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SPIDERS FROM HOKKAIDO

By

Saburo Saito

(With four Plates)

INTRODUCTION

Since the time of the publication of the rather monumental work on the spider of Japan, "Japanische Spinnen" by W. BÜSENBERG and E. STRAND¹⁾ dealing chiefly with the animals from Kyushu and southern parts of Honshu in 1905, that is about 30 years ago, our knowledge of Japanese Arachnology has hardly advanced. Practically the spider of Hokkaido, where the creature abounds and where there is a particular interest in view of zoogeography, has been represented by an extremely limited number, only four very common species, *Theridion tepidariorum* C. L. KOCH, *Araneus ventricosus* (L. KOCH), *Araneus cornutus* CLERCK and *Araneus pinguis* (KARSCH)²⁾ having been reported inhabiting the island. With the intention of making a complete survey of spider fauna in northern Japan, the present writer has recently reported on several different occasions the spiders of Saghalien, the North and South Kuriles, and Rishiri and Rebun Islands which lie off the western coast of Hokkaido.

The collection of spiders from all localities in Hokkaido has been carried out since 1929 on a large scale by the author kindly assisted by the following gentlemen, Messrs. M. SHIRATO, S. NISHIO, M. TERUI, S. MAKINO, M. SAKAMOTO, C. CHANG, S. MOTODA, H. ITOH, G. HAYASHI, Y. OHTA, H. YAMAGUCHI, R. MATSUKI, M. L. PEELLE, Dr. TOHRU UCHIDA and Dr. T. INUKAI, to whom the author wishes to express his hearty thanks. The collection has reached a quite large number and the specimens have now been put in order for the first time for publication. They have been identified with forty known genera including sixty-one known and twenty-two new species covering fourteen families.

The system of classification adapted in the present work is a somewhat modified form of "Systema Aranearium" (Transactions of the Con-

1) W. BÜSENBERG und E. STRAND:—"Japanische Spinnen", Stuttgart, 1905.

2) The locality of *Araneus ventricosus* (L. KOCH) is "Hatodate" in the original paper, but it is surely an error of the press for "Hakodate". *Araneus pinguis* (KARSCH) was collected from Nemuro or Etorof (Iterup).

necticut Academy of Arts and Science, Vol. 29, 1928) after A. PETRUNKEVITCH combined with that of "Die Tierwelt Mitteleuropas" after R. BREMEN. As there has been almost no available illustration of spiders of Japan generally except for the work by W. BÖSENBERG and E. STRAND, a full description and a figure based on the mature specimen of even well known species are given as frequently as possible. All measurements are given in centimeters. The measurements for appendages are made from the proximal point of the coxae to the apical point of tarsi. In the case of eyes the measurements represent the diameter of the cornea and for the oval eyes, the longer axis is taken. The measurements of the length or width of the eye group or of the quadrangle of median eyes invariably include the eyes, but not the curvature of eye-row. Similarly the length, width and height of the carapace do not mean the curvature, but represent an airline.

From the present study the hitherto unexplored spider fauna of Hokkaido has become known. This has enabled the writer to enter into a general consideration of the zoogeographical relation of the island as concerned with the spider. Accordingly a comparative study of the fauna of Hokkaido with those of the adjacent territories has been carried out.

Family	Number of species recorded only from Hokkaido	Number of species found in Hokkaido and Central Japan	Number of species found in Central Japan, Hokkaido and Eurasian continent	Number of species found in Hokkaido and northern part of Eurasian continent	Number of species distributed in northern part of the New and Old Worlds	Total number of species found in Hokkaido
Oecobiidae	1	—	—	—	—	1
Thomisidae	3	3	5	—	3	14
Clubionidae	2	2	1	—	—	5
Attidae	2	1	—	2	1	6
Pholcidae	—	1	—	—	—	1
Theridiidae	3	1	—	—	1	5
Linyphiidae	1	1	—	2	2	6
Micryphantidae	1	—	—	—	—	1
Argiopidae	2	6	2	2	6	18
Tetragnathidae	2	2	—	1	1	6
Amaurobiidae	—	—	—	1	—	1
Agelenidae	2	5	—	1	—	8
Pisauridae	—	2	—	—	—	2
Lycosidae	3	1	—	4	1	9
total	22	25	8	13	15	83

One may see that of 83 species of spiders occurring in Hokkaido 15 species are widely distributed throughout the northern circumpolar regions including the Eurasian and the American continents, and 13 forms are common to the former continent. Thus there are 28 species which are to be considered as northern continental forms. On the other hand 25 species belong to the southern kinds inhabiting also Japan proper. The most widely distributed species extending from Japan proper to the polar region of the continent are 8 in number; while these confined only to Hokkaido number 22. Taking into consideration the above facts, it can be seen that the spider fauna of Hokkaido is of a mixed nature including both northern and southern elements.

The Soya Strait makes the northern limit line of southern forms, while the Tsugaru Strait demarcates the southern boundary of the continental elements.

Here the utmost appreciation is offered to Dr. T. INUKAI for much valuable advice and suggestion and to Dr. TOHRU UCHIDA for his unceasing encouragement during the work.

CLASSIFICATION

In Hokkaido no species belonging to the Liphistimorphae or to the Mygalomorphae has yet been identified. Only the genus and species of the Trionycha of the Arachnomorphae are found; this is the spider in which the abdomen with a pair of spiracles leading into the booklungs, is not segmented and the chelicerae are articulated so as to move the fangs in and out.

The forms treated in this work are referred to the following families.

Key to Families of Spiders of Hokkaido

- | | | |
|--|-------|-------------------------|
| 1. a. Three claws. | | 2. |
| b. Two claws. | | 12. |
| 2. a. Anal tubercle large, two-jointed, with a fringe of long hair. | | Family I. Oecobiidae |
| b. Anal tubercle normal. | | 3. |
| 3. a. Cribellum and calamistrum present at least in the female, as well as in the immature male. Eyes heterogenous, anterior median (direct) eyes alone diurnal. | | Family XI. Amaurobiidae |
| b. Cribellum and calamistrum wanting. | | 4. |
| 4. a. Fourth tarsi with a ventral row of serrated bristles forming a distinct comb. | | 5. |

- b. No ventral comb of serrated bristles on fourth tarsi. 6.
- 5. a. Margins of chelicerae transverse and smooth.
..... Family VI. Theridiidae
- b. Margins of chelicerae oblique. Promargin with three well-developed teeth. Family VIII. Micryphantidae
- 6. a. Chelicerae soldered together at base. Eyes heterogenous, direct eyes alone diurnal and the nocturnal eyes in two groups each consisting of three eyes. Family V. Pholcidae
- b. Chelicerae free. 7.
- 7. a. Serrated bristles on tarsi present, forming at least one pair of spurious claws. 8.
- b. Serrated bristles wanting on tarsi or at least not in the shape of spurious claws. 10.
- 8. a. External surfaces of chelicerae with stridulating ridges.
..... Family VII. Linyphiidae
- b. Stridulating ridges on chelicerae wanting. Orb-weavers. 9.
- 9. a. Femora with several trichobothria arranged in a single or double row. Chelicerae without condyle. Family X. Tetragnathidae
- b. Chelicerae with well-developed condyle. ... Family IX. Argiopidae
- 10. a. Chelicerae with a distinct condyle. Anterior median eyes not far in advance of all the other eyes. Tarsal trichobothria in a regular row.
..... Family XII. Agelenidae
- b. Trichobothria on tarsi either in two rows or irregularly. 11.
- 11. a. Upper claws with numerous teeth in a single row. Inferior claw with two or three teeth. Legs rather long. Young spiderlings living for a while in a web. Family XIII. Pisauridae
- b. Upper claws with few teeth. Inferior claw either smooth or with a single tooth. Legs short. Young spiderlings carried on the back of the mother's abdomen. Family XIV. Lycosidae
- 12. a. Without cribellum or calamistrum. Eight eyes in three rows, homogeneous diurnal. First row composed of four eyes, second and third of two eyes each. Family IV. Attidae
- b. Eyes in two rows. 13.
- 13. a. All tarsi without scopula. Family II. Thomisidae
- b. At least first and second tarsi with scopula.
..... Family III. Clubionidae

Family I. *OECOBIIDAE*

Only one species of *Oecobius* belonging to this family is identified.

No form of *Uroctea* which is distributed in Honshu, has been collected in Hokkaido up to the present.

Genus ***Oecobius*** LUCAS, 1845

1. ***Oecobius sapporense*** n. sp. Jap. name, *Kita-chirigumo*.

Pl. XII, Fig. 1, a. Lateral view of female. b. Dorsal view of female.

Pl. XIV, Fig. 33, a. Eyegroup. b. Epigynum.

Locality: Sapporo (1 female, S. SAITO, Sept. 13, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.30	0.20	0.92	0.80	0.53	0.84

Female: Carapace 0.18 cm. long, 0.14 cm. wide between second and third coxae, with a definite cervical groove. Viewed from above, eight eyes in two rows, arranged in a circle, anterior row recurved while posterior row procurved. Lateral eyes somewhat smaller than the medians. Eyes equidistant in each row, anterior eyes separated by the diameter of median eyes and posterior eyes separated by $5/7$ of the diameter of median eyes. Lateral eyes contiguous. Quadrangle wider in front than behind, more long than wide in front in ratio 5 : 4. Clypeus practically wanting. Chelicerae relatively long, widely diverging. Labium triangular, wider at base than long in ratio 3 : 2. Maxillae short. Sternum semi-circular, rounded posteriorly, with straight anterior margin, more wide than long in ratio 5 : 4. First coxae wide apart, fourth coxae separated by twice their width.

Colour in life: Carapace brown with black band on the thoracic margin. Chelicerae, labium and maxillae dull brown. Sternum blackish brown with black fringe. Palpi and legs brown with black ring at the ends of coxae, trochanters, femora and tibiae. Abdomen brown with two pairs of black patch at posterior part and median white markings arranged symmetrically. Sides black. Belly black with white spots.

Remarks: The present species looks very much like *Oecobius navus* (BLACKWALL), but it is readily distinguishable from the latter by the pattern of the abdomen.

Family II. ***THOMISIDAE***

This family is divided into two Sub-families, Misumeninae and Philo-

drominae. As A. PETRUNKEVITCH pointed out, the Philodrominae differs from the Misumeninae in having four pairs of legs of equal length whereas the third and the fourth in the latter are much shorter than the first and the second.

I Subfamily MISUMENINAE

Key to Genera

1. a. Chelicerae with a band of hairs. 2.
b. Chelicerae hairless. Posterior row of eyes much longer than the anterior. Abdomen high and pointed behind. ... 6. Gen. *Tinarus* SIMON
2. a. Tuberles of lateral eyes of each side apart from each other. 3.
b. Tuberles of lateral eyes of each side contiguous. 5.
3. a. Posterior median eyes separated as wide as the posterior median and anterior median eyes. 4.
b. Posterior median eyes apart wider than the posterior median and anterior median eyes. 5. Gen. *Synaema* SIMON
4. a. First femur with more than five distinct spines.
..... 8. Gen. *Xysticus* C. L. KOCH
b. First femur with less than four spines. 7. Gen. *Oxyptila* SIMON
5. a. Median ocular area wider than long. 6.
b. Median ocular area longer than wide. 7.
6. a. Abdomen broadly rounded behind. 4. Gen. *Misumena* LATR.
b. Abdomen truncated at the end. 2. Gen. *Thomisus* WALCK.
7. a. Abdomen truncated at the end. 3. Gen. *Pistius* SIMON
b. Abdomen very long and slender. 1. Gen. *Oxytate* L. KOCH

1. Genus *Oxytate* L. KOCH, 1877

2. *Oxytate setosa* KARSCH Jap. name, *Sashige-wakabagumo*.

Pl. XII, Fig. 2, a. Dorsal view of subadult male. b. Dorsal view of female.

Pl. XIV, Fig. 34. Eyegroup of female.

Oxytate setosa, F. KARSCH:—Verhandl. d. N. V., Jahrg. 36, 1879, p. 78, Taf. 1, Fig. 11.; W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 247, Taf. 7, Fig. 94, Taf. 10, Fig. 175.; K. KISHIDA:—Kagakusekai (in Japanese), Tokyo, 1923.¹⁾

Locality: Sapporo (2 males, H. ITOH, July 22, 1930; S. YAMAGUCHI, July 20, 1931), Kitabu (1 female, B. NATORI, May 31, 1931).

Measurements:

1) K. KISHIDA (1923) treated this species as a synonym of *Oxytate striatipes* L. KOCH.

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.96	0.59	1.49	1.49	0.92	0.92
male (Sapporo)	1.04	0.66	1.33	1.33	0.75	0.83
female (Kitabu)	0.96	0.55	0.98	0.98	0.67	0.56

Male: Carapace 0.36 cm. long, 0.28 cm. wide between second and third coxae. Thoracic groove wanting. Carapace moderately high, its sides gently sloping. All eyes situated on white tubercles. Viewed from above, both rows of eyes recurved. Anterior row strongly curved and much shorter than the posterior. Eyes of anterior row equidistant, separated from each other by about four times the diameter of anterior median eyes which are smaller than the laterals. Eyes of posterior row also equidistant, the same separation as that of anterior eyes. Quadrangle more long than wide in ratio 5 : 4. Clypeus vertical, equal to the separation of eyes. Chelicerae short, vertical, with parallel outer sides. Labium much longer than wide in ratio 2 : 1, triangular, bluntly ending anteriorly. Maxillae almost meeting in median plane. Sternum convex, with straight anterior margin, bluntly ending between the fourth coxae which are almost contiguous.

Colour in alcohol: Yellow.

Female: The fourth pair of legs relatively short as compared with that of male. Colour in life green. Carapace 0.30 cm. long.

Distribution: Japan (Honshu, Kyushu).

2. Genus *Thomisus* WALCKENAER, 1805

3. *Thomisus albus* GMELIN Jap. name, *Azuchi-gumo*.

Pl. XII, Fig. 3. Dorsal view of female.

Pl. XIV, Fig. 35. Eyegroup of female.

Thomisus albus J. BLACKWALL:—Ann. Mag. Nat. Hist., Vol. 5, 1870, p. 398.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 57.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 82.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 339, Taf. 32, Fig. 503.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 249.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 19, Taf. 2, Fig. 193.

Thomisus onustus, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 427.; E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 251.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 225.

Thomisus abbreviatus, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 90, pl. 4, fig. 54.

Locality: Sapporo (1 female, Y. OHTA, June 21, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.66	0.30	0.83	0.83	0.43	0.50

Female: Carapace nearly semi-circular, truncated behind, 0.23 cm. long. Cervical, radial and median furrows wanting. Eight eyes in two rows, equal in size, situated on tubercles. Viewed from above, anterior eyes arranged in a recurved row, equidistant, separated from each other by six times their diameter. Eyes of posterior row also equidistant, in a slightly recurved row. Quadrangle square-shaped, but somewhat wider than long. Lateral eyes of both rows separated from each other by four times their diameter, and situated on a tubercle on each side. Clypeus equal to length of quadrangle of median eyes. Chelicerae small, stout, with convergent outer sides. Labium triangular, as wide as long, reaching beyond middle of maxillae. Maxillae inclined over labium, wider in front than at base, meeting in front. Sternum heart-shaped, slightly longer than wide in ratio 9 : 8, bluntly ending between the almost contiguous fourth coxae. Abdomen triangular, pointed anteriorly and broadened posteriorly.

Colour in alcohol: Carapace deep yellowish brown with yellow dots. Tubercles of eyes white. Chelicerae, sternum, maxillae and labium deep brown. Palpi and first two pairs of legs deep brown with dispersed yellow dots. Third and fourth legs deep yellow, but tibiae and patellae of fourth legs brown. Abdomen deep brown with yellow marginal stripe. Belly brown.

Distribution: Hungary, France, Germany, England, U.S.S.R., Japan.

Remarks: This species was reported from Japan in 1892 in "Araneae Hungariae" by L. KULCZYNSKI, upon which was based the description of the same species in "Japanische Spinnen" by W. BÖSENBERG and E. STRAND.

3. Genus *Pistius* SIMON, 18754. *Pistius truncatus* (PALL.)

Pl. XII, Fig. 4. Dorsal view of female.

Pl. XIV, Fig. 36, a. Eyegroup of female. b. Epigynum.

Pistius truncatus, E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 258; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, 1892, p. 83.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 369, Taf. 10, Fig. 168, Taf. 13, Fig. 309.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 19, Taf. 2, Fig. 194, 195, Taf. 1, Fig. 196.

Tistius truncatus (*Misumena truncata*), W. BÜSENEBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 369, Taf. 34, Fig. 544.

Misumena truncata, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 259.; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 57.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 228.

Aranea horrida, C. FABRICIUS:—Syst. Ent., Tom. 2, 1793, p. 432.

Locality: Nopporo (1 female, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.65	0.45	1.40	1.35	0.55	0.65

Female: Carapace almost circular, 0.30 cm. long. Viewed from above, anterior row of eyes strongly recurved, posterior row straight. All eyes nearly equal in size and situated on tubercles. Anterior median eyes separated from each other by three times their diameter, from anterior lateral eyes by 2.5 times their diameter. Eyes of posterior row equidistant, separated from each other by three times their diameter. Lateral eyes of both rows separated from each other by 2.5 times their diameter, and their tubercles almost contiguous. Quadrangle square-shaped, somewhat longer than wide. Clypeus equal to the separation of anterior median eyes. Chelicerae small, cone-shaped, vertical. Labium triangular, pointed in front, slightly shorter than maxillae which are inclined over the labium, almost contiguous at their ends. Sternum triangular, as long as wide, bluntly pointed between fourth coxae which are contiguous. First coxae widest apart. Abdomen triangular, 0.54 cm. wide at posterior edge which is concave. Anterior edge straight, 0.30 cm. wide.

Colour in life: Carapace brownish sepia with dispersive yellow dots and a deep sepia patch at posterior part. Chelicerae and sternum brownish sepia. Maxillae and labium paler than chelicerae. First two pairs of legs deep sepia with yellow dots and yellow tarsi and metatarsi. Third and fourth pairs of legs deep yellow, and patellae and tibiae of fourth legs deep sepia with yellow dots. Abdomen brownish sepia with several yellow marginal lines. Belly the same as above in colour.

Distribution: Hungary, France, Germany, U.S.S.R., Japan (Honshu, Kyushu).

4. Genus *Misumena* LATR., 1804

5. *Misumena tricuspidata* (FABRICIUS) Jap. name, *Hana-gumo*.

Pl. XIV, Fig. 37, a. Eyegroup of female. b. Epigynum. c, d. Palpus of male.

Misumena tricuspidata, E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 244.; C. CHYZER et L. KULCZYNKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 84.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 365, Taf. 34, Fig. 538.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 254, Taf. 10, Fig. 169, 170.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 20, Taf. I, Fig. 198.

Diaeä tricuspidata, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 539.; ———:— Südrussischer Spinnen, St. Petersburg, 1875, p. 56.

Diaeä capparina, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 232.

Aranea tricuspidata, C. FABRICIUS:—Syst. Ent., Tom. 2, 1793, p. 433.

Locality: Yakumo (2 females, S. SAITO, July 24, 1931.; K. MATSUKI, Oct. 24, 1931). Vicinity of Sapporo (4 females, H. YAMAGUCHI, Aug., 1929.; H. ITOH, July 6, 1930.; S. YAMAGUCHI, July 10, 1931). Makomanai (1 male, 1 female, S. SAITO, Sept. 18, 1932). Sapporo (1 male, Dr. T. UCHIDA, Aug. 30, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Yakumo)	0.55	0.49	1.13	1.13	0.55	0.63
female (Yakumo)	0.46	0.36	0.81	0.81	0.51	0.59
female (Sapporo)	0.61	0.43	0.76	0.76	0.47	0.48
female (Sapporo)	0.50	0.43	0.93	0.93	0.51	0.55
female (Sapporo)	0.44	0.27	0.89	0.89	0.48	0.51
female (Sapporo)	0.60	0.40	1.00	0.93	0.50	0.43
female (Makomanai)	0.50	0.35	0.90	0.90	0.45	0.50
male (Makomanai)	0.35	0.20	0.70	0.70	0.30	0.35
male (Sapporo)	0.30	0.20	0.75	0.75	0.30	0.30

Female: Carapace 0.20 cm. long, 0.18 cm. wide between second and third coxae. All eyes equal in size and situated on tubercles. Viewed from above, both rows recurved. Anterior row of eyes strongly recurved, the eyes being equidistant, separated from each other by three times their diameter. Posterior median eyes separated from each other by five times their diameter and from posterior lateral eyes by three times their diameter. Lateral eyes of both rows separated by three times their diameter, their tubercles contiguous. Quadrangle trapezoidal, wider behind than in front in ratio 5 : 3, somewhat wider than long. Clypeus equal to separation of anterior eyes. Chelicerae small, vertical, its outer edges parallel. Labium triangular, more long than wide, reaching considerably beyond middle of maxillae. Maxillae much wider in front than at base. Sternum shield-shaped, as wide as long, truncated in front, bluntly ending between fourth

coxae which are nearly contiguous. Abdomen pear-shaped, with broad, flat end.

Colour in life: It matches very perfectly to the resorts, flowers in most cases, and is white when living on white flowers and yellow on yellow ones. Specimen on white flower; carapace pale greenish yellow. Legs, palpi, chelicerae, maxillae, labium and sternum green. Abdomen white with a sepia marking.

Male: Colour clearer than that of female. Carapace pale brown with a pair of black stripes and marginal line. Legs brownish black. Abdomen deep green with a median black marking.

Distribution: Japan (Honshu, Kyushu), Germany, France, Hungary, U. S. S. R.

5. Genus *Synæma* SIMON, 1864

6. *Synæma globosa japonica* KARSCH Jap. name, *Funoji-gumo*.

Pl. XII, Fig. 5. Dorsal view of female.

Pl. XIV, Fig. 38. Tarsal claw.

Synæma globosa japonica, S. YUHARA:—Study of Spiders (in Japanese). Tokyo, 1930, p. 185, Fig. 102; T. KAMBE:—Jour. Chosen Nat. Hist. Soc. (in Japanese), Keijo, 1933, p. 44.

Synæma japonica, F. KARSCH:—Verhandl. d. N. V., Jahrg. 36, 1879, p. 75, Taf. 1, Fig. 10; W. BÜSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 265, Taf. 10, Fig. 165.

Locality: Vicinity of Sapporo (1 female, S. SAITO, July 6, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.45	0.30	0.50	0.50	0.30	0.35

Female: Carapace smooth, almost circular, 0.19 cm. long. Cervical, radial and median furrows wanting. Eyes of anterior row equidistant, arranged in a recurved row, separated from each other by six times the diameter of anterior median eyes which are much smaller than the laterals in ratio 3 : 1. Posterior row of eyes more strongly recurved than the anterior, equal in length with the anterior. The median eyes of posterior row separated from each other by ten times their diameter, from posterior lateral eyes by three times their diameter. Lateral eyes of both rows separated by their diameter, and their tubercles subcontiguous. Quadrangle trapezoidal, wider behind than in front in ratio 5 : 3, more wide than long in ratio 16 : 9. Clypeus equal to 1.5 times the diameter of anterior median

eyes. Chelicerae small, vertical, cone-shaped. Labium triangular, slightly longer than wide. Maxillae parallel, wider in front than at base. Sternum rhombic-shaped, bluntly ending posteriorly between fourth coxae which are almost contiguous.

Colour in life: Carapace deep brown with yellow ocular tubercles. Chelicerae, labium and maxillae brown. Sternum black. Palpi, third and fourth legs yellow. First two pairs of legs brownish yellow with black coxae, trochanters and femora. Abdomen yellow with a characteristic black marking. Belly black. Spinnerets brown.

Remarks: Because of the difference of the belly is uniformly brownish black this species was described as a new species by F. KARSCH who distinguished it from the European species, *Synaema globosa* (FABR.) which has a blackish brown median band on the pale brown belly.

Distribution: Japan (Honshu, Kyushu, Chosen).

6. Genus *Tmarus* SIMON, 1875

7. *Tmarus piger* WALCKENAER

Pl. XII, Fig. 6, a. Dorsal view of female. b. Sideview of abdomen.

Pl. XIV, Fig. 39. Eyegroup.

Tmarus piger, E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 262.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 101, Tab. 5, fig. 10.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 248.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 20, Taf. 2, Fig. 207, Taf. 1, Fig. 208.

Tmarus piger (*Monaeses cuneatus* C. L. K., BERTK.), W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 370, Taf. 34, Fig. 505.

Monaeses cuneatus, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 224.

Locality: Vicinity of Sapporo (1 male, S. SAITO, April 30, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.40	0.30	0.60	0.60	0.30	0.30

Male: Carapace nearly circular, 0.15 cm. long. Viewed from above, anterior row of eyes straight by anterior edges, posterior row slightly recurved by anterior sides and much longer than the anterior row in ratio 3:2. Anterior eyes smaller than the corresponding eyes of the posterior row and median eyes smaller than the laterals in both rows. Eye-ratio 6:4 : 3:2. Anterior median eyes separated from each other by three times their diameter, from anterior lateral eyes by four times their diameter.

Posterior median eyes separated from each other by four times their diameter, from posterior lateral eyes by five times their diameter. Lateral eyes of both rows separated by the same distance as that between the posterior median and lateral eyes. Quadrangle rectangular, wider behind than in front in ratio 18:11, as long as wide. Clypeus equal to the separation of two median eyes of posterior row, with five vigorous bristles at anterior margin. Chelicerae small, vertical, cone-shaped. Labium lengthened triangular in shape, bluntly ending anteriorly, reaching beyond middle of maxillae. Maxillae inclined over labium, almost meeting in median plane. Sternum shield-shaped, convex, bluntly pointed posteriorly, with straight anterior margin. First coxae wide apart, fourth coxae separated by their width. Abdomen high and pointed behind.

Colour in life: Carapace white with brown and black dots scattered at the marginal part. Chelicerae yellow. Maxillae, labium, palpi and legs yellow. Sternum black. Abdomen pale violet with a median pale band and four transverse pale stripes. Belly pale yellow with a median black band.

Distribution: Germany, France, Hungary, Japan (Kyushu).

7. Genus *Oxyptila* SIMON, 1864

8. *Oxyptila nigrifrons* n. sp. Jap. name, *Kuro-hanagumo-modoki*.

Pl. XII, Fig. 7. Dorsal view of male.

Pl. XIV, Fig. 40, a. Eyegroup. b, c. Palpus of male.

Locality: Soranuma (1 male, S. MAKINO, Sept. 8, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.34	0.20	0.50	0.50	0.34	0.34

Male: Carapace almost circular, 0.14 cm. long. Viewed from above, two rows of eyes recurved, nearly equal in length. Anterior row less curved than posterior row, and its eyes equidistant, separated from each other by 2.5 times the diameter of the anterior median eyes which are smaller than the anterior laterals in ratio 2:1. Posterior median eyes equal to anterior median eyes in size, separated from each other by 2.5 times their diameter, and from posterior lateral eyes by three times their diameter. Distance between both laterals equal to the distance between the median and lateral eyes in posterior row. Clypeus equal to three times

the diameter of anterior median eyes. Chelicerae vertical, short, weak, with convergent outer edges. Labium longer than wide, with almost parallel sides, reaching beyond middle of maxillae. Maxillae parallel, with concave outer edges. Sternum flat, heart-shaped, bluntly ending between fourth coxae. The space between the second coxae largest.

