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CONTRIBUTIONS TO THE FLORA OF NORTHERN JAPAN I

BY

KINGO MIYABE AND MISAO TATEWAKI

(With Plate I)

1. *Mitella nutans* L. Sp. Pl. (1753), 408; LEDEB. Fl. Ross. II. (1844-46), 228; RGL. et TIL. Fl. Ajan. (1859), n. 128; MAXIM. Prim. Fl. Amur. (1859), 123; BRITT. & BR. Ill. Fl. N. Amer. II. (1897), 181; KOMAR. Fl. Mansh. II. (1904), 419; NAKAI, Fl. Korea. II. (1911), 484; ROSEND. in Engl. Jahrb. L. Suppl. (1914), 382; OHWI, in Acta Phytotax. et Geobot. I. (1932), 62.

NOM. JAP. *Maruba-charumerusô*.

HAB. Okedo, Prov. Kitami (M. TATEWAKI, VIII. 27, 1926); Urahoro, Prov. Tokachi (Y. Kikkawa, V. 28, 1928).

Remarks. New to the flora of Hokkaido and Saghalien.

2. *Saxifraga bracteata* D. DON, in Trans. Linn. Soc. XIII-2. (1822), 367; HULT. Fl. Kamtschat. III. (1929) 11; OHWI, in Acta Phytotax. et Geobot. I. (1932), 49; TATEWAKI, in Journ. Facult. Agr. Hokkaido Imp. Univ. XXIX-5. (1933), 199.

NOM. JAP. *Kiyoshisô*.

HAB. Ochiishi, Prov. Nemuro (HAJIME TAKEDA, VII. 1927; M. TATEWAKI, IX. 23, 1927).

Remarks. The present species is a new addition to the flora of Hokkaido and the locality above mentioned seems to be its southernmost limit.

3. *Oxytropis Kudoana* MIYABE ET TATEWAKI, sp. nov.

Acaulis, petiolis scapisque inferioribus adpresse albo-pilosis; stipulis scariosis, ferrugineis, uni- vel binerviis, ellipticis, utrinque glabrescentibus, apice rotundatis ciliatisque. Folia 4-7-juga, margine revoluta, ciliata, oblonga, acutiuscula vel obtusa, supra pilosa deinde glabrescentia nerviis pilosis, subtus glabra, ca. 1 cm longa 2-3 cm lata. Scapus foliis subaequans, superiore nigro-pilosus, captulis subbifloris. Bractae oblongo-ovatae, albo-nigrescente pilosae, tubis calycium breviores. Petalae coeruleae, vexillo late ovato-ellipticis emarginato, carine mucrone ca 0.4 mm longo, ovario ventrali adpresse nigro-hirsuto et laterali

adpresse albo-hirsuto. Calyx adpresse nigro-hirsutus, dentibus lanceolatis 3 mm longis, tubis cylindricis 6 mm longo. Legumina ca. 3 cm longa, 1 cm lata, apice acuminata, basi rotundata, in calyce stipitata.

NOM. JAP. *Hidaka-genge*. (n. n.)

HAB. Mt. Esaomantottabetsu, Prov. Hidaka (M. TATEWAKI, VII. 28, 1927); Mt. Koebokusatsunai, Prov. Hidaka (K. ÔDATSUME, VII. 1932).

Remarks. The present species is closely related to *Oxytropis revoluta* LEDEB., from which it differs by the fewer, larger and less hairy leaflets, and by the scape being black-hairy on its upper portion. The present species is named in memory of the late Prof. Y. KUDO.

4. *Oxytropis hidaka-montana* MIYABE ET TATEWAKI, sp. nov.

Acaulis, petiolis et scapis longe patenterque albo-hirsuto; stipulis scariosis, subuninerviis, ovato-lanceolatis, acutissimus vel acuminatis, ca. 1.5 mm longis, intus glabris, extus pilosis. Folia 5-8-juga, oblonga, acuta vel obtusiuscula, supra villosa-pubescentia, subtus glabrescentia, margine revoluta, ciliata, 8-12 cm longa, 2-4 mm lata. Scapus foliis aequans vel paulo brevior, capitulis ca. 5-floribus. Bracteae viridiusculae, lineares, longe ciliatae, tubis calycium subaequantes. Calyx albo-nigrescente hirsutus, dentibus lanceolatis vel lineari-lanceolatis 3 mm longis, tubis cylindricis 12 mm longis. Petalae coeruleae, vexillo obovato profunde emarginato, carine mucrone 1 mm longo, ovario subsessili oblongo-ellipsoideo, adpresse albo-hirsuto.

NOM. JAP. *Hidaka-miyamano-endô*.

HAB. Mt. Pipairo, Prov. Hidaka (KYUYA KUROZUMI, VII. 17, 1929).

Remarks. The present species is closely related to *Oxytropis retusa* MATSUM., from which it differs by the fewer leaflets and fewer flowers, and also by the shape of the standard, bracts and stipules.

5. *Oxytropis yezoensis* NAKAI, Rep. Veg. Daisetsu Mts. (1930), 68.

Oxytropis japonica var. *sericea* KOIDZ. in Bot. Mag. (Tokyo), XXXII. (1918), 63.

form. ***albiflora*** MIYABE ET TATEWAKI, form. nov.

Flores albi.

NOM. JAP. *Shirobana-yezo-oyamanoendô*.

HAB. Takanegahara, Mt. Daisetsu, Prov. Ishikari (Y. IMAI & S. YAMAGIWA, VII. 1931).

6. *Primula sorachiana* MIYABE ET TATEWAKI, sp. nov.

Folia glabra, venosa, membranacea, subtus albo-farinosa, 1-2 cm longa,

5-10 mm lata, elliptico-spathulata vel rhombeo-spathulata, rotundata vel obtusa, antice denticulata, basin versus in petiolum alatum, laminam aequantem vel longiorem attenuata. Scapus foliis superans, 3-4 cm altus, gracilis, superne parce albo-farinosus, umbellam 3-5-10-floram (rarius 12-17) gerens. Bractee lanceolato-subulatae, basi leviter saccatae. Pedicelli filiformes, sparse farinosi, juveniles erecto-patenti, demum elongati flexuosi subnutanti, 7-10 mm longi. Calyx sparse farinosus, 4-5 mm longus, campanulato-urceolatus, lobis lineari-lanceolatis subacutis, tubo calycem fere subduplo brevior. Corolla lilacino-rosea, tubo calycem fere duplo superanti, limbo 10-13 mm diametenti, lobis obcordato-cuneatis profunde emarginatis. Capsula calycem subaequans.

NOM. JAP. *Sorachi-kozakura*. (n. n.).

HAB. Kanayama, Prov. Ishikari. (M. TATEWAKI, V. 15, 1933).

Remarks. The present species is closely related to *Primula yuparensis* TAKEDA from which it is distinguished by the elongated petiole of the leaf, by the larger number of the flowers in an umbel, and by subnutant pedicels of the smaller flowers.

7. *Rhododendron parvifolium* ADAMS. in Mém. Soc. Nat. Mosc. IX. (1834), 237; LEDEB. Fl. Ross. II. (1844-46), 921; TRAUTV. et MEY. Fl. Ochot. (1856), 63; RGL. et TIL. Fl. Ajan. (1859), n. 195; MAXIM. Rhodod. As. Or. (1870), 17; KOMAR. Fl. Mansh. III. (1907), 204; C. K. SCHN. Ill. Handb. Laubholz. II. (1907), 476, fig. 317, a; MIYABE & MIYAKE, Fl. Saghal. (1915), 309, Pl. IX. fig. 3-7; KUDO, Contr. Fl. N. Saghal. (1923), 50, et Rep. Veg. N. Saghal. (1924), 196; REHD. Man. Cult. Tr. & Shr. (1927), 689; MAKINO & NEMOTO, Fl. Jap. ed. 2, (1931), 887.

Rhododendron parviflorum FR. Schm. Fl. Sachal. (1868), 158.

Rhododendron palustre TURCZ. ex DC. Prodr. VII. (1838), 724.

NOM. JAP. *Sakai-tsutsuji*.

HAB. Ochiishi, Prov. Nemuro (M. TATEWAKI, VI. 15, 1930).

Remarks. New to the flora of Hokkaido.

8. *Lagotis Takedana* MIYABE ET TATEWAKI, sp. nov.

Rhizoma obliquum elongatum hypogeos emittens, collo petiolorum basibus dilatato-vaginantibus infibras non solutis tecto. Caulis saepe solitarius, foliatus, 10-20 cm altus. Folia carnosa, laevia; radicalia ovato-lanceolata vel late elliptica vel ovata, basi parum attenuata, nec cordata, sparse serrata vel crenato-serrata, 5-7 cm longa, 3-6 cm lata, petiolis 3-6 cm longis. Spica cylindrica, 4-5 cm longa, 1-1.5 cm diametro. Calyx glabrescens, spathaceus, antice oblongo-ovato 5-8 mm longo, postice bilobus 5-6 mm longo. Corolla dilute lilacina, tubulosa,

bilabiata, tubo 6 mm longo, labio superiore oblongo-truncato laeviter undulato vel laeviter emarginato tubo duplo brevior, inferiore bifido laciniis lanceolatis ca 3 mm longis. Stamina 2, labio superiore duplo breviora. Filamenta breviora. Antherae coeruleo-purpureae. Stylus elongatus staminibus subaequans.

NOM. JAP. *Yubarisô*.

HAB. Mt. Yubari, Prov. Ishikari (H. TAKEDA & M. TATEWAKI, VIII. 3, 1920).

Remarks. The present species is closely related to *Lagotis glauca*, GAERTN. from which it differs in having the upper lip of the corolla half as long as the corolla-tube, the lanceolate lobes of the lower lip being as long as the upper lip, and the pale lilac colour of the corolla and the paler colour of the anther.

9. *Lagotis Stelleri* Rupr. Fl. Samoed. Cis. 49; HULT. Fl. Kamtschat. IV. (1930), 104, fig. 1, *b.*; KOMAR. Fl. Penins. Kamtschat. III. (1930), 72.

Gymnandra Stelleri CHAM. et SCHLECHT. in Linnaea II. (1827), 563; LEDEB. Fl. Ross. III. (1849), 332; GRAY, Syn. Fl. N. Am. II. -I. (1878), 332; MACOUN, Cat. Canad. Pl. I. (1883), 378.

Lagotis glauca GAERTN. subsp. *borealis* MAXIM. var. *Stelleri* TRAUTV. in Act. Hort. Petrop. V. 95; MAXIM. in Mém. Biol. XI. (1881), 297.

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

Lagotis yessoensis TATEWAKI, in sched.

Arcte affinis typo, sed stylis longioribus, staminibus fere labio superiore paulo brevioribus, antherisque majoribus, exqua differt.

Nom. Jap. *Hosoba-urupsô*. (Prof. Nakai).

Hab. Mt. Daisetsu, Prov. Ishikari (Y. IMAI & S. YAMAGIWA, VII. 18, 1931).

Explanation of Plate

Fig. 1. *Oxytropis Kudoana* MIYABE et TATEWAKI.

a. Standard. b. Wing. c. Keel. d. Stamens. e. Pistil.

f. Ripened pod. g. Calyx, outside view. h. Stipule. (a-g, $\times 3.3$; h, $\times 6.7$)

Fig. 2. *Oxytropis hidaka-montana* MIYABE et TATEWAKI.

a. Standard. b. Wing. c. Keel. d. Stamens. e. Pistil.

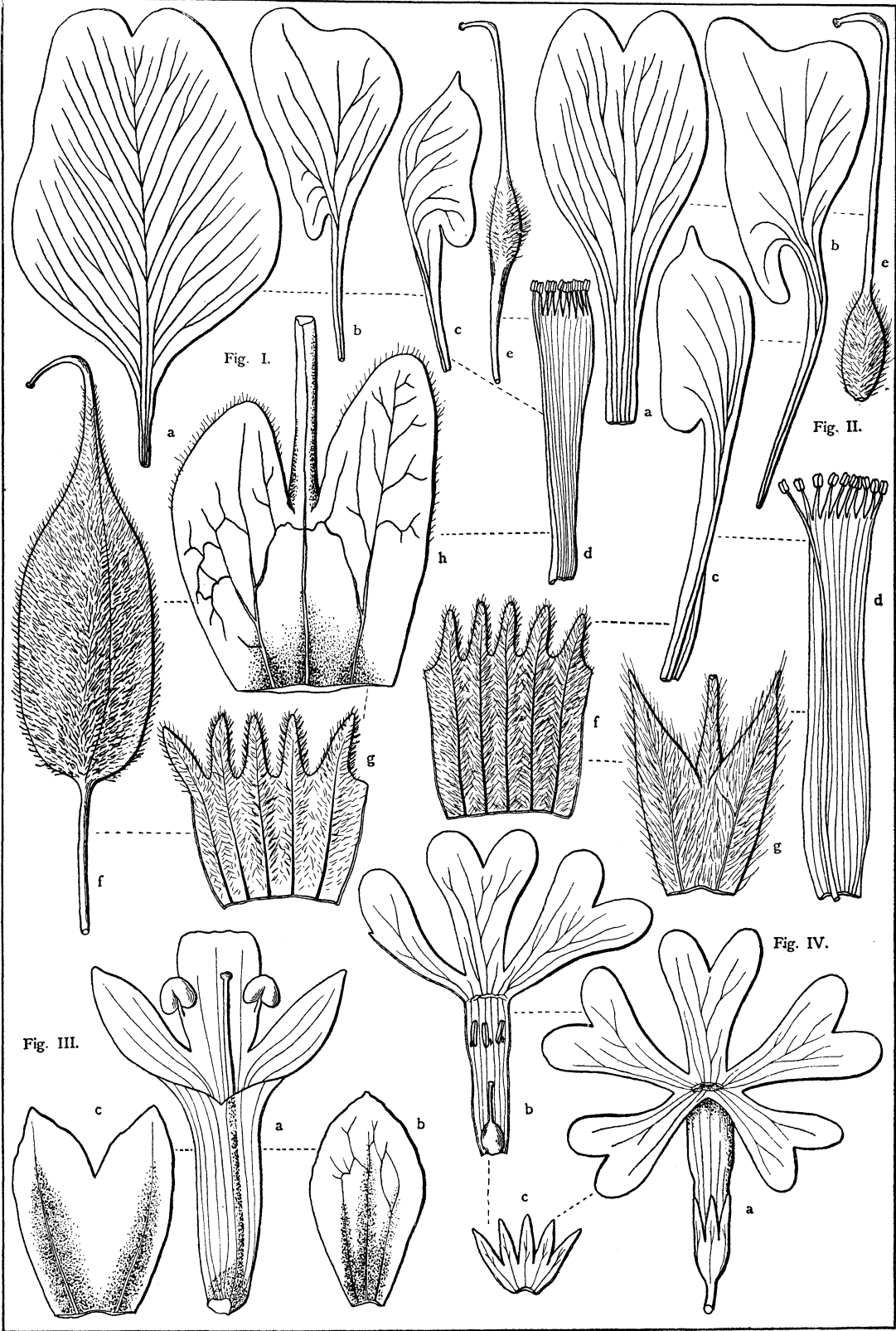
f. Calyx, laid open, showing the outside. g. Stipule. (a-g, $\times 4.7$)

Fig. 3. *Lagotis Takedana* MIYABE et TATEWAKI.

a. Flower. b. Anterior calyx-lobe. c. Posterior calyx-lobe. (a-c, $\times 6.7$)

Fig. 4. *Primula sorachiana* MIYABE et TATEWAKI.

a. Flower, entire view. b. *Ditto*, longitudinal section. c. Calyx, laid open, showing the outside. (a-c, $\times 3.3$)



摘 要

北 日 本 植 物 誌 料 一

宮 部 金 吾・館 脇 操

1 マルバチヤルメルサウ

本種は本邦に於て朝鮮に産するを知られたるのみなり。北海道に於ては、東部針葉樹林中に生ず。

2 キヨシサウ

本邦に於ては従来千島に産するを知られしのみなり。而して根室落石は本種分布の南限なるべし。

3 ヒダカゲンゲ (第一圖参照)

本種は北千島産 *Oxytropis revoluta* LEDEB. フカダゲンゲに似たる稀品にして、日高山脈中央部のみに分布す。フカダゲンゲとは、小葉片の數尠く、形は大、毛の鈔きこさ及花莖上部に黒毛を有することに依りて類別せらる。本種の種名は北海道植物研究に深き關係を有する故工藤博士を記念するものなり。

4 ヒダカミヤマノエンダウ (第二圖参照)

本種は黒住久彌君に依り日高山脈ヒバイロ岳に採集せられしものなり。千島産コダマサウに極めて近きも、小葉片の少きこさ、一花序内の花數少きこさ、旗瓣、苞、托葉の形によりて別つこさを得べし。

5 シロバナエゾオヤマノエンダウ

本變種はエゾオヤマノエンダウの白花なるものにして、大雪山高根ヶ原に産す。

6 ソラチコザクラ (第四圖参照)

本種はユウバリコザクラに最も類似せるも、全株更に小型にして、繖形花序内の花數多きこと、花形小なるこさ、やゝ下垂する花梗によりて別つこさを得。尙一見ユキワリサウ又はユキワリコザクラに似たるも、葉裏白粉を被ること、花瓣の形、蒴果と萼片と同長なることに依り別つこさを得べし。石狩國空知川流域に産する稀品なり。

7 サカイツツジ

本種は本邦に於て樺太に産するを知られしのみなるも、近時根室落石附近に産することを知れり。分布上キヨシサウと共に注目に値す。

8 ユウバリサウ (第三回参照)

本種はウルツブサウに最も近縁なるも、花冠上唇が花筒の半長なるこさ、花唇裂片披針形なるこさと、花冠と葯が淡色なることによりて直ちに類別するこさを得べし。夕張岳の特産なり。

9 ホソバウルツブサウ

本變種は *Lagotis Stelleri* TURCZ. に似たるも、花柱はるかに長く、花絲短く、葯の大なるこさにより別つこさを得。大雪山の特産なり。

CHANGE OF PATHOGENICITY SHOWN BY THE "BAKANAE" FUNGUS, *GIBBERELLA FUJIKUROI*

BY

SHOICHI SHIMADA

The "*Bakanae*" disease of rice plant is caused by a fungous parasite, *Gibberella Fujikuroi*, and characterized by the taller and more slender appearance in shoots than that of normal plants. During the writer's research on this disease, a change of pathogenicity was observed in one strain of the causal fungus, probably resulting from continued cultivation on artificial media, and the matter reported in this paper is related to this problem.

The fungus used was kindly furnished by Mr. J. KIMURA, who had isolated it from a diseased seedling collected at Kotoni near Sapporo in 1928. The fungus which originated from a single spore was cultured continuously on onion decoction agar. The inoculation experiments upon rice plants were started in March, 1929 and repeated several times with successful infection until September, 1931. Since December, 1931, however, the fungus has never caused either overgrowth symptom or slender appearance upon the inoculated plants. The filtrate of the fungus in question also caused no overgrowth of the aerial parts of rice seedlings. The experimental results obtained are shown in Table 1. The rice seeds used throughout the experiments were those of a pure line of the variety "*Bozu*". The experimental methods denoted 1, 2 and 3 respectively in the Table are as follows:

1. The inoculated seeds were planted in sand moistened with KNOP's solution in PETRI dishes.
2. The seedlings were placed in KNOP's solution to which was added the fungous filtrate.
3. In this case, the experiment was conducted in a similar manner as in Experiment No. 2, detailed in the writer's previous paper (2), using alcohol as the solvent.

