

New Genera and Species of the Spider Family Linyphiidae (Arachnida, Araneae) from Japan

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Abstract Three new genera and twenty-four new species of the spider family Linyphiidae (Arachnida, Araneae) are described from Japan under the names, *Hypselistes australis* sp. nov., *Oedothorax sexmaculatus* sp. nov., *Tmeticus neserigonoides* sp. nov., *T. vulcanicus* sp. nov., *T. nigerrimus* sp. nov., *Gongylidioides galeritus* sp. nov., *G. monocornis* sp. nov., *G. communis* sp. nov., *G. kaihotsui* sp. nov., *Walckenaeria ichifusaensis* sp. nov., *W. chikunii* sp. nov., *Nipponotusukuru* gen. nov., *N. enzanensis* sp. nov. (type species), *N. spiniger* sp. nov., *Tapinocyba suganarii* sp. nov., *Tojinium* gen. nov., *T. japonicum* sp. nov. (type species), *Erigone edentata* sp. nov., *Saitonia kawaguchikonis* sp. nov., *Diplocephalus hispidulus* sp. nov., *Tibioploides eskovianus* sp. nov., *T. monticola* sp. nov., *Asthenargus niphonius* sp. nov., *A. matsudae* sp. nov., *Ryojius* gen. nov., *R. japonicus* sp. nov. (type species) and *R. occidentalis* sp. nov. Two genera, *Tibioploides* Eskov et Marusik, 1991, and *Asthenargus* Simon et Fage, 1922, are recorded from Japan for the first time. *Tmeticus bipunctis* (Bösenberg et Strand, 1906), comb. nov., is redescribed based on the type specimens, transferred from the original genus, *Oedothorax* Bertkau, 1883, to *Tmeticus* Menge, 1868, and regarded as a senior synonym of *Tmeticus japonicus* Oi, 1960 (new synonymy). *Saitonia ojiroensis* (H. Saito, 1990), comb. nov., is transferred from the original genus *Araeoncus* Simon, 1884, to *Saitonia* Eskov, 1992.

Key words: Arachnida, Araneae, Linyphiidae, taxonomy, new genus, new species, new synonymy, new combination, Japan.

Introduction

Containing about 500 genera and more than 6000 species, the family Linyphiidae is a huge group in spiders (Araneae), which occupies one sixth of all the known species of spiders in the world. Spiders of the family are usually dominant in spider fauna of warm and cold temperate regions of the Northern Hemisphere, including arctic and polar areas. In a northern European country such as Germany the number of linyphiid species reaches 50% of a total number of known species (ca. 950 spp.).

In Japan, more than 1,200 species of spiders are known at present. Of these, however, only about 200 species of 95 genera are recorded in the family Linyphiidae (Ono, Kamura & Nishikawa, 1999), because it is not long since intensive taxonomi-

cal studies of linyphiid spiders were started by Oi (1960, 1962, 1964, 1980). Although many linyphiids have recently been recorded and described from this country (Yaginuma, 1972, 1986; H. Saito, 1980, 1982, 1986, 1988, 1992; Yaginuma & Saito, 1981; Millidge, 1981; Matsuda, 1986, 1987, 1996, 1997; Saito & Yasuda, 1988; Chikuni, 1989; Ono & Saito, 1989; Ono et al., 1991; Saito & Irie, 1992; Tazoe, 1992, 1993, 1994; Ihara, 1995; Saaristo, 1996; and many others), much more species are remaining undescribed and unrecorded. Some useful informations for Japanese linyphiid fauna were also carried out from West and North Asia and Siberia by Russian colleagues (Tanasevitch, 1987, 1989; Eskov, 1988a, b, 1992, 1993; Eskov & Marusik, 1990; and others, further literature see Eskov, 1994).

In the present paper 24 new species are described under 14 genera including three new genera herein established and further two genera recorded from Japan for the first time. *Oedothorax bipunctis* Bösenberg et Strand, 1906, is redescribed based on its type specimens and is transferred from the original genus to *Tmeticus* Menge, 1868. A new synonymy between this species and *Tmeticus japonicus* Oi, 1960, is reported.

Type specimens of the new species to be described in this paper are deposited in the collection of the Department of Zoology, National Science Museum, Tokyo (NSMT).

Before going further, the authors wish to express their sincere thanks to the late Dr. Ryoji Oi and the late Dr. Takeo Yaginuma for their various advices in taxonomy of spiders. Many thanks are also due to Dr. Jun-ichi Aoki, Dr. A. D. Blest, Mr. Yasunosuke Chikuni, Mr. Akito Fukushima, Dr. Manfred Grasshoff, the late Mr. Ryôichi Hamada, Mr. Toshio Hayashi, Mr. Yoh Ihara, Mr. Teruo Irie, Mr. Kiyoshi Ishii, Mr. Ryôsaku Ito, Mr. Kenji Kaihotsu, Mrs. Kiyoko Kato, Dr. Narayoshi Kikuya, Dr. Kazuhiko Konishi, Mr. Ken-ichi Kumada, Mr. Seiji Matsumoto, Dr. Yoshiaki Nishikawa, Dr. Shôhei Nomura, Dr. Noboru Nunomura, Mr. Kiyoto Ogata, Mr. Mitsuaki Ogawa, the late Dr. Chiyoko Okuma, Mr. Katsumi Sasaki, Mr. Yôhei Suganami, Mr. Katsuhiko Suzuki, Mr. Akio Tanikawa, Mrs. Sachiko Tazoe, Dr. Nobuo Tsurusaki and Mr. Nobuki Yasuda for their offering and loaning of invaluable specimens. This study was partly supported (for the junior author) by the Grant-in-aid No. 10640688 for Scientific Research, and in traveling expenses for overseas research (1999 in Europe) from the Ministry of Education, Science, Sports and Culture, Japan.

Subfamily Erigoninae, *s. lat.*

[Japanese name: Kosaragumo-aka]

Note. In the present paper, the family Linyphiidae is divided into two large groups Erigoninae and Linyphiinae in the widest sense after a classification based on the tracheal arrangement by Blest (1976), although several subfamilies and genus

groups were proposed by Millidge (1984).

Genus *Hypselistes* Simon, 1894

[Japanese name: Tsunotategumo-zoku]

Hypselistes australis sp. nov.

[Japanese name: Minami-tsunotategumo]

(Figs. 1–4)

Type specimens. Holotype: ♂, Ebino-Kôgen Heights, Ebino-shi, Miyazaki Pref., Kyushu, Japan, 14–VII–1965, R. Hamada leg. (NSMT-Ar 4568); paratypes: 2 ♀, same data as for the holotype (NSMT-Ar 4569–4570), 2 ♀, Mt. Hikosan, Fukuoka-shi, Fukuoka Pref., 27–VII–2–VIII–1959, C. Okuma leg. (NSMT-Ar 4571).

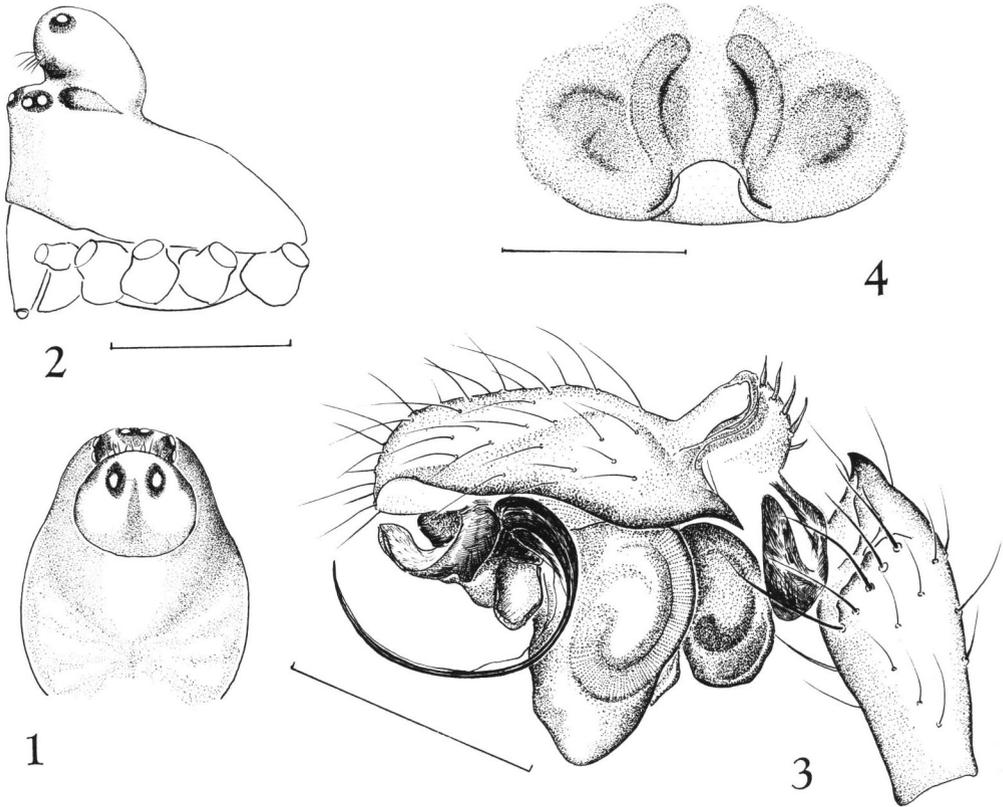
Description. Male (holotype): Body length 1.83 mm, prosoma length 0.93 mm, width 0.73 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.66 mm (0.78+0.85+0.66+0.37), II 2.61 mm (0.73+0.85+0.66+0.37), III 2.14 mm (0.62+0.71+0.54+0.27), IV 2.71 mm (0.81+0.85+0.71+0.34).

Prosoma (Figs. 1–2): Carapace light reddish brown, head darker and raised, forming a hump furnished with posterior median eyes on its top; each eye with black ring, anterior eye-row slightly procurved, anterior median eyes adjoining, distance between anterior median eye and anterior lateral eye almost equal to the diameter of anterior median eye, distance between posterior median eyes twice as long as the diameter of the median eye, clypeus as long as the length of median ocular area, vertical in front of anterior median eyes, slightly depressed at the middle. Sternum light reddish brown, widely darker-margined. Chelicera light brown, stridulating files absent, promargin of fang furrow with 4 teeth, retromargin with 4 small teeth basally adjoining; legs light yellowish brown, distance between coxae IV equal to the diameter of the coxa, the order of spines on the tibiae I–IV, 1111, each spine shorter than diameter of the tibia, and distant about one third of the length of tibia from the base, Tm IV present, Tm I ca. 0.91.

Male palp (Fig. 3): Length of femur and patella in ratio 17:11, tibia slightly shorter than patella, slender at the base, distally thickend, with 2 dorsal trichobothria and a dorso-apical apophysis small, spiniform and pointed; cymbium with a dorsal projection at the base, a row of several very thick bristles present on the projection; paracymbium simple, strongly curved and U-shaped; embolus relatively long, aculeate and curved.

Opisthosoma black, with 2 pairs of sigilla.

Female (a topotypical paratype; NSMT-Ar 4569): Body length 2.03 mm, prosoma length 0.81 mm, width 0.71 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.97 mm (0.90+1.02+0.73+0.32), II 2.92 mm (0.90+1.00+0.73+0.29), III 2.51 mm (0.78+0.83+0.63+0.27), IV 3.09



Figs. 1–4. *Hypselistes australis* sp. nov., male holotype (NSMT-Ar 4568) from Miyazaki Pref. and a female paratype (NSMT-Ar 4569) from type locality. — 1, Male carapace, dorsal view; 2, male prosoma, lateral view; 3, male palp, retrolateral view; 4, epigynum, ventral view. [Scales: 1–2, 0.5 mm; 3, 0.2 mm; 4, 0.1 mm.]

mm (0.93+1.07+0.80+0.29).

General appearance and coloration similar to those of the male. Head without projection; anterior eye-row procurved, distance between both anterior median eyes shorter than the radius of the median eye, distance between anterior median eye and anterior lateral eye equal to the radius of the median eye, posterior eye-row also procurved, distance between posterior median eyes equal to the radius of posterior median eye, distance between posterior median eye and posterior lateral eye one and a half times long as the diameter of the median eye; clypeus slightly longer than the length of median ocular area.

Female genitalia (Fig. 4): Epigynum flat, wider than long, with a semicircular opening part; intromittent canal distinct and visible through dorsal plate.

Etymology. Specific name from Latin meaning “southern.”

Distribution. Japan (Kyushu).

Remarks. This new species resembles *Hypselistes asiaticus* Bösenberg et Strand, 1906, described from Japan, *H. semiflavus* (L. Koch, 1879), widely known from northern Asia, and *H. fossilobus* Fei et Zhu, 1993 recently described from China, but is distinguished from these species by the condition of hump on head and the shape of peculiar projection on the basal part of cymbium in male, and by the structure of genitalia visible through epigynal plate in female.