Colour in alcohol: Carapace black. Chelicerae of the same colour as the carapace, with brown fang. Maxillae and labium pale black. Sternum dull yellow with black margin. Palpi and legs yellow. Abdomen dull black with a deep black marking at anterior part. Belly dull yellow with dispersive black fleck.

Remarks: The present species is almost identical with *Oxyptila decorata* KARSCH in Honshu (Japan), however, the colour of cephalothorax and abdomen in the present specimen is black and there is no bright colour in the case of the species of Honshu.

8. *Xysticus* C. L. KOCH, 1835

9. *Xysticus sapporensis* n. sp. Jap. name, *Ezo-kanigumo*.

Pl. XII, Fig. 8. Dorsal view of female.

Pl. XIV, Fig. 41. Frontview of eyegroup.

Locality: Sapporo (1 female, S. SAITO, June 5, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.45	0.30	0.60	0.60	0.40	0.40

Female: Carapace 0.20 cm. long, 0.15 cm. wide between second and third coxae. Cervical, radial and median furrows wanting. Arrangement of eyes typical. Lateral eyes larger than median eyes in ratio 3 : 2. Viewed from above, anterior eyes arranged recurvately, equidistant, separated from each other by four times the diameter of anterior median eyes. Posterior row much longer than anterior, recurved, its eyes equidistant, separated from each other by five times the diameter of posterior median eyes. Laterals separated by 12/5 of their diameter. Quadrangle wider behind than in front in ratio 5 : 4, as long as wide. Clypeus vertical, equal to the width of quadrangle of median eyes. Chelicerae short, weak, cone-shaped. Sternum heart-shaped, convex, with straight truncature in front, pointed behind. First coxae far apart, fourth coxae contiguous.

Colour in life: Carapace dark brown with a broad submarginal black

band which extends anteriorly to the space between the posterior median and lateral eyes. Chelicerae brownish yellow. Maxillae and labium dull yellow, the latter with a brown marginal stripe. Leg dull yellow with a brown annulation at the end of tibia. Abdomen of about the same colour as legs, with a brownish black marking at median part.

Remarks: This species bears a resemblance in appearance to *Xysticus pini* (Hahn) which is distributed in Asia and Europe, but the marking of abdomen makes it a distinct species.

10. *Xysticus tunicatus* Bös. et STRAND

Pl. XIV, Fig. 42. Epigynum.

Xysticus tunicatus, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 263, Taf. 10, Fig. 176.

Locality: Sapporo (1 female, Y. OHTA, June 21, 1931). Vicinity of Sapporo (1 female, S. YAMAGUCHI, July 10, 1931). Lake Akan (1 male, S. MOTODA, July 31, 1931). Mt. Akan (1 female, Dr. T. INUKAI, August, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Sapporo)	0.70	0.50	0.80	0.80	0.60	0.60
female (Sapporo)	0.70	0.50	0.80	0.80	0.60	0.60
female (Mt. Akan)	0.85	0.60	1.30	1.30	0.90	1.00
male (Lake Akan)	0.47	0.28	0.95	0.95	0.71	0.76

Female: Carapace 0.30 cm. long, 0.28 cm. wide between second and third coxae. Viewed from above, both rows of eyes recurved, almost parallel. Anterior row slightly shorter than the posterior. Four median eyes equal in size, smaller than the laterals, and posterior lateral eyes larger than the anterior lateral ones. Eye-ratio 6 : 3 : 2. Anterior median eyes separated from each other by seven times their diameter, from the laterals by four times their diameter. Posterior median eyes separated from each other by the same distance as that between anterior median eyes. Quadrangle nearly quadrate-shaped, but slightly more long than wide. Clypeus equal to the width of quadrangle of median eyes. Chelicerae of moderate size, with convergent outer sides, furnished with long black hairs. Labium oval, rounded anteriorly. Maxillae very little dilated at end. Sternum heart-shaped, flat, truncated in front, pointed between the fourth coxae which are separated by 1/2 of their width.

Colour in alcohol: Carapace pale brown with a deep blackish brown

marginal band. Chelicerae brown. Maxillae and labium blackish brown with pale ends. Sternum pale brown with deep brown fleck. Palpi, first and second legs brown, third and fourth legs pale brown with deep brown dots. Abdomen dull brown with two pairs of pale bands at posterior part. Belly pale brown with dull brown fleck.

Male: Colouration clearer than that of female, the brown marginal band of carapace broader than that of female. Tarsi and metatarsi of legs yellow.

Distribution: Japan (Kyushu).

II. *Xysticus ephippiatus* SIMON

Xysticus ephippiatus, W. BÜSENBURG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 261, Taf. 10, Fig. 119, 161.

Locality: Vicinity of Sapporo (1 female, S. SAITO, Sept. 21, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.77	0.51	1.03	1.03	0.72	0.78

Female: Carapace 0.40 cm. long, 0.35 cm. wide between second and third coxae, highest just behind eye region, sloping gently forward and backward. Both rows of eyes recurved, posterior row slightly longer than the anterior. Eyes of anterior row equidistant, separated from each other by four times the diameter of anterior median eyes. Posterior eyes also equidistant and their separation equal to that of the anterior eyes. Lateral eyes of both rows larger than the median eyes and separated by their diameter. Quadrangle rectangular, as wide as long. Clypeus equal to the length of quadrangle of median eyes, with several vigorous black bristles on the anterior margin. Chelicerae short, furnished with short, black hairs. Labium triangular, more long than wide at base in ratio 2 : 1, pointed anteriorly. Maxillae with parallel outer edges, inclined over labium, with rounded ends. Sternum oval, convex, more long than wide in ratio 3 : 2, bluntly pointed in front of hind coxae which are almost contiguous.

Colour in life: Carapace pale brownish yellow with a pair of deep brown bands. Chelicerae, labium, maxillae, sternum, palpi and legs pale brownish yellow with dispersive deep brown dots. Abdomen of the same colour with carapace, with a deep brown leaf-marking. Belly pale brownish yellow.

Distribution: Japan (Kyushu).

II Subfamily *PHILODROMINAE*

Two genera of Hokkaido may be diagnosed as follows.

- a. Posterior eyes arranged in a slightly recurved line with the median eyes farther from each other than from the lateral eyes.
..... 1. Gen. *Philodromus* WALCKENAER
- b. Posterior eyes arranged in a strongly recurved line and equidistant. ...
..... 2. Gen. *Tibellus* SIMON

1. Genus *Philodromus* WALCKENAER, 182512. *Philodromus flavidus* n. sp. Jap. name, *Ki-ebigumo*.

Pl. XII, Fig. 9. Dorsal view of female.

Pl. XIV, Fig. 43, a. Eyegroup. b. Chelicera. c. Epigynum.

Locality: Mt. Akan (1 female, Dr. T. INUKAI, July, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.80	0.70	0.85	1.00	0.80	0.75

Female: Carapace 0.29 cm. long, 0.22 cm. wide between second and third coxae, with a definite cervical groove. Viewed from above, anterior row of eyes recurved, posterior row almost straight but slightly recurved, and much longer than the anterior. Posterior eyes somewhat larger than the anterior eyes. Anterior median eyes separated from each other by two times their diameter, from anterior lateral eyes by their diameter. Posterior median eyes separated from each other by almost four times their diameter, from posterior lateral eyes by 1.5 times their diameter. The separation of the lateral eyes of both rows equal to the distance between the posterior median and lateral eyes. Quadrangle trapezoid in shape, wider behind than in front in ratio 31 : 19, more wide than long in ratio 3 : 2. Clypeus equal to length of anterior row of eyes. Chelicerae short, weak, vertical, with a tooth on the anterior margin of claw-furrow. Labium triangular, rounded anteriorly, more wide than long in ratio 4 : 3, reaching beyond middle of maxillae. Maxillae nearly square, wider at base than in front. Sternum heart-shaped, strongly rebordered, as wide as long, with concave anterior margin, bluntly ending between fourth coxae which are separated by two times their width.

Colour in alcohol: Pars cephalica light brown, with deep brown markings at eye-region. Pars thoracica dark violet with deep brown along

the cervical and radial grooves. Chelicerae brown. Maxillae, labium and sternum light brown. Palpi and legs above yellow with dark longitudinal stripe, under side light brown, without marking. Abdomen yellow with four deep muscular points at the anterior part, and six brown muscular points at the posterior part and a pair of brown markings on both sides of the broadest part. Belly light brown.

Remarks: This species bears some resemblance to *Philodromus emarginatus* (SCHRUNK) in the form of epigynum, but the colour of the spider and the number of spines on the tibia of the first leg make it a distinct species.

13. *Philodromus rufus* WALCKENAER

Philodromus rufus, E. SIMON:—Arachn. de France, Paris, 1875, Tom. 2, p. 287, pl. 8, Fig. 9.; E. KEYSERLING:—Spinnen Amerikas, Laterigradae, Nürnberg, 1880, p. 217, pl. 5, Fig. 119.; N. BANKS:—Proc. Acad. Philadelphia, 1892, p. 64, pl. 3, Fig. 26.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 107, Tab. 4, Fig. 16.; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 333, Taf. 31, Fig. 494.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 421.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 27, 29, Taf. 3, Fig. 285, Taf. 4, Fig. 3c6.; S. SAITO:—Transact. Sapporo Nat. Hist., Bd. 13, 1934, p. 327.

Philodromus obscurus, J. BLACKWALL:—Ann. Mag. Nat. Hist., 4 ser., 1871, Vol. 8, p. 431.

Philodromus pictus, J. H. EMERTON:—Trans. Connecticut Acad. Sc., 1892, Vol. 8, p. 373, pl. 31, Fig. 2.; ——:—Common Spiders, 1902, p. 37, Fig. 108-110.

Locality: Shiranuka (1 female, M. L. PEELLE, July 31, 1931). Kussharo (1 female, S. NISHIO, July 15-18, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Shiranuka)	0.50	0.35	0.55	0.60	0.40	0.40
female (Kussharo)	0.60	0.50	0.75	0.90	0.70	0.70

Female: Carapace 0.15 cm. long, 0.11 cm. wide between second and third coxae. Cervical, radial and median furrows wanting. Viewed from above, both rows of eyes recurved. Posterior row much longer than the anterior and more curved. All eyes situated on white tubercles. Anterior lateral eyes largest, and median eyes of both rows smallest. Eye-ratio 10 : 5 : 3. Anterior median eyes separated from each other by four times their diameter, from anterior lateral eyes by their diameter. Posterior median eyes separated from each other by eight times their diameter, from posterior laterals by four times thier diameter. Laterals separated by three times the diameter of anterior lateral eyes. Quadrangle wider behind than in front in ratio 2 : 1, slightly more wide than long. Clypeus vertical,

equal to the separation of anterior median eyes. Chelicerae weak, cone-shaped. Labium longer than wide, rounded anteriorly, reaching middle of maxillae. Maxillae inclined over labium, with convex outer sides. Sternum heart-shaped, more long than wide in ratio 4 : 3. First coxae wide apart, fourth coxae separated by a distance equal to their width.

Colour in alcohol:—Carapace dull yellow with a marginal black band. Ocular tubercles white. Legs pale yellow with black dots on femora, and with indications of dark colour on tibiae, metatarsi and tarsi. Chelicerae, maxillae and labium dull yellow. Sternum deep yellow with black marginal markings. Abdomen pale yellow with pale sepia median and black marginal markings and black dots. Belly pale yellow with black markings at the circumference of spinnerets which are deep yellow.

Distribution: U.S.A., Canada, France, Germany, Hungary, Japan (Southern Saghalien).

14. *Philodromus aureolus* CLERCK

Philodromus aureolus, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 99, pl. 5, Fig. 59.; T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 264.; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 59.; E. SIMON:—Arachn. de France, Paris, 1875, Tom. 2, p. 296.; T. THORELL:—Bull. Survey, Vol. 3, 1877, p. 500.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 218.; E. KEYSERLING:—Spinnen Amerikas, Nürnberg, Laterigradae, 1880, p. 217.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 108.; E. STRAND:—Zool. Anz., Bd. 32, 1908, p. 216.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 418.; H. ZIMMERMANN:—Spind. Umgegend von Niesky, p. 119.

Philodromus cespiticos, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 95, pl. 5, Fig. 58.

Locality: Sapporo (1 male, S. SAITO, July 23, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.60	0.40	1.40	1.40	1.10	1.00

Male: Carapace 0.25 cm. long, 0.20 cm. wide between second and third coxae. Eyes in two rows situated on tubercles. Anterior row of eyes recurved. Posterior row nearly straight, much longer than the anterior row. Anterior median eyes separated from each other by two times their diameter, from anterior lateral eyes by their diameter. Posterior median eyes separated from each other by three times their diameter, from posterior lateral eyes by about two times their diameter. Quadrangle wider behind than in front in ratio 3 : 2. Clypeus equal to the separation of two posterior median eyes. Chelicerae short, vertical, weak, with parallel

outer edges. Labium triangular, pointed anteriorly, as long as wide. Maxillae parallel, with concave outer edges, dilated at end. Sternum heart-shaped, convex, bluntly pointed between fourth coxae. The space between second coxae most broad. Fourth coxae separated by their width.

Colour in life: Carapace reddish brown with a white median band, and clypeus paler. Chelicerae and palpi green. Sternum, maxillae and labium brownish yellow. Legs green, but patellae, tibiae, metatarsi and tarsi brownish yellow. Abdomen yellowish white with black margin and dispersive black points. Belly white.

Remarks: This species is full variability, and the so-called "*aureolus* group" contains several varieties or forms as the following; R. BREMEN recognized four subspecies, *Philodromus aureolus rufolimbatus* KULCZ., *Ph. a. aureolus* (OLIV.), *Ph. a. caespiticola* (WALCK.) and *Ph. a. similis* (KULCZ.) from Europe in his work "Tierwelt Mitteleuropas". W. BÖSENBERG admitted another subspecies *Ph. a. verus* KULCZ. from Europe (Zoologica, Bd. 14). W. BÖSENBERG and E. STRAND described one subspecies *Ph. a. japonicola* and moreover they collected a new species in the *aureolus*-group, *Ph. subaureolus* in their "Japanische Spinnen". T. THORELL had stated in "Remarks on Synonyms of European Spiders" that the male of this species is recognizable in substantially two forms which are treated by J. BLACKWALL (Spid. Gr. Brit. & Ir., 1864) as two different species, *Ph. aureolus* and *Ph. cespiticolis* because of the inferior process of the tibial joint, but transition-forms between the two appear in the detailed study. And the females of these *Ph. aureolus* and *Ph. cespiticolis* are quite impossible to distinguish. Therefore he came to the conclusion that they are not specifically different. C. CHYZER and L. KULCZYNSKI described seven subspecies *Ph. a. verus* KULCZ., *Ph. a. variegatus* KULCZ., *Ph. a. caespiticola* WALCK., *Ph. a. similis* KULCZ., *Ph. a. pallens* KULCZ., *Ph. a. rufolimbatus* KULCZ. and *Ph. a. marmoratus* KULCZ. from Hungary (Araneae Hungariae, 1892).

Distribution: U.S.A., U.S.S.R., Sweden, Germany, France, England, Hungary.

2. Genus *Tibellus* SIMON, 1875

15. *Tibellus oblongus* WALCKENAER

Pl. XIV, Fig. 44. Eyegroup.

Tibellus oblongus, E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 311.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 115.; E. STRAND:—Zool. Anz., Bd. 32, 1908, p. 241.; J. H. ALLEN:—Bull. Amer. Mus. Nat. Hist., 1911, Vol. 29, p. 432.; C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Agr. Exper. Station, New York, 1926, p. 106.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig,

- Bd. 3, Lief. 2, p. 30, Taf. 5, Fig. 324, 325.; S. SAITO:—Jour. Fac. Sc. Hokkaido Imp. Univ., Ser. 4, Zoology, Vol. 2, 1933, p. 115, Fig. 5.
- Tibellus oblongus* (*Phiodromus*), G. MARK:—Proc. Nat. Mus., Washington, Vol. 12, 1889, p. 558.
- Tibellus oblongus* (*Thanatus*), W. BÜSENBERG:—Zoologica, Bd. 14, 1903, Stuttgart, p. 338, Taf. 32, Fig. 502.
- Tibellus dottonii*, J. H. EMERTON:—Common Spiders, Boston, 1902, p. 39, Fig. 114-116.; J. H. COMSTOCK:—Spider Book, New York, 1913, p. 549, Fig. 620.
- Tibellus dottoni*, E. KEYSERLING:—Spinnen Amerikas, Nürnberg, Iaterigradae, 1880, p. 194, pl. 4, Fig. 107.; N. BANKS:—Proc. U.S. Nat. Mus., Vol. 25, 1903, p. 216.; ———:— Bull Smithsonian Inst. U.S. Nat. Mus., Washington, Vol. 72, 1910, p. 51.
- Phiodromus oblongus*, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 100, pl. 5, Fig. 60.; T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 269.
- Thanatus oblongus*, H. ZIMMERMANN:—Die Spinnen Umgegend von Niesky, p. 116.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 60.
- Thomisus Dottonii*, N. M. HENTZ:—Spid. U. S., Boston, 1875, p. 81, pl. 10, Fig. 10, pl. 18, Fig. 79, pl. 20, Fig. 11.

Locality: Sapporo (1 female, S. SAITO, Sept. 14, 1929). Vicinity of Sapporo (1 immature female, S. SAITO, Apr. 23, 1930). Shiranuka (1 male, M. L. PEELLE, July 31, 1931). Mt. Yubari (1 female, S. MOTODA, July 9, 1932). Mt. Daisetsu (1 female, S. NISHIO, August 1-5, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Shiranuka)	0.70	0.45	1.25	1.50	1.00	1.35
female (Sapporo)	0.60	0.40	0.60	0.80	0.50	0.70
female (Mt. Yubari)	1.00	0.70	1.30	1.60	1.00	1.40
female (Mt. Daisetsu)	1.50	1.10	1.60	1.90	1.20	1.50

Female: Carapace 0.50 cm. long, 0.30 cm. wide between second and third coxae. Cervical, radial and median furrows wanting. Five long, stout spines on carapace. Both rows of eyes strongly recurved, and lateral eyes of both rows larger than the medians in ratio 3 : 1. Anterior median eyes separated from each other by three times their diameter, from the laterals by 1.5 times their diameter. Posterior median eyes separated from each other by five times their diameter, from posterior lateral eyes by the same distance. Laterals separated by 2.5 times the diameter of posterior laterals. Quadrangle wider behind than in front in ratio 17 : 13, as wide as long. Clypeus vertical, equal to the length of quadrangle. Chelicerae weak, cone-shaped. Labium oval, more long than wide, rounded anteriorly, reaching beyond middle of maxillae. Maxillae with convex outer edges, inclined over labium and almost meeting in front, with rounded ends. Sternum convex, shield-shaped, as wide as long, truncated between fourth coxae which almost touch each other. Second coxae wide apart.

Colour in life: Carapace yellow with a median pale black band and a narrow submarginal and a marginal dark stripe. Chelicerae, labium, maxillae and palpi yellow. Legs yellow with black spots. Abdomen yellow with a median pale black band, two pairs of black longitudinal lines and black fleck. Belly and spinnerets darker than the back.

Distribution: France, Hungary, Germany, England, U.S.S.R., U.S.A., Japan (Southern Kurile Islands).

Family III. *CLUBIONIDAE*

Two of five Subfamilies are represented in the fauna of Hokkaido. The Subfamily Clubioninae can be distinguished by the constriction of the maxillary lobes from the another Subfamily Micarinae in which the maxillary lobes are truncated.

I Subfamily *CLUBIONINAE*

Our four species represent two distinct genera which can be separated as follows:

- a. Posterior legs longer than the anterior legs; tibiae and metatarsi of the first two pairs of legs armed beneath with paired spines.
..... 1. Gen. *Clubiona* LATREILLA
- b. Anterior legs longer than the posterior legs; anterior legs armed with but few spines, and these not paired.
..... 2. Gen. *Chiracanthium* C. L. KOCH

1. Genus *Clubiona* LATREILLA, 1804

16. *Clubiona mantis* Bös. et STRAND

Pl. XIV, Fig. 45, a. Carapace of male. b, c. Palpus of male.

Clubiona mantis, W. BÜSENBURG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 286, Taf. 16, Fig. 492.

Locality: Sapporo (1 male, S. SAITO, June 22, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.60	0.40	0.90	0.93	0.70	1.00

Male: Carapace 0.30 cm. long, 0.28 cm. wide between second and third coxae, without radial and cervical furrows, with an indefinite median groove. Eight eyes in two rows, equal in size. Four anterior and two posterior

lateral eyes arranged on a recurved row, and these six eyes equidistant, separated by their radius. Interval between two posterior median eyes equal to twice their diameter, somewhat longer than the interval between the posterior median and posterior lateral eyes. Quadrangle wider behind than in front in ratio 7 : 4, as long as wide. Clypeus equal to the radius of anterior median eyes. Chelicerae relatively weak, with divergent margins. Labium rectangular, articulated to maxillae at $1/2$ distance from base. Maxillae much wider in front than at base in ratio 3 : 2, with divergent outer margins. Sternum concave, lengthened oval, truncated anteriorly, pointed behind.

Colour in life: Carapace brownish yellow, brown toward caput. Chelicerae black. Maxillae and labium deep brown. Sternum darker than carapace. Legs and abdomen dark brown.

Distribution: Japan (Kyushu).

17. *Clubiona lutescens* WESTRING

Pl. XIV, Fig. 46, a, b. Palpus of male.

Clubiona lutescens, T. THORELL:—Rem. on Syn., Upsala, 187c-1873, p. 225; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 40; E. SIMON:—Arachn. de France, Paris, Tom. 4, 1878, p. 219.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 149.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 2, 1897, p. 227.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 276, Taf. 26, Fig. 405;—W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 283, Taf. 16, Fig. 485.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 328, Fig. 3.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 32, 33, Taf. 5, Fig. 352, Taf. 6, Fig. 365.

Locality: Sapporo (2 males, 7 immature females, S. SAITO, Oct. 27, 1929, June 23, 30, Aug. 11, 1930.; H. ITOH, July 5, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.80	0.50	0.90	0.90	1.10	1.10
male (Sapporo)	0.85	0.60	0.90	0.90	0.95	1.20

Male: Carapace with chelicerae 0.32 cm. long, 0.23 cm. wide between second and third coxae. Anterior row of eyes recurved, posterior row procurved and much longer than the anterior. Median eyes of both rows larger than the lateral eyes in ratio 3 : 2. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by their diameter. Posterior median eyes separated from each other by twice their diameter, from posterior lateral eyes by their diameter. Lateral eyes of both rows

separated by their diameter. Quadrangle much wider behind than in front in ratio 9 : 5, wider than long in ratio 10 : 7. Clypeus narrow, practically wanting. Chelicerae long with divergent outer edges. Labium more long than wide, a little shorter than maxillae. Maxillae slightly wider in front than at base. Sternum flat, lengthened oval, narrowed anteriorly to the width of labium, bluntly ending posteriorly. Second coxae most widely apart, fourth coxae contiguous.

Colour in life: Light yellow, chelicerae deeper than the other parts.

Distribution: Germany, France, Hungary, U.S.S.R., Japan (Southern Saghalien).

18. *Clubiona glatiosa* n. sp. Jap. name, *Fusa-fukurogumo*.

Pl. XII, Fig. 10. Dorsal view of male.

Pl. XIV, Fig. 47. Eyegroup.

Locality: Sapporo (1 male, S. SAITO, Oct. 12, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.30	0.20	0.40	0.40	0.30	0.40

Male: Carapace 0.11 cm. long, with definite cervical and median furrows. Eight eyes in two rows, equal in size. Anterior row recurved, posterior row straight and much longer than anterior row. Anterior eyes equidistant, separated by $7/5$ of their diameter. Posterior median eyes separated from each other by three times their diameter, from posterior lateral eyes by their diameter. Quadrangle wider behind than in front in ratio 5 : 3, as long as wide. Lateral eyes of both rows separated by three times their radius. Clypeus equal to the diameter of eyes. Chelicerae weak, cone-shaped and diverging. Labium triangular, as long as wide. Maxillae slightly wider at end than long, much wider in front than at base in ratio 3 : 2. Sternum shield-shaped, convex, with concave anterior margin and posterior blunt end. First coxae most widely apart, fourth coxae separated by twice their width.

Colour in life: Carapace white with bright brown band at the thoracic margin and the same colour along cervical and median furrows. Chelicerae, maxillae and labium white. Sternum pale brown. Palpi and legs white with bright brown at the base of all joints. Abdomen bright brown with a leaf-marking of white spots. Belly pale brown.

Remarks: This species differs from the other species of *Clubiona* in the bright colour and especially in the eye intervals.

2. Genus *Chiracanthium* C. L. KOCH, 1839

19. *Chiracanthium lascivum* KARSCH

Pl. XIV, Fig. 48, a. Carapace of female. b. Palpus of male.

Chiracanthium lascivum, F. KARSCH:—Verhandl. d. N. V., Jahrg. 36, 1879, p. 91.; W. BÖSENBURG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 287, Taf. 16, Fig. 502.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 329, Fig. 4.

Locality: Vicinity of Sapporo (1 male, 2 females, S. SAITO, Aug. 10, 1930). Ikusagawa (3 females, H. ITOH, August 10, 1930). Mt. Daisetsu (1 male, S. NISHIO, August 1-5, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Sapporo)	1.70	1.10	2.80	1.80	1.20	1.90
female (Sapporo)	1.30	1.00	2.70	1.30	1.20	1.90
male (Sapporo)	1.45	0.60	3.50	2.80	1.90	2.60
female (Ikusagawa)	1.30	0.80	2.60	1.70	1.30	1.80
female (Ikusagawa)	1.00	0.70	2.20	1.40	1.10	1.80
female (Ikusagawa)	1.10	0.80	2.40	1.70	1.10	2.00
male (Mt. Daisetsu)	1.20	0.70	3.50	2.40	1.60	2.40

Male: Carapace with chelicerae 0.70 cm. long, 0.40 cm. wide, truncated in front. Eyes occupy almost full width of carapace which measures in the eye region 0.30 cm. Eyes in two rows. Anterior row slightly recurved, posterior row nearly straight and longer than the anterior. Posterior median eyes alone nocturnal, separated from each other by three times their radius, and from posterior lateral eyes by the same interval. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by a slightly longer distance. Quadrangle wider behind than in front in ratio 4 : 3 and slightly wider than long. Clypeus equal to the diameter of anterior median eyes. Chelicerae with very weak condyles. Basal joint 0.30 cm. long. Labium more long than wide in ratio 4 : 3, reaching slightly beyond middle of maxillae. Sides almost parallel and anterior margin straight. Maxillae long, with both sides concave. Outer angle rounded. Oblique depression wanting. Sternum heart-shaped, as long as wide, narrowed in front, with convex anterior margin, pointed posteriorly. Fourth coxae almost contiguous.

