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注 意

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MATERIALS FOR A FLORA OF HOKKAIDO. VII.

By

KINGO MIYABE

and

YŪSHUN KUDŌ.

北海道植物志料 VII.

宮 部 金 吾
工 藤 祐 舜

76. *Carex* (Gibbae) *ponmoshiriensis* Miyabe et Kudō, sp. nov.

Rhizoma caespitosum. Culmus gracilis, 18-35 cm altus, laevis. Folia striata, plerumque culmo longiora, circa 38 cm longa, deorsum plana, 1.5 mm lata, margine glabra, sursum paulatim angustiora, longe attenuata, margine scabra. Spiculae 2-4, gymnaecandrae, *ovatae vel deltoideo-ovatae*, 7-8 mm longae, 4-6 mm latae, densiflorae, plus-minus remotae vel superiores 2-3 approximatae; bractae omnes foliaceae, longissimae usque 25 cm longae, usque 2.5 mm latae, striatae, margine deorsum glabrae sursum scabrae. Squamae *oblongo-ovatae* apice acutae vel acuminatae et aristatae, cum arista 3-3.5 mm longae, 1.2 mm latae, pallido-stramineae, margine scariosae, carina viridiuscula. Utriculi pallide straminei, *elliptico-ovati, basi late cuneati*, 4-4.5 mm longi, compressi, glabri, *utrinque distincte 5-7 nervati*, margine alati, *alis margine non-nihil fimbriatis, ore antice ad medium fisso*. Nux utriculo multo minor, *oblongo-elliptica, subcompressa, breviter stipitata*, 1.5 mm longa, 1 mm lata. Styli basi incrassati.

NOM. JAP. *Nishida-suge* (nov.).

HAB. *Hokkaidō*. Prov. Ishikari: Sorachigun, Ponmoshiri (S. Nishida!¹⁾ Aug. 10, 1916).

DISTRIB. Endemic.

A very interesting species. It is nearest to *Carex gibba* Wahlenb. in its

1) 西田 彰三。

general habits, but it differs from the latter by its distinctly nerved utricle, smaller seed and oblong-ovate scale, and also by the shape of the utricle.

77. *Arisaema Takedai* Makino, Bot. Mag. Tokyo, XXIV. p. 73; Takeda, Bull. Misc. Inform. Kew Gard. 1912. p. 216 (in nota *Arisaema serratum* Schott).

Arisaema Takedanum Makino, in Takeda, Hakubutsu-no-Tomo. Ann. 7. No. 36. p. 72.

NOM. JAP. *Ō-mamushigusa*.

HAB. *Hokkaidō*. Prov. Oshima : Hakodate and its vicinity (F. C. Greatrex ! n. 490, June 8, July 10 & 14, 1916).

DISTRIB. Honshū at Nikkō and southern *Hokkaidō*.

The plant is easily distinguished from *A. japonicum* by the shape of the appendage of the spadix and also by the shape and colour of the spathe. The appendage is stouter and cylindrical-clavate with rounded apex, truncate at the base and often purplish below, and is provided with a short stalk. In the spathe, the tubular part is about one half the length of the lamina, which is dark-purple in colour. The tubular part as well as the lower portion of the lamina is paler coloured with many whitish or light-yellowish longitudinal streaks.

According to Mr. F. C. Greatrex, British Vice-Consul at Hakodate and an enthusiastic botanist, the plant is said to be very common in the vicinity of Hakodate. It likes to grow in open situations, and its corms grow much deeper in the soil than in the case of those of *A. japonicum*.

Dr. H. Takeda found a specimen of this plant in the Kew Herbarium collected by Maximowicz at Hakodate in the year 1861, named *Arisaema japonicum* Bl. var *atropurpureum* Engl. According to him, there is also another specimen of the same species at Kew collected at the same locality by Hodgson in 1860.

78. *Betula glandulosa* Michx. Fl. Bor. Am. II. p. 180; Britt. & Brown, Ill. Fl. I. p. 510; Winkl. Betulac. in Engl. Pflanzenreich, IV. 61. p. 73; C. K. Schn. Laubholz. I. p. 105; Koidz. in Matsum. Ic. Koishik. I. p. 49, pl. 25; Miyabe & Miyake, Fl. Saghal. p. 415.

B. nana L. *β. sibirica* Ledeb. Fl. Ross. III. p. 654; Regel, Monogr. Betul. p. 43; Trautv. et Mey. Fl. Ochot. p. 85; Fr. Schm. Fl. Sachal. p. 175.

NOM. JAP. *Hime-kamba*.

HAB. *Saghalin*. Pahmaito Detū (T. Miyake! ¹⁾ Aug. 19, 1906).

Kuriles. Paramoshiri: Chitose Bay (T. Matsubara! ²⁾ July 29, 1916).

DISTRIB. Saghalin, Northern Kuriles, Kamtschatka, Behring Island, Siberia and North America.

New to the Flora of Hokkaidō.

79. *Sceptrocnide macrostachya* Maxim. Mél. Biol. IX. p. 626. t. IX. f. 9-16; Fr. et Sav. Enum. Pl. Jap. II. p. 492; Matsum. Ind. Pl. Jap. II. 2. p. 47.

NOM. JAP. *Miyama-irakusa*.

HAB. *Hokkaidō*. Prov. Oshima: Moheji (Maximowicz! Oct. 1860); Between Kamiiso and Ōno (F. C. Greatrex! Sept. 23, 1916).

DISTRIB. Honshū and Hokkaidō.

This interesting nettle was most critically studied by Maximowicz apparently from the fresh specimens collected by himself in the vicinity of Hakodate. At our request, Mr. Greatrex has kindly sent us the living root of the plant, which seems to be remarkably long. In his letter he informed us that it would be extremely difficult to get the whole root of a plant; one would have to dig up the whole bank systematically! The sting is very violent far worse than that of *Urtica dioica*.

80. *Moehringia platysperma* Maxim. Mél. Biol. IX. p. 35; Matsum. Ind. Pl. Jap. II. 2. p. 85.

Arenaria platysperma Makino, Bot. Mag. Tokyo, VI. p. 49; Yatabe, Nihon Shokubutsu Hen, p. 232.

NOM. JAP. *Yezo-fusuma*, *Tachihakobe*.

HAB. *Hokkaidō*. Prov. Oshima: Hakodate (Maximowicz).—Prov. Iburi: Tomakomai (Y. Kudō & T. Yoshimi! ³⁾ June 25, 1915).—Prov. Ishikari: Nopporo (Y. Kudō! June 24, 1916).

DISTRIB. Hokkaidō and Honshū.

81. *Ceratophyllum demersum* L. Spec. Pl. ed. 1. p. 992; Thunb. Fl. Jap. p. 190; DC. Prodr. III. p. 73; Fr. et Sav. Enum. Pl. Jap. II. p. 482; Britt. & Brown, Ill. Fl. II. p. 46; Kawakami, Bot. Mag. Tokyo. XII. p. (225); Matsum.

1) 三宅 勉. 2) 松原太郎. 3) 吉見辰三郎.

Ind. Pl. Jap. II. 2. p. 93; Kom. Fl. Mansh. II. p. 220; Matsum. et Hayata, Enum. Pl. Formos. p. 395.

NOM. JAP. *Kingyomo*.

HAB. *Hokkaidō*. Prov. Kushiro: Lake Akan (T. Kawakami! ¹⁾ Aug. 23, 1897; J. Hanzawa! ²⁾ Aug. 5, 1904); Lake Tōro (J. Hanzawa! Aug. 8, 1904).

DISTRIB. Almost cosmopolitan.

82. *Ranunculus reptans* L. Spec. Pl. ed. 1. p. 549; DC. Prodr. I. p. 32; Ledeb. Fl. Alt. II. p. 310; Maxim. Prim. Fl. Amur. p. 20; Britt. & Brown, Ill. Fl. I. p. 75; Huth, Bull. Herb. Boiss. V. p. 1079; Kom. Fl. Mansh. II. p. 294; Matsum. Ind. Pl. Jap. II. 2. p. 120; Miyabe & Miyake, Fl. Saghal. p. 14.

Ranunculus Flammula L. var. *reptans* E. Meyer, Pl. Lab. p. 96; Fr. et Sav. Enum. Pl. Jap. II. p. 266; Yatabe, Nihon Shokubutsu Hen, p. 41; Makino, Bot. Mag. Tokyo, XIII. p. (321).

Ranunculus Flammula L. subsp. *reptans* Turcz. Baik.-Dah. I. p. 50.

Ranunculus Flammula L. var. *filiformis* Regel et Til. Fl. Ajan. p. 31.

NOM. JAP. *Ito-kimpōge*, *Matsuba-kimpōge*.

HAB. *Saghalin*. Lake Solenuiya (Miyabe & Miyagi! July 26, 1906).

Kuriles. Paramoshiri: River Toruki (T. Matsubara! July 31, 1916).

Honshū. Prov. Shimotsuke: Akanumagahara, Nikkō (K. Miyabe! July 31, 1882).

DISTRIB. Saghalin, Kuriles, Honshū, North Korea and other parts of North Asia, Europe and North America.

The species is not yet found in the main-island of Hokkaidō.

83. *Corydalis* (Eucorydalis) *curvicalcarata* Miyabe et Kudō, sp. nov.

Caulis erectus, glaberrima, 3 pedes altus. Folia caulina bipinnatim vel tripinnatim partita vel secta, segmentis ultimis bi-, tri- vel uni-pinnatisectis vel partitis, lobis elliptico-oblongis, oblongo-lanceolatis vel ellipticis, apice acutis, margine et utrinque glabris, subtus glaucis. Racemi breves, subsimplices, 4.5 cm longi, pedicellis 1 cm longis, erecto-patentibus, filiformibus, bracteis linearibus pedicello paulo vel multo brevioribus. Flores albi, cum calcare 1.6 cm longi. Sepala decidua. Petalum superius 1.6 cm longum, limbo calcari paulo longiore, 9-nervato, calcare

1) 川上瀧彌。2) 牛澤 洵。

breve, crasso, angulo recto sursum verso, apice rotundato; petalum inferius naviculare basi subdilatatatum apice mucronatum, 5-nervatum; petala lateralibus longe pedunculata, oblonga, 6 mm longa, 3 mm lata, apice rotundato-mucronata, medio leviter constricta, basi truncato-subcordata, uno latere leviter saccata, pedunculis linearibus circa 5 mm longis. Capsulae clavato-obovatae, 20-35 mm longae, 6-7 mm latae, apice subrotundatae, basi attenuatae. Stylus persistens, 4-5 mm longus. Semina nigra, nitentia, 3-3.5 mm in diametro.

NOM. JAP. *Yezo-ōkeman* (nov.).

HAB. *Hokkaidō*. Prov. Ishikari: Mt. Furano (S. Nishida! July 25, 1916).

DISTRIB. Endemic.

The high stature and glaucous foliage of the plant make one to take it at first sight to be a form of *C. gigantea* Trautv. et Mey. But by careful comparison it will easily be proved, that these two plants differ from each other in many important characters of the inflorescence, flower and fruit. The most striking character of this species is its comparatively short and stout spur, which is bent upward almost at right angles, looking like a caterpillar holding its head high up into the air.

84. *Cardamine Greatrexii* Miyabe et Kudō, sp. nov.

Caulis ascendens, subflexuosus, 18-35 cm longus, gracilis, glaber. Folia radicalia et inferiora pinnatisecta, lobo terminale *maximo, truncato-ovato*, 1-2 cm longo, 8-14 mm lato, apice rotundato, margine integro v. plus-minus undulato v. pauci-dentato, basi interdum *hastato-trilobo*, lobis *lateralibus minutis paucis vel deficientibus*; caulina breviter petiolata usque sessilia, *spathulato-lanceolata, oblanceolata vel lineari-lanceolata*, 2.5-3.5 cm longa, 6-11 mm lata, *paucis dentata vel subintegra*. Flores albi, circa 6 mm in diametro, pedicellis 3 mm longis. Sepala oblonga vel oblongo-ovata, 2 mm longa, 1-1.2 mm lata, *margine hyalina*, apice integra vel *paucis denticulata*, 3-5 nervia. Petala obovato-cuneata, apice rotundato-truncata, 4 mm longa, 2 mm lata, brevi-ungiculata. Antherae flavidae, ellipticae; filamenta basi non dilata. Ovarium lineare; stylus brevis, stigmatibus simplicibus. Pedicelli fructiferi 6-14 mm longi, gracilis, *horizontaliter patentes* vel rarius subdeflexi. Siliquae lineares, glabrae, stylo brevi et stigmate capitato coronatae. Semina *oblonga vel elliptica, exalata*.

NOM. JAP. *Oshima-tanetsukebana* (nov.).

HAB. *Hokkaidō*. Prov. Oshima : Yunokawa (F. C. Greatrex! May 15 & 30, 1916) : Hakodate (Greatrex! June 10, 1916).

DISTRIB. Endemic.

This species is named in honour of Mr. F. C. Greatrex, who has collected it for the first time, and was kind enough to furnish us with an excellent series of the flowering as well as fruiting specimens.

85. *Astilbe platyphylla* Boiss. Bull. Herb. Boiss. V. (1897) p. 684; Matsum. Ind. Pl. Jap. II. 2. p. 171.

Astilbe apetala Miyabe, MS.

NOM. JAP. *Momijibashōma*, *Birōshōma*.

HAB. *Hokkaidō*. Prov. Oshima : Nanaye, Narukagawa Valley (F. C. Greatrex! n. 524. June 26, 1916).—Prov. Hidaka : Saruru (Y. Tokubuchi! Aug. 14, 1892; Faurie, n. 10480. July 21, 1893).—Prov. Tokachi : Birō (K. Miyabe! June 23, 1884).

DISTRIB. Endemic.

This plant is remarkable for the complete absence of petals in both male and female plants. It has been known to grow only in the vicinity of the Cape Erimo, but Mr. Greatrex found it lately in the Narukagawa Valley, Nanaye, not far from Hakodate.

86. *Saxifraga* (Trachyphyllum) *Nishidae* Miyabe et Kudō, sp. nov.

Caulis basi foliis dense imbricatis obtectus, florifer *gracilis*, 4–5.5 cm altus, paucifolius, apice 1–3 florus. Folia inferiora *oblongo-cuneata*, *lineari-cuneata vel oblanceolato-cuneata*, apice *tricuspidata*, 7–8 mm longa, margine *glanduloso-ciliata*, utrinque subglabra, 3–5 nervia, coriacea; cuspibus ovato-triangularibus, apice *cartilagineo-spinosis*, cuspe media lateralibus duplo majore; caulina pauca, minora, lineari-lanceolata, apice cartilagineo-spinosa, margine glanduloso-ciliata, utrinque glabra. Pedicelli *glandulosi*, calyce longiores. Flores *albi*. Sepala basi leviter coalita, in fructu erecta, oblonga, apice acuta, 4 mm longa, trinervia, margine *glanduloso-ciliata*, utrinque glabra. Petala oblonga vel elliptica, apice subacuta, 7 mm longa, 2.5–3 mm lata, tripli-nervia, alba tamen purpureo-punctata.

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

HAB. *Hokkaidō*. Prov. Ishikari : Mt. Yūbari, at Gamaiwa (S. Nishida! Aug.

7, 1916).

DISTRIB. Endemic.

It is nearly related to *Saxifraga bronchialis* L. and *S. tricuspidata* Retz. But it is easily distinguished from the former by its tricuspidate basal leaves with glandular ciliate margins and from the latter by its white flowers. It also differs from the both by having more slender stems bearing a few flowers and also by its glandular-ciliate sepals.

The plant is named after the name of its collector, Mr. Shōzō Nishida, Assistant of Botany in our College, who has been making a special study of the flora of the Yūbari mountain range for the last four years.

87. *Potentilla nivea* L. Spec. Pl. ed. 1. p. 499; Ledeb. Fl. Alt. II. p. 260 et Fl. Ross. II. p. 57; Rgl. et Til. Fl. Ajan. p. 84; Maxim. Prim. Fl. Amur. p. 97; Fr. Schm. Fl. Amg. p. 40; Kom. Fl. Mansh. II. p. 505; Makino, Bot. Mag. Tokyo, XIX. p. 87; Matsum. Ind. Pl. Jap. II. 2. p. 213; Koidz. Consp. Rosa. Jap. p. 184.

Potentilla Matsuokana Makino, Bot. Mag. Tokyo, XVI. p. 161.

NOM. JAP. *Urajiro-kimbai*.

HAB. *Hokkaidō*. Prov. Ishikari: Mt. Yūbari, at Gamaiwa (S. Nishida! Aug. 7, 1916).

DISTRIB. *Hokkaidō*, Honshū, Manchuria, China, Himalaya, Siberia, Europe and North America.

New to the Flora of *Hokkaidō*.

88. *Viola Francheti* Boiss. Bull. Soc. Bot. de Fr. XLVII. p. 321; Matsum. Ind. Pl. Jap. II. 2. p. 373.

Viola sapporensis Franch. in Sched. Herb.

NOM. JAP. *Yezo-saishin-sumire*. (nov.)

HAB. *Hokkaidō*. Prov. Oshima: Hakodate Hills (F. C. Greatrex! n. 17. May 28, June 5, 1916).—Prov. Ishikari: Between Otaru and Sapporo (Faurie, May 1885).

Kuriles. Etorofu: Sokiya (T. Kawakami! Aug. 8, 1898).

DISTRIB. Endemic.

The plant is nearly related to *Viola vaginata*, with which it may easily be

confounded. Mr. Greatrex made a careful study of the plant, and we have a pleasure to note here some of his observations. Compared with *V. vaginata*, the vagina in the present species are not so large and prominent, the rootstock more slender, and coarsely crenato-dentate leaves usually four or five proceeding from the tip of the rootstock. The flowers are purple mauve in colour and odourless; and the sepals are broad and obtuse, brownish in colour, with rounded and almost entire appendages.

89. *Viola rostrata* Pursh, Fl. Am. Sept. p. 174; DC. Prodr. I. p. 298; Britt. & Brown, Ill. Fl. II. p. 455; Boiss. in Bull. Soc. Bot. Fr. XLVII. p. 322; Makino, Bot. Mag. Tokyo, XVI. p. 137; Matsum. Ind. Pl. Jap. II. 2. p. 378.

NOM. JAP. *Nagao-sumire*.

HAB. *Hokkaidō*. Prov. Oshima : Kamiiso Hill, in open situations (F. C. Greatrex! n. 438. May 1, 1916).

DISTRIB. Northern Honshū, *Hokkaidō* and North America.

New to the Flora of *Hokkaidō*.

90. *Sium Ninsi* L. Cod. 2025; Maxim. Mél. Biol. IX. p. 18; Fr. et Sav. Enum. Pl. Jap. I. p. 181; Yabe, Rev. Umbell. Jap. p. 52; Boiss. Bull. Herb. Boiss. ser. 2. III. (1903) p. 954; Matsum. Ind. Pl. Jap. II. 2. p. 444.

NOM. JAP. *Mukago-ninjin*.

HAB. *Hokkaidō*. Prov. Oshima : Plain near Hakodate (Faurie, n. 5758. July 27, 1890); marshes near the sea, north of Hakodate (F. C. Greatrex! n. 564. Aug. 18, 1916).

DISTRIB. Southern *Hokkaidō*, Honshū and Kiushū.

91. *Helwingia japonica* Dietrich, Nacht. Gärt. Lex. III. p. 660; DC. Prodr. XVI. 2. p. 680; Fr. et Sav. Enum. Pl. Jap. I. p. 195; C. K. Schn. Handb. Laubholzk. II. p. 434; Matsum. Ind. Pl. Jap. II. 2. p. 447; Wangerin, in Engl. Pflreich. IV. 229. p. 35; Rehder, Pl. Wils. II. p. 570.

Osyris japonica Thunb. Fl. Jap. p. 31.

Helwingia rusciflora Willd. Spec. Pl. IV. p. 716; Miq. Prol. Fl. Jap. p. 209; Hayata, Fl. Montana Formos. p. 104.

NOM. JAP. *Hana-ikada*.

HAB. *Hokkaidō*. Prov. Oshima : Hakodate Hills (S. Nozawa! ¹⁾ Sept. 1887).

DISTRIB. Southern Hokkaidō, Honshū, Shikoku, Kiushū, Formosa and China.

New to the Flora of Hokkaidō.

92. *Swertia japonica* Makino, Bot. Mag. Tokyo, XXIV. p. 294.

Swertia rotata Thunb. Fl. Jap. p. 115; DC. Prodr. IX. p. 134. (non L.)

Gentiana? *japonica* Schult. Syst. Veg. VI. p. 174.

Ophelia japonica Griseb. Gen. Sp. Gent. p. 332.

Pleurogyne rotata Sieb. et Zucc. in Abh. Akad. Muench. IV. 3. p. 159; Miq. Prol. Fl. Jap. p. 288; Fr. et Sav. Enum. Pl. Jap. I. p. 324. (non Griseb.)

Ophelia diluta Maxim. in Mél. Biol. IX. p. 399 (quod pl. jap.); Fr. et Sav. Enum. Pl. Jap. II. p. 450. (non Ledeb.)

Swertia chinensis a vulgaris Makino, Bot. Mag. Tokyo, XVII. p. 55.

NOM. JAP. *Semburi*, *Tōyaku*.

HAB. *Hokkaidō*. Prov. Oshima : Shirikishinai (T. Kawakami! Oct. 1900); a valley on the slopes of Mt. Esan (S. Kwan! ²⁾ Oct. 30, 1916).

DISTRIB. Hokkaidō and Honshū.

New to the Flora of Hokkaidō.

93. *Cynanchum atratum* Bunge, Enum. Pl. Chin. Bor. n. 251; Kom. Fl. Mansh. III. p. 287; Matsum. et Hayata, Enum. Pl. Formos. p. 237; Nakai, Fl. Korea. II. p. 96; Matsum. Ind. Pl. Jap. II. 2. p. 509.

Vincetoxicum atratum Morr. et Dcne. in Bull. Acad. Brux. (1836) p. 17; DC. Prodr. VIII. p. 523; Maxim. Prim. Fl. Amur. p. 195 et Mél. Biol. IX. p. 789; Miq. Prol. Fl. Jap. p. 59; Fr. et Sav. Enum. Pl. Jap. I. p. 317.

NOM. JAP. *Funabarasō*.

HAB. *Hokkaidō*. Prov. Oshima : Yunokawa, near Hakodate (F. C. Greatrex! n. 212. June 25, July 1, 1916).