Genus *Oedothorax* Bertkau, 1883

[Japanese name: Kobu-akamunegumo-zoku]

Oedothorax sexmaculatus sp. nov.

[Japanese name: Mutsuboshi-miyama-akamunegumo]

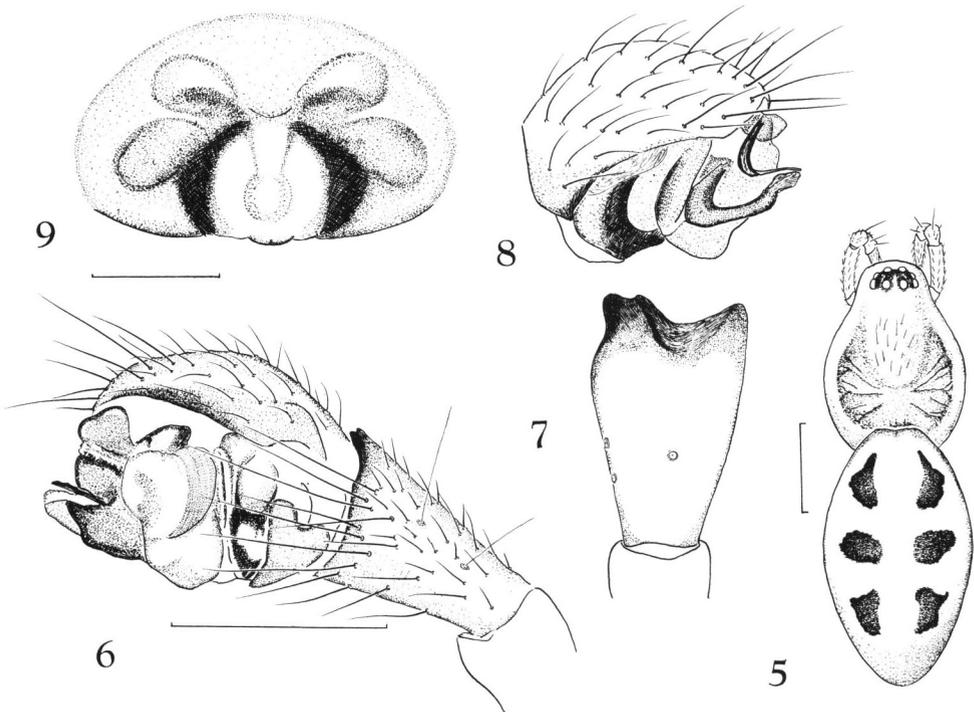
(Figs. 5–9)

Type specimens. Holotype: ♂, Jôdodaira, Azuma-yama Mts., Yama-gun, Fukushima Pref., Honshu, Japan, 11–VI–1986, K. Kumada leg. (NSMT-Ar 4572); paratypes: 6♀5♂, same data as for the holotype (NSMT-Ar 4573–4574), 1♂, Marunuma, Katashina-mura, Tone-gun, Gunma Pref., 1–VI–1983, H. Saito leg. (NSMT-Ar 4575).

Description. Male (holotype): Body length 2.35 mm, prosoma length 1.05 mm, width 0.88 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 4.24 mm (1.23+1.38+1.10+0.53), II 4.23 mm (1.23+1.40+1.05+0.55), III 3.50 mm (1.00+1.10+0.95+0.45), IV 4.21 mm (1.23+1.35+1.13+0.55).

Prosoma: Carapace light yellowish brown, widely margined with light yellow, radiating lines darker and distinct; head relatively raised but without hump behind the ocular area, which are always present in the European species of the genus; each eye with black ring, anterior eye-row relatively recurved, distance between anterior median eyes almost equal to the diameter of the median eye, distance between anterior median eye and anterior lateral eye slightly shorter than the diameter of anterior median eye, posterior eye-row straight, distance between posterior median eyes longer than the diameter of the median eye, distance between posterior median eye and posterior lateral eye equal to the diameter of the median eye; clypeus almost as long as the length of median ocular area. Sternum light yellow. Chelicera light yellow, tinged with red, stridulating files absent, promargin of fang furrow with 4 teeth, retromargin with 3 teeth; legs light yellowish brown, distance between coxae IV equal to the diameter of the coxa, the order of spines on the tibiae I–IV 2211, Tm IV present, Tm I ca. 0.89.

Male palp (Figs. 6–8): Length of femur and patella in ratio 7:3, tibia slightly longer than patella, with 3 dorsal trichobothria, apical margin of tibia strongly sclerotized, dorsally with a large incision and 2 small and blunt apophyses at both the sides



Figs. 5–9. *Oedothorax sexmaculatus* sp. nov., male holotype (NSMT-Ar 4572) from Fukushima Pref. and a female paratype (NSMT-Ar 4573) from type locality. — 5, Female body, dorsal view; 6, male palp, retrolateral view; 7, tibia of male palp, dorsal view; 8, bulb of male palp, prolateral view; 9, epigynum, ventral view. [Scales: 5, 0.5 mm; 6–8, 0.2 mm; 9, 0.1 mm.]

of incision, the top of retrolateral apophysis slightly depressed (Fig. 7); embolus short and flagelliform, apically curved.

Opisthosoma relatively long, greyish white, with a pair of discontinuous black bands.

Female (a topotypical paratype; NSMT-Ar 4573): Body length 3.25 mm, prosoma length 1.45 mm, width 1.13 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 5.46 mm (1.55+1.88+1.35+0.68), II 5.44 mm (1.53+1.88+1.38+0.65), III 4.51 mm (1.30+1.48+1.20+0.53), IV 5.46 mm (1.55+1.75+1.48+0.68).

General appearance and coloration similar to those of the male, with the exception of marking of opisthosoma not banded but with 3 pairs of black spots (Fig. 5). Chelicera with 5 teeth on promargin of fang furrow and 4 teeth on retromargin.

Female genitalia (Fig. 9): Epigynal plate oval, wider than long, spermathecae oval, visible through integument.

Etymology. Specific name from Latin meaning “with six spots,” derived from

the marking of female opisthosoma.

Distribution. Japan (Honshu).

Remarks. This new species resembles *Oedothorax hirsutus* Wunderlich, 1974, described from Nepal in absence of hump on head of male, but clearly distinguished from the latter by the peculiar structure of male palp and female genitalia. Females of this new species can be readily distinguished from all congeners by having 6 distinct spots on their abdomen (Fig. 5).

Genus *Tmeticus* Menge, 1868

[Japanese name: Nukagumo-zoku]

Notes. Up to the present, only one species, *Tmeticus japonicus* Oi, 1960, was known under this genus in Japan. However, this spider is in fact same species as another Japanese species, *Oedothorax bipunctis*, never recognized since the original description made by Bösenberg and Strand (1906). Having compared type specimens of both the species, the present authors confirmed this identification. Besides, *Oedothorax bipunctis* is herewith transferred from the original genus to *Tmeticus*. Further three new species, *Tmeticus neserigonoides* sp. nov., *T. vulcanicus* sp. nov. and *T. nigerrimus* sp. nov., are described in following pages. Thus, four species have been known under this genus in Japan.

These species are classified into two groups based mainly on the structure of male palpal organ. The first group is composed of *Tmeticus bipunctis* and *T. neserigonoides* sp. nov., which have very long male palps. Their patella is furnished with a hook-shaped apophysis, while their tibia appears without distinct apophysis. Having long palps, type species of the genus, *Tmeticus affinis* (Blackwall, 1855) known from Europe may also belong to the first group, although two small dorso-distal apophysis are present on its tibia. On the other hand, spiders of the second group, *Tmeticus vulcanicus* and *T. nigerrimus* spp. nov., possess a shorter male palp without apophysis on its patella but with a distinct dorsal apophysis on the tibia.

Tmeticus bipunctis (Bösenberg et Strand), comb. nov.

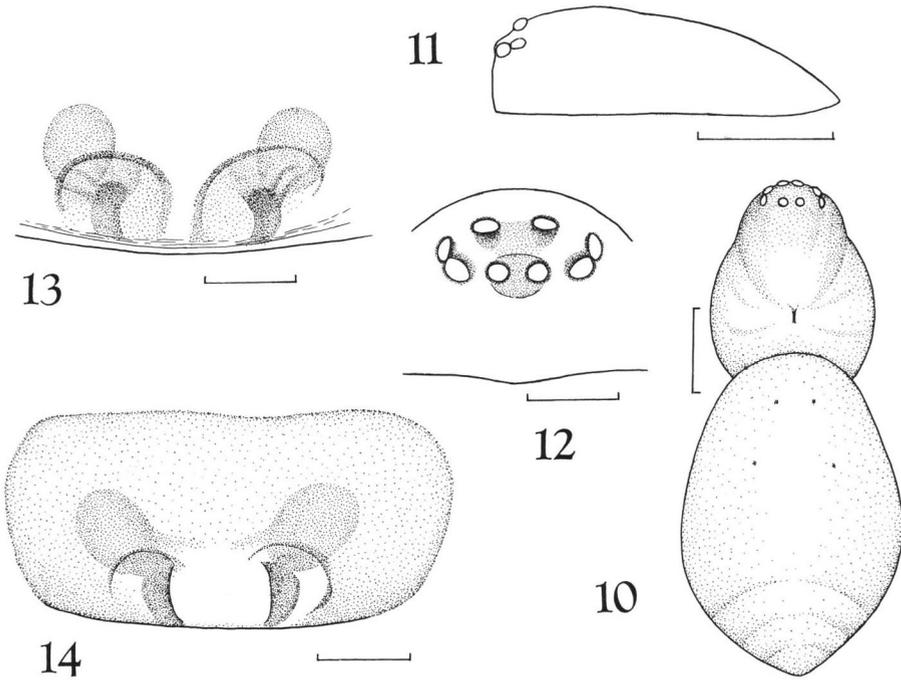
[Japanese name: Nukagumo]

(Figs. 10–14)

Oedothorax bipunctis Bösenberg et Strand, 1906, p. 162, pl. 12, fig. 258 [2♀ syntypes from Japan (without further information), 1882, W. Dönitz leg., in Senckenberg Museum, Frankfurt am Main (SMF), examined.]

Tmeticus japonicus Oi, 1960, p. 152, pl. IV, figs. 50–51 [♂ holotype from Nara (Nara-shi, Nara Pref.), Japan, 4–IX–1955, T. Yaginuma leg., in National Science Museum, Tokyo (NSMT-Ar 2673), examined.] — Chikuni, 1989, p. 58 figs., p. 199. [New synonymy.]

Type specimens. Syntypes: 2♀, Japan (without further information, but pre-



Figs. 10–14. *Tmeticus bipunctis* (Bösenberg et Strand, 1906), female syntypes (SMF 4156) from Japan. — 10, Body, dorsal view; 11, carapace, lateral view; 12, ocular area, frontal view; 13–14, epigyna, ventral view. [Scales: 10–11, 0.5 mm; 12, 0.2 mm; 13–14, 0.1 mm.]

sumably from Saga Pref., Kyushu), 1882, W. Dönitz leg. (SMF 4156).

Redescription. Female (one of the syntypes). Body length 3.06 mm, prosoma length 1.26 mm, width 0.92 mm; lengths of leg I (measurements of other legs and palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: 4.08 mm (1.15+1.40+0.95+0.58).

Prosoma: Carapace reddish brown, radiating lines and median furrow distinct (Fig. 10); head low (Fig. 11); each eye with black ring, anterior median eye smaller than anterior lateral eye, anterior eye-row procurved, distance between anterior median eyes slightly shorter than the diameter of the median eye, distance between anterior median eye and anterior lateral eye equal to the diameter of anterior median eye; both the lateral eyes adjoining, posterior eye-row straight, posterior eyes same in size, distance between posterior median eyes one and a half the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to the diameter of posterior median eye (Fig. 12); clypeus slightly longer than the length of median ocular area. Sternum light yellowish brown, longer than wide. Chelicera: pro-margin of fang furrow with 5 teeth, retromargin with 4 teeth; Tm I ca. 0.64.

Opisthosoma blackish brown, with 2 pairs of sigilla.

Female genitalia (Figs. 13–14): Epigynum small, with a oblong plate at the middle, intromittent orifices situated at both sides of the plate; spermathecae close to the orifices, respectively.

Etymology. Specific name from Latin meaning “two+spotted,” may be derived from sigilla on the abdomen.

Distribution. Japan (Hokkaido, Honshu, Kyushu) and Russia (Sakhalin, Kamchatka).

Remark. Further descriptions, especially those of males see Oi (1960) and Chikuni (1989).

Tmeticus neserigonoides sp. nov.

