib. Sachalin austr.

This species is very related to *Peronospora Stellariae-aquaticae* SAWADA, but it differs from the latter in the size of conidium.

35. *Peronospora Stellariae-uliginosae* SAWADA, Trans. Formosan Nat. Hist. Soc. n. 79-80, p. 203, 1925, nom. seminud.; Descrip. Catal. Formosan Fungi, III, p. 59, tab. IV, fig. 22-26, 1927, nom. seminud.

Maculis in foliis caulibusque, flavo-viridis, dein albidis; caespitulis hypophyllis vel cauliculis, effusis, mollibus, albidis; conidiophoris singulis vel plurimis e stomatibus egredientibus, 180-850 μ altis, trunco 100-350 μ longo, 7-12 μ crasso, ramis 6-9-ies dichotome ramosis, plus minusve curvatis, ramulis ultimis fere rectangulis, brevibus; conidiis obovoideis vel late ellipsoideis, hyalinis, 14-24 $\times$ 12-18 μ , media 18.96 $\times$ 15.02 μ ; oogoniis sphaericis vel obovoideis, 33-74 $\times$

30–53 μ ; antheridiis oblongis, ca. $18 \times 14 \mu$, paragenis; oosporis sphaericis, 28–40 μ diam., episporio brunneo, reticulato tectis.

Hab. in foliis caulibusque vivis *Stellariae uliginosae* L.

Distrib. Hokkaido, Honshu, Kyushu, Formosa.

36. *Peronospora Hiratsukae* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, griseo-albis, mollibus, effusis, totum tergum foliorum occupantibus; conidiophoris saepe singulis e stomatibus exeuntibus, 200–500 μ altis, superne 4–7-ies dichotome ramosis, trunco $\frac{1}{2}$ – $\frac{2}{3}$ totius altitudinis efficienti, 6–16 μ crasso, ramulis ultimis rectangulo-divaricatis, curvatis, inaequilongis, 6–34 μ longis; conidiis ellipsoideis, leniter brunneo-violaceis, $14\text{--}28 \times 12\text{--}21 \mu$, media $21.6 \times 16.99 \mu$; oosporis ignotis.

Hab. in foliis vivis *Galii brachypodii* MAXIM. Monte Teine, Prov. Ishikari (N. HIRATSUKA, 28 Junio 1925—*typus*); Sounkyo, Prov. Ishikari (K. MIYABE et N. HIRATSUKA, 19 Aug. 1925).

This species is related to *Peronospora calotheca* DE BARY rather than to *Peronospora* parasitic on *Galium* spp.

37. *Peronospora Sakamotoi* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, pallide griseo-violascentibus, mollibus, interdum plus minusve densiusculis, per totam superficiem foliorum occupantibus; conidiophoris plerumque singulis e stomatibus erumpentibus, gracilibus, 300–800 μ altis, trunco $\frac{1}{3}$ – $\frac{3}{4}$ totius altitudinis efficienti, 6–12 μ crasso, ramis 3–7-ies dichotome ramosis, patentibus, inferis rectis, ceteris curvatis, ramulis ultimis rectangulo-divaricatis, validis, curvatis vel rectis, 7–27 μ longis; conidiis oblongatis vel elongatis, leviter flavo-brunneis, $26\text{--}56 \times 16\text{--}24 \mu$, media $43.62 \times 20.56 \mu$; oosporis ignotis.

Hab. in foliis vivis *Galii pseudoasprelli* MAKINO. Zenibako, Prov. Shiribeshi (M. SAKAMOTO, 15 Junio 1929—*typus*; K. FUJITA, 15 Junio 1929).

Distrib. Hokkaido.

This species is closely related to *Peronospora Aparines* (DE BARY) GÄUM., but its conidia are larger and longer than those of the latter.

38. *Peronospora Galii-trifidi* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis vel cauliculis, mollibus vel densiusculis, griseo-albis, per totam superficiem occupantibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, gracilibus, 300–650 μ altis, superne 5–8-ies dichotome ramosis, patentibus, trunco $\frac{1}{3}$ – $\frac{2}{3}$ totius altitudinis efficienti, 6–12 μ crasso, basi raro leviter incrassato, ramulis ultimis rectangulis, parum curvatis vel rectis,

fere brevibus tenuibusque, 5-15 μ , interdum 22 μ longis; conidiis ellipsoideis vel citriformibus, interdum ovoideis, utrimque vel utralibet plus minusve acutiusculis, leviter flavo-violaceis, 19-29 $\times$ 13-20 μ , media 23.36 $\times$ 15.44 μ ; oosporis ignotis.

Hab. in foliis caulibusque vivis *Galii trifidi* L. Higashitaraika prope Shikka, Sachalin austr. (H. OTANI et Y. IMAI, 23 Julio 1930—*typus*); Shikka, Sachalin austr. (H. OTANI et Y. IMAI, 19 Julio 1930).

Distrib. Sachalin austr.

This species is closely related to *Peronospora borealis* GÄUM., but it differs from the latter in shape and size of the conidium. In this species the conidia are usually acute in both sides and smaller than those of the latter.

39. *Peronospora Hommae* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis vel cauliculis, pallide griseo-violascentibus, plus minusve densiusculis, per totam superficiem foliorum occupantibus; conidiophoris singulis vel plusculis e stomatibus erumpentibus, 200-720 μ altis, trunco $\frac{1}{3}$ - $\frac{2}{3}$ totius altitudinis efficienti, ramis 4-9-ies dichotome vel plus minusve irregulariter ramosis, ramulis ultimis rectangulis, curvatis vel rectis, interdum parum flexuosis, validis, 7-26 μ interdum 40 μ longis; conidiis ellipsoideis, basi raro brevissime pedicellatis, pallide brunneo-violascentibus, 18-30 $\times$ 14-22 μ , media 23.8 $\times$ 17.52 μ ; oosporis ignotis.

Hab. in foliis caulibusque vivis *Galii trifloriformis* KOM. Nopporo, Prov. Ishikari (Y. TOKUNAGA, 15 Junio 1929—*typus*); monte Moiwa, Prov. Ishikari (Y. HOMMA, 19 Junio 1921); Maruyama prope Sapporo, Prov. Ishikari (I. TANAKA, 28 Junio 1929); Kitanayoshi, Sachalin austr. (Y. TOKUNAGA et K. KAWAI, 28 Aug. 1929).

Distrib. Sachalin austr., Hokkaido.

This species is closely related to *Peronospora Aparines* (DE BARY) GÄUM., but its conidia are smaller than those of the latter.

40. *Peronospora Yamadana* TOGASHI, in litt.

Maculis foliicolis, angularibus, a nervis limitatis, dein totam superficiem occupantibus; caespitulis hypophyllis, pallide flavo-brunneis, mollibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, 140-280 μ altis, superne 3-6-ies dichotome ramosis, trunco brevi, $\frac{1}{3}$ - $\frac{1}{2}$ totius altitudinis efficienti, 60-140 μ longo, 5-10 μ crasso, basi leniter incrassato (usque ad 14 μ), ramis tenuibus, curvatis, ramulis ultimis rectangulo-divaricatis, arcuatis vel sigmatim curvatis, interdum plus minusve flexuosis, 5-24 μ longis; conidiis ellipsoideis vel globoso-ellipsoideis, leviter luteo-brunneis, 14-25 $\times$ 10-20 μ , media 20.05 $\times$

14.56 μ ; oosporis ignotis.

Hab. in foliis vivis *Thalictri tuberiferi* MAXIM. Monte Iwate, Prov. Rikuchu (K. TOGASHI, 16 Julio 1934—*typus*; G. YAMADA, 18 Julio 1908).

Distrib. Honshu.

41. *Peronospora Achlydis* S. ITO et TOKUNAGA, sp. nov.

Maculis in foliis, lutescentibus, angularibus; caespitulis mollissimis, griseo-albis, totum tergum foliorum subtegentibus; conidiophoris singulis vel plusculis e stomatibus exeuntibus, 85–300 μ altis, trunco $\frac{2}{5}$ – $\frac{2}{3}$ totius altitudinis efficienti, 40–180 μ longo, 5–10 μ crasso, ramis 3–7-ies dichotome ramosis, rectis vel arcuatis, ramulis ultimis rectangulis, sigmatim curvatis, aequilongis vel uno axiali longiore, 5–18 μ longis; conidiis leviter flavis vel paene hyalinis, late ellipsoideis, ovoideis vel globosis, 14–25 $\times$ 12–21 μ , fere 17–21 $\times$ 15–18 μ , media 18.87 $\times$ 16.51 μ ; oosporis creberrimis in foliis marcidis, globosis, 17–33 μ diam., episporio flavo-brunneo, levi, leviter rugoso tectis; oogoniis forma irregularibus, 25–40 μ diam.

Hab. in foliis vivis *Achlydis japonici* MAXIM. Monte Tengu, Prov. Ishikari (Y. IMAI et K. ISHIZUKA, 21 Junio 1931—*typus*).

42. *Peronospora Desmodii* MIYABE, in sched.

Maculis foliicolis, luteo-viridis, angularibus, a nervis limitatis, sparsis, dein totum folium occupantibus, caespitulis hypophyllis, mollissimis, leviter griseo-albis insidentibus; conidiophoris singulis vel plusculis e stomatibus exeuntibus, tenuissimis, 200–500 μ altis, trunco $\frac{2}{5}$ – $\frac{2}{3}$ totius altitudinis efficienti, 140–350 μ longo, 3–8 μ crasso, basi rarius leviter incrassato, ramis 4–6-ies dichotome ramosis, plerumque arcuatis, ramulis ultimis rectangulis, paene rectis vel leviter curvatis, 4–18 μ longis, uno axiali saepe longiore; conidiis obscure griseis, late ellipsoideis, 15–26 $\times$ 14–24 μ , fere 19–21 $\times$ 16–19 μ , media 20.4 $\times$ 18.36 μ ; oosporis creberrimis in parenchymate foliorum, globosis, 25–34 μ diam., episporio levi, dilute brunneo tectis.

Hab. in foliis vivis *Desmodii racemosi* DC. Maruyama prope Sapporo, Prov. Ishikari (Y. TOKUNAGA, 28 Sept. 1934—*typus*; G. YAMADA, 7 Aug. 1901; S. ITO, 16 Julio 1934); Ishiyama, Prov. Ishikari (K. MIYABE, 15 Julio 1896); monte Usu, Prov. Iburi (K. ISHIZUKA, 28 Sept. 1932); Tokyo, Prov. Musashi (G. YAMADA, 29 Aug. 1900).

Peronosporae forma in foliis vivis *Dumasiae truncatae* SIEB. et ZUCC. Hiraishi-mura, Prov. Shimotsuke (R. KIKUCHI, 25 Julio 1926); Oshima-mura, Prov. Echigo (K. ISHIZUKA, 23 Aug. 1930; 27 Aug. 1933).

Peronosporae forma in foliis vivis *Falcatae comosae* O. KUNTZE var. *japonicae*

MAKINO. Maruyama prope Sapporo, Prov. Ishikari (K. ISHIZUKA, 14 Sept. 1930; Y. TOKUNAGA, 2 Oct. 1934); monte Komagadake, Prov. Ugo (K. TOGASHI, 31 Julio 1929).

Distrib. Hokkaido, Honshu.

In the fungus parasitic on *Dumasia truncata* the conidia are somewhat smaller than those of above description. They are $15-22 \times 14-20 \mu$, average $18.20 \times 16.36 \mu$.

43. *Peronospora Eritrichii* S. ITO et TOKUNAGA, sp. nov.

Peronospora Echinosperti MIURA (non SWINGLE), Fl. Manch. & Mong. III, p. 52, 1928.

Caespitulis mollibus, leviter flavo-albis, totum tergum foliorum tegentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, validis, compactis, $100-250 \mu$ altis, trunco $\frac{1}{3}-\frac{3}{4}$ totius altitudinis efficienti, $50-150 \mu$ longo, $7-12 \mu$ crasso, basi interdum leviter incrassato, ramis 3-5-ies dichotome ramosis, paene rectis vel arcuatis, ramulis ultimis rectangulis, rectis vel interdum curvatis, validis, $5-24 \mu$ longis; conidiis ellipsoideis, leviter brunneis, $16-32 \times 15-25 \mu$, fere $20-28 \times 18-21 \mu$, media 24.84×19.94 ; oosporis creberrimis in parenchymate foliorum marcidiorum, globosis, $30-48 \mu$ diam., episporio crasso, flavo-brunneo, irregulariter rugoso tectis.

Hab. in foliis vivis *Eritrichii pectinati* DC. Kung-chu-ling, Manchuria (M. MIURA, 17 Maio 1921—*typus*).

Distrib. Manchuria.

This species differs from *Peronospora Echinosperti* SWING. in the smaller conidiophores and conidia. In the latter species the conidiophores are $120-530 \mu$ high, the conidia $19-36 \times 16-27 \mu$, average $27.39 \times 21.57 \mu$.

44. *Peronospora Trigonotidis* S. ITO et TOKUNAGA, sp. nov.