Colour in life: Carapace uniformly brownish yellow, abdomen slightly

paler. Belly darker than carapace, palpi and legs paler than abdomen but the fourth legs alone blue. Sternum deep brown. Chelicerae, labium and maxillae black.

Distribution: Japan (Southera Saghalien, Honshu ?, Kyushu ?).

II Subfamily *MICARINAE*

The members of this Subfamily resemble the jumping spiders (Attidae) in body form, but they can be easily recognized by the arrangement of the eyes in two rows. Only one new species is identified in this study.

1. Genus *Castianeira* KEYSERLING, 1879

20. *Castianeira albimaculata* n. sp.

Jap. name, *Shirobuchi-jigabachigumo*.

Pl. XII, Fig. 11. Dorsal view of female.

Pl. XIV, Fig. 49, a. Epigynum. b. Eyegroup.

Locality: Vicinity of Sapporo (1 female, S. SAITO, August 10, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.90	0.60	0.90	0.80	0.90	1.00

Female: Carapace 0.40 cm. long, 0.26 cm. wide between second and third coxae. Eyes in two rows. Both rows nearly straight. Posterior row much longer than anterior row, and its eyes nocturnal. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by 4/9 of their diameter. Posterior eyes equidistant, separated from each other by their diameter. Quadrangle rectangular, more long than wide in ratio 15 : 12. Clypeus equal to two diameters of anterior median eyes. Chelicerae vertical, short, weak. Labium oval, more long than wide in ratio 5 : 4, with almost parallel sides, reaching slightly beyond middle of maxillae. Maxillae parallel, with concave inner edges. Sternum convex, shield-shaped, much more long than wide in ratio 3 : 2, pointed between fourth coxae which are subcontiguous. The part between the second coxae is broadest.

Colour in life: Carapace deep black. Chelicerae black with brown fang. Labium and maxillae black with white ends. Sternum deep black. Coxae, trochanters, femora, basal parts of tibiae, terminal parts of metatarsi and tarsi of first legs, coxae, trochanters, femora of second legs, the terminal

parts of femora of third and fourth legs black and the other part yellow. Abdomen black with a pair of white patches at the median part and a white patch at anterior part. Belly black with a median yellow band.

Remarks: This is much the same in general appearance as *Castianeira descripta* (HENTZ) (*Geotrecha crocata* EMERTON). But it differs from the latter in the presence of white patches on the abdomen, in the absence of a bright red spot at the hinder end of the abdomen and in the form of the epigynum.

Family IV. ATTIDAE

The Attidae is one of the largest and most widely distributed of the families of spiders; they especially are abundant in the tropics. The present specimens include five genera; the following table will aid in the separation of them.

1. a. The lower margin of the furrow of the chelicerae armed with several small teeth. 2.
- b. The lower margin of the furrow of the chelicerae armed with a great tooth. 3.
2. a. The sides of the ocular quadrangle almost parallel.
 - 3. Gen. *AElurillus* SIMON
 - b. Ocular quadrangle much wider behind than before.
 - 2. Gen. *Pellenes* SIMON
3. a. Patella and tibia of the third legs longer than those of the fourth legs. 4. Gen. *Evarcha* SIMON
- b. Patella and tibia of the third legs shorter than those of the fourth legs. 4.
4. a. Small eyes much more remote from the posterior eyes than from the anterior eyes. 5. Gen. *Icius* SIMON
- b. Small eyes situated midway between the anterior lateral and the posterior lateral eyes. 5.
5. a. First pair of legs stouter than the second pair.
 - 6. Gen. *Marpissa* C. KOCH
 - b. First two pairs of legs similar. 1. Gen. *Plexippus* C. KOCH

1. Genus *Plexippus* C. KOCH, 1846

21. *Plexippus paykullii* (AUDOUIN)

Plexippus paykullii, T. THORELL:—Descriptive Catalogue of the Spiders of Burma, British Mus., London, 1895, p. 360.; W. BÖSENEBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 362, Taf. 9, Fig. 142, Taf. 13, Fig. 347, 354.; A. PETRUNKEVITCH:—

Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 695.; S. SAITO:—Trans. Sapporo Nat. Hist., Vol. 13, 1933, p. 38.

Hasarius faykullii, E. SIMON:—Arachn. de France, Paris, 1876, Tom. 3, p. 81.

Thomis faykullii, O. P. CAMBRIDGE:—Biol. Centr. Amer., 1897-1905, Vol. 1, p. 240, Taf. 20, Fig. 21.; A. PETRUNKEVITCH:—Trans. Connecticut Academy Arts and Science. Vol. 31, 1930, p. 156.

Locality: Sapporo (1 female, S. SAITO, June 23, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.63	0.36	0.42	0.34	0.39	0.44

Female: Carapace 0.23 cm. long, 0.20 cm. wide between second and third coxae. Lateral eyes form a rectangle which is wider than long in ratio 25 : 17. Posterior median eyes situated midway between anterior lateral eyes and posterior lateral eyes. Width of eye region considerably smaller than width of carapace. Upper margin of chelicerae with two teeth, lower margin with a single pointed tooth. Maxillae much longer than wide and slightly wider in front than at base. Sternum somewhat convex, oval, shiny, transversely truncated in front to width of labium, more long than wide in ratio 3 : 2. First coxae wide apart, fourth coxae sub-contiguous.

Colour in alcohol: Carapace black with a yellow median patch and yellow marginal lines. Abdomen yellow with a pair of black longitudinal bands. Legs and palpi yellow. Chelicerae, maxillae, labium and sternum dark yellow.

Distribution: A common cosmopolitan species of the Old and New Worlds. Guiana, Paraguay, Costa Rica, Colombia, West Indies, U.S.A., Mexico, Burma, Japan (Honshu, Kyushu, Formosa).

2. Genus *Pellenes* SIMON, 1876

22. *Pellenes nigrociliatus* L. KOCH

Pellenes nigrociliatus, W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 423, Taf. 60, Fig. 622.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 42, Taf. 8, Fig. 478.

Pellenes Bedeli, E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 98.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 36.

Attus Brassayi, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 316.

Locality: Soranuma (1 male, 1 female, S. MAKINO, Sept. 8, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.54	0.35	0.37	0.33	0.43	0.42
male	0.45	0.28	0.37	0.30	0.40	0.47

Female : Carapace 0.24 cm. long, 0.18 cm. wide between second and third coxae, furnished with long black hairs at anterior margin. Viewed from in front, first row of eyes is straight by upper edges, Clypeus practically wanting. Small eyes slightly nearer to posterior lateral than to anterior lateral eyes. Chelicerae vertical, short and stout. Labium almost a triangle in shape, more wide than long. Labium barely reaches middle of maxillae. Maxillae with parallel truncatures and parallel outer edges. Sternum oval, more long than wide in ratio 3 : 2, truncated in front to width of labium. First coxae a little wider apart than width of labium, fourth coxae sub-contiguous.

Colour in alcohol: Carapace brownish yellow with a pair of black longitudinal bands. Palpi, legs and sternum pale brown. Chelicerae, maxillae and labium brown. Abdomen brownish yellow with black markings. Belly pale brown with black spots.

Male: Carapace 0.23 cm. long, 0.17 cm. wide between second and third coxae. Colour of abdomen greenish yellow and its black markings clearer than those of female.

Distribution: Germany, Hungary, France.

3. Genus *AElurillus* SIMON, 1884

23. *AElurillus subfestivus* n. sp. Jap. name, *Kita-haetorigumo*.

Pl. XII, Fig. 12. Dorsal view of female.

Pl. XIV, Fig. 50, a. Epigynum. b. Carapace from above.

Locality: Chitose (1 female, Y. OHTA, Oct. 17, 1930).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.79	0.54	0.60	0.54	0.72	0.64

Female: Carapace 0.35 cm. long, 0.24 cm. wide between second and third coxae. Quadrangle of lateral eyes rectangular, with almost parallel sides but slightly wider in front than behind, as wide as long. Second row of eyes nearer to posterior row than to anterior row in ratio 3 : 1. Anterior median eyes separated from each other by 3/18 of their diameter.

A straight line tangent to inner edges of anterior lateral eyes and posterior lateral eyes of the outer side, is tangent to inner edge of eyes of median row. Clypeus equal to the diameter of anterior lateral eyes. Chelicerae vertical, inner edge contiguous, outer edges converging. Labium triangular, as long as wide, reaching considerably beyond middle of maxillae. Maxillae much wider in front than at base. Sternum oval, flat, much more long than wide, narrowed in front to width of labium. First coxae separated by the width of the labium, fourth coxae nearly contiguous.

Colour in alcohol: Carapace and chelicerae black. Maxillae and labium black with white ends. Legs above black with dull yellow tarsi and under side blackish brown. Abdomen above black, sides and belly blackish brown.

Remarks: In size and general appearance the species is closely allied to *AElurillus festivus* (L. KOCH), but it differs from the latter in the form of epigynum.

4. Genus *Evarcha* SIMON, 1902

24. *Evarcha albaria* (L. KOCH) Jap. name, *Mamijiro-hactorigumo*.

Evarcha albaria, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 361, Taf. 9, Fig. 140, Taf. 13, Fig. 350.; S. YUHARA:—Study of Spiders (in Japanese), Tokyo, 1930, p. 266, Fig. 151.

Hasarius albarius, L. KOCH:—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 720, Taf. 16, Fig. 39.

Locality: Mt. Yubari (1 male, S. MOTODA, July 9, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.70	0.40	0.60	0.55	0.60	0.65

Male: Carapace 0.40 cm. long, 0.28 cm. wide, 0.20 cm. high, sloping gently forward, posteriorly declivity steep. Viewed from front, first row of eyes straight by upper edge and eyes equally separated by 1/5 of the diameter of anterior median eyes. A straight line drawn through the upper edges of anterior lateral eyes and posterior median eyes cuts the posterior lateral eye of the same side through the centre. The small eyes or posterior median eyes are slightly nearer to the posterior lateral eyes than to the anterior lateral ones. Clypeus equal to radius of anterior lateral eyes. There are characteristic long white hairs on the anterior declivity. Chelicerae short and stout, vertical, somewhat gibbous in front. Inner edges in contact with each other, outer edges nearly parallel. Maxillae wider

in front than at base, with more or less rounded upper outer angle. Labium more long than wide at base but a little in front of base almost as wide as long, reaches beyond middle of maxillae and is rounded anterioly. Sternum flat, more long than wide in ratio 3 : 2, truncate in front to twice width of labium. Fourth coxae almost contiguous and the part between the second coxae most widely separated.

Colour in alcohol: Carapace deep brown furnished with black hairs. Eye region and chelicerae black. Labium, maxillae and sternum blackish yellow. Legs black with dull yellow coxae. Palpi black, but the terminal joint furnished with white hairs. Abdomen dull yellow with dense black hairs. Belly uniformly black.

Distribution: Japan (Kyushu, Honshu).

5. Genus *Icius* SIMON, 1874

25. *Icius daisetsuzanus* n. sp. Jap. name, *Ezo-tobigumo*.

Pl. XII, Fig. 13. Dorsal view of female.

Pl. XIV, Fig. 51, a. Eyegroup. b. Epigynum.

Locality: Mt. Daisetsu (3 females, Dr. T. INUKAI, July 16-20, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.68	0.40	0.54	0.48	0.50	0.82
female	0.59	0.36	0.45	0.42	0.43	0.74
female	0.42	0.30	0.35	0.30	0.24	0.50

Female: Carapace 0.30 cm. long, 0.20 cm. wide between second and third coxae. Cervical, radial and median furrows wanting, furnished with long, black hairs. Eight eyes in three rows, anterior four eyes nocturnal. Anterior median eyes largest, eyes of second row smallest. Anterior median eyes subcontiguous with each other, separated from the laterals by 1/3 of their diameter. Eye region rectangular, more wide than long in ratio 2 : 1. Small eyes or posterior median eyes somewhat more remote from the posterior lateral eyes than from anterior lateral eyes. Clypeus equal to the diameter of anterior lateral eyes. Chelicerae small, stout, cone-shaped. Labium heart-shaped and rounded in front. Sternum oval, more long than wide in ratio 2 : 1. Fourth coxae subcontiguous.

Colour in alcohol: Carapace black with brown caput. Chelicerae, sternum, maxillae, labium, palpi and legs dull brown. Belly blackish brown.

Remarks: The species much resembles the American *Icius elegans* KEYSERLING (*Tutelina elegans* HENTZ) in general appearance, but it is easily distinguishable by the colour of abdomen and the form of epigynum.

6. Genus *Marpissa* L. KOCH, 1846

26. *Marpissa muscosa* CLERCK

Marpissa muscosa, E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 25.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 15, Tab. 1, Fig. 15.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 444, Taf. 63, Fig. 650.; H. ZIMMERMANN:—Spin. Umgegend von Niesky, p. 128.

Marpissa muscosa, T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 76.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 304.

Araneus muscosus, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 367.

Salticus tardigradus, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 63, pl. 3, Fig. 35.
Locality: Vicinity of Sapporo (1 female, S. SAITO, June 23, 1931).

Sapporo (1 male, 2 females, S. SAITO, July 15, 1931, May, July 23, 1933).
Yakumo (1 female, S. SAITO, July 25, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.70	0.40	0.70	0.50	0.50	0.70
female (Sapporo)	1.00	0.70	0.70	0.70	0.60	0.80
female (Sapporo)	1.10	0.70	0.70	0.70	0.60	0.70
female (Sapporo)	1.10	0.70	0.70	0.60	0.80	0.90
female (Yakumo)	1.10	0.80	0.70	0.60	0.70	0.80

Female: Carapace flat, 0.40 cm. long, 0.23 cm. wide between second and third coxae. Cervical, radial and median furrows wanting. Anterior eyes subcontiguous and upper edges arranged in a straight line. Quadrangle of lateral eyes more wide than long in ratio 6 : 5. Eyes of second row situated midway between the first and the third row. Clypeus equal to 1/2 of the diameter of anterior lateral eyes and furnished with long white hairs. Chelicerae short, stout, vertical and parallel. Labium more wide than long, reaching far beyond middle of maxillae, rounded in front. Sternum oval, flat, narrowed anteriorly to width of labium and more long than wide in ratio 3 : 2. First coxae separated by their width, fourth coxae subcontiguous. The space between second coxae broadest.

Colour in life: Carapace black with white hairs. Chelicerae brown. Maxillae and labium black with yellowish brown ends. Sternum black. Legs above black, below dull yellow. Abdomen black with white hairs. Belly dull yellow.

Distribution: France, Germany, Hungary, U. S. S. R.

Family V. *PHOLCIDAE*

Only a single species of *Pholcus* common found in Honshu represents this family in Hokkaido.

1. Genus *Pholcus* WALCKENAER, 1805

27. *Pholcus crypticolens* Bös. et STRAND Jap. name, *Yureigumo*.

Pholcus crypticolens, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 127, Taf. 6, Fig. 72, Taf. 15, Fig. 440.; S. YUHARA:—Study of Spiders (in Japanese), Tokyo, 1930, p. 87, 88, Fig. 20, 21.

Locality: Sapporo (2 males, 2 females, S. SAITO, Sept. 20, 1929, June 22, 1930, May, July 15, 1933). Akkeshi (1 male, 1 female, S. MOTODA, July 29, 1931). Kushiro (2 males, 1 female, S. MOTODA, July 29, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.50	0.30	2.80	2.10	1.60	2.10
male (Sapporo)	0.45	0.30	2.62	1.37	1.20	1.95
female (Sapporo)	0.40	0.25	2.05	1.65	1.55	1.85
female (Sapporo)	0.30	0.20	1.70	1.45	1.05	1.60
male (Akkeshi)	0.50	0.35	2.90	1.50	1.60	2.10
female (Akkeshi)	0.36	0.23	1.50	1.10	0.90	1.20
male (Kushiro)	0.45	0.32	2.50	2.04	1.65	1.96
male (Kushiro)	0.50	0.35	2.73	2.10	1.65	1.97
female (Kushiro)	0.48	0.35	2.14	1.76	1.21	1.77

Female: Carapace 0.17 cm. long, 0.11 cm. wide between second and third coxae, flat, oval, with a definite median furrow, but cervical groove wanting. Eyes eight in three groups arranged transversely. Two eyes of median group small, almost contiguous. Three eyes of each side equal in size, situated on an ocular tubercle. Viewed from in front, three groups of eyes straight along anterior margins. Clypeus equal to the diameter of small eyes. Chelicerae weak. Labium triangular, rounded in front, reaching middle of maxillae. Sternum trapezoid in shape, with a concave anterior margin, truncated posteriorly so that fourth coxae are separated widely.

Colour in life: Carapace dull white. Eye tubercles black. Sternum light yellowish black. Chelicerae, maxillae and labium light brown. Abdomen yellowish white.

Distribution: Japan (Honshu, Kyushu).

Family VI. *THERIDIIDAE*

The species of this family found in Hokkaido are referable to the following genera.

1. a. Cephalothorax with a transverse furrow in the middle. Abdomen prolonged. 3. Gen. *Argyrodes* SIMON
- b. Cephalothorax without transverse furrow. Abdomen not greatly prolonged. 2.
2. a. Labium long and pointed, more than half as long as the maxillae. 2. Gen. *Teutana* SIMON
- b. Labium transverse, not more than half as long as the maxillae. 1. Gen. *Theridion* WALCKENAER

1. Genus *Theridion* WALCKENAER, 1805

28. *Theridion subpallens* Bös. et STRAND

Pl. XIV, Fig. 52, a. Epigynum from above. b. Sideview of epigynum. c. Eyegroup.

Theridium subpallens, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 139, Taf. 12, Fig. 293.

Locality: Kushiro (1 female, S. MOTODA, July 29, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.20	0.15	0.35	0.32	0.18	0.21

Female: Carapace 0.11 cm. long, with a definite cervical and a median longitudinal furrow. Eight eyes in two rows, anterior row recurved, posterior row slightly procurved. Anterior median and posterior lateral eyes somewhat smaller than the others. Anterior eyes equidistant and separated by the diameter of anterior median eyes. Lateral eyes of both rows contiguous. Quadrangle rectangular, more long than wide in ratio 11 : 8. Clypeus equal to the diameter of posterior median eyes. Chelicerae parallel, weak. Labium triangular, rounded in front, straight behind. Maxillae inclined over the labium, with parallel outer margins, wider in front than at base in ratio 3 : 2, more long than wide in front in ratio 4 : 3. Sternum oval, convex, narrowed to the width of labium, pointed behind between fourth coxae which are separated by their width.

Colour in alcohol: Dull brown. Abdomen, sternum and chelicerae deeper than carapace, and palpi, legs, maxillae and labium paler than carapace.

Distribution: Japan (Kyushu ?).¹⁾

29. *Theridion tepidariorum* C. L. KOCH Jap. name, *Ôhimegumo*.

Theridion tepidariorum, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 180, pl. 13, Fig. 114; ———:—Ann. Mag. Nat. Hist., 4 ser., Vol. 8, 1871, p. 435; O. P. BRIDGE:—Ibid., 5 ser., Vol. 1, 1878, p. 155; E. SIMON:—Arachn. de France, Paris, Tom. 5, 1881, p. 93; T. THORELL:—Descriptive Catalogue of Spiders of Burma, British Mus., London, 1895, p. 95; E. SIMON:—Fauna Hawaïensis, Cambridge, Vol. 2, Part. 5, 1900, p. 449; J. A. ALLEN:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 207; J. H. COMSTOCK:—Spider Book, New York, 1913, p. 210, 299, 330, 345, 421, Fig. 321, 323, 340-343; R. CHAMBERLIN:—Proc. U. S. Nat. Mus., Washington, Vol. 63, 1924, p. 5; ———:—Proc. California Academy Scie., 4 ser., Vol. 12, 1924, p. 638; C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Exper. Station, Vol. 101, 1926, p. 1042; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 57, 59, Tab. 9, Fig. 647, Tab. 10, Fig. 662; S. YUHARA:—Study of Spiders (in Japanese), Tokyo, 1930, p. 96, 97, Fig. 25, 26; S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 273; ———:—Transact. Sapporo Nat. Hist., Vol. 13, 1933, p. 42; ———:—Ibid., Vol. 13, 1934, p. 329.

Theridium tepidariorum, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 80; ———:—Horae Societatis Entomologicae Rossicae, Vol. 11, 1875, p. 29; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 83; G. MARX:—Proc. U. S. Nat. Mus., Vol. 10, 1890, p. 520; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 2, 1894, p. 35; T. THORELL:—Estratto dagli Annali del Museo Civico di Storia Naturale di Genova, 2 ser., Vol. 19, 1898, p. 45; ———:—Bihang Till K. Svenska Vet.-Akad. Handlingar, Bd. 25, 1899, p. 25; T. P. von BAYERN:—Zool. Anz., Bd. 23, 1900, p. 283; W. BÜSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 96, Tab. 8, Fig. 115; J. H. EMERTON:—Common Spiders, London, 1902, p. 111, Fig. 255-260; W. BÜSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 148; E. STRAND:—Zool. Anz., Bd. 32, 1908, p. 219; N. BANKS:—Bull. Smithsonian Inst. U. S. Nat. Mus., Vol. 72, 1910, p. 20.

Theridion tepidariorum, E. KEYSERLING:—Spinnen Amerikas, Theridiidae, Nürnberg, 1884, Bd. 1, p. 9, Tab. 1, Fig. 1.

Theridion vulgare, N. M. HENTZ:—Spiders U. S., Boston, 1875, p. 142, pl. 16, Fig. 1.

Locality: Makomanai (8 immature females, S. SAITO, Sept. 23, 1929). Sapporo (1 male, 3 females, S. SAITO, July 3, 1930, July 3, 1933). Oshoro (1 female, S. SAITO, Sept. 19, 1930). Nemuro (2 females, S. MOTODA, July 15, 1931). Yakumo (1 female, S. SAITO, July 25, 1931). Kushiro (1 male, 2 females, S. MOTODA, July 31, 1931, Dr. T. INUKAI, July, August, 1933). Mt. Daisetsu (1 male, S. NISHIO, August 1-5, 1932).

1) The locality is uncertain. That in the original paper by E. STRAND is stated as Saga (Kyushu) but it is no more than a surmise.

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.40	0.30	1.40	0.90	0.50	0.90
male (Kushiro)	0.37	0.27	0.99	0.61	0.45	0.57
female (Kushiro)	0.48	0.36	0.87	0.67	0.43	0.78
female (Kushiro)	0.54	0.43	1.10	0.82	0.61	0.70
female (Sapporo)	0.85	0.65	1.80	1.20	0.85	1.45
female (Sapporo)	0.85	0.70	1.80	1.10	0.70	1.30
female (Sapporo)	0.80	0.60	1.60	1.10	0.80	1.20
female (Oshoro)	0.60	0.40	1.60	0.90	0.70	0.80
female (Nemuro)	0.60	0.48	1.37	0.98	0.67	0.88
female (Nemuro)	0.60	0.47	1.83	1.30	0.80	1.27
female (Yakumo)	0.70	0.60	1.90	1.20	1.00	1.50

Female: Carapace 0.33 cm. long, 0.21 cm. wide between second and third coxae, with a median longitudinal furrow, small in proportion to the abdomen. Eight eyes in two rows, anterior row recurved and posterior row procurved so that the eyes are arranged on a circle. Posterior median eyes larger than the others, separated from posterior lateral eyes by their radius. Anterior eyes equidistant, separated by their diameter. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front in ratio 13 : 10, somewhat longer than wide. Clypeus equal to the length of quadrangle of median eyes. Chelicerae weak, parallel, with short fangs. Labium more wide than long, rounded anteriorly, articulated to maxillae 1/3 distance from base. Maxillae more long than wide, contiguous with each other at anterior ends. Sternum convex, Shield-shaped, with concave anterior edge, bluntly ending posteriorly between fourth coxae which are separated by their diameter.

Colour in life: Carapace deep sepia. Chelicerae, maxillae and labium dull yellow. Sternum dark yellow. Palpi and legs dull yellow, annulated indistinctly with brownish yellow. Abdomen deep sepia with white spots. Belly dull yellow with black spots.

Distribution: Cosmopolitan.

2. Genus *Teutana* SIMON, 1881

30. *Teutana albimaculosa* n. sp. Jap. name, *Buchi-tsuzuregumo*.

Pl. XII, Fig. 14. Dorsal view of male.

Pl. XIV, Fig. 53. Carapace.

Locality: Sapporo (1 male, S. SAITO, May 14, 1930).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.50	0.30	0.95	0.90	0.45	0.82

Male : Carapace 0.19 cm. long, 0.11 cm. wide between second and third coxae, gradually narrowed in front. A shallow depression of an indefinite shape in place of a median furrow. Anterior row of eyes recurved, posterior row slightly recurved calculated by the center of eyes but almost straight by posterior margin. Posterior median eyes larger than the others which equal in size in ratio 2 : 1. Anterior median eyes subcontiguous with each other, separated by twice their diameter from anterior lateral eyes. Eyes of posterior row equidistant, separated by the radius of posterior median eyes. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front in ratio 13 : 7, as wide as long. Clypeus equal to the diameter of the anterior median eyes. Chelicerae slender, parallel, with short, transverse, smooth margin and very short, stout fangs. Maxillae more long than wide, converging. Sternum convex, shield-shaped, with straight anterior edge, as wide as long. First coxae wide apart, fourth coxae separated by their width.

Colour in life: Carapace dark yellow with deep caput and margins. Chelicerae brownish black. Maxillae, labium and sternum darker than caput. Palpi and legs are the same in colour as carapace. Abdomen black with a white marginal band and four converse V-shaped markings of white spots. Belly white with dispersive black spots.

Remarks : The species is allied to *Teutana grossa* (C. L. KOCH), but it is distinguished from the latter by the darkness of colouration and also by the marking of abdomen.

3. Genus **Argyrodes** SIMON, 186431. **Argyrodes yesoensis** n. sp. Jap. name, *Yeso-isorogumo*.

Pl. XII, Fig. 15, a. Black female. b. White female. c. Sideview of black specimen.

Pl. XIV. Fig. 54. Eye-group.

Locality : Jozankei (3 females, M. SHIRATO, July 19, 1932).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.60	0.40	0.80	0.40	0.30	0.60
female	0.50	0.45	0.80	0.45	0.35	0.60
female	0.55	0.45	0.85	0.40	0.35	0.65

Female: Carapace high, 0.20 cm. long, 0.15 cm. wide between second and third coxae. Eye region occupying entire width of carapace. Radial furrow wanting. Eyes eight, in two rows. Both rows straight. Anterior eyes and posterior lateral eyes equal in size and posterior median eyes largest being twice the diameter of the other eyes. Anterior median eyes separated from each other by the distance of their diameter, from anterior lateral eyes by three times the diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by a radius of the posterior lateral eyes. Lateral eyes separated by the diameter of the posterior median eyes. Quadrangle wider behind than in front in ratio 3 : 2. Clypeus broader than the diameter of anterior eyes. Chelicerae in perfect contact with each other along median line in proximal half, then divergent and attenuated toward end. Basal segment 0.05 cm. long. There is no tooth on the furrow of chelicerae. Labium triangular, slightly more long than wide. Maxillae about as wide at base as at end. Sternum convex, more long than wide in ratio 3 : 2, with straight anterior edge, pointed between hind coxae which are almost contiguous. In a side view abdomen triangular, higher than long in ratio 9 : 8. Spinnerets six.