[Japanese name: Nankin-nukagumo]

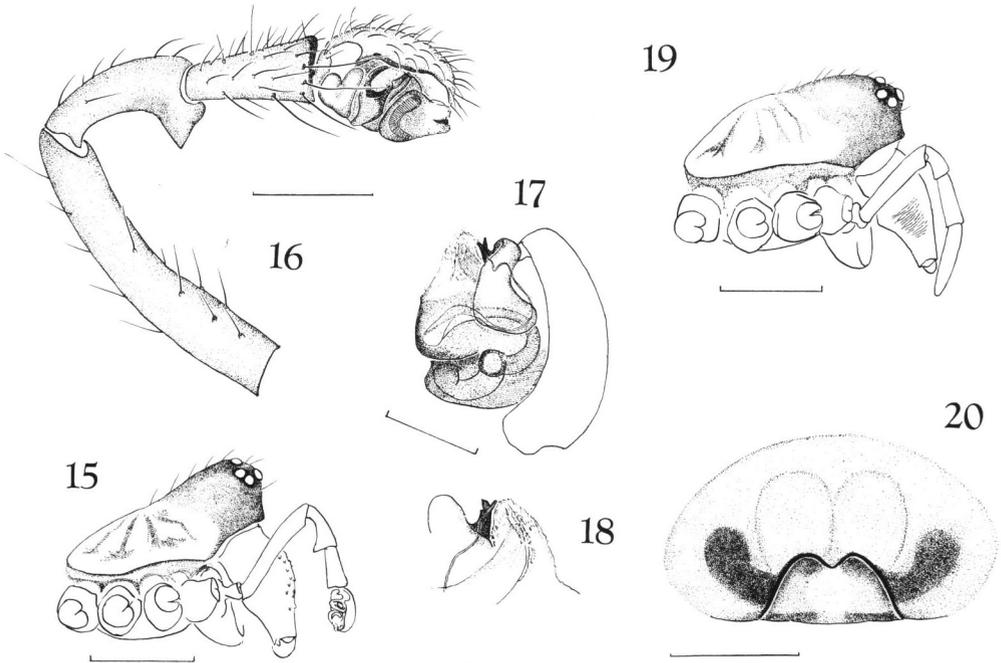
(Figs. 15–20)

Type specimens. Holotype: ♂, Yanagisawa-tôge Pass, Enzan-shi, Yamanashi Pref., 16–V–1991, H. Saito leg. (NSMT-Ar 4593); paratypes: 12 ♀, same data as for the holotype (NSMT-Ar 4594–4595); 4 ♀3 ♂, Dandouradani, Shitara-chô, Kitashitara-gun, Aichi Pref., 19–V–1991 & 16–V–1993, K. Ogata leg. (NSMT-Ar 4596–4597).

Description. Male (holotype). Body length 2.07 mm, prosoma length 0.93 mm, width 0.68 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.13 mm (0.83+1.07+0.79+0.44), II 2.94 mm (0.83+0.98+0.73+0.40), III 2.43 mm (0.71+0.77+0.61+0.34), IV 3.17 mm (0.93+1.02+0.83+0.39).

Prosoma: Thoracic part of carapace very light yellowish brown, strongly tinged with vermilion red, cephalic part front of cervical furrow yellowish brown, strongly tinged with black; head highly raised but without hump (Fig. 15); each eye with black ring, anterior median eyes much larger than the other eyes same in size, anterior eye-row straight, distance between anterior median eyes equal to the radius of the median eye, distance between anterior median eye and anterior lateral eye shorter than the radius of anterior median eye; posterior eye-row slightly procurved, distance between posterior median eyes equal to the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the diameter of posterior median eye; clypeus as long as the length of median ocular area. Sternum light yellowish brown, tinged with red, darker marginated, cordate and rounded in shape, convex. Chelicera very light yellowish brown, dorsally granulate, apically with a prolateral apophysis spiniform and furnished with a seta on its top; promargin of fang furrow indistinct and with several denticles scatteringly standing, retromargin with 3 teeth, of these the most distal one very large; legs very light yellowish brown, distance between coxae IV slightly shorter than the diameter of the coxa, the order of spines on the tibiae I–IV 2211, all metatarsi with a trichobothrium, Tm I ca. 0.59.

Male palp (Figs. 16–18): Coloration of the palp same as that of the head, light yellowish brown, tinged with black. Length of femur and patella in ratio 2 : 1, patella



Figs. 15–20. *Tmeticus neserigonoides* sp. nov., male holotype (NSMT-Ar 4593) from Yamanashi Pref. and a female paratype (NSMT-Ar 4594) from type locality. — 15, Male prosoma, lateral view; 16, male palp, retrolateral view; 17, bulb of male palp, prolateral view; 18, embolus of male palp, dorsal view; 19, female prosoma, lateral view; 20, epigynum, ventral view. [Scales: 15, 19, 0.5 mm; 16, 0.2 mm; 17–18, 20, 0.1 mm.]

as long as tibia, with a large hook-shaped ventral apophysis distally, tibia with 3 dorsal trichobothria; embolic division horsebean-shaped (reniform), distally slender and curved dorsad.

Opisthosoma light vermilion red, without any marking.

Female (a topotypical paratype, NSMT-Ar 4594): Body length 2.39 mm, prosoma length 1.05 mm, width 0.80 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.56 mm (1.02+1.22+0.83+0.49), II 3.27 mm (0.95+1.10+0.76+0.46), III 2.80 mm (0.83+0.90+0.68+0.39), IV 3.71 mm (1.10+1.22+0.93+0.46).

Prosoma lower than that of the male (Fig. 19), thoracic part of carapace orange, cephalic part (head) yellowish brown, strongly tinged with black, conditions of eye as same as in male, anterior median eye the largest and the other eyes same in size; clypeus shorter than the length of median ocular area. Coloration of chelicera as same as that of the head, promargin of fang furrow with 6 teeth, retromargin with 5 teeth.

Female genitalia (Fig. 20): Epigynum simple, wider than long, opening part

semicircular; spermathecae seem apart from the openings by canals.

Etymology. Specific name is derived from the name of a related genus *Neserigone* Eskov, 1992, because this new species apparently resemble some species of the genus, especially in the coloration.

Distribution. Japan (Honshu).

Remarks. This new species is closely related to *Tmeticus bipunctis* (Bösenberg et Strand, 1906) known from Japan and Russia but is distinguished from the latter species by its reddish coloration, having anterior median eyes larger than the other eyes, lacking a slender and projecting suprategular apophysis on male palpal bulb and by the shape of epigynum much wider.

***Tmeticus vulcanicus* sp. nov.**

[Japanese name: Miyakejima-nukagumo]

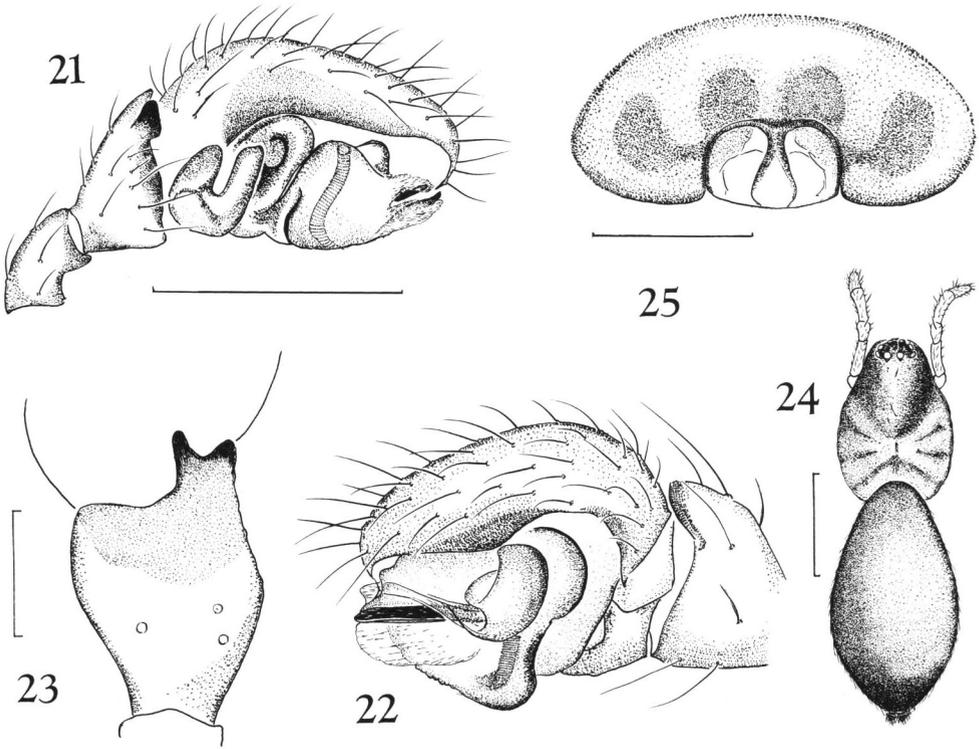
(Figs. 21–25)

Type specimens. Holotype: ♂, Mt. Oyama, Miyakejima Island, Izu Islands, 29–III–1985, H. Ono leg. (NSMT-Ar 4586); paratypes: 3 ♀ 2 ♂, same data as for the holotype (NSMT-Ar 4587–4588); 1 ♀, Maioka-chô, Totsuka-ku, Yokohama-shi, Kanagawa Pref., Japan, 6–IX–1986, S. Tazoe leg. (NSMT-Ar 4589).

Description. Male (holotype). Body length 1.51 mm, prosoma length 0.63 mm, width 0.49 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.01 mm (0.59+0.63+0.46+0.33), II 1.87 mm (0.54+0.61+0.43+0.29), III 1.62 mm (0.46+0.51+0.39+0.26), IV 2.12 mm (0.61+0.71+0.51+0.29).

Prosoma: Thoracic part of carapace light yellowish brown, tinged with black, radiating lines darker and distinct; cephalic part very dark, blackish, relatively raised; each eye with black ring, anterior eye-row almost straight, distance between anterior median eyes almost equal to the diameter of the median eye, distance between anterior median eye and anterior lateral eye equal to the radius of anterior median eye; posterior eye-row slightly procurved, posterior eyes same in size, distance between posterior median eyes equal to the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the diameter of posterior median eye; clypeus slightly shorter than the length of median ocular area. Sternum blackish brown, cordate and rounded. Chelicera light yellowish brown, retro-laterally with stridulating files, promargin of fang furrow with 5 teeth, retromargin with 4 teeth; legs very light yellowish brown, distance between coxae IV slightly longer than the diameter of the coxa, the order of spines on the tibiae I–IV 2211, all metatarsi with a trichobothrium, respectively, Tm I ca. 0.54.

Male palp (Figs. 21–23): Length of femur and patella in ratio 3 : 1, patella without hook-shaped ventral apophysis at the apical margin, tibia longer than patella, with 3 dorsal trichobothria and a dorsal apophysis distally bifid; basal part of the embolic division rounded and horsebean-shaped (reniform), embolus clavate, apically nar-



Figs. 21–25. *Tmeticus vulcanicus* sp. nov., male holotype (NSMT-Ar 4586) from Miyakejima Island and a female paratype (NSMT-Ar 4587) from type locality. — 21, Male palp, retrolateral view; 22, male palp, prolateral view; 23, tibia of male palp, dorsal view; 24, female body, dorsal view; 25, epigynum, ventral view. [Scales: 21–22, 0.2 mm; 23, 0.05 mm; 24, 0.5 mm; 25, 0.1 mm.]

rowed and blunt.

Opisthosoma greyish black, caudally black.

Female (a toptypical paratype, NSMT-Ar 4587): Body length 1.88 mm, prosoma length 0.76 mm, width 0.57 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.17 mm (0.61+0.73+0.49+0.34), II 2.07 mm (0.61+0.68+0.46+0.32), III 1.75 mm (0.51+0.56+0.41+0.27), IV 2.31 mm (0.67+0.76+0.55+0.33).

General appearance and coloration (Fig. 24) as same as those of the male.

Female genitalia (Fig. 25): Epigynum oval, wider than long, opening part also ovate with a parting strip (median septum) posteriorly wider.

Etymology. Specific name from Latin meaning “volcanic.” Mt. Oyama on Miyakejima Island, the type locality of this new species, is still active (the most recent eruption was observed in the year 2000).

Distribution. Japan (Honshu).

Remark. Diagnostic characters as in the remarks of the following species.

***Tmeticus nigerrimus* sp. nov.**

[Japanese name: Miyama-kuro-nukagumo]

(Figs. 26–31)

Type specimens. Holotype: ♀, Unryû-keikoku Valley, Nikkô-shi, Tochigi Pref., Honshu, Japan, 25–V–1984, H. Saito leg. (NSMT-Ar 4590); paratypes: 22 ♀2 ♂, same data as for the holotype (NSMT-Ar 4591–4592).

Other specimens examined. 2 ♀, Chikaribetsu-gawa River, Kamikawa-gun, Hokkaido, 2–VIII–1981, N. Yasuda leg., many ♀, Kumono-daira, Daisetsuzan Mts., Kamikawa-gun, Hokkaido, 16–VII–1980, N. Yasuda leg., 4 ♀2 ♂, Akaishi-gawa River, Daisetsuzan Mts., Kamikawa-gun, Hokkaido, 13–VIII–1985 & 23–VIII–1986, N. Yasuda leg., 2 ♀, Rikumanbetsu-gawa River, Daisetsuzan Mts., Kamikawa-gun, Hokkaido, 3–VIII–1977, N. Yasuda leg., 2 ♀, Hokkai-zawa River, Daisetsu Mts., Kamikawa-gun, Hokkaido, 6–8–VIII–1978, N. Yasuda leg., 1 ♀1 ♂, Fujisato, Akita-shi, Akita Pref., 15–VIII–1994, A. Fukushima leg.