TABLE I. Showing the effect of the "*Bakanae*" fungus upon the rice seedlings at different periods of time during its culture

	Date of experiments	Methods	Number of plants tested	Length of shoots (cm.)		
				Aver.	Max.	Min.
Control Inoculated	March, 15-April, 15, 1929	I	9	14.54	17.0	11.5
			8	24.53	27.5	22.0
Control Inoculated	April, 7-May, 1, 1929	I	18	18.47	22.0	12.0
			15	27.11	33.0	21.6
Control Filtrate	October, 6-13, 1929	2	4	9.15	10.7	7.7
			6	15.55	19.0	12.0
Control Filtrate	March, 20-26, 1930	2	11	12.4	14.2	9.5
			9	14.47	18.0	10.0
KNOP's sol. Extract	February, 13-19, 1931	3	9	14.09	16.0	11.5
			6	15.38	17.3	12.0
KNOP's sol. Extract	April, 4-11, 1931	3	9	12.73	15.4	11.0
			6	16.37	18.0	13.9
KNOP's sol. Filtrate	September, 1-8, 1931	2	6	13.16	14.8	10.8
			6	16.0	19.2	11.7
KNOP's sol. Filtrate	December, 13-18, 1931	2	6	23.12	26.5	21.3
			6	15.02	18.7	11.2
Control Extract	June, 4-14, 1932	3	6	11.07	11.5	10.0
			6	11.4	12.4	10.5
KNOP's sol. Extract	August, 26-Sept. 1, 1932	3	6	13.53	17.7	10.8
			6	14.07	20.4	11.5
Control Inoculated	Sept. 13-Oct. 10, 1932	I	9	20.0	26.2	14.5
			10	20.2	24.0	16.6

Looking over the results of the experiments, it will be found that the fungus was capable of causing the overgrowth of rice plant during a period until September, 1931, whatever the experimental method employed might be. Since December, 1931, however, the fungus ceased to cause any overgrowth symptom upon rice seedlings. Although in the latter case some of the inoculated seedlings were recorded to be a little taller than control plants, the slender appearance was by no means noticeable.

It is generally recognized that a pathogene, which cultured continuously for a long time on artificial media, more or less loses its pathogenicity. The "*Bakanae*" fungus is characterized by its special nature, the excretion of a growth promoting substance which eventually causes the overgrowth symptom. If the apparent change of pathogenicity of the fungus is due to a gradual weakening of its power of infection or declining of virulence by continued cultivation, the fungous filtrate may possibly contain a certain amount of the growth promoting substance sufficient to cause those symptoms. But such was not the actual case of the writer's experiments, neither the pathogene nor the filtrate under consideration having produced any overgrowth symptom upon rice seedlings. It occurs to the writer now to think it possible that the pathogene has lost its power of excreting the growth promoting substance during the three years of cultivation. If this should be true, it follows that the fungus in question has suffered a certain change in its metabolism with respect to its function of producing the growth promoting substance, on account of its prolonged cultivation on artificial media, which are remarkably different from its natural substrata.

Allowing the four-year or five-year old fungus in question to grow upon its host plant for a month showed no effect in the restoration of the declined virulence.

The above results appear to offer some hints as to the relation between the host and the metabolic products of its pathogene.

In conclusion, the writer wishes to express his sincere thanks to Prof. S. ITO for his kind direction and criticisms. He also expresses his heartiest thanks to Profs. Y. TOCHINAI and T. FUKUSHI for their kind advices.

Literature Cited

1. ITO, S. and SHIMADA, S.: On the nature of the growth promoting substance excreted by the "*Bakanae*" fungus. Ann. Phytopath. Soc. Japan, 2, pp. 322-338, 1931.
2. SHIMADA, S.: Further studies on the nature of the growth promoting substance excreted by the "*Bakanae*" fungus. Ann. Phytopath. Soc. Japan, 2, pp. 442-453, 1932.

摘 要

稻馬鹿苗病菌の病原性の變化に就て

島 田 昌 一

稻馬鹿苗病に關し研究中、此病原菌が長年月の培養の結果その病原性に變化を來し、稻苗に對し徒長現象を起さしむる能力を失ふに到る事實を認めたり。而して之と殆んど同時に、該菌の培養濾液中には生長促進物の存在を認め難きに到れり。之該菌が長年月間天然狀態と全く異なる榮養狀態に培養せられし結果、其の物質代謝、特に生長促進物の分泌能に變化を來せしものと考察せらる。

GLOEOSTEREEAE S. ITO ET IMAI, A NEW TRIBE OF THELEPHORACEAE

BY

SANSHI IMAI

(With three text-figures)

In our district, there is a peculiar gelatinous fungus, which resembles certain species of the Tremellineae in its general appearance.

The host-plants of the fungus are, as far as the present writer has observed, *Acer pictum* and *Ulmus japonica*, and the habitat is generally confined to rotting wood, but the fungus has never been found growing on the living tree or on much decayed wood.

The fungus grows solitary, gregarious or in imbricate. The fructification measures from 2.5 to 15 cm. in width, from 2.5 to 10 cm. in depth and up to 3 cm. in thickness at the base. At first the primordial body appears as an irregular globose-mass, and subsequently it expands into a subreniform or nearly fan-shape and sessile structure. The whole body is gelatinous and soft when fresh, but becomes cartilaginous and hard when dried. The upper surface of the fructification is sterile and silky villous, whitish, pale ochraceous-salmon¹⁾ or buff-pink in color, but turns to nearly Japanese-rose color when wet; the hairs are longer at the basal part and gradually shorter towards the marginal zone. The under surface is fertile, glabrous and uneven appearing somewhat tubercular or rugulose, pinkish-buff, fawn or salmon-color, and powdery when the spores are produced. The texture is also gelatinous and pinkish-buff, buff-pink or onion-skin-pink in color.

The hymenium is about $30\ \mu$ in thickness; the basidia are capitate or sub-ovate at the apices and long-stalked, about $5\ \mu$ in diameter, 4-spored and one-celled; the paraphyses filiform, 1.5 to $2.5\ \mu$ thick and equal or slightly enlarged at the apices up to $3\ \mu$ in diameter and with granular contents. The cystidia are found among the hymenium; they are cylindrical, cylindrical-clavate or sublinear, 50 to $140\ \mu$ long and 5 to $10\ \mu$ thick, hyaline and with granular contents. The spores are white in mass, hyaline, ellipsoidal, smooth and with granular contents, 6 to $8.5\ \mu$ long and about $3\ \mu$ wide.

1) The color-description follows after RIDGWAY's Color Standard and Nomenclature.

Owing to the characters above mentioned, the fungus under consideration is undoubtedly a member of Thelephoraceae although the gelatinous texture of the fructification is an unusual characteristic in this family. In 1928 KILLERMANN²⁾ classified Thelephoraceae into seven tribes and 23 genera, accompanied by seven doubtful genera.

According to his classification, the present fungus may be included in the tribe Stereaeae, but the members of this tribe are coriaceous in texture and never fleshy nor gelatinous. Thelephoreae is also coriaceous. He has further noted that some members of Craterelleae are gelatinous but they are easily distinguished from the present fungus in general features. Thus we treat here the present fungus as a new species belonging to a new genus of a new tribe of Thelephoraceae. Its diagnosis is given as follows:—

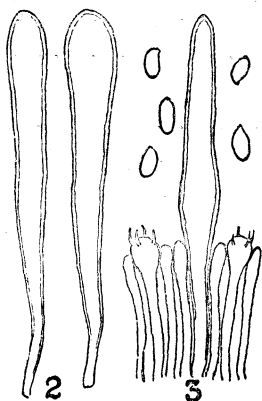


Fig. 1. Fructifications of *Gloeostereum incarnatum* S. ITO et IMAI, about half natural size.

Fig. 2. Cystidia, $\times$ about 700.

Fig. 3. Hymenium showing cystidium, basidia, paraphyses and spores, $\times$ about 700.

2) KILLERMANN, S.: Hymenomyceteae. In ENGLER u. PRANTL, Nat. Pflanzenfam. 2 Aufl. VI, 99-283 (135-151), 1928.

Gloeostereae S. ITO et IMAI, Trib. nov. Thelephoracearum.

Pileus gelatinosus, subreniformis vel subflabelliformis, applanatus, sessilis, supra sterilis, subtus fertilis; sporae albae, laevis.

Gloeostereum S. ITO et IMAI, gen. nov.

Pileus gelatinosus, primo orbicularis, demum subreniformis vel subflabelliformis, applanatus, sessilis; supra sterilis, villosus; subtus fertilis, glaber, subtuberculosus vel rugulosus; basidia capitata, unicellulata, 4-sporifera; sporae albae ellipsoideae, laevis; cystidia subcylindracea vel clavata, hyalina.

Typus: *Gloeostereum incarnatum* S. ITO et IMAI.

Gloeostereum incarnatum S. ITO et IMAI, spec. nov.

Pileo gelatinoso, 2.5-15 cm. lato, primo orbiculari, demum subreniformi vel subflabelliformi, applanato, sessili; supra sterili, villosus, albido vel incarnato; subtus fertili, glabro, subtuberculoso vel ruguloso, incarnato, pruinoso; basidiis capitatis, longe stipitatis, ca. 5μ crassis, unicellulatis, 4-sporiferis; sporis albis, hyalinis, ellipsoideis, $6-8.5 \times 3\mu$, laevibus; cystidiis cylindraceis, cylindraceo-clavatis vel sublinearibus, $50-140 \times 5-10\mu$, hyalinis; paraphysibus filiformibus, hyalinis, apice leniter incrassatis.

Hab. ad cortices trunosque emortuos *Aceris pictis* et *Ulmi japonici*. Hokkaido: Prov. Ishikari, Sapporo; Prov. Iburi, Chitose. Aug.-Nov.

Nom. Jap. *Nikawa-urokotaké* (n. n.)

摘 要

疣茸科の一新族ニカハウロコタケ族

今 井 三 子

石狩国札幌市、膽振国千歳村に於て、イタヤ及びニレの枯損木に、孤生或は重疊して生ずる膠質、片端の $2.5-15 \times 2.5-10$ cm. の茸で、其上面は白色乃至淡鮭肉色の毛刺にて被はれ、其下面は無毛にして微かに凹凸或は皺襞あり、鮭肉色を呈するものを調査せるに、疣茸科に屬する一新屬、一新種にして、本科の一新族を代表するものなることを確め得たり。由りて、之れに *Gloeostereum incarnatum* S. ITO et IMAI なる新屬、新種名を與へ、ニカハウロコタケと命名し、其族名を *Gloeostereae* S. ITO et IMAI となして此處に報告せり。

MEERESALGEN AUS KAMTSCHATKA

VON

MASAJI NAGAI

In dieser kleinen Beschreibung will ich über sechzehn Arten von Meeresalgen aus Kamtschatka berichten, welche von Juli bis August 1930 bei Petropawlowsk (Ostküste) und Osernaja (Westküste, unweit Kap Lopatka, des südlichsten Punktes von Kamtschatka) von Herrn B. UMENO von dem Schulschiff der kaiserlichen Universität von Hokkaido gesammelt wurden. Unter diesen Arten sind *Ulva Linza*, *Scytosiphon Lomentarius* f. *cylindricus major*, *Fucus evanescens* f. *dendroides* und *Porphyra umbilicalis* f. *laciniata* ganz neu unter die Flora Kamtschatkas eingereiht worden.

Ich möchte hier den Herren Prof. Dr. K. MIYABE und S. ITO für ihre Anregung und stetige Leitung in dieser Arbeit, sowie Herrn Prof. Dr. Y. YAMADA, der mir die Benutzung seiner wertvollen Bücherei und Sammlungen gestattete, meinen innigsten Dank aussprechen. Ebenso bin ich Herrn B. UMENO, der mir die Grundlage für nachstehende Arbeit geliefert hat, zu grossem Dank verpflichtet.

CHLOROPHYCEAE

Ulvaceae

1. *Monostroma fuscum* (P. et R.) WITTR.

Monostr., 1866, p. 53, Tab. 4, fig. 13—KJELLMAN, Alg. Arct. Sea, 1883, p. 299—HAUCK, Meeresalg., 1885, p. 425—DE TONI, Syll. Alg. I, 1889, p. 109—ROSENVINGE, Grönl. Havalg., 1893, p. 940 (excl. synonym.)—SETCHELL et GARDNER, Mar. Alg. Pacific Coast N. Amer. II, 1920, p. 242—Collins, Green Alg. N. Amer. (Phot. repr.), 1928, p. 133.

Ulva fusca POST. et Rupr., Ill. Alg., 1840, p. 21—KÜTZING, Spec. Alg., 1849, p. 475.

Hab. Petropawlowsk.

Verbr. Alaska bis Puget Sund, Grönland, Nördliches Eismeer, Kurilen, Yezo.

Thallus 30–36 μ dick, in getrocknetem Zustande dunkelbraun gefärbt, klebt nicht an Papier; Zellen im Querschnitt vertikal verlängert, 21–27 μ lang, 7.5–12 μ breit.

2. *Enteromorpha compressa* (L.) GREV.

Alg. Brit., 1830, p. 180, pl. 18—HAUCK, Meeresalg., 1885, p. 428—DE TONI, Syll. Alg. I, 1889, p. 126—OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 227—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. II, 1920, p. 251—COLLINS, Green Alg. N. Amer. (Phot. repr.), 1928, p. 121—WORONICHIN¹, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 116—ARWIDSSON², Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 152.

Ulva compressa L., Flora suecica (Ed. 2), 1755, p. 433.

Enteromorpha fascia POST. et RUPR., Ill. Alg., 1840, p. 21—SETCH. et GARDN., Alg. N. W. Amer., 1903, p. 211—COLLINS, Green Alg. N. Amer. (Phot. repr.), p. 124.

Hab. Petropawlowsk.

Verbr. Europa, Nordamerika, Tasmanien, Japan.

3. *Ulva Linza* L.

Sp. Plant. II, 1753, p. 1163—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. II, 1920, p. 262.

Enteromorpha Linza J. AG., Till Alg. Syst. III, 1883, p. 134, Tab. 4, fig. 110–112—OKAMURA, Icon. Jap. Alg. III, 1915, p. 163, pl. 138; Enum. Jap. Alg. (2nd ed.), 1916, p. 226—COLLINS, Green Alg. N. Amer. (Phot. repr.), 1928, p. 126.

Hab. Petropawlowsk.

Verbr. Färöer-Inseln, Island, Nordsee, Baltisches Meer, Mittelländisches Meer, Zentral- und Südamerika, Tasmanien, Kurilen, Yezo, Japan.

4. *Ulva rigida* AG.

Sp. I, 2, 1822, p. 410—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. II, 1920, p. 269.

Ulva Lactuca L. var. *rigida* LE JOLIS, Alg. Mar. Cherb., 1863, p. 38—SAUNDERS, Alg. Harriman Exped., 1901, p. 410 (p. p.)—COLLINS, Green Alg. N. Amer. (Phot. repr.), 1928, p. 135—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 113.

Hab. Osernaja.

Verbr. Nördliches Eismeer, Alaska bis zur Vancouver Insel, Kurilen.

Thallus 15 × 15 cm. gross, 54 μ dick, hier und da durchlöchert, dunkelgrün gefärbt; Zellen in der Flächenansicht unregelmässig vieleckig, im Querschnitte vertikal länglich, 18–21 μ hoch, 6–9 μ breit.

PHAEOPHYCEAE

Ectocarpaceae

1). Ich verlasse mich auf die Beschreibungen in „Plantes Cryptogames de Kamtschatka“, in den zweiten botanischen Nachrichten von TH. P. RIABUSCHINSKIS Expedition in Kamtschatka, welche von der Forschungsabteilung der Südmanchurischen Eisenbahngesellschaft ins Japanische übersetzt worden ist.

2). Rev. Alg. VI, 1932, pp. 147–158.

5. *Pylaiella littoralis* (L.) KJELLM.

Skand. Ect. och. Tilopt., 1872, p. 99; Alg. Arct. Sea, 1883, p. 281—SAUNDERS, Alg. Harriman Exped., 1901, p. 418—OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 145—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 402, pl. 37, fig. 32—WORONICHIN, Meeresalg. Kamtschatka. (Ins Jap. übersetzt), 1928, p. 121.

Hab. Petropawlowsk.

Verbr. Skandinavien, Beringmeer bis nach Californien, Kurilen, Yezo.

Nur ein fragmentarisches Exemplar, auf *Chordaria flagelliformis* AG.

Scytosiphonaceae

6. *Scytosiphon Lomentarius* (LYNGB.) J. AG.

Sp. Alg. I, 1848, p. 126—SAUNDERS, Alg. Harriman Exped., 1901, p. 421—OKAMURA, Icon. Jap. Alg. I, 1908, p. 144, pl. 30; Enum. Jap. Alg. (2nd ed.), 1916, p. 152—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 531, pl. 44, fig. 72, 74—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 123—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 152.

Chorda Lomentaria LYNGBYE, Hydrophyt. Dan., 1819, p. 74, Tab. 18.

f. *cylindricus major* SETCH. et GARDN.

Mar. Alg. Pacific Coast N. Amer., p. 533.

Hab. Petropawlowsk.

Verbr. Zentral-Californien.

Thallus 7–16 cm. hoch, in dem breitesten Teile 1.5–2.5 mm. im Durchmesser, stielrund, hier und da nicht eingeschnürt, an beiden Enden verjüngt. In diesen Eigenschaften stimmt mein Exemplar sehr gut mit dieser Form bei SETCHELL und GARDNER überein.

Chordariaceae

7. *Chordaria flagelliformis* (MÜLL.) AG.

Syn. Alg. Scand., 1817, p. 12, p. xii—OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 160—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 572—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 127—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, pp. 149, 153.

f. *typica* KJELLM.

Spets. Thall. II, 1877, p. 28—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer., p. 573, pl. 39, fig. 44.

Hab. Petropawlowsk.

Verbr. Skandinavien, Alaska, Kurilen.

Die Alge ist 32 cm. lang, mit verschiedenen langen (bis 15 cm.) Aesten versehen.

Laminariaceae

8. *Arthrothamnus bifidus* (GMEL.) J. AG.

De Lam., 1867, p. 28—MIYABE, Lam. Hokkaido, 1902, p. 47, pl. 18—OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 178—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 620—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 138—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 148.

Hab. Osernaja.

Verbr. Aläuten, Kurilen, Yezo.

9. *Alaria ochotensis* YENDO

Monogr. Alaria, 1919, p. 84, pl. 3, 19, fig. 1-3—OKAMURA, Alg. fr. Kamtschatka, 1928, p. 52—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 153.

Hab. Petropawlowsk.

Verbr. Kurilen, Sachalin.

Das vorliegende Exemplar hat linear-längliche Sporophyllen und ein kurzen, etwas flachen Stiel, an welchen im unteren Teile die ziemlich dicht fortgesetzten basalen Teilchen der abgetragenen Sporophyllen übrigbleiben.

10. *Alaria tenuifolia* SETCH.

in SETCH. et GARDN. Alg. N. W. Amer., 1903, p. 272; Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 638.

f. *typica* SETCH.

in SETCH. et GARDN. Alg. N. W. Amer., p. 273, pl. 22; Mar. Alg., p. 638—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 128.

Hab. Osernaja.

Verbr. Aläuten.

Stiel etwa 1.5 cm. lang, unten stielrund, oben etwas flach; Sporophyll breit-eiförmig oder eirund, kurz gestielt, 6-13 cm. lang, 2.5-3.5 cm. breit; Sori sind auf beiden Seiten einer Hälfte bis eines Drittels des unteren Teiles des Sporophylls entwickelt.

11. *Alaria proelonga* KJELLM. ?

Beringhafv. Algfl., 1889, p. 38, Tab. 4, fig. 1-4—DE TONI, Syll. Alg. III, 1895, p. 330—YENDO, Monogr. Alaria, 1919, p. 86, pl. 4, fig. 1-5—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. über-

setzt). 1928, p. 130—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 150.

Hab. Petropawlowsk.

Verbr. Bering-Insel, Yezo.