Colour in alcohol: Colour varies with the specimens, from almost white to black. Carapace from dull brown to black. Sternum, chelicerae, maxillae and labium brown. Legs white with brown annulations, but the coxae and trochanters black in black specimens. Abdomen from white to black with a yellow patch. Belly and spinnerets from brown to black.

32. *Argyrodes silvicolum* n. sp. Jap. name, *Gin-isorogumo*.

Pl. XIII, Fig. 16. Dorsal view of female.

Pl. XIV, Fig. 55, a. Epigynum. b. Sideview of carapace.

Locality: Makomanai (1 female, S. SAITO, Sept. 18, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.35	0.20	0.70	0.48	0.30	0.50

Female: Carapace 0.20 cm. long, 0.13 cm. wide between second and third coxae, with a definite cervical and a median furrow. The eye region bordered from the clypeus by a deep transverse furrow. Eyes eight in two rows, equal in size. Viewed from above, anterior row of eyes strongly recurved, posterior row nearly straight, somewhat procurved. Anterior median eyes alone diurnal, separated from each other by $3/2$ of their diameter, from anterior lateral eyes by their diameter. Posterior eyes equidistant, separated by their diameter. Quadrangle wider in front than behind in ratio 6 : 5 as long as wide in front. Lateral eyes of both rows subcontiguous. Clypeus equal to the width of quadrangle of median eyes. Chelicerae weak, vertical, with convergent outer margins. Labium triangular, as wide as long. Maxillae rectangular, but somewhat wider in front than at base, with parallel inner margins. Sternum triangular, with straight anterior margin and pointed behind between fourth coxae which are separated by their width.

Colour in life: Carapace sepia with black colour along cervical groove. Chelicerae light brown. Maxillae, labium and sternum dull yellow. Abdomen silver white, with three transverse black lines at posterior part, black spots at the median part and a dull brown median line giving off five pairs of branches at the sides. Belly dull yellow.

Remarks: In respect to the presence of a furrow at the border between the eye region and clypeus this spider is somewhat similar to *Argyrodes fissifrons* O. P. CAMBRIDGE, but the present specimen is distinct in the round termination of the abdomen which in the latter is pointed.

Family VII. LINYPHIIDAE

This family includes about one hundred and eighty genera in the world, but only two genera, *Linyphia* and *Oedothorax* were found in Hokkaido.

1. Genus *Linyphia* LATREILLE, 1804

33. *Linyphia emphana* WALCKENAER

Pl. XV, Fig. 56, a. Epigynum from a little beneath. b. Epigynum from above.

Linyphia emphana, T. THORELL:—Ren. on Syn., Upsala, 1870-1873, p. 47.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest Bd. 3, 1879, p. 59.; E. SIMON:—Arachn. de France, Paris, Tom. 5, 1884, p. 233.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 2, 1894, p. 57.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 68, Taf. 5, Fig. 69.; E. STRAND:—Zool. Anz., Bd. 32, 1908, p. 216.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 73, 74, Taf. 13, Fig. 822, Taf. 12, Fig. 833.; S. SAITO:—Proc. Imper. Acad., Vol. 9, 1933, p. 273.

Locality: Vicinity of Sapporo (3 females, S. SAITO, August, 10, 1930). Shiranuka (2 immature males, 2 immature females, M. L. PEELLE, July 31, 1931). Mt. Tokachitake (1 male, 1 female, S. SAITO, August 29, 1931). Shikaribetsu (5 females, S. SAITO, August 31, 1931). Soranuma (3 females, S. MAKINO, Sept. 8, 1931). Kussharo (4 males, 3 females, S. NISHIO, July 15-18, 1932). Mt. Daisetsu (7 females, 2 immature males, S. NISHIO, Aug. 1-5, 1932). Mt. Kurotake (7 immature males, 22 immature females, Dr. T. UCHIDA, August, 1, 1932). Mt. Ishikari (2 females, Dr. T. INUKAI, August 3, 1932). Mt. Akan (4 females, Dr. T. INUKAI, August, 1933). Nopporo (2 females, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Tokachitake)	0.40	0.20	1.00	0.80	0.60	0.80
male (Kussharo)	0.70	0.50	1.50	1.30	1.00	0.83
male (Kussharo)	0.70	0.40	1.50	1.20	0.90	1.00
male (Kussharo)	0.70	0.40	1.50	1.30	0.80	1.20
male (Kussharo)	0.65	0.40	1.40	1.20	0.70	1.20
female (Soranuma)	0.65	0.45	0.96	0.77	0.61	0.70
female (Soranuma)	0.46	0.33	0.92	0.79	0.65	0.73
female (Shikaribetsu)	0.60	0.45	1.00	1.20	0.80	0.83
female (Kussharo)	0.65	0.40	1.40	1.10	0.90	1.10
female (Kussharo)	0.70	0.40	1.50	0.90	1.00	1.20
female (Kussharo)	0.60	0.40	1.10	1.20	0.60	0.80
female (Daisetsu)	0.80	0.60	1.40	1.10	0.70	1.30
female (Daisetsu)	0.80	0.60	1.20	1.30	0.80	0.95
female (Daisetsu)	0.70	0.50	0.80	1.20	0.80	1.30
female (Daisetsu)	0.80	0.60	1.50	1.30	0.90	1.10
female (Ishikaridake)	0.40	0.30	1.30	1.50	0.35	0.50
female (Ishikaridake)	0.50	0.40	0.70	1.00	0.60	0.80
female (Akan)	0.70	0.50	1.20	1.20	0.60	0.85
female (Akan)	0.70	0.50	1.20	1.00	0.70	0.95
female (Nopporo)	0.60	0.30	1.30	1.00	0.70	1.00
female (Nopporo)	0.40	0.20	1.00	0.70	0.40	0.60

Female: Carapace 0.25 cm. long, 0.14 cm wide between second and third coxae. First row of eyes strongly recurved, second row in almost straight line, rather slightly procurved and almost as long as the first. All eyes equal in size. Eyes of posterior row equidistant, separated from each other by three times the diameter of eye. Anterior median eyes contiguous with each other and the laterals of both rows contiguous. Quadrangle

equilateral triangular in shape. Clypeus equal to the separation of the posterior eyes. Chelicerae powerful, not strongly diverging, almost 2/3 of carapace. Labium triangular, more wide than long in ratio 4:3. Sternum convex, shield-shaped, more or less triangular, with the three angles rounded, more long than wide in ratio 6:5. Maxillae wider in front than at base. Fourth coxae separated by their width.

Colour in life: Carapace yellow. Chelicerae yellowish brown, with sepia fangs. Labium, maxillae and sternum sepia, the latter darker than the others. Palpi and legs yellowish green. Abdomen white with sepia markings at anterior part and black markings at posterior part. Belly white with a dark broad median band. Spinnerets black.

Distribution: Germany, France, Hungary.

34. *Linyphia pusilla* SUNDEVALL

Pl. XV, Fig. 57, a. Epigynum from above. b. Sideview of epigynum.

Linyphia pusilla, T. THORELL:—Ren. on Syn., Upsala, 1870-1873, p. 50; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 22; L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 9; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 65; E. SIMON:—Arachn. de France, Paris, Tom. 5, 1884, p. 244; E. KEYSERLING:—Spinnen Amerikas, Theridiidae, Vol. 2, 1886, p. 55, pl. 12, Fig. 163; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 2, 1894, p. 58, Tab. 2, Fig. 25; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, p. 70, Taf. 6, Fig. 72; A. PETRUNKEVITCH:—Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 253; J. H. COMSTOCK:—Spider Book, New York, 1913, p. 398, Fig. 410, 411, 412; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 73, 74, Taf. 13, Fig. 818, 835.

Linyphia fuscinea, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 216, pl. 15, Fig. 142; ———:—Ann. Mag. Nat. Hist., 2 ser., Vol. 8, p. 450.

Linyphia mandibulata, J. H. EMERTON:—Common Spiders, Boston, 1902, p. 139, Fig. 325-329.

Locality: Mt. Daisetsu (1 female, Dr. T. INUKAI, August 14, 1930). Yakumo (1 male, 2 females, S. SAITO, July 24, 1931). Lake Akan (2 females, S. MOTODA, July 31, 1931). Shiranuka (3 females, L. M. PEELLE, July 31, 1931). Soranuma (1 male, 2 immature females, S. MAKINO, Sept. 8, 1931). Mt. Kurotake (1 male, Dr. T. UCHIDA, August 1, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Soranuma)	0.47	0.29	0.92	0.92	0.62	0.83
male (Mt. Kurotake)	0.50	0.35	0.80	0.70	0.60	0.65
male (Yakumo)	0.55	0.33	1.00	0.90	0.70	0.85
female (Yakumo)	0.53	0.36	0.75	0.70	0.65	0.80
female (Yakumo)	0.66	0.42	0.75	0.75	0.55	0.90

female (Mt. Daisetsu)	0.44	0.33	1.00	0.89	0.79	0.88
female (Lake Akan)	0.40	0.35	0.52	0.41	0.36	0.55
female (Lake Akan)	0.42	0.35	0.46	0.40	0.35	0.50
female (Shiranuka)	0.55	0.40	0.80	0.80	0.50	0.80
female (Shiranuka)	0.50	0.40	1.10	0.80	0.65	1.00
female (Shiranuka)	0.55	0.35	0.80	0.80	0.50	0.80

Female: Carapace 0.25 cm. long, 0.15 cm. wide between second and third coxae. First row of eyes recurved and second row procurved. Posterior median eyes largest and anterior lateral eyes smallest, the others equal in size. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by three times their diameter. Posterior median eyes separated from each other by $1/4$ of their diameter, from the posterior laterals by their diameter. Lateral of both rows contiguous with each other. Quadrangle more long than wide in ratio 3 : 2, wider behind than in front in ratio 11 : 6. Chelicerae moderately long and strong, convex in front. Clypeus equal to the length of quadrangle. Labium with circular base and gently converging sides, more wide than long in ratio 10 : 9. Maxillae with parallel sides, twice as long as wide. Inner upper angle considerably produced. Sternum shield-shaped, truncated in front, pointed behind.

Colour in life: Carapace blackish brown, with black cervical groove. Chelicerae and sternum darker than carapace. Labium and maxillae black. Legs and palpi dull yellow. Abdomen white with characteristic black markings. Belly and spinnerets uniformly black.

Distribution: Alaska, U. S. A., Siberia, U. S. S. R., Hungary, Germany, France.

35. *Linyphia marginata* C. L. KOCH

Pl. XV, Fig. 58, a. Epigynum from above. b. Epigynum from a little beneath.

Linyphia marginata, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 51.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, 1879, p. 58.; J. EMERTON:—Trans. Connecticut Acad. Sc., Vol. 6, 1882, p. 61, pl. 18, Fig. 1.; E. SIMON:—Arachn. de France, Paris, Tom. 5, 1884, p. 231.; E. KEYSERLING:—Spinnen Amerikas, Theridiidae, Nürnberg, 1886, Vol. 2, p. 53, pl. 12, Fig. 164.; J. H. COMSTOCK:—Spider Book, New York, 1913, p. 399, Fig. 404, 405.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 67, Taf. 5, Fig. 66.; A. PETRUNKEVITCH:—Bull. Amer. Nat. Hist., Vol. 29, 1911, p. 252.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 173, Taf. 10, Fig. 192.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 73, Taf. 12, Fig. 814, Taf. 13, Fig. 813.; M. L. PEELLE and S. SAITO:—Jour. Faculty Sc. Hokkaido Imp. Univ., 6 ser., Vol. 2, 1932, p. 90, Fig. 5.

Linyphia triangularis, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 212, pl. 15, Fig. 139.

Locality: Mt. Akan (5 females, Dr. T. INUKAI, July, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.55	0.40	0.65	0.70	0.40	0.55
female	0.50	0.40	0.65	0.65	0.35	0.50
female	0.50	0.35	0.60	0.65	0.35	0.55
female	0.50	0.35	0.65	0.65	0.30	0.55
female	0.40	0.30	0.60	0.60	0.30	0.50

Female: Carapace 0.22 cm. long, 0.07 cm. wide between second and third coxae. The anterior row of eyes, seen from above, is slightly recurved and the posterior row is nearly straight. Anterior median eyes slightly smaller than the others which are equal in size. Posterior median eyes separated from each other by their diameter. Lateral eyes of both rows almost in contact with each other. Quadrangle oblong, more long than wide. Chelicerae small, vertical and cone-shaped. Labium triangular, more wide than long in ratio 3 : 1. Maxillae triangular. Sternum pear-shaped, the place between the second coxae broadest.

Colour in alcohol: Carapace black with a marginal white band. Maxillae brown with light brown tips. Labium blackish brown. Chelicerae and sternum black. Palpi and legs bright yellow without marking. Abdomen light yellow with black marking at the middle part. Sides light black. Belly yellowish black with two yellow stripes from both sides of spinnerets to the spiracles.

Distribution: Europe, U. S. A., Japan (Kyushu, Iterup).

36. *Linyphia peltata* WIDER-REUSS.

Pl. XV, Fig. 59, a. Epigynum from above. b. Sideview of epigynum. c. Palpus of male.

Linyphia peltata, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 51.; E. SIMON:—Arachn. de France, Paris, Tom. 5, 1884, p. 236.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 57, Taf. 2, Fig. 15.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 68, Taf. 5, Fig. 63.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 73, Taf. 13, Fig. 824, Taf. 12, Fig. 832.

Linyphia rubea, J. BLACKWALL.—Ann. Mag. Nat. Hist., 2 ser., Vol. 8, p. 450.; ———:—Spid. Gr. Brit. & Ir., London, 1864, p. 217, pl. 15, Fig. 143.

Locality: Soranuma (2 females, S. MAKINO, Sept. 8, 1931). Lake Doya (1 immature male, Dr. T. INUKAI, May 27-29, 1932). Kussharo (3 females, S. NISHIO, July 15-18, 1932). Ishikiriyama (1 immature female,

M. TERUI, August, 1932). Mt. Ishikari (2 females, Dr. T. UCHIDA, August 3, 1932). Nopporo (2 females, 1 male, S. SAITO, August 17, 1933).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Nopporo)	0.50	0.30	1.70	1.50	1.00	1.30
female (Nopporo)	0.60	0.40	1.70	1.40	0.90	1.20
female (Nopporo)	0.45	0.30	1.40	1.20	0.70	1.10
female (Soranuma)	0.45	0.30	0.94	0.78	0.50	0.68
female (Soranuma)	0.42	0.27	1.30	1.10	0.90	1.00
female (Mt. Ishikari)	0.55	0.30	1.20	1.00	0.80	0.90
female (Mt. Ishikari)	0.45	0.30	1.40	1.20	1.00	1.10
female (Kussharo)	0.50	0.30	1.60	1.30	0.90	1.00
female (Kussharo)	0.50	0.30	1.70	1.40	1.00	0.80
female (Kussharo)	0.50	0.30	1.60	1.50	1.00	0.75

Female : Carapace 0.25 cm. long, 0.15 cm. wide between second and third coxae. Cervical groove in the shape of a peculiar, pigmented depression. Eyes equal. Anterior row recurved, posterior row straight. Laterals of each side contiguous. Both rows of eyes equal in length. Anterior median eyes almost contiguous with each other, separated from anterior lateral eyes by twice their diameter. Eyes of posterior row equidistant, separated by their diameter from each other. Quadrangle wider behind than in front in ratio 11 : 8. Clypeus equal to two diameters of eyes. Chelicerae stout and short, convex in front. Labium strongly rebordered, more wide than long in ratio 3 : 2, not quite reaching middle of maxillae. Sternum triangular, produced between hind coxae which are separated by a distance equal to their width.

Colour in life : Carapace, legs and palpi pale yellow. Chelicerae brownish yellow. Labium, maxillae and sternum black. Abdomen white with median black markings. Belly black with a pair of white dots at both sides of spinnerets and at the anterior part.

Distribution : Germany, France, Hungary, England.

37. *Linyphia exornata* L. KOCH

Pl. XIII, Fig. 17. Dorsal view of female.

Pl. XV, Fig. 60, a. Epigynum from above. b. Epigynum from a little beneath.

Linyphia exornata, L. KOCH :—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 746, Taf. 15, Fig. 10; W. BÜSENBERG u. E. STRAND :—Japanische Spinnen, Stuttgart, 1905, p. 173.

Locality: Nopporo (1 female, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.50	0.30	1.60	1.10	0.70	1.00

Female: Carapace 0.21 cm. long, 0.13 cm. wide between second and third coxae. Viewed from above, anterior row of eyes recurved, posterior row procurved. All eyes nearly equal in size, but posterior lateral eyes somewhat smaller than the others. Anterior median eyes separated from each other by $1/3$ of their diameter, from anterior lateral eyes by their diameter. Posterior median eyes situated on black tubercles, nocturnal, separated from each other by $7/5$ of their diameter, from posterior lateral eyes by their diameter. Lateral eyes of both rows situated on a tubercle and contiguous. Quadrangle wider behind than in front in ratio 16 : 11, more long than wide in ratio 3 : 2. Clypeus equal to $8/5$ of the diameter of anterior median eyes. Chelicerae comparatively long, furnished with six teeth on anterior margin of claw-furrow. Labium almost rectangular in shape, more wide than long in ratio 2 : 1. It does not reach the middle of maxillae. Maxillae somewhat wider in front than at base, more long than wide in front in ratio 2 : 1. Sternum nearly triangular in shape, convex, bluntly ending posteriorly, straight in front. First coxae wide apart, fourth coxae separated by their width.

Colour in life: Carapace light brown with sepia submarginal stripes. Chelicerae brown. Maxillae paler than chelicerae. Labium deep sepia with white tip. Sternum deep sepia. Palpi and legs greenish yellow. Abdomen dark yellow with white spots and five pairs of black spots. Belly pale black.

Distribution: Japan (?)¹⁾

2. Genus *Oedothorax* BERTKAU, 1883

38. *Oedothorax trilineatus* n. sp. Jap. name, *Misiji-akanegumo*.

Pl. XIII, Fig. 18. Dorsal view of female.

Pl. XV, Fig. 61, a. Eyegroup. b. Epigynum.

Locality: Nemuro (4 females, S. MOTODA, July 15, 1931).

Measurements:

1). L. KOCH gave a description without locality while W. BÖSENBERG and E. STRAND failed the collection from Japan.

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.15	0.10	0.13	0.11	0.13	0.15
female	0.14	0.11	0.13	0.10	0.11	0.12
female	0.14	0.10	0.14	0.10	0.13	0.14
female	0.13	0.10	0.12	0.11	0.10	0.12

Female: Carapace very small. Eight eyes in two rows. Viewed from above, anterior row recurved, its eyes equal in size and equidistant, separated by their diameter. Posterior row slightly procurved, its eyes equidistant, separated by three times the radius of its median eyes which largest in eight eyes. Posterior lateral eyes smaller than anterior eyes. Eye ratio 4:3:2. Quadrangle square, as wide as long. Clypeus equal to the width of quadrangle of median eyes. Chelicerae weak, divergent, with weak fangs. Labium oval, rounded anteriorly, much wider than long in ratio 2:1. It does not reach the middle of maxillae. Maxillae almost triangular, much wider in front than at base, with parallel inner margins. Sternum oval, narrowed anteriorly to width of labium, bluntly ending between fourth coxae.

Colour in alcohol: Carapace black, but pars thoracica deeper than pars cephalica. Chelicerae, maxillae, labium and sternum black. Legs and palpi white, annulated with black. Abdomen black with three oblique white markings at the sides. Belly black uniformly.

Remarks: The spider is allied to *Oedothorax femineus* Eös. et STRAND, but it differs in colour and in abdominal markings from the brown body of the latter.

Family VIII. *MICRYPHANTIDAE*

This family intergrades with the Linyphiidae, the Theridiidae and the Argiopidae, and in consequence some genera of this family are united in the above families by certain authors. In extreme cases this family is quite neglected as by A. PETRUNKEVITCH (Systema Aranearium, Trans. Connect. Acad. Arts and Sc., Vol. 29, 1929).

1. Genus *Nesticus* THORELL, 1870

39. *Nesticus cericeus* n. sp. Jap. name, *Kinu-gumo*.

Pl. XIII, Fig. 19. Dorsal view of female.

Pl. XV, Fig. 62, a. Eyegroup. b. Epigynum.

Locality: Soranuma (1 female, S. MAKINO, Sept. 8, 1931).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.47	0.32	1.03	0.98	0.79	0.93

Female: Carapace 0.23 cm. long, 0.14 cm. wide between second and third coxae, with indefinite median furrow, without cervical groove. Eight eyes in two rows, black in colour. Anterior eyes much smaller in diameter than posterior eyes in ratio 2 : 1. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by twice their diameter. Posterior eyes equidistant, separated by their diameter. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front in ratio 5 : 3, somewhat more long than posterior width. Clypeus equal to the width of eye-region. Chelicerae relatively long, furnished with five teeth on the lower margin of claw-furrow. Labium triangular, more wide than long in ratio 5 : 3, bluntly ending anteriorly. It does not reach the middle of maxillae. Maxillae much wider in front than at base in ratio 3 : 1, more long than wide in front. Sternum almost triangular, with concave anterior margin, pointed between fourth coxae which is separated by their width.

Colour in alcohol: Carapace yellow with a median longitudinal and marginal black stripes at pars thoracica. Chelicerae yellow with brown ends. Sternum dark yellow. Maxillae, labium and palpi yellow. Legs yellow, with black ends of femora, tibiae, metatarsi and tarsi. Abdomen dull crimson red with a dark median longitudinal leaf-marking. Belly dull yellow.

Remarks; The spider is closely allied to *Nesticus cellulanus* CLERCK, but it is distinguished from the latter by the crimson red of the abdomen together with the absence of a pair of black stripes at the belly.

Family IX. ARGIOPIDAE

The limits of this family as used here are the same as in the paper by R. BREMEN (*Tierwelt Mitteleuropas*, Leipzig, Bd. 3), therefore, it is confined within narrower limits than the common system. Five genera are represented in the fauna of Hokkaido, which can be distinguished by the following table.

- | | |
|---|----|
| 1. a. Lateral condyle of the chelicerae wanting. | 2. |
| b. Lateral condyle of the chelicerae distinct. | 3. |

2. a. Posterior femora with a single or double fringe of hairs on the external face of the basal half. 1. Gen. *Leucauge* WHITE
- b. Posterior femora not fringed. 3. Gen. *Meta* C. L. KOCH
3. a. Posterior row of eyes strongly procurved. 2. Gen. *Argiope* AUD.
- b. Posterior row of eyes barely procurved. 4.
4. a. Abdomen with several humps. 4. Gen. *Cyclosa* MENGE
- b. Abdomen without hump. 5. Gen. *Araneus* L.

1. Genus ***Leucauge*** WHITE, 1841

40. ***Leucauge subblanda*** Bös. et STRAND

Leucauge subblanda, W. BÜSENBURG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 184, Taf. 15, Fig. 406.

Locality: Yakumo (8 females, S. SAITO, July 24, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.80	0.65	1.80	1.40	0.80	1.20
female	0.80	0.60	1.90	1.50	0.80	1.20
female	0.80	0.70	1.50	1.20	0.70	1.10
female	0.70	0.50	2.00	1.50	0.80	1.30
female	0.80	0.60	2.00	1.70	0.80	1.40
female	0.90	0.60	1.70	1.40	0.80	1.20
female	0.90	0.70	2.10	1.70	0.90	1.20
female	0.60	0.30	1.60	1.20	0.80	1.00

Female: Carapace 0.32 cm. long, 0.23 cm. wide between second and third coxae, flat, with a definite cervical and transverse median furrows. Eight eyes in two rows, equal in size. Anterior row recurved and posterior row straight. Anterior median eyes separated from each other by $1/4$ of their diameter, from anterior lateral eyes by $7/3$ of their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by almost twice their diameter. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front in ratio 4 : 3, longer than the posterior width in ratio 5 : 4. Clypeus equal to the diameter of eyes. Chelicerae cone-shaped, vertical, with strong fang. Labium more wide than long in ratio 3 : 2, rounded anteriorly. It does not reach the middle of maxillae. Maxillae wider in front than at base in ratio 3 : 2, more long than wide in front in ratio 2 : 1. Sternum heart-shaped, as long as wide, with concave anterior margin, pointed posteriorly between fourth coxae which are almost contiguous.

Colour in life: Carapace dull white with black marginal line and dull brown colour along cervical and median furrows. Chelicerae brown with black claw. Maxillae and labium brown. Sternum brown with black fringe. Palpi and legs dull brown, but femora and patellae of the first and second legs dull green. Abdomen yellow with a black leaf-marking, which is ornamented with silver spots. Belly black with a pair of silver stripe from spinnerets to spiracles.

Distribution: Japan (Kyushu).

41. *Leucauge blanda* L. KOCH

Leucauge blanda, W. BÖSENBURG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 182, Taf. 3, Fig. 8, Taf. 15, Fig. 394.; S. YUHARA:—Study of Spiders (in Japanese), Tokyo, 1930, p. 115, Fig. 44.

Meta blanda, L. KOCH:—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 743, Taf. 15, Fig. 5.

Locality: Nopporo (1 female, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.60	0.45	1.50	1.20	0.80	0.95

Female: Carapace 0.30 cm. long, 0.21 cm. wide between second and third coxae. Viewed from above, anterior row of eyes recurved, posterior row straight. Posterior eyes nocturnal, somewhat larger than the anterior eyes. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by three times their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by three times their diameter. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front ratio 6 : 5, more long than wide. Clypeus equal to the diameter of anterior median eyes. Chelicerae strong, vertical. Labium triangle in shape, more wide than long in ratio 3 : 2. Maxillae square, somewhat wider in front than at base. Sternum almost triangular in shape, as wide as long, pointed behind between the fourth coxae which are separated by 1/3 of their width.

Colour in life: Carapace light brown. Chelicerae deeper than carapace. Labium and maxillae yellowish brown. Sternum blackish brown. Palpi and legs dull yellow. Abdomen dull yellow with a median silver band which is ornamented with black leaf-marking. Belly blackish brown with a paler median band which is bordered with greenish silver stripe. Spinnerets black.

Distribution: Japan (Honshu, Kyushu).

2. Genus *Argiope* AUDOUIN, 1827

42. *Argiope Brünnichi* (SCOPOLI)

Argiope Brünnichi, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 518.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 20, Taf. 1, Fig. 1.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 196, Taf. 4, Fig. 23, Taf. 12, Fig. 297, 300.