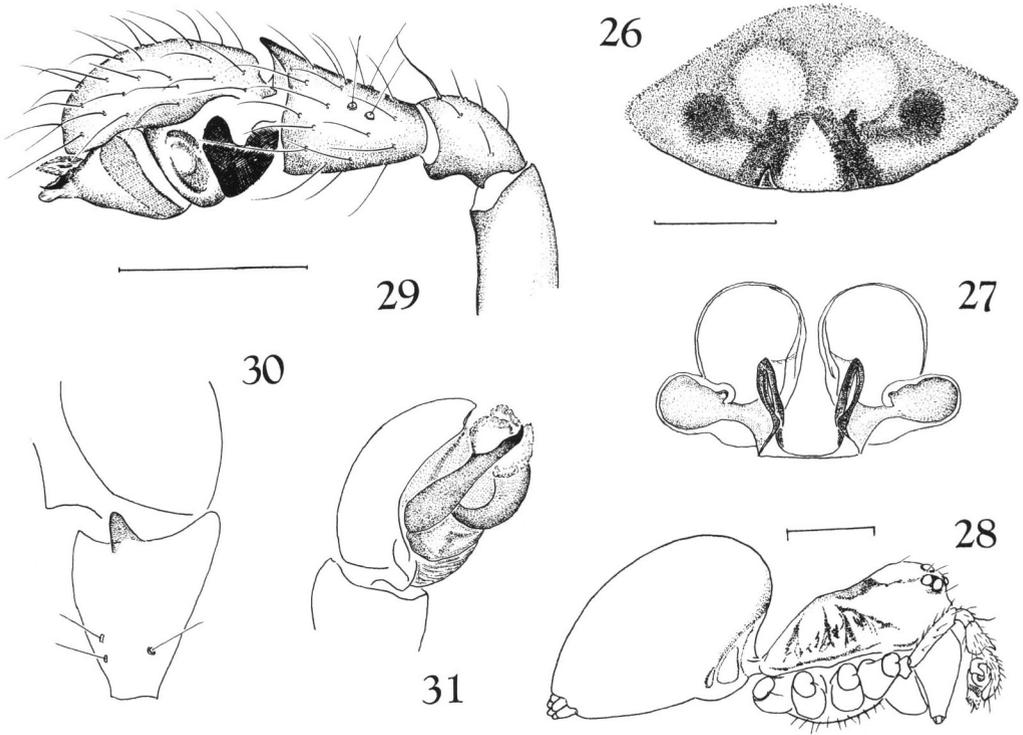
Description. Female (holotype). Body length 2.32 mm, prosoma length 1.10 mm, width 0.81 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.07 mm (0.88+1.02+0.68+0.49), II 2.95 mm (0.85+0.98+0.66+0.46), III 2.60 mm (0.73+0.84+0.59+0.44), IV 3.25 mm (0.93+1.10+0.76+0.46).

Prosoma: Carapace light yellowish brown, tinged with black, radiating lines and median furrow darker and distinct; head relatively raised with a bristle near the peak; each eye with black ring, anterior eye-row straight, distance between anterior median eyes shorter than the radius of the median eye, distance between anterior median eye and anterior lateral eye equal to the radius of anterior median eye; posterior eye-row slightly recurved, posterior eyes same in size and equidistant, distances between these eyes slightly shorter than the radius of posterior median eye; clypeus shorter than the length of median ocular area, slightly depressed in front of anterior median eyes. Sternum blackish brown, cordate and convex. Chelicera light yellowish brown, tinged with red, retrolaterally with indistinct stridulating files, promargin of fang furrow with 5 teeth, retromargin with 4 teeth; legs yellowish brown, distance between coxae IV slightly shorter than the diameter of the coxa, the order of spines on the tibiae I–IV 2211, Tm IV present, Tm I ca. 0.60.

Opisthosoma black, with 2 pairs of sigilla.

Female genitalia (Figs. 26–27). Epigynum wider than long, with a pair of incisions to interomittent orifices; spermathecae ovate.

Male (a topotypical paratype, NSMT-Ar 4591): Body length 1.95 mm, prosoma length 0.90 mm, width 0.68 mm; lengths of legs (palp omitted) [total length (femur+



Figs. 26–31. *Tmeticus nigerrimus* sp. nov., female holotype (NSMT-Ar 4590) from Tochigi Pref. and a male paratype (NSMT-Ar 4591) from type locality. — 26, Epigynum, ventral view; 27, internal organ of female genitalia, dorsal view; 28, male body, lateral view; 29, male palp, retrolateral view; 30, tibia of male palp, dorsal view; 30, tarsus of male palp, prolateral view. [Scales: 26–27, 0.1 mm; 28, 0.5 mm; 29–31, 0.2 mm.]

patella and tibia+metatarsus+tarsus]): I 2.64 mm (0.76+0.85+0.59+0.44), II 2.50 mm (0.71+0.81+0.54+0.44), III 2.15 mm (0.61+0.68+0.49+0.37), IV 2.69 mm (0.76+0.88+0.61+0.44).

General appearance and coloration similar to those of the female. Head higher than that of female (Fig. 28), sulci absent, ocular area sparsely covered with short hairs; each eye with a thin, black ring, anterior eye-row straight, distance between anterior median eyes equal to the diameter of the median eye, distance between anterior median and anterior lateral eye equal to the radius of the median eye, posterior eye-row also almost straight, distance between posterior median eyes equal to their radius, distance between posterior median eye and posterior lateral eye shorter than the radius of the median eye; the order of spines on the tibiae I–IV 2211, each spine longer than the diameter of the tibia, Tm IV present, Tm I 0.58.

Male palp (Figs. 29–31): Length of femur and patella in ratio 23 : 10, patella

without hook-shaped ventral apophysis at the apical margin, tibia longer than patella, with 3 dorsal trichobothria and a dorsal apophysis dentiform and strongly sclerotized; embolic division wide and rounded at the base, narrowed distally; embolus spiniform, pointed, slightly curved and extending dorsad.

Etymology. Specific name is the superlative degree of a Latin adjective meaning "black," derived from the coloration of the spider.

Distribution. Japan (Hokkaido, Honshu).

Remarks. This new species is closely related to *Tmeticus vulcanicus* sp. nov., but is distinguished from the latter by the shape of tibial apophysis (cf. Figs. 23 and 30), bulb and embolic division of male palp (cf. Figs. 22 and 31) and the structure of female genitalia (cf. Figs. 25 and 26). Only with coloration of the body both species can also be easily distinguishable.

Genus *Gongylidioides* Oi, 1960

[Japanese name: Zukin-nukagumo]

Gongylidioides galeritus sp. nov.

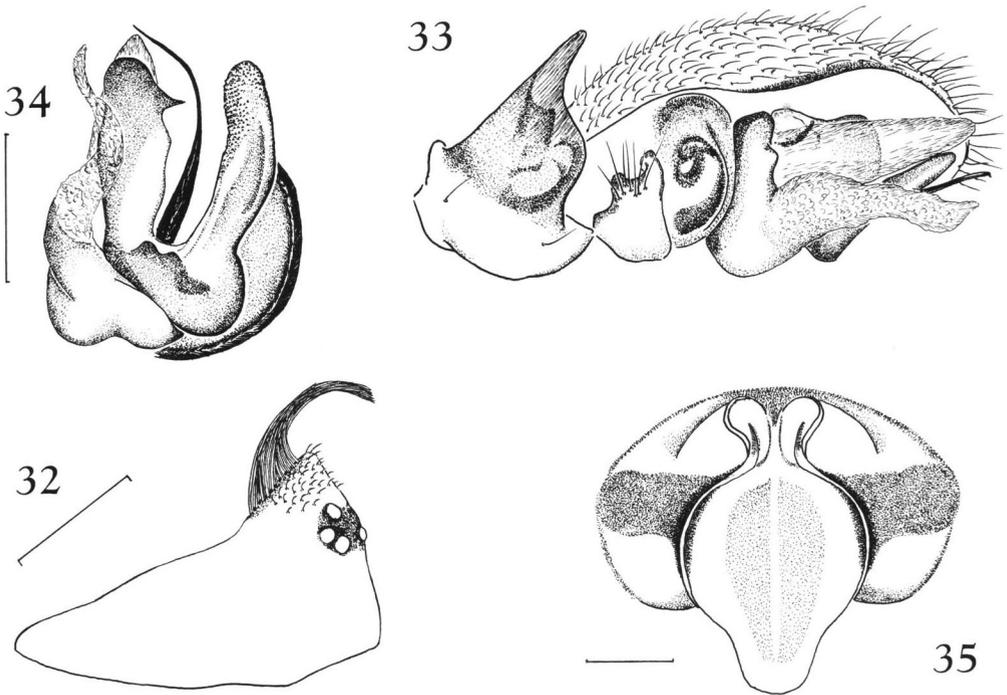
[Japanese name: Chonmage-zukin-nukagumo]

(Figs. 32–35)

Type specimens. Holotype: ♂, Mt. Kiyosumi-yama, Chiba Pref., Honshu, Japan, 22–V–1983, K. Kato leg. (NSMT-Ar 4243); paratypes: 1 ♂, same data as for the holotype (NSMT-Ar 4244), 8 ♀4 ♂, same locality and collector as for the holotype, 26–VI–1976, 18–VI–1983 (NSMT-Ar 4245–4249), 1 ♀1 ♂, Dôshi-mura, Minamitsuru-gun, Yamanashi Pref., 14–VI–1977, K. Kumada leg. (NSMT-Ar 4250–4251), 1 ♂, Fudakake, Kiyokawa-mura, Aikô-gun, Kanagawa Pref., 26–V–1981, K. Kumada leg. (NSMT-Ar 4252), 1 ♀, Mt. Sekirô-zan, Tsukui-gun, Kanagawa Pref., 5–VI–1977, K. Kumada leg. (NSMT-Ar 4253).

Description. Male (holotype): Body length 2.88 mm, prosoma length 1.38 mm, width 1.05 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 5.01 mm (1.45+1.58+1.25+0.73), II 4.44 mm (1.28+1.45+1.13+0.58), III 3.76 mm (1.10+1.23+0.93+0.50), IV 4.86 mm (1.43+1.58+1.25+0.60).

Prosoma: Carapace yellowish brown, radiating lines, cervical furrow and median furrow distinct and blackish, basal part of head marginated widely with light yellow, head highly raised with a tuft of long setae (Fig. 32); eyes with black ring, anterior eye-row procurved, distance between anterior median eyes equal to diameter of anterior median eye, distance between anterior median eye and anterior lateral eye slightly wider than diameter of anterior median eye; posterior eye-row procurved, distance between posterior median eyes twice as wide as diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to diameter of posterior median eye; clypeus wide, twice as long as the length of median ocu-



Figs. 32–35. *Gongylioides galeritus* sp. nov., male holotype (NSMT-Ar 4243) from Chiba Pref. and a female paratype (NSMT-Ar 4250) from Yamanashi Pref. — 32, Male carapace, lateral view; 33, male palp, retrolateral view; 34, embolic division of male palp, ventral view; 35, epigynum, ventral view. [Scales: 32, 0.5 mm; 33–34, 0.2 mm; 35, 0.1 mm.]

lar area. Sternum brown, widely margined with black, cordate and convex, posterior edge truncated. Chelicera yellowish brown tinged with red, dorsally with several long hairs, stridulating files absent, promargin of fang furrow with 5 teeth, retromargin with 4 denticles; legs yellowish brown, distance between coxae IV slightly narrower than the diameter of coxa, the order of spines on the tibiae I–IV 2211, Tm IV present, Tm I ca. 0.73.

Male palp (Figs. 33–34): Length of femur and patella in ratio 7 : 3, tibia robust; bulb with suprategular apophysis, embolic division in two large branches, projecting embolus situated between both the branches, whip-shaped, strong and curved.

Opisthosoma ovate, yellowish milk-white, with a pair of irregular vertical stripes.

Female (a paratype from Dôshi-mura, Yamanashi Pref., NSMT-Ar 4250): Body length 2.75 mm, prosoma length 1.25 mm, width 0.88 mm; lengths of palp and legs [total length (femur+patella and tibia+metatarsus+tarsus)]: palp 2.71 mm (0.88+0.90+—+0.93); leg I 4.30 mm (1.20+1.45+1.05+0.60), II 3.88 mm (1.13+1.25+

0.97+0.53), III 3.37 mm (0.98+1.08+0.85+0.46), IV 4.41 mm (1.25+1.45+1.13+0.58).