DISTRIB. Hokkaidō, Honshū, Kiushū, Formosa, Korea, North China, Manchuria and Amurland.

New to the Flora of Hokkaidō.

94. *Phtheirospermum japonicum* Kanitz, Anthoph. Jap. p. 12 (1878);

1) 野澤俊次郎. 2) 菅貞仁.

Makino, Bot. Mag. Tokyo, XIII. p. (111) et XV. p. 72; Matsum. Ind. Pl. Jap. II. 2. p. 568; Hurumi, Bot. Mag. Tokyo, XXX. p. 134.

Gerardia japonica Thunb. Pl. Jap. p. 251.

Phtheirospermum chinense Bunge, in Fisch. et Mey. Ind. Sem. Hort. Peterop. I. p. 35; Maxim. Prim. Fl. Amur. p. 208; Miq. Prol. Fl. Jap. p. 53; Fr et Sav. Enum. Pl. Jap. I. p. 350; Kom. Fl. Mansh. III. p. 440; Nakai, Fl. Korea. II. p. 123.

NOM. JAP. *Koshiogama*.

HAB. *Hokkaidō*. Prov. Oshima : Todohokke (K. Miyabe! Aug. 25, 1890).—Prov. Iburi : Oshamanbe (T. Kawakami! July 27, 1892); Numanohata (J. Hanzawa! Aug. 23, 1899); Tomakomai (J. Hanzawa! Aug. 21, 1899); Chitose (K. Miyabe! Aug. 11, 1890; Aosa-sandō (Y. Tokubuchi! Aug. 15, 1893); Yūbutsu (T. Watase!¹⁾ 1883; K. Miyabe! Aug. 22, 1884).—Prov. Hidaka : Horoizumi (Y. Tokubuchi! Aug. 20, 1892).

DISTRIB. *Hokkaidō*, Honshū, Shikoku, Korea, Manchuria, China and Amurland.

95. ***Lonicera gracilipes*** Miq. Prol. Fl. Jap. p. 158; Fr. et Sav. Enum. Pl. Jap. I. p. 205 et II. p. 388; Maxim. Mél. Biol. X. p. 76; Dippel, Handb. Laubholz. I. p. 257; Makino, Bot. Mag. Tokyo, XII. p. (17); C. K. Schn. Handb. Laubholz. II. 2. p. 692.

var. ***glabra*** Miq. l. c. p. 159; Rehder, Syn. Lonic. p. 66; Matsum. Ind. Pl. Jap. II. 2. p. 692.

NOM. JAP. *Uguisukagura*.

HAB. *Hokkaidō*. Prov. Oshima : Hakodate Hills (F. C. Greatrex! n. 473. June 10, 1916).

DISTRIB. *Hokkaidō* and Honshū.

New to the Flora of *Hokkaidō*.

96. ***Cacalia bulbifera*** Matsum. Shokubutsu Mei-I, ed. 3. p. 56, n. 582 et Ind. Pl. Jap. II. 2. p. 632; Koidz. Bot. Mag. Tokyo, XXIV. p. 153; Kudō, *ibidem* XXIX. p. 228.

1) 渡瀬寅次郎。

Senecio bulbiferus Maxim. Mél. Biol. IX. p. 295 ; Fr. et Sav. Enum. Pl. Jap. I. p. 251.

NOM. JAP. *Tamabuki, Iwabuki.*

HAB. *Hokkaidō.* Prov. Oshima : Yunokawa Valley (F. C. Greatrex ! Sept. 16, 1916).

DISTRIB. Southern Hokkaidō and Honshū.

New to the Flora of Hokkaidō.

Mr. Greatrex found this plant only at one spot on the wooded bank, which forms the east boundary of the Yunokawa Valley about four miles up from the Yunokawa Village.

97. *Cirsium Greatrexii* Miyabe et Kudō, sp. nov.

Radix perennis *repens*. Caulis *elatus, 8-10 pedes altus, simplex, apice tamen leviter ramosus*, distincte striatus, glaber. Folia omnia basi ad caulem *non decurrentia*; radicalia spathulato-oblancheolata, apice acuminata, basi longe attenuata, 28 cm longa, 8 cm lata, irregulariter et leviter pinnatifida, utrinque subglabra vel subtus parce arachnoidea, margine spinulosa; *serris angustis vel ovato triangularibus, spinis erectis vel incurvis*; caulina inferiora petiolata, radicalia subconformia, minora, 13-16 cm longa; superiora *sessilia, oblongo-lanceolata, spinoso-serrata*, 7-13 cm longa, 2.5-3.5 cm lata, utrinque subglabra, subtus pallidiora, margine spinulosa. Inflorescentia corymbosa, bracteis foliaceis, lineari-lanceolatis. Capita 13-20, *erecta*, 2.5-3 cm in diametro. Squamae *parce arachnoideae vel glabratae, apice spinosae, basi dilatatae, erecto-patentes*; extremae *sublancheolatae*, plerumque 7-10 mm longae, 2 mm latae; intimae *subulatae*, 13-15 mm longae, 3 mm latae. Corolla purpurea, *limbo 11-13 mm longo, tubo filiforme circa 10 mm longo*. Styli antheras superantes. Pappi circa 16 mm longi, fulvi.

NOM. JAP. *Ōrwa-azami.* (nov.)

HAB. *Hokkaidō.* Prov. Oshima : Hakokate (F. C. Greatrex ! Aug. 29 and Sept. 7, 14, 1916).

DISTRIB. Endemic.

This is a remarkable species which could not be placed in any known section of the genus. The creeping rhizome and general appearance make it appear to have a close relation to *Cirsium arvense*, but the characters of the involucre bracts and flowers are totally different from it.

We have a pleasure of naming the thistle also after its collector, Mr. F. C. Greatrex.

98. *Cirsium pexum* Nakai, Bot. Mag. Tokyo, XXVI. p. 365.

Cnicus suffultus Maxim. a *pexus* Maxim. Mél. Biol. IX. p. 315; Fr. et Sav. Enum. Pl. Jap. I. p. 259.

Cnicus pexus Fr. et Sav. l. c. II. p. 410.

NOM. JAP. *Tsukushi-kuruma-azami*.

HAB. *Hokkaidō*. Prov. Oshima : Hakodate (F. C. Greatrex! July 3, Oct. 5, 1916).

DISTRIB. *Hokkaidō* and Honshū.

New to the Flora of *Hokkaidō*.

99. *Cirsium yezoense* Nakai, Bot. Mag. Tokyo, XXVI. p. 374. (non Makino).

Cnicus yezoensis Maxim. Mél. Biol. IX. p. 328; Fr. et Sav. Enum. Pl. Jap. I. p. 261 et II. p. 415.

NOM. JAP. *Benkei-azami* (nov.).

HAB. *Hokkaidō*. Prov. Oshima : Hakodate (Albrecht; F. C. Greatrex! n. 323 a. Sept. 29, 1916); Moheji (Maximowicz, Oct. 1860).

DISTRIB. Endemic.

Remarkable for its enormous size, especially of its radical leaves, which measure one and half to two feet in length and one foot in breadth.

100. *Senecio nikoensis* Miq. Prol. Fl. Jap. p. 114; Maxim. Mél. Biol. VIII. p. 14; Fr. et Sav. Enum. Pl. Jap. I. p. 251; Matsum. Ind. Pl. Jap. II. 2. p. 665.

NOM. JAP. *Sawagiku*, *Horogiku*.

HAB. *Hokkaidō*. Prov. Ishikari : Nopporo (Y. Kudō! Sept. 3, 1915).—Prov. Iburi : Sobetsu (M. Date! ¹⁾ Sept. 22, 1894).—Prov. Hidaka : Shizunai (T. Kawakami! 1900); Saruru (Y. Tokubuchi! Aug. 13, 1892).

DISTRIB. *Hokkaidō*, Honshū, Shikoku and Tsushima.

Botanical Institute, College of Agriculture,

Tōhoku Imperial University, Sapporo, Hokkaidō.

December 15, 1916.

1) 伊達宗經。

摘 要

76. *Carex ponmoshiriensis* Miyabe et Kudō. にしだすび (新稱)

石狩國空知郡ポンモシリ沼地に生ず。形狀及性質よくますくさに類す。其區別の要點は果囊の橢圓狀卵形にして明かに五脈乃至七脈を有し、其鱗片は長橢圓狀卵形且種子の小形なることなり。西田彰三氏の採集にかゝる。

77. *Arisaema Takedai* Makino. おほまむしぐさ。

函館在勤英國副領事エフ、シー、グレートレツクス氏之を函館及其附近に於て採集せり。武田久吉氏によれば同所に於て己に約五十五年以前ホジソン及マキシモウキツチ兩氏の採集にかゝる標本英國キュー腊葉室に保存せられありと云ふ。てんなんせうに比するに其肉穗花序の附屬物は圓壩狀棍棒形にして太く下方は通常帶紫色基部截形をなす。其佛焰苞の葉狀部は濃紫色にして其長さ筒部に倍す。武田氏は之を日光にて採集せり。

78. *Betula glandulosa* Michx. ひめかんば。

本種は從來樺太の北部幌内原野に於て採集せられたるのみなりしが本年北海道廳技師松原太郎氏之を千島幌延島に於て採集せられたり。

79. *Sceptrocnide macrostachya* Maxim. みやまいらくさ。

本道に於ては函館附近に於てのみ知らる。此種類はむかごいらくさに於けるが如く葉は互生し激烈なる刺毛を有するも莖は高く「むかご」を生ぜざるにより容易に區別し得べし。又根は極めて長し。

80. *Moehringia platysperma* Maxim. えぞふすま。たちはこべ。

本道に於ては渡島、膽振及石狩等の諸國に産す。一見はこべに類似するも花瓣は全縁にして其長さ萼片の半分に等しきことにより容易に區別し得べし。

81. *Ceratophyllum demersum* L. きんぎよも。

本道に於ては釧路國阿寒湖及釧路湖に産す。

82. *Ranunculus reptans* L. いときんばうげ。まつはきんばうげ。

從來樺太及び本州に於て産することを知られたりしに本年松原太郎氏之を千島幌延島に於て採集せらる。

83. *Corydalis curvicalcarata* Miyabe et Kudō. えぞおほけまん (新稱)

けまん屬に於てはからふとねほけまんと同じく本邦産中尤も大なるものにして其高さ三尺に達す。花は白色。距は花の長さの半分に於て太く上方に殆んど直角をなして屈曲す。果實は棍棒狀倒卵形にして大形長さ三十五「セメ」に達するものあり。依りて容易にからふとねほけまんと區別し得べし。西田彰三氏本年始めて之を富良野岳に於て採集す。

84. *Cardamine Greatrexii* Miyabe et Kudō. をしまたねつけはな (新稱)

函館及其附近に於てグレートレツクス氏之を採集す、好んで陽地に生ず。在來の種類にして本種に相當するものなきを以て新種と認め以て採集者の名を採り種名とせり。

85. *Astilbe platyphylla* Boiss. もみぢはしようま。びろをしようま。

とりあししようま屬中本種の如く花瓣を全く欠如するものは本邦産の種類中其類を見ず。從來本種は

襟裳岬附近にのみ産することを知られたりしに本年グレートレツクス氏之を七飯山中に得らる。分布上面白き事實とす。

86. *Saxifraga Nishidae* Miyabe et Kudō. えぞくもまどさ。(新稱)

本種は西田彰三氏夕張岳基岩にて採集す。其形状しこたんさうに類すと雖も其葉の先端三裂せること莖の纖弱にして一個乃至三個の花を着生すること及萼片に有腺毛茸あることにより容易に區別し得べし。新種と認め西田氏の名を採りて種名となす。

87. *Potentilla nivea* L. うらじろきんばい。

本邦に於ては從來本州中央高山に産するものとして知られたるものなるも本年西田氏により夕張岳基岩にて發見せられたり。

88. *Viola Francheti* Boiss. えぞさいしんすみれ。(新稱)

本種は頗るすみれさいしんに類似し往々之と混同し易すきも其花は紫紅色にして香氣なく、萼片は鋭頭にして褐色を帯び其附屬物は全縁、根出葉は四五個叢生すること等により容易に區別し得べし。本種は渡島及石狩兩國及千島樺捉島に産し本道以外に未だ産するを知らず。

89. *Viola rostrata* Pursh. ながをすみれ。

本種は本道に於て始めて發見せられたるものにして渡島國上磯山に生ず。

90. *Sium Ninsi* L. むかごにんじん。

函館灣北部の沼地に生ず。

91. *Helwingia japonica* Dietrich. はないかだ。

野澤俊次郎氏本種を函館山に於て採集せり。

92. *Swertia japonica* Makino. せんぶり。たうやく。

本道に於ては渡島國恵山附近に生ず。

93. *Cynanchum atratum* Bunge. ふなばらさう。

本種は青森附近にまで分布するものなりしが本年始めてグレートレツクス氏之を渡島國湯の川に得たり。

94. *Phtheirospermum japonicum* Kanitz. こしほがま。

本道に於ては渡島、膽振、日高等の諸國に産す。

95. *Lonicera gracilipes* Miq. var. *glabra* Miq. うぐひすかぐら。

本道に於ては未だ本種の野生することを知られざりしがグレートレツクス氏本年始めて之を函館山に於て採集せり。

96. *Cacalia bulbifera* Matsum. たまぶき。いはぶき。

本種は本州北部まで分布することは既知の事實なるもグレートレツクス氏本年之を湯の川上流に於て採集せられたり。

97. *Cirsium Greatrexii* Miyabe et Kudō. おほいはあざみ(新稱)

本種はえぞのきつねあざみに類似するも之れより強大にして高さ一丈に達するものあり、莖は單一なるも上部に於て僅に分枝す。總苞の鱗片は稍絨形又は披針形にして先端は有刺鋭尖基部は廣がり、直立斜上す。花冠の管部は唇部より稍短きこと等によりて容易に區別し得べしグレートレツクス氏の採集にかゝり新種とす。和名ねほいはあざみは同氏の姓に因みて命名したるものなり。

98. *Cirsium pexum* Nakai. つくしくるまあざみ。

グレートレツクス氏之を函館にて採集せり。

99. *Cirsium yezoense* Nakai. べんけいあざみ。(新稱)

本道産あざみ屬中最も強大なるものにして特に其根葉の如きは長さ二尺巾一尺に達するものあり。渡島國に産することを知らるゝのみなり。

100. *Senecio nikoensis* Miq. さばぎく。ほろぎく。

本道に於ては石狩、膽振、日高等の諸國に生ず。

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A LIST OF THE JAPANESE AND FORMOSAN CICADIDAE, WITH DESCRIPTION OF NEW SPECIES AND GENERA.

By

Prof. SHONEN MATSUMURA.

日本及び臺灣産の蟬並に新種の記載に就き

理學博士 松村松年

Since I have published "Die Cicadinen Japans" in the "Annotationes Zoologicae Japonensis" Vol. VI, Part 2, 1907, and some new species in my "Thousand Illustrated Insects of Japan" (Nippon Senchū-zukai), Additamenta, Vol. I, 1913, nothing seems to have been published in regard to the Japanese nor Formosan Cicadidae. In the present paper, I shall describe some new species and genera and enumerate at the same time all the species already known from our faunal regions.

According to my investigation, we have in Japan and Formosa 59 species under 28 genera, of which 14 species and 6 genera are new.

1. Fam. Cicadidae.

Subfam. Cicadinae

Division Polyneuraria.

1. Gen. *Platypleura* Am. Serv.

1. *Platypleura kaempferi* F.

Tettigonia kaempferi F. Ent. Syst. Vol. 4, p. 23, 25 (1794).

Platypleura fuscangulis Butl. Ent. Vol. I, p. 189 (1874).

Platypleura hylino-limbata Sign. Bull. Soc. Ent. Fr., (6) Vol. I, p. 42 (1881).

Platypleura kaempferi Dist., Monogr. Orient. Cicad. Pro., t. I. f. 14 a,b (1889); Mats. Annot. Zool. Jap. Vol. II Part. I, p. 2, t. I a,b (1898);

Thousand Ins. Jap. Vol. 1, p. 211, t. 17, f. 10 (1904.)

Hab.—Hokkaido, Honshu, Shikoku, Kiushu, Formosa; China.

Nom. Jap.—*Nini-zemi*.

var. **formosan** n.

Differs from the type as follows:—

Double row of the apical spots to the tegmina distinct, those of the first, second and third being the largest and often contiguous, nearly in the same level with smaller spots of the fourth and sixth veins, which are not connected mostly with any other spot or streak.

Hab.—Formosa (Koshun, Keibi, Hoppo); 8 (5 ♂, 3 ♀) specimens in my collection.

2. **Platypleura kuroiwa** n. sp.

Nearly allied to *P. kaempferi* F., but differs from it as follows:—

Body much smaller; pronotal angles rounded, not obtusely angled; opercula fuscous, at the extreme margin narrowly olivaceous yellow; subapical fasciate fuscous spot narrower and more obliquely situated, running parallel to the double row of the apical spots; double row of the apical spots much smaller, those of the second and third being the largest, not touching each other in the middle of the second apical area, nearly in the same level with the fourth, fifth and sixth, each spot at the apices of the longitudinal veins being much smaller and of a roundish form, which is wanting at the apex of the second vein; marginal membrane of the wings much broader.

Length—excl. tegm. 18–19 mm; exp. tegm. 56–61 mm.; breadth between the pronotal angles 11 mm.

Hab.—Okinawa (Naha); 5 ♂ specimens collected by Mr. K. Kuroiwa.

Nom. Jap.—*Kuroiwa-Ni-ni*.

var. **takasagona** n.

Differs from the type as follows:—

Central fuscous stripe to the pronotum very narrow in the middle; apical double spots to the tegmina smaller, only those of the first, second and third longitudinal veins conspicuous.

Hab.—Formosa (Kiirun); 2 ♂ specimens in my collection.

3. *Platypleura yayeyamana* n. sp.

Allied also to *P. kaempferi* F., but differs from it as follows:—

Pronotal angles much produced and nearly at right angles, central spots to the mesonotum connected with each other and nearly of a rectangular form, from the middle of which posteriorly sending a black stripe; opercula fuscous at the extreme margin, and a spot near the base, ochraceous; subapical fasciate fuscous spot to the tegmina nearly parallel to the double row of the apical spots, those of the second and third longitudinal veins connected with each other, and those of the third, fourth and fifth much smaller, marginal membrane being much broader; hyaline marginal membrane to the wings much broader.

Length—excl. tegm. 20 mm.; exp. tegm. 68 mm.; breadth of the pronotal angles 13 mm.

Hab.—Yayeyama (Ishigakijima); 4 ♂ specimen collected by Messrs. K. Kuroiwa and T. Iwasaki.

Nom. Jap.—*Yayeyama-Ni-ni*.

2. Gen. *Pycna* Am. Serv.

4. *Pycna miyakona* n. sp.

Allied to *P. repanda*¹⁾ F., from which it differs in the following points:—

1. Operacula pale ochraceous, on its inner margin narrowly fuscous, at the apex a little more rounded.

2. A large subapical fasciate fuscous spot to the tegmina independent, inner row of the apical spots triangular, becoming smaller towards the hind margin, each being accompanied by a double spot on each apex of the longitudinal vein; inner spot at the apex of the 7th longitudinal vein roundish.

3. Wings velvety black, apex of each apical area narrowly and outer margin broadly hyaline, apex of the anal area being white and opaque.

Length—excl. tegm. 23–26 mm.; exp. tegm. 70–80 mm.; breadth between the pronotal angles 13–15 mm.

Hab.—Miyakojima, Riukiu, 8 (5 ♂, 3 ♀) specimens collected by Mr. K. Kuroiwa.

1) *Pycna rapanda* F. was reported from Japan and China, but according to my present knowledge it is known only from E. India and Burma. The species identified as *P. repanda* were mostly *Platypleura kaempferi* F. or its varieties.

Nom. Jap. *Miyako-Ni-ni*.

Div. Tacuaria

3. Gen. Tosena Am. Serv.

5. Tosena seebohmi Dist.

Tosena seebohmi Dist. Ann. Mag. N. H. (7), Vol. 14, p. 301 (1904);

Mats. Thous. Ins. Jap. Add. Vol. 1, p. 17, t. 9, f. 1. (1913).

Hab.—Formosa (Torin, Horisha, Shinchiku, Koshun), not common; 7 (4 ♂, 3 ♀) specimens in my collection; recently I have recieved 2 more ♂ specimens from the late Baron Yoshio Tanaka, but their localities are not cited.

Nom.—Jap.—*Taiwan-aburazemi*.

4. Gen. Graptosaltria Stål.

6. Graptosaltria colorata Stål.

Graptosaltria colorata Stål, Berl. Ent. Zeitschr. Vol. 10, p. 169 (1866);

Dist. Mong. Orient. Cicad. p. 25, t. 8 a, b (1889); Mats., Ann. Zool.

Jap. Vol. 12, Hart 1, p. 4, t. 1, f. 3 a, b (1898); Mats. Thous. Ins.

Jap. Vol. 1. p. 207, n. 190, t. 17, f. 3 (1904).

Hab.—Hokkaido, Honshu, Shikoku, Kiushu.

Nom Jap.—*Abura-zemi*.

Div. Cicadaria.

5. Gen. Rihana Dist.

8. Rihana ochracea Wk.

Fidicina ochracea Wk. List. Hom. Vol. 1, p. 99 (1850).

Cicada ferrifera Wk. List. Hom. Vol 1, p. 115 (1850).

Dundubia fasciceps Stål, Oefv. Vet-Akad. Förh. p. 242 (1854).

Cicada fusciceps Stål, Berl. Ent. Zeitschr. p. 171 (1866).

Cicada ochracea Dist., Mon. Orient. Cicad. p. 96, t. 12, f. 13 a, b (1892);

Mats., Ann. Zool. Jap. Vol. VI, Part 2, p. 101 (1907).

Rihana ochracea Dist., Faun. Brit. Ind. Rhyn. Vol. III. p. 78 (1906);

Mats., Thous. Ins. Jap. Add. Vol. 1. t. 9, f. 11 (1913).

Hab.—Formosa (common); China.

Nom. Jap.—*Hagoromo-zemi*.

6. Gen. *Cicada* L.

8. *Cicada bihamata* Motsch., Ent. p. 24 (1861); Dist., Monog. Orient. Cicad. p. 95, t. 12, f. 8 a, b (1891); Mats., Ann. Zool. Jap. Vol. II, Part 1, p. 14, f. 13 a, b (1898); Thous. Ins. Jap. Vol. 1, p. 212, f. 7 (1904).