Locality: Bankenuma (1 female, G. HAYASHI, Sept. 19, 1930). Sapporo (1 female, H. YAMAGUCHI, Oct. 17, 1930). Soranuma (1 female, S. MAKINO, Sept. 8, 1931).

Measurements:—

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Bankenuma)	1.90	1.50	2.80	2.60	1.50	2.50
female (Sapporo)	1.85	1.45	2.70	2.50	1.60	2.50
female (Soranuma)	1.35	1.07	1.87	1.74	0.93	1.60

Female: Carapace 0.58 cm. long, 0.43 cm. wide between second and third coxae, with a definite cervical groove. Eyes eight, typical, in two rows. Abdomen yellow, crossed by a great number of black transverse lines. Carapace covered with white hairs through which dark markings on the sides show indistinctly.

Distribution: Europe, Japan (Honshu, Kyushu).

43. *Argiope aurea* n. sp. Jap. name, *Kin-kogane-gumo*.

Pl. XIII, Fig. 20. Dorsal view of female.

Pl. XV, Fig. 63, a. Epigynum from above. b. Sideview of epigynum.

Locality: Mt. Kurotake (1 female, Dr. T. UCHIDA, August 1, 1932).

Measurements:—

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.00	0.80	1.70	1.30	0.80	1.30

Female: Carapace 0.40 cm. long, 0.30 cm. wide between second and third coxae, 0.25 cm. wide in the region of the eyes. Radial groove wanting, but pars cephalica clearly delimited by the cervical groove. Viewed from above, first row of eyes strongly recurved, second row slightly procurved, and a very little shorter than the anterior ones. All eyes equal in size. Posterior median eyes separated from each other by their diameter,

and from posterior lateral eyes by six times their diameter. Anterior median eyes separated from each other by four times the diameter, from anterior laterals by six times. Laterals contiguous. Quadrangle wider in front than behind in ratio 5 : 3, as long as wide. Clypeus equal to the diameter of eyes. Chelicerae strongly convex in front, cone-shaped, with weak condyle. Labium more wide than long in ratio 5 : 2. Maxillae convex, wider toward end, as long as wide. Sternum convex, triangular, strongly rebordered, more long than wide in ratio 5 : 4, widest at first and second coxae, pointed between fourth coxae. Abdomen oblong oval, with obvious shoulder hump.

Colour in alcohol: Carapace dull yellow with a median longitudinal black band. Chelicerae dull yellow with deep brown condyle and black fang. Labium and maxillae yellow at the termination, black at basal part. Sternum black with yellow fringe. Legs yellow annulated with sepia. Abdomen buff above with four black muscular points, weak black mesh, and brown lines at posterior part. Belly dull yellow, black in middle, forming a mid-ventral band bordered by a row of white spots. Spinnerets black.

Remarks: This species is allied to *Argiope sachalinensis* SAITO¹⁾ which inhabits Saghalien, but it is distinguished by the presence of shoulder hump, the form of epigynum and the colour of abdomen.

3. Genus *Meta* C. L. KOCH, 1836

44. *Meta yunohamaensis*, EÖS. et STRAND

Jap. name, *Yunohama-doyogumo*.

Meta yunohamaensis, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 180, Taf. 11, Fig. 225, 229.; T. KAMBE:—Jour. Chosen Nat. Hist. Soc., (in Japanese) No. 15, 1933, p. 44; S. SAITO:—Transact. Sapporo Nat. Hist. Soc., Vol. 13, 1933, p. 48, pl. 3, Fig. 12.; ———:—Proc. Imp. Acad., Vol. 9, 1933, p. 273.; ———:—Transact. Sapporo Nat. Hist. Soc., Vol. 13, 1934, p. 33.

Locality: Sapporo (1 male, 3 females, S. SAITO, Oct. 25, 1929, May 20, 1932, Nov. 28, 1933.; Dr. T. INUKAI, Nov. 7, 1931). Vicinity of Sapporo (1 male, S. SAITO, Apr. 29, 1930). Mt. Yubari (1 female, T. ITABASHI, July 8, 1930). Nemuro (2 females, S. MOTODA, July 15, 1931). Yakumo (2 females, S. SAITO, July 24, 1931). Mt. Daisetsu (2 females, S. NISHIO, Aug. 1-5, 1932). Ishikiriyama (1 immature male, 1 female M. TERUI, Aug., 1932). Mt. Akan (1 female, Dr. T. INUKAI, July, 1933).

Measurements:

1) S. SAITO:—Transact. Sapporo Nat. Hist. Soc., Vol. 13, 1934, p. 332, Fig. 6.

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Mt. Akan)	1.00	0.70	1.60	1.20	0.70	1.20
female (Nemuro)	0.70	0.55	1.49	1.18	0.59	0.83
female (Nemuro)	0.77	0.62	1.46	1.18	0.75	0.99
female (Yakumo)	1.00	0.75	2.20	1.60	0.90	1.30
female (Yakumo)	0.90	0.60	2.10	1.50	0.80	1.30
female (Mt. Yubari)	1.00	0.80	2.20	1.70	0.90	1.30
female (Mt. Daisetsu)	1.10	0.80	2.00	1.60	1.00	1.50
female (Mt. Daisetsu)	0.90	0.70	2.00	1.50	0.90	1.30
female (Sapporo)	0.45	0.30	1.10	0.90	0.50	0.70
female (Sapporo)	0.53	0.39	1.28	0.99	0.56	0.76
female (Sapporo)	0.75	0.50	1.75	1.20	0.70	1.10
male (Sapporo)	0.40	0.32	0.70	0.65	0.25	0.40
male (Sapporo)	0.74	0.52	1.29	0.95	0.78	0.81

Female: Carapace 0.38 cm. long, 0.26 cm. wide between second and third coxae. Viewed from above, anterior row of eyes recurved, posterior row straight. Posterior median eyes separated from each other by their diameter, from the posterior laterals by the same interval, somewhat larger than the others which are equal in size. Eyes of anterior row equidistant separated by 23/30 of their diameter. Laterals of both rows contiguous. Quadrangle somewhat wider behind than in front in ratio 13 : 12, as wide as long. Clypeus narrow, practically wanting. Chelicerae moderately long and strong, with parallel outer margins. Labium oval, more wide than long in ratio 5 : 4. Maxillae much wider in front than at base in ratio 2 : 1. Sternum triangular, convex, bluntly ending between the fourth coxae which are separated by their width.

Colour in life: Carapace brownish yellow with a sepia marking at median part and at margin. Chelicerae, maxillae and labium brown. Sternum black. Legs and palpi dull yellow. Abdomen white or dull yellow with a leaf-marking. Belly sepia with a pair of white stripe from spinnerets to both spiracles.

Male: Colour brighter than that of female. Carapace, legs and palpi green or light brown. The leaf-marking of abdomen brown.

Distribution: Japan (Formosa, Kyushu, Honshu, Korea, Southern Saghalien).

4. Genus *Cyclosa* MENGE, 1866

45. *Cyclosa atrata* BöS. et STRAND

Pl. XIII, Fig. 21, a. Dorsal view of female. b. Sideview of female.

Cyclosa atrata, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 204. Taf. 4, Fig. 28, Taf. 15, Fig. 417.

Locality: Sapporo (1 female, August 14, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.00	0.70	1.00	0.90	0.70	0.90

Female: Carapace 0.29 cm. long, 0.17 cm. wide between second and third coxae with indefinite cervical and median furrows. Eyes eight, in two rows. Viewed from above, both rows strongly recurved. Anterior eyes larger than posterior eyes in ratio 3 : 2. A straight line can be drawn through the posterior edges of posterior median eyes and the anterior edges of anterior lateral eyes. Anterior eyes equidistant, separated by 17/11 of their diameter. Posterior median eyes in contact with each other, separated from posterior lateral eyes by about four times their diameter. Lateral eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 17 : 7, as long as wide behind. Clypeus equal to the diameter of anterior eyes. Chelicerae short but strong. Labium triangular, as long as wide at base. Maxillae wider at end than at base in ratio 2 : 1, as long as wide in front. Sternum triangular, broadly truncated anteriorly, pointed behind between fourth coxae which are separated by their width. Abdomen slender, the hind part prolonged, with three hind projections, one in median line on the ventral side and one on each side.

Colour in life: Carapace, chelicerae, maxillae labium and sternum deep sepia. Palpi and legs pale yellow, but femora and patellae deep yellow, coxae and trochanters brown. Abdomen deep sepia with a pair of stripes of silver spots. This stripe branching toward outside and cutting at 1/3 from behind. Belly paler than carapace.

Distribution: Japan (Kyushu).

5. Genus *Araneus* LINNAEUS, 1759

46. *Araneus marmoreus* CLERCK

Araneus marmoreus, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 15.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat., Hist., Vol. 29, 1911, p. 301.; W. RABELEK:—Zeitschr. f. Morph. u. Oekol., Bd. 21, 1931, p. 198.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 336.

Araneus marmoreus, J. H. EMERTON:—Trans. Connect. Acad., Vol. 6, 1884, p. 307.; C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Agr. Exper., 1926, p. 1053.; S. SAITO: Annot. Zool. Japonensis, Vol. 13, 1932, p. 379, Fig. 1.

Aranea marmorea, C. FABRICIUS:—Syst. Ent., Tom. 2, 1793, p. 415.

Aranea marmorea (*Aranea Rajii*), T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 9.

Epeira marmorea, E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 76.; L. KOCH:—Arachn. Sibirien u. Novaja Semlja, Stockholm, 1879, p. 5.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 130, Taf. 5, Fig. 15.; C. McCook:—Amer. Spiders, 1893, Vol. 3, p. 143, pl. 1, Fig. 1, 2, pl. 2, Fig. 1, 2, pl. 3, Fig. 7, 8.; J. H. EMERTON:—Common Spiders, London, 1902, p. 169, Fig. 398, 399.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 24, Taf. 1, Fig. 4.

Aranea Radii, W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 236.

Epeira scalaris, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 331, pl. 24, Fig. 240.

Epeira insularis, E. KEYSERLING:—Spinnen Amerikas, Epeiridae, 1892, p. 170, pl. 8, Fig. 126. N. M. HENTZ:—Spiders U. S., Boston, 1875, p. 109, pl. 2, Fig. 11.

Epeira Radii, T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 15.

Locality: Sapporo (1 male, 7 females, S. SAITO, Sept. 21, 1929). Shiranuka (1 immature female, M. L. PEELLE, July 31, 1931). Shikaribetsu (1 female, S. SAITO, August 3, 1931). Akkeshi (1 female, Y. HADA, Nov. 3, 1931). Kushiro (4 immature females, S. MOTODA, July 15-18, 1932). Makomanai (1 female, S. SAITO, Sept. 18, 1932). Mt. Akan (1 male, 1 female, Dr. T. INUKAI, July, Aug., 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.80	0.40	1.50	1.30	1.00	1.20
male (Mt. Akan)	1.20	0.70	2.70	2.30	1.60	2.20
female (Mt. Akan)	1.70	1.30	2.60	2.40	1.50	2.20
female (Sapporo)	1.50	1.10	2.30	2.10	1.30	2.00
female (Sapporo)	1.00	0.90	1.70	1.50	1.00	1.50
female (Shikaribetsu)	1.80	1.60	2.50	2.30	1.60	2.25
female (Akkeshi)	1.30	0.90	2.60	2.50	1.70	2.40
female (Makomanai)	1.90	1.50	2.90	2.60	1.70	2.50

Female: Carapace 0.60 cm. long, 0.52 cm. wide between second and third coxae, with a definite cervical groove. Eyes in two recurved rows. The separation of both rows at the median eye-region greater than a half of that between two anterior median eyes while the lateral eyes of both rows contiguous. Legs vigorous, furnished with short grey hairs and vigorous black bristles. Sternum oval, pointed behind.

Colour in life: Carapace dull yellow. Palpi and legs similar in colour to the thorax with dark brown at the termination of each segment. Sternum brown. Abdomen bright yellow with complicated black markings. Anterior abdomen with a shamrock leaf shaped marking on the upper side on the middle line, on both sides of which there are four black muscle

impressions. Posterior abdomen ornamented with a folium and spots at its periphery, the number of which are variable. Belly dark with a black longitudinal band at the median part.

Male: Carapace 0.45 cm. long, 0.40 cm. wide between second and third coxae. Abdomen relatively smaller than that of female. Tibia of the second leg furnished with six pairs of strong spines on the inner side.

Distribution: Canada, U. S. A., Siberia, France, Germany, Hungary, England, Japan (Southern Saghalien).

47. *Araneus quadratus* CLERCK

Pl. XV, Fig. 64, a. Sideview of epigynum. b. Epigynum from above. c. Eyegroup.

Araneus quadratus, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 16.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 311.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 337.

Epeira quadrata, E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 80.; J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 324, pl. 23, Fig. 236.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 130, Taf. 5, Fig. 12.; W. BÜSENBURG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 23, Taf. 1, Fig. 3.

Locality: Vicinity of Sapporo (5 females, 1 immature female, S. SAITO, July 3, 6. August 10, 1930). Ishikiriyama (2 females, M. TERUI, August 1932). Nopporo (2 females, S. SAITO, Aug. 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Sapporo)	1.90	1.50	3.00	2.50	1.50	2.40
female (Sapporo)	2.00	1.60	3.00	2.80	1.90	2.70
female (Sapporo)	1.55	1.30	2.30	2.00	1.40	1.80
female (Sapporo)	1.70	1.20	2.70	2.30	1.60	2.50
female (Sapporo)	1.40	1.10	2.30	2.20	1.30	2.00
female (Ishikiriyama)	1.50	1.30	2.00	1.80	1.50	1.70
female (Ishikiriyama)	1.30	1.10	1.90	1.80	1.20	1.70
female (Nopporo)	2.00	1.60	3.20	2.90	1.70	2.80
female (Nopporo)	1.60	1.20	2.60	2.40	1.70	2.30

Female: Carapace 0.80 cm. long, 0.62 cm. wide between second and third coxae. Eight eyes in typical arrangement, equal in size. Viewed from above, both rows recurved. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by 4.5 times their diameter. Posterior median eyes separated from each other by 1/4 of their diameter, from posterior lateral eyes by five times their diameter. Lateral

eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 4 : 3, more long than wide in ratio 6 : 5. Clypeus equal to the length of quadrangle of median eyes. Chelicerae vigorous, vertical and cone-shaped. Labium oval, more wide than long in ratio 7 : 5, reaching middle of maxillae. Sternum shield-shaped, with concave anterior margin, bluntly pointed between the contiguous fourth coxae.

Colour in life: Carapace pale yellow with median dark stripe and submarginal dark stripes. Chelicerae deeper than carapace. Labium and sternum black. Maxillae black with white anterior margins. Palpi and legs yellow; annulated with black on all ends of all joints. Abdomen reddish brown with yellow dots which are bordered with deep brown and arranged somewhat regularly. Belly reddish brown.

Distribution: Greenland, France, Germany, Hungary, England, Japan (Southern Saghalien).

48. *Araneus undatus* OLIVIER

Aranea undata (sclopetaria CL.), W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 228.

Araneus sericatus, A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 315.

Araneus sericata, J. H. COMSTOCK:—Spider Book, New York, 1913, p. 487.

Epeira sclopetaria, MENGE:—Preuss. Spinnen, p. 59, pl. 7, Fig. 7.; J. BLACKWALL:—Ann. Mag. Nat. Hist., 4 ser., 1871, Vol. 8, p. 429.; J. H. EMERTON:—Common Spiders, Boston, 1902, p. 160, Fig. 383.

Epeira sericata, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 328, pl. 23, Fig. 238.

Locality: Yakumo (1 male, S. SAITO, July 24, 1931); Shiranuka (1 male, 5 immature females, M. L. PEELLE, July 31, 1931). Mt. Akan (1 male, 3 females, Dr. T. INUKAI, July 11-12, 1932). Lake Kussharo (1 male, S. NISHIO, July 15-18, 1932). Ishikiriyama (1 immature female, M. TERUI, August, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Yakumo)	0.65	0.40	1.50	1.20	0.70	1.00
male (Shiranuka)	0.70	0.40	1.30	1.00	0.80	1.00
male (Kussharo)	0.70	0.50	1.20	1.10	0.80	0.90
male (Mt. Akan)	0.40	0.30	0.60	0.58	0.32	0.52
female (Mt. Akan)	0.75	0.68	1.02	0.82	0.60	0.85
female (Mt. Akan)	0.67	0.52	0.78	0.68	0.42	0.62

Female: Carapace 0.28 cm. long, 0.22 cm. wide between second and third coxae. Arrangement of eyes typical. Viewed from above, anterior

row of eyes slightly recurved, posterior row nearly straight. Posterior median eyes somewhat larger than the others, nocturnal, separated from each other by their radius, from posterior lateral eyes by about four times their diameter. Anterior eyes almost equidistant, separated from each other by two times their diameter. Lateral eyes of both rows contiguous. Clypeus equal to the radius of anterior eye. Chelicerae of moderate size, strong, with a weak-developed condyle. Labium more wide than long in ratio 4 : 3, rounded anteriorly. It does not reach the middle of maxillae. Maxillae almost square in shape, with parallel truncature and parallel outer margins. Sternum convex, with concave anterior margin, pointed behind between fourth coxae which are almost contiguous. First coxae wide apart.

Colour in alcohol: Carapace dull brown. Chelicerae deep brown with black ends. Labium black with white tip. Maxillae blackish brown with white inner margins. Sternum black. Palpi and legs pale brown, annulated indefinitely with brown on all joints. Abdomen dull brown or brownish white with a black or sepia leaf-marking which is broken at the edge just in front of the middle on each side, so as to form two separate figures, one covering the front and the other the back half of the abdomen. Belly sepia or black with a pair of white stripes from spiracles to spinnerets which black.

Male: Abdomen comparatively smaller than that of female, and the other characters and colour as in female.

Remarks: A. PETRUNKEVITCH says that *Epeira frondosa* WALCKENAER is a synonym of this species (Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 742), but it is a synonym of a quite different species, *Araneus cornutus* CLERCK.

Distribution: U. S. A., France, Hungary, Germany, England, Siberia, Japan (Yeso). This species has already been reported from Hokkaido by W. BÖSENBERG and E. STRAND in their "Japanische Spinnen".

49. *Araneus cornutus* CLERCK

Araneus cornutus, A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 742;—

S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 334.

Aranea cornuta, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 236.

Araneus frondosa, J. H. COMSTOCK:—Spider Book, New York, 1913, p. 489.

Araneus fojatus, S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 273.

Aranea fojata, R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 111, 115, Taf. 23, Fig. 1253, Taf. 24, Fig. 1299.

Epeira cornuta, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 15.; E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 168.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 16.; L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879,

p. 5.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, 1879, Bd. 3, p. 17.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, 1891, Tom. I, p. 133, Taf. 5, Fig. 9.
Epeira strix, N. M. HENTZ:—Spiders U. S., Boston, 1875, p. 112, pl. 13, Fig. 5.; J. H. EMERTON:—Common Spiders, London, 1902, p. 160, Fig. 385.
Epeira affinis, J. BLACKWALL:—Ann. Mag. Nat. Hist., 1844, Vol. 18, p. 77.
Epeira apocissa, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 325, Fig. 237.

Locality: Sapporo (6 females, S. SAITO, Sept. 10, 1930, June 23, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.10	0.70	1.40	1.20	0.80	1.20
female	1.20	0.90	1.45	1.25	0.75	1.15
female	1.05	0.80	1.15	1.00	0.65	0.95
female	1.00	0.75	1.25	1.15	0.70	1.00
female	0.95	0.85	1.20	1.00	0.60	0.80
female	1.20	0.90	1.45	1.25	0.80	1.15

Female: Carapace 0.43 cm. long, 0.35 cm. wide between second and third coxae. Eyes eight in two rows, black. Viewed from above, anterior row slightly recurved, posterior row almost straight. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by three times their diameter. Posterior median eyes separated from each other by 3/4 of their diameter, from posterior lateral eyes by four times their diameter. Lateral eyes of both rows contiguous. Quadrangle almost square in shape, but somewhat wider in front than behind. Clypeus practically wanting. Chelicerae strong, cone-shaped, with well-developed condyles. Labium wider than long in ratio 4 : 3, rounded anteriorly. Maxillae more long than wide in ratio 5 : 3, wider in front than at base in ratio 3 : 2. Sternum shield-shaped, pointed behind, with concave anterior margin. First coxae wide apart, fourth coxae contiguous.

Colour in life: Carapace yellowish brown. Chelicerae blackish brown. Maxillae and labium pale black with white margin. Sternum blackish brown, but deeper than the chelicerae. Palpi and legs yellow with black ring at the end of every joint. Abdomen white with a blackish brown leaf-marking. Belly yellowish brown with a dark band bordered with white stripe which extends from spinnerets to spiracles.

Distribution: U. S. A., Europe, Japan (Southern Saghalien).

50. *Araneus patagiatus* CLERCK

Araneus patagiatus, A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 803.;

W. RABELER:—Zeitschr. f. Morph. u. Oekol., Bd. 21, 1931, p. 198.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1924, p. 334.

Araneus patagiata, L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 7.; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 35, Taf. 2, Fig. 22.; C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Agr. Exper. Station, 1926, p. 1053.; S. SAITO:—Ann. Zool. Jap., Vol. 13, 1932, p. 380, Fig. 2.; M. L. PEELE and S. SAITO:—Jour. Faculty Sc. Hokkaido Imper. Univ., 6 ser., Vol. 2, 1932, p. 92.; S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 273.; T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 16.

Epeira patagiata, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 329, pl. 24, Fig. 229.; MENGE:—Preuss. Spinnen, 1866, Vol. 1, p. 10, pl. 8, Fig. 9.; E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 110.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 16.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 113, Taf. 5, Fig. 10.; J. EMERTON:—Common Spiders, London, 1902, p. 160, Fig. 384.

Aranea ocellata, J. H. COMSTOCK:—Spider Book, New York, 1913, p. 489.

Locality: Soranuma (1 male, 1 female, S. MAKINO, Sept. 8, 1931).
Mt. Akan (1 female, Dr. T. INUKAI, July, 1933).

Measurements:

	total length.	abdomen	leg I	leg II	leg III	leg IV
male (Soranuma)	0.42	0.29	0.58	0.47	0.33	0.44
female (Soranuma)	0.60	0.44	0.89	0.70	0.52	0.76
female (Mt. Akan)	0.50	0.65	1.20	1.10	0.70	0.95

Female: Carapace 0.36 cm. long, 0.32 cm. wide between second and third coxae. Eyes in two rows, equal in size. Anterior row of eyes slightly recurved, posterior row straight. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by four times their diameter. Posterior median eyes separated from each other by their radius. Lateral eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 6 : 5. Clypeus practically wanting. Chelicerae cone-shaped, strong, with weak-developed condyles. Labium triangular, as wide as long. Maxillae square in shape, wider in front than at base in ratio 2 : 1. Sternum shield-shaped, more long than wide in ratio 5 : 4, straight anterior margin and bluntly pointed posteriorly. Second coxae most widely apart, fourth coxae separated by 1/2 of their width.

Colour in alcohol: Carapace dull brown, furnished with black hairs. Chelicerae blackish brown. Maxillae and labium brown with light tips. Sternum blackish brown. Palpi and legs deep brown. Abdomen deep brown with a leaf-marking. Belly blackish brown with a pair of white stripes from both spiracles to median part of abdomen.

Distribution: U. S. A., Siberia, Japan (Southern Saghalien, Iturup),

Germany, France, Hungary, England.

51. *Araneus tokachianus* n. sp. Jap. name, *Tokachi-onigumo*.

Pl. XIII, Fig. 22. Dorsal view of female.

Pl. XV, Fig. 65. Epigynum from above.

Locality: Mt. Tokachi (1 female, S. SAITO, August 29, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.70	0.50	0.85	0.80	0.50	0.80

Female: Carapace 0.27 cm. long, 0.21 cm. wide between second and third coxae, with definite cervical and median furrows. Eyes eight, typical, in two rows, both of which are slightly recurved. Median eyes somewhat larger than the laterals. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by twice their diameter. Posterior median eyes separated from each other by their radius and from posterior lateral eyes by three times their diameter. Lateral eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 6 : 5. Clypeus practically wanting. Chelicerae relatively weak, with convergent outer margins. Labium almost circular, as wide as long. Sternum shield-shaped, with straight anterior margin and pointed posterior end. Maxillae rounded anteriorly, as wide as long, with parallel inner margins. The first coxae wide apart, fourth coxae subcontiguous.

Colour in alcohol: Carapace dull white with dark colour on pars cephalica. Chelicerae dull yellow. Maxillae and labium paler than chelicerae. Sternum blackish yellow. Palpi and legs dull white with sepia at the ends of all joints and sepia patch on femora and tibiae. Abdomen dull white, with a median leaf-marking. Sides sepia. Belly sepia with a median black band bordered by a stripe of white spots.

Remarks: The species is easily distinguishable from the other species of the genus by the form of the epigynum.

52. *Araneus triguttatus* FABRICIUS

Pl. XIII, Fig. 23, a, b. Dorsal view of female.

Pl. XV, Fig. 66. Epigynum from above.

Araneus triguttatus, S. SAITO:—Transact. Sapporo. Nat. Hist., Vol. 13, 1934, p. 336.

Aranea triguttata, C. FABRICIUS:—Syst. Ent., Tom. 2, 1793, p. 416.

Epeira triguttata, E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 88.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 131, Taf. 5, Fig. 6.;

W. BÜSENBERG:—*Zoologica*, Stuttgart, 1903, Bd. 14, p. 38, Taf. 2, Fig. 25.

Epeira triguttata var. *agelena*, T. THORELL:—*Südrussischer Spinnen*, St. Petersburg, 1875, p. 16.

Aranea guttata, R. BREMEN:—*Tierwelt Mitteleuropas*, Leipzig, Bd. 3, Lief. 2, p. 113, 114, Taf. 23, Fig. 1270, Taf. 24, Fig. 1285.

Epeira agelena, J. BLACKWALL:—*Spid. Gr. Brit. & Ir.*, London, 1864, p. 334, pl. 24, Fig. 242.; _____:—*Ann. Mag. Nat. Hist.*, 2 ser., Vol. 14, p. 32.

Locality: Mt. Tokachi (1 female, S. SAITO, August 29, 1931). Vicinity of Sapporo (1 female, M. SHIRATO, July 10, 1932). Mt. Akan (2 females, Dr. T. INUKAI; July, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Mt. Tokachi)	0.60	0.45	0.80	0.70	0.50	0.70
female (Sapporo)	0.50	0.40	0.70	0.60	0.50	0.70
female (Mt. Akan)	0.60	0.50	0.90	0.70	0.50	0.65
female (Mt. Akan)	0.60	0.50	0.75	0.60	0.40	0.65

Female: Carapace 0.24 cm. long, 0.21 cm. wide between second and third coxae. All eyes equal in size. Viewed from above, the anterior row of eyes recurved, the posterior row nearly straight. Anterior median eyes separated from each other by about two times their diameter, from anterior lateral eyes by four times their diameter. Posterior median eyes separated from each other by three times their radius, from the posterior laterals by nine times their radius. Lateral eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 4:3, as long as wide. Clypeus equal to the diameter of eyes. Chelicerae moderately long and strong, with parallel outer edges. Labium triangular, more wide than long in ratio 3:2. Maxillae slightly wider in front than behind, as long as wide. Sternum convex, shield-shaped, strongly rebordered, pointed posteriorly but with anterior margin nearly straight. First coxae wide apart, fourth coxae almost contiguous.