Nur ein unvollständiges Exemplar. Thallus 60 cm. hoch, 4 cm. breit, in seinem basalen Teile scharf, in getrocknetem Zustande nicht sehr runzelig; Stiel etwa 10 cm. lang; Sporophyll einiger, klein und dünn. Nach obigen Eigenschaften, scheint es mir, gleicht mein Exemplar einem jungen der eingangs erwähnten Art.

Fucaceae

12. *Fucus evanescens* AG.

Sp. Alg. I, 1820, p. 92—KJELLM., Beringhafv. Algfl., 1889, p. 34—DE TONI, Syll. Alg. III, 1895, p. 201—YENDO, Fuc. Jap., 1907, p. 14, pl. I, fig. 1-2—GARDN., Genus Fucus, 1922, p. 36, pl. 1, fig. 2—SETCH. et GARDN., Mar. Alg. Pacific Coast N. Amer. III, 1925, p. 681—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 139—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, pp. 149, 153.

f. *rudis* KJELLM.

Beringhafv. Algfl., p. 34—DE TONI, Syll. Alg. III, p. 202—GARDN., Genus Fucus, p. 53, pl. 57—SETCH. et GARDN., Mar. Alg., p. 692—WORONICHIN, Meeresalg. Kamtsch., p. 143.

Fucus vesiculosus P. et R., Ill. Alg., 1840, p. 12, Tab. 25.

Hab. Petropawlowsk.

Verbr. Bering-Insel, Alaska, Kurilen.

Thallus 10-15 cm. hoch, steif und lederartig, oben blattartig, dichotomisch oder teilweise einseitig sich verzweigend, in getrocknetem Zustande schwarz gefärbt; Segment breit, lang, linear oder etwas keilförmig, an der Spitze abgestutzt, 1-2 meist 1-1.5 cm. breit; Mittelrippe deutlich, an der Spitze vergehend; Kryptostomata zerstreut auf den Oberteilen der Segmente; Rezeptakeln verhältnismässig gross, nicht deutlich abgegrenzt, fleischig verdickt, zwei- oder selten dreizackig, scharf gespitzt, 2-4 cm. lang, 1-1.5 cm. breit; Konzeptakeln dicht gedrängt. Mein Exemplar ist grösstenteils steril, es stimmt aber, wie mir scheint, sowohl mit der Urbeschreibung als den Photographien des Typusexemplares, die von GARDNER in seiner Arbeit gegeben werden, sehr gut überein.

f. *dendroides* STROEMFELT

Alg. -veg. vid. Islands Kuster, 1886, pp. 35, 36, pl. 3—DE TONI, Syll. Alg. III, p. 203—GARDN., Genus Fucus, p. 41, pl. 41—SETCH. et GARDN., Mar. Alg., p. 691.

Hab. Petropawlowsk.

Verbr. Island, Alaska.

Thallus 18–23 cm. hoch, steif und lederartig, dicht, regelmässig und wiederholt dichotomisch, oder teilweise einseitig sich verzweigend, in getrocknetem Zustande schwarz gefärbt; Segment eng, 4–7 mm. breit, linear oder etwas keilförmig, an der Spitze abgestutzt; Mittelrippe hervortretend, bisweilen an der Spitze vergehend; Kryptostomata zerstreut auf den Oberteilen der Segmente, mitunter ganz fehlend; Rezeptakeln zahlreich, langellipsoidisch bis eiförmig, 1–1.5 cm. lang, 5–12 mm. breit, einzeln oder gabelig, deutlich abgegrenzt, fleischig verdickt; Konzeptakeln dicht gedrängt. Wenn ich gleich keine authentischen Exemplare sehen kann, so identifizierte ich mein Exemplar mit dieser Form nach der Beschreibung STROEMFELTS und der Figur GARDNERS in der Arbeit des Letzteren.

RHODOPHYCEAE

Bangiaceae

13. *Porphyra umbilicalis* (L.) J. AG.

Till Alg. Syst. VI, 1883, p. 66, Tab. 2, fig. 61—ROSENVINGE, Mar. Alg. Denmark I, 1909, p. 60, pl. 1, 2, fig. 1–3—UEDA,¹ Stud. Jap. Porphyra, 1932, p. 32, pl. 1, fig. 10, 11, 15, pl. 7, fig. 6–16, pl. 8, fig. 1, pl. 20, fig. 1–3.

f. *laciniata* (LIGHTIF.) THUR.

in LE JOLIS Liste, 1863, p. 99—ROSENVINGE, Mar. Alg., p. 61—UEDA, Stud. Jap. Porphyra, p. 33.

Hab. Petropawlowsk.

Verbr. Frankreich, Dänemark, Skandinavien, Sachalin, Yezo, Kurilen.

Mein Exemplar ist dioecisch und nur ein männlicher Thallus. Thallus zarthäutig, breitblättrig, von unregelmässigem Umriss, hellpurpurrot gefärbt, einschichtig, 5–11 × 4–5.5 cm. gross, 27–30 μ dick, an der Basis herzförmig; Vegetativzellen im Querschnitt 11.5–12 μ hoch, in der Flächenansicht 12–15 μ im Durchmesser; Antheridien am Thallusrande des oberen Teile in gelblich-weissen abgegrenzten, kleinen länglichen Flecken gebildet; 16 Spermatozoiden, welche vielleicht als ungereift anzusehen sind, sind in einem Antheridium gefunden worden.

Rhodymeniaceae

14. *Halosaccion saccatum* KÜTZ.

Tab. Phyc. XVI, 1866, Tab. 78, fig. a-b—YENDO, Notes on Alg. new to Jap., 1909, p. 129—

1.) Journ. Imp. Fish. Institut. XXVIII, 1932, pp. 1–45.

OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 53—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 153—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 149.

Fucus saccatus TURN., Hist. Fuc. IV, 1819, p. 104, Tab. 241.

Halosaccion Hydrophora (P. et R.) J. AG., Spec. Alg. II, 1852, p. 358—DE TONI, Syll. Alg. IV, 1900, p. 604.

H. fucicola (P. et R.) RUPR., Tange Ochotsk. Meer., 1851, p. 293—KJELLM., Beringhafv. Algfl., 1889, p. 29—DE TONI, Syll. Alg. IV, p. 604—SAUNDERS, Alg. Harriman Exped., 1901, p. 436.

H. decapitatum (P. et R.) KÜTZ., Tab. Phyc. XVI, 1866, p. 28, Tab. 79, fig. a-h.

H. glandiforme RUPR., Tange, p. 279, Tab. 16—SETCH. et GARDN., Alg. N. W. Amer., 1903, p. 317. (p. p.)

Hab. Osernaja.

Verbr. Alaska bis Nordkalifornien, Bering-Insel, Kurilen, Sachalin, Yezo.

15. *Halosaccion microsporum* RUPR.

Tange Ochotsk. Meer., 1851, p. 277, Tab. 15—DE TONI, Syll. Alg. IV, 1900, p. 606—SAUNDERS, Alg. Harriman Exped., 1901, p. 436—WORONICHIN, Meeresalg. Kamtschatkas (Ins Jap. übersetzt), 1928, p. 156.

Hab. Osernaja.

Verbr. Alaska.

Meine Exemplare stimmen mit RUPRECHTS Beschreibung und Figur sehr gut überein. Thallus einfach oder wenig verzweigt, etwa 9.5 cm. hoch, 3.5–14 mm. breit, mit mehreren Tetrasporen versehen.

Rhodomelaceae

16. *Pterosiphonia bipinnata* (P. et R.) FALKENBERG

Rhodomel., 1901, p. 273—DE TONI, Syll. Alg. IV, 1903, p. 997; VI, 1924, p. 408—SETCH. et GARDN., Alg. N. W. Amer., 1903, p. 328—OKAMURA, Enum. Jap. Alg. (2nd ed.), 1916, p. 78; Icon. Jap. Alg. IV, 1921, p. 134, pl. 185, fig. 1–7—TOKIDA, Mar. Alg. Robben Isl., 1932, p. 30—ARWIDSSON, Higher Mar. Alg. hitherto known fr. Kamtschatka, 1932, p. 150.

Polysiphonia bipinnata POST. et RUPR., Ill. Alg., 1840, p. 22—KJELLM., Beringhafv. Algfl., 1889, p. 25.

Polyostea gemmifera RUPR., Tange Ochotsk. Meer., 1851, p. 226, Tab. 11.

Hab. Petropawlowsk.

Verbr. Alaska bis Washington, Alëuten, Bering-Insel, Kurilen, Sachalin, Yezo.

Meine Exemplare stimmen mit den Beschreibungen und Figuren von RUPRECHT (*Polyostea gemmifera*) und OKAMURA sehr gut überein. Rasen 7–12 cm. hoch, allseitig fiederartig verzweigt; Glieder mit einer zentralen und 15 perizentralen Zellen versehen.

Aus dem Botanischen Institut
der Landwirtschaftlichen Fakultät der Kaiserlichen
Universität von Hokkaido zu Sapporo, Japan.

摘 要

勘 察 加 産 の 海 藻 に 就 て

永 井 政 次

昭和五年夏、本學附屬水産専門部の練習船忍路丸が勘察加方面に遠洋航海を行ひたる際、事務長梅野萬里氏の好意に依り、東岸ペトロバウロフスク及西岸オゼルナヤに於て若干の海藻を採集し、余に示されたり、勘察加の東西兩岸にては海藻の種類に多少の差異あるも、共に隣接地たる我千島列島産の種類に類似する處多く、且つ又一部は北海道、樺太産のものとも一致するものありたり。

其の査定せるものは次の 16 種 (緑藻 4 種、褐藻 8 種 5 變種、紅藻 4 種 1 變種) にして勘察加新産のものは 1 種、3 變種あり、之れに * 印を附して示せり。

緑 藻 類

1. *Monostroma fuscum* (P. et R.) WITTR.
2. *Enteromorpha compressa* (L.) GREV. (ひらあをのり)
3. **Ulva Linza* L. (うすばあをのり)
4. *Ulva rigida* AG.

褐 藻 類

5. *Pyraliella littoralis* (L.) KJELLM. (びらいら)
6. *Scytosiphon lomentarius* (LYNGB.) J. AG. (かやものり)
* f. *cylindricus major* SETCH. et GARDN.
7. *Chordaria flagelliformis* (MÜLL.) AG. (ながまつも)
f. *typica* KJELLM.
8. *Arthrothamnus bifidus* (GMEL.) J. AG. (れこあしこんぶ)
9. *Alaria ochotensis* YENDO
10. *Alaria tenuifolia* SETCH.
f. *typica* SETCH.
11. *Alaria proelonga* KJELLM. ?
12. *Fucus evanescens* AG. (ひげつのまた)
f. *rudis* KJELLM.
* f. *dendroides* STROEMF.

紅 藻 類

13. *Porphyra umbilicalis* (L.) J. AG. (ちしまくろのり)
* f. *laciniata* (LIGHTIF.) THUR.
14. *Halosaccion saccatum* KÜTZ. (べにふくろのり)
15. *Halosaccion microsporum* RUPR.
16. *Pterosiphonia bipinnata* (P. et R.) FALKENBERG (いさやなぎ)

STUDIES ON THE AQUATIC CHYTRIDS OF JAPAN

I. Woroninaceae

BY

YOSIO TOKUNAGA

(With one Plate)

The aquatic chytrids hitherto reported from Japan are three species of *Pseudolpidium* in Woroninaceae. They are *P. fusiforme* (CORNU) A. FISCHER, *P. stellatum* SAWADA and *P. Saprolegniae* (A. BRAUN) A. FISCHER all of which have been described by K. SAWADA¹⁾ from Formosa. He has also recorded an undetermined fungus parasitic in the hyphae of *Achlya proliferata* SAWADA (not NEES, identical with *A. flagellata* COKER), which was placed by him in Olpidiaceae as well as the three species above mentioned. After inspecting his description, however, the writer was led to the belief that this fungus in all probability belongs to Woroninaceae.

In the course of the studies on rot-disease of rice-seedlings, the writer observed many Chytridiaceous parasites in the hyphae of causal organisms of the disease. His interest in such groups of fungi urged him on an eager collection of higher water molds, algae, lower animals etc. which might have been affected by certain Chytridiaceous fungi. The materials obtained by him personally or sent from various districts were cultured in the laboratory and examined from time to time for the development of Chytridiaceous fungi. The present paper was prepared to record ten species belonging to four genera in Woroninaceae collected in Japan. The descriptions and illustrations of these fungi were made by the writer based upon his own observations with the one exception of *Pseudolpidium stellatum* SAWADA which was noted here as an addition.

The writer wishes to express here his sincere thanks to Prof. Emer. K. MIYABE for his valuable suggestions and to Profs. S. ITO and Y. TOCHINAI for their kind directions. He is also indebted to Mr. M. NAGAI for his kind help in the identifications of the host plants.

***Pseudolpidium* A. FISCHER**

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 33.

¹⁾ Studies on the rot-disease of rice-seedlings. (Spec. Bull. Agr. Exp. Sta. Formosa, III, 1912. *In Japanese*).

[Transact. Sapporo Nat. Hist. Soc., Vol. XIII, Pt. 1, 1933]

Syn. *Olpidiopsis* CORNU pro parte, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 114. *Olpidiopsis* (CORNU) SCHRÖTER, in ENGLER-PRANTL, Natürl. Pfl. Fam. I, 1, 1897, p. 69.

1. *Pseudolpidium fusiforme* (CORNU) A. FISCHER

(Pl. II, figs. 1 & 2)

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 35; SCHRÖTER, in ENGLER-PRANTL, Natürl. Pfl. Fam. I, 1, 1897, p. 69; SAWADA, in Spec. Bull. Agr. Exp. Sta. Formosa, III, 1912, p. 69, pl. VIII, figs. 15-16, pl. IX, figs. 1-9.

Syn. *Olpidiopsis fusiformis* CORNU, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 147 pro parte, pl. IV, figs. 1-3; A. FISCHER, in Jahrb. Wiss. Bot. XIII, 1882, p. 320 & 363, pl. XIII, fig. 1.

Zoosporangia solitary or gregarious in fusiformly swollen hyphae of the host, fusiform to cylindrical in shape, or rarely crooked, variable in size, 98-350 μ long, 30-78 μ wide, with colorless, smooth membrane and a short exit tube; zoospores egg-shaped, about $4 \times 2 \mu$, with two cilia; resting spores similar to zoosporangia in shape and size, but with densely echinulate membrane.

Hab. In hyphae of *Achlya flagellata* COKER.

Hokkaido: Prov. Ishikari; Kotoni (May 21, 1931; May 25, 1932. Y. TOKUNAGA); Shinoro (June 9, 1931. H. OTANI); Sapporo (June 7, 1932. Y. TOKUNAGA).

Honshu: Prov. Mutsu; Kuroishi (May, 1931. J. KIMURA). Prov. Rikuzen; Iwanuma (May, 1931). Prov. Iwashiro; Koriyama (May, 1931).

In hyphae of *Achlya flagellata* COKER var. *yezoensis* ITO et NAGAI.

Hokkaido: Prov. Ishikari; Shin-kotoni (May 28, 1931. Y. TOKUNAGA); Kotoni (May 25, 1932. Y. TOKUNAGA). Prov. Shiribeshi; Setana (May, 1931).

In hyphae of *Achlya racemosa* HILDEBR.

Hokkaido: Prov. Ishikari; Sapporo (May 27, 1931. Y. TOKUNAGA); Kotoni (May 25, 1932. Y. TOKUNAGA). Prov. Shiribeshi; Setana (May, 1931).

Distrib. Europe, Central Asia and Japan.

This was found very commonly in the hyphae of *Achlya* causing the rot-disease of rice-seedlings. In many cases, it was accompanied by *Olpidiopsis minor* A. FISCHER as many authors have reported already. This species is very remarkable among the fungi parasitic on water molds for its extremely large zoosporangium and resting spore. K. SAWADA has recorded this fungus from Formosa as parasitic in *Achlya prolifera* SAWADA (*A. flagellata* COKER). In his fungus, the zoosporangia are $45-305 \times 18-51 \mu$, having one to three exit tubes which are very long, up to 64μ and 8μ wide. The resting spores are $27-310 \times 19-78 \mu$ and germinate through one to nine exit tubes.

2. *Pseudolpidium Pythii* BUTLER

(Pl. II, figs. 3 & 4)

in Mem. Dept. Agr. India, I, 5, 1907, p. 127, pl. VII, figs. 9-16.

Zoosporangia solitary or gregarious in swollen diverticula of host hyphae, ovoidal or ellipsoidal, up to $32\ \mu$ in the longer diameter, with a single exit tube; zoospores elongated, having a cilium in front and another on the lateral side; resting spores solitary or gregarious, and also in company with zoosporangia, spherical or ellipsoidal, $19.2-30\ \mu$ in diameter, brownish, with fine, short spines.

Hab. In hyphae of *Pythium Oryzae* ITO et TOKUNAGA.

Hokkaido: Prov. Ishikari; Koton (May 20, 1932. Y. TOKUNAGA).

Distrib. Europe and Japan.

The fungus was found in the host hyphae growing on the rotted seedlings of rice-plant. This species is easily distinguished from the related species by its habitat, living in the vegetative hyphae of *Pythium*.

3. *Pseudolpidium Saprolegniae* (A. BRAUN) A. FISCHER

(Pl. II, fig. 5)

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 35; SAWADA, in Spec. Bull. Agr. Exp. Sta. Formosa, III, 1912, p. 72, pl. X, figs. 11-14.

Syn. *Chytridium Saprolegniae* A. BRAUN, in Abhandl. Berl. Akad. Wissensch. 1855, p. 61 pro parte, pl. V, fig. 23. *Olpidium Saprolegniae* A. BRAUN, ibidem p. 75. *Olpidiopsis Saprolegniae* CORNU, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 145 pro parte, pl. III, fig. 8; A. FISCHER, in Jahrb. Wiss. Bot. XIII, 1882, p. 363, pl. XIII, figs. 2-5; SCHRÖTER, in Krypt. Fl. Schlesien, III, 1, 1889, p. 183.

Zoosporangia gregarious in the host hyphae, ellipsoidal, with smooth membrane and long exit tubes, irregular in size, $34-120\ \mu$ in longer diameter; zoospores ovoidal, $4 \times 2\ \mu$, apically and laterally ciliated; resting spores spherical or ellipsoidal, with fine scattered spines, $64-87\ \mu$ in diameter.

Hab. In hyphae of *Saprolegnia Thureti* DE BARY.

Hokkaido: Prov. Ishikari; Sapporo (July 12, 1931. Y. TOKUNAGA); Maruyama near Sapporo (June 9, 1932. Y. TOKUNAGA).

Distrib. Europe, Central Asia and Japan.

K. SAWADA recorded this fungus parasitic in *Saprolegnia* sp. from Formosa. In his fungus, the zoosporangia are formed to the number of one to eight in a dilation of hypha and are elliptical to long elliptical, $40-103 \times 20-42\ \mu$ in size. The resting spores are not observed.

4. *Pseudolpidium steldlatum* SAWADA

in Spec. Bull. Agr. Exp. Sta. Formosa, III, 1912, p. 70, pl. VIII, figs. 11-16. (*In Japanese*).

Description condensed and translated from the original:

Zoosporangiis zoosporisque ignotis; sporis perdurantibus sphaericis, interdum ovoideo-globosis, hyalinis vel luteis, 24–100 μ diam., aculeis conicis, acribus, 9–24 μ longis ornatis.

Hab. In hyphae of *Achlya prolifer* SAWADA (*A. flagellata* COKER).

Distrib. Japan.

K. SAWADA found this fungus in the hyphae of *Achlya* causing the rot-disease of rice-seedlings in Formosa. According to his description, this fungus was found independently or in company with *Pseudolpidium fusiforme*. The resting spores resembled those of *Olpidiopsis minor* A. FISCHER, but the companion cells were never found in spite of careful and repeated observations. Accordingly he decided that this fungus was a new species of *Pseudolpidium*.