Cicada andrewsi Dist., Ann. Mag. N. H. (7). Vol. 14, p. 330 (1904).

Hab.—Hokkaido (common), Honshu.

Nom. Jap.—*Ko-yezo-zemi*.

Newly emerged imago is spot less in the tegmina and corresponds exactly with the description of *C. andrewsi* Dist.; unfortunately Mr. Distant has not described any ♂ specimen of it.

9. *Cicada flammata* Dist., Mong. Orient. Cicad. p. 99, t. 13, f. 15 a, b (1892); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 13, t. 1, f. 12 a, b (1898); Mats., Thous. Ins. Jap. Vol. 1, p. 213, n. 196, t. 17, f. 8 (1904).

Hab.—Hokkaido (common), Honshu (rare).

Non. Jap.—*Yezo-zemi*.

10. *Cicada pyropa* Mats.

Cicada pyropa Mats., Ann. Zool. Jap. Vol. V, p. 53, t. 3, f. 4 (1904); Oshan., Die Palaeork. Hem. Bd. 11, p. 385 (1908).

Cicada flammata Dist. Gen. Ins. Hom. p. 31 (1912).

Hab.—Hokkaido, Honshu (Iwate, Yamagata).

Nom. Jap.—*Aka-yezozemi*.

Mr. W. Distant thinks *Cicada pyropa* Mats. as a synonym of *C. flammata* Dist., but it is quite easy to distinguish them by the following characters¹⁾—

C. flammata Dist.

C. pyropa Mats.

1. Face broader, scarcely longer than the breadth

1. Face narrower, much longer than the breadth.

1) I have compared 21 (16 ♂, 5 ♀) specimens of *C. pyropa* and 20 (12 ♂, 8 ♀) of *C. flammata* and found always some constant differences.

- | | |
|--|---|
| 2. Head with eyes always broader than the base of the pronotum. | 2. Head with eyes always as broad as the base of the pronotum. |
| 3. Pronotum on the sides always with narrow black margin; black band near the hind margin always not interrupted in the middle, immediately before it provided with large black triangular spot, inclosing 2 ochraceous spots. | 3. Pronotum on the sides not with black margin on the anterior half; black band near the hind margin always interrupted in the middle, immediately before it provided with 2 small black spots, instead of a triangular black spot. |
| 4. Ochraceous W-spot of the mesonotum always broader, lateral stripes fulvous pubescent. | 4. Ochraceous W-spot of the mesonotum narrower, lateral stripes white pulverous. |
| 5. Veins to the tegmina always robust-er, dark brown or black, olivaceous yellow at the basal half; first apical vein opens near the base and not brownish suffused; the third and fourth cross-veins nearly always infuscated (rarely in ♂ not suffused). | 5. Veins to the tegmina slender, reddish ochraceous to the tip; first apical cross-vein opens nearly in $1/3$ of the first apical area, which is nearly yellow brownish suffused; the fourth and fifth nearly always not infuscated (rarely suffused in the ♀). |
| 6. Abdomen always black on the back. | 6. Abdomen very often reddish ochraceous on the back. |
| 7. Opercula longer, always reaching to the third ventral segment, emarginated on the lateral margins. | 7. Opercula short, always reaching only to the base of the abdomen, not emarginated on the lateral margins. |

It is probable that Mr. Distant has not seen any specimen of *C. pyropa* from Japan. Mr. B. Oshanin reports in his catalogue that this species lives also in Askold Island near Wladivostok.

7. *Cryptotympana* Stål.

11. *Cryptotympana pustulata* F.

Tettigonia pustulata F., Mant. Ins. Vol. 2, p. 266, n. 11 (1787).

Tettigonia atrata F., *ibidem*, p. 267, n. 22 (1787).

Cicada nigra Oliv., E. c. Meth. Vol. 5, p. 750, n. 17 (1790).

Cicada atra Sign., Rev. Mag. Zool. p. 406, t. 10, f. 1 (1849).

Fidicina bubo Wk., List. Hom. Vol. 1, p. 82 (1850).

Cryptotympana pustulata Dist., Mon. Orient. Cicad., p. 86, t. 11, f. 10
a, b; Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 121, t. 1, f. a, b (1898).

Hab.—Formosa (common); China, Malay Archipelago.

Nom. Jap.—*Sujiaka-kumazemi*.

12. *Cryptotympana intermedia* Sign.

Cicada intermedia Sign., Rev. Mag. Zool. p. 407 (1849).

Fidicina immaculata Wk., List. Hom. B. M. Vol. I, p. 90 (1850).

Cryptotympana intermedia Dist., Mon. Orient. Cicad., p. 88, t. 11, f. 1
a, b (1891); Mats., Ann. Zool. Jap. p. 100 (1907).

Cryptotympana pustulata Mats., Thous. Ins. Jap. Vol. 1, p. 207, n. 189
(1904).

Hab.—Honshu, Shikoku, Kiushu, Formosa; China, Malay Archipelago, E.
India. (very common in Kiushu, but very rare near the vicinity of
Takyo).

Nom. Jap.—*Kuma-zemi*.

13. *Cryptotympana facialis* Wk.

Cicada facialis Wk., List. Hom. Suppl. p. 30 (1858).

Fidicina nigrofusca Motsch. Bull. Soc. Mosc. XXXIX, p. 185 (1866).

Cryptotympana facialis Dist., Mon. Orient. Cicad. p. 90, t. 11, f. 11
a, b; Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 11, t. 1, f. 10 a, b;
Mats., Thous. Ins. Jap. Add. Vol. 1, p. 85, t. 10, f. 2 (1913).

Hab.—Riukiu (Yayeyama); China, Siam.

Nom. Jap.—*Riukiu-kumazemi*.

14. *Cryptotympana holsti* Dist.

Cryptotympana holsti Dist., Ann. Mag. N. H. 7. Vol. 14, p. 331 (1904); Mats.,
Ann. Zool. Jap. Vol. VI, Pt. 2, p. 101 (1907); Thous. Ins. Jap. Add.
Vol. 1, p. 84, t. 10, f. 1 (1913).

Hab.—Formosa (Koshun, Shinko, Taihoku, Kōtōshō).

Nom. Jap.—*Taiwan-kumazemi*.

Div. Dundubiaria

8. Gen. *Leptopsaltria* Stål.

15. *Leptopsaltria tuberosa* Sign.

Cicada tuberosa Sign., Soc. Ent. Fr. (2), Vol. V, p. 299 (1847).

Leptopsaltria tuberosa Dist., Mong. Orient. Cicad., p. 34, t. 8, f. 7 a, b (1889); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 8, t. 1, f. 7 a, b (1904).

Hab.—Japan (?); Java, Malacca, India.

This species was originally described from the Javanese specimens, and lately it was known also from India (Sikkim, Khasia Hill) and Japan? (Yokohama).

The only specimen from Japan is now in the museum of Brussel, but I doubt whether it was truly from Japan (or Java?), although I have collected a quite large number of specimens of Cicadidae from all parts of Japan and Formosa, I have not yet met with any insect resembling in the least to the present species.

9. Gen. *Formosemia* n. g.

Genotype—*Leptopsaltria apicalis* Mats.

Allied to *Purana* Dist., from which it differs in the following characters:—

Head including eyes distinctly broader than the base of mesonotum; face prominent, but far less than at right angles to the anterior lateral angles of vertex; abdomen scarcely longer than the space between head and cruciform-elevation, scarcely attenuated towards the apex; tympanal coverings in the male as broad at base as long; tubercles on the second and third ventral segments long and slender, strongly sloping backwards; rostrum reaches to the base of abdomen.

16. *Formosemia apicalis* Mats.

Leptopsaltria apicalis Mats., Ann. Zool. Jap. Vol. VI, p. 95 (1907);

Thous. Ins. Jap., Add. Vol. 1, p. 78, t. 9, f. 7 (1913).

When I have described this species comparing it with *Leptopsaltria tuberosa* Sign., I was not aware of the fact, that what I thought to be *L. tuberosa* was *Euterpnosia chibensis* Mats. and so it is necessary to describe this insect again.

Body above olivaceo-ochraceous, head with 2 lateral oblique stripes in front, striations to face, 2 $\pm$ -shaped spots on each side of vertex, ocellar region (inclosing 2 small ochraceous spots) and basal margin narrowly, black; pronotum with 2 central lines, a curved spot on each side, the anterior margin, incisures, 2 spots near each lateral area, black or piceous; mesonotum with a narrow central line, a short clavate line on each side of the central line, a spot on each outer side of the clavate line and a transverse row of 4 small spots before the cruciform-elevation, black; abdomen with the segmental margins, a spot in the middle of the first and second dorsal segments, as well as 2 apical segments, fuscous; body on its ventral side and legs, ochraceous, the anterior and middle tibiae and tarsi at the apices infuscated; opercula pale olivaceous yellow, on the lateral sides narrowly infuscated; tubercles on the apices and last ventral segment, fuscous; tegmina hyaline, with olivaceous veins, stigma yellow, the first, second and third apical cross-veins more or less infuscated, each longitudinal vein near the apex with a fuscous spot.

Length—excl. tegm. 22–24 mm.; exp. tegm. 70–74 mm.

Hab.—Formosa (Koshun, Hoppo); rare.

Nom. Jap.—*Taiwan-himeharuzemi*.

10. Gen. *Taiwanosemia* n. g.

Differs from *Leptopsaltria* Stål as follows:—

Head including eyes scarcely narrower than the base of mesonotum; abdomen long, somewhat shorter than the double length between the head and cruciform-elevation; tegmina short, only $1/4$ of its length surpassing the tip of abdomen; the first apical cross-vein much oblique, exactly running parallel to the second cross-vein, the third cross-vein nearly straight; rostrum not passing the posterior coxae; opercula short and round; ventral tubercles large, and much depressed.

Genotype—*Leptopsaltria hoppoensis* Mats.

17. *Taiwanosemia hoppoensis* Mats.

Leptopsaltria hoppoensis Mats., Ann. Zool. Jap. Vol. VI. Pt. 2, p. 96
(1907)

Hab.—Formosa (Hoppo); rare.

Nom. Jap.—*Hoppo-higurashi*.

11. Gen. *Tanna* Dist.18. *Tanna japonensis* Dist.

Pomponia japonensis Dist., Mon. Orient. Cicad. p. 102, t. 15, f. 22 (1892); Mats., Ann. Zool. Jap. Vol. II. Pt. 1, p. 6, t. 1, f. 5 a, b (1898).

Leptopsaltria japonica Horv., Term. Füzet. Vol. 15, p. 136 (1892); Mats., Thous. Ins. Jap. Vol. 1, p. 210, n. 194, t. 17, f. 9 (1904).

Hab.—Honshu, Shikoku, Kiushu (common).

Nom. Jap.—*Higurashi* (*Kana-kana*).

19. *Tanna taipinensis* Mats.

Leptopsaltria taipinensis Mats., Ann. Zool. Jap. Vol. VI, Pt. 2, p. 95 (1907).

Hab.—Formosa (Taipin near Hoppo, not rare).

Nom. Jap.—*Taipin-higurashi*.

13. Gen. *Semia* n. g.

Head (including eyes) scarcely narrower than the base of mesonotum; ocelli not quite twice the distance from eyes as from each other; eyes round, very highly prominent; tempora behind eyes very large, nearly in the same height with the eyes; face conical and prominent; pronotum with the lateral margins broadly amplified especially at the hind margin, in the middle incised, before the middle with a small tooth; mesonotum as long as head and pronotum taken together; abdomen very long, somewhat shorter than twice the length between head and cruciform-elevation; genital segment of the male large, above and on the sides each with a large tooth-like projection; the anterior femora distinctly and robustly spined; rostrum extending somewhat beyond opercula; tympana covered, opercula very short, not reaching to the base of abdomen, nearly touching each other on the inner margin; ventral segments in the ♂ without tubercles; tegmina and wings hyaline, the first apical cross-vein strongly oblique, namely running from the second down to the first longitudinal vein; the other characters nearly the same as those of *Tanna* Dist,

Genotype—*Leptopsaltria watanabei* Mats.

20. *Semia watanabei* Mats.

Leptopsaltria Watanabei Mats., Ann. Zool. Jap. Vol. VI, Pt. 2, p. 96
(1907).

Pomponia Watanabei Mats. Thous. Ins. Jap., Add. Vol. 1, p. 78, t. 9,
f. 8 (1913).

Hab.—Formosa (Hoppono, Horisha); very rare.

Nom. Jap.—*Watanabe-higurashi*.

When I have received the female specimen of this insect from the late K. Watanabe, it seemed to me that it might have belonged to *Leptopsaltria*, but on studying later the male specimen from Horisha, collected by the late Inao Nitobe, I was convinced that it should belong to quite a new genus.

13. Gen. *Leptosemia* n. g.

Much resembles to *Purana* Dist., but differs from it as follow:

Pronotum not angulated or toothed on its lateral margins; opercula very widely separated from each other on the inner margin, nearly twice as long as the breadth; the male on the second and third ventral segment wants tubercles.

Genotype—*Purana sakaii* Mats.

21. *Leptosemia sakaii* Mats.

Leptopsaltria sakaii Mats., Thous. Ins. Jap. Add. Vol. I, p. 76, t. 9, f.
5 (1913).

Hab.—Formosa (Kanshirei, Horisha).

Nom. Jap.—*Sakai-himeharuzemi*.

Note.—I have received from Western China a new species belonging to this new genus, which I shall describe here on this occasion.

Leptosemia takanonis n. g.

Allied to *L. sakaii* Mats., from which it differs as follows:—

Body much larger; a large spot on the ocellar region and face below, and upper facial striations, black, conical spot on the upper part of face olivaceous; mesonotum on the anterior margin with a short conical spot on each side of obconical spot; abdomen on the lateral sides with some inconspicuous fuscous spots; opercula broader, distinctly rounded on the outer sides; both ends of tibiae and apices of tarsi fuscous or brown.

Length—excl. tegm. 25 mm., exp. tegm. 67 mm.

Hab.—Western China (Prov. Szchuen); one ♂ specimen collected by Mr. T. Takano.

14. Gen. *Cosmopsaltria* Stål.22. *Cosmopsaltria inermis* Stål.

Cosmopsaltria inermis Stål, Oefv. Vet-Akad. Förh. p. 708 (1870);

Dist., Mon. Orient. Cicad. p. 49, t. 6, f. 15 a, b (1890).

Mr. W. Distant had enumerated this species as living in Japan in the "Genera Insectorum," Family Cicadidae, p. 44 (1913), but I think it may be a mistake. This species was originally described from the Philippine Islands.

23. *Cosmopsaltria multivocalis* n. sp.

Head and thorax above, olivaceous; a transverse spot to front, a central stripe to face, upper facial striations, the area of ocelli, a zigzag spot on vertex at the inner sides of eyes, a lateral fascia at the front of eyes, black. Pronotum with 2 central black lines, lateral spots and incisures, brownish; mesonotum with 5 black stripes, of which the middle 3 united in the middle; on the anterior margin at the inner sides of the outer lateral stripes each with a small black spot; before cruciform-elevation with 2 black spots; opercula ochraceous, long, reaching to the fifth abdominal segment, at the basal half on the inner sides nearly straight and touching each other, then obliquely truncated, and at the apex conically broadly pointed; abdomen short, above black, each hind margin of the segments olivaceous, which becoming broader towards the sides; venter dark yellow and nearly coloured as that of *Meimuna opalifera* Wk.; tegmina nearly twice as long as the abdomen and thorax taken together, hyaline, on the first and second apical cross-veins infuscated; legs ochraceous, an indistinct stripe to femora, tibiae at the apices and tarsi except bases, fuscous.

Length—excl. tegm. 26 mm.; exp. tegm 81 mm.

Hab.—Formosa (Hoppo); 1 ♂ specimen collected by the late K. Watanabe; according to his information this insect is very difficult to catch and produces three or four different sounds.

15. Gen. *Platylomia* Stål.24. *Platylomia spinosa* F.

Tettigonia spinosa F., Mant. Ins. Vol. 2, p. 266, n. 6 (1787).

Cosmopsaltria spinosa Dist., Mon. Orient. Cicad. p. 52, t. 4, f. 7 a, b (1890).

Cosmopsaltria abdulla Dist., Trans. Ent. Soc. London, p. 639 (1881).

Hab.—Japan (?); Philippines, Malay Peninsula, Sumatra, Borneo.

Mr. B. Oshanin in his catalogue, "Die Palaearktischen Hemipteren" Bd. 11, p. 388 (1908), has enumerated this species, which was originally reported by Dr. G. Horváth as inhabiting in Kiushu, but I think it may be a mistake.

25. *Platylomia bivocalis* Mats.

Cosmopsaltria bivocalis Mats., Ann. Zool. Jap. Vol. VI, Pt. II, p. 97 (1907); —Thous. Ins. Jap., Add. Vol. I, p. 72, t. 9, f. 2 (1913).

Platylomia bivocalis Dist., Gen. Ins. Cicad., p. 49 (1913).

Hab.—Formosa (Koshun); not rare.

Nom. Jap.—*Takasago-zemi*.

26. *Platylomia karëisana* Mats.

Cosmopsaltria karëisana Mats., Ann. Zool. Jap. Vol. VI, Pt. 11, p. 98 (1907).

Platylomia karëisana Mats., Thous. Ins. Jap. Add. Vol. 1, p. 74, t. 9, f. 4 (1913).

Hab.—Formosa (Hoppono); rare.

Nom. Jap.—*Karei-zemi*.

16. *Diceropyga* Stål.

27. *Diceropyga boninensis* Dist.

Diceropyga boninensis Dist., Ann. Mag. Nat. H. (7), Vol. 15, p. 67 (1905).

Hab.—Bonin Islands (Ogasawarajima).

I have not yet seen any specimen of this species from these Islands.

17. *Meimuna* Dist.

28. *Meimuna opalifera* Wk.

Dundubia opalifera Wk., List. Hom. Vol. 1, p. 56 (1850).

Cosmopsaltria opalifera Dist., Mon. Orient. Cicad., p. 56, t. 5, f. 2 a, b (1890); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 46, t. 4 a, b (1898); Thous. Ins. Jap. Vol. 1, p. 208, n. 191, t. 17, f. 4 (1904).

Hab.—Hokkaido, Honshu, Shikoku, Kiushu, Riukiu, Formosa, Hachijo Island, Bonin Islands (?), Corea.

Nom. Jap.—*Tsukutsuku-bōshi*.

29. *Meimuna ogasawarensis* Mats.

Cosmopsaltria ogasawarensis Mats., Trans. Sapporo Nat. Hist. Soc. Vol.

I, p. 29, t. I, f. I (1905).

Hab.—Bonin Islands (Ogasawarajima); not rare.

Nom. Jap.—*Ogasawara-zemi*.

30. *Meimuna oshimensis* Mats.

Cosmopsaltria oshimensis Mats., Trans. Sapporo, Nat. Hist. Soc. Vol.

I, p. 30 (1905).

Hab.—Oshima (Amami), Kikaigashima, Riukiu.

Nom. Jap.—*Ōshima-zemi*.

31. *Meimuna iwasakii* Mats.

Meimuna iwasakii Mats., Thous. Ins. Jap. Add. Vol. I, p. 72, t. 9, f.

3 (1913).

Hab.—Yayeyama (Ishigakijima), Riukiu.

Nom. Jap.—*Iwasaki-zemi*.

32. *Meimuna kuroiwa* n. sp.

Allied to *M. ogasawarensis* Mats., from which it differs as follows:—

Face smaller and less prominent, in the middle with a narrow black stripe; opercula distinctly narrower, less vaulted, at the apex much more pointed, on the sides and at the apex broadly infuscated; all tibiae at the apices infuscated; tegmina narrower, 2 apical cross-veins, spot-like, infuscated; genital plate fuscous.

Length—excl. tegm. ♂ 29–♀ 32–35 mm.; exp. tegm. ♂ 80–♀ 85–90 mm.

Hab.—Riukiu (Naha); 5 (4 ♂, 1 ♀) specimens collected by Mr. K. Kuroiwa.

Nom. Jap.—*Kuroiwa-zemi*.

33. *Meimuna gakokizana* n. sp.

Allied closely to *M. mongolica*¹⁾ Dist., but differs from it in the following points:—

1) I have got 2 ♂ specimens from Prov. Shantung, China, collected by a Chinese student.

Front much less prominent, black spots of vertex smaller, face in the middle with a central black stripe, pronotum on each side near the basal angle wanting fuscous spot; lateral black stripes to mesonotum straight at the outer margins, lacking a branch on its external lower end; abdomen narrower, more conically pointed, with only 2 small yellowish spots in the first dorsal segment; opercula on the innerside evenly arched, not obliquely truncated, on the sides infuscated, at the apex being more pointed; genital plate fuscous, on its apex being more pointed.

Length—excl. tegm. 30 mm.; exp. tegm. 67 mm.

Hab.—Formosa (Mt. Gakoki near Hoppo); 2 (1 ♂, 1 ♀) specimens collected by the late K. Watanabe.

34. *Meimuna goshizana* n. sp.

Allied to *M. gakokizana* Mats., from which it differs as follows:—

Face somewhat less prominent; central green stripe to pronotum in the middle not constricted; inner lateral black stripes to mesonotum distinctly longer; opercula distinctly narrower and at the apex more pointed, on the sides and at the apex broadly infuscated as that of *M. kuroizvae* Mats.; abdomen longer, from the third segment to the apex narrower and conically pointed, the first dorsal segment lacking 2 yellowish spots; tegmina with much shorter longitudinal veins, near the apices each with a small fuscous spot, in this point resembling rather to *M. iwazakii* Mats. or *M. oshimensis* Mats.; wings not reaching to the apex of the third ulnar area, while in *M. gakokizana* reaching to the apex; the posterior tibiae at the apices infuscated.

Length—excl. tegm. 32 mm., exp. tegm. 89 mm.

Hab.—Formosa (Mt. Goshizan near Hoppo); one ♂ specimen collected by the late K. Watanabe.

Nom. Jap.—*Goshizan-zemi*.

18. Gen *Pomponia* Stål.

35. *Pomponia fusca* Oliv.

Cicada fusca Oliv. Enc. Meth. Vol. 5, p. 749 (1790).

Dundubia linearis Wk., List Hom. Vol. 1, p. 48 (1850).

Dundubia cinctimanus Wk., *ibid.* p. 49.

Dunbubia ramifera Wk., *ibid.* p. 53.

Dunbubia urania Wk., *ibid.* p. 64.