Head not strongly raised as in male, without hair tuft, distance between anterior median eyes slightly shorter than the diameter of anterior median eye, distance between anterior median eye and anterior lateral eye almost equal to the diameter of anterior median eye, posterior eye-row almost straight, distance between posterior median eyes one and a half times the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the diameter of posterior median eye, clypeus not wide as in male, only slightly longer than the length of median ocular area; chelicera with 6 teeth on promargin of fang furrow, 5 teeth on retromargin; two dorsal trichobothria on palpal tibia; Tm I ca. 0.78; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Fig. 35): Epigynum with a large scapiform dorsal plate at the middle, the plate longer than wide.

Etymology. Specific name from Latin meaning “wearing a farmer’s cap,” derived from the shape of male head.

Distribution. Japan (Honshu).

Remarks. Females of this new species closely resemble those of the type species of the genus, *Gongylidioides cucullatus* Oi, 1960, from Japan. However, both the species are distinguishable from each other in the structure of male palp. Although male palps of known species of the genus including new species to be described in following pages resemble one another, details of embolic division of these species are respectively unique. Besides, males are easily distinguishable by the shape of head.

***Gongylidioides monocornis* sp. nov.**

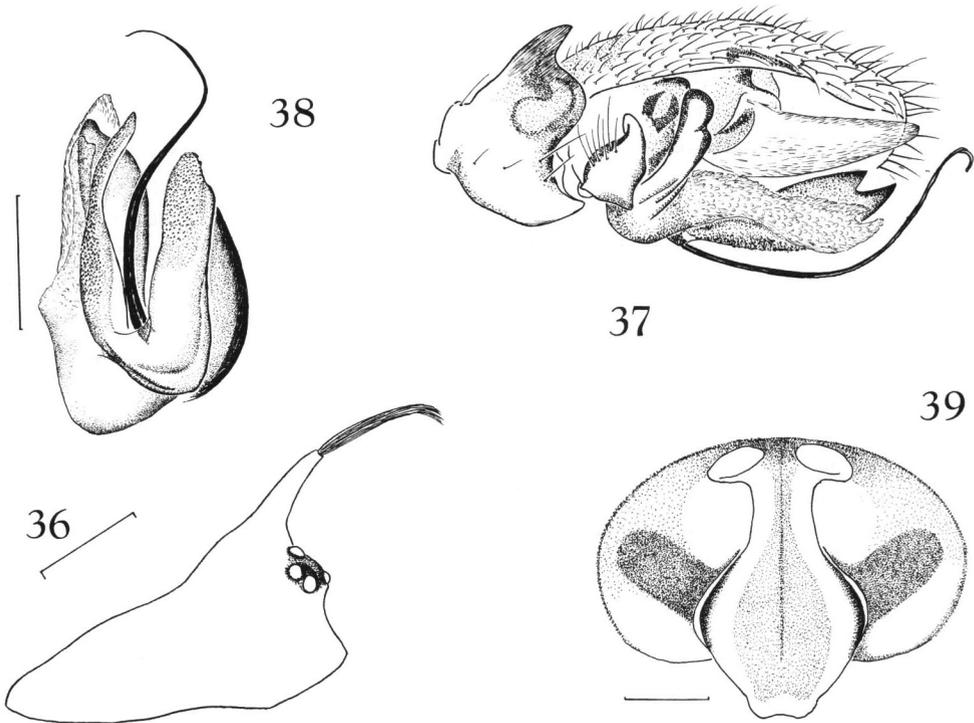
[Japanese name: Ikkaku-zukin-nukagumo]

(Figs. 36–39)

Type specimens. Holotype: ♂, Mt. Akagi-san, Gunma Pref., Honshu, Japan, 16–VI–1979, H. Saito leg. (NSMT-Ar 4257); paratypes: 1 ♀, same data as for the holotype (NSMT-Ar 4258), 1 ♀, same locality as for the holotype, 17–VI–1979, T. Hayashi leg. (NSMT-Ar 4259), 2 ♀, Nikkô-shi, Tochigi Pref., 27–VIII–1974, H. Saito leg. (NSMT-Ar 4260), 1 ♀ 1 ♂, Onikôbe-tôge, Ogachi-gun, Akita Pref., 2–VI–1995, A. Fukushima leg. (NSMT-Ar 4261).

Description. Male (holotype): Body length 2.88 mm, prosoma length 1.50 mm, width 1.13 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 4.78 mm (1.38+1.40+1.25+0.75), II 4.36 mm (1.25+1.38+1.08+0.65), III 3.71 mm (1.03+1.20+0.98+0.50), IV 4.79 mm (1.38+1.53+1.25+0.63).

Prosoma: Carapace yellowish brown tinged with red, head corniculate, a tuft of thick and long bristles present on the tip of horn (Fig. 36); eyes with black ring, ante-



Figs. 36–39. *Gongylidioides monocornis* sp. nov., male holotype (NSMT-Ar 4257) from Gunma Pref. and a female paratype (NSMT-Ar 4258) from type locality. — 36, Male carapace, lateral view; 37, male palp, retrolateral view; 38, embolic division of male palp, ventral view; 39, epigynum, ventral view. [Scales: 36, 0.5 mm; 37–38, 0.2 mm; 39, 0.1 mm.]

rior eye-row relatively procurved, distance between anterior median eyes equal to diameter of anterior median eye, distance between anterior median eye and anterior lateral eye also equal to the diameter of anterior median eye; posterior eye-row slightly recurved, distance between posterior median eyes 1.5 times as wide as diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to the half of diameter of posterior median eye; clypeus 1.5 times as wide as the length of median ocular area. Sternum yellowish brown tinged with black, cordate. Chelicera without stridulating files, pro- and retromargins of fang furrow with 5 teeth, respectively; legs yellowish brown, distance between coxae IV slightly narrower than the diameter of coxa, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.77.

Male palp (Figs. 37–38): Length of femur and patella in ratio 5 : 2, tibia robust; embolus filiform, very thin and long.

Opisthosoma ovate, greyish white, with blackish grey, irregular patches.

Female (a topotypical paratype; NSMT-Ar 4258): Body length 2.32 mm, proso-

ma length 1.04 mm, width 0.88 mm; lengths of palp and legs [total length (femur+patella and tibia+metatarsus+tarsus)]: palp 1.34 mm (0.43+0.43+—+0.48); leg I 4.23 mm (1.20+1.38+1.05+0.60), II 3.94 mm (1.14+1.30+0.95+0.55), III 3.51 mm (1.00+1.13+0.88+0.50), IV 4.49 mm (1.28+1.48+1.15+0.58).

Head not corniculate, the postocular part furnished with three straight, thick and long bristles; anterior eye-row slightly procurved, distance between anterior median eye and anterior lateral eye almost equal to the half of diameter of anterior median eye, posterior eye-row slightly procurved, distance between posterior median eyes equal to the diameter of posterior median eye; sternum yellowish brown tinged with black, widely margined with black, chelicera with 6 teeth on promargin of fang furrow, 5 teeth on retromargin; Tm I ca. 0.77; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Fig. 39): Basal part of “scape”-shaped dorsal plate longer than those of relative species.

Etymology. Specific name from Latin meaning “with a single horn” derived from the shape of male head.

Distribution. Japan (Honshu).

Remarks. This species is readily distinguishable from relatives by its unique, corniculate head of males, filiform embolus of male palp and the long basal part of the epigynal scape (dorsal plate) of females.

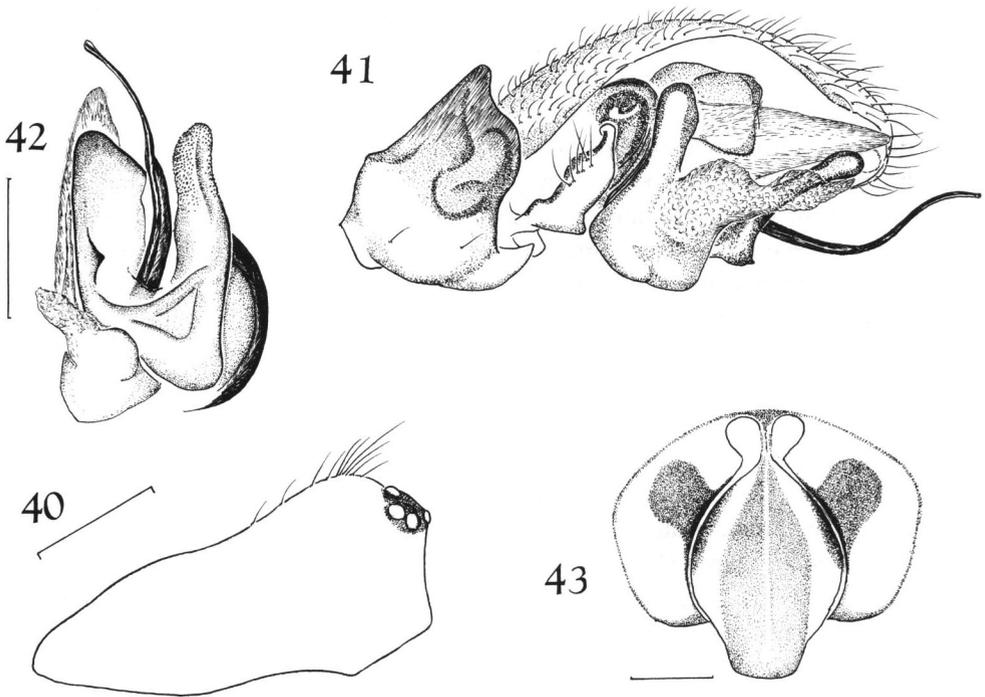
***Gongylidioides communis* sp. nov.**

[Japanese name: Nami-zukin-nukagumo]

(Figs. 40–43)

Type specimens. Holotype: ♂, Nikkô-shi, Tochigi Pref., Honshu, Japan, 2–VII–1983, A. D. Blest leg. (NSMT-Ar 4254); paratypes: 7 ♀ 7 ♂, same data as for the holotype (NSMT-Ar 4255–4256).

Other specimens examined. 1 ♀ 3 ♂, Tomakomai-shi, Hokkaido, 15–VII–1983, N. Tsurusaki leg., 3 ♀ 3 ♂, Mt. Hakodate-yama, Hakodate-shi, Hokkaido, 10–VII–1980, K. Kumada leg., 5 ♀ 4 ♂, Aobajô-kôen Park, Sendai-shi, Miyagi Pref., Honshu, 26–V–1983, A. D. Blest leg., 1 ♂, Hasama-chô, Tome-gun, Miyagi Pref., 15–VI–1986, A. Tanikawa leg., 1 ♂, Mt. Takadate-yama, Mashiko-chô, Haga-gun, Tochigi Pref., 9–VI–1979, H. Saito leg., 1 ♀, Takahagi-shi, Ibaragi Pref., 26–VI–1989, Y. Suganami leg., 2 ♀, Kawaguchi-ko Lake, Yamanashi Pref., 12–VI–1983, A. D. Blest leg., 2 ♀, Yanagisawa-tôge, Enzan-shi, Yamanashi Pref., 30–VIII–1981, S. Matsumoto leg., 2 ♀, Kyoto-shi, Kyoto Pref., 18–VI–1983, A. D. Blest leg., 6 ♀, Oochi-dani, Tottori-shi, Tottori Pref., 28–V–1987, N. Tsurusaki leg., 1 ♀ 1 ♂, Takano-chô, Hiba-gun, Hiroshima Pref., 31–V–1997, M. Ogawa leg., 1 ♀ 1 ♂, Shitomiya, Hiba-gun, Hiroshima Pref., 16–V–1997, M. Ogawa leg., 1 ♀, Terabara, Chiyoda-chô, Yamagata-gun, Hiroshima Pref., 4–VII–1988, Y. Ihara leg., 2 ♂, Ushitayama, Higashi-ku, Hi-



Figs. 40–43. *Gongylioides communis* sp. nov., male holotype (NSMT-Ar 4254) from Tochigi Pref. and a female paratype (NSMT-Ar 4255) from type locality. — 40, Male carapace, lateral view; 41, male palp, retrolateral view; 42, embolic division of male palp, ventral view; 43, epigynum, ventral view. [Scales: 40, 0.5 mm; 41–42, 0.2 mm; 43, 0.1 mm.]

roshima-shi, Hiroshima Pref., 30–V–1988, Y. Ihara leg., 1 ♂, Kamagari-chô. Aki-gun, Hiroshima Pref., 7–V–1995, M. Ogawa leg., 4 ♀, Mt. Iwakuro-yama, Mts. Ishizuchi-san, Ehime Pref., Shikoku, 5–VIII–1982, N. Tsurusaki leg., 4 ♂, Mt. Hikosan, Fukuoka Pref., Kyushu, 27–31–V–1959, C. Okuma leg., 3 ♀ 1 ♂, Itsuki-mura, Kumagun, Kumamoto Pref., 5–V–1985, T. Irie leg., 1 ♂, Mts. Aso, Kumamoto Pref., 1–VI–1975, T. Irie leg., 1 ♂, Mt. Some-dake, Hondo-shi, Amakusa Peninsula, Kumamoto Pref., 29–IV–1979, T. Irie leg., 3 ♀ 1 ♂ 1 juv. ♂, Oita-shi, Oita Pref., 19–XI–1978, N. Kikuya leg., 2 ♀ 2 juv. ♀ 1 juv. ♂, Mie-chô, Ono-gun, Oita Pref., 4–XI, 4–XII–1978 & 15–V–1979, N. Kikuya leg., 1 ♂, Taketa-shi, Oita Pref., 2–XI–1978, N. Kikuya leg., 2 ♀ 1 ♂, Ebino-Kôgen, Miyazaki Pref., R. Hamada leg., Coll. R. Oi, 2 ♀, Mt. Okueyama, Higashi-usuki-gun, Miyazaki Pref., 3–V–1965, K. Matsuyama leg., Coll. T. Yaginuma.