Olpidiopsis (CORNU) A. FISCHER

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 37; CORNU pro parte, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 114.

Syn. *Diplophysa* SCHRÖTER, in Krypt. Fl. Schlesien, III, 1, 1889, p. 195 & in ENGLER-PRANTL, Natürl. Pfl. Fam. I, 1, 1897, p. 85.

5. *Olpidiopsis minor* A. FISCHER

(Pl. II, figs. 6–8)

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 39; BUTLER, in Mem. Dept. Agr. India, I, 5, 1907, p. 134, pl. IX, figs. 8–11.

Syn. *Olpidiopsis fusiformis* CORNU, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 147 pro parte, pl. IV, figs. 3 a & 4.

Zoosporangia gregarious in large dilations of the host hyphae, spherical or ellipsoidal, sometimes elongated, 45–97 μ long, 25–50 μ wide, with one or two exit tubes which are 4.8–6.0 μ in width; zoospores ellipsoidal or elongated, with two cilia, one of them fixed laterally, the other in front; resting spores usually living with sporangia, spherical, yellowish-brown, with large, colorless, triangular spines, 32–52 μ in diameter without spines; companion cells usually single, sometimes double, spherical or ellipsoidal, 16–24 μ in diameter, with colorless, smooth, thin membrane.

Hab. In hyphae of *Achlya flagellata* COKER.

Hokkaido: Prov. Ishikari; Koton (May 21, 1931; May 25, 1932. Y. TOKUNAGA); Shinoro (June 9, 1931. H. OTANI); Bannosawa near Sapporo (June 5, 1932. Y. TOKUNAGA).

Honshu: Prov. Mutsu; Kuroishi (May, 1931. J. KIMURA). Prov. Rikuzen; Iwanuma (May, 1931).

In hyphae of *Achlya flagellata* COKER var. *jezoensis* ITO et NAGAI.

Hokkaido: Prov. Ishikari; Shin-kotoni (May 31, 1931. Y. TOKUNAGA).

In hyphae of *Achlya racemosa* HILDEBR.

Hokkaido: Prov. Ishikari; Sapporo (June 4, 1931. Y. TOKUNAGA). Prov. Shiribeshi; Setana (May, 1931).

Distrib. Europe, India and Japan.

The fungus was observed so commonly as *Pseudolpidium fusiforme* in the hyphae of *Achlya* causing the rot-disease of rice-seedlings. It is usually found in a swelling of host hyphae in company with *Pseudolpidium fusiforme*.

6. *Olpidiopsis Saprolegniae* CORNU

(Pl. II, fig. 9)

in Ann. Sci. Nat. 5 sér. XV, 1872, p. 145, pl. III, fig. 10 pro parte; BARRETT, in Ann. Bot. XXVI, 1912, p. 232, pl. XXIII, figs. 2-4, 8-9 & 21A.

Syn. *Chytridium Saprolegniae* A. BRAUN, in Abhandl. Berl. Akad. Wissensch. 1855, p. 61 pro parte.

Zoosporangia single or gregarious in the dilation usually near the end of hyphae, spherical or ellipsoidal, variable in size, with smooth membrane and one or two exit tubes; zoospores ellipsoidal, with two cilia; resting spores spherical, dark brown, with spiny membrane, 62-76 μ in diameter; companion cells usually one, sometimes two, spherical, hyaline, with smooth membrane, 25-28 μ in diameter.

Hab. In hyphae of *Saprolegnia monilifera* DE BARY.

Hokkaido: Prov. Ishikari; Sapporo (June 4, 1932. Y. TOKUNAGA).

Distrib. Europe, N. America and Japan.

This species was described by CORNU in 1872. According to his description the resting spores are provided with a large number of very fine spines and are accompanied by an adjacent cell with a smooth wall. In his illustration of this species the mature resting spores possess distinct spines rather than warts or tubercles. A. FISCHER in 1892 described *Olpidiopsis Saprolegniae* which he considered the same as CORNU's fungus. This fungus possesses resting spores provided with hemispherical or blunt colorless warts. The fungi above mentioned are species entirely distinct from each other. BARRETT has discussed this problem and described the latter as *Olpidiopsis vezans*. In our fungus, the resting spores are covered with membrane bearing numerous slender spines. The companion cells somewhat differ in size from those illustrated by CORNU, but the difference between the two fungi is not so remarkable to warrant as the different species.

7. *Olpidiopsis spinosa* TOKUNAGA, sp. nov.

(Pl. II, figs. 10 & 11)

Zoosporangii in hypha matricis solitariis vel gregariis, ellipsoideis vel cylindricis, majoribus, 92–198 μ longis, 34–61 μ latis, tubulis exitus 1–2, extra cellulam matricis prominentibus ornatis; zoosporis ellipsoideis vel elongatis, antice et lateraliter cilio praeditis; sporis perdurantibus sphaericis, membrana lutea vel argillacea tectis, spiculis numerosis, hyalinis, ca. 9.6 μ longis ornatis, sine spiculis 51–73 μ diam., cellula adhaerente singula, globosa, spinulosa, 25.2–32.4 μ diam. praeditis, germinatione nondum observata.

Hab. In hyphae of *Achlya flagellata* COKER.

Hokkaido: Prov. Ishikari; Kotoni (May 21, 1931. Y. TOKUNAGA).

Distrib. Japan.

This fungus was found in the hyphae of *Achlya flagellata* causing the rot-disease of rice-seedlings. The sporangia and resting spores are usually formed together in a dilation of hypha. The companion cells are thickly covered with hairy spines as well as the resting spores. *Olpidiopsis Index* CORNU is an unique species in the genus possessing the spiny companion cell. But its spines are very short and lie sparsely. This fungus was sometimes found together with *Pseudolpidium fusiforme* or *Olpidiopsis minor*.

Rozella CORNU

in Ann. Sci. Nat. 5 sér. XV, 1872, p. 114; A. FISCHER, in Jahrb. Wiss. Bot. XIII, 1882, p. 365.

8. *Rozella simulans* A. FISCHER

in Jahrb. Wiss. Bot. XIII, 1882, p. 365; von MINDEN, in Krypt. Fl. Mark Brandenburg, V, 1915, p. 273, fig. 11a.

Zoosporangia few to 15 or more in a single row, cylindrical, usually 60–250 μ long, 25–90 μ wide, with lateral membrane fused with the host cell-wall; zoospores liberating through the exit papillae at the apex or near the transverse wall, long ellipsoidal or cylindrical, about $6 \times 2.4 \mu$, with two cilia in front, one of them long, the other short; resting spores not observed.

Hab. In hyphae of *Achlya flagellata* COKER.

Honshu: Prov. Iwashiro; Koriyama (May, 1931).

Distrib. Europe and Japan.

This fungus was found in the materials of seedling-rot disease of rice-plant sent from the Iwate Agricultural Experiment Station. It was cultured for several months in a PETRI-dish to which the host fungus cultured on the sterilized rice-grains was occasionally added. Large globular bodies resembling the young

oogonia of the host were occasionally formed near the base of the sporangial range. They contained very dark and granular plasma and were easily burst by slight external pressure. It is highly probable that their contents may develop into the resting spore, but no mature resting spores were obtained in our culture. This species is closely related to *Rozella septigena* CORNU parasitic in *Saprolegnia*. There is no morphological difference between these species, but they are distinguishable from each other by their parasitism.

Woronina CORNU

in Ann. Sci. Nat. 5 sér. XV, 1872, p. 114.

9. *Woronina asterina* TOKUNAGA, sp. nov.

(Pl. II, figs. 15 & 16)

Zoosporangia in sori 4–20 aggregatis, sphaericis, 12–19 μ diam., membrana levi, hyalina cinctis, dein papilla brevi ornatis; zoosporis globosis vel ovoideis, 3–4 μ diam.; sporis perdurantibus in sori ut in zoosporangio formatis, sphaericis, 12–22 μ diam., flavis, aculeis conicis, crassis, hyalinis ornatis, germinatione nondum observata.

Hab. In hyphae of *Achlya americana* COKER.

Hokkaido: Prov. Oshima; Assabu, Hiyama (May, 1931).

Distrib. Japan.

This fungus was found in the hyphae of *Achlya americana* causing the rot-disease of rice-seedlings. The attacked hyphae lay down transverse septa dividing themselves into definite short cells. Such cells enclose the sorus of zoosporangia or resting spores. The sori are 96–216 μ long, 18–30 μ wide, and contain the zoosporangia or resting spores in single or double rows. The resting spores are provided with large conical spines as those of *Olpidiopsis minor* A. FISCHER. Their germination was not observed.

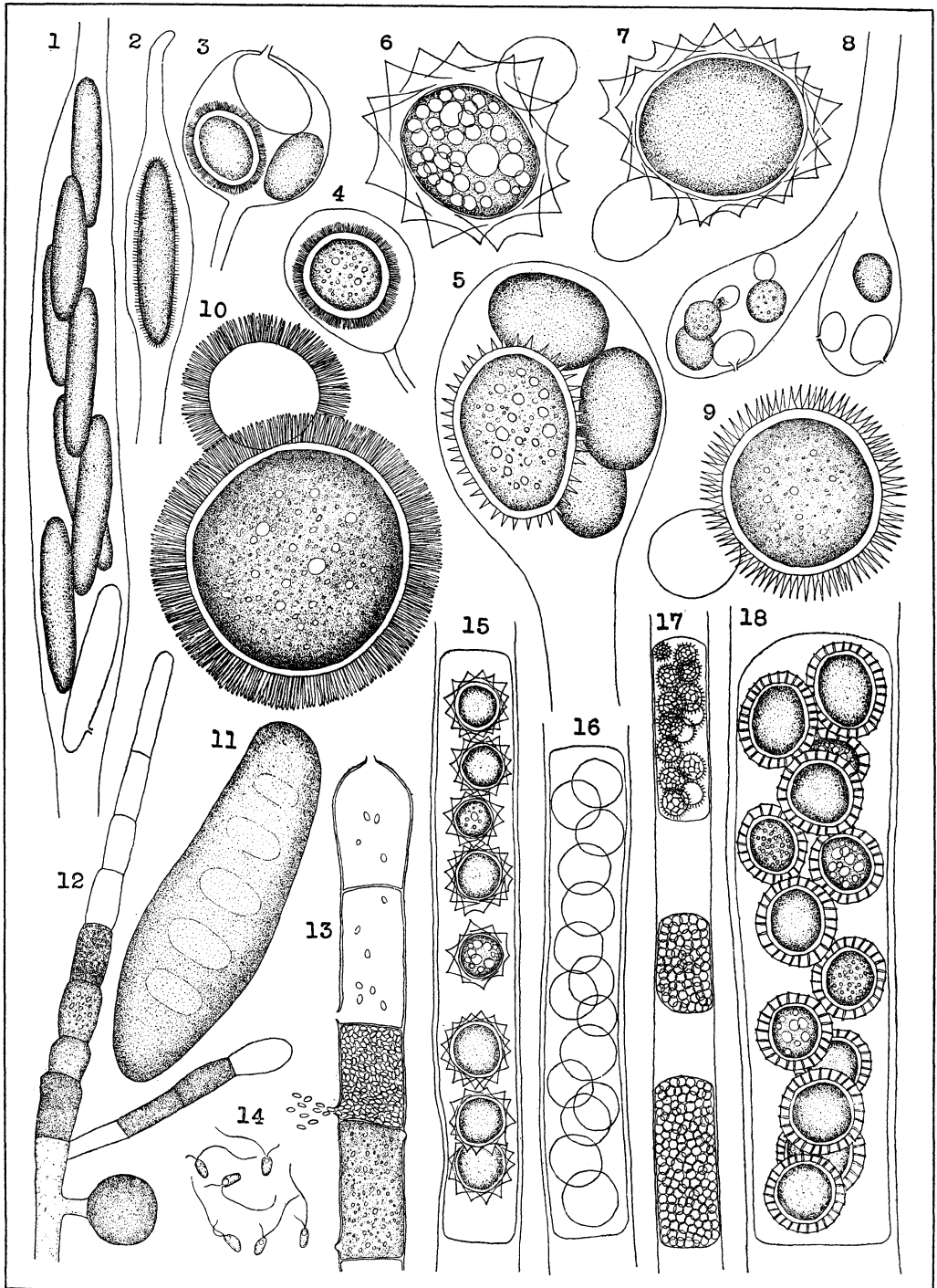
10. *Woronina glomerata* (CORNU) A. FISCHER

(Pl. II, figs. 17 & 18)

in RABENHORST's Krypt. Fl. I, 4, 1892, p. 67; ZOPF, in Beitr. z. Physiol. u. Morph. niederer Organismen, IV, 1894, p. 43, pl. II, figs. 1–13; pl. III, figs. 1–3.

Syn. *Chytridium glomeratum* CORNU, in Ann. Sci. Nat. 5 sér. XV, 1872, p. 187, pl. VII, figs. 20–22.

Sporangial sori scattered here and there in the filament of the host, cylindrical, irregular in size, 70–300 μ long, 50–96 μ wide; zoosporangia very irregular in number per sorus, spherical, 10–21 μ in diameter, with hyaline, smooth



membrane; zoospores ellipsoidal to cylindrical, about $3.6 \times 2.4 \mu$, with two cilia; resting spores formed in sori as in zoosporangia, spherical or ellipsoidal, 12–22 μ in diameter, with episore provided with fine spiny and net-like sculpture resembling spores of wheat-bunt (*Tilletia tritici*); spines 3.2–3.6 μ long.

Hab. In vegetative cells of *Vaucheria sessilis* DC.

Hokkaido: Prov. Ishikari; Sapporo (July 2, 1931. Y. TOKUNAGA).

Distrib. Europe and Japan.

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

Explanation of Plate

Figs. 1 & 2. *Pseudolpidium fusiforme* in the host hyphae. ($\times 115$)

1. Zoosporangia. 2. Resting spore.

Figs. 3 & 4. Zoosporangia and resting spores of *Pseudolpidium Pythii* in the diverticula of host hyphae. ($\times 520$)

Fig. 5. A resting spore and three zoosporangia of *Pseudolpidium Saprolegniae* in the host hypha. ($\times 320$)

Figs. 6–8. *Olfidiopsis minor*.

6 & 7. Resting spore. ($\times 520$) 8. Zoosporangia and young resting spores in the host hypha. ($\times 150$)

Fig. 9. Resting spore of *Olfidiopsis Saprolegniae*. ($\times 320$)

Figs. 10 & 11. *Olfidiopsis spinosa*, n. sp. ($\times 520$)

10. Resting spore. 11. Zoosporangium.

Figs. 12–14. *Rozella simulans*.

12. A portion of host hypha attacked by the fungus. ($\times 90$) 13. Spor-
angial range. ($\times 160$) 14. Zoospores. ($\times 520$)

Figs. 15 & 16. *Woronina asterina*, n. sp. ($\times 520$)

15. Resting spores in a sorus. 16. Zoosporangia in a sorus.

Figs. 17 & 18. *Woronina glomerata*.

17. A portion of host filament attacked by the fungus. ($\times 170$) 18. Rest-
ing spores in a sorus. ($\times 520$)

摘 要

日本産水生壺状菌に就て

I. ボロニン菌科

徳 永 芳 雄

本編に報告せるボロニン菌科菌類は下記の如し。

1. *Pseudolpidium fusiforme* (CORNÜ) A. FISCHER
Achlya flagellata COKER, *A. flagellata* var. *yezoensis* ITO et NAGAI 及び *A. racemosa* HILDEBR. の菌絲に寄生す。
2. *Pseudolpidium Pythii* BUTLER
Pythium Oryzae ITO et TOKUNAGA の菌絲に寄生す。
3. *Pseudolpidium Saprolegniae* (A. BRAUN) A. FISCHER
Saprolegnia Thureti DE BARY の菌絲に寄生す。
4. *Pseudolpidium stellatum* SAWADA
Achlya prolifera SAWADA (*A. flagellata* COKER) の菌絲に寄生す。
5. *Olpidiopsis minor* A. FISCHER
Achlya flagellata COKER, *A. flagellata* var. *yezoensis* ITO et NAGAI 及び *A. racemosa* HILDEBR. の菌絲に寄生す。
6. *Olpidiopsis Saprolegniae* CORNU
Saprolegnia moniliferæ DE BARY の菌絲に寄生す。
7. *Olpidiopsis spinosa* TOKUNAGA (新種)
Achlya flagellata COKER の菌絲に寄生す。
8. *Rozella simulans* A. FISCHER
Achlya flagellata COKER の菌絲に寄生す。
9. *Woronina asterina* TOKUNAGA (新種)
Achlya americana COKER の菌絲に寄生す。
10. *Woronina glomerata* (CORNÜ) A. FISCHER
Vaucheria sessilis DC. の營養細胞に寄生す。

DIE MORDELLIDEN JAPANS (COL.)

(VIERTER NACHTRAG)

VON

HIROMICHI KÔNO

Glypa malaccana PIC

Glypa malaccana PIC, L'Echange, XXVII, p. 90 (1911); MIWA, Trans. Nat. Hist. Soc. Formosa, XXIII, p. 10 (1933).

Fundort: Okinawa (Ins. Iriomete, nach Y. MIWA).

Verbreitung: Malacca, Formosa, Ins. Iriomete.

J. N.: *Kôto-obihananomi*.

Mordella composita WALKER

Mordella composita WALKER, Ann. Mag. Nat. Hist. (3), II, p. 286 (1858); MIWA, Trans. Nat. Hist. Soc. Formosa, XXIII, p. 10 (1933).

Fundort: Okinawa (Ins. Iriomete, nach Y. MIWA).

Verbreitung: Ceylon, Formosa, Ins. Iriomete.

J. N.: *Koshun-hananomi*.

Mordella splendens MIWA

Mordella splendens MIWA, Trans. Nat. Hist. Soc. Formosa, XXIII, p. 10 (1933).

Fundort: Okinawa (Ins. Iriomete, nach MIWA).

J. N.: *Kimboshi-hananomi*.

Mordellistena signatella MARSEUL

Mordellistena signatella MARSEUL, Ann. Soc. Ent. Fr. (5), VI, p. 476 (1876).

Fundort: Okinawa (Ins. Iriometa, 1 ♂, V. 1932, S. HIRAYAMA).

J. N.: *Futaobi-himehananomi*.

Mordellistena hirayamai n. sp.

Dunkelbraun, teilweise verdunkelt; Scheitel dunkel, Fühler schwarz, 4 basalen Glieder gelb, Halsschild mit 4 grossen dunklen Makeln, Flügeldecken grösstenteils schwarz, an der Basis rotbraun. Behaarung dunkel, goldgelb schimmernd; 4 grosse Makel des Halsschildes, ein grosser hakenartiger Basalmakel und ein grosser dreieckiger Makel hinter der Mitte jeder Decke schwarz.

Jedes Fühlerglied ein wenig länger als breit, das 3te Glied klein, nur halb

so lang wie das 2te, das 4te etwas grösser als das 3te, die folgenden bedeutend grösser als das 3te, die 5.-10. fast gleich lang. Halsschild so lang wie breit, an den Seiten nach vorn schwach verjüngt, an der Basis zweibuchtig, die Hinterecken rechtwinklig. Schildchen kurz, bedeutend breiter als lang. Flügeldecken ziemlich dicht punktiert. Pygidium 3 mal so lang wie das Analsegment. Hinterschiene ein wenig länger als das erste Hintertarsenglied, mit 3 stark schrägen Einkerbungen, der innere Endsporn fast 4 mal so lang wie der äussere. Das erste so wie auch das 2te Hintertarsenglied mit je 2 Einkerbungen, das 3te ohne solche.

Körperlänge: 3 mm.