Pomponia fusca Dist., Mon. Orient. Cicad. p. 70, t. 7, f. 10 a, b (1890);

Mats., Thous. Ins. Jap. Add. Vol. 1, p. 83, t. 9, f. 13 (1913).

Hab.—Kiushu (?), Formosa (common); China, Malay Archipelago, India.

Nom. Jap.—*Taiwan-higurashi*.

19. Gen. *Oncotympana* Stål.

36. *Oncotympana maculaticollis* Motsch.

Cicada maculaticollis Motsch., Bull. Soc. Nat. Mosc. Vol. 39, p. 185 (1855).

Pomponia maculaticollis Dist., Mon. Orient. Cicad. p. 80, t. 6, f. 11 a, b (1891); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 6, t. 1, f. 5 a, b (1898); Thous. Ins. Jap. Vol. 1, p. 206, n. 188, t. 17, f. 1. (1904)

Oncotympana maculaticollis Dist., Syn. Cat. Hom. 1, p. 70 (1906); Genera Ins. Cicad. p. 56 (1913).

Hab.—Hokkaido, Honshu, Shikoku, Kiushu, Formosa; China.

Nom. Jap.—*Min-min*.

II. Subfam. Gaeninae

Div. Cicadatraria

20. Gen. *Yezoterpnosia* n. g.

Allied to *Terpnosia* Dist., from which it differs as follows:—

Head with eyes distinctly narrower than the base of mesonotum; abdomen much broader than thorax, nearly the same breadth throughout the first 6 segments; in the female ovipositor very short; tympanal coverings longer, reaching somewhat to the middle of orifices; opercula relatively large, reaching beyond the base of abdomen; the first apical cross-vein oblique, so that nearly running parallel to the second cross-vein.

Genotype—*Terpnosia nigricosta* Motsch.

37. *Yezoterpnosia nigricosta* Motsch.

Cicada nigricosta Motsch., Bull. Soc. Mosc. Vol. XXXIX. p. 184 (1866).

Terpnosia nigricosta Dist., Mon. Orient. Cicad. p. 138, t. 15, f. 4 a, b (1898); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 9, t. 1, f. 9, a, b (1892); Thous. Ins. Jap. Vol. 1, p. 209, n. 193, t. 17, f. 6 (1604).

Hab.—Hokkaido, Honshu; in Hokkaido it is very common but in Honshu very rare.

Nom. Jap.—*Yezo-karuzemi*.

21. Gen. *Terpnosia* Dist.**38. *Terpnosia vacua* Oliv.**

Cicada vacua Oliv. Euc. Meth. 5, p. 757, t. 113, f. 10 (1790); Dist. Mon. Orient. Cicad. p. 152 (1892); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 15 (1898).

Cicada clara Motsch. Bull. Soc. Nat. Mosc. p. 184 (1866).

Terpnosia pryzeri Dist. Mon. Orient. Cicad. p. 139, t. 15, f. 5, a, b (1892); Mats. Ann. Zool. Jap. Vol. II, Pt. 1, p. 8, t. 1, f. 8, a, b (1898).

Terpnosia vacua Dist., Syn. Cat. Hom. 1, p. 77 (1906).

Terpnosia kawamuræ Mats., Thous. Ins. Jap. Add. Vol. 1, p. 80, t. 9, f. 9 (1913).

Hab.—Honshu, Shikoku, Kiushu.

Nom. Jap.—*Haruzemi*.

This is a very variable species, color changing from brown to black; in the black species olivaceous spots and stripes to thorax are wanting entirely. It comes only early in the spring, singing especially far up on pine trees.

22. Gen. *Euterpnosia* n. g.

Allied closely to *Terpnosia* Dist., from which it differs as follows:—

Head shorter than the breadth between eyes, the latter being broader than the base of mesonotum; tympanal coverings very short, nearly exposing entirely the tympanal orifices; opercula very short and narrow, so that tympanal orifices, seen from above, being visible on the lateral sides; mesonotum long and distinct;

the third abdominal segment on each lateral side with a wart-like projection; penultimate abdominal segment conical and abruptly truncated as that of *Terpnosia*; venation to tegmina slender, radial area much narrower than the middle ulnar; ovipositor of the female very long.

This genus is quite easily distinguishable by the presence of the lateral tubercles to the third abdominal segment; female with a very long ovipositor.

Genotype—*Euterpnosia chibensis* n. sp.

39. *Euterpnosia chibensis* n. sp.

Body olivaceous yellow; head with the ocellar region, a zigzag spot on each side of vertex, a transverse band to the upper part of gena, 2 longitudinal stripes and some short lateral striations to front and face, black; pronotum with a central black stripe, converging posteriorly, a crescent spot on each side of these stripes, incisures and 2 spots near each hind angle, brownish; mesonotum with a central lanceolate stripe, an obconical spot on each side of the stripe, the other very small conical spot on its outer side, a lateral stripe somewhat curved, 2 round spots before cruciform-elevation, black; abdomen ochraceous, becoming brownish towards the apex, on each lateral side with a row of brownish spots, lateral tubercles of the third segment concolorous; ovipositor of the female more than one half the length of the abdomen; legs ochraceous or olivaceous yellow; a short stripe near each apex of femur, a spot near the base of tibia, the base as well as tip of tarsus, brownish; opercula ochraceous, on the lateral sides rounded; tegmina hyaline, veins olivaceous yellow, the first and second apical transverse veins scarcely infuscated.

. Length—excl. tegm. ♂ 24–♀ 27 mm.; exp. tegm. ♂ 60–♀ 68 mm.

Hab.—Honshu (Mt. Yawata in the Prov. Chiba); 8 (3 ♂, 5 ♀) specimens in my collection; recently one ♂ specimen was presented to our University by the son of the late Baron Yoshio Tanaka, who had collected it also in the same place.

var. *daitoensis* n.

Differs from the type as follows:—

Face with a broad longitudinal black stripe, on its apex inclosing a small ochraceous spot; 2 central black stripes becoming broader posteriorly; 2 obconical

spots to mesonotum united by an oblique bar to the central stripe.

Hab.—Riukiu (Daitōjima, a small southeastern island of the Riukiu Archipelago); 2 ♂ specimens were sent to me by Mr. S. Uchida.

40. *Euterpnosia hoppo* n. sp.

Allied to *E. chibensis* Mats., from which it differs as follows:—

Body much larger, more greenish; face with a central black stripe, inclosing in the middle a narrow ochraceous stripe; 2 central stripes to pronotum nearly parallel, only at the posterior margin being much dilated; a small conical black spot outwardly on each side of obconical spots indistinct; the hind margin of each dorso-abdominal segment fuscous; tuberal projections to the third segment smaller, fuscous; opercula much broader, on the outer sides much more rounded; ovipositor of the female long, but somewhat shorter than the genital segment, ochraceous, being black on its apex.

Length—excl. tegm. ♂ 28—♀ 25 mm.; exp. tegm. ♂ 68—♀ 70 mm.

Hab.—Formosa (Hoppono); 5 (4 ♂, 1 ♀) specimens collected by the author.

41. *Euterpnosia iwasakii* Mats.

Purana iwasakii Mats., Thous. Ins. Jap. Add. Vol. 1. p. 76, t. 9, f. 6 (1913).

Hab.—Riukiu (Yayeyama); 2 ♂ specimens collected by Mr. T. Iwasaki.

Nom. Jap.—*Iwasaki-himeharuzemi*.

42. *Euterpnosia viridifrons* n. sp.

Closely allied to *E. iwasakii* Mats., from which it differs in the following characters:—

♂. Body much smaller; vertex with a black transverse band across the ocellar region, face entirely green, without any black spot or striation; 2 central black stripes to pronotum at the posterior margin somewhat dilated; central lanceolate black stripe to mesonotum at the anterior 2/3 very narrow; opercula much smaller, not truncated laterally; the second apical cross-vein opens nearly in the middle of the first ulnar area, while the cross-vein opens in the fourth apical area.

Length—excl. tegm. 20 mm.; exp. tegm. 56 mm.

Hab.—Formosa (Kanshirei); one ♂ specimen collected by the late Y. Sakai.

Nom. Jap.—*Aotsura-himeharuzemi*.

Div. *Moganniaria*

23. Gen. *Mogannia* Am. Serv.

43. *Mogannia hebes* Wk.

Cephaloxys hebes Wk. List. Hom. B. M. Suppl. p. 38 (1858).

Mogannia spurcata Wk., Ins. Saund. Hom. p. 27 (1858).

Mogannia hebes Stål, Öfv. Vet-Akad. Förh. p. 483 (1863); Dist. Mon.

Orient. Cicad. p. 121, t. 14, f. 13, a, b (1892); Mats. Ann. Zool.

Jap. Vol. VI, Pt. 2, p. 102 (1907);—Thous. Ins. Jap. Add. Vol. 1,

p. 90, t. 10, f. 8 (1913).

Hab.—Formosa; Corea, China.

Nom. Jap.—*Kusa-zemi*.

44. *Mogannia iwasakii* Mats.

Mogannia hebes Mats., (Pt. Riukiu) Ann. Zool. Jap. Vol. VI, Pt. 2, p. 102 (1907).

Mogannia iwasakii Mats., Thous. Ins. Jap. Add. Vol. 1, p. 90, t. 10, f. 9 (1913).

Hab.—Riukiu (Yayeyama; 12 (9 ♂, 3 ♀) specimens collected by Mr. T Iwasaki.

Nom. Jap.—*Iwasaki-kusazemi*.

45. *Mogannia minuta* Mats.

Mogannia minuta Mats., Ann. Zool. Jap. Vol. VI, Pt. 2, p. 103 (1907).

Hab.—Riukiu (Naha, collected by Mr. K. Kuroiwa), Formosa (Koshun, collected by the author).

Nom. Jap.—*Hime-kusazemi*.

46. *Mogannia basalis* Mats.

Mogannia basalis Mats., Thous. Ins. Jap. Add. Vol. 1, p. 87, t. 10, f. 6 (1913).

Hab.—Formosa (Tainan); one ♂ specimen collected by Mr. M. Ishida.

Nom. Jap.—*Küro-kusazemi*.

47. *Mogannia rubricosta* n. sp.

Mogannia nasalis Mats. Ann. Zool. Jap. Vol. VI, Pt. 2, p. 102 (1907).

Body dark brown to black, in the male reflecting somewhat blue color, with some short golden hairs; face ochraceous, apex and striations black; antennae ochraceous, at the base black; above the antennae the frontal margin ochraceous; pronotum on the lateral sides ochraceous; body beneath, legs (except knees, apices of tarsi and the anterior pair) and opercula, ochraceous; tegmina hyaline, at the basal half olivaceous, in the middle on the cross-vein a large fuscous spot, the middle cross-veins more or less infuscated, on the apical half scarcely infuscated, except the costal part which is entirely hyaline, costa reddish, veins mostly greenish, only on the apex veins fuscous.

Length—excl. tegm ♂ ♀ 14–15 mm.; exp. tegm. ♂ 35–♀ 41 mm.

Hab.—Formosa (Koshun); 5 (2 ♂, 3 ♀) specimens collected by the author.

Nom. Jap.—*Mayeaka-kusazemi*.

48. *Mogannia pallipes* n. sp.

Closely allied to *M. rubricosta* Mats., from which it differs as follows:—

Face, front and the anterior lateral sides of the vertex entirely ochraceous; pronotum in the middle with a stripe and on the sides broadly, ochraceous; legs entirely (except knees and anterior coxal stripes) ochraceous; tegmina nearly the same, but on the basal half veins reddish yellow; in the female costal spot much reduced.

Length—excl. tegm. ♂ 14–♀ 15 mm.; exp. tegm. ♂ 37–♀ 38 mm.

Hab.—Formosa (Koshun); 2 (1 ♂, 1 ♀) specimens collected by the author.

Nom. Jap.—*Kiashi-kusazemi*.

49. *Mogannia formosana* Mats.

Mogannia formosana Mats., Ann. Zool. Jap. Vol. VI, Pt. 2, p. 102 (1907).

Hab.—Formosa (Koshun, Kanshirei); 7 (5 ♂, 2 ♀) specimens in my collection.

Nom. Jap.—*Taiwan-kusazemi*.

50. *Mogannia cyanea* Wk.

Mogannia cyanea Wk. List Hom. B. M. Suppl. p. 40 (1858); Dist.

Mon. Orient. Cicad. p. 121, t. 15 a, b (1892); —Faun. Brit. Ind.
Hom. p. 153 (1906); Mats., Ann. Zool. Jap. Vol. VI, Pt. 2, p. 103
(1907); —Thous. Ins. Jap. Add. Vol. 1, p. 87, t. 10, f. 5 (1913).
Hab.—Formosa (Hoppono, Horisha, Kanshirei, Arikani, Arisan); China,
Assam, Burma, India.
Nom. Jap.—*Ruri-kusazemi*.

51. **Mogannia nigrocyanea** Mats.

Mogannia nigrocyanea, Mats., Thous. Ins. Jap. Add. Vol. 1, p. 88, t.
10, f. 7 (1913).
Hab.—Formosa (Horisha, Nanto); 2 (1 ♂, 1 ♀) specimens collected by
the author.
Nom. Jap.—*Haguro-ruri-kusazemi*.

III. Subfam. Tibicininae

Div. Huechysaria

24. **Gen. Huechys** Am. Serv.

52. **Huechys sanguinea** Deg.

Cicada sanguinea Deg. Mem. 111, p. 221, t. 33, f. 17 (1773).
Cicada sanguinolenta F. Sys. Ent. p. 681, n. 15 (1775).
Huechys sanguinea Am. Serv. Hem. p. 465 (1843); Dist. Mon. Orient.
Cicad. p. 111, t. 3, f. 2, a, b (1892); —Faun. Brit. Ind. Hom. p. 157
(1906); Mats. Thous. Ins. Jap. Add. Vol. 1, p. 91, t. 10, f. 10 (1913).
Hab.—Formosa; China, Philippine, Malay Archipelago, India.
Nom. Jap.—*Haguro-zemi*.

25. **Gen. Scieroptera** Stål.

53. **Scieroptera splendidula** F.

Tettigonia splendidula F., Syst. Ent. p. 681 (1775).
Cicada splendidula Oliv., Enc. Meth. V. p. 756 (1790).
Scieroptera splendidula Stål, Berl. ent. Zeit. X, p. 109 (1866); Dist.
Mon. Orient. Cicad. p. 117, t. 14, f. 5, a, b (1892); —Faun. Brit.

- Ind. Hom. p. 159 (1906); Mats., Ann. Zool. Jap. Vol. VI, Pt. 2. p. 102 (1906); —Thous. Ins. Jap. Add. Vol. 1, p. 92, t. 10, f. 11 (1913).
 Hab.—Formosa (Hoppon, Horisha, Keibi, Kanshirei); China, Philippine, Malay Archip., Borneo, Java, Celebes, Burma, India.
 Nom. Jap.—*Ashiaka-hagurozemi*.

Div. Taphuraria

26. Gen. *Lemuriana* Dist.

54. *Lemuriana terminalis* Mats.

- Abroma terminalis* Mats., Thous. Ins. Jap. Add. Vol. 1, p. 82, t. 9, f. 12 (1913).
 Hab.—Riukiu (Yayeyama, Miyakojima); 3 (2 ♂, 1 ♀) specimens collected by Mr. K. Kuroiwa; and also from Western China (one ♂ specimen collected by Mr. T. Takano).
 Nom. Jap.—*Tsumaguro-zemi*.

Div. Cicadettaria

27. Gen. *Cicadetta* Kolen.

Melampsalta Karsch (nec Am. Serv.)

55. *Cicadetta radiator* Uhl.

- Melampsalta radiator* Uhl. Proc. Nat. Mus. U. S. A. p. 276 (1896); Mats., Ann. Zool. Jap. Vol. II, Pt. 1, p. 6, t. 1, f. 14 a, b (1898); —Thous. Ins. Jap. Add. Vol. 1, p. 81, t. 9, f. 10 (1913).
 Hab.—Honshu, Kiushu.
 Nom. Jap.—*Chitchi-zemi*.

56. *Cicadetta yezoensis* Mats.

- Melampsalta yezoensis* Mats., Ann. Zool. Jap. Vol. II, Pt. 1, t. 1, f. 15, a, b (1898).
 Hab.—Hokkaido (Sapporo); it is very difficult to catch this insect, for it settles far up on a tree as *Betula japonica* in mountain regions.
 Nom. Jap.—*Yezo-chitchi-zemi*.

57. *Cicadetta sachalinensis* n. sp.

Melampsalta yezoensis Mats. ♀ Ann. Zool. Jap. Vol. VI, Pt. 2, p. 104 (1907).

Allied to *C. yezoensis* Mats., from which it differs as follows:—

Body distinctly broader; face, except the sides, and clypeus black, front in the middle with a very narrow ochraceous stripe; pronotum with a central ochraceous stripe, which being interrupted near the base, on the hind margin with 2 small triangular concolored spots; mesonotal spots smaller; veins to tegmina fuscous, cubital and brachial veins mostly spotted with gray; pectus and legs mostly black, the latter with the apices of femora, bases of the hind tibiae, a middle spot of each tarsus and some longitudinal stripes to femora, ochraceous; opercula at the base broadly fuscous; ventral black stripe much broader.

Length—excl. tegm. ♂ 23–♀ 25 mm.; exp. tegm. ♂ 64–♀ 62 mm.

Hab.—Saghalien (Ōdomari, Toyohara); 15 (10 ♂, 5 ♀) specimens were collected by Prof. M. Takamatsu, Ass. Prof. M. Oguma, Messrs. I. Adachi and S. Isshiki. It is reported that this insect is very slow in its movement and easily captured by bending branch or trunk of a tree; and this character is entirely different from that of *C. yezoensis* Mats.

58. *Cicadetta pellosoma* Uhl.

Cicada pellosoma Uhl. Proc. Ac. Nat. Sc. Phil. p. 283 (1863).

Melampsalta pellosoma Dist., Mon Orient. Cicad. p. 143, t. 15, f. 10, a, b (1892); Oshanin—Verz. Palaeark. Hem. Bd. 11, p. 399 (1908).

Hab.—Saghalien; Khabarovsk, Ussuri, China.

I have not yet seen any specimen of this species from Saghalien.

Div. Prasinaria**28. Gen *Prasia* Stål.****59. *Prasia kuroiwa* Mats.**

Prasia kuroiwa Mats. —Thous. Ins. Jap. Add. Vol. 1, p. 85, t. 10, f. 3, ♀ (1913).

Hab.—Riukiu (Naha); one ♀ specimen collected by Mr. K. Kuroiwa.

Nom. Jap.—*Kuroiwa-zemi*.

摘 要

日本及び臺灣に産する蟬は今日迄の研究によれば五十九種あり、其内十四種は新種にして更に六の新屬あり、當東北帝國大學農科大學昆虫學教室には左の五種を欠く。

- (1) *Leptopsaltria tuberosa* Sign.
- (2) *Cosmopsaltria inermis* Stål.
- (3) *Platylomia spinosa* F.
- (4) *Diceropyga boninensis* Dist.
- (5) *Cicadetta pellosoma* Uhl.
- (1) は白義國 **ぶらせる** 博物館に横濱より來れる一匹ありと云ふ、元來此ものは Java の原産にして果して Java なるや Japan なるや疑はし。
- (2) は **すたうてんげる** 氏の目錄及び **すたん** と氏の目錄に日本産 (横濱) として載せありと雖も頗る疑はしきものなり、此は比利賓の原産なり。
- (3) は **ほるばー** と氏の目錄及び **をしやにー** 氏の目錄に九州産として載せあるも疑はし、此は元來比利賓及び印度に産す。
- (4) は小笠原島に産すと云ふ、余は未だ之れを知らず。
- (5) は **をしやにー** 氏の目錄に樺太産として載せあれども疑はし。

今本邦に産するものを舉ぐれば下の五十九種にして * を附せるものは新屬なり、地名は本邦のみ載け置きたり。

Fam. Cicadidae	蟬 科	
Subf. Cicadinae	蟬 亞 科	
Div. Polyneuraria	にいにい 族	
1 <i>Platyleura kaempferi</i> F.	にいにいぜみ	日本全島、臺灣
2 " <i>kuroiwae</i> n. sp.	くろいはににに	琉 球
3 " <i>yayeyamana</i> n. sp.	やえやまににに	八 重 山
4 <i>Pycna miyakona</i> n. sp.	みやこににに	宮 古 島
Div. Tacuaria	あぶらぜみ 族	
5 <i>Tosena seebohmi</i> Dist.	たいわんあぶらぜみ	臺 灣
6 <i>Graptopsaltria colorata</i> Stål.	あぶらぜみ	日本全島、臺灣
Div. Cicadaria	えぞぜみ 族	
7 <i>Rihana ochracea</i> Wk.	はごろもぜみ	臺 灣
8 <i>Cicada bihamata</i> Motsch.	こえろぜみ	北海道、本州、九州
9 " <i>flammata</i> Dist.	えろぜみ	北海道、本州、九州
10 " <i>pyropa</i> Mats.	あかえろぜみ	北海道、本州
11 <i>Cryptotympana pustulata</i> F.	すちあかくまぜみ	臺 灣
12 " <i>intermedia</i> Sign.	くまぜみ	本州、四國、九州、臺灣
13 " <i>facialis</i> W.	りうきうくまぜみ	琉 球