Caespitulis mollibus, leviter griseo-violaceis, totum tergum foliorum tegentibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, $350-800 \mu$ altis, trunco $\frac{1}{2}-\frac{2}{3}$ totius altitudinis efficienti, $7-14 \mu$ crasso, basi leviter incrassato, ramis 5-9-ies dichotome ramosis, patentibus, primariis oblique rectis, paenultimis plerumque leviter curvatis, ramulis ultimis rectangulis, tenuibus, leviter sigmatim curvatis vel arcuatis, $6-24 \mu$ longis, aut omnibus aequilongis aut uno plus minusve brevioribus; conidiis late ellipsoideis, leviter brunneis, $16-28 \times 15-23 \mu$, fere $19-24 \times 17-21 \mu$, media $21.77 \times 19.06 \mu$; oosporis creberrimis in parenchymate foliorum marcidiorum, globosis, $22-31 \mu$ diam., episporio crasso, flavo, irregulariter rugoso tectis.

Hab. in foliis vivis *Trigonotidis peduncularis* BENTH. Iro-zaki, Prov. Izu

(Y. TOKUNAGA, 18 Apr. 1934—*typus*); Morioka, Prov. Rikuchu (G. YAMADA, 6 Maio 1904); Nakamura, Prov. Mino (M. HIURA, 5 Junio 1934).

Distrib. Honshu.

This species is distinct from the species in *Peronospora Echinospirmi* group by possessing the slender conidiophores and smaller conidia.

45. *Peronospora Bothriospermi* SAWADA, Descrip. Catal. Formosan Fungi, III, p. 54, tab. IV, fig. 12-14, 1927, nom. seminud.

Maculis foliicolis, flavo-viridis, effusis, caespitulis hypophyllis, mollibus, pallide brunneo-violascentibus insidentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, gracilibus, 250-750 μ altis, trunco $\frac{1}{2}$ - $\frac{3}{4}$ totius altitudinis efficienti, 5-10 μ crasso, basi leviter incrassato, ramis 5-9-ies dichotome ramosis, patentibus, curvatis, ramulis ultimis rectangulo-divaricatis, tenuibus, sigmatim curvatis, 2-25 μ longis; conidiis late ellipsoideis vel ellipsoideis, leviter brunneo-violascentibus vel hyalinis, 14-26 $\times$ 11-21 μ , media 19.53 $\times$ 16.06 μ ; oosporis ignotis.

Hab. in foliis vivis *Bothriospermi tenelli* F. et MEY. necnon *B. tenelli* F. et MEY. var. *asperugoidis* MAXIM.

Distrib. Honshu, Formosa.

46. *Peronospora Perillae* MIYABE, in sched.

Caespitulis mollissimis, griseo-violaceis, tergum foliorum nonnulla parte subtegentibus; conidiophoris fere singulis e stomatibus erumpentibus, 350-600 μ altis, superne 4-8-ies dichotome ramosis, trunco $\frac{1}{2}$ - $\frac{3}{4}$ totius altitudinis efficienti, 200-430 μ longo, 7-13 μ crasso, ramulis ultimis rectangulis, literae sigma similiter curvatis vel interdum rectis, fere inaequalibus, tenuibus, fere 10-36 μ longis; conidiis late ellipsoideis vel globosis, pallide brunneo-violaceis, 15-27 $\times$ 14-25 μ , fere 19-24 $\times$ 18-22 μ , media 21.57 $\times$ 19.68 μ ; oosporis sphaericis, 19-28 μ diam., episporio hyalino vel lutescenti, levi, 0.5 μ crasso tectis.

Hab. in foliis vivis *Perillae frutescentis* BRIT. var. *crispae* DECNE. Utsunomiya, Prov. Shimotsuke (R. KIKUCHI, 16 Julio 1926—*typus*).

Distrib. Honshu.

47. *Peronospora Chrysanthemi-coronarii* (SAWADA) S. ITO et TOKUNAGA, comb. nov.

Plasmopara Chrysanthemi-coronarii SAWADA, Descrip. Catal. Formosan Fungi, V, p. 15, tab. I, fig. 17-21, 1931, nom. seminud.

Maculis in foliis, flavo-viridis, angularibus vel rotundatis, saepe a nervis limitatis, dein totam superficiem occupantibus, caespitulis hypophyllis, albidis,

densis insidentibus; conidiophoris 1-3 e stomatibus coalitis, 420-780 μ altis, trunco 225-545 μ longo, 11-15 μ crasso, ramis 5-8-ies dichotome ramosis, rectis vel leniter curvatis, plus minusve crassiusculis, ramulis ultimis sub angulo obtuso orientibus, interdum trifurcatis, rectis vel raro vix curvatis, apice leviter incrassatis, 9-26 μ longis, 3-5 μ crassis; conidiis oblongatis vel ellipsoideis, hyalinis, 38-56 $\times$ 18-28 μ , media 44.6 $\times$ 24.1 μ ; oosporis ignotis.

Hab. in foliis vivis *Chrysanthemi coronarii* L.

Distrib. Formosa.

The above diagnosis is condensed and translated from the original description of *Plasmopara Chrysanthemi-coronarii*.

48. *Peronospora Helichrysi* TOGASHI et EGAMI, in litt.

Caespitulis hypophyllis, albo-lutescentibus, mollibus, effusis, dein per totam superficiem foliorum distributis; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 200-500 μ altis, superne 3-7-ies ramosis, trunco $\frac{1}{2}$ - $\frac{3}{4}$ totius altitudinis efficienti, 7-12 μ crasso, ramis dichotomis vel subdichotomis, interdum trichotomis, leniter curvatis vel rectis, crassiusculis, ramulis ultimis interdum trifurcatis, fere rectis vel leviter curvatis, 7-24 μ longis, basi plus minusve incrassatis; conidiis ellipsoideis, hyalinis vel leviter flavo-brunneis, 22-38 $\times$ 17-25 μ , media 29.20 $\times$ 19.01 μ ; oosporis ignotis.

Hab. in foliis vivis *Helichrysi bracteati* WILLD. Sapporo, Prov. Ishikari (Y. IMAI, 26 Julio 1932—*typus*; T. FUKUSHI et Y. IMAI, 24 Sept. 1932); Kotoni, Prov. Ishikari (K. KURIBAYASHI, 15 Julio 1925); Morioka, Prov. Rikuchu (T. EGAMI, 5 Nov. 1931).

Distrib. Hokkaido, Honshu.

49. *Peronospora Fujitai* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis, mollibus, sordide violaceis, effusis; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 180-300 μ altis, trunco $\frac{1}{2}$ - $\frac{2}{3}$ totius altitudinis efficienti, 7-15 μ crasso, basi saepe leviter tumido, ramis 3-6-ies dichotome ramosis, primariis paene rectis, paenultimis plerumque arcuatis, ramulis ultimis rectangulis, arcuatis vel sigmatim curvatis, fere inaequalibus, 5-25 μ longis; conidiis late ellipsoideis, leviter fulvescentibus, 18-33 $\times$ 16-28 μ , media 26.27 $\times$ 21.69 μ ; oosporis creberrimis in foliis marcidis, globosis, 25-36 μ diam., episporio crasso, pallide brunneis, levi, leviter rugoso tectis.

Hab. in foliis vivis *Allii Victorialis* L. Zenibako-tôge, Prov. Shiribeshi (K. FUJITA, 1 Junio 1930—*typus*; Y. TOKUNAGA, 15 Junio 1932; 28 Maio 1933); monte Tengu, Prov. Ishikari (Y. TOKUNAGA, 15 Junio 1930; Y. IMAI, 21 Junio 1931).

Distrib. Hokkaido.

50. *Peronospora Hylomeconis* S. ITO et TOKUNAGA, sp. nov.

Caespitulis mollibus, brunneo-albis, tergum foliorum nonnulla parte tegentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 150–400 μ altis, superne 3–7-ies dichotome ramosis, trunco $\frac{2}{5}$ – $\frac{2}{3}$ totius altitudinis efficienti, 100–250 μ longo, 5–12 μ crasso, ramulis ultimis rectangulis, literae sigma similiter curvatis, 7–24 μ longis; conidiis hyalinis vel pallide brunneolis, late ellipsoideis, 16–28 $\times$ 15–24 μ , fere 20–25 $\times$ 18–21 μ , media 22.80 $\times$ 19.21 μ ; oosporis ignotis.

Hab. in foliis vivis *Hylomeconis japonicae* PRANTL et KUENDIG. var. *typicae* MAKINO. Akabane, Prov. Musashi (N. NAMBU et I. UEMURA, 24 Apr. 1900—*typus*).

Distrib. Honshu.

This species is closely related to *Peronospora Chelidonii* MIYABE, but it differs from the latter in the larger size of conidium.

51. *Peronospora Nasturtii-palustris* S. ITO et TOKUNAGA, sp. nov.

Caespitulis hypophyllis et cauliculis, densis, brunneo-albis, per totam superficiem distributis; conidiophoris plurimis e stomatibus exeuntibus, 140–400 μ altis, superne 4–8-ies dichotome ramosis, trunco $\frac{1}{2}$ – $\frac{3}{4}$ totius altitudinis efficienti, 80–300 μ longo, 6–20 μ crasso, ramis rectis, breviusculis, ramulis ultimis rectangulo-divaricatis, literae sigma similiter curvatis, sed parte ultima longioris ramuli saepe inflexis, 7–36 μ longis; conidiis ellipsoideis, hyalinis, 12–24 $\times$ 10–18 μ , fere 16–20 $\times$ 13–16 μ , media 18.05 $\times$ 14.71 μ ; oogoniis oosporisque ignotis.

Hab. in foliis caulibusque vivis *Nasturtii palustris* DC. Horomui, Prov. Ishikari (Y. IMAI, 1 Junio 1930—*typus*); Sapporo, Prov. Ishikari (I. TANAKA, 17 Julio 1924; M. SAKAMOTO, 21 Junio 1929); Shikka, Sachalin austr. (H. OTANI et Y. IMAI, 31 Julio 1930); Morioka, Prov. Rikuchu (G. YAMADA, 20 Maio 1904; K. TOGASHI, 2 Julio 1934).

Distrib. Sachalin austr., Hokkaido, Honshu.

52. *Bremia elliptica* SAWADA, Bot. Mag. Tokyo, XXVIII, p. 139, fig. 6, 1914, nom. seminud.; Descrip. Catal. Formosan Fungi, I, p. 107, tab. IV, fig. 10–13, 1919, nom. seminud.; ibid. II, p. 42, 1922, nom. seminud.

Maculis foliicolis, flavo-viridis, polygoniis, a nervis limitatis, caespitulis hypophyllis, albidis, mollibus insidentibus; conidiophoris singulis vel plurimis e stomatibus exeuntibus, 240–570 μ altis, superne 3–6 ies dichotome ramosis, trunco $\frac{1}{2}$ – $\frac{2}{3}$ totius altitudinis efficienti, 140–400 μ longo, 8–16 μ crasso, basi

vix incrassato, ramis validis, rectis vel plus minusve curvatis, ultimis brevibus, crassiusculis, apice in vesiculam tympaniformem inflatis, 2-6 sterigmatibus 5-12 μ longis praeditis; conidiis late ellipsoideis vel ellipsoideis, apice depresso papillatis, hyalinis, 15-24 $\times$ 12-20 μ ; oosporis ignotis.

Hab. in foliis vivis *Lactuae laciniatae* MAKINO, *L. formosanae* MAXIM. necnon *L. Raddeanae* MAXIM.

Distrib. Hokkaido, Formosa.

53. *Bremia microspora* SAWADA, Bot. Mag. Tokyo, XXVIII, p. 139, fig. 7, 1914, nom. seminud.; Descrip. Catal. Formosan Fungi, I, p. 109, tab. IV, fig. 14-18, 1919, nom. seminud.

Maculis foliicolis, luteolis, effusis, caespitulis hypophyllis, albidis, mollibus insidentibus; conidiophoris e stomatibus caespitosis, 270-600 μ altis, superne 3-7-ies dichotome ramosis, trunco $\frac{1}{3}$ - $\frac{2}{3}$ totius altitudinis efficienti, 140-340 μ longo, 6-16 μ crasso, basi interdum vix incrassato, ramis tenuiusculis, arcuatis, ultimis brevibus, apice in vesiculam subglobosam parviusculamque inflatis, 2-7 sterigmatibus brevibus 2.5-5 μ interdum 8 μ longis praeditis; conidiis ellipsoideis vel globosis, hyalinis, 9-19 $\times$ 8-15 μ ; oosporis ignotis.

Hab. in foliis vivis *Lactuae debilis* MASS. necnon *L. dentatae* MAKINO var. *Thunbergii* MAKINO.

Distrib. Hokkaido, Honshu, Formosa.

54. *Bremia Picridis* S. ITO et TOKUNAGA, sp. nov.

Maculis foliicolis, lutescentibus, rotundatis, effusis, caespitulis hypophyllis, albidis, densiusculis insidentibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, 300-850 μ altis, 4-7-ies dichotome ramosis, trunco $\frac{1}{3}$ - $\frac{3}{4}$ totius altitudinis efficienti, 200-650 μ longo, superne 7-15 μ crasso, basi leviter incrassato, ramis gracilibus, inferis rectis, superis curvatis, ultimis brevibus, apice in vesiculam tympaniformem inflatis, 3-7 sterigmatibus 5-9 μ longis praeditis; conidiis ovoideis, ellipsoideis vel globosis, hyalinis, 12-22 $\times$ 10-19 μ , fere 15-18 $\times$ 12-16 μ , media 16.86 $\times$ 14.54 μ ; oosporis ignotis.

Hab. in foliis vivis *Picridis hieracioidis* L. var. *japonicae* REGEL. Sounkyo, Prov. Ishikari (Y. TOCHINAI et Y. TOKUNAGA, 3 Aug. 1934—*typus*; S. ITO, 26 Julio 1926); ins. Rebun, Prov. Kitami (K. MIYABE, 23 Aug. 1894); Maruyama prope Sapporo, Prov. Ishikari (S. YAMAGIWA, 14 Junio 1931).