Colour in life: Carapace light brownish yellow with a brown median stripe and a brown marginal band. Chelicerae and sternum deep brown. Maxillae and labium paler than sternum, with yellow tips. Palpi and legs of the same colour as carapace, annulated with deep brown. Abdomen dull yellow with sepia marking which shows great variability. Belly dull yellow with a median blackish brown band.

Distribution: Germany, France, Hungary, England, U. S. S. R., Japan (Southern Saghalien).

53. *Araneus omoeda* THORELL

Pl. XIII, Fig. 24. Dorsal view of female.

Araneus omoeda, S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 333.

Aranea omoeda, R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 114, Taf. 24, Fig. 1281, p. 111, Taf. 23, Fig. 1255.

Epeira omoeda, E. SIMON:—Arachn. de France, Paris, Tom. I, 1874, p. 66.; C. CHYZER et L. KULCZYNSKI:—Aranee Hungariae, Budapest, Tom. I, 1892, p. 129.; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 27, Taf. 1, Fig. 9.

Epeira bicornis, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 19.

Locality: Mt. Daisetsu (1 female, S. NISHIO, August 1-5, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.80	0.60	1.20	1.20	0.80	1.10

Female: Carapace 0.37 cm. long, 0.24 cm. wide between second and third coxae, with definite cervical and median furrows. Eyes typical, in two rows. Posterior eyes somewhat larger than anterior ones. Viewed from above, both rows recurved. Anterior median eyes separated from each other by about two times their diameter, from anterior lateral eyes by four times their diameter. Posterior median eyes separated from each other by two times their diameter. Lateral eyes of both rows contiguous. Quadrangle wider behind than in front in ratio 4 : 3, as long as wide behind. Viewed from in front, the anterior row of eyes straight. Clypeus equal to the diameter of anterior eyes. Chelicerae cone-shaped, vigorous, with convergent outer margins. Labium triangular, more wide at base than long in ratio 3 : 2. Maxillae wider at end than at base in ratio 2 : 1, with parallel inner margins. Sternum shield-shaped, strongly rebordered, with concave anterior margin, pointed behind. First coxae wide apart and fourth coxae subcontiguous. Abdomen with prominent shoulder tubercles.

Colour in alcohol: Carapace deep sepia with a white patch at median furrow. Chelicerae and sternum deeper than carapace. Maxillae and labium dark brown with white tips. Palpi and legs white, but patellae of all legs sepia and annulated with sepia at the end of the other joints. Abdomen paler than carapace and the shoulder tubercles white. Belly brown with a pair of pale stripes from spinnerets to spiracles.

Distribution: Germany, France, Hungary, Japan (Southern Saghalien).

54. *Araneus abscissa* KARSCH

Aranea abscissa, W. BÜSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 225, Taf. 11, Fig. 214.

Epeira abscissa, F. KARSCH:—Verhandl. d. N. V., Jahrg. 36, 1879, p. 69.

Locality: Mt. Akan (1 female, Dr. T. INUKAI, July 11, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.90	0.65	1.30	1.19	0.76	1.20

Female: Carapace 0.30 cm. long, 0.21 cm. wide between second and third coxae. Eyes in two rows, black. Anterior eyes somewhat smaller than posterior eyes. Viewed from above, anterior row recurved, its median eyes separated from each other by two times their diameter and the distance between the median and the lateral eyes equal to four times their diameter. Posterior row of eyes nearly straight, its median eyes separated from each other by their diameter, and the distance between the median and the lateral eyes equal to five times their diameter. Lateral eyes of both rows contiguous. Quadrangle of trapezoidal form, wider in front than behind in ratio 4 : 3, as long as wide. Clypeus equal to the diameter of anterior median eyes. Chelicerae strong, vertical, with well-developed condyles. Labium almost square, more wide than long in ratio 4 : 3, reaching middle of maxillae. Maxillae wider in front than at base in ratio 2 : 1. Sternum shield-shaped, convex, truncated in front, pointed behind between fourth coxae which are separated by 1/2 of their width, first coxae wide apart.

Colour in alcohol: Carapace dull brown with brown pars thoracica. Chelicerae and maxillae are the same in colour as the carapace. Labium black with white tip. Sternum darker than maxillae. Palpi and legs above deep brown, venter yellowish brown. Abdomen dull brown with a brown leaf-marking. Belly blackish brown with a pair of yellow stripes from spinnerets to spiracles.

Distribution: Japan.

55. *Araneus angulatus* CLERCK

Pl. XV, Fig. 67. Epigynum from above.

Araneus angulatus, A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 279.

Aranea angulata, J. H. COMSTOCK:—Spider Book, New York, 1913, p. 469, Fig. 483.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 110, 113, Taf. 23, Fig. 1246, Taf. 24, Fig. 1276.

Epeira angulata, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 360, pl. 27, Fig. 259.; T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 3.; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 15.; E. SIMON:—Arachn. de France, Paris, 1874, Tom. 1, p. 52, pl. 1, Fig. 11.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 11.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom.

1, 1892, p. 128.; E. KEYSERLING:—*Spinnen Amerikas, Epeiridae, Nürnberg*, 1892, p. 114, pl. 6, Fig. 84.; J. EMERTON:—*Common Spiders*, London, 1902, p. 164, Fig. 389.
W. BÜSENBURG:—*Zoologica*, Bd. 14, 1903, Stuttgart, p. 25, Taf. 1, Fig. 5.

Locality: Vicinity of Sapporo (2 females, S. SAITO, Sept. 21, 1929, August 31, 1931). Nopporo (5 females, S. SAITO, August 11, 1933). Bankenuma (1 female, G. HAYASHI, Sept. 19, 1933). Ishikiriyama (1 female, M. SAKAMOTO, Oct. 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Sapporo)	2.10	1.40	3.00	2.80	1.80	2.60
female (Sapporo)	1.75	1.35	2.65	2.50	1.70	2.55
female (Nopporo)	1.70	1.30	3.00	2.80	1.90	2.70
female (Nopporo)	1.70	1.40	2.90	2.70	1.80	2.50
female (Nopporo)	1.70	1.20	2.60	2.50	1.80	2.40
female (Nopporo)	1.60	1.20	2.80	2.60	1.70	2.40
female (Nopporo)	1.60	1.20	2.60	2.30	1.60	2.20
female (Bankenuma)	1.80	1.20	2.90	2.70	1.90	2.80
female (Ishikiriyama)	1.90	1.70	2.80	2.70	1.90	2.70

Female: Carapace 0.74 cm. long, 0.60 cm. wide between second and third coxae, with a definite median furrow. Viewed from above, both rows of eyes recurved. A straight line tangent to anterior edges of posterior median eyes is also tangent to anterior edges of anterior lateral eyes. Median eyes in both rows somewhat larger than the laterals. Anterior median eyes separated from each other by 1.5 times their diameter, from anterior lateral eyes by about six times their diameter. Posterior median eyes separated from each other by 1/3 of their diameter. Lateral eyes of both rows contiguous. Quadrangle wider in front than behind in ratio 5 : 3. Clypeus equal to the diameter of anterior median eyes. Chelicerae strong, cone-shaped, with weakly developed condyles. Labium oval, more wide than long in ratio 5 : 3. Maxillae wider in front than at base in ratio 2 : 1. Sternum oval, more long than wide in ratio 6 : 5, bluntly pointed between fourth coxae which are subcontiguous.

Colour in life: Carapace dull yellow with a black longitudinal median stripe and dark colour along cervical and radial furrows. Chelicerae light brown with black fangs. Maxillae and labium black with white anterior margins. Sternum black with white keel-marking. Palpi and legs yellow, annulated with bright brown at the ends of every joint. Abdomen dull yellow with a dull brown leaf-marking. Sides dull brown. Belly dull yellow with a median black band from spinnerets to spiracles.

Distribution: U.S.A., U.S.S.R., Germany, France, Hungary, England.

56. *Araneus adiantus* WALCKENAER

Araneus adiantus, W. RABELER:—Zeitschr. f. Morph. u. Oekol., Bd. 21, 1931, p. 198.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 337.
Aranea adianta, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 23.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 112, 115, Taf. 23, Fig. 1265, Taf. 24, Fig. 1291.
Araneus adianta, S. SAITO:—Annot. Zool. Jap., Vol. 13, 1932, p. 381, Fig. 3.
Epeira adianta, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 348, pl. 25, Fig. 251.; E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. III.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 18.; C. P. CAMBRIDGE:—Ann. Mag. Nat. Hist., Vol. 1, 1878, p. 120.; L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 7.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 133.

Locality: Kamifurano (5 females, S. SAITO, August 30, 1931). Vicinity of Sapporo (2 females, S. SAITO, August 10, 1930). Shiranuka (1 immature male, M. L. PEELLE, July 31, 1931). Mt. Yubari (2 immature males and 2 females, S. MOTODA, July 31, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Kamifurano)	0.80	0.60	1.30	1.20	0.70	1.10
female (Kamifurano)	0.70	0.50	1.30	1.10	0.65	1.10
female (Kamifurano)	0.75	0.55	1.20	1.10	0.60	1.00
female (Kamifurano)	0.80	0.60	1.20	1.00	0.60	1.00
female (Kamifurano)	0.70	0.50	1.20	1.00	0.60	0.90
female (Sapporo)	0.80	0.50	1.40	1.20	0.70	1.15
female (Sapporo)	0.80	0.60	1.50	1.20	0.80	1.35

Female: Cephalothorax light yellow with a black, longitudinal median stripe, extending from the posterior extremity to the middle of the pars cephalica; two green lines on the sides of the pars thoracica along the margin. Median and cervical grooves obsolete. Eyes dark grey in colour, moderate in size for the genus, occupying almost the whole part of the width of the caput, lateral eyes in contact antero-posteriorly with each other, four central eyes making a square, a side of which is twice as long as the diameter of the anterior median eyes. Eyes on the whole placed in two nearly parallel recurved transverse lines; the anterior eyes smaller than the corresponding eyes in the posterior row; posterior median eyes the largest. Sternum black, oval, pointed behind and truncated in front. Labium oblong-oval, the transverse axis being twice as long as the longitudinal; the termination light yellow and the root black. Abdomen of somewhat oblong form, truncated before and

pointed behind; upper side yellow with eight central longitudinal markings; seven pairs of black flecks inserted from side between the above white markings; under side dull yellow with a strong longitudinal median black band and a pair of white side stripes.

Distribution: Germany, France, England, U.S.S.R., Siberia (Krasnojarsk), Japan (Southern Saghalien).

57. *Araneus ventricosus* L. KOCH Jap. name, *Onigumo*.

Pl. XV, Fig. 68, a. Sideview of epigynum. b. Epigynum from above.

Araneus ventricosus, S. SAITO:—Annot. Zool. Jap., Vol. 13, 1931, p. 143.; ———:—Ibid., Vol. 13, 1932, p. 378.; Td. SATO, TK. SATO and I. KAYASHIMA:—*Sylvia* (in Japanese), Vol. 3, 1932, p. 5.; I. KAYASHIMA:—Ibid., Vol. 3, 1932, p. 4.; T. KAMBE:—Jour. Chosen Nat. Hist., No. 15, 1933, p. 44 (in Japanese); S. SAITO:—Transact. Sapporo Nat. His., Vol. 13, 1933, p. 54.

Aranea ventricosa, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 213, Taf. 1, Fig. 177, 198, Taf. 3, Fig. 15. Textfig. 3.

Epeira ventricosa, L. KOCH:—Verhandl. d. zool. bot. Ges., 1877, p. 739, Taf. 15, Fig. 2.

Epeira senta, F. KARSCH:—Verhandl. d. n. V., Bd. 36, 1879, p. 70, Taf. 1, Fig. 5.

Locality: Sapporo (3 males, 17 females, S. SAITO, June 29, Sept. 20, 21, 1929, July 20, 1930). Muroran (1 immature male, Dr. T. INUKAI, June 27, 1931). Akkeshi (1 female, S. MOTODA, July 24, 1931). Lake Akan (1 female, S. MOTODA, July 31, 1931). Mt. Yubari (1 female, S. MOTODA, July 9, 1932). Mt. Akan (1 male, 2 females, Dr. T. INUKAI, July 11-12, 1932). Kussharo (2 females, S. NISHIO, July 15-18, 1932). Nopporo (2 females, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	1.20	0.80	1.80	1.70	1.10	1.60
male (Sapporo)	1.60	1.00	2.25	2.15	1.40	2.05
male (Sapporo)	1.05	0.80	2.00	2.00	1.20	1.90
male (Mt. Akan)	1.40	0.85	2.70	2.35	1.60	2.35
female (Mt. Akan)	1.80	1.20	2.10	2.00	1.50	2.10
female (Mt. Akan)	1.27	0.87	1.97	1.85	0.87	1.86
female (Sapporo)	1.30	0.90	1.80	1.70	1.00	1.60
female (Sapporo)	1.10	0.70	1.40	1.60	1.00	1.50
female (Mt. Yubari)	1.50	1.10	2.30	2.20	1.40	2.10
female (Kussharo)	1.70	1.10	2.30	2.10	1.60	2.10
female (Akkeshi)	1.65	1.16	2.64	2.64	1.72	2.12
female (Lake Akan)	1.50	1.04	2.08	2.03	1.29	2.10
female (Nopporo)	1.80	1.30	2.70	2.50	1.70	2.30

Female: Carapace 1.00 cm. long, 0.63 cm. wide between second and third coxae, with a definite median furrow. Abdomen oval with a pair of low shoulder tubercles, covered with fine hairs. Legs and palpi vigorous, densely clothed with black hairs and long bristles. Eyes eight, in two rows. Both rows recurved. Median eyes of both rows black, larger than the lateral eyes which are pearly brownish black in colour.

Colour in life: Carapace brownish black, darker toward caput. Clypeus black. Chelicerae black with a large brownish yellow puncture. Sternum blackish brown. Abdomen of the same colour as the thorax, variegated indistinctly with dark margin. Belly lighter than the above with black colour at the circumference of spinnerets and spiracles.

Male: The femora of the two foremost pairs stout and the terminal end of the metatarsus of the second leg furnished with a large projection.

Distribution: Manchuria, Japan (Formosa, Korea, Kyushu, Honshu, Southern Saghalien).

Family X. *TETRAGNATHIDAE*

A comparison with A. PETRUNKEVITCH's table (Trans. Connecticut Acad., Vol. 29, 1928) will show that only his one Subfamily Tetragnathinae corresponds to this family. The genus *Leucauge* was placed by PETRUNKEVITCH among the Tetragnatinae, but I have placed it among the Argiopidae because the *Leucauge* does not have the large characteristic chelicerae of the former and in the other respects resembles the Argiopidae.

Contains a single genus *Tetragnatha*.

1. Genus *Tetragnatha* LATREILLE, 1804

58. *Tetragnatha squamata* KARSCH

Pl. XV, Fig. 69, a, b. Chelicerae of male. c. Palpus of male.

d. Eyegroup.

Tetragnatha squamata, F. KARSCH:—Verhandl. d. n. V., Jahrg. 36, 1879, p. 65, Taf. 1, Fig. 3;

W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 176, Taf. 3, Fig. 5, Taf. 15, Fig. 4c5.; S. SAITO:—Transact Sapporo Nat. Hist., Vol. 13, 1934, p. 338, Fig. 9.

Locality: Onuma (2 females, S. SAITO, July 27, 1932). Kussharo (1 male, 3 females, S. NISHIO, July 15-18, 1932). Mt. Kurotake (1 female, Dr. T. UCHIDA, August 1, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Onuma)	0.60	0.40	1.35	1.20	0.65	0.90
female (Onuma)	0.50	0.39	1.20	1.00	0.50	0.70
female (Kurotake)	0.50	0.40	1.20	0.80	0.40	0.80
female (Kussharo)	0.60	0.40	1.20	1.00	0.55	0.80
female (Kussharo)	0.70	0.50	2.00	1.60	0.80	1.20
female (Kussharo)	0.80	0.65	1.50	1.20	0.75	1.00
male (Kussharo)	0.75	0.50	1.70	1.40	0.80	1.10

Female: Carapace 0.25 cm. long, 0.15 cm. wide between second and third coxae. Both rows of eyes recurved, parallel. Posterior row slightly shorter than the first row. All eyes equal in size. Anterior median eyes separated from each other by three times their radius, from anterior lateral eyes by four times the radius. Posterior eyes almost equidistant, separated by three times the radius. Quadrangle almost square in shape. Clypeus equal to four times the diameter of eye. Chelicerae powerful, not widely divergent, 0.12 cm. long. Labium more wide than long in ratio 3 : 2, rounded and strongly rebordered. It does not reach the middle of maxillae. Maxillae with parallel truncatures and divergent outer margins. Sternum more long than wide in ratio 5 : 4, excavated slightly in front to accommodate the labium, produced into sharp points between all coxae and sharply pointed behind. Space between second coxae widest. Legs slender, long, furnished with short black hairs and long black bristles.

Colour in alcohol: Carapace yellow with green cervical and median furrows. Chelicerae and maxillae paler than carapace. Labium and sternum deep yellow. Coxae, femora of legs and palpi greenish yellow, the other joints of legs deep yellow. Abdomen yellow with black mesh forming a median band extending full length of abdomen. Sides of abdomen and belly yellowish green with silver fleck. Spinnerets dark yellow.

Distribution: Japan (Kyushu, Southern Saghalien).

59. *Tetragnatha yesoensis* n. sp. Jap. name, *Yezo-ashinagagumo*.

Pl. XIII, Fig. 25, a, b. Dorsal view of male.

Pl. XV, Fig. 70, a. Palpus of male. b, c. Chelicerae of male.

Locality: Lake Akan (3 males, S. MOTODA, July 31, 1931). Mt. Daisetsu (1 male, Dr. T. INUKAI, July 3-4, 1932).

Measurements:

ASQI T. 32

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Lake Akan)	0.83	0.58	2.61	1.89	0.90	1.52
male (Lake Akan)	0.67	0.41	2.04	1.49	0.80	1.34
male (Lake Akan)	0.67	0.47	2.09	1.73	0.72	1.39
male (Mt. Daisetsu)	0.80	0.50	2.10	1.50	0.80	1.30

Male: Carapace without chelicerae 0.26 cm. long, 0.17 cm. wide between second and third coxae. Viewed from above, posterior row of eyes slightly shorter than anterior row and more recurved. Four median eyes largest and anterior lateral eyes smallest, eye-ratio 5 : 4 : 3. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by $12/5$ of their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by $8/5$ of their diameter. The distance between the laterals is greater than that between the medians in ratio 6 : 5. Quadrangle square in shape. Clypeus equal to the length of quadrangle of median eyes. Chelicerae strongly divergent, 0.27 cm. long. Lower margin of chelicerae with six teeth, upper margin with three teeth. The first and second teeth of lower margin very strong, and the first tooth of upper margin strong and divaricated into two blunt ends. Labium more wide than long in ratio 5 : 3, rounded and strongly rebordered. It does not quite reach the middle of maxillae. Maxillae with parallel truncatures and divergent outer margins. Sternum as wide as long, excavated in front to accommodate the labium, produced into sharp points between all coxae and sharply pointed behind. First coxae wide apart, fourth coxae separated by a little more than one quarter of their width.

Colour in alcohol: Carapace yellow with a brown median marking extending from median eyes to median furrow. Chelicerae, legs and palpi yellow. Maxillae, labium and sternum brownish yellow. Abdomen brownish yellow. The specimen from Mt. Daisetsu has abdomen yellow with a leaf-marking of white spots. Belly dark yellow with white spots.

Remarks: The species bears a general resemblance to *Tetragnatha extensa* (LINNAEUS) in appearance, but the armature of chelicerae makes it a distinct species.

60. *Tetragnatha praedonia* L. KOCH Jap. name, *Ashinagagumo*.

Tetragnatha praedonia, L. KOCH:—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 744, Taf. 15, Fig. 6-9.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 177, Taf. 3, Fig. 7, Taf. 15, Fig. 404.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1933, p. 47, pl. 3, Fig. 22.

Locality: Sapporo (3 females, S. SAITO, Sept. 21, 1929, Sept. 10, 1930). Yakumo (5 females, S. SAITO, July 24, 1930, July 26, 1931). Mt. Daisetsu (1 male, Dr. T. INUKAI, August 14, 1930). Onuma (5 males, S. SAITO, July 25, 1931). Mt. Akan (3 females, Dr. T. INUKAI, July, 1932).

Measurements :

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Mt. Daisetsu)	0.60	0.39	1.70	1.12	0.63	1.09
male (Onuma)	0.75	0.50	1.70	1.10	0.55	1.10
male (Onuma)	0.70	0.40	1.50	1.10	0.50	1.00
male (Onuma)	0.50	0.40	1.30	0.90	0.40	0.80
male (Onuma)	0.70	0.50	1.60	0.80	0.50	1.00
male (Onuma)	0.70	0.50	1.80	1.20	0.62	1.10
female (Sapporo)	0.98	0.72	2.35	1.20	0.72	1.32
female (Sapporo)	0.90	0.70	2.30	1.50	0.80	1.50
female (Sapporo)	1.00	0.70	2.20	1.50	0.80	1.50
female (Yakumo)	1.20	0.80	2.30	1.50	0.70	1.50
female (Yakumo)	1.00	0.90	2.20	1.50	0.70	1.40
female (Yakumo)	1.10	0.80	2.70	1.80	0.90	1.65
female (Yakumo)	0.90	0.80	1.70	1.20	0.70	1.00
female (Yakumo)	0.90	0.70	2.20	1.50	0.60	1.30
female (Mt. Akan)	1.25	0.98	2.85	1.80	0.85	1.70
female (Mt. Akan)	1.04	0.70	2.57	1.72	0.79	1.32
female (Mt. Akan)	1.08	0.89	2.20	1.50	0.84	1.60

Female: Carapace 0.46 cm. long, 0.26 cm wide between second and third coxae. Anterior row of eyes recurved, posterior row slightly recurved and almost as long as the anterior. Anterior eyes smaller than the posterior eyes. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by three times their diameter. Posterior median eyes separated from each other by their radius, from posterior lateral eyes by their diameter. Laterals of both rows separated by the radius of the anterior lateral eyes. Quadrangle wider behind than in front in ratio 12 : 9, as long as wide. Clypeus equal to the front width of the quadrangle of median eyes. Chelicerae powerful, strongly diverging. Basal joint 0.28 cm. long. Upper margin of claw-furrow with ten teeth. Considerable space between the second and third teeth. Lower margin also with ten teeth. The second tooth very large. Labium trapezoid in shape, more wide than long in ratio 7 : 4. It does not quite reach the middle of maxillae. Maxillae with divergent outer edges. Sternum as wide as long, excavated in front to accommodate the labium, produced into sharp

points between all coxae and sharply pointed behind. Second coxae widest apart, fourth coxae separated by a little more than one quarter of their width.

Colour in life: Carapace, legs, chelicerae and palpi yellow. Maxillae brown. Labium black. Sternum blackish brown. Abdomen yellow with a leaf-marking. Belly brown from genital fold to spinnerets, bordered on each side by a yellow band.

Distribution: Japan (Formosa, Kyushu, Honshu).

61. *Tetragnatha extensa* (LINNAEUS)

Tetragnatha extensa, H. ZIMMERMANN:—Die Spinnen der umgegend von Niesky, p. 82.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 118, Taf. 25, Fig. 1332.; T. THORELL:—Oefvers. af K. Vet.-Akad. Förh., Bd. 17, 1858, p. 147.; J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 337, pl. 28, Fig. 265.; ———:—Ann. Mag. Nat. Hist., Vol. 5, 1870, p. 404.; T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 40.; E. SIMON:—Arachn. de France, Paris, Tom. 1, 1874, p. 115.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 20.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 46.; L. KOCK:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 7.; H. LUDWIG:—Tierkunde, Bd. 2, 1886, p. 588.; G. MARX:—Proc. Nat. Mus., 1889, Vol. 12, p. 552.; J. H. EMERTON:—Common Spider, London, 1902, p. 201, Fig. 462, 466.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 59, Taf. 4, 5, Fig. 55.; N. BANKS:—Proc. Nat. Mus., Vol. 25, 1903, p. 215.; ———:—Bull. U. S. Nat. Mus., Vol. 72, 1910, p. 37.; A. PETRUNKEVITCH:—Bull. Amer. Mus. Nat. Hist., Vol. 29, 1911, p. 390.; J. H. COMSTOCK:—Spider Book, N. Y., 1913, p. 411.; V. KULCZYNSKI:—Aran. Oribatidae Exped. Sibiriæ Arcticam Occidentalem, Petrograd, 1916, p. 21.; C. R. CROSBY and S. C. BISHOP:—Memoir Cornell Univ. Agr. Exper. Station, 1926, p. 2057.; M. L. PELLE and S. SAITO:—Jour. Faculty Sc. Hokkaido Imper. Univ., 6 ser., Vol. 2, 1932, p. 95, Fig. 8.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 13, 1934, p. 339.

Aranea extensa, J. FABRICIUS:—Ent. Syst., Tom. 2, 1793, p. 407.

Locality: Vicinity of Sapporo (1 male, S. SAITO, August 10, 1930). Mt. Yubari (1 male, S. MOTODA, July 19, 1932). Kussharo (1 male, 1 female, S. NISHIO, July 15-18, 1932). Mt. Daisetsu (1 female, S. NISHIO, August 1-5, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Sapporo)	0.78	0.61	3.10	1.75	0.78	1.57
male (Mt. Yubari)	0.95	0.50	2.40	1.50	0.70	1.60
male (Kussharo)	1.20	0.70	2.70	1.80	1.00	1.80
female (Kussharo)	1.10	0.90	2.70	2.00	1.00	1.80
female (Mt. Daisetsu)	0.80	0.50	1.90	1.10	0.60	1.10

Male: Carapace without chelicerae 0.40 cm. long, 0.25 cm. wide between second and third coxae. Viewed from above, anterior row of eyes more recurved than posterior row, both rows equal in length. Anterior eyes larger than corresponding eyes of posterior row. Posterior median eyes separated from each other by their long diameter, and from posterior lateral eyes by the same distance. Anterior median eyes separated from each other by three times their radius. Lateral of both rows contiguous. Quadrangle wider behind than in front in ratio 10 : 7, as wide as long. Clypeus equal to the diameter of anterior median eyes. Labium triangular, rounded at end, rebordered. Sternum longer than wide, pointed behind, produced between all coxae with ends merging with the edge of the carapace and leaving circular holes for the coxae.

Colour in alcohol: Carapace and appendages deep yellow. Abdomen above and on sides covered with small silvery dots. A median buff band on the back.

Distribution: France, Germany, Hungary, Sweden, England, U.S.S.R., Siberia, U. S. A., Canada, Alaska, Japan (Southern Saghalien).