- | | | | |
|------|---|------------|----------|
| 14 | <i>Cryptotympana holsti</i> Dist. | たいわんくまぜみ | 臺灣 |
| | Div. <i>Dundubiaria</i> | ひぐらし 族 | |
| 15 | <i>Leptopsaltria tuberosa</i> Sign. | | 日本? |
| * 16 | <i>Formosemia apicalis</i> Mats. | たいわんひめひぐらし | 臺灣 |
| * 17 | <i>Taiwanosemia hopponensis</i> Mats. | ほつぽひぐらし | 同 |
| 18 | <i>Tanna japonensis</i> Dist. | ひぐらし | 本州、四國、九州 |
| 19 | „ <i>taipinensis</i> Mats. | たいびんひぐらし | 臺灣 |
| * 20 | <i>Semia watanabei</i> Mats. | わたなべひぐらし | 同 |
| * 21 | <i>Leptosemia sakaii</i> Mats. | ほろひぐらし | 同 |
| 22 | <i>Cosmospsaltria inermis</i> Stål. | | 日本? |
| 23 | „ <i>multivocalis</i> n. sp. | もろごえぜみ | 臺灣 |
| 24 | <i>Platylomia spinosa</i> F. | | 日本? |
| 25 | „ <i>bivocalis</i> Mats. | たかさごぜみ | 臺灣 |
| 26 | „ <i>karëisana</i> Mats. | かれいぜみ | 同 |
| 27 | <i>Diceropyga boninensis</i> Dist. | | 小笠原島 |
| 28 | <i>Meimuna opalifera</i> Wk. | つくつくぼーし | 日本全島、臺灣 |
| 29 | „ <i>ogasawarensis</i> Mats. | をがさはらぜみ | 小笠原島 |
| 30 | „ <i>oshimensis</i> Mats. | をしませみ | 琉球 (大島) |
| 31 | „ <i>iwasakii</i> Mats. | いはさきぜみ | 八重山 |
| 32 | „ <i>kuroiwa</i> n. sp. | くろいはつくつく | 琉球 |
| 33 | „ <i>gakovizana</i> n. sp. | がこーきぜみ | 臺灣 |
| 34 | „ <i>goshizana</i> n. sp. | ごしざんぜみ | 同 |
| 35 | <i>Pomponia fusca</i> Oliv. | たいわんひぐらし | 九州? 臺灣 |
| 36 | <i>Oncotympana maculaticollis</i> Motsch. | みんみん | 日本全島、臺灣 |

Subf. *Gaeninae*

春蟬亞科

Div. *Cicadatraria*

ほるぜみ 族

- | | | | |
|------|---|----------|----------|
| * 37 | <i>Yezoterpnosia nigricosta</i> Motsch. | えりはるぜみ | 北海道、本州 |
| 38 | <i>Terpnosia vacua</i> Oliv. | はるぜみ | 本州、四國、九州 |
| * 39 | <i>Euterpnosia chibensis</i> n. sp. | ひめはるぜみ | 本州、琉球 |
| 40 | „ <i>hoppo</i> n. sp. | ほつぽはるぜみ | 臺灣 |
| 41 | „ <i>iwasakii</i> Mats. | いはさきはるぜみ | 八重山 |
| 42 | „ <i>viridifrons</i> n. sp. | あをつらはるぜみ | 臺灣 |

Div. *Moganniaria*

くさぜみ 族

- | | | | |
|----|----------------------------|----------|-------|
| 43 | <i>Mogannia hebes</i> Wk. | くさぜみ | 臺灣 |
| 44 | „ <i>iwasakii</i> Mats. | いはさきくさぜみ | 八重山 |
| 45 | „ <i>minuta</i> Mats. | ひめくさぜみ | 琉球、臺灣 |
| 46 | „ <i>basalis</i> Mats. | きいろくさぜみ | 臺灣 |
| 47 | „ <i>rubricosta</i> n. sp. | まへあかくさぜみ | 同 |
| 48 | „ <i>pallipes</i> n. sp. | きあしくさぜみ | 同 |
| 49 | „ <i>formosana</i> n. sp. | たいわんくさぜみ | 同 |
| 50 | „ <i>cyanea</i> Wk. | るりくさぜみ | 同 |

- 51 *Mogannia nigrocyanea* Mats. はぐろるりくさぜみ 臺灣
- Subf. Tibicininae 裸蟬亞科
- Div. Huechysaria はぐろぜみ族
- 52 *Huechys sanguinea* Deg. . はぐろぜみ 臺灣
- 53 *Scieroptera splendidula* F. あしあかはぐろぜみ 同
- Div. Taphuraria ちっちぜみ族
- 54 *Lemuriana terminalis* Mats. つまぐろぜみ 琉球
- 55 *Cicadetta radiator* Uhl. ちっちぜみ 本州、九州
- 56 „ *yezoensis* Mats. えぞちっちぜみ 北海道
- 57 „ *sachalinensis* n. sp. からふとちっちぜみ 樺太
- 58 „ *pellosoma* Uhl. 樺太?
- Div. Prasinaria あをぜみ族
- 59 *Prasia kuroiwae* Mats. くろいはあをぜみ 琉球
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ON THE LIFE-HISTORY OF THE APPLE FRUIT-MINER, *ARGYRESTHIA CONJUGELLA* ZELL.

By

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りんごひめしんくひがの生活史に就きて

岡本半次郎

It is a fundamental principle of economic entomology that in order to successfully combat an insect the life history of that insect must be given a keen, searching study. With few exceptions these studies reveal some point in the life of the insect at which it is vulnerable to preventive or remedial measures. Without this knowledge efforts are wasted and in some cases are a positive aid to the insect.

In the present studies upon the apple fruit-miner a particular care has been taken to keep the different stages of the insect during the experiment in exactly the same conditions as to temperature, moisture and light as in the orchard in which the cages were located.

As in other lepidopterous insects, the life of the apple fruit-miner could be divided into four distinct stages—egg, larva, pupa and adult. In winter and early spring, the larva may be found in their cocoons in the soil. Later the larva transforms into a pupa, and this in turn changes to a moth, which in turn lays eggs.

THE EGG.

The egg is flat and oval in shape. It varies in size from 0.38 to 0.48 mm. in length and from 0.25 to 0.3 mm. in breadth. The surface is covered with a network of ridges which are much closer together toward the central portion than around the edge. The color varies with the age of the embryo. When the egg is first laid, it is of a white color, sometimes with a decided yellowish tinge, later becoming light yellowish.

Places where the eggs are laid—Having never seen the egg, the early writers and horticulturists were forced to guess as to where it was laid. They stated that the eggs were laid on the fruit. These views were held because of the presence of the entrance holes of the larvae on the fruit.

The writer has found that in my orchard the most of the eggs are laid upon the young fruit. In one cage a moth laid 25 eggs, many of which were upon the fruits, and in another cage 29 eggs were laid and only four were upon the leaves. A very few eggs were observed to have been laid upon the leaves in the field.

The average of several rough countings in the field gave an average of about 85 percent laid upon the fruits. Breeding records show that out of 54 eggs in cages, there are 48 eggs upon the young fruits, 6 upon the leaves. A very few eggs are laid upon the underside of the leaves.

We may therefore conclude that the eggs are for the most part laid upon the fruits, while a very few of them may be found upon the leaves.

When the eggs are laid—S. FUJII, *Nōgakushi* stated that the eggs were laid at night. The writer's observations show that the oviposition for the most part is accomplished in the late evening, while a single observation shows an egg to have been laid in the late afternoon.

The number of eggs laid by one female—In only two instances has the writer made a definite observation on the number of eggs laid by a single female moth. Two pairs of the moth were captured in copula, and each was placed in separate cages. In one cage, 25 eggs were found, and in the other, 29 eggs were laid. The average number of eggs laid by one female moth is 27.

The egg-laying period—Upon dissection of the ovaries of the female moth the eggs are found in various stages of development. It is also noted that the eggs are laid when they are in different stages of maturity. From these facts we may conclude that the egg-laying period extends over some time. The length of the time from the emergence of the moth to the beginning of the laying of the eggs varies from 2 to 4 days, with an average of about 3 days.

Hatching of the egg—The egg is hatched in six to seven days in my laboratory at an ordinary room temperature, and in the orchard one day longer. The writer has observed that as soon as the light yellowish tinge of the egg had turned to white, the larva came out of the egg near the one end through an irregular crack

in the shell.

Changes during incubation—The newly laid egg is of a translucent whitish color, often with a yellowish tinge. Observations upon many eggs show that from two to four days with an average of three days after the deposition of the egg a yellow ring makes its appearance in its interior. This ring disappears in five to six days and in its place the larva can be seen, the "black spot" which consists of the head and cervical shield, being the most conspicuous part.

THE LARVA.

At the time of hatching the young larva is milky white in color, with large shiny black head, and black cervical and anal shields. The body shows from six to eight regularly arranged dark spots with short hairs.

If hatched upon an apple, a young larva seeks soon a place to enter; when hatched upon the leaves, it may not find any apple for some time, and meanwhile it seems to be obliged to feed upon small portions of the leaves.

Description of the full-grown larva—When full-grown, the larva is about 6 mm. in length. The majority are of a light pink or flesh color, which is much lighter on the under side. The head is brown in color, and the cervical and anal shields are also brown. The segments of the body show from six to eight regularly arranged brown spots, in which the minute short hairs are situated. Beneath the under lip is the spinneret, from which the silken thread is drawn. The larva has eight pairs of legs. The first three pairs are situated on the thorax, and are three jointed. Later these form the legs of the adult insect. The five pairs of the fleshy abdominal legs disappear in the pupal stages of the insect. The first four pairs of abdominal legs are armed with circles of hooks, while the hooks on the two pairs at the end of the body are arranged in a semicircle. The spiracles or breathing apertures of the larva are arranged on both lateral sides of the segments (with exception of the second, third and anal segments) of the body.

How the larva enters the fruit—The place of the entrance of the apple fruit-miner for the most part is on the side of the fruit. It is very common to observe a gummy matter exuding from the place of entrance of the larva. The larva either squeezes its way or tunnels into the fruit. The tunnels are numerous and extend in all directions. A scar or rough spot is a favorite place to enter into, as the jaws slip on the smooth skin.

According to my observations the places of the entrance from 70 to 80 percent are on the sides of the fruit, while from 20 to 30 percent on the stem or calyx.

Time spent in the fruit—From the nature of the case it is most difficult to get exact data on this point, as there are many accidents which may prove fatal to the parasite. On only ten larvae was the writer able to obtain results definite enough to use with any degree of confidence. The average of all these observations is about 50 days. When about full grown the larva makes a passage-way to outside of the fruit and this is usually made toward the side of the apple.

Place of spinning cocoons—The larva on passing out of the apple crawls about on the surface of the fruit, and immediately seeks a place in which to spin a cocoon. If the apple is still upon the tree, the larva lets itself down to the ground by means of a silken thread. If the apple has fallen to the ground the larva simply crawls into the soil and spins there its cocoon. After leaving the fruit the larva is unprotected, and it does not consume much time for entering into the soil.

In an orchard the cocoons are normally found in the earth. But the larva which has been developed later in the season, spins its cocoon sometimes on the inside of boxes or barrels.

The cocoon—The cocoon is composed of silk, secreted by a pair of silk glands, which are situated on either side of the alimentary canal. When a suitable place has been selected for the spinning of the cocoon, the larva begins to weave about itself a single thread of the silk. While spinning the larva is bent upon itself and decreases considerably in size. When the cocoon is completed, which takes usually about one day, the larva straightens out and contracts in length.

The cocoon is spindle-shaped, about 10 mm. in length, and consists of two layers. While the exterior layer may be rough, the interior is always smooth.

The larva hibernates in the cocoon, and in the next early spring, the larval skin is shed and the insect becomes a pupa. The cast larval skin can always be found at the caudal end of the body, shriveled into a rounded mass.

THE PUPA.

The pupa is about 5 mm. in length and brown in color. The head, antennae, eyes, mouth parts, legs, and wings of the moth are apparent in sheaths which are immovably attached to the body. The abdominal segments are movable. The

last abdominal segment has a number of long spines with hooks at the end. These hooks are fastened in the silk and aid the pupa in holding its place in the cocoon.

THE ADULT INSECT.

After the pupa has thrust itself out of the cocoon, the pupal skin splits down the back, and the moth forces its way out by splitting away the head end of the pupal skin.

The insect is at first wet, and the body wall is soft. The wings increase several times in size, and as the body dries it grows more rigid. When the wings were fully expanded the moths would often hold them over their backs for a few minutes. The whole process of emergence takes from fifteen to thirty minutes.

The adult insect or moth is quite variable in size. The wings when fully expanded measure from 10 to 12 mm. The length of the body is from 5 to 6 mm. The whole insect is covered with scales having varying color. The body is dark gray. The head covered with long, yellowish white hairs. The antennae are very long and black in color with many yellowish white rings. The anterior wings are dark gray, and very slender. There is a very broad silver-white band along the hind margin, that extends to the middle part from the base of the wing. In the middle portion of the wing a large black band across the wing is to be seen, and a yellowish white spot on the outer margin. On the anterior margin there are many short yellow lines. The posterior wing is smaller and darker than the anterior, acinaciform and margined with long hairs.

Habits of the moth—The moth are but rarely seen in orchards. They spend most of their time resting in the foliage of the apple. When disturbed, they fly away so quickly that the eye is unable to follow them in their erratic flight. According to my observations the moth feed on the water, and are generally not attracted to lights at night.

摘 要

卵 子

扁平、楕圓、長徑 0.38—0.48、短徑 0.25—0.3 ミ、メ。殻面に網狀の突起を見る。色は胚の熟度に従ふも産卵當時にありては白色、次で淡黄色となる。

産卵場所 主として果面である。一飼育函内の一雌は二十五卵を産み、その大部分を果面に付け、他函内の一雌は二十九卵を産み、うち僅に四卵の葉上にあるを認めた。果園内に於ける數多の計算の平均に見るに、八割五分は果面である、又飼育函内では五十四卵中その四十八は稚果に、その六は葉上にあつた。

産卵時刻 藤井農學士は専ら夜間に産卵すると記するも、余は大部分夕刻に、一部分午後五時頃に産卵することを觀察した。

一雌の卵數 余は僅に二回實驗を試みた。交尾完了の二雌を別々の飼育函に放ちたるに、一雌は二十五を、他雌は二十九を産んだ。その平均は二十七卵である。

解 化 余の研究室に於ける卵子は約七日にして孵化したるも、果園のものは一日遅れた。而して淡黄色の卵子が、白色となるや否や、幼蟲は卵殻の一端より出づ。

孵化中に於ける變化 始め白色半透明なる卵子が、産卵後三日にして、その内部に黄環現れ、次で五六日を經過してこの黄環消失し、其所に幼蟲の存在を認む、而して頭部、第一節及尾節の硬皮板は所謂黒點となりて現る。

幼 蟲

孵化當時の幼蟲は乳白色にして、頭部、第一節及尾節の硬皮板は黒色なり、体節に六一八個の暗色點を有し、これに短毛を生ず。充分成長すれば体長 6 ミ、メ、となり。色は所謂肉色となる。頭部、第一節及尾節の硬皮板は褐色を呈し、各節の暗色點は褐色に變る。

蠶入個所 の七八割は果實の側面であつて残り二三割は萼筒若くは果梗の附近である。蠶入の初めには果面に常にその場所に飴色の分泌物を見る。果實に蠶入せる幼蟲は約五十日にして老熟する。

紡 繭 老熟した幼蟲は果を辭し紡繭の用意をする。被害果の未だ樹上にある間は、糸を吐きて地上に降下し、果の落下したる時には直ちに地中に入り繭を營む。繭はかくして一般に地中にあるも、幼蟲の發育遅き時は貯藏函中に紡繭する。

繭 紡錘狀にして二層よりなる、而して外層は粗にして、内層は滑なり。長さ 10 ミ、メ。繭を完成するに約一日を費す。

蛹

5 ミ、メ。褐色。腹部の末端に數多の刺を有し、刺の尖端に鈎を有す。

成 蟲

体長 5—6 ミ、メ。翅の開張 10—12 ミ、メ。体暗灰色。頭部に黄白の長毛を密生す、觸角長く、黑色にてこれに黄白輪多し。前翅暗灰色、細長、外縁に長縁毛あり、後縁の内半に銀白色の廣條あり、殆んど翅半に達す、翅の中央に黒色の一横條あり、尙ほ外縁に近く一黄白紋あり、其他前縁に短黄線多し。後翅は前翅より小にして且つより暗色なり。劔狀を呈し、長縁毛を装ふ。

蛾の習性 蛾は常に繁茂せる葉間に靜止す、人若し枝葉を攪亂すれば蛾は急速力にて飛翔し、その行先を見きわめ難し。一般に火光を慕はず。

SOME NEW SPECIES OF COCCINELLIDAE IN JAPAN.—I.

By

MASUMI TAKIZAWA.

(With three text figures)

日本産瓢蟲ノ新種(其一)

瀧澤真澄

In the course of my study on the family of Coccinellidae in Japan, I have found that there are three new species belonging to the subfamily Coccinellinae. One of them was collected at Rokugō, Prov. Musashi by Mr. S. Mitsuhashi and the others captured by the writer in the various localities. The present short paper is intended to describe these new species.

I wish here to express my hearty thanks to Prof. Dr. S. Matsumura and to Mr. H. Okamoto, for the valuable suggestions and kind directions. My obligations are also due to Messrs. S. Mitsuhashi, Y. Yamada and S. Hirayama, who have had the goodness to allow me to make the free use of their collections of this family.

***Ptychanatis yedoensis* sp. n.**

(Fig. 1, a & b.)

Adult:—Oval, convex, black, shining; head with a few very fine shallow punctures, having a pale median spot near the hind margin; antennae fuscous; pronotum very finely but densely punctured; scutellum impunctured; elytrum with two ochreous spots, the basal one of which being twice larger than the other, punctured as in the pronotum; epipleura fulvous.

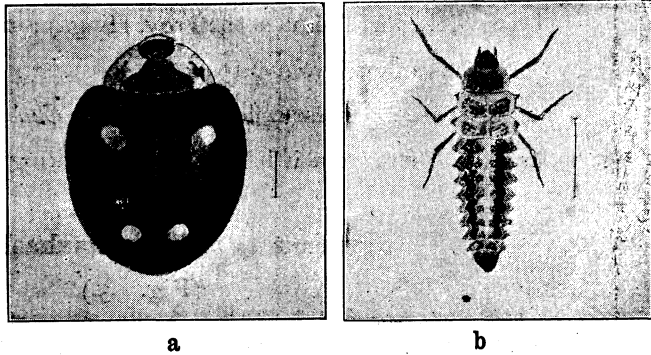
Sternum fulvous, metasternum in the middle being fuscous; ventral side of the abdomen fulvous, the first to fourth segments being fuscous in the middle;

legs fuscous, coxae, trochanter, tarsi, and the anterior pairs of the femora largely fulvous.

Length of body—6 mm.

Fig. 1.

Larva:—Head dark fuscous, with blackish hairs; thorax fuscous, pronotum provided with blackish spines and long hairs, meso- and metanotum with spines as on the pronotum and with a papilla-like projection on



each lateral side; abdomen fuscous, the first to seventh segments with six papilla-like projections and two large sulphurous markings, the eighth with four projections, of which the two dorsal ones being especially large and pointed, the terminal segment large, not provided with spines and projections.

Length of body—10 mm.

Hab.—Hondō (Tokyo), three specimens were collected and bred by the author.

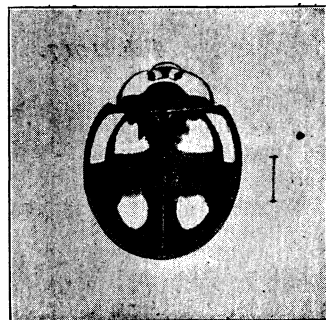
The species is closely allied to *Ptychanatis axyridis* PALL. in the adult stage, but differs from it conspicuously in its larval stage.

***Chilomenes hiugaensis* sp. n.**

(Fig. 2.)

Body black, hemispherical; head impunctured, with a somewhat triangular black marking extending to the anterior margin; antennae fulvous; pronotum with a large triangular yellowish marking on each anterior angle, and the narrow anterior margin yellowish, very fine, shallowly punctured; scutellum impunctured; elytrum punctured as in the pronotum, much shining, with three somewhat triangular, crimson-red markings, two of which being placed on the humerus, nearly uniting together, and the other one being situated at the two third of the elytrum.

Fig. 2.



Ventral side of the body shining black, on the lateral sides fulvous; legs fulvous, the anterior parts of the femora fuscous.

Length of body—6 mm.

Hab.—Kiushū (Tsuma in the Prov. Hiuga); many specimens were collected by the author in May, 1914.

The present species resembles somewhat to *Chilomenes quadriplagiata* SWARTZ., but apparently differs from it in having six markings on the elytra.

Scymnus (Pullus) mitsuhashii sp. n.

(Fig. 3.)

Nearly hemispherical, remarkably convex, black, covered with short, fine, grayish white hairs; head coarsely punctured; antennae reddish brown; pronotum punctured somewhat finer than on the head; scutellum impunctured; elytra more coarsely and sparsely punctured than on the pronotum, with two very large red spots near the sture, but nearer the apex than the middle.

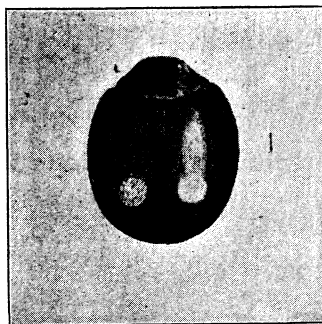
Ventral side of the body wholly black; legs black, tarsi being reddish brown.

Length of body :—2 $\frac{3}{5}$ mm.

Hab.—Hondō (Rokugō near Kanagawa), only one specimen was collected at Rokugō in the Prov. Musashi, in June, 1913, by Mr. S. Mitsuhashi.

The present species resembles somewhat to *Scymnus (Nephus) bipunctatus* KUGEL., but apparently differs from it in having two raised keel-lines on the prosternum.

Fig. 3.



Feb. 1917.

Department of Entomology,

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摘 要

予の研究に依れば本邦産瓢蟲中 Coccinellidae 亞科に隸するもの三新種あり、其内一種は三橋信治氏が武蔵國六郷に於て獲たるものにして他は皆著者が諸地方に於て採集したるものなり、本小編は其等の新種に就きて記載せんとするものなり。

著者が本稿を草するに當り松村博士及び岡本農學士は懇篤なる教指と貴重なる忠告とを與へられたり、茲に記して厚く感謝の意を表す、又標本檢閲の自由を與へられたる三橋信治、山田保治、平山修次郎の諸氏に對しては特に其厚意を深謝す。

1. *Ptychanatis yedoensis* TAKIZAWA.