M. signatella MARSEUL ähnlich, aber Zeichnung und Fühlerbildung anders.

Fundort: Okinawa (Ins. Iriomete, 1 ♀, V. 1932, S. HIRAYAMA).

J. N.: *Hirayama-himehananomi*.

***Mordellistena pelecotomoidea* PIC**

Mordellistena pelecotomoidea PIC, Deutsch. Ent. Nat.-Bibl., II, p. 189 (1911).

Das Tierchen ist bisher nur aus Formosa bekannt. Bei mir auch liegen ein Exemplar aus Okinawa vor.

Fundort: Okinawa (Ins. Iriomete, 1 ♀, V. 1932, S. HIRAYAMA).

Verbreitung: Formosa, Ins. Iriomete.

J. N.: *Kiuro-himehananomi*.

***Mordellistena chibi* KÔNO**

Mordellistena chibi KÔNO, Trans. Sapporo Nat. Hist. Soc., XII, p. 156, Pl. IV, f. 7, 17 (1932).

Diese bis jetzt nur aus Honshu bekannte Art wurde kürzlich von Herrn H. YAKU in Hokkaido erbeutet.

Fundorte: Hokkaido (Sapporo, 4 Ex., 11/VII. 1932, H. YAKU); Honshu.

J. N.: *Chibi-himehananomi*.

***Anaspis (Nassipa) karafutona* n. sp.**

Schwarz; Mundteil und 3 oder 4 basalen Fühlerglieder gelbrot, Beine schwarzbraun bis schwarz. Behaarung fein, bräunlich, gleichmässig angeordnet.

♂. Fühler viel kürzer als der halbe Körper, das 3te und 4te Glied gleich lang, länger als das 2te, das 5te kürzer als das 4te, die 7.-10. Glieder perlschnurförmig, Halsschild bedeutend breiter als lang, an der Basis schwach zweibuchtig, Hinterwinkel rechtwinklig. Schildchen dreieckig. Flügeldecken an der Basis so breit wie das Halsschild, gleichmässig fein gerunzelt. Das 3te Bauchsegment in der Mitte vorgezogen und trägt am Ende 2 gerade Anhänge, welche an der Basis eng zusammen stehen, nach hinten zu divergieren und die Spitze

den Hinterrand des 4ten Bauchsegmentes etwas überragen. Das 4te Bauchsegment einfach. Vorderschenkel verdickt. Das 2te Vordertarsenglied viel breiter und reichlich 2 mal so lang wie das erste, das 3te etwas grösser als das erste. Die Endsporne der Hinterschiene fast gleich lang.

♀. Die 6.-10. Fühlerglieder schwach perlschnurförmig. Das 3te Bauchsegment einfach. Das erste Vordertarsenglied fast so lang wie die folgenden 2 zusammen.

Körperlänge: 3-3.5 mm.

Fundort: Sachalin (Kashiho, 1 ♂ u. 2 ♀, 1/VIII. 1932, Maguntan, 1 ♀, 23/VII. 1932, Tarandomari, 1 ♂, 18/VII. 1932, H. KÔNO).

A. rufilabris GYL. ähnlich, aber das letzte Fühlerglied kräftiger und die Anhänge des 3ten Bauchsegmentes viel kürzer.

J. N.: *Karafuto-funagatahananomi*.

摘 要

本 邦 産 花 蚤 科 の 研 究

(第 四 追 補)

河 野 廣 道

本文は私が曩に札幌博物學會報第十卷に發表した「本邦産花蚤科の研究」の第四追補である。第三追補迄に知られた本邦産花蚤科の甲蟲は合計 49 種であつたが、その後三輪勇四郎氏が沖縄から一新種を記載し、私が本文に二新種を發表したから、總計 52 種となる。

本文に記載した新種の學名及び和名は次の如くである。

Mordellistena hirayamai KÔNO

ヒラヤマヒメハナノミ

Anaspis (Nassipa) karafutana KÔNO

カラフトフナガタハナノミ

NOTES ON THE SPIDERS FROM FORMOSA

BY

SABURO SAITO

(With one Plate)

In spite of the number of spiders which have been reported from Japan, including Honshu, Kyushu and Shikoku, the animal from the other regions of the country is almost unknown. Particularly so far as the writer is aware knowledge on the spider fauna of Formosa is extremely limited, except for a few scattered data which hardly admit any perspection with regard to the general features of the fauna.^{1,2)} Recently the writer has had the opportunity to study the specimens from Formosa containing 43 species, of which 17 species are supposed to be new and 15 species have been hitherto unknown to the island.

The majority of the materials have been handed to the author through the kindness of Dr. T. UCHIDA who has communication with Messrs. R. TAKAHASHI, K. SHIBATA, Y. MIWA, K. TOYODA and I. KAYASHIMA in Formosa. Some of them were collected by Mr. T. HAYASHI during his journey to that region on the occasion of the eighth Congress of the Japanese Zoological Society in 1932.

The author wishes to express his sincere gratitude to Dr. T. UCHIDA and Mr. T. HAYASHI for their kindness in permitting the examination of the specimens, and the most hearty thanks are also offered to Dr. T. INUKAI for his unceasing encouragement.

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- 1) A series of short works by Mr. T. NAKAJIMA in Transact. Nat. Hist. Society of Formosa, Vol. 9, 1920, Vol. 11, 1921 and Vol. 13, 1923. Among them there are found five species which were identified by Mr. K. KISHIDA as new species as *Neotetragnatha typica* (Jap. name, *Shin-Ashinagagumo*), *Theridion tuberculata* (Jap. name, *Gomigumo-modoki*), *Lycosa virgata* (Jap. name, *Shujifuto-Hashirigumo*), *Nagasaki typica* (Jap. name, *Nagasaki-Haetorigumo*) and *Theyne orientaris* (Jap. name, *Hina-Haetorigumo*). However it is regreted that the original descriptions are not available as they were published in Mr. KISHIDA's private journal *Arachnologia* Vol. 1, No. 1, 1912 which has been long out of print.
 - 2) TD. SATO, TK. SATO and I. KAYASHIMA :—Sylvia (in Japanese). Vol. 3. No. 1. 1932.
I. KAYASHIMA :—Ibid. Vol. 3. No. 4. 1932.

[Transact. Sapporo Nat. Hist. Soc., Vol. XIII, Pt. 1, 1933]

Family CTENIZIDAE

Genus *Bothriocyrtum* E. SIMON, 18911. *Bothriocyrtum tractabile* n. sp.Jap. name, *Yasagata-Totategumo*

Pl. III, fig. 2 a-d.

Adult female: cephalothorax, legs and palpi pale brown, legs and palpi clothed with strong black hairs; chelicerae dark brown; coxae of palpi, and labium yellow-brown with black bristles, sternum yellow with black hairs at its anterior part and abdomen blackish brown with greyish hairs. The ocular area very small and the posterior median eyes pearly white and the others black; the quadrangle of the four centrals broader than long, and the anterior side narrower than the posterior. The fore-laterals larger than the fore-centrals, and largest of the eight; the rest subequal, the hind-laterals perhaps smallest. The height of the clypeus is very slight, the fore-lateral eyes being almost close to the margin. The interval between the hind-centrals is considerably greater than that between each and the hindlateral eye. Legs moderately long and strong, not greatly different in length; tarsi not scopulate, set with numerous spines; tarsal claw of each leg furnished with two teeth. Coxae of palpi without large maxillary process and furnished with about twenty strong spines at its basal part. Chelicerae strong, its basal segment projecting forwards from the fore extremity of the cephalothorax, furnished with coarse black bristles in front; its articulation lying in the vertical plane. Sternum of a lengthened pentagonal form, ending behind in a blunt angle between the coxae of the fourth pair of legs, which are in contact with each other. Abdomen oval. Spinnerets four in number, compact, short, the anterior pair being close together at base. Epigynum of very simple structure, consisting of a hairless portion and two circular areas which are pale brown in colour and have a minute opening at the center. The measurements are as follows (in centimeters):—total length, 2.00; abdomen, 1.00; leg, I, 1.30, leg, II, 1.40, leg, III, 1.30, leg, IV, 1.50.

Locality: Taihoku (R. TAKAHASHI), July 27, 1928.

Remarks: No species of the Genus has yet been reported from Japan. The present species is almost identical with the type species of this genus, *Bothriocyrtum californicum* O. P. CAMBRIDGE. However, the anterior row of eyes in the present specimen makes a procurved row and the sternum is of quite different form.

Family *DIPLURIDAE*Genus *Ischnothele* AUSSERER, 18752. *Ischnothele simplicata* n. sp.Jap. name, *Hira-Jogogumo*

Pl. III, Fig. 3 a-d.

Adult female: cephalothorax of a rich blackish-chocolate colour, much longer than broad, of an oblong-oval form, roundly truncate in front, convex above, clypeus narrow and straightened. Ocular area small, the hind-central eyes white and the others brown; fore-laterals largest and the others subequal; in two transverse, almost straight rows, but somewhat recurved; central quadrangle broader than long, and the fore side shorter than the hind one; hind-central pair much more distant from each other than the hind-laterals, being separated by a space greater than three times the diameter; each lateral pair with the hind-centrals forming nearly an equilateral triangle; fore-central eyes separated by an interval which is about equal to the diameter of the eye and greater than to the fore-lateral eyes. Legs moderate in length and strength, similar to the cephalothorax in colour and furnished with long black hairs; tarsi without tufts and armed with three claws, the superior of which is furnished strongly with five teeth. Basal segments of chelicerae projecting forwards from the fore extremity of the cephalothorax, its articulation lying in a vertical plane, and furnished with a row of stout teeth at its inner side, besides a short one of smaller teeth at the base; fung closing backwards. Coxae of palpi without large maxillary process, yellowish brown in colour with black hairs. Labium slightly higher than broad and rounded at the apex. Colour similar to the coxae of palpi. Sternum short-oval broadly truncate in front, produced into a short rather fine point behind, between the coxae of the fourth pair of legs which are almost contiguous to each other; deep chocolate in colour. Abdomen oval, fore margin rounded, rather broadest a little past the middle; chocolate in colour on the upper- and under-side, thickly clothed with black hairs. Spinnerets four in number, anterior spinnerets widely separated by a distance equal to about two times the length of a single spinneret; the posterior pair very long and the terminal segment longer than the preceding two segments; the former yellowish brown with white hairs and the latter dark brown with long grey hairs. Anal papilla brown. The measurements are as follows (in centimeters):—total length, 1.90; abdomen, 0.90; leg, I, 1.70, leg, II, 1.40, leg, III, 1.40, leg, IV, 2.00; length of the posterior spinneret 0.65

Locality: Taihoku (K. SHIBATA), January 1, 1927.

Remarks: The specimen is closely allied in general appearance and size to *Ischnothele guianensis* WALCKENAER, but it differs chiefly in colour as we see in the description of *Ischnothele guianensis* "Carapace unicolorous mahogany-brown, the margins darker. Legs pale yellow beneath; coxae pale yellow; femora darker at the apex above; tibiae and protarsi pale yellow, each with a basal and apical annula of dark brown; tarsi yellow. Sternum pale yellow. Abdomen dark purplebrown, with a double central dorsal series of three minute oblique pale dots. Basal joint of the spinners pale yellow, its apex dusky beneath; second joint brown; terminal joint brown at the base, pale yellow towards the apex."

Genus ***Euagrus*** AUSSERER, 1875

3. ***Euagrus formosanus*** n. sp.

Jap. name, *Taiwan-Jogogumo*

Pl. III, Fig. 1 a-c.

Adult female: cephalothorax of a light grey colour, palest behind, with three pairs of radial furrows and hairless. Occular area very small and all eyes white, clypeus narrow; the four centrals forming a trapezoid, whose anterior side is shorter than the posteriors; the fore-central pair separated from each other by about two diameters, and from the fore-laterals by an eye's diameter; eyes of the lateral pairs are placed a little obliquely, and the interval of the laterals of the two rows the same as that between the fore-centrals and fore-laterals and greater than that between the hind-centrals and hind-laterals. Chelicera large and powerful, its basal segments furnished with a row of teeth at the inner side; grey in colour becoming darker at the apex. Legs moderately long and strong, furnished densely with long black hairs; colour paler than that of the cephalothorax. Maxillae, labium and sternum greyish yellow. Coxae of palpi without large maxillary process and furnished with black hairs and strong spines at the base. Sternum of nearly square form; the anterior margin ending bluntly and the posterior termination ending with a small process between the fourth pair of legs which are almost contiguous. Labium rounded at the apex, and broader than high and furnished with strong spines at the apex. Abdomen oval, projecting well over the base of the cephalothorax, grey in colour and the black hairs clothing it thickly. Spinnerets four in number: the posterior pair very long, three-jointed, and anterior pair short, one-jointed; the distance between the latter spinnerets equal to the length of a single spinneret. The measurements are as follows (in centimeters); total length, 1.20;

abdomen, 0.55; palpus, 1.10; leg, I, 1.70, leg, II, 1.50, leg, III, 1.40, leg, IV, 1.90; length of the posterior spinneret, 0.70.

Locality: Taihoku (R. TAKAHASHI), October 2, 1932.

Remarks: At first sight there is nothing to distinguish this interesting species from *Euagrus mexicanus* AUSSERER¹⁾, particularly the colouration being precisely the same, but the species differs greatly in the form of the sternum which is oval in *Euagrus mexicanus* with the longitudinal axis about one and a half times the length of the transversal axis. Moreover, the labium of the animal contacts with the anterior margin of the sternum, not inserting into the anterior marginal part of the sternum as the case of *Euagrus mexicanus*.

Family HETEROPODIDAE

Genus *Heteropoda* LATREILLE, 1803

4. *Heteropoda venatoria* (LINN.)

Jap. name, *Ashidakagumo*

Pl. III, Fig. 6 a, b.

Heteropoda venatoria, (1) G. MARX:—Proc. Nat. Mus. Vol. 12. 1889. p. 560; (2) T. THORELL:—Kongl. Vet. Akademiens Handlingar. Bd. 24. 1891. p. 78; (3) F. KARSCH:—Berliner Entomolog. Zeitschrift. Bd. 36. 1891. p. 291; (4) T. THORELL:—Ann. Mag. Nat. Hist. 6 ser. 1892. Vol. 9. p. 233; (5) ———:—Bihang Till K. Svenska Vet.-Akad. Handlingar. Bd. 20. 1894. p. 11; (6) ———:—Descriptive Catalogue of the Spiders of Burma. British Museum. London. 1895. p. 264; (7) R. I. POCKOCK:—The Fauna British India. London. 1900. p. 260; (8) O. P. CAMBRIDGE:—Biologia Centrali-Americana. Vol. 2. 1897-1905. p. 120. Tab. 5. figg. 22, 23; (9) N. BANKS:—Bull. Smithsonian Institution Unit. States Nat. Mus. 72. 1910. p. 52; (10) A. PETRUNKEVITCH:—Bull. Amer. Nat. Mus. Nat. Hist. 1911. Vol. 29. p. 488; (11) J. H. COMSTOCK:—The Spider Book. New York. 1913. p. 552. figg. 622-624; (12) S. YUHARA:—Study of Spider Tokyo. 1931. p. 193, 194, 197. figg. 106, 107, 109; (13) TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5; (14) I. KAYASHIMA:—Ibid. No. 4. p. 5. pl. 2. fig. 7.

²⁾ *Heteropoda venatoria* (*H. Regia*); (15) W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 273. Tab. 6. fig. 46. Tab. 16. fig. 453.

Heteropoda regia, (16) T. THORELL:—Bihang Till K. Svenska Vet.-Akad. Handlingar. Bd. 25. 1899. p. 71; (17) A. DOLLFUS:—Fauna Hawaiiensis. Cambridge. Vol. 2. Part 5. 1900. p. 504.

Heteropoda ocellata, (18) R. I. POCKOCK:—Ann. Mag. Nat. Hist. 7 ser. 1903. Vol. 11. p. 96.

Aranea regia, (19) J. FABRICIUS:—Entomologia Systematica. Tom. 2. p. 408.

1) *Euagrus mexicanus*, A. AUSSERER:—Verhandl. d.K. K. zool. bot. Ges. Bd. 25. 1875. p. 160. figg. 13-16.

2) E. STRAND (Zool. Anz. Bd. 31. 1907. p. 559) corrected as a variety, *Heteropoda venatoria* (L.) var. *japonica* on the Japanese and Chinese species, and he moreover, described two varieties *H. venatoria* (L.) var. *chinesica* and *H. venatoria* var. *maculipes* on the specimens from China. The characteristics of these three varieties according to his descriptions of the male are as follows:—

The species is very abundant in all tropical and subtropical countries, probably having been artificially distributed by trading vessels. The measurements of two females are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	1.80	1.10	3.20	3.40	2.90	3.10
Female II	1.40	0.85	2.50	2.70	2.20	2.45

Locality: Kururu (R. TAKAHASHI), July, 1931 and Juzan (T. HAYASHI), November, 1932.

Distribution: China (2), India (2, 7), Ceylon (3, 7), Burma (6, 8), Nicaragua (2), Rio de Janeiro (2), Brazil (2, 8), Batavia (2), Hawaii (17), Sumatra (2), Andaman Islands (4), Java (5, 8), U. S. A. (1, 8, 9, 10, 11), Guiana (8), Mexico (8), Guatemala (8), Antilles (8), Tropical Africa (8), Jamaica (8), Cerebes (8), Amboina (8), Philippine Islands (8), Australia (8).

Family THOMISIDAE

Genus *Misumena* LATREILLE, 1804

5. *Misumena japonica* BÖS. et STRAND

Pl. III, Fig. 18.

Misumena japonica, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 256.

Tab. 10. fig. 172.

	<i>H. venatoria japonica</i>		<i>H. venatoria chinesica</i>	<i>H. venatoria maculipes</i>
Locality	Japan and China		China	Canton (China)
Measurements	Cephalo-thorax	11 mm.	5.8 × 5.4 mm.	10.5 × 10 mm.
	leg, I	65 mm.	38.7 mm.	65.2 mm.
	leg, II	70 mm.	42.6 mm.	74.2 mm.
	leg, III	54.5 mm.	31.6 mm.	54.0 mm.
	leg, IV	58.5 mm.	33.8 mm.	58.0 mm.
process of tibia of palpus	the terminal process is somewhat greater than the basal one		the terminal process is longer than the basal one	

The present specimens resemble *H. venatoria* var. *chinesica* in the measurements, but my two examples are female, and so, I avoid decision for the present until the examination of the terminal process of the pedipalpus.

An adult female and an immature male have been obtained. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.50	0.30	0.90	0.90	0.45	0.60
Male I (immature)	0.40	0.30	0.80	0.80	0.30	0.45

Locality: Taihoku (K. SHIBATA), April 17, 1928.

Distribution: Japan: Kyushu (Saga, Kompira).

Family ATTIDAE

Genus *Plexippus* C. L. KOCH, 1846

6. ? *Plexippus incognitus* DÖN. et STRAND

Plexippus incognitus, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 399. Tab. 8. fig. 120.

Only one immature female is identified with this species but with some doubt, as it is a subadult which is not in good condition. Though the present specimen is not fully grown its colouration and the body dimensions agree precisely with those of *Plexippus incognitus* DÖN. et STRAND. Cephalothorax brownish black with two black patches and a median longitudinal dull yellow zone. Chelicerae brown. Labium, maxilla, sternum, leg and palpus dull yellow, the end of all joints of leg and palpus being black. Abdomen above dull yellow with a black folium, and a brownish longitudinal yellow stripe in the median line of the folium and two light brown points at the posterior part; belly dull yellow with irregular black flecks. The measurements are as follows (in centimeters):—total length, 0.80; abdomen, 0.50; leg, I, 0.60, leg, II, 0.55, leg, III, 0.60, leg, IV, 0.70.

Locality: Kagi (K. TOYODA), 1927.

Distribution: Japan: Kyushu (Saga).