Distrib. Sachalin austr., Kuriles, Hokkaido, Honshu.

55. *Bremia Taraxaci* S. ITO et TOKUNAGA, sp. nov.

Maculis foliicolis, flavo-viridis, effusis, caespitulis hypophyllis albidis, densi-

usculis insidentibus; conidiophoris singulis vel plurimis e stomatibus erumpentibus, 200-720 μ altis, superne 4-7-ies dichotome ramosis; raro trichotomis, trunco $\frac{1}{3}$ - $\frac{3}{4}$ totius altitudinis efficienti, 70-500 μ longo, 7-19 μ crasso, interdum basi vix incrassato, ramis validiusculis, inferis rectis, superis plus minusve curvatis, ultimis plerumque longis, apice tympaniformem vel subglobosam inflatis, 3-7 sterigmatibus 4-8 μ longis praeditis; conidiis ellipsoideis, ovoideo-ellipsoideis vel globosis, apice papilla depressa ornatis, hyalinis, 16-24 $\times$ 15-22 μ ; oosporis ignotis.

Hab. in foliis vivis *Taraxaci vulgaris* SCHRENK. Nopporo, Prov. Ishikari (Y. TOKUNAGA, 26 Maio 1929—*typus*); Sapporo, Prov. Ishikari (T. MIYAKE, 25 Maio 1902; I. TANAKA, 29 Maio 1925).

Hab. in foliis vivis *Taraxaci ceratophori* DC. Monte Yubari, Prov. Ishikari (S. ITO, 9 Aug. 1931).

Hab. in foliis vivis *Taraxaci platycarpi* DAHLST. Tokyo, Prov. Mutsu (N. NAMBU, 1 Apr. 1901).

Distrib. Hokkaido, Honshu.

Botanical Institute, Faculty of Agriculture,
Hokkaido Imperial University,
Sapporo, Japan

ON THE NEW GENUS KINUGASA

BY

MISAO TATEWAKI AND TIHARU SUTÔ

(館 脇 操・須 藤 千 春)

(With 3 text-figures)

Kinugasa TATEWAKI ET SUTÔ, gen. nov.

Perigonum (7)–8–12-phyllum persistens; segmenta distincta. Sepala petaloidea, niveo-lactea, lanceolata, reticulata. Petala linearia, apice paulo dilatata, totidem quot sepala, calicis dimidio breviora. Stamina an constanter 2-seriatem sepalis petalisque opposita, erecta, petalis breviora vel subaequilonga, ima basi segmentiorum inserta. Antherae biloculares, lineares, basi leviter bifidae, apice abrupte et abbreviate obtuso-mucronatae. Ovarium basi sessile, liberum, globosum, truncato-depressum, apice crenulato-marginatum; stigmata 6–8-, subulata, crassiuscula, apice recurvato-hamata; stili in columna brevissima connati. Bacca indehiscens. Semina subglobosa. Rhizoma annotinum tuberoso-incrassatum, carnosum, cylindricum, leviter annulatum, fuscum, fibras ramulosas emittens.

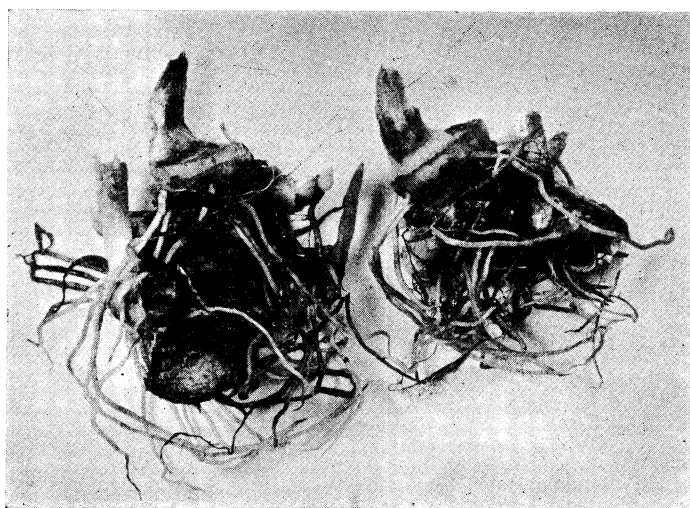


Fig. 1. Rhizome, (cult. in Sapporo, originally obtained at Mt. Gassan), taken on April 24, 1935.

Caulis simplex, erectus, basi vaginis paucis brevibus scariosis stipatus. Folia 7-12, ad apicem caulis verticillata, spatulato-lanceolata vel obovata, apice abrupte et breviter acuminata, in petiolum brevem attenuata, trinervia, nervulis ramoso-anastomosantibus. Flos unicus, interfolia pedicellatus, erectus.

NOM. JAP. *Kinugasasô-zoku*.

Remarks. The present genus is allied to *Paris* and *Trillium*, but it is distinguished from the former by the character of the rhizome, the petaloid sepals, the abruptly short-acuminate leaves, and also by the caespitose habits; and from the latter by the shape and number of the leaves, the shape of the stigma and also by the number of the floral parts. It is also closely related to *Trillidium* KUNTH [Enum. Pl. V. (1850), 121], from which it differs by the characters of the rhizome, the shape of the pistil and leaves, and also by the number of the floral parts.

In many species of both *Trillium* and *Paris* spontaneously growing in Japan, Mr. T. HAGA [in Journ. Fac. Sc. Hokk. Imp. Univ. V.-3. no. 1. (1934)] has made a comparison of the chro-

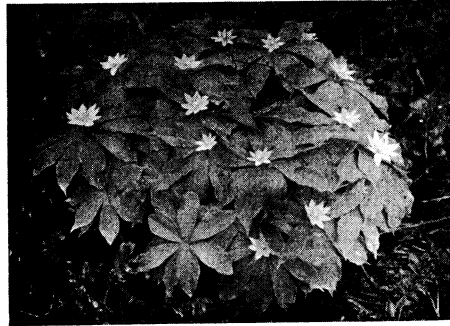


Fig. 2. *Kinugasa japonica* TATEW. ET SUTÔ in the boggy place; about 1500 m. alt., Mt. Gassan, Prov. Uzen, taken on July 24, 1934.

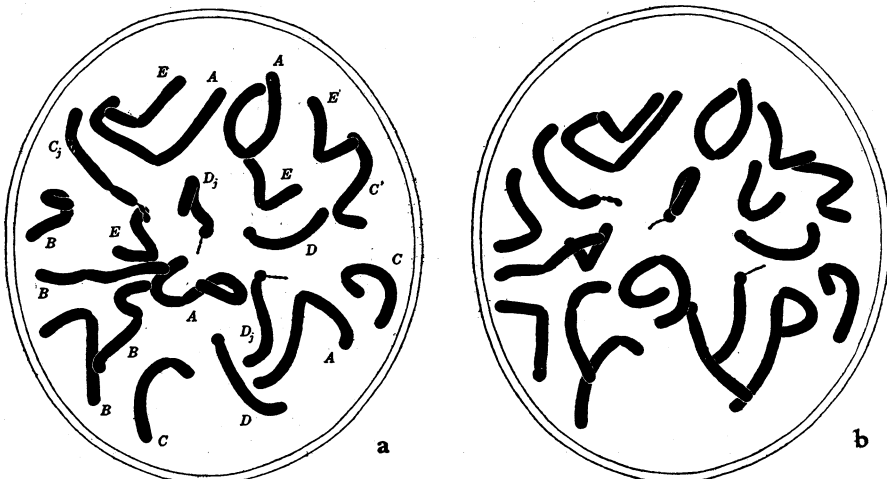


Fig. 3. An early anaphasic polar view of the primary pollen-nuclear division. The sister groups are shown separately in two optical sections a and b. (870 $\times$). (reproduced by kind permission of Mr. T. HAGA).

mosome complement. In these groups, he has called attention to the presence of the somatic complement of the di-, the tri- and the tetra-ploids which have 5-chromosomes as a basic number divididg into the five different types, namely A, B, C, D and E, and also to the fact that the D-chromosomes of *Trillium* are the d-type bearing no trabants, while those of *Paris* are furnished with the characteristic trabants, although each of A-, B-, C- and E-chromosomes in both genera is quite similar respectively.

The present genus represented by *Kinugasa japonica* is a octoploid type having 40-chromosomes [8 (A + B + C + D + E)] in the somatic complement. According to many data acquired by Mr. T. HAGA (unpublished), it is a very interesting fact that each of two chromosomes in the pollen grain (*fig. 3, Dj*) belonging to the D-type bears a trabant while other two to the D-type (*fig. 3, D*) have none, representing the character of *Paris* in the former, while that of *Trillium* in the latter, and A-, B- and E-chromosomes are of the same types as those of both genera, but one of the C-chromosomes has a special trabant belonging neither to *Paris* nor to *Trillium*. (*fig. 3, Cj*).

***Kinugasa japonica* TATEWAKI ET SUTÔ, com. nov.**

Trillidium japonicum FR. ET SAV. Enum. Pl. Jap. II. (1879), 56, 525.

Paris japonica FRANCH. in Mém. Soc. Phil. Paris, (1888), 290, *pl. XXIV*. A; MATSUM. Ind. Pl. Jap. II.-I. (1905), 209; MAKINO, Zôtei Sômoku-zusetsu, II. (1910), 594, *pl. 463*; KRAUSE, in ENGL. U. PR. Nat. Pfl.-fam. 2-Auf. Bd. 15a. (1930), 374; HONDA, List Pl. Shirouma Alp. Range, (1930), 15; MAKINO & NEMOTO, Fl. Jap. ed. 2, (1931), 1560; TAKEDA, Atl. Alp. Pl. Jap. (1933), 69, *pl. 302*.

Trillium japonicum MATSUM. Shokubutsu Mei-i, (1885), 298.

NOM. JAP. *Kinugasa-sô*.

HAB. Honshû: Mt. Gassan, Prov. Uzen (T. SUTÔ, VII. 1929); Mt. Hiuchi, Prov. Iwashiro (H. TAKEDA & M. TATEWAKI, VII. 19, 1924); Mt. Myôkô, Prov. Echigo (K. WATANABE, VII. 19, 1897); Mt. Shirouma, Prov. Shinano (M. MIURA, VIII. 11, 1906); Mt. Shôzu, Prov. Etchû (H. TAKEDA, VIII. 14, 1905); Mt. Hakusan, Prov. Kaga (R. YATABE & J. MATSUMURA, VIII. 8, 1881).

The writers desire to acknowledge their indebtedness to Profs. K. MIYABE and H. MATSUURA for their valuable advices. Particular mention should be made of the courtesy of Mr. T. HAGA who most kindly placed in the hand of the writers many unpublished cytological data to be used in the present study.

摘 要

従来キヌガササウ属は *Paris* ツクバネサウ属、*Trillium* エンレイサウ属、若しくは *Trillidium* 属に入れられ、特に本邦ではツクバネサウ属の植物として今日迄取扱はれてゐた。しかし百合科の分類に際して重要な地下部の性質から観察してゆくと、キヌガササウの當年の地下部の性質は全くツクバネサウ属のものと異り、寧ろエンレイサウ属に近い性質を有してゐる (Fig. 1 参照)。一方花辨様をなす萼片の性質や葉の形状などを比較し、雄蕊、雌蕊の形状を考慮に入れると何れの属とも合致しない。又胞細學上から観察しても兩属と異つてゐる。即ち *Trillium* も *Paris* も共に單數で5本の染色体を有し、デプロイド、トリプロイド、テトラプロイド種が見出され、この5本の基本染色体は形態上から夫々 A, B, C, D, E 型に區別される。従つてこの兩属に於ては複染色体數を $2(A+B+C+D+E)$ 、 $3(A+B+C+D+E)$ 及び $4(A+B+C+D+E)$ の式で表すことが出来る。而して *Paris* の D-染色体はトラバントを有し、*Trillium* ではこれを缺いてゐる事に依り、兩属を區別することが出来る。然るにキヌガササウは 40 本の複染色体を有し、 $8(A+B+C+D+E)$ に依つて表し得るオクタプロイド種である。而して8本の D-染色体を見るに4本は *Paris* 型でトラバントを有し、他の4本は *Trillium* 型でトラバントを缺いてゐる。又 C-染色体の一對にトラバントを有するものがあつて、それは *Paris* にも *Trillium* にも存しない新型の染色体である。

茲に是等の事實に基いてキヌガササウを基準種とし、キヌガササウ属を設立した次第である。尙 ENGLER-PRANTL, *Natürliche Pflanzenfamilien* Bd. 15a (1930) の 374を見るとヒマラヤ、西藏、支那に分布する、*Paris polyphylla* SMITH は葉形、花の部分の指數を除いては本属に近い性質を有してゐる。又雲南に分布する *Paris yunnanensis* FRANCH. 西部支那に分布する *Paris Fargesii* FRANCH. 及び *Paris chinensis* FRANCH., ダフリアに分布する *Paris verticillata* M. BIEB 等は地下部は不明であるが、雄蕊、雌蕊の特徴は本種に近い性質を有してゐるものの様である。

THE OXYBELIDAE OF JAPAN AND KOREA (HYMENOPTERA)

BY

KEIZÔ YASUMATSU

(安 松 京 三)

(With 1 text-figure)

The Japanese and Korean *Oxybelidae* has been hitherto represented by only a single genus and species, *Oxybelus lewisi* CAMERON, so far recorded from Hokkaido and Honshû.