62. ***Tetragnatha exquista*** SAITO Jap. name, *Hime-ashinagagumo*.

Pl. XIII, Fig. 26. Dorsal view of male.

Pl. XV, Fig. 71. Palpus of male.

Tetragnatha exquista, S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 275.

Locality: Mt. Akan (2 males, Dr. T. INUKAI, July 11-12, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.55	0.30	1.60	1.14	0.60	0.85
male	0.55	0.32	1.85	1.45	0.69	1.10

Male: Carapace 0.19 cm. long. Viewed from above, both rows of eyes slightly recurved. Anterior eyes somewhat smaller than the posterior. Separation between anterior median eyes slightly narrower than their diameter, the lateral eyes separated by almost two times their diameter. Posterior eyes equidistant, their separation equal to their diameter. Lateral eyes of both rows separated by the diameter of anterior eyes. Quadrangle wider behind than in front in ratio 9 : 7. Clypeus a little smaller than the length of quadrangle of median eyes. Chelicerae long, the claw-furrow armed on the anterior margin with five teeth, the first tooth somewhat stronger than the others, separated from the second by a very long toothless space, posterior margin also provided with five teeth. Labium triangular,

slightly rounded at the apex, more long than wide at base in ratio 1 : 2.5. Maxillae nearly square, more long than wide in ratio 3 : 1. Sternum triangular, broadly truncated in front.

Colour in alcohol: Carapace dull yellow. Chelicerae, palpi and legs bright yellow. Maxillae and labium dull yellow, darker than carapace. Abdomen silvery, sides yellowish silver. Belly silver with black meshing.

Distribution: Japan (Rebun; An island in the neighbourhood of Hokkaido).

63. *Tetragnatha pinicola* L. KOCH

Tetragnatha pinicola, L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 7.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. I, 1891, p. 144, Tab. 6, Fig. 8.; O. P. CAMBRIDGE:—Ann. Mag. Nat. Hist., 6 ser., Vol. 15, 1895, p. 37.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 61, Taf. 4, 5, Fig. 58.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 118, Taf. 25, Fig. 1331, Taf. 24, Fig. 1334.

Locality: Shiranuka (1 male, 4 females, M. L. PEELLE, July 31, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.00	0.60	1.80	1.20	0.60	1.10
female	1.00	0.60	2.00	1.40	0.70	1.20
female	0.70	0.45	1.50	1.00	0.50	0.90
female	0.85	0.60	1.70	1.20	0.60	1.00
male	0.70	0.50	1.90	1.20	0.70	1.20

Female: Carapace with chelicerae 0.32 cm. long, 0.21 cm. wide in the region of the cervical groove. Anterior eyes smaller than the corresponding eyes in the posterior row. Anterior eyes equal in size. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by three times their diameter. Posterior eyes equidistant and equal in size, separated from each other by their diameter. Quadrangle wider behind than in front in ratio 4 : 3, somewhat more long than wide. Clypeus equal to the radius of anterior median eyes. Chelicerae strongly divergent, basal segment 0.20 cm. long. Fang long, slender, bent not far from base, then straight. There is a slight swelling on the ventral side of the fang at the beginning of the straight portion. Labium as long as wide, rounded anteriorly. Maxillae much more long than wide in ratio 3 : 1. Sternum more long than wide, triangular, pointed behind, space between the first coxae widest, with lateral projections between the coxae, extending to the edge of the carapace and leaving circular openings for the coxae. Abdomen

cylindrical, 0.18 cm. wide in middle.

Colour in alcohol: Carapace, chelicerae, legs and maxillae dark yellow. Labium black with white end. Sternum dull yellow, slightly dusky at fringe. Abdomen spotted with silvery dots and a median longitudinal mesh-band. Belly dull yellow with a median black band bordered by a white stripe. Spinnerets dark yellow.

Distribution: Siberia, Germany, Hungary.

Family XI. AMAUROBIIDAE

One genus is represented in the fauna of Hokkaido.

1. Genus *Amaurobius* C. L. KOCH, 1837

64. *Amaurobius claustrarius* (Hahn)

Pl. XV, Fig. 72, a, b. Palpus of male.

Amaurobius claustrarius, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 503.; E. SIMON:—Arachn. de France, Paris, Tom. I, 1874, p. 223.; T. THORELL:—Südrussischer Spinnen, St. Petersburg, 1875, p. 35.; C. CHYZER et L. KULCZYNKI:—Araneae Hungariae, Budapest, 1892, p. 164.; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 251, Taf. 23, Fig. 363.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 119, Taf. 25, Fig. 1338, Taf. 24, Fig. 1348.

Locality: Soranuma (1 male, 1 female, S. MAKINO, Sept. 8, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	0.92	0.46	1.58	1.46	1.20	1.45
female	1.30	0.82	1.52	1.34	1.25	1.30

Female: Carapace 0.52 cm. long, 0.44 cm. wide between second and third coxae with a definite longitudinal median furrow and three pairs of radial furrows. Eight eyes in two rows, both rows almost parallel, slightly recurved. Anterior eyes somewhat smaller than posterior ones. Anterior median eyes diurnal, separated from each other by their diameter, from anterior lateral eyes by 2.5 times their diameter. Posterior median eyes separated from each other by twice their diameter, from posterior lateral eyes by the same distance as that between two posterior median eyes. Quadrangle wider behind than in front in ratio 14:9, somewhat more long than wide behind. Lateral eyes of both rows separated by three times the radius of anterior eyes. Clypeus equal to twice the diameter of anterior median eyes. Chelicerae strong, diverging, with vigorous fangs, measuring 0.29 cm. long without fang. Labium rectangular, as long as

wide, reaching beyond middle of maxillae. Maxillae inclined over labium, wider at end than at base in ratio 3:1. Sternum heart-shaped, strongly rebordered, concave anteriorly, pointed between fourth coxae which are subcontiguous.

Colour in alcohol: Carapace dull brown with dark brown caput, median and radial furrows. Chelicerae dark brown. Maxillae and labium deep brown with paler tips. Sternum bright brown with deep fringe. Legs and palpi dull brown, annulated with dark brown at the ends and at the bases of all joints. Abdomen black with six pairs of white markings arranged longitudinally.

Male: Carapace 0.43 cm. long, 0.37 cm. wide between second and third coxae. Abdomen relatively small. Legs slender. Colour paler than that of female, dark brown colour of caput and annulations of legs and palpi wanting. The first pair of white marking of abdomen larger than the others.

Distribution: France, Germany, Hungary, U. S. S. R.

Family XII. AGELENIDAE

This family presents intermediate forms not only within its own limits, but also with such other families as the Lycosidae and the Theridiidae. Especially it is difficult to separate clearly certain species among the Lycosidae from some of the Agelenidae. The genera of the Agelenidae represented in Hokkaido can be distinguished by using the following table.

1. a. Hind spinnerets with the apical segment at least as long as the basal segment. 2.
- b. Hind spinnerets with the apical segment much shorter than the basal segment. 4.
2. a. Both rows of eyes very strongly procurved, so that the anterior median eyes and the posterior lateral eyes form nearly a straight line. 2. Gen. *Agelena* WALCKENAER
- b. Neither rows of eyes procurved. 3.
3. a. Anterior median eyes much larger than the anterior lateral eyes
- 1. Gen. *Coras* SIMON
- b. Anterior median eyes not larger than the anterior lateral eyes.....
- 3. Gen. *Tegenaria* LATREILLE
4. a. Anterior median eyes as large as the lateral eyes.
- 4. Gen. *Cicurina* MENGE
- b. Anterior median eyes much smaller than the laterals.
- 5. Gen. *Cryptophoea* THORELL

1. Genus ***Coras*** SIMON, 189865. ***Coras luctuosus*** (L. KOCH)

Pl. XIII, Fig. 27. Dorsal view of female.

Pl. XV, Fig. 73. Epigynum.

Coras luctuosus, L. KOCH:—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 753, Taf. 15, Fig. 14, 15.; W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 300, Taf. 16, Fig. 459.

Locality: Mt. Tokachi (1 female, S. SAITO, August 28, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.80	0.50	1.35	1.20	1.20	1.50

Female: Carapace 0.43 cm. long, 0.32 cm. wide between second and third coxae. A shallow depression of an indefinite shape in place of a median furrow. Posterior eyes oval, equal in size, equidistant, arranged in a slightly recurved row, separated by twice their short diameter. Anterior row of cyes straight, the median eyes larger than the lateral ones, their interval equal to three times their radius. Quadrangle rectangular, more long than wide at base in ratio 3:2, reaching a little beyond middle of maxillae. Maxillae much wider in front than at base in ratio 2:1, with parallel outer edges. Sternum heart-shaped, with straight anterior margin, as wide as long, pointed between the almost contiguous fourth coxae.

Colour in alcohol: Carapace white with dull yellow caput and a brown median longitudinal line and black stripes along radial grooves. Chelicerae dull yellow with brown claws. Maxillae, palpi and legs light yellow. Labium dark. Sternum dull yellow with brown fringe. Abdomen deep sepia with yellow heart-marking, three converse V-shaped markings and irregular dots. Belly dull yellow with scattered black spots.

Distribution: Japan.

2. Genus ***Agelena*** WALCKENAER, 180566. ***Agelena limbata*** THORELL

Agelena limbata, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 296, Taf. 8, Fig. 104, Taf. 16, Fig. 461.

Locality: Mt. Akan (4 females, Dr. T. INUKAI, August, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.70	1.20	2.10	1.70	2.00	2.50
female	1.60	1.10	2.10	2.00	1.90	2.30
female	1.40	1.00	2.00	1.80	1.80	2.30
female	1.70	1.20	2.00	1.80	1.80	2.30

Female: Carapace 0.60 cm. long, 0.45 cm. wide between second and third coxae. Posterior median eyes nocturnal. Viewed from above, anterior row of eyes nearly straight along lower margins, posterior row procurved strongly. Anterior eyes equidistant, separated from each other by $1/8$ of the diameter of anterior median eyes. Posterior eyes also equidistant, separated from each other by 1.5 times the diameter of the posterior median eyes. Lateral eyes of both rows separated by the same distance as that between anterior eyes. Quadrangle rectangular, more long than wide in ratio 7:5. Clypeus equal to two times the diameter of anterior median eyes. Chelicerae vertical, moderately long, with well-developed condyles, their basal joints 0.32 cm. long. Labium trapezoidal, more wide than long in ratio 6:5, reaching middle of maxillae. Maxillae wider in front than at base, with parallel outer edges. Sternum heart-shaped, as long as wide, strongly rebordered, truncated anteriorly, pointed posteriorly between fourth coxae which are separated by $1/2$ of their width. Posterior spinnerets 0.28 cm. long.

Colour in alcohol: Carapace light brown with dark caput and brown submarginal band. Chelicerae brownisch black. Sternum and labium dark brown. Maxillae, palpi and legs light brown. Abdomen dark brown with a series of spots of light colour arranged in pairs on both sides of the median deep brown band. Belly light brown. Spinnerets deep yellowish brown.

Distribution: Japan (Honshu, Kyushu).

67. *Agelena japonica* KARSCH

Pl. XV, Fig. 74, a. Eyegroup. b. Epigynum.

Agelena japonica, F. KARSCH:—Verhandl. d. N. V., Jahrg. 36, 1879, p. 98, Taf. 1, Fig. 17; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 297, Textfig. 6.; S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 273.

Locality: Vicinity of Sapporo (1 female, S. SAITO, July 6, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.20	0.80	2.00	1.80	1.75	2.30

Female: Carapace 0.45 cm. long, 0.34 cm. wide between second and third coxae, considerably narrowed toward the front where it is 0.23 cm. wide in the eye region. Viewed from above, both rows strongly recurved. All eyes nearly equal in size, but posterior median eyes oval in shape. Anterior eyes equidistant, separated by their diameter. Posterior median eyes separated by twice their short diameter, from posterior lateral eyes by three times their short diameter. Lateral eyes of both rows contiguous. Quadrangle rectangular, more long than wide in ratio 12 : 11. Clypeus equal to the length of quadrangle of median eyes. Chelicerae parallel, strong, 0.32 cm. long without fang. Labium triangular, bluntly ending anteriorly, more long than wide at base in ratio 3 : 2. Maxillae much wider in front than at base in ratio 3 : 2. Sternum oval, convex, narrowed anteriorly to the width of labium, pointed behind. Second coxae most widely apart, fourth coxae subcontiguous.

Colour in life: Carapace dark brown with pale caput. Chelicerae deep brown. Sternum paler than chelicerae. Maxillae, labium, palpi and legs greenish yellow. Abdomen greenish black. Belly dark brownish black. Spinnerets brown.

Distribution: Japan (Honshu ?)¹⁾

68. *Agelena opulenta* L. KOCH

Pl. XV, Fig. 75. Epigynum.

Agelena opulenta, L. KOCH:—Verhandl. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 757, Taf. 15, Fig. 20.; W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 298, Taf. 16, Fig. 467.

Locality: Sapporo (1 male, 1 female, S. SAITO, Sept. 20, 1929). Akkeshi (1 male, 2 immature females, S. MOTODA, July 11, 1931). Nopporo (1 immature male, 1 female, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Akkeshi)	0.87	0.66	0.99	0.96	0.89	1.20
male (Sapporo)	0.86	0.65	1.80	1.60	1.50	2.10
female (Sapporo)	1.04	0.81	1.40	1.30	1.20	1.50
female (Nopporo)	0.65	0.40	0.95	0.90	0.80	1.00

Female: Carapace 0.28 cm. long, 0.25 cm. wide between second and third coxae. Viewed from above, anterior row of eyes slightly procurved, posterior row moderately procurved. All eyes equal in size and equidistant,

1) W. BÖSENBERG and E. STRAND collected one adult female from Northern Japan, but F. KARSCH did not give the locality.

separated from each other by about their diameter. Quadrangle rectangular, more long than wide in ratio 17 : 14. Viewed from in front, anterior row of eyes strongly upcurved. Clypeus equal to the length of quadrangle of median eyes. Chelicerae relatively long, cone-shaped. Labium rectangular, bluntly ending anteriorly, more wide than long in ratio 6 : 5, reaching a little beyond middle of maxillae. Maxillae wider in front than at base in ratio 2 : 1, with parallel truncatures. Sternum heart-shaped, with straight anterior margin, pointed between fourth coxae which are separated by their width.

Colour in life: Carapace light brown with dark cervical and radial grooves. Chelicerae brownish yellow. Maxillae, labium, palpi and legs light yellow, but legs and palpi annulated with deep yellowish brown at the end of all joints. Sternum deep brown with blackish median patch. Abdomen dark yellow with paired pale spots. Belly white with a median broad dark band from spinnerets to epigynum.

Male: Colour and marking clearer than those of female. Palpi and legs greenish yellow with yellow coxae and trochanters. Abdomen bright brown.

Distribution: Japan (Kyushu, Honshu).

3. Genus *Tegenaria* LATREILLE, 1804

69. *Tegenaria corasides* Bös. et STRAND

Tegenaria corasides, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1925, p. 301, Taf. 16, Fig. 460.

Locality: Makomanai (1 immature male, 1 female, S. SAITO, Sept. 23, 1929). Sapporo (3 females, S. SAITO, Oct. 6, 1929, May 19, 1932). Oshoro (1 male, S. SAITO, Sept. 19, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Oshoro)	1.20	0.70	1.90	1.80	1.70	2.10
female (Sapporo)	1.20	0.70	1.50	1.50	1.30	1.70
female (Sapporo)	1.10	0.75	1.20	1.20	1.00	1.30
female (Sapporo)	1.40	0.90	1.60	1.40	1.10	1.60

Male: Carapace 0.70 cm. long, 0.42 cm. wide between second and third coxae, 0.28 cm. wide in the eye-region, with a definite longitudinal median furrow. Anterior row of eyes slightly recurved, posterior row slightly procurved. All eyes equal in size and equidistant, separated from each other by their diameter. Quadrangle rectangular, as long as wide.

Lateral eyes of both rows contiguous. Chelicerae short, strong, furnished with four teeth at upper and lower margins of claw-furrow. Labium rectangular, slightly more long than wide. Maxillae wider in front than at base in ratio 3 : 2, with divergent outer margins. Sternum oval, rebordered strongly, rounded anteriorly, pointed behind.

Colour in life: Carapace greenish yellow with dark colour along the median and radial furrows. Caput pale brown. Chelicerae deep brown. Maxillae, labium darker than carapace. Sternum dull yellow. Palpi and legs light brown. Abdomen above and below light green with irregular sepia spots.

Distribution: Japan (Kyushu).

4. Genus *Cicurina* MENGE, 1869

70. *Cicurina cinerea* PANZER

Pl. XV, Fig. 76. Eyegroup.

Cicurina cinerea, W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 232, Taf. 21, Fig. 329.; E. SIMON:—Arachn. de France, Paris, Tom. 2, 1875, p. 21.

Cinerea circur, C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 2, 1897, p. 155.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 125, Taf. 25, Fig. 1415, 1416.

Tegenaria cinerea, T. THORELL:—Rem. en Syn., Upsala, 1870-1873, p. 514.

Aranea cinerea, C. FABRICIUS:—Syst. Ent., Tom. 2, 1793, p. 410.

Locality: Yakumo (1 female, S. SAITO, July 24, 1931). Lake Akan (1 male, S. MOTODA, July 31, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Yakumo)	0.42	0.24	0.65	0.62	0.47	0.62
male (Lake Akan)	0.41	0.25	0.63	0.59	0.32	0.60

Female: Carapace 0.13 cm. long, gradually narrowed toward the caput, with a definite longitudinal median groove. Eight eyes in two rows. Anterior row straight, posterior row slightly recurved and much longer than anterior row in ratio 14 : 11. All eyes equal in size. Anterior eyes equidistant, separated by 1.5 times their diameter. Posterior eyes also equidistant, separated by twice their diameter. Quadrangle wider behind than in front in ratio 8 : 7, as long as wide. Lateral eyes of both rows separated by the same distance as the interval between the anterior eyes. Clypeus equal to the diameter of eyes. Chelicerae weak, parallel. Labium triangular, much wider at base than long in ratio 3 : 1. Maxillae inclined over labium, wider in front than long in ratio 2 : 1, with parallel outer

margins. Sternum circular, convex, rounded posteriorly. Fourth coxae separated from each other by twice their width.

Colour in alcohol: Carapace deep reddish brown. Palpi, legs, chelicerae, maxillae and labium light brown. Sternum darker than labium. Abdomen reddish black.

Distribution: Germany, France, Hungary.

71. ***Cicurina maculipes* n. sp.** Jap. name, *Shima-kotanagumo*.

Pl. XIII, Fig. 28. Dorsal view of female.

Pl. XV, 77. Eyegroup.

Locality: Sapporo (1 female, S. SAITO, Sept. 6, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.28	0.16	0.15	0.20	0.20	0.30

Female: Carapace 0.14 cm. long, 10 cm. wide between second and third coxae with a definite cervical and an indefinite median furrow. Eyes eight, equal in size, in two rows. Viewed from above, anterior row of eyes recurved, posterior row procurved. The eyes equidistant in each row, anterior eyes separated by 3/5 of their diameter and posterior eyes by their diameter. Lateral eyes of both rows separated by their diameter. Quadrangle square in shape, more long than wide in ratio 15 : 13. Clypeus equal to the radius of the eyes. Chelicerae weak, with parallel inner margins. Labium oval, more wide than long in ratio 3 : 2, rounded anteriorly and posteriorly. Maxillae wider in front than at base in ratio 5 : 3, more long than front width. Sternum oval, narrowed anteriorly to the width of labium and pointed posteriorly between fourth coxae which are separated by their width.

Colour in life: Carapace dull yellow with black colour along the cervical and median furrows. Chelicerae, maxillae, labium and sternum darker than carapace. Palpi and legs dull yellow, annulated indistinctly with black. Abdomen dull yellow with a black median longitudinal stripe, giving off seven pairs of branches to sides.

Remarks: The species bears some resemblance in general appearance and size to *Cicurina cinerea* PANZER, but it differs chiefly in colour and in arrangement of eyes.

5. Genus *Cryphoeca* THORELL, 1870

72. *Cryphoeca angularis* n. sp. Jap. name, *Sumi-kotanagumo*.

Pl. XIII, Fig. 29. Dorsal view of female.

Pl. XV, Fig. 78, a. Eyegroup. b. Sternum.

Locality: Sapporo (1 female, S. SAITO, Sept. 7, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.50	0.28	0.77	0.60	0.49	0.80

Female: Carapace 0.28 cm, long, 0.18 cm. wide between second and third coxae, with a definite median furrow. Eyes eight, in two rows, anterior row recurved, posterior row procurved. Posterior median eyes nocturnal, most largest, anterior median eyes and posterior lateral eyes slightly smaller than anterior lateral eyes. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by five times their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by twice their diameter. Quadrangle wider behind than in front in ratio 5 : 3, more long than wide in ratio 8 : 3. Lateral eyes of both rows contiguous. Clypeus equal to the diameter of anterior median eyes. Chelicerae vertical, weak, with short fangs. Labium trapezoid in shape, as wide as long. Maxillae with rounded outer edges. Sternum oval, rounded anteriorly, pointed behind.

Colour in life: Carapace light yellow with black edge and two rows of black hairs from posterior lateral eyes to posterior margin of carapace. Chelicerae yellow with brown claw. Maxillae, labium, palpi, and legs light yellow. Sternum black with a broad median longitudinal yellow band and three pairs of yellow points which are opposite to the last three coxae. Abdomen light yellow with several black spots at the posterior part. Belly darker than above with a pair of black spots at both sides of epigynum.

Remarks: This species is somewhat similar in general form to *Cryphoeca silvicola* L. KOCH, but the present specimen is distinct in the colour of the abdomen which in the latter is black with a paler corner-fleck, and also in the marking of sternum.

Family XIII. *PISAURIDAE*

It is extremely difficult to draw a line between the Agelenidae and the Pisauridae and between the Pisauridae and the Lycosidae.

The present work describes a single genus *Dolomedes*.

1. Genus ***Dolomedes*** LATREILLE, 1804

73. ***Dolomedes saganus*** BöS. et STRAND

Pl. XV, Fig. 79. Eyegroup.

Dolomedes saganus, W. BÖSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 312, Taf. 8, Fig. 115. Taf. 13, Fig. 328.

Locality: Numanohata (1 male, 1 female, Y. OHTA, June, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male	1.12	0.63	1.90	1.90	1.70	2.07
female	1.00	0.64	1.32	1.32	1.10	1.32

Female: Carapace 0.40 cm. long, 0.31 cm. wide between second and third coxae with a longitudinal median furrow and three pairs of radial furrows. Eight eyes in two rows. Both rows recurved. Posterior eyes largest, anterior lateral eyes smallest. Eye ratio 8 : 5 : 3. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by their radius. Posterior median eyes separated from each other by three times their radius, from posterior lateral eyes by about their diameter. Quadrangle wider behind than in front in ratio 3 : 2, more long than wide in ratio 13 : 12. Lateral eyes of both rows separated by 11/8 of the diameter of the posterior eyes. Clypeus equal to the length of the quadrangle of median eyes. Chelicerae weak, parallel, with short fangs. Labium more wide than long in ratio 5 : 2, articulated to maxillae at 1/3 distance from base. Maxillae more long than wide in front in ratio 3 : 2, wider in front than at base in ratio 5 : 3. Sternum shield-shaped, convex, strongly rebordered, narrowed anteriorly to the width of labium, pointed posteriorly, as long as wide.

Colour in alcohol: Carapace light yellowish brown with a broad longitudinal median dark band. Chelicerae deep brown. Maxillae and labium dull yellow. Sternum dull yellow with black fringe. Palpi and legs deeper than carapace. Abdomen yellowish brown with a median broad dark band ranging through the whole length. Belly dull yellow.

Distribution: Japan (Kyushu).

74. ***Dolomedes sulfureus*** L. KOCH Jap. name, *Iōiro-hashirigumo*.

Pl. XV, Fig. 180. Eyegroup.

Dolomedes sulfureus, L. KOCH:—Verhand. d. k. k. zool. bot. Ges., Bd. 27, 1877, p. 778.; W. BÖSENBERG u. E. STRAND:—Japanische Spinnen, Stuttgart, 1905, p. 311, Taf. 13, Fig. 330.; K. KISHIDA:—Idiobiologia Aranearium (in Japanese), Tokyo, 1933, p. 56-59, Fig. 52-55.

Locality: Mt. Akan (1 female, Dr. T. INUKAI, August, 1933). Nopporo (1 female, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Mt. Akan)	1.20	0.75	1.70	1.70	1.50	1.90
female (Nopporo)	0.90	0.60	1.30	1.30	1.10	1.35

Female: Carapace 0.50 cm. long, 0.44 cm. wide between second and third coxae. Cervical, radial and median furrows wanting. Viewed from above, anterior row of eyes straight, equidistant and equal in size, their separation equal to $1/3$ of their diameter. Second row of eyes nearer to anterior row than the third row in ratio 5 : 4, and shorter than anterior row in ratio 11 : 10, the eyes separated from each other by their diameter. Third row of eyes longer than anterior row in ratio 16 : 11. Clypeus equal to the length of eye-region. Chelicerae vertical, strong, the basal joint 0.25 cm. long. Labium oval, more long than wide in ratio 4 : 3. Maxillae almost parallel, with well-developed scopula. Sternum more long than wide in ratio 6 : 5, truncated in front, pointed behind. Second coxae most widely apart, fourth coxae contiguous. All trochanters notched.

Colour in life: Carapace yellow with a dark longitudinal median band. Legs, palpi, maxillae, labium and sternum yellow. Abdomen yellow with a dark heart-marking.

Distribution: Japan (Honshu, Kyushu).

Family XIV. LYCOSIDAE

The Lycosidae are among the commonest spiders, or, at any rate, those most often seen. The genera of this family represented in Hokkaido can be identified by the following table.

- 1. a. Tarsus with bristles. 2. Gen. *Tarentula* SUNDEVALL
- b. Tarsus without bristles. 2.
- 2. a. Distal pair of ventral spines of the anterior tibiae never apical in position. 1. Gen. *Pirata* SUNDEVALL
- b. Distal pair of ventral spines of the anterior tibiae apical in position. 3. Gen. *Lycosa* LATREILLE

I. Genus **Pirata** SUNDEVALL, 183375. **Pirata piraticus** (OLIV.)

Pl. XV, Fig. 81. Epigynum.

Pirata piraticus, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 341.; ———:—Südrussischer Spinnen, St. Petersburg, 1875, p. 71.; E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 300.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. 1, 1892, p. 76.; L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1879, p. 106.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 406, Taf. 38, Fig. 598.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 131, Taf. 26, Fig. 1482.

Lycosa piratica, J. BLACKWALL:—Spid. Gr. Brit. & Ir., 1864, p. 34.