Description. Male (holotype): Body length 3.13 mm, prosoma length 1.50 mm, width 1.13 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 4.78 mm (1.35+1.50+1.05+0.88), II 4.55 mm (1.27+1.45+1.05+0.78),

III 3.86 mm (1.08+1.23+0.90+0.65), IV 4.98 mm (1.38+1.60+1.25+0.75).

Prosoma: Carapace yellowish brown, head strongly tinged with red, highly raised but not projecting, with long hairs on the tip (Fig. 40); eyes with black ring, anterior eye-row straight, distance between anterior median eyes equal to diameter of anterior median eye, distance between anterior median eye and anterior lateral eye almost equal to the half of diameter of anterior median eye; posterior eye-row also straight, distance between posterior median eyes slightly narrower than the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to the half of diameter of posterior median eye; clypeus wide, width of clypeus twice as wide as the length of median ocular area. Sternum cordate, convex, dark yellowish brown tinged with red. Chelicera dark reddish brown, stridulating files absent, promargin of fang furrow with 6 teeth, retromargin with 5 teeth; legs yellowish brown, distance between coxae IV equal to the diameter of coxa, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.78.

Male palp (Figs. 41–42): Length of femur and patella in ratio 22 : 9, tibia robust; a small spiniform apophysis present in the basal part of retrolateral branch of the embolic division, embolus thick and long, not much twisted and curved at the middle.

Opisthosoma ovate, yellowish white, with a pair of irregular vertical stripes.

Female (a topotypical paratype; NSMT- 4255): Body length 3.17 mm, prosoma length 1.46 mm, width 0.98 mm; lengths of palp and legs [total length (femur+patella and tibia+metatarsus+tarsus)]: palp 1.40 mm (0.43+0.44+—+0.53); leg I 4.76 mm (1.33+1.55+1.08+0.80), II 4.38 mm (1.25+1.45+1.00+0.68), III 3.71 mm (1.08+1.15+0.93+0.55), IV 4.79 mm (1.38+1.55+1.18+0.68).

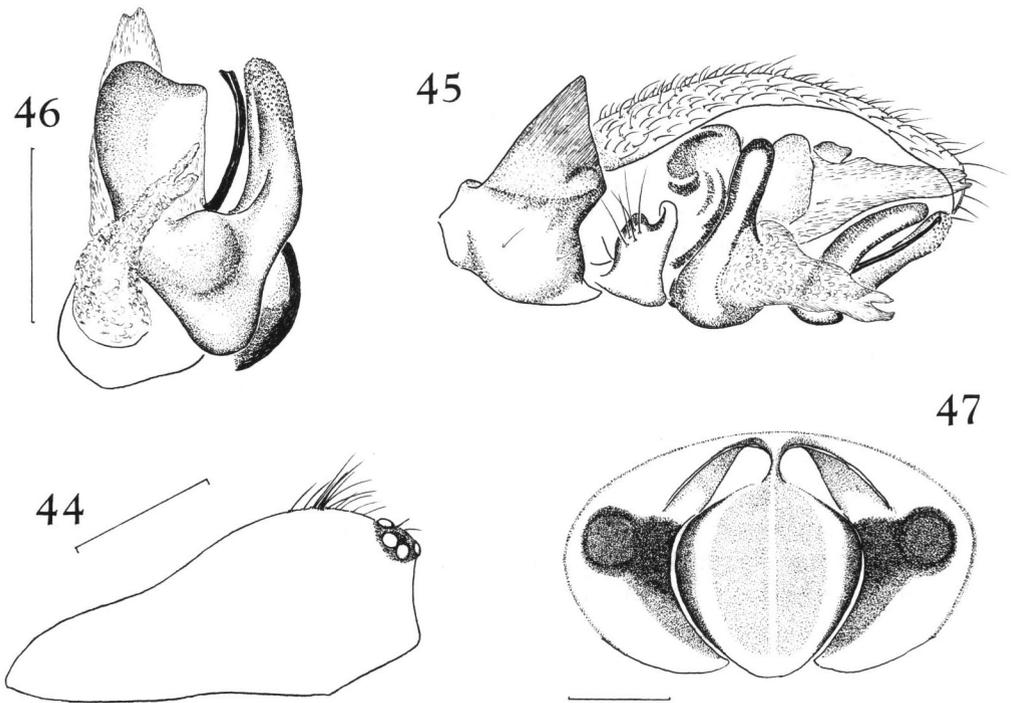
Head not strongly raised as in male, distance between anterior median eyes slightly narrower than the diameter of anterior median eye, distance between anterior median eye and anterior lateral eye slightly narrower than the diameter of anterior median eye; sternum brown, marginated with black, Tm I ca. 0.76; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Fig. 43): Epigynum as long as wide, scapiform dorsal plate longer than wide, laterally not much expanded.

Etymology. Specific name from Latin meaning “common.” This species shows the widest distributional range in the Japanese species of the genus, being distributed from Hokkaido in the north to Kyushu in the south.

Distribution. Japan (Hokkaido, Honshu, Shikoku and Kyushu).

Remarks. This new species closely resembles *Gongylioides kaihotsui* sp. nov., but the embolus of male palp of the new one is much longer than that of the latter species (cf. Figs. 41 and 45), and the dorsal plate of female genitalia is much longer than that of the latter (cf. Figs. 43 and 47).



Figs. 44–47. *Gongyldioides kaihotsui* sp. nov., male holotype (NSMT-Ar 4262) from Mie Pref. and a female paratype (NSMT-Ar 4263) from type locality. — 44, Male carapace, lateral view; 45, male palp, retrolateral view; 46, embolic division of male palp, ventral view; 47, epigynum, ventral view. [Scales: 44, 0.5 mm; 45–46, 0.2 mm; 47, 0.1 mm.]

***Gongyldioides kaihotsui* sp. nov.**

[Japanese name: Kaihotsu-zukin-nukagumo]

(Figs. 44–47)

Type specimens. Holotype: ♂, Mt. Fujiwara-dake, Fujiwara-chô, Inabe-gun, Mie Pref., 27–VII–1977, K. Kaihotsu leg. (NSMT-Ar 4262); paratypes: 2 ♀, same data as for the holotype (NSMT-Ar 4263–4264), 1 ♂, Kawach-dani, Fujiwara-chô, Inabe-gun, Mie Pref., Honshu, Japan, 19–VI–1977, K. Kaihotsu leg. (NSMT-Ar 4265), 1 ♀1 ♂, Kokurumi-dani, Fujiwara-chô, Inabe-gun, Mie Pref., 13–VIII–1978 & 24–VI–1979, K. Kaihotsu leg. (NSMT-Ar 4266–4267).

Other specimens examined. 1 ♂, Toyoshina-chô, Minamiazumi-gun, Nagano Pref., Honshu, 24–VII–1983, Y. Chikuni leg., 1 ♀, Toyota-shi, Aichi Pref., 5–V–1986, K. Ogata leg., 1 ♀1 ♂, Mt. Hôrai-ji-san, Hôrai-chô, Minamishitara-gun, Aichi Pref., 26–29–VI–1991, K. Ogata leg., 5 ♀2 ♂, Kada, Shitara-chô, Kitashitara-gun, Aichi Pref., 12–VI–1994, K. Ogata leg.

Description. Male (holotype): Body length 2.88 mm, prosoma length 1.32 mm, width 1.03 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 5.29 mm (1.55+1.63+1.33+0.78), II 4.76 mm (1.40+1.48+1.18+0.70), III 3.80 mm (1.13+1.20+0.94+0.53), IV 5.00 mm (1.45+1.60+1.30+0.65).

Prosoma: Carapace yellowish brown, radiating lines, cervical grooves and median furrow distinct and blackish, head highly raised, its tip furnished with thick and long bristles (Fig. 44) but not projecting nor cuniculate as in *Gongylidioides galeritus* and *G. cmonocornis*; eyes with black ring, anterior eye-row slightly procurved, distance between anterior median eyes wider than the half of diameter of anterior median eye, distance between anterior median eye and anterior lateral eye equal to the half of diameter of anterior median eye; posterior eye-row almost straight, distance between posterior median eyes equal to the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye slightly wider than the half of diameter of posterior median eye; clypeus wide, 1.5 times as long as the length of median ocular area. Sternum yellowish brown tinged with black, widely margined with black. Chelicera without stridulating files, promargin of fang furrow with 6 teeth, retromargin with 5 teeth; legs yellowish brown, distance between coxae IV equal to the diameter of coxa, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.74.

Male palp (Figs. 45–46): Tibia robust; retrolateral branch of embolic division wide, without a sclerotized, spiniform apophysis at the base as in *Gongylidioides communis* sp. nov., embolus relatively short.

Opisthosoma ovate, greyish white, with two pairs of irregular, blackish grey patches.

Female (a topotypical paratype, NSMT-Ar 4263): Body length 3.05 mm, prosoma length 1.22 mm, width 0.90 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 4.49 mm (1.28+1.43+1.03+0.75), II 4.01 mm (1.18+1.30+0.95+0.58), III 3.51 mm (0.93+1.03+0.83+0.45), IV 4.36 mm (1.25+1.40+1.08+0.63).

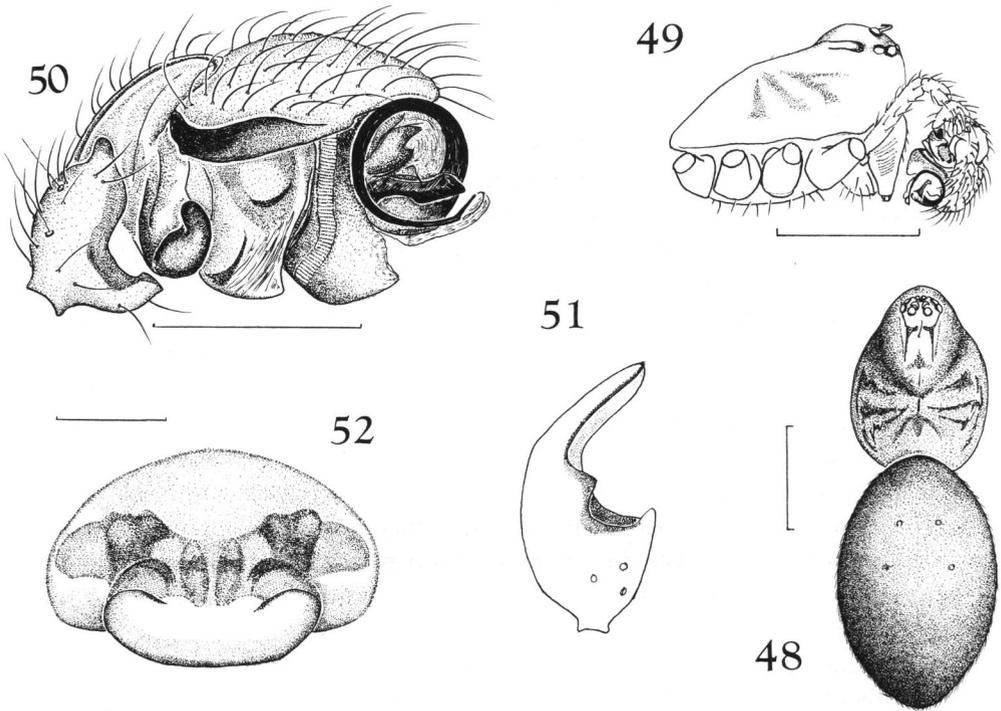
Head not strongly raised as in male; Tm I ca. 0.85; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Fig. 47): Epigynum much wider than long; dorsal plate short, as long as wide.

Etymology. This species is dedicated to Mr. Kenji Kaihotsu, Mie, the collector of type material used for the description of the new species.

Distribution. Japan (Honshu).

Remarks. This species is closely related to *Gongylidioides communis* sp. nov. on the basis of the structure of male palpal organ, but differs from the latter by shorter embolus and absence of spiniform apophysis on the retrolateral branch of embolic division. The epigynum of this new species is similar in appearance to that of *Gongylidioides cucullatus* Oi, 1960, but the dorsal plate of this new species is circular and



Figs. 48–52. *Walckenaeria ichifusaensis* sp. nov., male holotype (NSMT-Ar 4269) from Kumamoto Pref. and a female paratype (NSMT-Ar 4270) from type locality — 48, Male body, dorsal view; 49, male prosoma, lateral view; 50, male palp, retrolateral view; 51, tibia of male palp, dorsal view; 52, epigynum, ventral view. [Scales: 48–49, 0.5 mm; 50–51, 0.2 mm; 53, 0.1 mm.]

much wider than that of the latter.