Through the courtesy of Messrs. K. IWATA, K. IIDA, K. OKAZAKI, H. MASUDA, C. TAKEYA and N. TOSAWA, I have been able to examine some specimens representing more species of the family occurring in Japan and Korea.

I express my hearty thanks to the above-mentioned gentlemen for their kind assistance in forwarding the specimens and further to Prof. T. ESAKI for his kindness in reading through this manuscript.

Genus *Oxybelus* LATREILLE, 1796

Prec. car. gener. Insect, p. 129, n. 31.

Key to the species

1. Lateral squamae present 2
Lateral squamae obsolete *lewisi* CAMERON
2. Mucron comparatively stout and short, the base narrower than the apex, the apical margin deeply incised at the middle portion *eximius* SICKMANN
Mucron slender and long, with the sides nearly parallel to each other 3
3. Punctures on second abdominal sternite comparatively large and coarsely scattered. In the female, sixth abdominal segment ferruginous. Width of front (at the middle portion) : length of fore tibia = 20 : 24 (approximately) *melancholicus* CHEVRIER
Punctures on second abdominal sternite comparatively minute and very dense. In the female, sixth abdominal segment black. Width of front : length of fore tibiae = 25 : 23 (approximately) *strandii* sp. nov.

1. *Oxybelus lewisi* CAMERON

Oxybelus lewisi CAMERON, Mem. Manch. Lit. Phil. Soc., ser. 4, vol. 3, p. 282, 1890.

Oxybelus lewisi BINGHAM, Fauna of Brit. India etc., Hymen., vol. 1, p. 320, 1897.

Oxybelus lewisi MATSUMURA, List. of useful insects of Japan, p. 132, 1908.

[Trans. Sapporo Nat. Hist. Soc., Vol. XIV, Pt. 1, 1935]

Habitat: Japan (Hokkaido and Honshû, fide MATSUMURA) and Ceylon ? (fide CAMERON).

I have as yet no opportunity to see or collect any specimen of this species.

2. *Oxybelus eximius* SICKMANN

Oxybelus eximius SICKMANN, Zool. Jahrb., System., vol. 8, p. 205, ♀ ♂, 1895.

Habitat: North China and Korea.

This species was hitherto known from Tientin, North China. Mr. K. OKAZAKI collected a single specimen in Korea (in a room of a house at Taiden, 1 ♀, 25. viii. 1933). The specimen is preserved in the Entomological Laboratory, the Kyûshû Imperial University. This is the first record of the species from Korea.

3. *Oxybelus melancholicus* CHEVRIER

Oxybelus melancholicus CHEVRIER, Mitt. Schweiz. entom. Ges., vol. 11, p. 391, ♀ ♂, 1868.

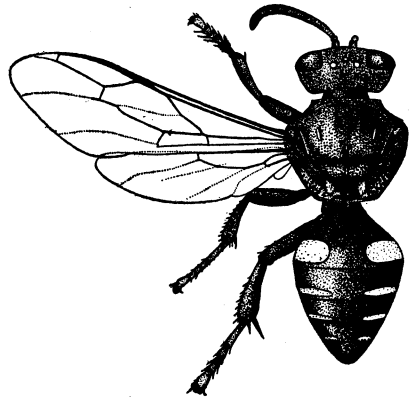
Habitat: Central Europe, Ussuri Region, Korea and Japan.

This species was hitherto known from Central Europe and was recently recorded from Ussuri Region by Dr. V. GUSSAKOVSKIY (Arkiv för Zoologi, Bd. 24 A, No. 10, p. 28, 1932). In the Entomological Laboratory of the Kyûshû Imperial University, there are preserved two male specimens from Japan and Korea respectively. 1 ♂ (Tokugô-tôge, Shinano, Honshû, Japan, 17. vii. 1933, collected by Mr. K. IIDA), 1 ♂ (Kongô-san, Kôgendô, Korea, 10. ix. 1931, collected by Mr. C. TAKEYA).

This is the first record of the species from Japan and Korea.

4. *Oxybelus strandi* sp. nov.

♀. Black. Apical portion of mandibles and apical two or three segments of antennae slightly ferruginous. Two appendiculate and lamellate processes of postscutellum, i. e. lateral squamae, somewhat yellowish white. Apical margin of mucron somewhat paler. Outer half of tegulae brown. Wings transparent, a little cloudy, reflecting violaceously in certain aspect; nervures brown. A line on tibia of fore legs pale brown. First tarsal segment of fore legs dark brown; remaining ones of the same legs, fourth and fifth tarsal segments of mid- and hind legs as well as tibial and tarsal spines and spurs



Oxybelus strandi YASUMATSU, sp. nov., ♀.

brown; pulvilli black. Four basal tergites of abdomen each with yellow markings on the sides and those on the first the largest. Pygidial area black. Pubescence on front, clypeus and occiput silver-white, on vertex brown, on legs and abdomen silver-yellow and on last abdominal segment dark brown. Punctures dense, those on head and thorax large, on abdomen minute. Other characters, except those mentioned in the key, are almost the same as in *Oxybelus melancholicus* CHEVRIER.

♂. Apical margin of seventh abdominal sternite sinuated inwardly, with postero-lateral angles pointed. Postero-lateral and humeral angles of pronotum, underside of femur of fore and mid-legs, fore tibia except the posterior surface, mid-tibia except the apex and the basal half of hind tibia yellow. Three basal abdominal tergites each with comparatively small, yellow markings on the sides and those on third almost obsolete.

Measurements (Length in mm.)

	Thorax	Abdomen	Fore wing	Hind wing
♂ (Holotype)	2.2	2.4	4.5	3.1
♀ (Allotype)	3.0	3.5	6.1	4.2

Holotype: 1 ♂ (Kamikôchi, Shinano, Honshû, 11. vii. 1933, collected by Mr. K. IIDA).

Allotype: 1 ♀ (Sobo-san, Bungo, Kyûshû, 1. viii. 1931, collected by the author).

Paratypes: 1 ♀ (Kôtôen, near Osaka, Settsu, Honshû, v. 1930, collected by Mr. N. TOSAWA), 2 ♀ ♀ (Jôkoji, Kai, Honshû, 12. vi., 25. ix. 1932, collected by Mr. H. MASUDA).

All the types, except one paratype collected by Mr. TOSAWA, are deposited in the Entomological Laboratory, the Kyûshû Imperial University, Fukuoka.

This new species is very closely allied to *Oxybelus melancholicus* CHEVRIER, but a careful comparison of both the species shows the following differences.

O. melancholicus, ♀

Tibiae and a few basal segments of tarsi beautiful brown.

Posterior margin of pronotum and its humeral angles greyish or whitish yellow.

O. strandi, ♀

Tibiae and a few basal segments of tarsi blackish brown or black.

Pronotum entirely black.

Sixth abdominal segment brown or ferruginous.

Width of front (at the middle portion): length of fore tibia=20:24 (approximately).

Sixth abdominal segment black.

Width of front : length of fore tibia =25 : 23.

This species is also near to *Oxybelus venustus* SICKMANN, 1895, but I think that the latter is much more closely related to *Oxybelus melancholicus* CHEVRIER than to the present new species.

摘 要

1931年の本會會報, Vol. 11, pt. 4, p. 221-226 に私は *Oxybelus* 屬に寄生する *Myrmosidae* アリバチモドキ科の1新種を記載した。今回は日本内地及び朝鮮産の *Oxybelidae* トゲムネアナバチ科(新稱)を報告する。尙本科は將來更に數種發見の可能性があるが現在私の知り得た種は次の如くで、すべて *Oxybelus* トゲムネアナバチ屬(新稱)に屬する。

- | | |
|---------------------------------------|-----------------------------------|
| <i>Oxybelus lewisi</i> CAMERON | ルイストゲムネアナバチ (改稱) (コキバチ, 松村, 1908) |
| <i>O. eximius</i> SICKMANN | シナトゲムネアナバチ (新稱) |
| <i>O. melancholicus</i> CHEVRIER | トゲムネアナバチ (新稱) |
| <i>O. strandi</i> YASUMATSU, sp. nov. | ヤマトトゲムネアナバチ (新稱) |

最後の種名は *Oxybelus bicolorisquama* STRAND タイワントゲムネアナバチ(新稱)の發表者 EMBRIK STRAND 教授に捧げたものである。

REMARKS ON THE SCYPHOMEDUSAN FAMILY PELAGIDAE

BY

TOHRU UCHIDA

(内 田 亨)

(With 2 text-figures)

The Pelagidae consist of the five genera *Pelagia*, *Chrysaora*, *Dactylometra*, *Kuragea* and *Sanderia*. The first four genera are closely allied, each having 8 sensory organs and 8 radial diverticula, while *Sanderia* alone is characterized by the possession of 16 sensory organs and 16 radial diverticula. Though the four former medusae are distinguished from one another by the number of the tentacles and marginal lappets, these differences occur during the metamorphosis of a species of the higher genera. *Pelagia* retaining the general form of the ephyra is the most primitive, and differs principally from the latter by the presence of the adradial tentacles and developed oral arms. The ephyra of *Chrysaora* at first reaches the *Pelagia*-stage and then comes to be equipped with 24 tentacles and 32 marginal lappets. The medusa of *Dactylometra*, after passing through the *Pelagia*- and *Chrysaora*-stages, is provided with 40 tentacles and 48 marginal lappets. In the Japanese species *Dactylometra pacifica*, however, 16 more tentacles appear on the sides of the sensory organs. Though these tentacles remain small compared with other ones and are associated with rudimentary lappets, the medusa with these characters agrees with the diagnosis of *Kuragea*. On account of this character STIASNY (1932) erred in identifying specimens of *Dactylometra pacifica* with *Kuragea depressa*. Such being the case, the distinction of these medusan genera, especially in the last two, is somewhat obscure. On the other hand, *Sanderia* is distinctly marked among the family in the possession of 16 sensory organs and 16 radial diverticula. In 1886 GOETTE, describing *Sanderia malayensis*, proposed to divide the Pelagidae into two sub-families, Eupelagidae and Sanderidae. In addition to the number of the sensory organs and radial diverticula, GOETTE pointed out the rudimental character of the oral arms, which is, however, due to ill-preservation or a wrecked condi-

tion of the medusa. I am of opinion that the gonads of *Sanderia* present a remarkably different appearance from those of other genera. The gonads of *Pelagia*, *Chrysaora*, *Dactylometra* and *Kuragea*, are similar in structure, separated into four interradial horse-hoof-shaped ones, which are transversely folded many times and are laid within the smooth subumbrellar wall, while those of *Sanderia*, also divided into four interradial ones, are furnished with sausage-shaped processes arranged along the outer margin of looped gonads, which are protruded on the subumbrella. Below is given a newly revised diagnosis of the genera belonging to the Pelagidae, accompanied with a list of Japanese medusae of the family.

Family *PELAGIDAE* GEGENBAUR, 1856

a) Subfamily *EUPELAGINAE* GOETTE, 1886 emend UCHIDA

Pelagidae with 8 sensory organs and 8 radial diverticula. Gonads folded and enclosed in the smooth subumbrellar wall.

Genus *Pelagia* PÉRON et LESUEUR, 1809

With 8 tentacles alternating with 8 sense organs, 16 marginal lappets.

1) *Pelagia panopyra*

PÉRON et LESUEUR

The medusa is common from central Japan southward to the tropical Pacific. It is pelagic throughout life and is found in the warm current "Kuroshiwo". Generally found on the Japanese coasts from winter to early summer. Colour pinkish.

Genus *Chrysaora*

PÉRON et LESUEUR, 1809

With 24 (3×8) tentacles, nearly equal in length, 3 between each successive pair of sensory organs. 32 marginal lappets.

2) *Chrysaora helvola* BRANDT

The species is an arctic form. It is common in summer along the eastern coasts

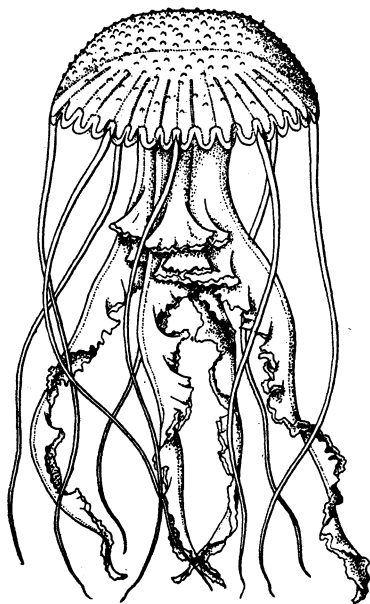


Fig. 1. *Pelagia panopyra* PÉRON et LESUEUR ($\times 2/3$)



Fig. 2. *Chrysaora helwola* BRANDT
($\times 1/2$)

of Hokkaido and Saghalien. Tentacles brown in colour. 16 brownish radial streaks on the subumbrella.

Genus ***Dactylometra***

L. AGASSIZ, 1862

With 40 (5×8) tentacles, almost equal in length, 5 between each successive pair of sensory organs. 48 marginal lappets. In *D. pacifica* 16 more small tentacles and lappets appear.

3) ***Dactylometra pacifica*** GOETTE

The medusa is one of the commonest medusae in Japanese waters, including Honshu, Shikoku, Kyushu, Loochoo Islands and Korea. In Hokkaido and Saghalien only found as rare temporary visitors. Tentacles reddish brown. 16 brown radial bands on the exumbrella, which are rarely absent. The species is abundant from winter to late spring. It gives much annoyance to fishermen.