7. *Plexippus paykulli* (AUDOUIN)

Plexippus paykulli, T. THORELL:—Descriptive Catalogue of the Spiders of the Burma. British Museum. London. 1895. p. 360.; W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 362. Tab. 9. fig. 142. Tab. 13. figg. 347, 354.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist. Vol. 29. 1911. p. 695.

Hasarius paykulli, E. SIMON:—Arachnids de France. 1876. Vol. 3. p. 81.

Thotmes paykulli, O. P. CAMBRIDGE:—Biol. Centr. Amer. 1897-1905. Vol. 2. p. 240. Tab. 20. fig. 21.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.85	0.55	1.15	0.80	1.00	1.10
Female II	0.80	0.50	1.15	0.90	1.10	1.10

Locality: Taihoku (K. SHIBATA), March 10, 1927 and March 1, 1928.

Distribution: Common to tropical and temperate regions, namely Guiana, Paraguay, Costa Rica, Colombia, West Indies, U. S. A., Mexico, Burma, Japan: Honshu, Kyushu.

Genus *Myrmarachne* MAC LEAY, 1839

8. *Myrmarachne innermichelis* BÖS. et STRAND

Jap. name, *Kuro-Arigumo*

Pl. III, Fig. 7 a, b.

Myrmarachne innermichelis, W. BÜSENBURG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 329. Tab. 9. fig. 128. Tab. 14. fig. 338.; K. KISHIDA:—Kagakusekai. 1914. Vol. 8. No. 3. p. 223.; S. YUHARA:—Study of Spider. Tokyo. 1931. p. 253. fig. 141.; I. KAYASHIMA:—Sylvia. Vol. 3. No. 4. p. 6.

The species has been long known occurring in Kyushu and southern part of Honshu. The measurements of the adult male are as follows (in centimeters):—total length, 0.85; abdomen, 0.40; chelicera, 0.30; leg, I, 0.50, leg, II, 0.40, leg, III, 0.30, leg, IV, 0.65.

Locality: Taihoku (K. SHIBATA), April, 1928.

Distribution: Japan: Honshu, Kyushu.

9. *Myrmarachne japonica* (KARSCH)

Jap. name, *Aka-Arigumo*

Pl. III, Fig. 17.

Myrmarachne japonica, W. BÜSENBURG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 328. Tab. 9. fig. 149. Tab. 14. fig. 372.; K. KISHIDA:—Kagakusekai. 1914. Vol. 8. No. 3. p. 223.; S. YUHARA:—Study of Spider. Tokyo. 1913. p. 251. fig. 140.; T. SATO, T. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. p. 6. 1932.

Salicis japonicus, F. KARSCH:—Verhandl. d. naturhist. Vereins d. preuss. Rheinlande und Westfalen. Jahrg. 36. 1879. p. 82.

The spider was also recorded from the same localities as *M. innermichelis* BÖS. et STRAND. The measurements of an adult female are as follows (in centimeters):—total length, 0.70; abdomen, 0.40; leg, I, 0.50, leg, II, 0.45, leg, III, 0.45, leg, IV, 0.60.

Locality: Heito (R. TAKAHASHI), October 30, 1927.

Distribution: Japan: Honshu.

10. ***Myrmarachne magnus*** n. sp.

Jap. name, *Oo-arigumo*

Pl. III, Fig. 27 a-g.

Male: cephalothorax deep blackish brown, covered with fine, white hairs, and a few long, fine prominent ones at the caput; narrow and elongate in shape, divided into two well-marked parts by a deep transverse constriction. Eye space forms a quadrangle, whose length and breadth are equal; eyes differing greatly in size, arranged in three rows; four anterior eyes almost in contact with each other and the central eyes the largest of the eight with a diameter twice that of the laterals which is the same as that of the one in the third row; the eyes of the second row being smallest, situated closer to the anterior row than to the third row. Legs deep blackish brown; coxae, trochanters, patellae and the ends of tibiae of the first legs, the tibiae, metatarsi, tarsi of the second and third legs and the trochanters of the fourth legs dull brown; the first leg furnished with six strong spines. Palpus short, deep brown with thick, black hairs; its structure simple, possessing a process at the termination of tibia. Maxillae long, strong, narrowest just above the insertion of the palpi, much broader at the top, black in colour. Sternum dull brown. Chelicerae deep brown, strong, long and the inner-side furnished with eight teeth. Abdomen deep blackish brown, densely covered with fine white hairs. The measurements are as follows (in centimeters):—total length, 1.00; cephalothorax, 0.40; abdomen, 0.30; chelicera, 0.40; leg, I, 1.20, leg, II, 0.80, leg, III, 0.80, leg, IV, 1.10.

Locality: Taihoku (R. TAKAHASHI), October 24, 1927.

Remarks: This species differs from the other species of *Myrmarachne* in having six spines on the tibia of the first leg and especially in the great body length.

Genus ***Simonella*** C. L. KOCH, 1846

11. ***Simonella formosana*** n. sp.

Jap. name, *Taiwan-Simon-Arigumo*

Pl. III, Fig. 5 a-e.

Male: body dull grey but the posterior extremity of the abdomen blackish grey; a very strong transverse constriction between the caput and thorax; caput smaller than thorax. Eyes in four rows; eye space a little broader than long; the eyes of the first row are the largest in diameter, being about four times that

of the eyes in the second and the last rows; eyes of the third row smallest, situated nearer to the fourth row than to the second. Legs slender, not very long; femora of the third and fourth legs dull grey and the other joints light yellow; coxae and trochanters of leg IV stronger than those of the other legs. Sternum more than three times as long as broad, truncate in front, pointed behind. Labium and maxillae short; chelicerae small, brownish yellow in colour. Abdomen divided in the middle by a constriction, the fore part connected with the thoracic part by a rather long narrow neck, being smaller than the hind part. The animal looks very narrow and elongate in appearance. Palpus short; cubital rather shorter than the radial joint which has a short obtusely pointed apophysis at its extremity on the inner side, brownish yellow in colour. The measurements are as follows (in centimeters):—total length, 0.45; abdomen, 0.25.

Locality: Toihoku (R. TAKAHASHI), October 24, 1927.

Remarks: So far as the writer is aware the species of the genus *Simonella* were formerly reported as being confined to the tropical region of the New World. The present spider is closely allied to *Simonella decipiens* which was described by O. P. CAMBRIDGE from Central America¹⁾ as having the dull orange-yellow-brown coloured body, and in colouration chiefly, the present species is distinct.

Family PHOLCIDAE

Genus *Smeringopus* E. SIMON, 1893

12. *Smeringopus kishidai* n. sp.²⁾

Jap. name, *Kishida-Yureigumomodoki*

Pl. III, Fig. 8.

An adult female: cephalothorax circular, dull brown in colour becoming darker on the ocular area, with two black converging lines at the anterior part, a well-defined longitudinal deep brown band in the median line and an irregular stripe along the two sides. Eyes in the ordinary position; two anterior median eyes slightly smaller than the others, contiguous with each other; the other six eyes pearly white and forming a group of three seated on the black low process; three groups of eyes forming a triangle, of which the base is slightly longer than high. Clypeus very high, the colour as cephalothorax. Chelicerae

1) *Biologia Centrali-Americana*. Vol. 1. 1889-1902. p. 163.

2) The present spider is very like *Smeringopus todai* K. KISHIDA, (*Kagakusekai*. Tokyo. Vol. 7. 1913. p. 43. fig. 6.) but unfortunately the author could not find any detailed descriptions of this species given by K. KISHIDA except the figure which is referred to *Smeringopus todai*, and so, the author at present has treated it as a new species.

weak, dark yellow in colour. Legs exceedingly long and slender, furnished with hairs over the whole length of metatarsi and tarsi, the other joints being slightly covered; dull yellow in colour with black patellae and white ends of femora and tibiae. Sternum broadly truncate anteriorly, acuminate posteriorly, dull yellow in colour. Abdomen narrow oval; on the middle of the upper side a narrow, light black, longitudinal band, narrowing gradually backwards and on both sides of the band five pairs of diverging black spots on the hind half of the abdomen; the sides marked with five groups of irregular black spots; belly dull brown with a broad, deep brownish black, well-defined, median longitudinal band. The measurements are as follows (in centimeters):—total length, 0.55; abdomen, 0.40; leg, I, 3.90, leg, II, 2.50, leg, III, 2.00, leg, IV, 2.70.

Locality: Musha (T. HAYASHI), November, 1932.

Family *THERIDIIDAE*

Genus *Theridion* WALCKENAER, 1805

13. *Theridion tepidarium* C. L. KOCH

Jap. name, *Oo-Himegumo*

Pl. III, Fig. 9.

Theridion tepidarium, (1) J. BLACKWALL:—Hist. of Great Britain and Ireland. p. 180. pl. 13. fig. 114.; (2) ———:—Ann. Mag. Nat. Hist. 4ser. Vol. 8. 1871. p. 435.; (3) O. P. CAMBRIDGE:—Ann. Mag. Nat. Hist. 5ser. Vol. 1. 1878. p. 155.; (4) E. SIMON:—Arachnides de France. Paris. Vol. 5. 1881. p. 93.; (5) T. THORELL:—Descriptive Catalogue of Spiders of Burma. British Museum. London. 1895. p. 95.; (6) E. SIMON:—Fauna Hawaïensis. Cambridge. Vol. 2. Part 5. 1900. p. 449.; (7) J. A. ALLEN:—Bull. Amer. Mus. Nat. Hist. Vol. 29. 1911. p. 207.; (8) J. H. COMSTOCK:—Spider Book. New York. 1913. p. 210, 299, 330, 345, 421. figg. 321, 323, 340-343.; (9) R. V. CHAMBERLIN:—Proc. United States Nat. Mus. Washington. Vol. 63. 1924. p. 5.; (10) ———:—Proc. California Academy Science. 4ser. Vol. 12. 1924. p. 638.; (11) C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Exper. Station. Vol. 101. 1926. p. 1042.; (12) R. BREMEN:—Die Tierwelt Mitteleuropas. Leipzig. Bd. 3. p. 59. p. 57. Tab. 9. fig. 647. Tab. 10. fig. 662.; (13) S. YUHARA:—Study of Spider. Tokyo. 1931. p. 96, 97. figg. 25, 26.

Theridion tepidarium, (14) T. THORELL:—Remarks on Synonyms of European Spiders. Upsala. 1870-1873. p. 80.; (15) ———:—Horae Societatis Entomologicae Rossicae. Vol. 11. 1875. p. 29.; (16) O. HERMAN:—Ungarns Spinnen-Fauna. Budapest. Bd. 3. 1879. p. 83.; (17) G. MARX:—Proc. Unit. States Nat. Mus. Vol. 10. 1890. p. 520.; (18) C. CHYZER and L. KULCZYNSKI:—Araneae Hungariae. Budapest. Tom. 2. Part 1. 1894. p. 35.; (19) T. THORELL:—Estratto dagli Annali del Musco Civico di Storia Naturale di Genova. 2ser. Vol. 19. 1898. p. 45.; (20) ———:—Bihang Till K. Svenska Vet.-Akad. Handlingar. Bd. 25. 1899. p. 25.; (21) T. P. VON BAYERN:—Zool. Anz. Bd. 23. 1900. p. 283.; (22) W. BÜSENBURG:—Zoologica. Die Spinnen Deutschlands. Bd. 1. 1901. p. 96. Tab. 8. fig. 115.; (23) J. H. EMERTON:—Common Spider. London. 1902. p. 111. figg. 255-260.; (24) W. BÜSENBURG und E. STRAND:—

Japanische Spinnen, Stuttgart. 1905. p. 148.; (25) E. STRAND;—Zool. Anz. Bd. 32. 1908. p. 219.; (26) N. BANKS;—BULL. Smithsonian Institution Unit. States Nat. Mus. Vol. 72. 1910. p. 20. *Steatoda tepidariorum*, (27) O. P. CAMBRIDGE;—Biologia Centrali-Americana. Vol. 2. 1897-1905. p. 382. Tab. 36. figg. 1, 2.

This species is cosmopolitan inhabiting any neglected room. It is often found in webs among rocks, but seldom on plants. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.80	0.60	1.50	1.10	0.70	1.10
Female II	0.80	0.60	1.70	1.20	0.85	1.45
Female III	0.70	0.50	1.60	1.00	0.80	1.20
Female IV	0.65	0.50	1.70	1.10	0.90	1.40
Female V	0.60	0.50	1.50	0.90	0.60	1.00

Locality: Taihoku (K. SHIBATA), April, 1928; Taihoku (R. TAKAHASHI), 1930; Nitsugetsutan and Musha (T. HAYASHI), November, 1932.

Distribution: England (1, 3), France (4), Burma (5, 19), Canada (1), Ceylon (27), Antilles Islands (27), Germany (22, 25), Guatemala (27), Hawaii (6), Hungary (16, 18), Mexico (27), U.S.A. (7-11, 17, 21, 23, 26, 27), U. S. S. R. (15), Japan: Honshu (13), Etorofu (24).

14. *Theridion elegans* n. sp.

Jap name, *Yasagata-himegumo*

Pl. III, Fig. 10 a-c.

Female: cephalothorax inversed heart-shape, ending before in an obtusely rounded form; the whole length not greatly exceeding the width of the widest part at the thoracic junction. Colour yellow-brown. Eyes in two transverse rows not greatly different in length, occupying the whole width of the caput; rather large in size, subequal but the posterior centrals larger slightly than the others; those of the posterior row in a transverse line almost equidistant only the centrals slightly further from each other than from the laterals. The anterior row does not extend so widely as the posterior row; eyes of the anterior row separated from each other by the same intervals which are greater than a diameter. Legs, chelicerae, palpi, labium similar to the cephalothorax in colour. Sternum longer than broad, hind extremity obtusely pointed; colour yellow-brown. Abdomen large, globular, deep grey, thickly covered with almost coalescing white irregular spots. Spinnerets placed on a black patch, short,

compact. A black band between spinnerets and epigynum.

The male resembles the female very nearly in colour and marking; palpi yellow in colour; palpal organ moderately complex with a circular lobe at the middle of the outer side. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.60	0.40	1.10	0.85	0.70	0.95
Male I	0.35	0.20	0.95	0.80	0.65	0.90

Locality: Nitsugetsutan (T. HAYASHI), November, 1932.

Remarks: The species is closely allied to *Theridion rotundum* O. P. CAMBRIDGE, but it is distinguished from the latter by the clearness of colouration and also by the form of epigynum.

Genus *Theridula* EMERTON, 1882

15. *Theridula caudata* n. sp.

Jap. name, *Onaga-Himegumomodoki*

Pl. III, Fig. 4 a-f.

Female: cephalothorax deep sepia, with a broken black marginal line. Eyes in two rows on a strong prominence of the fore part of the caput, equal in size and equidistant; the interval about twice an eye's diameter; the two rows, seen from front, nearly straight; the central quadrangle rather broader than long, lateral eyes of both rows contiguous with each other and the centrals of both rows separated by an eye's diameter; the eyes, seen from above, in the posterior row are in a straight line but in the anterior row strongly recurved. Legs short, yellow in colour, furnished with hairs, but not very thickly. Abdomen large, rather broader than long, with a long tail-like projection, the end of which is furnished with the spiral groove; the shoulder part also makes a round projection; colour dark yellow with two deep brown spots on the shoulder and a longitudinal light black band ending acutely anteriorly which is clear and well defined, but at the posterior part the margin is obscured. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.30	0.25	0.65	0.60	0.45	0.55
Female II	0.35	0.25	0.70	0.70	0.40	0.60

Locality: Shinten (R. TAKAHASHI), January 15, 1928.

Remarks: The animal is somewhat similar in general form to *Theridula tricornis* O. P. CAMBRIDGE, but the present specimen is distinct in the lateral projection of the abdomen which in the latter is pointed.

Genus *Argyroides* E. SIMON, 1864

16. *Argyroides bona dea* (KARSCH)

Pl. III, Fig. 20.

Argyroides bona dea, W. BÜSENBURG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 129. Tab. 5. fig. 52. Tab. 12. fig. 264.

Conopistha Bona Dea, F. KARSCH:—Berliner Entom. Zeitschr. Bd. 25. 1881. p. 29.

This spider is known to be found commonly in the webs of the other larger kind of spiders. In our country it often lives in the webs of *Nephila clavata* L. KOCH. The measurements of the adult female are given as follows (in centimeters):—total length, 0.25; height of abdomen, 0.20, length of abdomen, 0.15; leg. I, 0.35, leg. II, 0.20, leg. III, 0.15, leg. IV, 0.30.

Locality: Nitsugetsutan (T. HAYASHI), November, 1932.

Distribution: Japan: Kyushu (Saga, Korats, Yanagawa, Kurume).

17. *Argyroides longispinus* n. sp.

Jap. name, *Toge-Isorogumo*

Pl. III, Fig. 26 a-e.

Female: cephalothorax of a broad oval form, broadest and truncate behind, rounded in front; clypeus rather remarkable, rounded below; colour black. Eyes about equal in size, those of the posterior row arranged in a straight transverse line; two centrals separate less than an eye's diameter from each other, considerably apart from the laterals of the same row. The central eye space square, the anterior side longer than the posterior. The anterior row of eyes considerably recurved; the interval between the two centrals smaller than that between the centrals and laterals; the lateral eyes of both rows in contact with each other. Legs moderately long, slender; coxae and trochanters black; femora white; patellae brown; tibiae, metatarsi and tarsi yellow with brown end. Labium triangle, its basal part black and the termination dull yellow. Sternum somewhat triangular, broadest and truncate in front, ending obtusely behind; colour black with yellow patches at the inserting points of coxae. Abdomen very globular, with two conical prominences of equal length and strength, standing side by side on the back, the fore part of the prominences yellowish black. Epigynum consisting of a yellow chitinous plate.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.50	0.40	0.50	0.50	0.35	0.50
Female II	0.50	0.35	0.50	0.50	0.35	0.50

Locality: Taihoku (K. SHIBATA), February 24, 1927 and April, 1928.; Taihoku (R. TAKAHASHI), April, 1930.

Remarks: This species bears a general resemblance to *Argyrodes jucundus* O. P. CAMBRIDGE in appearance, but the large conical prominences of the abdomen make it a distinct species.

Genus *Enoplognatha* PAVESI, 1880

18. *Enoplognatha crassipes* Bös. et STRAND

Pl. III, Fig. 14.

Enoplognatha crassipes, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 157. Tab. 12. fig. 271.

Though the examples including both sexes are large in body size in comparison with those described by W. BÖSENBERG and E. STRAND, the form of the epigynum as well as the colouration are exactly the same. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.50	0.40	1.10	0.80	0.55	0.70
Female II	0.50	0.35	1.00	0.85	0.60	0.65
Male I	0.50	0.35	1.40	1.00	0.70	0.75

Locality: Taihoku (R. TAKAHASHI), August, 1930.; Taihoku (K. SHIBATA), April 17, 1928.; Tainan (T. HAYASHI), November, 1932.

Distribution: Japan: Kyushu (Hiuga, Nishitake).

Family ARGYOPIDAE

Genus *Tetragnatha* LATREILLE, 1804

19. *Tetragnatha japonica* Bös. et STRAND

Jap. name, *Yasagata-Ashinagagumo*

Pl. III, Fig. 21.

Tetragnatha japonica, W. BÜSEBERG und E. STRAND;—Japanische Spinnen. Stuttgart. 1905. p. 177. Tab. 15. fig. 409.; S. YUHARA:—Study of Spider. Tokyo. 1931. p. 113. fig. 42.; TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5.; Ibid. Vol. 3. No. 4. 1932. p. 2.

The measurements are as follows (in centimeters);—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.65	0.40	1.40	1.00	0.50	1.10
Male I	1.00	0.60	2.80	1.80	0.70	1.80

Locality: Suisha (R. TAKAHASHI), November 23, 1929.; Nitsugetsutan (Y. MIWA), March 25, 1929.