Genus *Walckenaeria* Blackwall, 1833

[Japanese name: Tsuno-nukagumo-zoku]

Walckenaeria ichifusaensis sp. nov.

[Japanese name: Ichifusa-chobihige-nukagumo]

(Figs. 48–52)

Type specimens. Holotype: ♂, Mt. Ichifusa-yama, Mizukami-mura, Kumagun, Kumamoto Pref., Japan, 27–X–1985, T. Tanabe leg. (NSMT-Ar 4269); paratypes: 2 ♀, same data as for the holotype (NSMT-Ar 4270–4271).

Description. Male (holotype): Body length 2.10 mm, prosoma length 0.93 mm, width 0.71 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+]

tarsus]): I 2.71 mm (0.78+0.93+0.59+0.41), II 2.51 mm (0.73+0.88+0.51+0.39), III absent, IV 2.86 mm (0.78+0.98+0.66+0.44).

Prosoma: Carapace blackish brown, radiating lines and median furrow distinct and much blackish, head globular and raised with posterior median eyes on its top, a pair of penicillate apophyses present between posterior median eyes, sulci present behind the posterior lateral eyes, and the attached grooves extending to the posterior margin of the globe of head (Figs. 48–49); eyes with black ring, anterior eye-row slightly procurved, anterior median eyes close to each other, distance between anterior median eye and anterior lateral eye slightly narrower than the diameter of anterior median eye; posterior eye-row procurved, posterior eyes same in size, distance between eyes equal to the diameter of posterior median eye; length of clypeus equal to the length of median ocular area. Sternum light chestnut brown, slightly longer than wide. Chelicera yellowish brown tinged with red, distinct stridulating files present, pro- and retromargins of fang furrow with 4 teeth, respectively; legs yellowish brown, distance between coxae IV narrower than the diameter of the coxa, tibiae without spines, Tm IV present, Tm I ca. 0.36.

Male palp (Figs. 50–51): Length of femur and patella in ratio 2 : 1, tibia longer than patella, dorsally with 3 trichobothria; embolic division not very large, embolus coiled.

Opisthosoma ovate, blackish grey, with a pair of sigilla (Fig. 48).

Female (a topotypical paratype; NSMT-Ar 4270): Body length 2.00 mm, prosoma length 0.95 mm, width 0.71 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.47 mm (0.76+0.85+0.49+0.37), II 2.32 mm (0.68+0.81+0.49+0.34), III 1.98 mm (0.56+0.66+0.44+0.32), IV 2.71 mm (0.78+0.93+0.61+0.39).

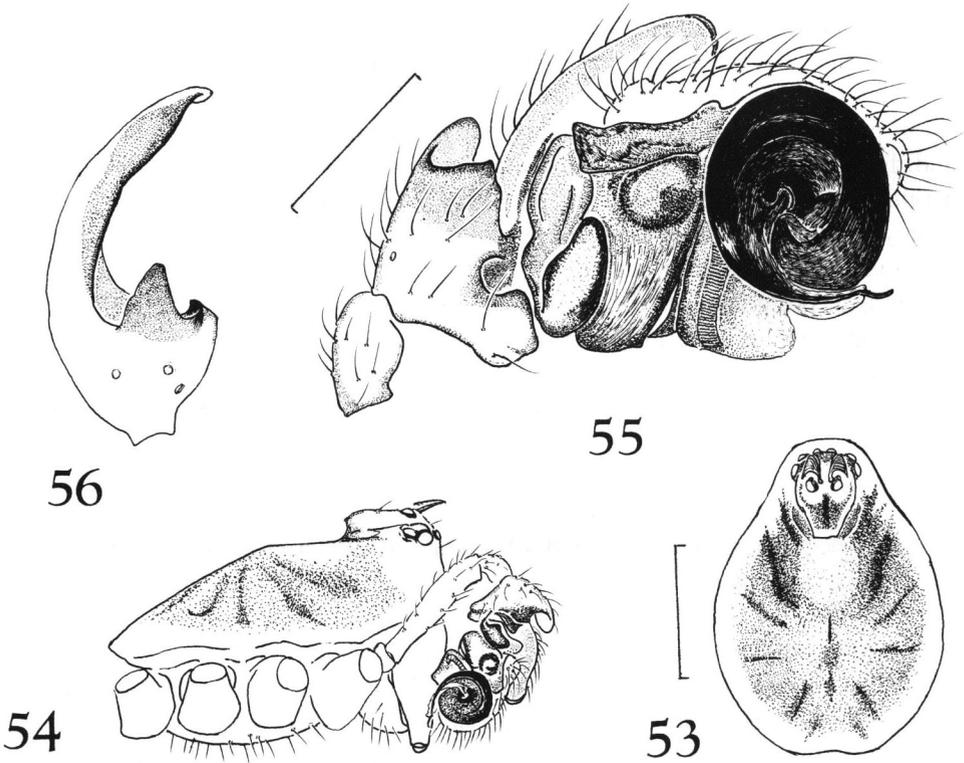
Head not strongly raised as in male, without penicillate apophyses; anterior eye-row almost straight, distance between anterior median eye and anterior lateral eye almost equal to the half of diameter of anterior median eye, posterior eye-row straight, Tm I ca. 0.39; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Fig. 52): Epigynum much wider than long, with a wide dorsal plate.

Etymology. Specific name is derived from the type locality.

Distribution. Japan (Kyushu).

Remarks. This new species resembles *Walckenaeria cucullata* (C. L. Koch, 1836) known from Europe but is distinguished from the latter by details of female genitalia (the epigynum of this new species has a peculiar dorsal plate) and by the condition of male palp, especially the shape of its tibia.



Figs. 53–56. *Walckenaeria chikunii* sp. nov., male holotype (NSMT-Ar 4268) from Nagano Pref. — 53, Male carapace, dorsal view; 54, male prosoma, lateral view; 55, male palp, retro-lateral view; 56, tibia of male palp, dorsal view. [Scales: 53–54, 0.5 mm; 55–56, 0.2 mm.]

***Walckenaeria chikunii* sp. nov.**

[Japanese name: Chikuni-kobu-nukagumo]

(Figs. 53–56)

Type specimen. Holotype: ♂, Toyoshina-chô, Minamiazumi-gun, Nagano Pref., Japan, 23–IX–1975, Y. Chikuni leg. (NSMT-Ar 4268).

Description. Male (holotype): Body length 2.20 mm, prosoma length 1.15 mm, width 0.83 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.61 mm (1.02+1.27+0.78+0.54), II 3.35 mm (0.98+1.15+0.73+0.49), III 2.85 mm (0.83+0.95+0.66+0.41), IV 3.65 mm (1.02+1.27+0.85+0.51).

Prosoma: Carapace yellowish brown, widely margined with light yellowish brown, radiating lines and median furrow distinct and darker; head vertically raised at the middle of cephalic division of carapace, its top flat and wide (Figs. 53–54), furnished with posterior median eyes and a pair of flabellate apophyses; sulci present behind the posterior lateral eyes; eyes with black ring, anterior eye-row almost straight,

distance between anterior median eyes narrower than the half of diameter of anterior median eye, distance between anterior median eye and anterior lateral eye slightly narrower than the diameter of anterior median eye; posterior eye-row procurved, distance between posterior median eyes equal to the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye wider than the diameter of posterior median eye; clypeus vertical, slightly longer than the length of median ocular area. Chelicera yellowish brown tinged with red, retrolaterally with stridulating files, promargin of fang furrow with 5 teeth, retromargin with 4 denticles; sternum light yellowish brown, longer than wide; legs yellowish brown, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.41; distance between coxae V narrower than the diameter of the coxa; tarsal claws of legs I–II with 4–5 teeth, of legs III–IV with 2 teeth.

Male palp (Figs. 55–56): Lengths of femur and patella 16 : 7 in ratio, tibia longer than patella, dorsally with 3 trichobothria; embolic division large, embolus very wide and coiled.

Etymology. This species is dedicated to Mr. Yasunosuke Chikuni, Nagano, the collector of the type specimen, in honor of his contribution in Japanese arachnology.

Distribution. Known only from the type locality.

Remarks. This species is distinguishable from males of all the known species by the flat head with unique and flabellate apophyses (specific setae) in the ocular area as well as by the shape of palp. Similar setae were found in some *Oedothorax* species from Nepal (Tanasevitch, 1998). The embolus is very wide and similar in shape to that of *Walckenaeria mitrata* (Menge, 1868) known from Europe, but the other parts of palpal organ are different from those of the European species. Female of this new species is unknown.

Genus *Nipponotusukuru* nov.

[Japanese name: Majinai-keshigumo-zoku]

Type species. *Nipponotusukuru enzanensis* sp. nov.

Other species included. *Nipponotusukuru spiniger* sp. nov.

Diagnosis. Very small erigonine spiders with body length 1.5–1.8 mm, desmitracheate, standing in the genus group of *Pelecopsis* established by Millidge (1977) on the basis of the structure of male palpal organ, especially close to *Tusukuru* Eskov, 1993. However, the new genus differs from the latter by the condition of dorsal spines on the tibiae of legs, value of Tm I, absence of sulci (postocular pits) on the head of male and the shape of genital organ in both the sex.

Description. Prosoma: Carapace blackish brown, head raised, but without a hump projecting; eyes small and with black ring, anterior median eye much smaller than the other eyes, clypeus swollen and projecting, equal to the length of median ocular area; chelicera light brown, without stridulating files on the retrolateral surface, pro-

margin of fang furrow with 4–5 teeth, retromargin with 3–4 denticles; sternum blackish brown, cordate and convex; legs yellowish brown, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I 0.72–0.79. Male palp: tarsal organ with a developed embolic division, embolus wide, long and coiled, tibia with a trichobothrium and well-developed apophyses (Figs. 59, 64). Opisthosoma blackish grey or black, with two pairs of sigilla but without markings. Female genitalia with a hood at the middle and a small, sclerotized plate in posterior part.

Etymology. The generic name was made from a combination of Nippon (Japan) and the most related genus *Tusukuru* Eskov, 1993; masculine.

Remark. Two species are known from Japan.

Nipponotusukuru enzanensis sp. nov.

[Japanese name: Enzan-majinaikeshigumo]

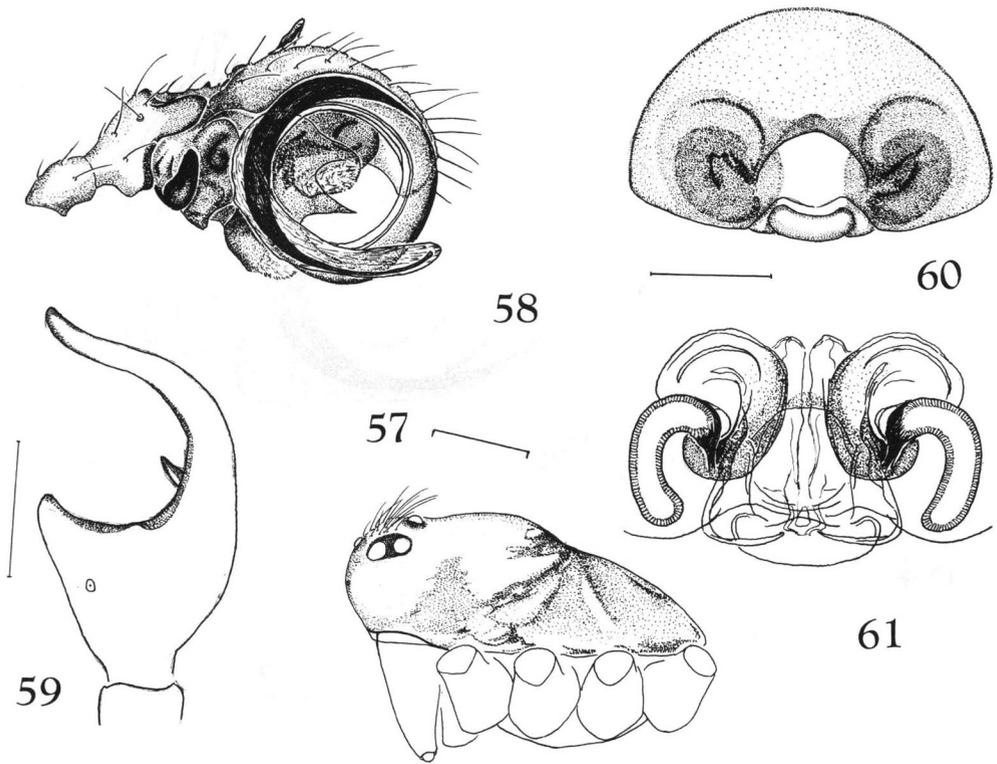
(Figs. 57–61)

Type specimens. Holotype: ♂, Yanagisawa-tôge, Enzan-shi, Yamanashi Pref., Honshu, Japan, 16–V–1992, H. Saito leg. (NSMT-Ar 4236); paratypes: 11 ♀10 ♂, same data as for the holotype (NSMT-Ar 4237–4238), 1 ♀, same locality as for the holotype, 30–VIII–1981, S. Matsumoto leg. (NSMT-Ar 4239), 4 ♀2 ♂, Yamakita-chô, Ashigarakami-gun, Kanagawa Pref., 3–VI–1977, K. Kumada leg. (NSMT-Ar 4240).