Genus "***Kuragea***"

KISHINOUE, 1902

With 56 (7×8) tentacles, nearly equal in length. 64 (8×8) lappets.

The genus may be united with *Dactylometra*.

4) ***Kuragea depressa*** KISHINOUE

The species is very rare in Japan. It is characterized by its flat exumbrella. Pigmentation on the exumbrella and the tentacles faint. The medusa, about 100 mm in diameter, is provided with 56 tentacles nearly equal in length and 64 well formed lappets, while *Dactylometra pacifica*, more than 150 mm in diameter, also has 56 tentacles and 64 lappets, of which 16 tentacles are

small and 16 lappets rudimentary. The specimens¹⁾ collected by TH. MORTENSEN in 1914 at Misaki and described by STIASNY (1922) as *K. depressa* are nothing but specimens belonging to *D. pacifica*.

b) Subfamily *SANDERINAE* GOETTE, 1886 emend UCHIDA

Pelagidae with 16 sensory organs and 16 radial diverticula. Gonads giving rise to sausage-like processes which are arranged on the outer margin and protruded beyond the subumbrella.

Genus *Sanderia* GOETTE, 1886

5) *Sanderia malayensis* GOETTE

The species is found in summer, mostly in the southern regions of Japan. Colour pinkish. Exumbrella marked with faintly brown radial bands. Abnormal forms frequently occur. It is a troublesome medusa to human beings on account of its poisonous nematocysts.

Zoological Institute,
Hokkaido Imperial University, Sapporo.

1) Through the kindness of Dr. P. L. KRAMP of the Zoological Museum of Copenhagen, I was able to examine these specimens on the occasion of my visit there (1930).

ÜBER JAPANISCHE *ESCARYUS*-ARTEN

VON

YOSIOKI TAKAKUWA

(高 桑 良 興)

(Mit 9 Textabbildungen)

Von den asiatischen Arten von *Escaryus* gab Prof. Attems in seinem Aufsatz „Neue Chilopoden“ (1927) und wieder in „Geophilomorpha“ (1929) einen Schlüssel für 4 Arten, in welchem er eine Art aus Japan beschrieb. Prof. Verhoeff beschrieb 1934 eine neue Art aus Korea. Ich habe hier noch drei neue Arten aus Japan beschrieben. Es scheint mir sehr schwierig, diese Gattung, wie Prof. Attems versuchte, in zwei Gruppen, „Klaue der Endbeine merklich kleiner als die der vorangehenden Beine“ und „Klaue der Endbeine ebenso gross wie die der vorangehenden Beine,“ einzuteilen.

Schlüssel für asiatische *Escaryus*-Arten.

- A 1. Maxillen ohne Aussentaster.
 - B Die Klaue der Endbeine ist ebenso gross wie die der vorangehenden Beine. *E. latzei* SSZL (Tian Schan)
 - BB Die Klaue der Endbeine kleiner als die der vorangehenden Beine *E. jacoti* VERH. (Korea)
- AA 1. Maxillen mit Aussentaster an den Telopoditen.
 - B 1. Maxille mit 2 Paar längeren Aussentastern; die lateralen Zähne des Labrums sind in lange, dünne Spitzen ausgezogen. *E. sibiricus* COOK (Wladiwostok)
 - BB 1. Maxille mit nur 1 Aussentaster an den Telopoditen, die lateralen Zähne des Labrums kurz und kräftig.
 - C Kieferfuss, geschlossen, erreichen den Stirnrand bei weitem nicht. Clypeus mit 2 ganz kleinen, runden, ungefelderten Stellen vor dem Labrum. *E. retusidens* ATT. (Przewalsk)
 - CC Kieferfuss, geschlossen, bis zum Stirnrand reichend.
 - D Clypeus mit zwei ungefelderten Flächen vor dem Labrum.
 - E Endbeinklaue merklich kleiner als die der vorangehenden Beine (ungefähr 1/3). *E. japonicus* ATT. (Japan)
 - EE Endbeinklaue ein wenig kleiner als die der vorangehenden Beine (ungefähr 4/5). (1) *E. yakumoensis* n. sp. (Japan)
 - DD Clypeus gleichmässig gefeldert, ohne zwei ungefelderte Flächen.
 - F Tarsungulum der Kieferfüsse ohne Zähnnchen. (2) *E. sachalinus* n. sp. (Japan)
 - FF Tarsungulum der Kieferfüsse mit kleinem Zähnnchen. (3) *E. makizimae* n. sp. (Japan)

Diese vier beschriebenen Arten unterscheiden sich voneinander Folgendermassen

	<i>E. japonicus</i> Att.	<i>E. sachalinus</i> n. sp.	<i>E. makizimae</i> n. sp.	<i>E. yakumoensis</i> n. sp.
Beinpaare	47, 51, 55	35, 37, 39	45, 47	57
Auf dem Clypeus ungefelderte Fläche	vorhanden	fehlen	fehlen	vorhanden
Borste in der Querreihe	15-16	10-15	6-15	10
Eckborste	4-5	1-2	0	2-3
Labrum mit	etwa 25 Zähnen	etwa 40, mit 4-5 fransen- artigen Spitzen an bei- den Enden	etwa 20	etwa 20
Labrum	mässig seicht einge- buchtet	mässig tief eingebuchtet	sehr tief eingebuchtet	tief eingebuchtet
Borstung des Sternits	zerstreut, mässig lang	spärlich, zerstreut, fein	ein wenig lange, in 2 Reihen	mit 2 deutlichen seit- lichen Borsten, und sehr fein zerstreut beborstet
Borstung des Tergits	zerstreut beborstet	sehr fein und spärlich (fast nackt)	etwa je 6 Borsten in 2 Reihen	etwa je 6 Borsten in 2 Reihen
Endbeinsternit L: Br	2 : 1	1 : 0.8	1 : 1	3 : 2
Endbeinkralle	nur 1/3 von den vor- angehenden	2/3	2/3	4/5
Hüftporen	zahlreich	etwa 25	etwa 20	etwa 30
Zähne auf Telopodit der Kieferfuss				
Präferur	vorhanden	vorhanden	vorhanden (deutlich)	fehlen
Femur	sehr kleiner Höcker (undeutlich)	vorhanden	vorhanden	fehlen
Tibia	sehr kleiner Höcker (undeutlich)	vorhanden	vorhanden	fehlen
Ungulum	fehlen	fehlen	vorhanden (deutlich)	fehlen
Terminalporen	fehlen	vorhanden	fehlen	vorhanden

(1) *E. yakumoensis* n. sp.

Länge 43 mm., Beinpaare 57, Kopfschild L : Br=8 : 7. Gelblich, Kopf und Kieferfusssegment bräunlich. Alle Glieder der Kieferfusstelopodit innen glatt, ohne Zahnbildung. Labrum mässig tief eingebuchtet, mit 20 stumpfen Zähnen. Aussentaster der 1. Maxille kurz. Clypeus hat 2 hintere ungefelderte Flächen, vorn eine unregelmässige Querreihe von etwa 10 Borsten und an den Ecken je 2-3 Borsten. Borste auf dem 2. und 3. Telopoditglied der 2. Maxille

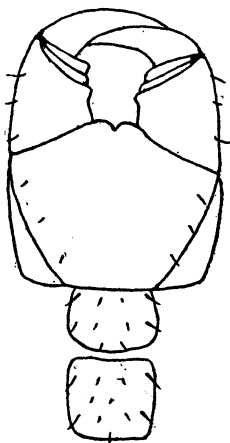


Fig. 1.

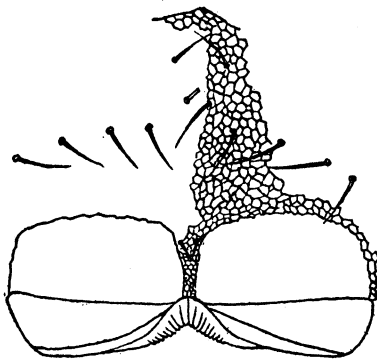


Fig. 2.

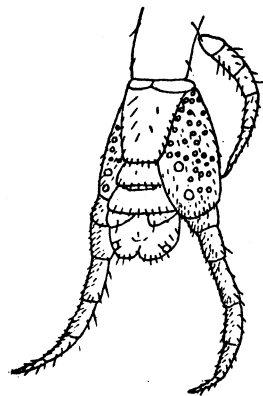


Fig. 3.

Fig. 1. *E. yakumoensis*, Kieferfuss, 1. und 2. Sternite von unten gesehen. $\times 40$

2. *E. yakumoensis*, Unterseite des Kopfes mit dem Labrum. $\times 170$

3. *E. yakumoensis*, Hinterende, Ansicht schräg von unten gesehen. $\times 50$

ärmlich. Tergit mit 2 Querreihen von etwa 6 Borsten. Sternit mit 2 langen Borsten an jeder lateralen Seite und mit spärlichen, zerstreuten und sehr feinen Borsten. Endsternit ungefähr L : Br=3 : 2, Endkrallen ein wenig kleiner als die der vorangehenden Beine, ungefähr 4 : 5. Hüftporen etwa 30. In übrigen mit *E. japonicus* übereinstimmend.

Fundort: Yakumo (Hokkaido).

(2) *E. sachalinus* n. sp.

Gelblich, Länge 30 mm., Beinpaare 35, 37, 39. Kopfschild L : Br=8 : 7. Clypeus gleichmässig gefeldert, ohne ungefelderte Fläche. Labrum mässig tief eingebuchtet, mit etwa 40 kurzen und kräftigen Zähnen, mit 4-5 fransenartigen Spitzen an beiden Enden. Aussentaster der 1. Maxille kurz. Tarsungulum des Kieferfusses innen ohne Zahn oder Höcker, übrige Glieder je mit kleinem Zahn.

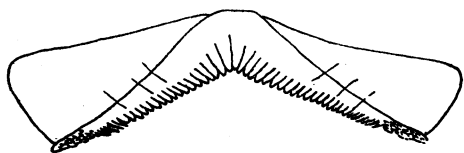


Fig. 4.

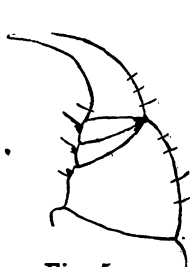


Fig. 5.

Fig. 4. *E. sachalinus*, Labrum. $\times 180$

5. *E. sachalinus*, Telopodit des Kieferfuss. $\times 50$

6. *E. sachalinus*, Hinterende von unten gesehen. $\times 40$

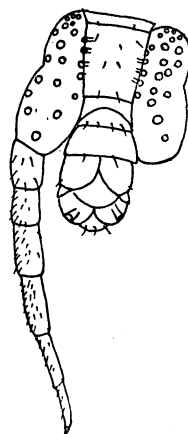


Fig. 6.

Tergit mit spärlich, zerstreuten feinen Borsten. Sternit sehr klein und spärlich beborstet. Endbeinsternit gross, $L : Br = 1 : 0.8$, nach hinten ein wenig schmälert, hinten eingebuchtet. Hüftporen ventral etwa 25; Endkrallen nicht merklich klein, d. h. ungefähr $2/3$ von denen der vorangehenden Beine. Terminalporen vorhanden. In übrigen mit *E. japonicus* fast übereinstimmend.

Fundort: Sachalin, Sapporo (Hokkaido).

Die Art verdanke ich Herrn KUROUME, der sie mir in Hokui (Sachalin) gesammelt und geschickt hat.

(3) *E. makizimae* n. sp.

Gelblich; Kopf und Kieferfusssegment bräunlich. Länge 30 mm. Beinpaare 45, 47. Auf dem Clypeus ist keine ungefelderte Fläche, in Ecken

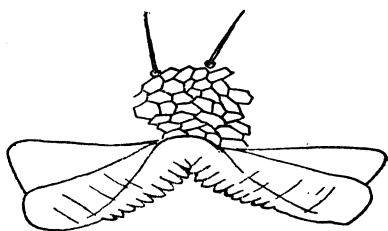


Fig. 7.



Fig. 8.

Fig. 7. *E. makizimae*, Labrum. $\times 150$

8. *E. makizimae*, Telopodit des Kieferfuss. $\times 45$

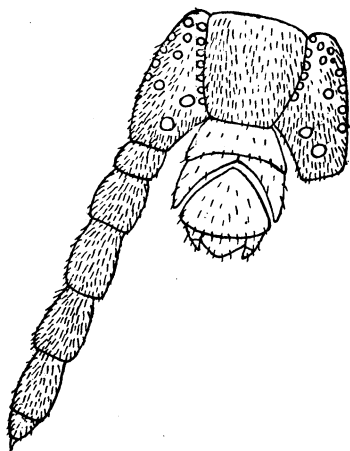


Fig. 9.

Fig. 9. *E. makizimae*, Hinterende
von unten gesehen. $\times 50$

fehlt Borste. Labrum sehr tief eingebuchtet, mit etwa 20 kurzen und kräftigen Zähnen. Aussentaster der 1. Maxille kurz. Tarsungulum der Kieferfusstelopodit mit einem deutlichen kleinen Basalzahn, die folgenden Glieder je mit einem Zahn. Etwa je 6 Borsten sind am Tergit in zwei Querreihen und am Prätergit in einer Querreihe. Auf dem Sternit sind mässig lange Borsten in 2 Reihen. Endsternit fast so lang wie breit (oder ein wenig länger), nach hinten ein wenig verschmälert. Endkrallen der Endbeine wenigstens $\frac{2}{3}$ von denen der vorgehenden Beine. Hüftporen ventral etwa 20. Terminalporen fehlen. In übrigen mit *E. japonicus* fast übereinstimmend.