Distribution: Japan: Honshu, Kyushu.

20. *Tetragnatha praedonia* L. KOCH

Jap. name, *Ashinagagumo*

Pl. III, Fig. 22.

Tetragnatha praedonia, L. KOCH:—Verhand. d. K. K. zool. bot. Ges. Bd. 27. 1877. p. 744. Tab. 15. figg. 6-9.; W. BÜSEBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 177. Tab. 3. fig. 7. Tab. 15. fig. 404.; S. YUHARA:—Study of Spider. Tokyo. 1931. p. 111, 112. figg. 40, 41.; TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5.; I. KAYASHIMA:—Ibid. Vol. 3. No. 4. 1932. p. 2.

A female example was obtained. The measurements are as follows (in centimeters):—total length, 1.05; abdomen, 0.70; leg, I, 2.30, leg, II, 1.50, leg, III, 0.65, leg, IV, 1.30.

Locality: Musha (T. HAYASHI), November, 1932.

Distribution: Japan: Honshu, Kyushu.

Genus *Eucta* E. SIMON, 1881

21. *Eucta javana* THORELL

Pl. III, Fig. 28 a-c.

Eucta javana, T. THORELL:—Descriptive Catalogue of the Spiders of Burma. British Museum. 1895. p. 146.

This spider is very rare, having been reported from Java and Burma. The measurements are as follows (in centimeters):—total length, 1.30; abdomen, 1.10; leg, I, 2.00, leg, II, 1.10, leg, III, 0.50, leg, IV, 1.00.

Locality: Taihoku (K. SHIBATA), February 23, 1927.

Distribution: Java. Burma.

Genus *Leucauge* WHITE, 181422. *Leucauge venusta* WALCKENAER.

Pl. III, Fig. 24.

Leucauge venusta, O. P. CAMBRIDGE:—*Biologia Centrali-Americana*. Vol. 2. 1897-1905. p. 441. Tab. 42. figg. 1, 2; J. A. ALLEN:—*Bull. Amer. Mus. Nat. Hist.* Vol. 29. 1911. p. 357; J. H. COMSTOCK:—*Spider Book*. New York. 1913. p. 442. figg. 434-436; C. R. CROSBY and S. C. BISHOP:—*Memoir Cornell Univ. Agr. Exper. Station*. 1926. p. 1055.

Leucauge hortorum, N. BANKS:—*Bull. Smithsonian Institution United States Nat. Mus.* 72. 1910. p. 35.

Argyropeira hortorum, J. H. EMERTON:—*Common Spider*. London. 1902. p. 192. figg. 446, 447.

The animal distributes extensively in the tropical and subtropical countries, particularly abounding in the New World. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.90	0.70	1.40	1.20	0.50	0.90
Female II	0.75	0.60	1.85	1.50	0.80	1.20

Locality: Taihoku (K. SHIBATA), February 27, 1927 and April, 1928.

Distribution: Mexico, Guatemala, Costa Rica, Panama, Colombia, U.S.A., Philippines, Hawaii.

Genus *Meta* C. L. KOCH, 183623. *Meta yunohamaensis* BÖS. et STRANDJap. name, *Yunohama-Doyogumo*

Pl. III, Fig. 12.

Meta yunohamaensis, W. BÜSENBURG und E. STRAND:—*Japanische Spinnen*. Stuttgart. 1905. p. 180.

Tab. 11. figg. 225, 229; T. KAMBE:—*Jour. Chosen Nat. Hist. Society*. No. 15. 1933. p. 44.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	1.30	1.00	2.70	2.00	0.90	1.70
Male I	0.60	0.45	1.40	1.25	0.70	1.00

Locality: Taihoku (K. SHIBATA), April 17, 1928 and Kanshirei (R. TAKAHASHI), April 19, 1928.

Distribution: Japan: Kyushu, Corea.

24. *Meta Doenitzi* BöS. et STRANDJap. name, *Doyogumo*

Pl. III, Fig. 15 a, b.

Meta Doenitzi, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 180. Tab. 11. figg. 238, 239.; S. YUHARA:—Study of Spider. Tokyo. 1931. p. 117, 118. figg. 45, 46.; T. KAMBE:—Jour. Chosen Nat. Hist. Society. No. 15. 1933. p. 44.

The measurements of a female are as follows (in centimeters):—total length, 0.80; abdomen, 0.45; leg, I, 1.25, leg, II, 1.15, leg, III, 0.75, leg, IV, 1.20.

Locality: Urae (I. KAYASHIMA), March 27, 1932.

Distribution: Japan: Honshu, Kyushu, Korea.

Genus *Poltys* C. KOCH, 1843

25. *Poltys nigrinus* n. sp.Jap. name, *Kuro-Tengugumo*

Pl. III, Fig. 29 a-e.

A female: cephalothorax much longer than broad. Caput projecting forward eminently; six eyes on the projection. Cervical groove tolerably strong. The cephalic part brownish yellow, covered rather thickly with brown hairs at its median longitudinal part; the thoracic part black. Eyes unequal in size; the central eyes of both rows white, the laterals black; the hind centrals placed postero-laterally on the cephalic part and the hind laterals at the base of the prominence of the caput, representing a triangle at the sides of the prominence with two eyes of the anterior row. Four anterior eyes larger than the hind, placed on the fore part of the prominence, the medians slightly larger than the laterals and the largest of eight. Legs moderately long and strong, those of the first pair the longest and strongest; colour brownish yellow, the femora and tibiae of the first and second pairs strongly marked with deep black. Sternum elongate, heart-shaped, yellowish brown in colour. Abdomen rather large, slightly longer than broad, the upper surface flattened-convex with several small processes arranged semi-circularly at the anterior part; upper side blackish brown with two great sepia patches at the posterior part, the sides are marked with blackish lines, the underside dull brown uniformly. The measurements are as follows (in centimeters):—total length, 1.40; abdomen, 1.20; leg, I, 2.10, leg, II, 1.80, leg, III, 1.30, leg, IV, 1.60.

Locality: Kagi (K. TOYODA), 1927.

Remarks: A single example was collected. The spider is closely allied to *Poltys stygius* THORELL from Burma, but it is easily distinguished from the

latter by the presence of the processes on the abdomen together with the different marking of the abdomen.

Genus *Nephila* LEACH, 1815

26. *Nephila clavata* L. KOCH

Jap. name, *Jorogumo*

Pl. III, Fig. 23.

Nephila clavata, L. KOCH:—Verhandl. d.K.K. zool. bot. Ges. Bd. 27. 1877. p. 741. Tab. 15. fig. 4.; R. J. POCK:—The Fauna British India. London. 1900. p. 218.; W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 190. Tab. 3. fig. 11. Tab. 11. fig. 217.; R. V. CHAMBERLIN:—Proc. U. S. Nat. Mus. Vol. 63. 1924. p. 15.; S. YUHARA:—Study of Spider. Tokyo. 1930. p. 123, 124. figg. 51, 52.; T. SATO, T. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5.; I. KAYASHIMA:—Ibid. Vol. 3. No. 4. 1932. p. 2.
Nephila limbata, T. THORELL:—Estratto dagli annali del Museo Civico di Storia Naturale di Genova. 2ser. Vol. 19. 1898.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	2.60	2.00	5.30	4.30	2.40	3.80
Female II	2.30	1.60	5.00	4.00	2.20	3.50
Female III	2.10	1.40	5.35	4.15	2.35	3.65
Female IV	2.30	1.50	5.60	4.60	2.70	4.20
Male I	1.00	0.70	2.70	2.30	1.40	2.20

Locality: Taihoku (R. TAKAHASHI), August, 1930.; Musha and Ari (T. HAYASHI), November, 1932.

Distribution: China, Burma, India, Japan: Honshu, Kyushu.

27. *Nephila maculata* (FABRICIUS)

Jap. name, *Oo-Jorogumo*

Pl. III, Fig. 25.

Nephila maculata, F. KARSCH:—Berliner Entomolog. Zeitschrift. Bd. 36. 1891. p. 284.; T. THORELL:—Descriptive Catalogue of the Spiders of Burma. British Museum. London. 1895. p. 159.; ———:—Estratto dagli Annali del Museo Civico di Storia Naturale di Genova. 2ser. Vol. 19. 1898. p. 337.; R. I. POCK:—The Fauna British India. London. 1900. p. 217. fig. 68.; J. A. ALLEN:—Bull. Amer. Mus. Nat. Hist. Vol. 29. 1911. p. 382.
Nephila chrysogaster, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 193. Tab. 11. fig. 208.
Nephila Lucasii, T. THORELL:—Bihang Till K. Sv. Vet.-Akad. Handl. Bd. 25. 1899. p. 35.

Aranea maculata, J. C. FABRICIUS:—Entomologia Systematica. Tom. 2. 1793. p. 425.

The measurements of a single female specimen are as follows (in centimeters):—total length, 4.80; abdomen, 3.20; leg, I, 9.00, leg, II, 7.80, leg, III, 4.90, leg, IV, 8.00.

Locality: Ari (T. HAYASHI), November, 1932.

Distribution^{b)}: Ceylon, Burma, India, China, Australia, U. S. A.^{a)}, Japan: Liu Kiu Islands.

Genus **Argyope** AUDOUIN, 1827

28. **Argyope minuta** KARSCH

Jap. name, *Kogata-Koganegumo*

Pl. III, Fig. 36 a-b.

Argyope minuta, F. KARSCH:—Verhandl. d. N. V. Jahrg. 36. 1879. p. 67.; W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 194. Tab. I. fig. 16. Tab. II. figg. 218, 222.; S. YUHARA:—Study of Spider. Tokyo. 1930. p. 128. fig. 54.; TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5.

The measurements of an adult female are as follows (in centimeters):—total length, 1.40; abdomen, 0.85; leg, I, 2.80, leg, II, 2.80, leg, III, 1.85, leg, IV, 2.75.

Locality: Musha (T. HAYASHI), November, 1932.

Distribution: Japan: Honshu, Kyushu.

Genus **Cyclosa** MENGE, 1866

29. **Cyclosa bicauda** n. sp.

Jap. name, *Futao-Gomigumo*

Pl. III, Fig. 31 a-d.

Female: cephalothorax much longer than broad; dull yellow or blackish brown with black markings on the sides of the caput and thoracic part; cervical groove moderate. Eyes in normal position, occupying the whole width of the fore extremity of the caput; the posterior row slightly procurved, the anterior row recurved; the hind central eyes are separated by less than a diameter of an eye, those of the fore centrals by a distance equal to a diameter. Four central eyes forming a trapezoid, the length being greater than the width, and the fore side longer than the hind. Clypeus low. Legs rather short, tolerably strong, furnished with hairs and a few slender spines; colour like that of the

1) E. STRAND (Zool. Anz. Bd. 31. 1907. p. 525.) reported a subspecies of this spider from Madagascar under the name of *Nephila maculata maculata*.

2) According to McCOOK the distribution of this same species in U. S. A. doubtful.

cephalothorax, but a little darker. Chelicerae brown, the lower margin of the furrow armed with three teeth. Sternum longer than broad, the anterior extremity broadly truncated; somewhat subtriangular the edge rugged, the insertion of leg corresponding to the convex; yellow or yellowish brown with the black parts between the inserting points of legs. Abdomen large, projecting over the thorax, prolonged remarkably posteriorly to be widely bifurcate at the termination; whitish yellow, with a black, weak mesh and four distinct black muscular points at the posterior part, the sides marked with irregular blackish lines, the underside blackish. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	1.25	0.90	1.25	1.15	0.70	1.15
Female II	0.90	0.70	1.00	1.00	0.70	0.95
Male I (immature)	1.00	0.80	1.00	0.95	0.60	0.85

Locality: Taihoku (R. TAKAHASHI), October 24, 1927 and (I. KAYASHIMA) 1931; Nitsugetsutan (T. HAYASHI), November, 1932.

Remarks: This species is allied to *Cyclosa bifurca* McCook, but differs in the absence of four conical warts on the abdomen.

30. *Cyclosa spinosa* n. sp.

Jap. name, *Togeo-Gomigumo*

Pl. III, Fig. 33 a-d.

Female: cephalothorax much longer than broad; caput somewhat rounded in front; colour yellow with a longitudinal, median, sepia line, ending anteriorly at the posterior median eyes, and a broad, marginal, dark sepia band on the thoracic part. Eyes occupying the whole width of the caput; the fore-centrals situated on a strong tuberculiform prominence; four centrals forming a trapezoid which is longer than broad, the posterior side being the shortest; the fore-centrals largest, and the others subequal in size; the lateral eyes of both rows situated obliquely on tubercles. The posterior row of eyes, looked at from above, is nearly straight, the anterior row strongly recurved. Legs moderately long, strong, furnished with hairs and numerous strong spines, yellow in colour. Chelicerae short, brown. Sternum yellow in colour, subtriangular. Abdomen slender, the hind part prolonged and ending in a spine-like projection; the anterior part divided into two and covering the thorax; silver in colour with

a median, longitudinal, light black band and black mesh at the anterior part; the sides deep yellow, the underside somewhat blackened. The measurements are as follows (in centimeters):—total length, 0.60; abdomen, 0.35; leg, I, 0.70, leg, II, 0.65, leg, III, 0.40, leg, IV, 0.50.

Locality: Takeyama (R. TAKAHASHI), April 17, 1927.

Remarks: The species is easily distinguishable from the other species of the genus by the form and the posterior projection of the abdomen.

31. *Cyclosa tricauda* n. sp.

Jap. name, *Mitsuo-Gomigumo*

Pl. III, Fig. 38 a, b.

Female: cephalothorax dull yellow with a marginal black band, furnished thinly with greyish hairs. Eyes small, in two ordinary transverse rows of nearly equal length, both slightly recurved; the quadrangle formed by four central eyes slightly broader than long, and the anterior side distinctly shorter than the posterior side; the eyes of the posterior row subequal in size and approximately equally separated by about an eye's diameter; the lateral eyes of both rows contiguous with each other. Legs moderately long and strong, covered with coarse hairs and spines, the latter not numerous nor very strong; yellow in colour with two black markings on each joint. Sternum oval, higher than wide, pointed behind; black in colour. Abdomen large, somewhat quadrate, with three hind projections, one in the median line and one on each side, extending tail-like over the spinnerets; upper part and the sides pale yellow, with scattered black markings and spots in the middle and a little behind the center, posteriorly diverging lines; underside, including the spinnerets, black with some irregular dull white spots at the anterior parts. The measurements are as follows (in centimeters):—total length 0.55; abdomen, 0.45; leg, I, 0.65, leg, II, 0.50, leg, III, 0.45, leg, IV, 0.60.

Locality: Musha (T. HAYASHI), November, 1932.

Remarks: The species is closely allied to the well-known Japanese form *Cyclosa laticauda* BÖS. et STRAND in general appearance, colours and markings. However, it is very small in size, being less than $\frac{1}{2}$ that of the latter.

Genus *Araneus* L., 1759

32. *Araneus Bertkani* L. KOCH

Pl. III, Fig. 13 a, b.

Epeira Bertkani, L. KOCH:—Arachniden Australiens. Nürnberg. 1886. p. 233. Tab. 21. fig. 1.

The measurements of an adult female are as follows (in centimeters):—
total length, 0.95; abdomen, 0.65; leg, I, 1.70, leg, II, 1.50, leg, III, 1.00,
leg, IV, 1.35.

Locality: Taihoku (R. TAKAHASHI), December 29, 1927.

Distribution: Australia.

33. *Araneus Dönitzella* STRAND

Pl. III, Fig. 16

Aranea Dönitzella, W. BÜSENBURG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 383.
Tab. 4. fig. 40.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.35	0.25	—	—	—	—
Female II	0.30	0.25	—	—	—	—
Female III	0.30	0.20	—	—	—	—

Locality: Taihoku (K. SHIBATA), February 22, 1927 and April 17, 1928.

Distribution: Japan: Kyushu.

34. *Araneus ventricosus* L. KOCH

Jap. neme, *Onigumo*

Araneus ventricosus, S. SAITO:—Ann. Zool. Japan. Vol. 13. 1931. p. 143.; ———:—Ibid. Vol. 13. 1932. p. 378.; TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. p. 5. 1932.; I. KAYASHIMA:—Ibid. Vol. 3. No. 4. 1932. p. 4.; T. KAMBE:—Jour. Chosen Nat. Hist. Society. No. 15. 1933. p. 44.

Aranea ventricosa, W. BÜSENBURG und E. STRAND:—Japanische spinnen. Stuttgart. 1905. p. 213.
Tab. 1. figg. 177, 198. Tab. 3. fig. 15. Textfig. 3.

Epeira ventricosa, L. KOCH:—Verhandl. d. zool.-botan. Ges. 1877. p. 739. Tab. 15. fig. 2.

Epeira senta, F. KARSCH:—Verhandl. d. Naturhist. Vereins d. preuss. Rheinlande u. Westfalen. 36. 1879. p. 70. Tab. 1. figg. 5, 5a.

The measurements of an adult female are as follows (in centimeters):—
total length, 2.30; abdomen, 1.70; leg, I, 3.80, leg, II, 3.50, leg, III, 2.40,
leg, IV, 3.40.

Locality: Juzan (T. HAYASHI), November, 1932.

Distribution: South Manchuria, China, Japan: Saghalien, Hokkaido, Honshu, Shikoku, Kyushu, Corea.

35. *Araneus Mellottéi* (SIMON)

Pl. III, Fig. 37 a, b.

Aranea Mellottéi, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 218.
Tab. II. fig. 223.

The measurements of an adult female are as follows (in centimeters):—total length, 1.00; abdomen, 0.60; leg, I, 1.65, leg, II, 1.45, leg, III, 1.00, leg, IV, 1.40.

Locality: Tainan (T. HAYASHI), November, 1932.

Distribution: Japan: Honshu, Kyushu.

36. *Araneus lacteus* n. sp.Jap. name, *Shiro-Onigumo*

Pl. III, Fig. 30 a-c.

Female: cephalothorax yellowish brown to brown without marking, covered with whitish hairs. Eyes in three groups as usual; those of the central group seates on a prominence, forming a square, whose posterior side is the shortest, the anterior pair apart from the lower margin of the clypeus by an eye's diameter. Legs moderately long and strong, furnished with grey hairs; colour yellowish brown to brown, irregularly annulated with dark brown. Maxillae and labium blackish brown tipped with white. Sternum similar in colour. Abdomen subtriangular, rounded in front, obtuse behind; the upperside dull brownish yellow and the larger portion of the back occupied by a broad black-brown band tapering posteriorly toward the spinnerets with very defined dentated black-brown margin; the sides marked with some irregular oblique black stripes; the underside black at the central portion and marked with four yellowish spots forming a square. Spinnerets normal, dark brown in colour. The genital process is characteristic and prominent; a broad genital process a little hanging over the genital pore. The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.85	0.65	1.45	1.25	0.85	0.95
Female II	0.90	0.70	1.75	1.45	0.95	1.45
Female III	0.85	0.55	1.50	1.40	0.90	1.30
Female IV	1.10	0.75	1.90	1.70	1.15	1.65
Female V	1.00	0.75	1.50	1.45	1.00	1.40
Male I (immature)	0.65	0.50	0.90	0.85	0.50	0.80

Locality: Kannonzan (R. TAKAHASHI), January 22, 1928.; Taihoku (K. SHIBATA), April 17, 1928.; Taihoku (R. TAKAHASHI), August, 1930.; Shirin (R. TAKAHASHI), February 28, 1930.; Taihoku (I. KAYASHIMA), June 17, 1931, and June 24, 1931.

Remarks: The spider is much the same in general appearance with *Araneus aculiferus* O. P. CAMBRIDGE, but the form of the genital process is on the contrary closely allied to that of *Araneus gravabilis* O. P. CAMBRIDGE.