Locality: Mt. Daisetsu (1 female, Dr. T. INUKAI, August 14, 1931).
Sapporo (8 immature males, 6 females, S. SAITO, Apr. 23, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Mt. Daisetsu)	0.80	0.50	1.00	1.00	1.00	1.40
female (Sapporo)	0.90	0.50	1.10	1.10	1.10	1.50
female (Sapporo)	0.90	0.50	1.10	1.10	1.10	1.40
female (Sapporo)	0.80	0.50	0.90	0.90	0.90	1.30
female (Sapporo)	0.90	0.60	1.20	1.20	1.20	1.60
female (Sapporo)	0.80	0.50	1.10	1.10	1.10	1.50
female (Sapporo)	0.80	0.40	0.90	0.90	0.90	1.30

Female: Carapace 0.33 cm. long, 0.21 cm. wide between second and third coxae, with a longitudinal median furrow. Edge of carapace with long black and short white hairs. Anterior row of eyes slightly shorter than the median row in ratio 13:10. Posterior median eyes largest, anterior lateral eyes smallest and posterior lateral eyes larger than anterior median eyes. Eye-ratio 18:15:10:7. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by their radius. Posterior median eyes separated from each other by 1.5 times their diameter, from posterior lateral eyes by 4.5 times their diameter. Posterior lateral eyes separated from each other by six times their diameter. Clypeus equal to two times the diameter of anterior median eyes. Chelicerae normal, furnished with long black and short brown hairs. Labium rectangular, more wide than long in ratio 5:4. It does not reach the middle of maxillae. Maxillae wider at end than at base in ratio 4:3. Sternum shield-shaped, evenly rounded in front, pointed behind between fourth coxae which are contiguous.

Colour in life: Carapace blackish brown with black eye-region and

a light brown median and submarginal band. Chelicerae dull brown. Maxillae and labium light brown with white tips. Sternum black. Palpi and legs light brown, annulated with sepia. Abdomen blackish brown with a paler heart-marking and five pairs of spots at median part.

Distribution: Germany, France, England, Hungary, U.S.S.R., Siberia.

Remarks: R. CHAMBERLIN described a subspecies *Pirata piraticus* var. *utahensis* from U. S. A. (Proc. Acad. Philadelphia, 1908, p. 313).

76. *Pirata Knorrii* SCOPOLI

Pl. XV, Fig. 82. Epigynum.

Pirata Knorrii, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 343.; ———: Südrussischer Spinnen, St. Petersburg, 1875, p. 72.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. I, 1892, p. 75.; W. BÖSENBERG:—Zoologica, Stuttgart, Bd. 14, 1903, p. 407, Taf. 39, Fig. 60t.; R. BREMEN: Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 131, Fig. 1474, Taf. 26, Fig. 1483.

Pirata Knorrii, E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 296.

Lycosa piscatoria, J. BLACKWALL:—Spid. Gr. Brit. & Ir., London, 1864, p. 36.

Locality: Sapporo (2 females, S. SAITO, Sept. 27, 1929).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.60	0.40	0.80	0.80	0.70	1.00
female	0.50	0.30	0.70	0.70	0.60	0.90

Female: Carapace 0.36 cm. long, 0.26 cm. wide between second and third coxae. Viewed from in front, anterior eyes in curved downward. Posterior lateral eyes largest and anterior eyes smallest. Eye-ratio 5:4:2. Anterior eyes equidistant, separated from each other by about their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by their radius. Posterior lateral eyes separated from each other by twice their diameter. Quadrangle of posterior eyes wider behind than in front in ratio 3:2, more wide than long in ratio 2:1. Clypeus practically wanting. Chelicerae with a brush of rather long hair on under side. Labium as long as wide, rounded anteriorly, reaching beyond middle of maxillae. Maxillae wider at end than at base in ratio 2:1, more long than wide in front in ratio 2:1. Sternum convex, shield-shaped with straight anterior margin, pointed posteriorly.

Colour in life: Carapace light brownish yellow with a marginal and submarginal and V-shaped median stripes. Caput sepia. Chelicerae, maxillae and sternum dull yellow. Labium black with dull yellow tip. Palpi and legs dull yellow, annulated with dark colour. Abdomen yellow,

furnished densely with short black hairs. Belly dull yellow.

Distribution: Germany, France, England, Hungary, U. S. S. R.

2. Genus **Tarentula** SUNDEVALL, 1833

77. **Tarentula ishikariana** n. sp. Jap. name, *Ishikari-Dokugumo*.

Pl. XIII, Fig. 30. Dorsal view of female.

Pl. XV, Fig. 83. Epigynum.

Locality: Ishikari (2 females, H. ITOH, Oct. 19, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	1.80	0.95	2.40	2.15	2.25	2.90
female	0.73	0.51	0.95	0.70	0.70	0.83

Female: Carapace 0.87 cm. long, 0.73 cm. wide between second and third coxae, with a longitudinal median and a definite cervical furrow. Eight eyes in three rows. Posterior eyes equal in size and largest, and anterior lateral eyes smallest. Eye-ratio 5:3:2. Viewed from above, four eyes of anterior row straight along anterior margin, the median eyes separated from each other by their radius, from anterior lateral eyes by $\frac{1}{4}$ of their diameter. Median row of eyes shorter than the anterior in ratio 8:7, its eyes separated by $\frac{3}{5}$ of their diameter. Posterior row longer than the anterior in ratio 7:5, its eyes separated by the length of median row. Quadrangle of posterior eyes more wide in front than long in ratio 5:4, and quadrangle of median eyes more wide behind than long in ratio 15:11. Clypeus equal to twice the diameter of anterior median eyes. Chelicerae strong, vertical, with parallel outer margins. Labium pentagonal, pointed anteriorly, as long as wide at base, reaching beyond middle of maxillae. Maxillae inclined over labium, rounded anteriorly with convergent outer margins. Sternum oval, narrowed anteriorly to the width of labium. Second coxae most widely apart, fourth coxae contiguous.

Colour in alcohol: Pars cephalica black. Pars thoracica yellowish white with a black marking along the cervical and median furrows. Chelicerae and sternum black. Maxillae and labium black with white tips. Palpi above brown, venter yellowish white. Legs above dark, below yellowish white. Abdomen yellowish white with a black leaf-marking. Belly dark colour.

Remarks: This species is distinguished from the other species of *Tarentula* by the great body length, by the bright colouration of body

and especially by the special form of epigynum.

78. *Tarentula striatipes* (L. KOCH)

Tarentula striatipes, C. CHYZER et L. KULCZYNSKI:—Aranee Hungariae, Budapest, Tom. I, 1892, p. 69.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 391, Taf. 36, Fig. 575.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 133, 135, Taf. 27, Fig. 1054, Taf. 26, Fig. 1520.

Lycosa striatipes, E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 250.; O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 2, 1879, p. 266.

Locality: Mt. Daisetsu (3 males, 3 females, Dr. T. INUKAI, July 16-20, 1931). Soranuma (2 immature females, S. MAKINO, Sept. 8, 1831).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Mt. Daisetsu)	0.85	0.46	1.18	1.18	1.15	0.85
male (Mt. Daisetsu)	0.70	0.48	1.04	0.92	0.91	1.13
male (Mt. Daisetsu)	0.92	0.48	1.38	1.23	0.99	1.35
female (Mt. Daisetsu)	1.43	0.84	1.40	1.40	1.35	1.75
female (Mt. Daisetsu)	1.33	0.84	1.50	1.50	1.40	1.82
female (Mt. Daisetsu)	0.76	0.43	0.75	0.75	0.62	0.77

Female: Carapace 0.97 cm. long, 0.32 cm. wide between second and third coxae, clothed with short, black hairs. A few long black hairs in the eye region and also in a median line behind eyes extending to median furrow which extends longitudinally. Anterior row of eyes straight, nearly equal in length to second row. Posterior median eyes largest, anterior eyes smallest and posterior lateral eyes median in size. Eye-ratio 8 : 5 : 3. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by 1.5 times their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by twice their diameter. Posterior lateral eyes separated from each other by five times their diameter. Quadrangle of posterior eyes wider behind than in front in ratio 17 : 10. Clypeus almost equal to the diameter of anterior eyes. Chelicerae comparatively slender. Labium barely wider than long, emarginate at tip, articulated to maxillae 1/2 distance from base. Maxillae with nearly parallel sides, slightly inclined over labium. Sternum as long as wide, pointed behind in front of fourth coxae, sparsely clothed with long black hairs.

Colour in alcohol: Carapace and sternum blackish brown. Maxillae and labium light yellowish brown. Legs and palpi below light brown, above deep brown, annulated indistinctly with blackish brown. Abdomen brown with black spots. Belly dull brown.

Male: Carapace 0.45 cm. long, 0.31 cm. wide between second and third coxae. Submarginal band of carapace wanting. Black spots of abdomen indistinct, but heart-marking more definite than that of female.

Distribution: Germany, France, Hungary.

79. *Tarentula flavitibia* n. sp. Jap. name, *Kiashi-Dokugumo*.

Pl. XIII, Fig. 31. Dorsal view of female.

Pl. XV, Fig. 84. Epigynum.

Locality: Mt. Sapporodake (1 female, S. SAITO, July 13, 1930).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.70	0.45	0.70	0.70	0.70	0.95

Female: Carapace 0.32 cm. long, 0.21 cm. wide between second and third coxae. Anterior row of eyes somewhat shorter than the median row. Posterior eyes largest, anterior lateral eyes smallest. Eye-ratio 7:4:3. Anterior median eyes separated from each other by their diameter, from anterior lateral eyes by 1/4 of their diameter. Posterior median eyes separated from each other by their diameter, from posterior lateral eyes by 1.5 times their diameter. Posterior lateral eyes separated from each other by 2.5 times their diameter. Quadrangle of median eyes wider behind than in front in ratio 2:1. Quadrangle of posterior eyes as long as wide, wider behind than in front in ratio 3:2. Clypeus equal to the diameter of anterior median eyes. Chelicerae furnished with long black hairs, strong, with parallel outer margins. Labium somewhat more wide than long, articulated to maxillae at 1/2 distance from base, rounded anteriorly. Maxillae wider in front than at base in ratio 3:2. Sternum heart-shaped, as wide as long, pointed posteriorly. Second coxae most widely apart, fourth coxae separated by 1/2 of their width.

Colour in alcohol: Carapace blackish brown. Maxillae and labium dark with white tips. Sternum black. Coxae and femora of palpi and legs light black and other joints of legs light dull yellow and annulated with dark colour. Abdomen darker than carapace. Belly blackish yellow.

Remarks: The spider is closely allied to *Tarentula barbipes* (SUNDÉVALL), but it is easily distinguished from the latter by the dull colour of abdomen and the form of epigynum.

3. Genus *Lycosa* LATREILLE, 1804

80. *Lycosa daisetsuzana* n. sp. Jap. name, *Daisetsu-Dokugumo*.

Pl. XIII, Fig. 32. Dorsal view of female.

Pl. XV, Fig. 85. Epigynum.

Locality: Mt. Daisetsu (1 male, 2 females, Dr. T. INUKAI, August 4, 1930). Mt. Tokachi (1 male, 3 females, S. SAITO, August 29, 1931). Soranuma (2 females, S. MAKINO, Sept. 8, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
male (Mt. Daisetsu)	0.60	0.35	0.97	1.00	1.00	1.20
male (Mt. Tokachi)	0.80	0.50	1.00	0.98	0.95	1.26
female (Mt. Daisetsu)	0.71	0.42	1.02	1.09	1.02	1.50
female (Mt. Daisetsu)	0.70	0.44	1.08	0.94	0.92	1.34
female (Soranuma)	0.60	0.39	1.06	1.01	0.99	1.22
female (Soranuma)	0.56	0.36	0.90	0.95	0.95	1.29
female (Mt. Tokachi)	0.65	0.40	1.10	1.10	1.02	1.50
female (Mt. Tokachi)	0.60	0.40	1.00	1.00	1.00	1.20

Female: Carapace 0.34 cm. long, 0.28 cm. wide between second and third coxae, with slanting sides and a longitudinal median furrow. Edge of carapace with long black and short white hairs. Surface of carapace with short black hairs. Anterior row of eyes slightly recurved, considerably shorter than median row in ratio 5 : 4. Anterior median eyes separated from each other by their diameter, and almost in contact with the anterior lateral eyes. Posterior median eyes separated from each other by 13/9 of their diameter, from posterior lateral eyes by the same distance. Quadrangle of posteriors wider behind than in front in ratio 4 : 3, as long as wide. Clypeus equal to the diameter of anterior lateral eyes. Chelicerae strong, with black bristles. Labium as wide as long, articulated to maxillae one third distance from base, almost parallel, with brown hairs. Sternum as long as wide, evenly rounded in front, pointed behind.

Colour in life: Carapace dark brown with a yellow stripe along the cervical and median furrows. Chelicerae brown with black fangs. Maxillae and labium yellowish brown. Sternum black. Legs and palpi dull yellow. Abdomen dull brown with white heart-marking. Belly reddish brown.

Remarks: The present species is almost identical with *Lycosa Wagneri* HAHN, but it differs chiefly in colour and the form of epigynum.

81. *Lycosa T-insignita* BöS. et STRAND

Lycosa T-insignita, W. BÜSENBERG u. E. STRAND:—Japanese Spinnen, Stuttgart, 1905, p. 324, Taf. 8, Fig. 109, Taf. 13, Fig. 337, 344.; S. SAITO:—Transact. Sapporo Nat. Hist., Vol. 11, 1930, p. 149.; —:—:—Annot. Zool. Jap., Vol. 13, 1932, p. 385.; —:—:—Tranact. Sapporo Nat. Hist., Vol. 13, 1934, p. 340.

Locality: Sapporo (1 female, S. SAITO, Sept. 27, 1929). Vicinity of Sapporo (4 females, S. SAITO, Apr. 29, 1930). Mt. Daisetsu (3 females, Dr. T. UCHIDA, August 1, 1932).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female (Sapporo)	0.72	0.65	0.70	0.75	0.84	1.21
female (Sapporo)	1.30	0.90	1.40	1.40	1.30	1.85
female (Sapporo)	1.20	0.70	1.30	1.30	1.25	1.70
female (Sapporo)	1.00	0.60	1.20	1.20	1.15	1.65
female (Sapporo)	1.00	0.60	1.10	1.20	1.00	1.50
female (Mt. Daisetsu)	0.85	0.50	1.20	1.00	0.90	1.30
female (Mt. Daisetsu)	0.80	0.45	1.20	1.20	1.00	1.50
female (Mt. Daisetsu)	0.85	0.50	0.90	0.90	0.95	1.75

Female: Carapace 0.42 cm. long, 0.29 cm. wide between second and third coxae. Anterior row of eyes straight and shorter than median row in ratio 11 : 8. Anterior eyes equal in size and equidistant, separating from each other by their diameter. Posterior median eyes separated from each other by 1.5 times their diameter, from posterior lateral eyes by two times their diameter. Posterior lateral eyes separated from each other by four times their diameter. Quadrangle of posterior eyes as wide as long. Clypeus equal to the diameter of posterior median eyes. Chelicerae vertical, cone-shaped. Labium as wide as long, articulated to maxillae one third distance from base. Sternum more long than wide in ratio 6 : 5, considerably narrowed in front, pointed behind.

Colour in life: Carapace deep sepia with a median and a pair of lateral longitudinal light yellow bands. Median band begins between anterior median eyes. Lateral bands submarginal, beginning at cervical furrow and extending to posterior edge of carapace. Legs and palpi light yellow, annulated with sepia. Chelicerae black, deep brown toward fangs. Labium, maxillae and sternum black. Abdomen sepia with a light yellow heart-marking and several pairs of spots. Belly deep sepia. Spinnerets black.

Distribution: Japan (Kyushu, Honshu, Southern Saghalien).

82. *Lycosa annulata* THORELL

Pl. XV, Fig. 86. Epigynum.

Lycosa annulata, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 302.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. I, 1892, p. 57.; W. BÖSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 378, Taf. 35, Fig. 553.; S. SAITO:—Proc. Imper. Academy, Vol. 9, 1933, p. 273.

Lycosa annulata, O. HERMAN:—Ungarns Spinnen-Fauna, Budapest, Bd. 3, 1879, p. 257.

Pardosa hortensis, E. SIMON:—Arachn. de France, Paris, 1876, p. 343.

Locality: Nopporo (3 females, S. SAITO, August 17, 1933).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.70	0.35	1.00	1.00	1.00	1.40
female	0.55	0.30	0.90	0.90	0.90	1.20
female	0.60	0.30	0.90	0.90	0.90	1.30

Female: Carapace 0.31 cm. long, 0.21 cm. wide between second and third coxae. Eyes in three rows. Eyes of median and posterior rows equal in size, largest, and lateral eyes of anterior row smallest. Eye-ratio 4 : 2 : 1. Anterior median eyes separated from each other by twice their diameter, from anterior lateral eyes by their diameter. Median row of eyes longer than anterior row in ratio 6 : 5, shorter than posterior row in ratio 3 : 2. Quadrangle of median eyes wider behind than in front in ratio 2 : 1, more long than wide in front in ratio 6 : 5. Quadrangle of posterior eyes as long as wide. Chelicerae strong, vertical, with convergent outer margins. Labium triangular, more wide at base than long in ratio 5 : 3. It does not reach the middle of maxillae. Maxillae wider in front than at base in ratio 3 : 2. Sternum almost circular, narrowed anteriorly to width of labium, pointed behind. Second coxae most widely apart, fourth coxae contiguous.

Colour in life: Carapace blackish brown with dark brown submarginal spots and a stripe along the cervical furrow. Chelicerae, maxillae and labium dark brown. Sternum black. Palpi and legs dark brown, annulated with blackish brown. Abdomen dull brown.

Distribution: Germany, France, Hungary.

83. *Lycosa monticola* CLERCK

Pl. XV, Fig. 87. Epigynum.

Lycosa monticola, T. THORELL:—Rem. on Syn., Upsala, 1870-1873, p. 285.; ———:—Südrus-sicher Spinnen, St. Petersburg, 1875, p. 62.; C. CHYZER et L. KULCZYNSKI:—Araneae Hungariae, Budapest, Tom. I, 1892, p. 56.; O. HERMAN:—Ungarns Spinnen-Fauna,

Budapest, Bd. 3, 1879, p. 253.; W. BÜSENBERG:—Zoologica, Stuttgart, 1903, Bd. 14, p. 376, Taf. 35, Fig. 549.; R. BREMEN:—Tierwelt Mitteleuropas, Leipzig, Bd. 3, Lief. 2, p. 138, 141, Fig. 1570.

Pardosa monticola, L. KOCH:—Arachn. Sibirien Novaja Semlja, Stockholm, 1870, p. 102.; E. SIMON:—Arachn. de France, Paris, Tom. 3, 1876, p. 318.

Locality: Akkeshi (3 females, S. MOTODA, July 29, 1931).

Measurements:

	total length	abdomen	leg I	leg II	leg III	leg IV
female	0.65	0.35	0.80	0.80	0.80	1.20
female	0.65	0.40	0.90	0.90	0.90	1.30
female	0.50	0.40	0.80	0.80	0.80	1.30

Female: Carapace 0.31 cm. long, 0.21 cm. wide between second and third coxae, with slanting sides. Anterior row of eyes slightly shorter than median row in ratio 4 : 3, slightly curved downward. Posterior eyes largest, anterior lateral eyes smallest and anterior median eyes median in size in ratio 7 : 4 : 3. Anterior median eyes separated from each other by their radius, from anterior lateral eyes by the same distance. Posterior median eyes separated from each other by twice their diameter, and from posterior lateral eyes by the same interval. Posterior lateral eyes separated from each other by four times their diameter. Clypeus equal to the diameter of anterior lateral eyes. Chelicerae strong, with parallel outer margins. Labium triangular, more wide at base than long in ratio 3 : 2. Maxillae inclined over labium, nearly square in shape. Sternum as wide as long, narrowed anteriorly to the width of labium, rounded posteriorly. Second coxae most widely apart, fourth coxae contiguous.

Colour in alcohol: Carapace light yellow with a pair of sepia bands through the whole length. Chelicerae brownish yellow. Maxillae and labium light yellow. Sternum blackish brown. Palpi and legs below light yellow, above annulated with sepia. Abdomen light yellow with a sepia leaf-marking. Belly dull yellow with three longitudinal black stripes.

Distribution: Germany, France, Hungary, U. S. S. R., Siberia.

EXPLANATION OF PLATES

Plate XII

1. *Oecobius sapporense* n. sp.; a, b, ♀.
2. *Oxytate setosa* KARSCH; a, Subadult ♂. b, ♀.
3. *Thomisus albus* GMELIN; ♀.
4. *Pistius truncatus* (PALL.); ♀.
5. *Synaema g'obosa japonica* KARSCH; ♀.
6. *Tmarus piger* WALCKENAER; a, ♀. b, Sideview of abdomen.
7. *Oxyptila nigrifrons* n. sp.; ♂.
8. *Xysticus sapporensis* n. sp.; ♀.
9. *Philodromus flavidus* n. sp.; ♀.
10. *Clubiona glatiosa* n. sp.; ♂.
11. *Castianeira albimaculata* n. sp.; ♀.
12. *AElurillus subfestivus* n. sp.; ♀.
13. *Icius daisetsuzanus* n. sp.; ♀.
14. *Teutana albimaculosa* n. sp.; ♂.
15. *Argyrodes yesoensis* n. sp.; a, Black ♀. b, White ♀. c, Sideview of black specimen.

Plate XIII

16. *Argyrodes sibiricum* n. sp.; ♀.
17. *Linyphia exornata* L. KOCH; ♀.
18. *Oedothorax triäneatus* n. sp.; ♀.
19. *Nesticus cericeus* n. sp.; ♀.
20. *Argiope aurea* n. sp.; ♀.
21. *Cyclosa atrata* BÖS ET STRAND; a, b, ♀.
22. *Araneus tokachianus* n. sp.; ♀.
23. *Araneus triguttatus* FABRICIUS; a, b, ♀.
24. *Araneus omoeda* THORELL; ♀.
25. *Tetragnatha yesoensis* n. sp.; a, b, ♂.
26. *Tetragnatha exquista* SAITO; ♂.
27. *Coras luctuosus* (L. KOCH); ♀.
28. *Cicurina maculipes* n. sp.; ♀.
29. *Cryphoeca angularis* n. sp.; ♀.
30. *Tarentula ishikariana* n. sp.; ♀.
31. *Tarentula flavitibia* n. sp.; ♀.
32. *Lycosa daisetsuzana* n. sp.; ♀.

Plate XIV

33. *Oecobius sapporense* n. sp.; a, Eyegroup. b, Epigynum.
34. *Oxytate setosa* KARSCH; Eyegroup (♀).
35. *Thomisus albus* GMELIN; Eyegroup (♀).
36. *Pistius truncatus* (PALL.); a, Eyegroup. b, Epigynum.
37. *Misumena tricuspidata* (FABRICIUS); a, Eyegroup (♀). b, Epigynum. c, d, Palpus (♂).
38. *Synaema globosa japonica* KARSCH; Tarsal claw.
39. *Tmars piger* WALCKENAER; Eyegroup.
40. *Oxyptila nigritrons* n. sp.; a, Eyegroup. b, c, Palpus (♂).
41. *Xysticus sapporensis* n. sp.; Frontview of eyegroup.
42. *Xysticus tunicatus* BÖS. et STRAND; Epigynum.
43. *Philodromus flexuoides* n. sp.; a, Eyegroup. b, Chelicerae. c, Epigynum.
44. *Tibellus oblongus* WALCKENAER; Eyegroup.
45. *Clubiona mantis* BÖS. et STRAND; a, Carapace (♂). b, c, Palpus (♂).
46. *Clubiona lutescens* WESTRING; a, b, Palpus (♂).
47. *Clubiona glatiosa* n. sp.; Eyegroup.
48. *Chiracanthium lascivum* KARSCH; a, Carapace (♀). b, palpus (♂).
49. *Castianeira albimaculata* n. sp.; a, Epigynum. b, Eyegroup.
50. *AElurillus subfestivus* n. sp.; a, Epigynum. b, Carapace from above.
51. *Icius daisetsuzanensis* n. sp.; a, Eyegroup. b, Epigynum.
52. *Theridion subpallens* BÖS. et STRAND; a, Epigynum from above. b, Sideview of epigynum. c, Eyegroup.
53. *Teutana albimaculosa* n. sp.; Carapace.
54. *Argyrodes yesoensis* n. sp.; Eyegroup.
55. *Argyrodes silvicolum* n. sp.; a, Epigynum. b, Sideview of carapace.

Plate XV

56. *Linyphia emphana* WALCKENAER; a, Epigynum from a little beneath. b, Epigynum from above.
57. *Linyphia pusilla* SUNDEVALL; a, Epigynum from above. b, Sideview of epigynum.
58. *Linyphia marginata* C. L. KOCH; a, Epigynum from above. b, Epigynum from a little beneath.
59. *Linyphia peltata* WIDER-REUSS.; a, Epigynum from above. b, Sideview of epigynum. c, Palpus (♂).
60. *Linyphia exornata* L. KOCH; a, Epigynum from above. b, Epigynum from a little beneath.
61. *Oedothorax trilineatus* n. sp.; a, Eyegroup. b, Epigynum.
62. *Nesticus cericeus* n. sp.; a, Eyegroup. b, Epigynum.
63. *Argiope aurea* n. sp.; a, Epigynum from above. b, Sideview of epigynum.

64. *Araneus quadratus* CLERCK; a, Sideview of epigynum. b, Epigynum from above. c, Eyegroup.
 65. *Araneus tokachianus* n. sp.; Epigynum from above.
 66. *Araneus triguttatus* CLERCK; Epigynum from above.
 67. *Araneus angulatus* CLERCK; Epigynum from above.
 68. *Araneus ventricosus* L. KOCH; a, Sideview of epigynum. b, Epigynum from above.
 69. *Tetragnatha squamata* KARSCH; a, b, Chelicerae (♂). c, Palpus (♂). d, Eyegroup.
 70. *Tetragnatha yesoensis* n. sp.; a, Palpus (♂). b, c, Chelicerae (♂).
 71. *Tetragnatha exquista* SAITO; Palpus (♂).
 72. *Amaurobius claustrarius* (HAHN); a, b, Palpus (♂).
 73. *Coras luctuosus* (L. KOCH); Epigynum.
 74. *Agelena japonica* KARSCH; a, Eyegroup. b, Epigynum.
 75. *Agelena opulenta* L. KOCH; Epigynum.
 76. *Cicurina cinerea* PANZER; Eyegroup.
 77. *Cicurina maculipes* n. sp.; Eyegroup.
 78. *Cryphoeca angularis* n. sp.; a, Eyegroup. b, Sternum.
 79. *Dolomedes saganus* BÖS. et STRAND; Eyegroup.
 80. *Dolomedes sulfureus* L. KOCH; Eyegroup.
 81. *Tirata piraticus* (OLIV.); Epigynum.
 82. *Pirata Knorrii* SCOPOLI; Epigynum.
 84. *Tarentula flavitibia* n. sp.; Epigynum.
 85. *Lycosa daisetsuzana* n. sp.; Epigynum.
 86. *Lycosa annulata* THORELL; Epigynum.
 87. *Lycosa monticola* CLERCK; Epigynum.
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