Fundort: Iida (Naganoken).

Vorkommen: Diese Tiere sind von Fräulein H. MAKIZIMA, Hilfsarbeiterin in unserem Institut, gesammelt und mir geschickt worden. Hier danke ich ihr herzlich für ihre Freundlichkeit.

FURTHER NOTES ON SPIDERS FROM SOUTHERN SAGHALIEN (THE THIRD SUPPLEMENT)

BY

SABURO SAITO

(齋 藤 三 郎)

Hitherto 30 species were reported by the author from southern Saghalien in the *Annotationes Zoologicae Japonenses* in 1932 and 1935 and in the Transactions of the Sapporo Natural History Society in 1934. This is the fourth opportunity to record the spiders from the same region. The majority of the specimens were kindly handed to the author by Mr. C. WATANABE collected on the west coast of the island in August, 1934, and a considerable number of specimens were also presented by Mr. M. YOSHIKURA from Shiretori. Moreover, through the kindness of Dr. TOHRU UCHIDA, four specimens collected by Dr. MIYAJI of the Otsu Hydrobiological Station, in Saghalien in June, 1934 were given to the author for identification. Here the writer wishes to express his hearty thanks to the kindness of the above gentlemen.

The present work lists 27 species, of which three are new to science¹⁾ without doubt, twelve species are new to fauna of Saghalien, one placed only in its genus on account of immaturity. Following eleven species are referable again to the species of southern Saghalien, *Misumena vatia* CL., *Tibellus tenellus* (L. K.), *Theridion tepidariorum* L. K., *Argiope sachalinensis* SAITO, *Araneus quadratus* CL., *A. nordmanni* THORELL, *A. marmoreus* CL., *A. cornutus* CL., *A. inconspicua* SIMON ? (the specimen is a subadult female), *Zilla artica* L. K. and *Meta yunohamaensis* BÖS. et STRAND.

In this paper, the writer intends only to enumerate the species which are new to southern Saghalien.

I. *Xysticus ulmi* (HAHN)

The species is otherwise commonly recorded from the northern Eurasiatic continent, namely Sweden, Germany, France, England and U. S. S. R. Charac-

1) The descriptions of the new species were published already in the *Annotationes Zoologicae Japonenses*, Vol. 15, 1935.

[Trans. Sapporo Nat. Hist. Soc., Vol. XIV, Pt. 1, 1935]

teristic is that the female's valva consists of a very small, almost triangular fovea truncated in front and narrowed behind. Two females were collected by Dr. MIYAJI by Lake Shibesan on July 16, 1934 and one female was obtained by Mr. YOSHIKURA at Shiretori in 1934.

2. *Xysticus pini* HAHN

The species was once described from Japan by E. STRAND without the locality. It widely distributes in the northern Eurasiatic continent, Sweden, Germany, France, U. S. S. R. and Siberia (KRASNOJARSK). T. THORELL treated this species as Var. β of *X. cristatus* (CL.) from a closer examination ascertaining that both forms gradually pass into one another in all characters. One female was collected by Mr. YOSHIKURA at Shiretori in 1934.

3. *Clubiona phragmitis* C. L. KOCH

The species is characterized in having an epigynum that forms a small brown area projecting behind by two small protuberances. It is probably new to the fauna of Asia, though it has been reported from the northern Europe, such as Germany, England and Sweden. Two females were captured by Mr. YOSHIKURA at Shiretori in 1934.

4. *Gayenna sachalinensis* SAITO

Jap. name, *Karafuto-Fukurogumo*

A single female was collected by Mr. WATANABE at Kurashi on August 8, 1934. *Gayenna* sp. has so far been reported only from the New World. The specimen belongs, beyond any doubt, to *Gayenna* because it has a furrow of posterior spiracle at behind the middle of the abdomen and the anterior lateral eyes and the clypeus are greater than the anterior median eyes, and the lateral eyes of both rows are separated from each other with a smaller distance than their diameter. The writer treated this as a new species by the speciality in the form of spigynum and the number of spine on the femur.

5. *Theridula albipes* SAITO

Jap. name, *Karafuto-Himegumomodoki*

A single female was obtained by Mr. WATANABE at Kurashi on August 8, 1934. This species is easily distinguished from the other species with the tail-like projection of the abdomen and two horns of the clypeus.

6. *Lephtyphantes collinus* (L. KOCH)

A single female of this european species was presented by Mr. YOSHIKURA from Shiretori in 1934.

7. *Lephtyphantes angulipalpis* WESTRING

A single female was collected by Mr. YOSHIKURA at Shiretori in 1934.

8. *Lephtyphantes insularis* SAITO

Jap. name, *Shima-Saragumomodoki*

Mr. WATANABE collected one female on a solitary island, Kaibato on August 6, 1934. The epigynum of this species has a peculiar form, providing with a tangle-like scape and lacking the parmula.

9. *Linyphia emphana* WALCKENAER

The species widely distributes in circumpolar regions on the Old World. An immature male (?) was collected by Mr. YOSHIKURA at Shiretori in 1934 and two adult females were captured by Mr. WATANABE at Kurashi on August 8, 1934.

10. *Linyphia concinna* L. KOCH

The present species has been reported only from Siberia. One female was obtained by Mr. WATANABE at Kurashi on August 8, 1934 and two females by Mr. YOSHIKURA from Shiretori. At first sight, the specimen from Kurashi looks different being the enormous in size and having the dark yellow ground colour of the abdomen from the specimens of Shiretori which are bright yellow in the ground colour, but the characteristic marking of abdomen, a red spot at the above part of the anus and the form of spigynum show the identity of the both specimens.

11. *Linyphia pusilla* SUNDEVALL

This is a common species in circumpolar regions occuring in Alaska, U.S. A., Siberia, U. S. S. R., Hungary, Germany, France, Sweden and Japan (Hokkaido). A single female was obtained by Dr. MIYAJI by Lake Shibesan on July 16, 1934.

12. *Linyphia insignis* BLACKWALL

This species has been recorded from the northern part of the both worlds,

U. S. A. (Pa., Mass., N. Y., N. J.), Siberia (from Krasnojarsk to Tomsk), Germany, England and Sweden. A single female was presented by Mr. YOSHIKURA from Shiretori in 1934.

13. *Linyphia circumspecta* BLACKWALL

A male and a female being collected by Dr. MIYAJI by Lake Shibesan on July 16, 1934, which has been found belonging also to the fauna of Saghalien. Of the characteristic the reddish brown genital bulb of the pedipalpus has the fine circularly curved spines at the apex as is stated by BLACKWALL.

14. *Araneus cucurbitina typica* LINNAEUS

Two females of this wide spreaded species of the circumpolar regions, including U. S. A. (All States), Canada, Labrador, Alaska, U. S. S. R., Germany, France, Sweden and England, were collected at Tarandomari on July 25, 1934 and at Kaibato on August 6, 1934 by Mr. WATANABE. This species is distinguished with three paired black points on the posterior abdomen from *A. cucurbitina opisthographica* KULCZYNSKI which has five pairs of black point.

15. *Araneus marmoreus pyramidatus* (CLERCK)

A single full grown female specimen was presented by Mr. YOSHIKURA from Shiretori in 1934. The spider is only a form of a different colour of *A. marmoreus* CLERCK which was recorded by the author from the island in 1932 and 1934. It distributes to Canada, U. S. A., Siberia, France, Germany, Hungary, England and Japan.

16. *Tetragnatha* sp.

Hitherto three *Tetragnatha* species have been recorded by the writer, *T. squamata* KARSCH, *T. Solandli* (SCOPOLI) and *T. extensa* L. The writer identified an immature female which was collected by Dr. MIYAJI by Chachanuma on July 22, 1934 with a species of this genus.

SPIDERS FROM THE NORTHERN KURILE ISLANDS II.

BY

SABURO SAITO

(齋 藤 三 郎)

The writer published in 1932¹⁾ and 1933²⁾ the first report on the spiders from the northern Kurile islands, namely Shimushir, Paramushir and Araid. Last summer, through the courtesy of Mr. S. NOJIMA of the Fishery College of the Hokkaido Imperial University, he sized the further opportunity to make request for the collection of the Kurile spider to Mr. T. NAKANO of the Nemuro Fisheries Experimental Station who stayed at Minamiura of Araid for the business during June 15–August 31, 1934. Moreover, lately through the kindness of Dr. TOHRU UCHIDA some specimens collected by Dr. D. MIYAJI at Paramushir and Shimushir have been handed to the author for the identification. These specimens are consisted of six known species, of which four are so far unrecorded. Here the writer wishes to express his thanks to Dr. TOHRU UCHIDA and Messrs. NOJIMA and NAKANO for giving him the chance of examination of these precious materials.

1. *Meta segmentata* CLERCK

This species is commonly recorded from the northern Eurasiatic continent. One immature male and two adult female were collected by Mr. NAKANO at Minamiura of Araid.

2. *Tetragnatha extensa* (LINNAEUS)

The species is recorded from the northern part of the both worlds, namely U. S. A. (All States), Canada, Alaska, Labrador, Siberia, U. S. S. R., Sweden, Germany, France, England, Hungary and Japan (Hokkaido). A single female was obtained by Dr. MIYAJI by Lake Yoda on July 14, 1934.

1) Transactions of the Sapporo Natural History Society, Vol. 12, 1932, p. 100–104.

2) Bulletin of the Biogeographical Society of Japan, Vol. 4, 1933, p. 122–132.

3. *Theridiosoma gemmosum* L. KOCH

A single female of this little cosmopolitant spider in the circumpolar regions, on which the writer reported from Paramushir in the previous paper (1933), was contained in the collection of Dr. MIYAJI at Shimushir on July 20, 1934.

4. *Lycosa tarsalis* THORELL

This spider distributes widely from the northern Europe to Siberia. Three females were collected by Mr. NAKANO at Minamiura of Araid.

5. *Lycosa riparia* C. KOCH

The species which is common in northern Europe was reported by the writer in the previous paper from Araid. Two females were collected by Mr. NAKANO from the same locality.

6. *Trochosa lapidicola* (HAHN)

Four females were obtained by Mr. NAKANO at Minamiura of Araid. It is probably new to the fauna of Asia. Otherwise this is very common in species Europe.

A LIST OF BIRDS' SKIN BELONGING TO ANATIDAE KEPT IN THE UNIVERSITY MUSEUM OF SAPPORO

BY

MARQUIS YOSHIMARO YAMASHINA AND SHINJIRO IKEDA

(侯爵 山階 芳麿・池田 眞次郎)

(With 1 text-figure)

Family ANATIDAE

Genus *Cygnus* BECHSTEIN (1803).

1. *Cygnus cygnus* (LINNAEUS).

English name: Whooper Swan.

Japanese name: *Ôhakuchô*.

No.	Sex	Age	Locality	Date	Length in mm			
					Wing	Tail	Exp. Cul.	Tarsus
10083	♂	Ad.	?	1 IX 1931	625	210	109	116
10084	♂	Ad.	Hokkaido (Yufutsu)	23 I 1880	620	injury	108.5	111
10085	♀	Ad.	?	?	590	199	104	115
10086	?	Imm.	Hokkaido (Yufutsu)	17 XII 1893	555	166	86	119
10087	♂	Ad.	?	?	590	180	110	103
10089	?	Imm.	Hokkaido (Muroran)	2 V 1916	552	142	82	113.5

2. *Cygnus bewickii jankowskii* ALPHÉRAKY.

English name: Eastern Bewick's Swan, Alphéraky's Swan.

Japanese name: *Hakuchô*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10088	♂	Ad.	Hondo (Sendai)	? I 1912	530	146	96	108
3962	?	Imm.	Hokkaido (Numanohata)	7 XI 1912	535	102.7	61	86

3. *Cygnopsis cygnoid* (LINNAEUS).

English name: Chinese Goose, Swan Goose.

Japanese name: *Sakatsuragan*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10090	♀	Ad.	?	?	420	120	67	74

This is the third list of birds so far reported from the museum kindly assisted by Marquis YAMASHINA to whom the curator is indebted so much.

T. INUKAI (The Chief Curator of the Museum)

[Trans. Sapporo Nat. Hist. Soc., Vol. XIV, Pt. 1, 1935]

Genus *Anser* BRISSON (1760).4. *Anser albifrons albifrons* (SCOPOLI).

English name: White-fronted Goose.

Japanese name: *Magan*.

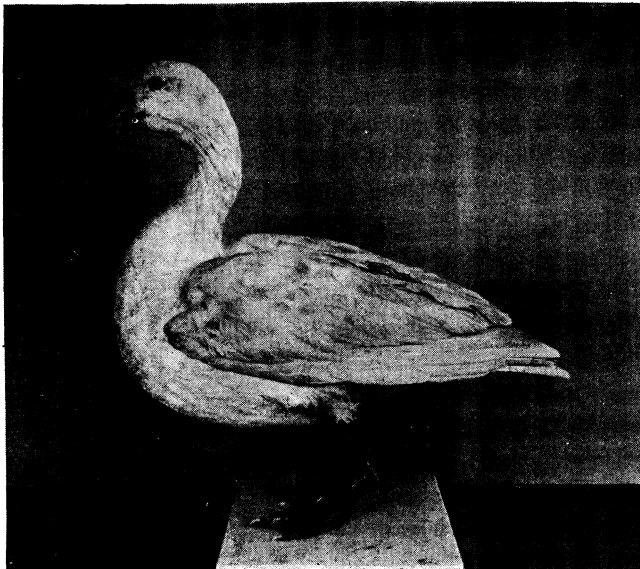
No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10091	♂	Ad.	?	?	407	113	52.5	74
10092	?	Imm.	Hokkaido (Naebo)	17 IX 1905	376	103	45	67
10093	♂	Ad.	Hokkaido (Sapporo)	16 IV 1888	418	120	54	68
10094	♀	Ad.	?	?	362	108	45	62.5

5. *Anser fabalis serrirostris* SWINHOE.