Genus ***Gasteracantha*** SUNDEVALL, 1833

37. ***Gasteracantha brevispina*** DOLESCHALL

Jap. name, *Futahoshi-Togegumo*

Gasteracantha brevispina, F. KARSCH:—Berliner Entomolog. Zeitschrift. Bd. 36. 1891. p. 278.; T. THORELL:—Bihang Till K. Svenska Vet.-Akad. Handlingar. Bd. 24. 1891, p. 58.; ———:—Ann. Mag. Nat. Hist. 1892. p. 233.; ———:—Descriptive Catalogue of the Spider of Burma. British Museum. London. 1895. p. 213.; ———:—Astratto dagli Annali del Museo Civico di Storia Naturale di Genova. 2ser. Vol. 19. 1898. p. 107.; ———:—Bihang Till K. Svenska. Vet.-Akad. Handlingar. Bd. 25. 1899. p. 64.; R. I. POCKOCK:—The Fauna of British India. London. 1900. p. 235.

Gasteracantha mammosa, S. YUHARA:—Study of Spider. Tokyo. 1930. p. 137. fig. 63.; TD. SATO, TK. SATO and I. KAYASHIMA:—Sylvia. Vol. 3. No. 1. 1932. p. 5.; I. KAYASHIMA:—Ibid. Vol. 3. No. 4. 1932. p. 4.

The measurements are as follows (in centimeters):—

Sex	total length	length of abdomen	breadth of abdomen
Female I	0.80	0.90	0.60
Female II	0.75	0.85	0.60

Locality: Taihoku (R. TAKAHASHI), August, 1930.

Distribution: India, Burma, Sumatra, Java, Borneo, New-Guinea, Malacca, Japan: Honshu.

38. ***Gasteracantha sola*** n. sp.

Jap. name, *Kuroobi-Togegumo*

Pl. III, Fig. 34 a, b.

Female: cephalothorax with the caput considerably raised; the sides gibbous, the cervical groove not recognizable; yellow marked with a black cross and a black marginal marking. Eyes in three groups, small; those of the central group forming a square, whose posterior side is the shortest, the eyes forming this side being separate by a diameter; the anterior pair of eyes of

this group somewhat larger than the others, separated from the lower margin of the clypeus by an eye's diameter; those of each lateral pair almost contiguous to each other. Legs short, strong, of yellow colour, distinctly annulated and marked with deep black, the markings of the third and fourth legs smaller than those of the first and second, furnished with hairs and spines. Maxillae, labium and sternum yellow, the first two black at the base, the last one with a black median longitudinal line. Abdomen large, convex and somewhat globular in form, leathery, the margin fringed with spinose processes; of deep brown colour with a broad longitudinal black band from the anterior margin to the spinnerets covering the two posterior spines; the side and underside uniformly black. The measurements of a female are as follows (in centimeters):—total length, 1.10; length of abdomen, 0.90, breadth of abdomen, 1.00, height of abdomen, 0.80; leg, I, 0.90, leg, II, 0.80, leg, III, 0.55, leg, IV, 0.80.

Locality: Taihoku (K. SHIBATA), February 22, 1927.

Remarks: The spider is allied to *Gasteracantha minax* THORELL. It differs from the latter in the patterns of the cephalothorax and abdomen, and also in the colour and markings of the legs.

39. *Gasteracantha sparsa* n. sp.

Jap. name, *Buchi-Togegumo*

Pl. III, Fig. 35 a, b.

Female: cephalothorax rounded in the sides, truncated in front; yellow in colour with a black, broad, median, longitudinal band and a marginal band on each side, covered with white hairs. Eyes in the usual three groups; the central group forming a rectangle, whose posterior side is the shortest; the anterior eyes larger than the posteriors, separated from the lower margin of the clypeus by much less than an eye's diameter; the laterals nearly contiguous to each other. Legs short, strong; dull yellow, annulated and marked with dark yellowish brown, and furnished with grey and white hairs and numerous spines. Maxillae and labium black, tipped with pale yellow. Sternum dark yellowish brown, with a black, median, longitudinal line. Abdomen leathery, the edge fringed with spinose processes; the upperside concave; the anterior margin truncated; dull brown in colour with a complex black pattern; a large pattern at the base of each spine, two lines anterior to the base of the anterior spines, two lines posterior to the median part of the abdomen, the irregular meshes connecting the above lines; the sides and underside black uniformly. The measurements are as follows (in centimeters):—total length, 0.70; length of abdomen, 0.55, breadth of abdomen, 0.80, height of abdomen, 0.50; leg,

I, 0.65, leg, II, 0.65, leg, III, 0.45, leg, IV, 0.70.

Locality: Taihoku (K. SHIBATA), February 22, 1927.

Remarks: The present spider appears like *Gasteracantha brevispina* DOLESCHALL, but it is readily distinguishable from the latter by the pattern of the abdomen, and by the form of the genital organ.

40. ***Gasteracantha formosana*** n. sp.

Jap. name, *Taiwan-Togegumo*

Pl. III, Fig. 32 a-c.

Female: cephalothorax as wide as long; truncated in front and rounded in sides: colour yellowish brown with a yellow hue at the caput, a black, longitudinal median line through the full length of the cephalothorax and a black band at each side. Eyes in the usual three groups moderate in size; four central eyes forming nearly a square, seated on a slight black prominence. Legs short, not very strong, yellow, distinctly annulated with blackish brown, covered with hairs and bristles. Maxillae and labium yellow, furnished with white hairs. Sternum lengthened oval, truncated in front and pointed behind; black in colour with two yellow, circular points at the anterior part and a yellow inversed V-shaped pattern at the posterior part. Abdomen leathery with a fringe of spinose processes, somewhat rounded in front; colour brownish black with a very complicated pattern; the sides and underside black uniformly. The measurements are as follows (in centimeters):—total length, 0.85; length of abdomen, 0.70, breadth of abdomen, 0.80, height of abdomen, 0.65; leg, I, 0.60, leg, II, 0.60, leg, III, 0.45, leg, IV, 0.70.

Locality: Taihoku (K. SHIBATA), February 22, 1927.

Remarks: The species closely resembles *Gasteracantha sola* SAITO in general form but it is distinct in the patterns of the abdomen. On the other hand it is like *Gasteracantha kochi* BUTLER in the patterns, but it is also easily distinguished from the latter in the form of the abdomen and also in the colour of sternum.

Family *AGELENIDAE*

Genus ***Tegenaria*** LATREILLE, 1804

41. ***Tegenaria*** sp.

The colouration of the present spider is much the same as that of *Tegenaria dea* DÖN. et STRAND in the original paper,¹⁾ of which only two figures of an adult and a subadult female are given without descriptions. So the author

1) W. BÜSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 388. Tab. 17. fig. 79.

avoids at present to treat this spider as a new species. The measurements are as follows (in centimeters):—total length, 0.50; abdomen, 0.30; leg, I, 0.60, leg, II, 0.60, leg, III, 0.50, leg, IV, 0.70.

Locality: Taihoku (K. SHIBATA), April 17, 1928.

Family *OXYOPIDAE*

Genus *Oxyopes* LATREILLE, 1804

42. *Oxyopes sertatus* L. KOCH

Pl. III, Fig. 19 a, b.

Oxyopes sertatus, L. KOCH:—Verhandl. d. K. K. zool. bot. Ges. Bd. 27. 1877. p. 779.; W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 327. Tab. 8. fig. 117. Tab. 15. fig. 435.

The measurements are as follows (in centimeters):—

Sex	total length	abdomen	leg, I	leg, II	leg, III	leg, IV
Female I	0.65	0.40	0.95	0.95	0.75	0.80
Female II	0.65	0.40	0.95	0.95	0.75	0.80
Female III	0.60	0.35	0.80	0.80	0.60	0.70
Female IV	0.80	0.60	1.10	1.10	0.90	1.00
Female V	0.80	0.50	0.95	0.95	0.75	0.75
Male I (immature)	0.85	0.50	1.15	1.00	0.90	1.10
Male II (immature)	0.80	0.45	1.15	1.15	1.00	1.10

Locality: Nitsugetsutan (Y. MIWA), March 25, 1929, Urai (I. KAYASHIMA), March 27, 1932.

Distribution: Japan: Honshy, Kyushu.

Family *PISAUROIDAE*

Genus *Dolomedes* LATREILLE, 1804

43. *Dolomedes saganus* Bös. et STRAND

Pl. III, Fig. 11 a, b.

Dolomedes saganus, W. BÖSENBERG und E. STRAND:—Japanische Spinnen. Stuttgart. 1905. p. 312. Tab. 8. fig. 135. Tab. 13. fig. 328.

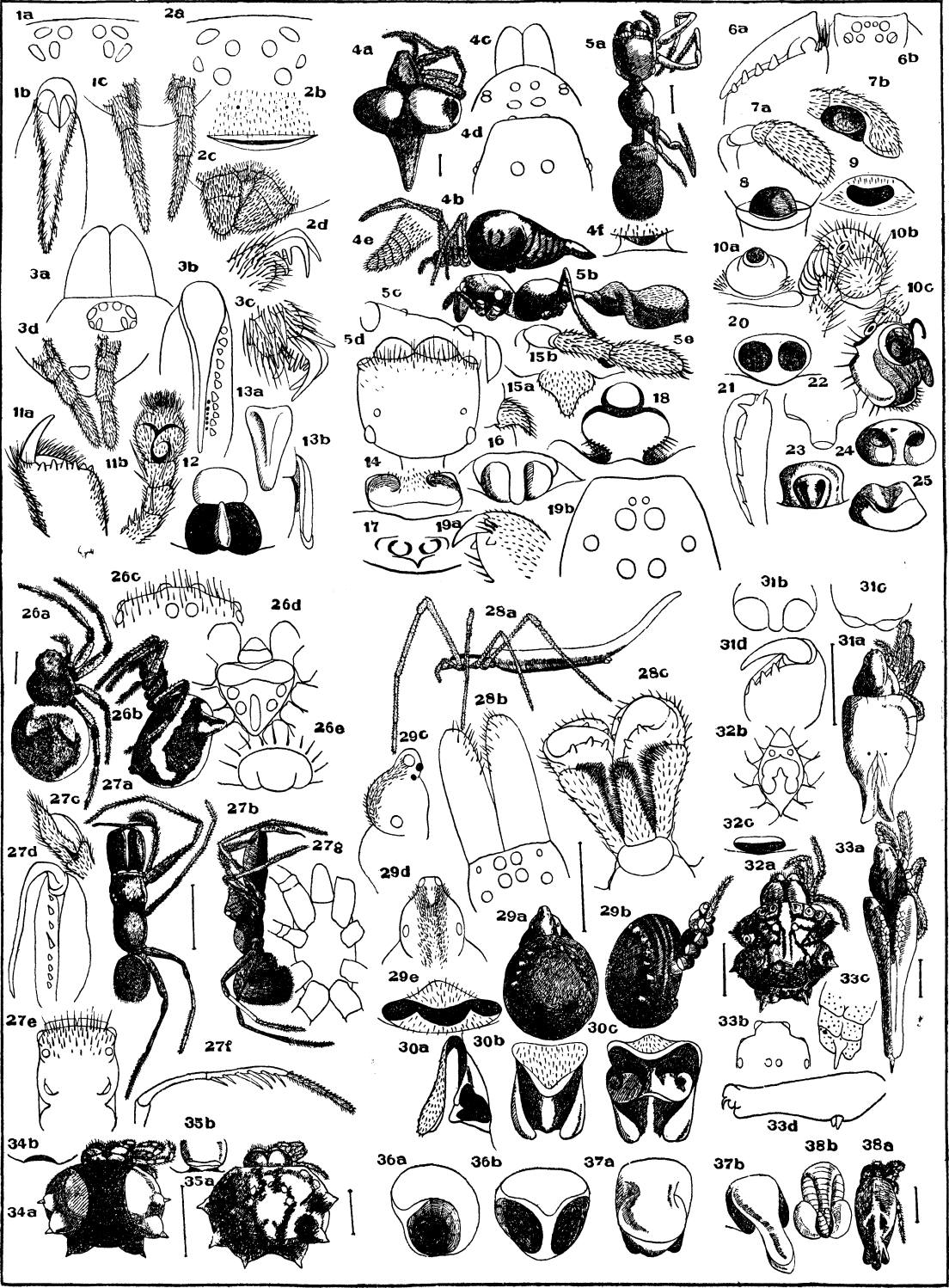
The measurements are as follows (in centimeters):—total length, 1.80; abdomen, 1.00; leg, I, 4.80, leg, II, 4.20, leg, III, 3.40, leg, IV, 4.20.

Locality: Taihoku (R. TAKAHASHI), July 27, 1928.

Distribution: Japan: Honshu, Kyushu.

Explanation of Plate

1. *Euagrus formosanus*, female: 1a, eyes from front, and a little above; 1b, left chelicera from beneath; 1c, spinnerets from beneath.
2. *Bothriocyrtum tractabile*, female: 2a, eyes from front; 2b, epigynum; 2c, spinnerets; 2d, tarsus of leg I.
3. *Ischnothele simplicata*, female: 3a, eyes from above; 3b, right chelicera; 3c, tarsus of leg I; 3d, spinnerets from beneath.
4. *Theridula caudata*, female: 4a, full figure from above; 4b, profile; 4c, eyes from front, a little below; 4d, eyes from above; 4e, posterior end of abdomen, from the side, showing spiral constriction; 4f, epigynum.
5. *Simonella formosana*, male: 5a, dorsal view; 5b, lateral view; 5c, eyes, side view; 5d, eyes from above; 5e, palpus from outer side.
6. *Heteropoda venatoria*, female: 6a, chelicera from outer side; 6b, eyes from above.
7. *Myrmarachne innermichelis*, male: 7a, palpus from outer side; 7b, palpus from inner side.
8. *Smeringopus kishidai*, female: 8, epigynum.
9. *Theridion tepidariorum*, female: 9, epigynum.
10. *Theridion elegans*, male and female: 10a, epigynum; 10b, palpus from the other side; 10c, palpus from inner side.
11. *Dolomedes saganus*, male: 11a, chelicera from beneath; 11b, right palpus from outer side.
12. *Meta yunohamaensis*, female: 12, epigynum.
13. *Araneus Bertkani*, female: 13a, scapus of epigynum from above; 13b, scapus of epigynum in profile.
14. *Enoplognatha crassipes*, female: 14, epigynum from above.
15. *Meta Doenitzi*, female: 15a, scapus of epigynum, profile view; 15b, same from above.
16. *Araneus Doenitzella*, female: 16, epigynum, anterior view.
17. *Myrmarachne japonica*, female: 17, epigynum.
18. *Misumena japonica*, female: 18, epigynum.
19. *Oxyopes sertatus*, female: 19a, chelicera from beneath; 19b, eyes from front.
20. *Argyrodes bona dea*, female: 20, epigynum.
21. *Tetragnatha japonica*, male: 21, chelicera from above.
22. *Tetragnatha praedonia*, female: 22, epigynum.
23. *Nephila clavata*, female: 23, epigynum.
24. *Leucauge venusta*, female: 24, epigynum.
25. *Nephila maculata*, female: 25, epigynum.
26. *Argyrodes longispinus*, female: 26a, from above; 26b, profile; 26c, epigynum; 26d, sternum, coxae of legs, maxillae and labium.
27. *Myrmarachne mignus*, male: 27a, from above; 27b, profile; 27c, palpus from outside; 27d, right chelicera from below; 27e, eyes from above; 27f, 1st leg; 27g, sternum.
28. *Eucta javana*, female: 28a, profile; 28b, chelicerae and eyes from above; 28c, chelicerae, maxillae and labium from beneath.
29. *Poltys nigrinus*, female: 29a, dorsal aspect, legs and palpi omitted; 29b, profile view, legs omitted; 29c, cephalic part, profile view; 29d, same from above; 29e, epigynum.
30. *Araneus racteus*, female: 30a, female organ, side view; 30b, same from above; 30c, same from a little beneath.
31. *Cyclosa bicauda*, female: 31a, dorsal view; 31b, epigynum from above; 31c, same, anterior view; 31d, left chelicera from beneath.
32. *Gasteracantha formosana*, female: 32a, dorsal view; 32b, sternum, coxae, maxillae and labium; 32c, epigynum.
33. *Cyclosa spinosa*, female: 33a, dorsal view; 33b, eyes from above; 33c, posterior end of abdomen, showing spine; 33d, abdomen, profile view.
34. *Gasteracantha sola*, female: 34a, dorsal view; 34b, epigynum.
35. *Gasteracantha sparsa*, female: 35a, dorsal view; 35b, epigynum.
36. *Argyope minuta*, female: 36a, epigynum, profile view; 36b, same from above.
37. *Araneus Mellottèi*, female: 37a, epigynum from above; 37b, same, lateral view.
38. *Cyclosa tricauda*, female: 38a, dorsal view; 38b, epigynum.



摘 要

臺灣産蜘蛛に就て

藤 三 郎

本文は臺灣産蜘蛛四十三種を報告するものにして、次の十七種を新種と認めて記載す。

<i>Bothriocyrtum tractabile</i> SAITO (n. sp.)	ヤサガタトタテグモ
<i>Ischnothele simplicata</i> SAITO (n. sp.)	ヒラジョウゴグモ
<i>Euagrus formosanus</i> SAITO (n. sp.)	タイワンジョウゴグモ
<i>Myrmarachne magnus</i> SAITO (n. sp.)	オウアリグモ
<i>Simonella formosana</i> SAITO (n. sp.)	タイワンシモンアリグモ
<i>Smeringopus kishidai</i> SAITO (n. sp.)	キシダユウレイグモモドキ
<i>Theridion elegans</i> SAITO (n. sp.)	ヤサガタヒメグモ
<i>Theridula caudata</i> SAITO (n. sp.)	オナガヒメグモモドキ
<i>Argyroides longispinus</i> SAITO (n. sp.)	トゲイソウロウグモ
<i>Poltys nigrinus</i> SAITO (n. sp.)	クロテンググモ
<i>Cyclosa bicauda</i> SAITO (n. sp.)	フタテゴミグモ
<i>Cyclosa spinosa</i> SAITO (n. sp.)	トゲテゴミグモ
<i>Cyclosa tricauda</i> SAITO (n. sp.)	ミツテゴミグモ
<i>Araneus lacteus</i> SAITO (n. sp.)	シロオニグモ
<i>Gasteracantha sola</i> SAITO (n. sp.)	クロオビトゲグモ
<i>Gasteracantha sparsa</i> SAITO (n. sp.)	ブナトゲグモ
<i>Gasteracantha formosana</i> SAITO (n. sp.)	タイワントゲグモ

本稿は内田亨博士の御厚意に依る高橋、柴田、三輪、豊田、萱島諸氏の採取せられし標本、及び林禎二郎氏が第八回日本動物學會に出席の折の採取標本に依るものなり。茲に更めて以上の諸氏に深甚の謝意を表す。並に多大の助言を賜りたる犬飼博士に深厚なる感謝の意を表す。

北海道帝國大學 農學部動物學教室

注 意

本會に對する總ての書信は北海道帝國大學
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下記事項御含みの上御寄稿願上候

1. 第十三卷第二號原稿
2. 昭和八年十月末日×切
3. 昭和八年十一月發行の豫定
4. 原稿は尨大ならざるもの
5. 歐文は「タイプライテング」のこさ
6. 論文には歐文及び和文の題目を記せられ度し
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キ ャ ッ プ	(CAP)	=====
スモールキャップ	(SMALL CAP)	=====
イ タ リ ッ ク	(Italic)	=====
ヘ ビータイプ	(Heavy type)	=====
ヘビーイタリツク	(Heavy Italic)	=====
ゲ ス ペ ル ト	(Gesperrt)	-----

人名はスモールキャップ。學名はイタリツク。

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