づぼしてんとう (新稱)

成虫：——楕圓形にして隆起し光澤ある黑色なり、頭部は細微の淺き點刻を粗布し中央後縁に近く一個の青白紋を裝ふ、觸角は暗黃色を呈す、前胸背の兩側は青白にして細微の點刻を密布す、稜狀部は點刻を缺如す、翅鞘には二個の黃赤色の斑紋を裝ひ其基部に存するものは他の二倍の大きさを有す、點刻は前胸背と同様なり、翅鞘の疊折部は暗黃色を呈す、胸部の腹面は暗黃色、後胸腹面の中央は暗色なり、腹部は暗黃色にして第一乃至第四腹節の中央は暗色を呈す、脚部は暗色、基節、轉節、跗節及び前脚の一對の腿節は著しく暗黃色を帶ぶ、體長 6 ミ、メ、

幼虫：——頭部は暗黑色にして黒毛を裝ふ、胸部は暗色、前胸背には黑色の短刺と長毛を裝ふ、中後兩胸背には前胸背と同様の短刺を裝ひ且つ兩側に各一個の乳頭狀の突起を有す、腹部は暗色、第一節より第七節に至る各節には各六個の乳頭狀突起と二個の硫黃色の大紋を裝ふ、又第八節には四個の突起を有し其基上にある二個は殊に大且つ鋭なり、尾節は大にして刺及び突起を缺く、體長 10 ミ、メ、

產地、本土(東京)、著者が三頭の幼虫を採集して飼育せるものなり、

本種は成虫時代に於ては **てんとうむし** に酷似すれども幼虫時代に於て著しき差異を有す。

2. *Chilomenes hiugaensis* TAKIZAWA.

べにむつはしてんとう (新稱)

体は黒色、平球狀を呈す、頭部は點刻を缺如す、色は暗黄にして稍三角形を呈せる黒色の一紋を裝ひ其先端は頭の前縁に擴張す、觸角は暗黄色なり、前胸背の前縁角には各一個の大なる三角形の黄色の斑紋を有し、且つ前縁も細く同色を呈す、淺き細微の點刻を裝ふ、稜狀部は點刻を缺如す、翅鞘は前胸背と同様の點刻を裝ひ、著しく光澤を有す、各翅に稍三角形をなせる三個の深紅色の斑紋を裝ひ内二個は肩に在りて殆んど結合せんとし他の一個は翅鞘の後方 $2/3$ の處に位置す、体下は光澤ある黒色にして其側縁は暗黄色を呈す、脚部は暗黄色なるも腿節の前側は暗色なり、体長 5 ミ、メ、

產地、九州(日向國妻)、著者は大正三年五月其數多を採集せり。

本種は **よつぼしてんとう** に稍類似せるも翅鞘上に六個の斑紋を有するを以て明かに區別することを得。

3. *Scymnus (Pullus) Mitsuhashii* TAKIZAWA.

みつはしてんとう (新稱)

殆んど半珠狀にして殊に著しく隆起す、黒色にして灰白色の短細毛を裝ふ、頭部の點刻は粗大なり、觸角は赤褐色を呈す、前胸背の點刻は頭部のものより稍小なり、稜狀部は點刻を缺如す、翅鞘上の點刻は前胸背に於けるものより大且つ粗なり、翅鞘の中央より稍後方接合部に近く二個の著大なる赤色紋を裝ふ、体下は全く黒色、脚は黒色只跗節のみ赤褐色を呈す、体長 $2\frac{3}{5}$ ミ、メ、

產地、本土(神奈縣六郷)、大正二年六月三橋信治氏が武藏國六郷に於て只一頭を採集せるものなり。

本種は稍 *Scymnus (Nephus) bipunctatus* SWARTZ. に類似せるも前胸腹の龍骨上に二條の隆起を有するを以て容易に區別することを得。

ON THE ANTAGONISM BETWEEN TWO DIFFERENT SALTS IN THE ENZYMATIC ACTIONS.

By

TETSUTARO TADOKORO, *Nōgakushi.*

酵素作用に對する鹽類の韻類現象に就て

田 所 哲 太 郎

To these days, some different experimental results for the influences of different neutral salts upon the enzymatic actions have been reported by many authors. Many contrary points, however, are found among those which are written in the OPPENHEIMER'S "Fermente und ihre Wirkungen". These authors have reported always the influences of one salt alone and there are no experimental data upon the mutual and antagonistic actions between two different salts.

BANG¹⁾ reported that when the human saliva was mixed with secondary phosphate, the diastase of saliva lost its action but if this fluid was mixed farther with common salt, the diastase recovered its action. Thereupon he explained these phenomena by introducing the fact that the compound of phosphoric-acid-ptyalin has no diastatic action while the compound of common-salt-ptyalin has.

Recently, MICHAELIS and PECHSTEIN²⁾ investigated the action of the diastase of saliva in the mixture of salts, and their reports are as follows. "The saliva-diastase acts better in N/500 NaCl-solution than in N/50 Na₂SO₄ + N/500 NaCl-solution, and it acts better in N/50 NaBr + N/5000 NaCl-solution than in N/5000 NaCl-solution alone. It acts better in N/50 NaCl-solution than in N/50 NaBr + N/50 NaCl-solution, and better also than in N/50 NaBr-solution, because here N/50 NaBr-solution, because here N/50 NaCl-solution acts better than N/50 NaBr-solution."

Thus until today, we can not find any report on the discussion of the antago-

1) BANG, E.—Biochem. Zeits., 32,417 (1911).

2) MICHAELIS, L. and PECHSTEIN, H.—Biochem. Zeits., 59, 77—99 (1914).

nistic influence of two different salts upon any enzymatic action. And here I have the honor to report the following experiment on this field of investigation. As samples I took some fresh pressed juice of wheat-seedling and the 0.05 % solution of Takadiastase. At first I determined the injurious concentration of different salt solutions and got the following results.

1. The injurious concentration of different salt solutions upon the actions of two amylases.

20 ccm of 1.0 % solution of soluble starch were mixed with 2 ccm of fresh juice and farther with the following quantities of salts, and thus many series of these mixed solutions were placed in a thermostat at 40° C under the presence of 2 ccm toluol.

After 6 hours, the formed sugar in 10 ccm of each of the series of these mixed solutions were determined by the BERTRAND'S method and the result are as follows :

The following numbers of reducing sugar are shown in mg.

Table 1.

The comparison of cations					
Concentration salts	1/3 normal	1/5 normal	1/10 normal	1/20 normal	1/100 normal
CaCl ₂	—	—	13,0	17,6	19,4
MgCl ₂	—	17,8	19,2	19,6	24,6
KCl	14,4	16,2	18,0	17,8	17,6
NaCl	16,2	18,0	22,0	22,0	24,0
The comparison of anions					
Concentration salts	1/3 normal	1/10 normal	1/50 normal	1/1000 normal	
KI	11,4	11,6	11,6	12,4	
KCl	11,6	12,0	12,8	13,0	
KNO ₃	9,8	11,6	12,4	13,2	
K ₂ SO ₄	12,0	13,0	13,0	16,6	
K ₂ HPO ₄	14,4	14,0	14,6	14,0	

40 ccm of 1,0% solution of soluble starch were mixed with 1,0 ccm of 0,05% Takadiastase solution and with the following quantities of different salts and placed in a thermostat at 40° C under the presence of 2 ccm toluol. After 6 hours 20 ccm of these mixed solution were treated in the same way as above mentioned and the results are as follows:

Table 2.

The comparison of cations				
Concentration salts	I normal	1/10 normal	1/50 normal	1/100 normal
CaCl ₂	—	5,2	9,2	9,0
MgCl ₂	—	8,8	10,8	11,0
KCl	8,8	9,2	9,6	10,0
NaCl	10,2	10,2	11,0	11,0
BaCl ₂	—	10,0	11,0	11,4
AlCl ₃	—	4,6	6,4	8,0
The comparison of anions				
Concentration salts	I normal	1/10 normal	1/50 normal	1/100 normal
KCl	6,4	6,8	8,0	8,0
KNO ₃	6,2	7,4	7,8	7,8
K ₂ SO ₄	7,0	7,2	8,2	8,4
KI	0	5,8	7,8	8,0

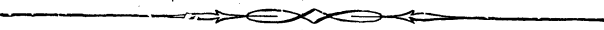
From the above results of my experiment we know that the enzymatic action is evidently injured in the 1/10 normal concentration of Mg- or Ca- salts and in the normal solution of alkalisalts.

2 The antagonistic action between KCl and CaCl₂ for two amylases

50 ccm of 1,0% soluble starch solution were mixed with 5 ccm of fresh juice of wheet-seedling or with 5 ccm of 0,05% Takadiastase solution, and the concentration of salts in the solution was kept as follows.

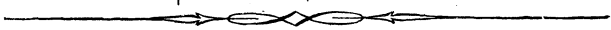
The farther treatment is the same as above mentioned, and the formed sugar was determined by the BERTRAND's method. (the following number shows sugar-quantity with mg. in 50 ccm of solution.)

Table 3.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N-KCl + 2,5 cc H ₂ O	12,5	N/10 CaCl ₂ + 2,5 cc H ₂ O	10,5
N-KCl + 2,5 cc N/10 CaCl	14,5	N/10 CaCl ₂ + 2,5 cc N-KCl	12,2
N-KCl + 2,5 cc N/2 CaCl ₂	13,2	N/10 CaCl ₂ + 2,5 cc N/2 KCl	13,5
			
N-KCl + 2,5 cc H ₂ O	13,0	N/10 CaCl ₂ + 2,5 cc H ₂ O	8,5
N-KCl + 2,5 cc N/10 CaCl ₂	15,0	N/10 CaCl ₂ + 2,5 cc KCl	9,4
N-KCl + 2,5 cc N/2 CaCl ₂	14,2	N/10 CaCl ₂ + 2,5 cc N/2 KCl	10,2

3 The antagonistic action between NaCl
and CaCl₂ for two amylases

Table 4.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N-NaCl + 2,5 cc H ₂ O	13,25		
N-NaCl + 2,5 cc N/10 CaCl ₂	14,7		
N-NaCl + 2,5 cc N/2 CaCl ₂	14,5		
			
N-NaCl + 2,5 cc N/10 CaCl ₂	12,8	N/10 CaCl ₂ + 2,5 cc H ₂ O	10,5
N-NaCl + 2,5 cc N/10 CaCl ₂	14,5	N/10 CaCl ₂ + 2,5 cc N-NaCl	11,25
N-NaCl + 2,5 cc N/2 CaCl ₂	14,0	N/10 CaCl ₂ + 2,5 cc N/2 NaCl	12,3

4 The antagonistic action between NaCl
and KCl for two amylases

Table 5.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
		N-NaCl + 2,5 cc H ₂ O	14,25
		N-NaCl + 2,5 cc N-KCl	15,5
		N-NaCl + 2,5 cc N/2 KCl	15,0
			
N-KCl + 2,5 cc H ₂ O	10,5	N-NaCl + 2,5 cc H ₂ O	10,0
N-KCl + 2,5 cc N-NaCl	11,8	N-NaCl + 2,5 cc N-KCl	10,8
N-KCl + 2,5 cc N/2 NaCl	11,0	N-NaCl + 2,5 cc N/2 KCl	10,5

5 The antagonistic action between CaCl_2
and MgCl_2 for an amylase

Table 6.

Concentration	N/10 CaCl_2 + 2,5 cc H_2O	N/10 CaCl_2 + 2,5 cc N/2 MgCl_2	N/10 CaCl_2 + 2,5 cc N/5 MgCl_2
wheat-seedling	4,00	6,75	6,25

The results in the above tables show the antagonistic effects between different cations for amylase of wheat-seedling and for Takadiastase and we can also observe that the antagonistic effect between monovalent cation and bivalent one is greater than that between two monovalent ones.

Farther I exerminded the antagonistic effects between different anions with same cation for wheat-amylase and for Takadiastase.

6 The antagonistic action between KCl
and K_2SO_4 for wheat-amylase

Table 7.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N- KCl + 2,5 cc H_2O	12,5	N- K_2SO_4 + 2,5 cc H_2O	11,5
N- KCl + 2,5 cc N/2 K_2SO_4	13,25	N- K_2SO_4 + 2,5 cc N/2 KCl	12,25
N- KCl + 2,5 cc N- K_2SO_4	13,75	N- K_2SO_4 + 2,5 cc N- KCl	12,75

7 The antagonistic action between KNO_3
and K_2SO_4 for Takadiastase

Table 8.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N- KNO_3 + 2,5 cc H_2O	8,0	N- K_2SO_4 + 2,5 cc H_2O	10,0
N- KNO_3 + 2,5 cc N/2 K_2SO_4	10,0	N- K_2SO_4 + 2,5 cc N/2 KNO_3	11,2
N- KNO_3 + 2,5 cc N- K_2SO_4	11,0	N- K_2SO_4 + 2,5 cc N- KNO_3	22,5

Here we can also observe the antagonistic effects between different anions for wheat-amylase and for Takadiastase, and then I exerminded the antagonistic effects between different cations and different anions for wheat-amylase.

8 The antagonistic action between K_2SO_4
and $MgCl_2$ for wheat-amylase

Table 9.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N- K_2SO_4 + 2,5 cc H_2O	11,0	N- $MgCl_2$ + 2,5 cc H_2O	10,5
N- K_2SO_4 + 2,5 cc N/2 $MgCl_2$	13,5	N- $MgCl_2$ + 2,5 cc N/2 K_2SO_4	13,7
N- K_2SO_4 + 2,5 cc N- $MgCl_2$	15,25	N- $MgCl_2$ + 2,5 cc N- K_2SO_4	13,9

9 The antagonistic action between $CaCl_2$
and $MgSO_4$ for wheat-amylase

Table 10.

Concentration of salts	sugar mg.	Concentration of salts	sugar mg.
N/10 $CaCl_2$ + 2,5 cc H_2O	10,0	N/10 $MgSO_4$ + 2,5 cc H_2O	10,2
N/10 $CaCl_2$ + 2,5 cc N/2 $MgSO_4$	11,2	N/10 $MgSO_4$ + 2,5 cc N/2 $CaCl_2$	11,4
N/10 $CaCl_2$ + 2,5 cc N- $MgSO_4$	11,5	N/10 $MgSO_4$ + 2,5 cc N- $CaCl_2$	—

The results show the antagonistic effects between different cations and anions for wheat-amylase. At last I examined LOEB's so-called apparent antagonistic effects between the decomposition products of protein and potassium chloride for wheat-amylase and got the following results.

10 The antagonistic action between glycocoll
and KCl for wheat-amylase

Table 11.

Concentration of salts	5 % glycocoll 2,5 cc H_2O	5 % glycocoll 2,5 cc N/2 KCl	5 % glycocoll 2,5 cc N-KCl
sugar mg.	11,0	11,5	12,7

In this case we can also observe the antagonistic effect between glycocoll and KCl for wheat-amylase.

CONCLUSTON

From the results we know the antagonistic effects between different salts — of different cations and same anions as KCl and $CaCl_2$, NaCl and $CaCl_2$, NaCl and KCl or $CaCl_2$ and $MgCl_2$, and of different anions and same cations as KCl and K_2SO_4 , KNO_3 and K_2SO_4 and of different cations and different anions as K_2SO_4 and $MgCl_2$ or $CaCl_2$ and $MgSO_4$ — for amylase of wheat-seedling and for Takadiastase. Farther more the apparent antagonistic effect is observed between glycocoll and KCl for the same enzyme.

摘 要

酵素作用に對する鹽類の影響に關しては從來幾多の研究結果を報告せしものありと雖も、此等は多く單獨の影響に關するものにして、未だ二種以上の鹽類の相互關係若くは同鹽類間に於ける頤頤現象に就きて試験を試みしもの極めて稀なり是著者の本研究を企圖せし所以なり。

著者は先づ次の如き各種鹽類の陽イオン及び陰イオンが發芽小麥のアミラーゼ並にタカヂアスターゼに對する阻遏作用を現すべき濃度を決定せり其結果はカルシウム及びマグネシウムの如き二價イオンの鹽類は十分の一規定液に達するに及んで有害なるを認めたり、反之カリウム及びナトリウムの如き一價イオンの鹽類は一規定液の濃度に至りて初めて其阻遏作用を表はせり。

依て著者は酵素液を各種鹽類の有害作用を表はすべき濃度に保持せし後更に之に微量の他の鹽類を添加して此の場合に於ける相互作用の結果を試験せり、其の結果同一陰イオンの鹽類にして陽イオン異なる場合即ち鹽化カリウムと鹽化カルシウム、鹽化ナトリウムと鹽化カルシウム、鹽化ナトリウムと鹽化カリウム若くは鹽化カルシウムと鹽化マグネシウムとを相共に作用せしめたる場合は勿論、同一陽イオンの鹽類にして相異なる陰イオンを有するもの例へば鹽化カリウムと硫酸カリウム、硝酸カリウムと硫酸カリウムとを添加せし場合更に陰陽兩イオンの全く異なる場合即ち硫酸カリウムと鹽化マグネシウム若くは鹽化カルシウム硫酸マグネシウムとを添加せし場合にありては單獨の鹽類を作用せしめたる場合に比較して常に其阻遏作用の輕減せらるゝことを認むるものなり、或は又蛋白質分解產物たるグリコールと鹽化カリウムとを作用せしめたる場合に於ても之と同様なり。

茲に於てか吾人は各鹽類の相互作用は生物体に對して常に頤頤現象を表はすと同様に酵素作用に對しても亦同様に繾綣現象を表はすことを知るものなり更に生物体に對して所謂外觀的頤頤現象と稱せらるる現象も亦酵素作用に對して生物体と同様の結果を與ふるものなることを知る。

初乳.常乳.分泌末期乳の結氷點降下 並びに加水の有無鑑別上結氷測定の實用的價值

里 正 義

Über die Gefrierpunktniederung der Kuhmilch sowie die
Anwendung der Kryoskopie als ein sicheres Mittel,
die Milchverfälschungen durch Wasserzusatz nachzuweisen

VON

MASAYOSHI SATO.

緒 言

乳汁の結氷點降下は其の中に溶存する鹽類並びに含糖量に關係せり従つて此等の成分に變化多き初乳並びに分泌末期乳に於ける結氷點降下は常乳と少々趣きを異にするも其の程度に關する研究に乏しく常乳にあつては牛種、個體、飼料分泌期間及び其の他の關係による變異の範圍極めて少なきより殆んど結氷點に影響なし而して加水による濃度の減少と共に漸次零度に近接す従つて結氷點の測定は加水による不正行爲を多數の鑑定法中最も確實に觀破し得可しとは多くの研究者の共に唱導する所なるも各實驗者によつて純乳に於ける結氷點降下の限界を異にするより加水量の範圍は勿論其の實用的價值の如何に關しても亦對説ありよつて余は最近他の目的を以て初乳常乳分泌末期乳の結氷點降下並びに加水による變化に就き少々多數に測定する所ありたるを以て聊か從來の業績と比較し併せて加水の有無程度の鑑別上結氷點測定の實用的價值に就て記載す可し。

結氷點測定方法

結氷點の測定は Beckmann 氏の裝置により所定の方法に従つて之を測定したり。

I.

初乳の結氷點降下

大正五年六月十三日より同十二月五日に至たる間本學第二農場に於て分娩

したるホルスタイン種八頭エーシヤイヤー種三頭ゲルンジー種四頭都合十五頭の初乳に就て分娩直後並びに其の翌日より毎日朝乳に就て三日間乃至七日間供試測定したり

供試牛の種類年齢、産次、分娩年月日並びに供試乳に就て其の酸度、含脂量比重乾物量無脂乾物量を併記し結氷點降下の測定結果を表示せば第一表の如し

表中酸度は牛乳 100 c.c 中に含有する乳酸量に換算し含脂量は Gerber 氏の遠心分離法により比重は Westphal 氏天秤比重計及 Quevenne 乳稠計を用ひて測定したり而して乾物量は表中 (×) 標を附したるものは常法により他は Fleischmann 氏の算式により計出したる

第 一 表

供試 番號	種 類	年 齡	産 次	分 娩 年 月 日	供試乳	酸 度 g	含 脂 量 %	比 重 15°C	乾 物 量 %	無 脂 乾 物 量 %	乳 量 ポンド	結 氷 點 °C
1.	ホルスタイン	90 號	5 歳	5 産	5. 6. 17. 直 後	0,324	4,9	1,0420	—	—	18,5	-0,55
					3 日目朝	0,216	3,1	1,0333	12,31	9,21	20,6	-0,565
					4 „ „	0,198	5,6	1,0312	14,78	9,18	18,6	-0,525
2.	„	126 號	7 „	4 „	5. 7. 7. 直 後	0,279	4,0	1,067	—	—	6,2	-0,75
					2 日目朝	0,234	2,4	1,0384	12,74	10,34	10,8	-0,55
					3 „ „	0,234	2,1	1,0370	12,03	9,93	14,0	-0,53
					4 „ „	0,225	3,3	1,0354	13,07	9,77	15,1	-0,58
3.	„	60 號	13 „	11 „	5. 9. 26. 直 後	0,288	4,5	1,084	38,280×	33,780	6,2	-0,61
					2 日目朝	0,261	3,2	1,049	17,460×	14,260	6,0	-0,55
					3 „ „	0,243	2,7	1,0347	16,728×	14,028	8,7	-0,55
					4 „ „	0,225	3,1	1,0342	12,835×	9,735	8,0	-0,56
					5 „ „	0,189	2,1	1,0345	11,828×	9,728	11,0	-0,53
4.	„	160 號	4 „	1 „	5. 10. 29 直 後	0,243	5,5	1,052	22,109×	16,608	8,8	-0,615
					2 日目朝	0,225	3,5	1,0351	13,449×	9,949	8,2	-0,55
					3 „ „	0,252	3,0	1,037	13,231×	10,231	10,0	-0,575
					4 „ „	0,252	2,9	1,038	13,24	10,34	10,4	-0,57
					5 „ „	—	3,0	1,036	12,86	9,86	12,0	-0,56
					6 „ „	0,216	2,8	1,036	12,430×	9,63	12,4	-0,55
					7 „ „	0,225	2,9	1,0356	12,669×	9,769	12,5	-0,575
	„	119 號	7 „	5 „	5. 11. 1. 直 後	0,352	8,5	1,054	25,293×	16,793	15,4	-0,595
					2 日目朝	0,306	4,8	1,0355	14,516×	9,716	15,6	-0,59
					3 „ „	0,252	4,6	1,0357	14,968×	10,368	15,5	-0,575
					4 „ „	0,225	4,2	1,0354	14,15	9,95	13,0	-0,59
					5 „ „	0,216	—	—	—	—	—	—
					6 „ „	0,261	3,9	1,0349	13,67	9,79	17,2	-0,50
					7 „ „	0,225	4,1	1,0345	14,180×	10,08	18,4	-0,55