English name: Eastern Bean Goose.

Japanese name: *Hishikui*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10095	♀	Ad.	Hokkaido (Sapporo)	28 X 1896	417	119	73	69
10096	♀	Ad.	?	?	407	124	68	76
10097	♂	Ad.	?	?	487	145	70	80
10098	♀	Ad. albino	?	?	435	148	61	81.5



An albino of the Eastern Bean-Goose.

Specimen 10098.

(Photographed by S. IKEDA)

6. *Anser fabalis sibiricus* (ALPHÉRAKY).

English name: Middendorff's Goose.

Japanese name: *Ohishikui*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10099	♂	Ad.	?	?	535	154	86	92

7. *Branta bernicla nigricans* (LAWRENCE).

English name: Black Brent.

Japanese name: *Kokugan*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3042	♀	Ad.	Hondo (Tokyo Bay)	27 XI 1878	325	104.5	32	52

8. *Anser erythropus* (LINNAEUS).

English name: Lesser White-fronted Goose.

Japanese name: *Karigane*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10100		Imm.	Hokkaido (Zenibako)	14 VII 1901	361	99	30	57
10205	♂	Ad.	?	12 V 1888	363	102.5	34	63

Genus *Casarca* BONAPARTE (1838).**9. *Casarca ferruginea* (PALLAS).**

English name: Ruddy Sheldrake.

Japanese name: *Akatsukushigamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3038	♂	Ad.	Korea	? I 1912	350	130	44.5	37.5
10101	♂	Ad.	?	28 III ?	350	130	42	56
10102	♂	Ad.	?	28 III ?	352.5	140	42	55

Genus *Anas* LINNAEUS (1758).**10. *Anas platyrhynchos platyrhynchos* LINNAEUS.**

English name: Mallard.

Japanese name: *Magamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
1110	♂	Ad.	Hokkaido (Sapporo)	22 II 1908	261	84	52.5	43.5
10103	♂	Ad.	?	?	267	84	60	44.5
10104	♂	Ad.	?	?	273	89	56	41
10105	♂	Ad.	?	?	265	82	55	39
2845	♀	Ad.	Hokkaido (Naebo)	15 VIII 1898	245	78.5	55	43.5
2844	♂	Ad.	Rishiri (Oniwaki)	12 X 1887	276	83	57.5	40
3236	♀	Ad.	Sakhalin (Sakaehama)	5 VIII ?	248	73	52.5	40
2092	♂	Ad.	Hokkaido (Otarunaigawa)	14 XI 1903	276	90	56.3	43
10106	♂	Ad.	Sakhalin	4 V 1908	277	85	54	45

10107	♀	Ad.	Hokkaido (Garugawa)	10 V 1911	253	86	51	40
10108	♀	Ad.	?	?	247	93	50	36.5
2850	Nestling		Hokkaido (Sapporo)	5 VIII 1896				
2851	Nestling		Hokkaido (Garugawa)	?				
2852	Nestling		Hokkaido (Sapporo)	6 VII 1884				
2853	Nestling		Hokkaido (Sapporo)	10 IX 1880				

11. *Anas poecilorhyncha zonorhyncha* SWINHOE.

English name: Eastern Spot-billed Duck.

Japanese name: *Karugamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
2846	♀	Ad.	Hokkaido (Naebō)	11 IX 1899	264	76	51	35.5
2842	♀	Ad.	Hokkaido (Naebō)	16 VIII 1904	263	85	52	42
2843	♂	Ad.	Hokkaido (Yufutsu)	? IX 1881	245	89	55	43
10109	♂	Ad.	Hokkaido (Ishikari)	7 X 1892	247	76	48	38
10110	♂	Ad.	?	?	229	91	56	41
10111	♀	Ad.	Hokkaido (Usu)	22 VII 1905			moulting	

Genus *Querquedula* STEPHENS (1824).

12. *Querquedula crecca crecca* (LINNAEUS).

English name: Teal.

Japanese name: *Kogamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3276	♂	Imm.	Sakhalin (Kotan)	5 IX 1912	177	62.5	38	30
10112	♀	Ad.	?	?	177.5	62	35	28
2888	♀	Ad.	Hokkaido (Sapporo)	10 X 1895	172	62	35	28
3275	♂	Imm.	Sakhalin (Kotan)	5 IX 1912	175	67	35	30.5
3958	♀	Ad.	Hokkaido (Sapporo)	12 IV 1920	176	66	36.5	27
1111	♂	Ad.	?	?	186	72	33.5	28
2878	♂	Ad.	Hokkaido (Sapporo)	25 IV 1926	182	62.5	37	27.5
10113	♂	Ad.	?	?	178	71	35	28
3272	♀	Ad.	Sakhalin (Kashiho)	?	172.5	62.5	31.5	30.5
10114	♂	Ad.	?	?	182.5	70	37	26
10115	♂	Ad.	?	?	173	75	35	26
10116	♂	Ad.	Hokkaido (Sapporo)	10 IV 1900	182	66	38	27
10117	♂	Ad.	Hokkaido (Osatsu)	19 IX 1924	177	injury	35	28
10118	♀	Ad.	?	?	165	66	35	27
2869	♀	Ad.	Hokkaido (Sapporo)	23 X 1890	162.5	61	33	29
3283	♂	Ad.	Sakhalin (Tarinaï ?)	23 IX 1914	182	64.5	34	30
10119	♀	Ad.	Hokkaido (Otarunaigawa)	20 IX 1905	173	67	37.5	30.5
3959	♀	Ad.	Hokkaido (Sapporo)	7 XI 1919	172.5	64	34	30
3105	♀	Ad.	Etorofu (Rubetsu)	5 X 1910	173	64	35	30
2880	♀	Ad.	Hokkaido (Osatsu)	1 X 1881	173	64	35	30
10120	♀	Ad.	?	?	174	63	33	28
3274	♀	Ad.	Sakhalin (Gungawa)	? VIII 1911	169	63.5	35	28
2877	♀	Ad.	Hokkaido (Sapporo)	28 I 1884	165.5	61	35.5	27

2879	♂	Ad.	Hokkaido (Usu)	20	X	1901	184.5	67	37	30
10121	♂	Ad.	Hokkaido (Chitose)	29	X	1896	185	65.5	36.5	28.5
2876	♀	Ad.	Hokkaido (Yufutsu)	20	X	1880	172.5	61.5	35	28
2875	♀	Ad.	Hokkaido (Usu)	25	IX	1903	175.5	65	35.5	30

13. *Querquedula formosa* (GEORGI).

English name: Spectacled Teal.

Japanese name: *Tomoe-gamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10122	♂	Ad.	?	?	201	73	37	32.5
10123	♀	Ad.	?	?	189	82	35	31

14. *Querquedula querquedula* (LINNAEUS).

English name: Garganey.

Japanese name: *Shimaaji*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10124	♂	Ad.	Hokkaido (Chitose)	I VIII 1901	158.5	65	36	28

15. *Querquedula falcata* (GEORGI).

English name: Falcated Teal.

Japanese name: *Yoshigamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3103	♂	Ad.	Hokkaido (Usu)	3 X 1903	238	67	38.5	36
3108	♀	Ad.	Etorofu (Rubetsu)	5 X 1910	235	78	39	33.5
3107	♂	Ad.	Hokkaido (Sapporo)	? X 1895	240	75	40.5	37
10125	♀	Ad.	?	?	225	68	38.5	34
10126	♂	Ad.	?	? X 1915	240	76	44	35
2086	♂	Ad.	Hokkaido (Usu)	19 X 1903	241	70	40	36
3104	♂	Ad.	Hokkaido (Usu)	5 IX 1903	241	75	41.5	38
10127	♀	Ad.	Hokkaido (Yamaguchi)	11 X 1889	216	68	33.5	33.5
10128	♂	Ad.	?	?	250	83	44.5	31
10129	♂	Ad.	?	?	240	81	43.5	35
10130	♂	Ad.	Hokkaido (Otaru)	? XII 1879	241	injury	47	32.5

Genus *Mareca* STEPHENS (1824).

16. *Mareca penelope* (LINNAEUS).

English name: Wigeon.

Japanese name: *Hidorigamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
2900	♀	Ad.	Hokkaido (Bannaguro)	16 X 1906	233	82	32	35
3110	♂	Ad.	Hokkaido (Otaru)	9 XI 1905	230	89	32	35
3073	♂	Ad.	Hokkaido (Usu)	26 X 1902	253	90	33	37
1350	♀	Ad.	Rishiri (Oniwaki)	14 X 1887	235	84	33	33.5

1261	♀	Ad.	Rishiri (Oniwaki)	14	X	1887	233	83	31.5	33
3061	♂	Ad.	Rishiri (Sehoshi)	16	X	1887	244	84.5	31	37
1349	♂	Ad.	Rishiri (Oniwaki)	14	X	1887	248	85	32	37
2369	♂	Ad.	Hokkaido (Bannaguro)	18	IV	1906	248	95	37	35
1009	♀	Ad.	Hokkaido (Naebo)	28	X	1891	228	85	31	33
3958	♂	Ad.	Chiba	?	?	1909	250	97	37.5	35
10131	♂	Ad.	Hokkaido (Zenibako)	10	XI	1877	254	86	33	37

Genus *Dafila* STEPHENS (1824).17. *Dafila acuta acuta* (LINNAEUS).

English name: Pintail.

Japanese name: *Onagagamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10132	♂	Imm.	Hokkaido (Usu)	? X 1902	256	82	48	38.5
2885	♂	Ad.	Hokkaido (Usu)	17 X 1901	258	101	46	38
2883	♂	Ad.	?	?	258	91.5	49	37.5
2881	♂	Ad.	Hokkaido (Ishikari)	11 X 1892	260	89+x	52	39
2882	♂	Ad.	Hokkaido (Usu)	3 X 1903	262	114	51	40
2886	♂	Ad.	Hokkaido (Ishikari)	11 X 1892	251	92+x	48	37
2884	♀	Ad.	Hokkaido (Sapporo)	11 X 1892	251	93	48.5	39
3063	♀	Ad.	Hokkaido (Yufuts)	? IX 1881	230	84	43.5	35
2887	♀	Ad.	Hokkaido (Usu)	6 X 1901	241	90	46	35
10133	♀	Ad.	Hokkaido (Ishikari)	6 X 1892	241	89	45.5	35
2902	♀	Ad.	Hokkaido (Barato)	11 XI 1878	243	83	46.5	37.5
10134	♀	Ad.	?	?	244	90	45.5	37
10135	♀	Ad.	?	?	238	98	46	32
10136	♀	Ad.	Hokkaido (Sapporo)	28 IX 1892	232	86	47	32
10137	♀	Ad.	Hokkaido (Sapporo)	? IX 1901	236	95	43.5	37
10138	♂	Ad.	?	?	265	95+x	50	39
10139	♂	Ad.	?	?	262.5	90+x	52	38
10140	♂	Ad.	Hokkaido (Sapporo)	?	275	165	40	40

Genus *Spatula* BOIE (1822).18. *Spatula crypeata* (LINNAEUS).

English name: Shoveller.

Japanese name: *Hashibirogamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
2890	♀	Imm.	Hokkaido (Sapporo)	20 X 1913	230	74	61	32
10142	♂	Imm.	?	?	223	68.5	65	32
1271	♀	Ad.	Hokkaido (Usu)	17 X 1903	215	72	60	32
10143	♂	Ad.	?	?	231	76	65.5	34.5
10144	♂	Ad.	Hokkaido (Naebo)	1 X 1891	231	72	63	34
10145	♀	Ad.	?	?		moulting		

Genus *Aix* BOIE (1828).19. *Aix galericulata* (LINNAEUS).

English name: Mandarin Duck.

Japanese name: *Oshidori*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3097	♂	Ad.	Hokkaido (Chitose)	1 VIII 1901	221	160.5	29.5	36
2874	♂	Ad.	Hokkaido (Sapporo)	30 VII 1891	220	80.5+x	27	35.5
2872	♂	Ad.	Hokkaido (Sapporo)	31 VII 1888	145+x	83+x	25	34.5
10146	♂	Ad.	?	?	217	99	27	35
3065	♂	Ad.	Hokkaido (Mori)	10 IV 1911	233	102.5	30	36.5
2901	♂	Ad.	Hokkaido (Sapporo)	28 VIII 1913	242	91	29	36.5
3083	♀	Ad.	Hokkaido (Sapporo)	14 IV 1911	223	101	28.5	35
3060	♀	Ad.	Hokkaido (Sapporo)	12 VIII 1911	227	85+x	31.5	35
2873	♂	Ad.	Hokkaido (Sapporo)	28 X 1920	225	84+x	30	34
2870	♀	Ad.	Hokkaido (Chitose)	27 IV 1884	223.5	100	28.5	36
10147	♀	Ad.	?	?	218	106	28	33
10148	♂	Ad.	?	?	219	90	28.5	36
10149	♂	Ad.	Hokkaido (Sapporo)	4 XI 1891	236	104	29	34
10150	♀	Ad.	Hokkaido (Sapporo)	4 XI 1881	227	100	27.5	35
2129	♀	Ad.	Hokkaido (Ishikari)	28 V 1905	218.5	88+x	28.5	36.5
10151	♂	Ad.	Hokkaido (Chitose)	27 IV 1884	228	101	29.5	35
3899	♂	Ad.	?	?	216	88+x	28.5	32
3924	♀	Ad.	Hokkaido (Sapporo)	22 IV 1889	209+x	88+x	27.5	33.5
2847	Nestling		Hokkaido (Hanagawa)	?				
2849	Nestling		Hokkaido (Hanagawa)	?				
10141	Nestling		Hokkaido (Hanagawa)	?				