234 里一初乳、常乳、分泌末期乳の結氷點降下並びに加水の有無鑑別上結氷點測定の實用的價值

6.	„	75 號 11 „	7 „	5. 11.	4. 直 後	0,360	11,2	1,071	31,511×	20,311	9,8	-0.46
					2 日目朝	0,297	3,0	1,054	18,664×	15,664	7,2	-0.59
					3 „ „ „	0,252	4,1	1,0385	14,739×	10,639	15,5	-0.56
					4 „ „ „	0,270	3,6	1,0385	14,638×	11,038	18,2	-0.59
					5 „ „ „	0,243	4,2	1,0355	14,523×	10,323	15,0	-0.58
7.	„	108 號 8 „	5 „	5. 12.	4. 直 後	0,414	8,1	1,057	26,351×	18,251	14,0	-0.59
					2 日目朝	0,270	3,2	1,0352	12,985×	9,785	17,0	-0.57
					3 „ „ „	0,252	3,4	1,0363	13,42	10,02	16,0	-0.55
					4 „ „ „	0,243	4,45	1,039	15,28	10,83	16,9	—
					5 „ „ „	0,234	4,3	1,038	14,92	10,62	16,8	-0.535
8.	„	54 號 14 „	9 „	5. 12.	5. 直 後	0,378	7,2	1,0668	29,447×	22,247	4,2	-0.62
					2 日目朝	0,315	4,9	1,042	15,473×	10,573	9,5	-0.59
					3 „ „ „	0,279	3,3	1,0354	13,07	9,77	14,4	-0.545
					4 „ „ „	0,252	4,3	1,0360	14,30	10,00	14,1	-0.53
9.	エア-シヤイヤー	79 號 5 „	3 „	5. 9.	20. 直 後	0,323	6,7	1,064	26,396	19,696	4,0	-0.62
					2 日目朝	0,351	3,5	1,053	14,077×	10,577	2,8	-0.50
					3 „ „ „	0,225	4,1	1,0360	14,547×	14,137	6,3	-0.57
					4 „ „ „	0,189	3,0	1,0350	12,865×	9,865	7,8	-0.54
10.	„	76 號 7 „	4 „	5. 10.	30. 直 後	0,540	5,5	1,079	31,214×	25,714	6,8	-0.59
					2 日目朝	0,423	8,5	1,050	34,080×	25,580	1,0	-0.60
					3 „ „ „	0,324	4,5	1,0395	15,398×	10,898	6,8	-0.59
					4 „ „ „	—	3,6	1,0370	13,439×	9,839	6,4	-0.56
					5 „ „ „	0,252	8,9	1,0340	18,916×	10,016	12,0	-0.55
					6 „ „ „	0,207	5,7	1,0331	15,350×	9,650	8,2	-0.56
					7 „ „ „	0,180	5,5	1,0344	15,46	9,96	?	-0.54
11.	„	82 號 3 „	1 „	5. 11.	4. 直 後	0,378	4,0	1,078	27,268×	23,263	2,8	-0.62
					2 日目朝	0,270	9,2	1,0545	26,535×	17,335	2,0	-0.59
					3 „ „ „	0,270	3,3	1,038	13,796×	10,395	6,0	-0.555
					4 „ „ „	0,288	3,7	1,0398	14,386×	10,686	7,6	-0.575
					5 „ „ „	0,234	4,2	1,0385	15,046×	10,846	7,2	-0.56
12.	メルソ-	141 號 9 „	5 „	5. 6.	13. 直 後	0,459	5,7	1,0400	17,09	11,39	18,	-0.54
					3 日目朝	0,270	—	1,0353	—	—	13,1	-0.575
					4 „ „ „	0,243	—	1,0363	—	—	14,8	-0.555
13.	„	148 號 7 „	4 „	5. 7.	1. 3 日目朝	0,279	3,1	1,0343	12,56	9,46	10,8	-0.56
					4 „ „ „	0,243	2,9	1,0353	12,57	9,67	12,0	-0.545
					5 „ „ „	0,234	3,5	1,0358	13,41	9,91	12,6	-0.54
14.	„	151 號 7 „	4 „	5. 9.	16. 直 後	—	3,6	1,0490	18,186×	14,586	11,8	-0.61
					2 日目朝	—	3,6	1,0410	15,607×	12,007	6,8	—
					3 „ „ „	0,315	3,6	1,0360	13,880×	10,28	6,0	-0.61
					4 „ „ „	0,261	4,1	1,0333	13,510	9,41	6,6	-0.54
					5 „ „ „	0,270	3,7	1,0367	13,87	10,17	9,0	-0.56
					6 „ „ „	0,243	3,7	—	—	—	—	-0.57

15.	„	157 號	3 „ 1 „ 5.	9:22. 直 後	0,315	6,6	1,074	29,185×	22,585	4,4	-0.54
				4 日目朝	0,270	3,8	1,0370	13,215×	9,415	5,3	-0.56
				5 „ „ „	0,234	3,1	1,0354	12,027×	8,927	6,2	-0.57
				6 „ „ „	0,252	3,3	1,0357	12,539×	9,239	7,3	-0.56

今初乳期間に於ける分娩後の経過日数と結氷點降下の關係を明らかならし
むる爲め第一表より結氷點のみを列記すれば左の如し

第 二 表

供試番號	直 後 Oc	二日目朝乳 Oc	三日目朝乳 Oc	四日目朝乳 Oc	五日目朝乳 Cc	六日目朝乳 Oc	七日目朝乳 (平 均) Cc
1.	-0,55	—	-0,565	-0,525	—	—	—
2.	-0,57	-0,56	-0,53	-0,58	—	—	—
3.	-0,61	-0,55	-0,55	-0,56	-0,53	—	—
4.	-0,615	-0,55	-0,575	-0,57	-0,56	-0,55	-0,575
5.	-0,595	-0,59	-0,575	-0,59	—	-0,50	-0,55
6.	-0,64	-0,59	-0,56	-0,59	-0,58	—	—
7.	-0,59	-0,57	-0,55	—	-0,535	—	—
8.	-0,62	-0,59	-0,545	-0,53	—	—	—
9.	-0,62	-0,50	-0,57	—	—	-0,54	—
10.	-0,59	-0,60	-0,59	-0,56	-0,55	-0,56	-0,54
11.	-0,62	-0,59	-0,555	-0,575	-0,56	—	—
12.	-0,54	—	-0,575	-0,555	—	—	—
13.	—	—	-0,56	-0,545	-0,54	—	—
14.	-0,61	—	-0,61	-0,54	-0,56	-0,57	—
15.	-0,54	—	—	-0,56	-0,57	-0,56	—
平 均	-0.594	-0.569	-0.565	-0.560	-0.554	-0.547	-0.555 (-0.567)

結 果

i). 初乳の結氷點降下 Δ は直後にありては十四頭十四回の測定に於て

$$\Delta = -0,54 - 0,64 \quad \text{平均} \Delta = -0,594$$

二日目に於ては十頭十回の測定に於て $\Delta = -0,50 - 0,60$ 平均 $\Delta = -0,569$

三日目に於ては十四頭十四回の測定に於て $\Delta = -0,53 - 0,61$ 平均 $\Delta = -0,565$

四日目に於ては十三頭十三回の測定に於て $\Delta = -0,525 - 0,59$ 平均 $\Delta = -0,560$

五日目に於ては 九 頭 九 回の測定に於て $\Delta = -0,53 - 0,58$ 平均 $\Delta = -0,554$

六日目に於ては 六 頭 六 回の測定に於て $\Delta = -0,50 - 0,57$ 平均 $\Delta = -0,547$

七日目に於ては 三 頭 三 回の測定に於て $\Delta = -0,54 - 0,575$ 平均 $\Delta = -0,555$

にして普通初乳期間と見做されたる分娩後一週間以内にありては十六頭六十九

1) Schnorf 氏は初乳に於ける結氷點降下は分娩後三日目乃至四日目に於て降下最も大なりとせり

結 果

分泌末期乳の結氷點降下は $\Delta = -0,53 - 0,57$ 平均 $\Delta = -0,552$ にして初乳に比し變化の範圍は勿論其の降下の度亦少く常乳に於けると大なる差異を認めず

III.

常乳の結氷點降下

ホルスタイン種分娩後 83 日乃至 382 日を經過したるもの十九頭四十二例
 デルンジー種分娩後 19 日乃至 297 日を經過したるもの九頭十例エアーシヤイ
 ヤー種分娩後 89 日乃至 279 日を經過したるもの六頭六例短角種分娩後 8 日乃
 至 38 日を經過したるもの二頭二例、都合三十六頭四十二例の個畜乳並びに一回
 十七頭乃至十八頭のホルスタイン混合乳二十四例、一回七頭乃至八頭のデルン
 ジー混合乳七例市乳九例都合混合乳四十例の結氷點降下を測定したり

今種類分娩年月日供試年月日、供試乳の分娩後の經過日數、酸度、含脂量
 比重乾物量無法乾物量乳量を併記し結氷點の測定結果を示せば左の如し

第 四 表

個畜乳の結氷點降下

供試 番號	種 類	分娩 年月日	供試 年月日	供試乳の分娩 後の經過日數	酸 度	含脂量	比 重	乾物量	無脂 乾物量	乳 量	結氷點
					g	%		%	%	ポンド	°C
1.	ホルスタイン	47 號 5. 2. 26. 5. 5. 19.		83 日目	0,180	3,3	1,0310	11,97	8,67	12,0	-0.53
2.	"	" " " 5. 7. 18.		149 " "	0,171	2,7	1,0323	11,58	8,88	12,5	-0.555
3.	"	48 號 4. 10. 22. 5. 5. 19.		210 " "	0,171	3,3	1,0300	11,72	8,42	8,0	-0.51
4.	"	" " " 5. 7. 18.		246 " "	0,180	3,2	1,0333	12,43	9,23	7,3	-0.55
5.	"	85 號 5. 2. 22. 5. 5. 23.		91 " "	0,153	2,8	1,032	11,17	8,37	12,0	-0.59
6.	"	108 號 4. 9. 18. 5. 5. 25.		250 " "	0,189	3,8	1,0302	12,37	8,57	4,3	-0.58
7.	"	119 號 4. 8. 9. 5. 5. 26.		291 " "	0,189	3,0	1,0344	12,49	9,49	10,4	-0.52
8.	"	" " " 5. 5. 29.		294 " "	0,198	3,0	1,0352	12,66	9,66	10,6	-0.52
9.	"	149 號 5. 2. 27. 5. 5. 26.		89 " "	0,171	2,8	1,0334	11,97	9,17	12,6	-0.53
10.	"	73 號 4. 11. 8. 5. 5. 27.		201 " "	0,180	2,2	1,0327	11,08	8,88	16,0	-0.52
11.	"	132 號 4. 9. 16. 5. 6. 1.		259 " "	0,199	3,3	1,0330	12,35	9,15	9,5	-0.54
12.	"	137 號 4. 12. 20. 5. 6. 1.		168 " "	0,171	3,3	1,0330	12,59	9,19	13,5	-0.57
13.	"	" " " 5. 6. 24.		191 " "	0,162	2,7	1,0323	11,58	8,88	15,0	-0.53
14.	"	136 號 4. 8. 1. 5. 6. 23.		314 " "	0,162	4,6	1,0312	13,58	8,98	13,1	-0.52
15.	"	123 號 5. 2. 21. 5. 6. 10.		110 " "	0,162	1,9	1,0323	10,62	8,72	19,2	-0.54

16.	„	46 號	4. 9. 19	5. 6. 10.	265 „ „	0,171	3,9	1,0312	12,74	8,84	7,7	—0.52
17.	„	„	„ „ „	5. 6. 17.	272 „ „	0,171	3,2	1,0312	11,90	8,70	7,1	—0.54
18.	„	57 號	5. 3. 4	5. 6. 13.	102 „ „	0,144	2,1	1,0312	10,58	8,48	15,0	—0.55
19.	„	155 號	5. 2. 9	5. 6. 13.	125 „ „	0,144	3,5	1,0302	12,01	8,51	9,5	—0.55
20.	„	54 號	4. 5. 30	5. 6. 15.	382 „ „	0,162	2,9	1,0323	11,82	8,92	10,0	—0.54
21.	„	147 號	4. 9. 9	5. 6. 16.	281 „ „	0,162	3,9	1,0302	12,49	8,59	5,2	—0.52
22.	„	156 號	4. 11. 6	5. 6. 9.	214 „ „	0,162	4,1	1,0302	12,73	8,63	7,2	—0.51
23.	„	„	„ „ „	5. 6. 29.	236 „ „	0,162	3,4	1,0317	12,27	8,87	8,4	—0.53
24.	„	49 號	5. 6. 9	5. 7. 18.	40 „ „	0,180	2,1	1,0333	11,11	9,01	15,0	—0.55
平 均												—0.538
25.	ガルンジョー	146 號	5. 1. 7	5. 5. 25.	139 „ „	0,189	4,8	1,0320	14,02	9,22	8,2	—0.58
26.	„	152 號	5. 5. 11	5. 5. 29.	1,9 „ „	0,234	3,1	1,0372	13,30	10,2	11,8	—0.52
27.	„	154 號	4. 9. 18	5. 6. 2.	258 „ „	0,207	5,5	1,0312	14,66	9,16	6,2	—0.52
28.	„	151 號	4. 8. 11	5. 6. 3.	297 „ „	0,189	6,0	1,0327	15,64	9,64	8,0	—0.55
29.	„	156 號	4. 11. 3	5. 6. 3.	213 „ „	0,243	4,2	1,0327	13,48	9,28	6,5	—0.59
30.	„	„	„ „ „	5. 6. 20.	226 „ „	0,162	3,5	1,0353	13,29	9,79	6,3	—0.53
31.	„	120 號	5. 5. 26	5. 6. 7.	23 „ „	0,198	3,4	1,0327	12,52	9,12	18,1	—0.54
32.	„	125 號	5. 1. 15	5. 6. 8.	145 „ „	0,180	4,6	1,0330	14,03	9,43	7,1	—0.52
33.	„	149 號	5. 5. 6	5. 6. 8.	34 „ „	0,198	2,8	1,0350	12,37	9,58	16,0	—0.54
34.	„	141 號	5. 6. 13	5. 7. 1.	19 „ „	0,189	3,3	1,0347	12,90	9,60	20,1	—0.55
平 均												—0.544
35.	エアーシャイヤー	71 號	5. 3. 9	5. 6. 5.	89 „ „	0,180	3,9	1,0333	13,27	9,37	17,6	—0.55
36.	„	77 號	4. 12. 27	5. 6. 5.	161 „ „	0,180	2,9	1,0333	12,07	9,17	15,0	—0.56
37.	„	クラウン	4. 11. 29	5. 6. 6.	159 „ „	0,162	4,1	1,0302	12,73	8,63	9,1	—0.52
38.	„	76 號	4. 9. 19	5. 6. 14.	269 „ „	0,153	4,6	1,0309	13,51	8,91	10,8	—0.54
39.	„	79 號	4. 9. 9	5. 1. 14.	279 „ „	0,153	4,6	1,0309	13,51	8,91	3,7	—0.54
40.	„	ノーマル	4. 7. 8	5. 7. 18.	376 „ „	0,153	4,3	1,0302	12,97	8,67	5,0	—0.555
平 均												—0.543
41.	短角	17 號	5. 6. 10	5. 7. 18.	38 „ „	0,153	2,6	1,0320	11,38	8,76	11,0	—0.565
42.	„	27 號	5. 7. 11	5. 7. 18.	8 „ „	0,225	3,4	1,0327	12,52	9,12	14,0	—0.525
平 均												—0.545

第 五 表

混合乳の結氷點降下

供試 番 號	供試混乳 種 類	混乳頭數	試験 年 月 日	酸 度 g	含脂量 %	比 重	乾物量 %	無脂 乾物量 %	結 氷 點 oc
1.	ホルスタイン混乳	18.	5. 5. 31.	0,162	3,4	1,0310	12,09	8,69	—0.54
2.	„	17.	5. 6. 13.	0,162	3,4	1,0312	12,14	8,74	—0.56
3.	„	17.	5. 6. 14.	0,162	3,4	1,0320	12,34	8,94	—0.53
4.	„	18.	5. 6. 19.	0,171	3,1	1,0323	12,06	8,96	—0.54
5.	„	18.	5. 6. 21.	0,171	3,2	1,0320	12,10	8,93	—0.565
6.	„	18.	5. 6. 23.	0,171	3,2	1,0323	12,18	8,98	—0.54

第 六 表

[illegible]

結 果

何等他物を含有せざる常乳の結氷點は個畜乳にありては第四表より**ホルス**
タイン種十九頭二十四例の測定により $\Delta = -0,510 - 0,59$ 平均 $\Delta = -0,538$
デルンジー種九頭十例の測定により $\Delta = -0,52 - 0,59$ 平均 $\Delta = -0,544$
エアー・シヤイヤ種六頭六例の測定により $\Delta = -0,52 - 0,56$ 平均 $\Delta = -0,543$
 短角種二頭二例の測定により $\Delta = -0,525 - 0,565$ 平均 $\Delta = -0,545$ にして牛種
 を異にするによつて何等認む可き差異なし従つて都合各種二十六頭四十二例に
 於ける降下の範圍は $\Delta = -0,51 - 0,59$ なり 混合乳にありては第五表より**ホル**
スタン混乳二十四例の測定によつて $\Delta = -0,53 - 0,58$ 平均 $\Delta = -0,549$ **デルン**
ジー混乳七例により $\Delta = -0,53 - 0,57$ 平均 $\Delta = -0,546$ の降下を示し市乳にあ
 りては第六表より九例の測定により $\Delta = -0,53 - 0,57$ 平均 $\Delta = -0,547$ の降下
 を示せり而して市乳にありては牛種並びに其の混合頭數を知ること能はざるも
 混合乳と見做す可きものなるより市乳を含める混合乳各種四十例に於て $\Delta = -$
 $0,53 - 0,58$ 平均 $\Delta = -0,548$ の降下を示せり今此等の測定數を從來檢定せられ
 たる結果に比較するに個畜乳にありては Winter, Hamburger, Koeppe, Abati u.
 B. Sohn, Allemann, Parmentier, Villejean, Lucius, Grimmer 並びに Van der Lean
 氏等の測定したる降下の範圍は $\Delta = -0,530 - 0,587$ にして高低共稍々大に混合
 乳にありては Barthel, Bonnema, Fischer, Dresser, Beckmann, Winter, Hamburger.
 Rievel, Carlinfanti, Yam, Maiocco, Koeppe, Hotz, Schnorf, Grimmer, Van der Lean
 氏等の測定したる範圍は最高 Maiocco 氏の測定したる $\Delta = -0,52$ 最低 Carlin-
 fanti 氏の測定したる $\Delta = -0,59$ にして稍々小なり、

IV.

加水の有無鑑別上結氷點測定の實用的價值

乳汁に加水する時は漸次水の結氷點に近接す従つて加水の有無を知り得る
 事に關しては敢て異論の存する所にあらざるも衛生警察上其の應用の適否加水
 量を確認し得る程度並びに實用的價值に關しては對説あり

結氷點測定は加水の有無を鑑別するに適したる方法なりと推奨したるは Barthel, Bomstein, Allemann, Fischer, Schnorf, Hamburger, Beckmann, Parmentier, Winter 氏等にして其の確知し得る程度に關しては Beckmann 氏は 8% 以上、Fischer 氏は 5% 以上、Hamburger 氏は 3% 以上の加水量を知り得可しとし殊に Barthel 氏の如きは本法による時は牛舎試験の如きは全く不必要にして 1-2% の加水量も尙確實に之を知ることを得可しと稱したり Winter 氏は結氷點の降下は殆んど加水量と比例するものなりとし $E = V \frac{\alpha - D}{\alpha}$ (E は檢乳 V 量中の加水量、 α は純乳の結氷點 -0.555 D は檢乳の結氷點を示す) なる算式を作り本式に依つて約 1.82% 加水する時は結氷點に於て 0.01 度の差異を來たすものとし檢乳の結氷點を測定して直ちに加水量を算出し得る表を作成せり然るに Koeppe 氏並びに其他二三の學者は 10% 以上の加水量に至りて初て確實に知り得可しとなし Maiocco 氏は結氷點の測定は單獨にては加水の證明に不適當にして唯他の方法と併試したる場合に於ける補助的一法に過ぎずとし Teichert 氏亦他の各種の方法により得たる結果を確證する時に於てのみ適當すと結論せり

之を要するに結氷點降下は種類、個畜、年齢、飼料、泌乳期間發情其の他含脂量により殆んど影響なきことは從來の研究により又吾人の試験により明かなる所にして且つ少量の加水も直ちに結氷點の向上を來たすものなれば加水の有無を鑑別し得る實用的價值を知らんと欲せば常乳に於ける結氷點變異の範圍並びに一定量の加水によつて向上する割合を測定することを必要とす然るに新鮮にして何等他物の混入なき混合純乳の結氷點は $\Delta = -0.53 - 0.58$ にして平均 $\Delta = -0.548$ の降下を示せりよつて余は一定量の加水によつて結氷點の向上する割合を見出す爲め個畜乳並びに混合乳三十一例に就て 5%, 10% 及び 20% の加水によつて變化する結氷點降下を測定したり今是等の結果を示せば第七表の如し

第七表

	常乳の結氷點	5%の加水による 結氷點降下	差	10%の加水による 結氷點降下	差	20%の加水による 結氷點降下	差
1.	-0.55	—	—	-0.48	0.05	-0.37	0.16
2.	-0.52	—	—	-0.48	0.04	—	—
3.	-0.52	-0.48	0.04	—	—	—	—
4.	-0.53	-0.50	0.03	—	—	—	—
5.	-0.52	-0.48	0.04	—	—	—	—
6.	-0.54	-0.505	0.035	—	—	—	—
7.	-0.54	-0.51	0.03	—	—	—	—
8.	-0.54	-0.51	0.03	—	—	—	—
9.	-0.52	-0.50	0.02	-0.475	0.045	-0.43	0.09
10.	-0.55	-0.49	0.09	—	—	—	—
11.	-0.55	—	—	-0.48	0.07	—	—
12.	-0.56	—	—	-0.48	0.08	—	—
13.	-0.57	—	—	-0.48	0.09	-0.40	0.17
14.	-0.54	—	—	-0.47	0.07	-0.41	0.13
15.	-0.54	—	—	-0.47	0.08	-0.40	0.14
16.	-0.53	—	—	-0.48	0.05	-0.41	0.12
17.	-0.54	-0.495	0.045	-0.44	0.10	—	—
18.	-0.55	-0.53	0.02	—	—	—	—
19.	-0.57	—	—	-0.475	0.095	—	—
20.	-0.56	-0.52	0.04	—	—	—	—
21.	-0.53	-0.49	0.04	—	—	—	—
22.	-0.54	-0.51	0.03	-0.48	0.06	—	—
23.	-0.555	—	—	-0.475	0.08	—	—
24.	-0.555	—	—	-0.475	0.08	—	—
25.	-0.55	—	—	-0.49	0.06	—	—
26.	-0.55	—	—	-0.50	0.05	—	—
27.	-0.53	—	—	-0.445	0.085	—	—
28.	-0.53	—	—	-0.47	0.06	—	—
29.	-0.55	—	—	-0.465	0.085	—	—
30.	-0.51	—	—	-0.46	0.05	—	—
31.	-0.57	—	—	-0.49	0.08	—	—
平均	-0.537	-0.502	0.035				
”	-0.543			-0.473	0.07		
”	-0.538					-0.403	0.135

第七表より 5% の加水によつて 0.035 度 (0.02 度—0.06 度), 10% の加水によつて 0.07 度 (0.04 度—0.10 度), 20% の加水によつて 0.135 (0.09 度—0.17 度) の向上を來たし従つて結氷點に於て 0.01 度の向上を來たさしむるに要する加水量は Winter

氏の測定したる数より稍々少なく約 1,44% (約 1%—2,4%) なることを知る、故に今一混合市乳にして -0,53 の結氷點を有する場合には 1% の加水も尙之を知ることを得可きも -0,58 の結氷點を有する場合には 10% 以上の加水に有らざれば其の贋造を検出すること能はず然るに混合純乳に於ける結氷點にして -0,58_度 の如き甚だしき降下を來たすは極めて稀れることは余の四十回の測定にありても唯一回に過ぎざりしによりて明らかなる所にして多くは平均數 -0,548 より僅かに上下するに過ぎず故に今結氷點の平均數を -0,548 とし 0,01_度 を向上するに要する加水量を 1,44% (1%—2,4%) とする時は次表を得可し

第 八 表

検出したる結氷點 °C	加水量 %	
-0,548	—	
-0,538	1,44	(1, -2,4)
-0,528	2,88	(2, -4,8)
-0,518	4,32	(3, -7,2)
-0,508	5,76	(4, -9,6)
-0,498	7,20	(5, -12,4)
-0,488	8,64	(6, -14,4)
-0,478	10,08	(7, -16,8)
-0,468	11,52	(8, -19,2)
-0,458	12,96	(9, -21,6)
-0,448	14,42	(10, -24,0)
-0,438	15,94	(11, -26,4)
-0,428	17,28	(12, -24,8)
-0,418	18,72	(13, -31,2)
-0,408	20,16	(14, -33,6)

即ち如何なる場合にありても 10% 以上の加水量は之れを確知することを得可く且つ多くの場合に於て 0,01 度の向上を來たすに要する加水量の 2,4% に及ぶことは亦甚だしく稀れにして多くは平均數 1,44% より僅かに上下するに止まるより Fischer 氏の稱するが如く 10% 以下 5% 以上の加水による不正行爲も尙之れを知ることを得可く且つ一般成書に見る多くの鑑別法に比し確實なり但し本法の欠點とする所は加水量の極めて少量なる場合並びに加水と同時にグリセリン、蔗糖及び食鹽液等を混入したる場合に於ては檢定不可能なると共に

測定に手数を要し熟練後に非ざれば正確なる結氷點を測定し得ざるにあり、

總 括

1. 初乳の結氷點は $\Delta = -0.50 - 0.64$ 平均 $\Delta = -5.567$ にして一般常乳に比し稍々低く降下の變異亦甚だし而して個畜によつて其の趣きを異にするも常則として直後に於て最も大に漸次遞下して常乳の其れに近接す、

2. 分泌末期乳の結氷點降下は $\Delta = -0.53 - 0.57$ 平均 $\Delta = -0.552$ にして常乳に於けると大なる差異を認めず、

3. 常乳の結氷點降下は個畜乳にあつては $\Delta = -0.51 - 0.59$ 混合乳にあつては $\Delta = -0.53 - 0.58$ 平均 $\Delta = -0.548$ なり従つて市乳に於て何等異物を混入せざる新鮮純乳にして $\Delta = -0.53$ より降下小なる時は Van der Lean 氏と同じく加水せるものと見做すことを得可し、

4. 結氷點測定法による時は 5% 以上の加水は殆んど確實に 10% 以上の加水は確實に鑑別することを得可く加水量は第八表より大略之を検出することを得可し而して一般成書に見る多くの鑑定法に比し正確なる判決を下すことを得るも測定に手数と熟練とを必要とする欠點あり、

(結氷點の測定に當り坂上氏を煩はしたること多し茲に感謝の意を表す)

本 會 記 事

(自大正四年十一月至大正六年三月)

大正四年十一月より本年三月迄例會を開催すること七回、其講演題目及大要次の如し。

第百九十二回大正四年十二月二十三日經濟學講堂に於て。

1. 泡盛麴菌に就きて。

農學博士 半 澤 洵君

先泡盛酒の由來及びこれが發酵に關する菌の研究の歴史を述べ、本邦に於て本菌の最初の研究者は乾氏にて氏は *Aspergerus luchuensis* を以て其主要なるものとせり。而して氏は該菌の記載に於て其小梗子は單一なりとせり。其後宇佐見氏中澤氏等同様に本菌を研究し特に中澤氏は臺灣に於て研究せる結果を發表し本菌の小梗子は二個よりなる復梗なりとし、乾氏の研究を抹殺して、*Aspergerus Awamori*. と訂正せり。されど今回自己の研究せるところを以てせば該菌は其古きものは第一梗子脱落して第二梗子のみよりなる單梗の如く見ゆるに至るものなるにより、乾氏は本菌の老成せる單一なるものに就て記載したるものなるべし、故に本菌は依然 *Aspergerus luchuensis* として存在すべきものなりと。

2. 植物採集家としての佛人フオーリ師

理學博士 宮 部 金 吾 君

天主教公會の宣教師 Urban Faurie は植物採集家として我植物學界に貢獻したること大なりとて其傳記を詳述せらる。

Faurie 氏は 1840 年 12 月 30 日佛國に生る、父は農業兼造林業を營み兄弟は男六人女六人て氏は實に其第七番目の子である。氏は幼時は體質弱かつたが學問は優てあつた。父は氏を製紙業に従事せしめやうとしたが、其頃から氏は熱心なる宗教心を起し、一身を神様にさしげんとし、特に外國の傳導に従事しようとした。明治六年廿四才で神學校を卒業し直ちに日本に渡來した。氏は此頃から植物採集を初め之れを本國の Franchet 氏に送たが其中に *Chrysosplenium Fauriei*, Franchet と名ぜられたる、**ねこのめさう** ありたるにより益々其研究心を高め會津、日光、越後等の植物を採集して送つた。明治十六年青森及

び北海道巡廻教師となり、函館を振出しとして仙臺、北海道各地を傳導し盛に採集をしたが氏は特に *Chrysosplenium* を研究し其の Monograph を發表し、次で *Carex* を研究した、日本の *Carex* 研究では氏は第一着であつた。明治二十三年頃札幌の天主教公會に移つたが、明治二十八年には青森定住となつた。明治三十七年には日露戰の關係から露國と關係ありとして注意されたので、採集に出ることが出来なかつた。が戰後は大に活動し大正二年は布哇に渡つて採集した。其留守中青森の大火があつたが幸い氏の標本は難を免かれた。

此頃から氏は羊齒の採集を初めた羊齒類は臺灣に多いので此年更に臺灣に渡航し大正四年迄同島に採集したが此間に於て氏は其身體を害したものと見ゆ遂に同年七月臺灣にて逝去せられた。

氏は最も熱心なる採集家で教を傳ふと云ふよりもむしろ新植物の發見を常に念頭に置いた人で、日曜でも標本の整理をした。尙ほ氏は其採集した標本を盛に賣却したが其得た金員は自己のために消費せず、皆布教に投じた。札幌の教會の土地購入や青森に於ける貧民教育など其半面を語るもので自己を處するにきはめて素であつた。

第百九十三回、大正五年一月二十九日經濟學講堂に於て。

3. 桐樹立枯病に就て。農學士 逸見武雄君

第六卷第二號、百三十三頁掲載。

4. 村の移轉に就きて。理學士 田中館秀三君

1. 地震に依りて起る移轉、

伊太利の山間に於ける一市街に大地震があつた、此の市街は元陷落地帶で、百五十年前迄は湖水にあつたのを排水して、五十年程前に成効して家屋を建築した人口15000の市街であるが、僅7秒間に全部破壊した、日本の家屋ではかゝるときには火災を起して消失するのが普通であるが、此の市街は石造であるから倒壊したら其取片付に困難であるので新市街は舊市街の傍に移轉した。

2. 山崩に依る村の移轉、

粘土層より成る崖の下に建てられたる市街では其崩壞のため年々埋めらるゝの

て市街は遂に山の上に移轉し更に其崩壞によりて尙後方に移轉する。

3. 對敵防禦上及病源による移轉、

湖水の沿岸にある大なる市街が **まらりや** 病のため、且つは戰時要害のために 510 m の高地に移轉せるも現時醫術進歩と戰時防備の必要なきによりて、商業の中心市街は又再び湖岸に移轉した。村の移進は人爲的の移轉もあるが、問題は天然の意味に於ける移進に就て述べたのである、村の消失もある、噴火の場合の如きこれである。櫻島の噴火によつては或村の如きは全滅した。

第百九十四回、大正五年三月二十五日經濟學講堂。

5. 豊平川の變遷、

河 野 常 吉 君

豊平川、本名札幌川なり、之は「乾き易き川」の意味即ち「**サツポロ**」は陸地の名にあらず河の名なり。永田氏は「**サツ**」乾燥「**ポロ**」廣大の意なりとなせども非なり。其河の名なること「**フシコサツポロ**」「**サツポロブト**」等の名あるによりても明なり。豊平「**トヒピラ**」にして「**トヒ**」は崩なり「**ピラ**」は崖なり。豊平川なる名は小樽、千歳間の交通路となれる今の豊平橋の附近の部分的名稱なるべし。

札幌川の流域は飛驒屋久兵衛氏所有の石狩川地圖（明和年間 1768）によるに現今と餘程違ふものがある、之れによりて見るに當時の札幌川は今より遙に下流で石狩川に注入したものである。即ち當時の流域は「**フシコサツポロ**」川の流域を取つたもので篠路附近で本流に合したものであると思はる。此の推定の無理でないことは、遠山村垣兩氏の西蝦夷日記（文化三年 1707）に「**サツポロ**」川巾 14.5 間「**ツイシカリ**」川巾 5 間とあり尙付して（右近年迄は小川に御座候處四五年前大水にて「**サツポロ**」川上流に切所出來其後「**ツイシカリ**」川水深舟通路自由の川とまかりなり候云々）とあり。即ち當時「**サツポロ**」川本流筋（篠路口）と新川筋（對雁口）とありしも尙「**ツイシカリ**」川巾 15 間なりしがごときも、觀國錄（安政四年 1857）に「**サツポロ**」川巾 5.6 間「**ツイシカリ**」川巾 20 間とあり、即ち此頃より、現時の状態となりしものか。

6. 綿虫の新研究、

理學博士 松 村 松 年 君

綿虫の研究に入る前に蚜虫の研究を述ぶる必要ありとて其大要を述べられ。綿虫 *Schizoneura lagenira* は苹果樹に寄生し *S. ulmi* は榆樹の葉に寄生する。自分の研究によると *S. lanigera* と *S. ulmi* の觸角はよく似てをる、故にこれと混同して居るものが多い、又大形の綿虫が居るが之れは觸角及翅等の比較研究によつて、大に異なるところあるを見出した。これはおほわたむし *Prociphilus bumelliae* と稱し歐洲に産するものと同種である。*S. lanigera* は成虫に綿がない *Prociphilus* 若くは *Pemphigus* は特有の綿がある。北海道産の綿虫は *S. lanigera* ではあるが未だ有翅のものが發見せられない、有翅の綿虫と稱するものは普通おほわたむしを云ふものである。之れは主に苹樹、梨其他濶葉樹の根に寄生する。

歐洲産の綿虫に依て研究された結果によると有翅綿虫の交尾の結果出來たものは胎生兒で之れより生ずる幼虫時代が八代續て初めて有翅の成虫となり、居所を轉じて他の樹に入て卵を産む、羽虫の腹を割いて見ると6—7個の卵あり其中3—4は♀で3は♂である成長するも翅が生じない、♀に口吻を有して居らぬこれは♀は食物を取る必要なく交尾して産卵すると死するからである。之れは交尾後一個の黑色卵を産むが普通であるが朝鮮では胎生兒を生むと云ふ、本道産の綿虫も果して同様の生活史を有するかは疑問であるが参考のために述べてをく。

第百九十五回、大正五年五月二十三日經濟學講堂にて。

7. 亞麻の銹病に就て、 農學士 宮部憲次君

亞麻の病害をなす *Melampsora* に二種ある *M. linei* 及び *M. lineperia* である。本邦産のは後者である、被害部の状態は顯微鏡下の反應によれば著しく Pektin 質を犯されてをる、特に病斑部直下は Zellulose 質迄も犯してをるによりて甚しく製絲紡績を困難にする。

8. たかのはすすきの葉斑に就て、 理學博士 郡場 寛君

たかのはすすきの葉斑に於ける斑色は普通の葉斑とは異なり、單に葉綠粒の變色乃至減却に由るものにあらず、同化組織の退化に基くものなり。同化組

織は葉の未だ發叙せざる幼時成長期に於て退縮するものにして、之に伴ひ自餘の組織の發育狀態も變化せられ葉の綠色部に於けるとは著しき差異を來す。

第百五十五回、大正五年九月三十日經濟學講堂に於て。

9. 歐米雜談、

農學士 素木得一君

氏は歐米遊學中視察せられたる諸國の昆虫學に關する敎室試驗場博物館等に於ける學者的研究的態度、日常生活、研究上の設備、出版物等に就て實見談をなし尙ほ晩近に於ける昆虫學研究の趨勢に就き述べられたり。

百九十七回、大正五年十一月二十五日經濟學講堂に於て。

10. 花瓣の表皮、細胞に於ける原形質膜の滲透壓に就て、

農學士 並河 功君

原形質分離の方法により種々の植物の花弁の表皮細胞に於ける滲透壓を測定し開花過程中に起る滲透壓の變化に二種の形式あることを認めたり。第一の型には *Adonis vernalis* var. *amurensis*, *Prunus* の數種 *Corydalis ambigua*, *Lilium* の數種 *Gagea lutea*, *Pogonia japonica* 等之に屬し滲透壓は蕾の開發と同時に徐々に下り、開花の起ると同時に上り夫れより又下降す。第二の型には *Pharbitis Nil*, *Hosta japonica* var. *coerulea* 等之に屬し滲透壓は只下る一方の曲線を現はす、是等滲透壓の變化は花瓣中に於ける物質の消長と生長の速度に密接なる關係を有す。又特殊の場合としては通發作用の促進、溫度の如何及び成長を妨碍する外界の機械的勢力が此滲透壓の曲線に多少の *Modifikation* を與ふるものなり。

11. 頤頤現象と膠朧質の關係、

農學士 田所哲太郎君

幼芽植物汁液の膠朧質性に就き研究を重ね、膠朧質物の凝集及び溶解は鹽類の頤頤現象を誘起する場合と能く一致することを認めたり。同事實は更に酵素に對する鹽類の頤頤現象に於ても證明することを得べしとて頤頤現象の一因として膠朧質性の變化を指摘せり。

第百九十八回、大正五年十二月二十三日經濟講堂に於て。

12. 黑龍江沿岸視察談、

文學士 寺田貞吉君

露國の黑龍江地方侵略の經路を述べ。次に其交通上の關係を略述し、黑龍江一帯は單に水路による交通は發達せるも一步其内方に入らんか全く交通路なしと斷言するをはいからず。ために沿岸の豊富なる森林或は礦物、農産物等開發せられざるもの多大なり。我國民にしてこゝに着目し彼地に事業を起さば盖有望なるものあるべし。次に民族の大要、植物特に森林植物の景觀に就て其分布の大要を述べらる。

13. 彌地病の學說に就て、

理學博士 宮 部 金 吾 君

先彌地病の意義を述べ是を以て一種の連作病なりとし、其より我邦に於ける研究の次第を述べらたたり。本病は山田佐藤兩氏によりて最初に研究せられ其病原は一種の微生物とせられた。次に大工原博士の有害有機物説出で鈴木重禮博士の反對説あり、次に堀技師の酵母説現はれたが氏は更に其説を更へて有機物分泌説を以てし、彌地病を除くには、土壤に多量の鹽基物即ち石灰、木灰の如きを施せば可なりとした。歐洲に於ては 1832 年佛の**ドカンドル**氏の根部排泄説有力なるものであつた。是に對して奧國の**ウンデル**氏及び其門下の反對説があつたが、1840 年獨逸の有名なる化學者**リービツヒ**氏の賛成説が出た。氏は更に説をなして無機養分缺乏説を稱へた。1905 年頃から米國の農商務省土壤局で瘠土の原因に就ての研究あり瘠土の多くは養分の缺乏によるにあらず土壤中に作物に對し有害なる有機物の蓄積せらるゝによることが判明した。即ち此の研究の結果は 80 年前の**ドカンドル**氏の説の誤ならざるを證明したものである。而して此等有害排泄物なるものゝ本態は何であるかは今日に於て尙不明である。

近來植物病理學の進歩に伴ひ彌地病の原因が一種の菌によることの明になつたものもある。朝鮮人參、亞麻、綿、紅豆、西瓜等の病害はこれで又茄子の舞病、煙草の彌地病の如きは一種の**バクテリア**の侵害によることが明になつた。近時問題となつた豌豆の彌地病の原因としては前記の如き根部排泄説が有力であるが所によりては此等菌類によることもあるべく或は又全く別種の原因によることもあるだらう。此等は綿密な研究の上に立論するのでなければ一概に斷言が

出来ぬ、要するに豌豆の彌地病の原因の如きは未だ見解の迷路にあるもので、之れに對する適確なる救法濟を述ぶることも不可能である。

第百九十九回、大正六年一月二十四日植物學講堂に於て本會例會を開き左の口演を行ひ、終て總會を開く。

14. こがねむしの被害と驅除、 林學博士 新 島 善 直 君

東北帝國大學農科大學演習林報告に記載あるによりてこゝに略す。

第二百回、大正六年三月十日經濟學講堂に於て。

15. 減數分裂は果たして体細胞に起り得ざるや否や。

農 學 士 坂 村 徹 君

そらまめ及びあんどうの根端を抱水「クロラル」を以て處理し茲に現はる細胞及核分裂の異狀現象並に之れに伴ふ染色体の形態の變化に就て研究の結果を報告せらる。分裂異狀現象の結果は「ヂプロイド」核、過多、過少染色質核、二核、多核其他異狀形核を有する細胞の出現にして曩にネメツツ氏の主張する体細胞内に於ける融合核の自制的減數分裂殊に間接減數分裂なるものは抱水「クロラル」處理の直接結果にして「ヂプロイド」核の一種の異狀分裂像たる二心核群集に外ならざることを指摘し更に体細胞分裂並に減數分裂に際して出現する四分体の意義を論じ、又直接核分裂なるものは從來考へられたるが如く核の生殖を意味するものにあらずして寧ろ核の一種の病的破碎なることを述べ。次に花粉母細胞を抱水「クロラル」を以て處理したる結果により「ヂプロイド」其他異常染色体數を有する花粉粒の人工的形成が強ち無望ならざることを述べたり。

16. 本邦産五倍子に就て、 理學博士 松 村 松 年 君

ぬるての瘿蟲は從來單に *Schlechtendalia chinensis* 一種と見做され居りしも本邦各地産の虫瘿内に有せる瘿虫を研究せる結果は次の六種を區別し得たり。

Schlechtendalia Miyabei, Mats.

えぞおほぶし。

„ *intermedia*, Mats.

おほいほぶし。

„ *mimifushi*, Mats.

みみぶし。

Nurudea ibofushi, Mats.

いほぶし。

Nurdeopsis hanafushi, Mats.

はなぶし。

Fushia rosea, Mats.

べにぶし。

而して Schlechtendalia chinensis が實際本邦に産するか否かは不明なりと。

總 會

大正五年一月廿九日、例會閉會後、經濟學講堂に於て本會定期總會を開催す。

先づ工藤幹事は庶務に關し、佐々木幹事は會計に關し、新島幹事は編輯に關し本期間に於ける會務の報告あり。宮部會長の挨拶ありて後、役員の改選あり。次の諸氏當選せられたり

本會役員

會 長	宮 部 金 吾
庶 務 幹 事	前 川 徳 次 郎
同 上	工 藤 祐 舜
會 計 幹 事	伊 藤 誠 哉
編 輯 幹 事	新 島 善 直
同 上	郡 場 寛

會 員

新 入 會 員

星 野 三 郎 (正)	佐 藤 隆 太 郎 (准)
渡 瀬 次 郎 (准)	菅 谷 忠 次 郎 (准)
有 泉 方 松 (准)	枡 内 吉 彦 (准)
辻 良 助 (准)	木 原 均 (准)
一 色 周 知 (准)	栗 田 伸 造 (准)

逸 見 文 雄 (准) 山 根 甚 信 (准)

草 間 正 慶 (准)

死 亡 會 員

本會正會員川上瀧彌君大正四年八月二十日を以て逝去せらる。君は多年本會の爲めに盡瘁せられたり、實に哀悼の至に堪へず。

大正六年一月二十日、例會閉會後、植物學講堂に於て本會定期總會を開催す

先づ前川幹事は庶務に關し、伊藤幹事は會計に關し、新島幹事は編輯に關し
本期間に於ける會務の報告あり。宮部會長の挨拶ありて後、役員の改選あり。
次の諸氏當選せられたり

本會役員

會 長	宮 部 金 吾
庶 務 幹 事	前 川 徳 次 郎
同 上	工 藤 祐 舜
會 計 幹 事	伊 藤 誠 哉
編 輯 幹 事	新 島 善 直
同 上	郡 場 寛

會 員

新 入 會 員 九 名

春 川 忠 吉 (正)	西 門 義 一 (正)
近 藤 金 助 (准)	浦 川 卯 之 助 (准)
瀧 澤 直 澄 (准)	富 田 爲 義 (准)
福 田 八 十 楠 (准)	福 士 貞 吉 (准)
寺 田 貞 治 (准)	

現 在 會 員

贊 助 會 員	二 名
正 會 員	八 十 五 名

在 札	三十八名
地 方	四十四名
准 會 員	六十三名
在 札	二十六名
地 方	三十七名

會 員 姓 名

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