Genus *Nyroca* FLEMING (1822).20. *Nyroca rufa baeri* (RADDE).

English name: Siberian White-eyed Duck, Baer's Pochard.

Japanese name: *Akahajiro*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10152	♀	Ad.	?	?	139.5	59	41	34
10153	♂	Ad.	Hokkaido (Numanohata)	12 IV ?	194	60.5	42	26

21. *Nyroca fuligula* (LINNAEUS).

English name: Tufted Duck.

Japanese name: *Kinkurohajiro*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3095	♀	Ad.	Hokkaido (Tarunaigawa)	1 XI 1899	190	52.5	36	31
10154	♂	Imm.	?	?	189	52	40	31
10155	?	Imm.	?	?	186	46	38	33
3092	♂	Imm.	Hokkaido (Yufutsu)	14 IX ?	182	58	38	33

10156	♂	Imm.	?	?		199	53	40	31.5
10157	♂	Imm.	?	?		197	50.5	38	33
1043	♀	Ad.	Hokkaido (Sapporo)	12 IV	1890	188.5	51.5	39	34
10158	♂	Ad.	?	?		200	50.5	40	33
10159	♀	Ad.	?	?		188.5	52	37.5	33
10160	♂	Ad.	?	?		200	52	39	33
10161	♂	Ad.	?	?		193	56	39	32
10162	?	Imm.	?	?		175	50	35.5	29.5
10163	♀	Ad.	Hokkaido (Uennai)	5 XI	1901	189	52.5	39	32.5
10164	♀	Ad.	?	?		193	54	39.5	32.5
3101	♀	Ad.	Hokkaido (Uennai)	11 XI	1890	189	53	36	31
10165	♂	Imm.	Hokkaido (Numanohata)	29 IX	1921	186	50	38	31.5

22. *Nyroca marila mariloides* (VIGORS).

English name: Eastern Scaup-Duck.

Japanese name: *Suzugamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3085	♂	Imm.	Hokkaido (Tomakomai)	11 XI 1905	206	51	39	33.5
3049	♂	Ad.	Rishiri	? VIII 1903	214	51	38	35.5
3084	♂	Ad.	Hokkaido (Otaru)	9 XI 1905	214	51	38	35.5
2897	♀	Ad.	Hokkaido (Otarunaigawa)	11 XI 1900	205	54	39	35
3087	♂	Ad.	Hokkaido (Usu)	23 X 1903	207	56	41	32
3079	♀	Ad.	Hokkaido (Usu)	26 X 1903	202	55	injury	42
3080	♀	Ad.	Hokkaido (Otakeshi)	11 XI 1890	174.5+x	54	40.5	34
10166	♂	Ad.	Hokkaido (Sapporo)	25 II 1880	216	55.5	40	37
2282	♂	Ad.	Hokkaido (Usu)	3 XI 1906	208	56	42	32
10167	♂	Ad.	?	?	210	55	44	36.5
10168	♂	Ad.	Hokkaido (Otarunaigawa)	28 X 1911	206	56	42.5	36.5
2199	♂	Ad.	Hokkaido (Otarunaigawa)	26 XI 1905	207	51	41	35
3090	♀	Ad.	Hokkaido (Uennai)	6 XI 1901	204	50	42.5	35
3285	♂	Ad.	?	?	203	53	41	36
10169	♂	Ad.	Rebun (Funatomari)	20 X 1887	206	55	40	35

Genus *Bucephala* BAIRD (1860).

23. *Bucephala clangula clangula* (LINNAEUS).

English name: Golden-eye.

Japanese name: *Hohojirogamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3074	♀	Ad.	Hokkaido (Usu).	17 X 1903	206	75	32	36
3088	♂	Imm.	Hokkaido (Yufutsu)	12 XI 1890	206.5	80	32	36
3114	♂	Imm.	Hokkaido (Sapporo)	27 XI 1923		injury		
3048	♂	Ad.	Rubetsu	10 XI 1910	224	82	33.5	37
10170	♀	Ad.	?	?	185.5	68.5	31	31
2283	♀	Ad.	Hokkaido (Usu)	? X 1906	198	72	30	32
10171	♂	Ad.	Hokkaido (Muroran)	28 X 1895	210	75	33.5	38

1484	♀	Ad.	Hokkaido (Otaru)	11	XI	1878	185	56	31	32
10172	♂	Ad.	Hokkaido (Tarugawa)	1	XI	1907	203	64.5	34	36
10173	♂	Ad.	Hokkaido (Sapporo)	10	II	1909	205	76	31	35
10174	♂	Ad.	Hokkaido (Otarunaigawa)	26	XI	1893	206	78	34	37
10175	♀	Ad.	?	?			188	76.5	30	32
10176	♀	Ad.	Hokkaido (Sapporo)	?			180	injury	29	29

Genus *Clangula* LEACH (1819).24. *Clangula hyemalis* (LINNAEUS).

English name: Long-tailed Duck.

Japanese name: *Kohrigamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
2905	♂	Ad.	Hokkaido (Muroran)	16 II 1910	222	228	28	35.5
2952	♂	Ad.	Hokkaido (Muroran)	2 III 1907	225	226	29.5	36
3077	♂	Ad.	Hokkaido (Tomakomai)	? III 1909	228	204	27.5	36
3078	♂	Ad.	Hokkaido (Tomakomai)	? III 1909	212	203	27.5	34
3100	♂	Ad.	Hokkaido (Muroran)	28 III 1896	230	222	27	35
3107	♀	Ad.	Hokkaido (Tomakomai)	25 I 1892	217	91	26	34.5
3111	♀	Ad.	Hokkaido (Otaru)	10 XII 1878	216	95	26.5	33
10177	♂	Ad.	?	?	218	176	29	31
10178	♂	Ad.	?	?	232	207	28	33.5
1367	♀	Ad.	Hokkaido (Muroran)	29 III 1896	207	94.5	27	33.5
10179	♀	Ad.	?	?	215	90	27	30
10180	♂	Ad.	?	?	222	113+x	25.5	32
10181	♀	Ad.	Kuriles (Shumushu)	? I 1906	216	64.5	24	33
10182	♀	Ad.	?	? ? 1887	205	59	27	33

Genus *Melanitta* BOIE (1822).25. *Melanitta fusca stejnegeri* (RIDGWAY).

English name: Eastern Velvet Scoter.

Japanese name: *Birohdokinkuro*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
1231	♀	Ad.	Hokkaido (Tomakomai)	9 III 1894	253	69	49	39
10183	♀	Imm.	?	? ? 1887	246	65	37.5	44
10184	♂	Ad.	?	?	271	77	45	42
10185	♂	Ad.	?	?	278	84	48	42
10186	♀	Imm.	Hokkaido (Muroran)	28 III 1895	235	64	41	42.5

26. *Melanitta nigra americana* (SWAINSON).

English name: American Black Scoter.

Japanese name: *Kurogamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10187	♂	Ad.	Hokkaido (Zenibako)	? XI 1892	223	87	42	41
1263	♀	Ad.	?	?	214	72	41	42

Genus *Histrionicus* LESSON (1828).27. *Histrionicus histrionicus pasificus* BROOKS.

English name: Pacific Harlequin Duck.

Japanese name: *Shinorigamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
1257	♂	Imm.	Rebun (Funatomari)	20 X 1887	195	72	26.5	37
3050	♂	Imm.	Hokkaido (Takashima)	24 XI 1906	187	70	26	37.5
1353	♂	Ad.	Rebun (Kabuka)	18 X 1887	227	65	28.5	39
1109	♂	Ad.	?	?	204	71	27	36
3066	♂	Ad.	Hokkaido (Oshoro)	20 XII 1911	207	92	27	36
1351	♂	Ad.	?	?	202	101	28	35.5
1368	♀	Ad.	Hokkaido (Muroan)	29 III 1895	190	78	26	36
1108	♀	Ad.	Hokkaido (Yufutsu)	23 XI 1879	191.5	83	25	36
3055	♀	Ad.	Hokkaido (Kushiro)	12 XI 1907	192	85	26	35.5
1352	♀	Ad.	Rebun (Kabuka)	18 X 1887	185	66	25.5	35
1264	♀	Ad.	Rishiri (Oshidomari)	18 X 1887	186.5	52+x	25	36
1267	♀	Ad.	Sarumonbetsu	9 X ?	190	77	25.5	35
1359	♀	Ad.	?	?	187	73	26	35
1270	♀	Ad.	?	?	129	86	25	35.5
1266	♀	Ad.	Rishiri (Oshidomari)	9 X 1887	185	75	25.5	35.5
1269	♀	Ad.	?	?	189	89	27	36
10188	♂	Ad.	Rebun (Kabuka)	30 X 1887	195	102	26	34.5
10189	♀	Ad.	Hokkaido (Oshoro)	4 I 1909	185	65	26	35
10190	♀	Ad.	?	?	183	73.5	25	33.5
10191	♂	Ad.	Hokkaido (Muroan)	?	209	104	25.5	33.5
10192	♀	Ad.	Rebun	?	192	50	26	34
10193	♂	Ad.	?	?	211	97	28	35
10194	♂	Ad.	?	?	201	67	28	32.5
10195	♂	Ad.	Hokkaido (Oshoro)	4 I 1909	199	105	26	35
3284	♀	Ad.	Hokkaido (Kitanayoro)	?	194.5	84.5	25	35
3237	♀	Ad.	Nishimorotsu	17 IX 1912	188	76	26.5	35

Genus *Somateria* LEACH (1819).28. *Somateria spectabilis* (LINNAEUS).

English name: King Eider.

Japanese name: *Kewatagamo*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
3039	♂	Ad.	Kuriles	? XI 1910	273	80	31.5	
3071	♂	Ad.	Kuriles (Shumushu)	? ? 1908	268	84	32	45

Genus *Mergellus* SELBY (1840).29. *Mergellus albellus* (LINNAEUS).

English name: Smew.

Japanese name: *Mikoaïsa*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
10196	♂	Ad.	?	28 III ?	191	73	28	30
1355	♂	Ad.	Hokkaido (Otarunaigawa)	11 XI 1900	185	61	28	31
1348	♂	Imm.	Hokkaido (Uennai)	5 XI 1901	188	60	29	28.5
1354	♀	Ad.	Hokkaido (Otarunaigawa)	11 XI 1900	166	53	25.5	27
1356	♂	Ad.	Hokkaido (Tohbetu)	? ? 1897	189	74.5	28.5	32
10197	♀	Ad.	Hokkaido (Tomakomai)	27 I 1892	183.5	70	27	27

Genus *Mergus* LINNAEUS (1758).

30. *Mergus serrator* LINNAEUS.

English name: Red-breasted Merganser.

Japanese name: *Umiaisa*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
1362	♀	Ad.	Hokkaido (Ishikari)	21 XI 1903	206	67.5	50.5	41
2904	♀	Ad.	Hokkaido (Otarunaigawa)	12 XI 1905	212	61.5	51	41
10198	♀	Ad.	Hokkaido (Otarunaigawa)	22 XI 1908	214	65	50.8	41
2197	♀	Ad.	Hokkaido (Otarunaigawa)	12 XI 1905	212	60	49	37.5
10199	♂	Ad.	Hokkaido (Yushima)	9 III 1900	247	83	57	41
10200	♀	Ad.	Hokkaido (Tomakomai)	? I 1892	224	77	55	40

31. *Mergus merganser merganser* LINNAEUS.

English name: Goosander.

Japanese name: *Kawaaïsa*.

No.	Sex	Age	Locality	Date	Wing	Tail	Exp. Cul.	Tarsus
1260	♀	Ad.	?	?	253	91	49	44
10201	♀	Ad.	Hokkaido (Sapporo)	20 XII 1879	248	89	47	44
10202	♀	Ad.	?	28 III ?	256	103	47	47
10203	♂	Ad.	?	?	272	114	56	49
10204	♂	Ad.	Hokkaido (Numanohata)	25 II 1878	272	119	55.5	47

The specimens brought from Europe by Mr. MUSTERHJELM.

1. *Meranitta nigra nigra* (LINNAEUS).

English name: European Black Scoter.

No.	Sex	Age	Wing	Tail	Exp. Cul.	Tarsus
10206	♂	Ad.	214	91	45	40

2. *Branta bernicla hrota* (MÜLLER).

English name: American Brant.

No.	Sex	Age	Wing	Tail	Exp. Cul.	Tarsus
10207	?	Ad.	335	91	33	61.5

注 意

本會に對する總ての書信は北海道帝國大學
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