Description. Male (holotype): Body length 1.56 mm, prosoma length 0.73 mm, width 0.56 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.87 mm (0.56+0.63+0.41+0.27), II 1.66 mm (0.49+0.54+0.39+0.24), III 1.48 mm (0.44+0.46+0.34+0.24), IV 1.92 mm (0.56+0.63+0.46+0.27).

Prosoma: Carapace blackish brown with a pentagonal marking behind the head, radiating lines and median furrow black, head highly raised (Fig. 57); eyes with black ring, anterior eye-row straight, distance between anterior median eyes equal to a half of diameter of anterior median eye, distance between anterior median eye and anterior lateral eye one and a half times as wide as diameter of anterior median eye; posterior eye-row procurved, posterior eyes equal in size, distance between posterior median eyes and distance between posterior median eye and posterior lateral eye equal to diameter of posterior median eye; clypeus swollen and projecting forward, clypeus equal to the length of median ocular area; some long hairs present in the ocular area and extending backward. Sternum cordate and convex, blackish brown, margined with black. Chelicera light brown, promargin of fang furrow with 4 teeth, retromargin with 4 denticles; legs yellowish brown, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.79.

Male palp (Figs. 58–59): Length of femur and patella in ratio 17:5, tibia longer than patella, chelate with developed apophyses, with a tooth at the middle (Fig. 59) and a trichobothrium on the dorsal surface; embolic division large and complicated, embolus wide, long and coiled.



Figs. 57–61. *Nipponotusukuru enzanensis* gen. et sp. nov., male holotype (NSMT-Ar 4236) from Yamanashi Pref. and a female paratype (NSMT-Ar 4237) from type locality. — 57, Male prosoma, lateral view; 58, male palp, retrolateral view; 59, tibia of male palp, dorsal view; 60, epigynum, ventral view; 61, internal organ of female genitalia, dorsal view. [Scales: 57–58, 0.2 mm; 59–61, 0.1 mm.]

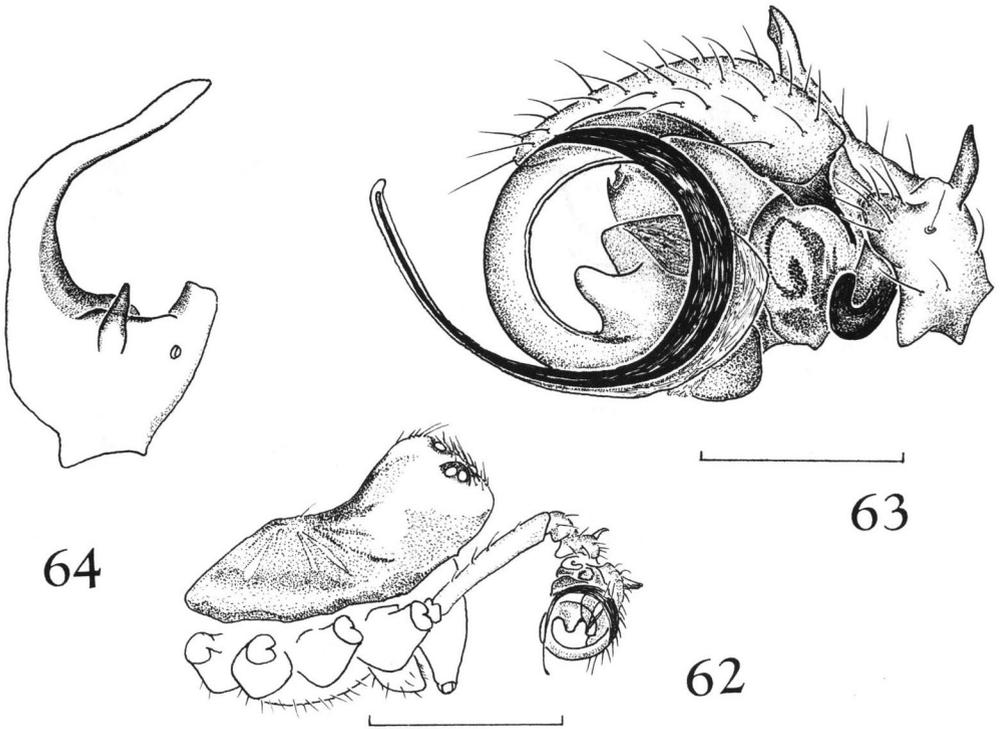
Opisthosoma ovate, blackish grey with two pairs of sigilla, without any marking.

Female (a topotypical paratype; NSMT-Ar 4237): Body length 1.83 mm, prosoma length 0.65 mm, width 0.51 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.79 mm (0.54+0.59+0.39+0.27), II 1.65 mm (0.49+0.54+0.35+0.27), III 1.46 mm (0.44+0.46+0.32+0.24), IV 1.88 mm (0.59+0.61+0.41+0.27).

Head not strongly raised as in male, clypeus not swollen and projecting, the hairs in the ocular area not long and extending backward, Tm I ca. 0.78; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Figs. 60–61): Copulatory opening round, with a hood and situated at the middle of epigynum, a small, sclerotized plate present in the posterior part; spermathecae tubular, long and curved (Fig. 61).

Etymology. Specific name is derived from the type locality.



Figs. 62–64. *Nipponotusukuru spiniger* gen. et sp. nov., male holotype (NSMT-Ar 4241) from Yamagata Pref. — 62, Male prosoma, lateral view; 63, male palp, retrolateral view; 64, tibia of male palp, dorsal view. [Scales: 62, 0.5 mm; 63–64, 0.2 mm.]

Distribution. Japan (Honshu).

Remarks. Two known species of the new genus are closely related, but can be distinguished from each other by the shape of male head and by presence/absence of a large, spiniform dorsal apophysis on male palpal tibia.

***Nipponotusukuru spiniger* sp. nov.**

[Japanese name: Zaou-majinaikeshigumo]

(Figs. 62–64)

Type specimens. Holotype: ♂, Mt. Zaô-san, Yamagata Pref., Honshu, Japan, 28–V–1983, A.D. Blest leg. (NSMT-Ar 4241); paratypes: 2♂, same data as for the holotype (NSMT-Ar 4242).

Description. Male (holotype): Body length 1.59 mm, prosoma length 0.78 mm, width 0.59 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.15 mm (0.61+0.73+0.49+0.32), II 2.05 mm (0.61+0.66+0.49+0.29),

III 1.62 mm (0.49+0.50+0.39+0.24), IV 2.22 mm (0.66+0.73+0.51+0.32).

Prosoma: Carapace yellowish brown tinged with black, radiating lines and median furrow distinct and black, head very high but without a hump or a projection, its tip furnished with several hairs extending forward, many setae extending backward present in the ocular area (Fig. 62); eyes with black ring, anterior eye-row almost straight, distance between anterior median eyes wider than the diameter of anterior median eye, distance between anterior median eye and anterior lateral eye three times as wide as the diameter of anterior median eye; posterior eye-row procurved, distance between posterior eyes one and a half times as wide as diameter of posterior median eye, distance between posterior median eye and posterior lateral eye twice as wide as diameter of posterior median eye; clypeus projecting and relatively wider than the length of median ocular area. Sternum cordate, blackish brown, as long as wide. Chelicera yellowish brown tinged with red, without stridulating files, promargin of fang furrow with 4 teeth, retromargin with 3 teeth; legs yellowish brown, distance between both the coxae IV equal to diameter of the coxa, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I ca. 0.73.

Male palp (Figs. 63–64): Tibia chelate, with developed apophyses, a large, spini-form, dorsal apophysis present at the middle (Fig. 64); embolus wide, long and coiled.

Etymology. Specific name from Latin meaning “spiny,” derived from the male palpal tibia with a spini-form apophysis.

Distribution. Japan (Honshu).

Remark. Discriminating characters see the “remarks” of the former new species. Female unknown.

Genus *Tapinocyba* Simon, 1884

[Japanese name: Yamaji-konagumo-zoku]

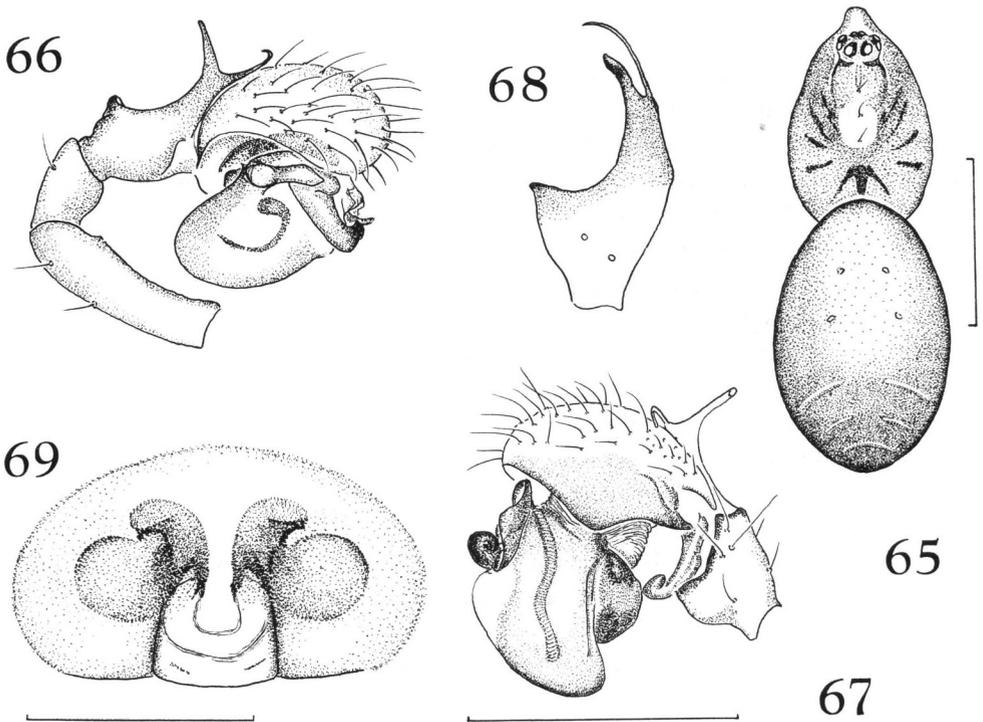
Tapinocyba suganamii sp. nov.

[Japanese name: Suganami-yamaji-konagumo]

(Fig. 65–69)

Type specimens. Holotype: ♂, Shiku, Shimo-kimida, Takahagi-shi, Ibaragi Pref., Honshu, Japan, 22–X–1988, Y. Suganami leg. (NSMT-Ar 4598); paratypes: 1 ♀, same data as for the holotype (NSMT-Ar 4599), 1 ♀, Wakaguri, Takahagi-shi, Ibaragi Pref., 15–V–1988, Y. Suganami leg. (NSMT-Ar 4600), 1 ♀, Wakaguri-bokujō, Takahagi-shi, Ibaragi Pref., 8–V–1988, Y. Suganami leg. (NSMT-Ar 4601).

Other specimens examined. 1 ♂, Yaotome, Izumi-shi, Miyagi Pref., Honshu, Japan, 29–III–1982, K. Sasaki leg.; 1 ♀, Izunuma Lake, Hasama-chō, Tome-gun, Miyagi Pref., 25–I–1987, A. Tanikawa leg.; 1 ♂, Naganohara-chō, Agatsuma-gun, Gunma Pref., 23–XI–1991, Y. Suganami leg.; many ♀♂, the Imperial Palace, Chiyo-



Figs. 65–69. *Tapinacyba suganamii* sp. nov., male holotype (NSMT-Ar 4598) from Ibaragi Pref. and a female paratype (NSMT-Ar 4599) from type locality. — 65, Male body, dorsal view; 66, male palp, prolateral view; 67, male palp, retrolateral view; 68, tibia of male palp, dorsal view; 69, epigynum, ventral view. [Scales: 65, 0.5 mm; 66–68, 0.2 mm; 69, 0.1 mm.]

da-ku, Tokyo, 24–VI–1996, 17–III & 21–III–1997, 7–I & 11–III–1998, N. Nunomura, K. Ishii, R. Ito, S. Nomura and H. Ono leg.; 3 ♀ 2 ♂, Zenpukuji-kôen Park, Sugiyama-ku, Tokyo, 9–II–1986, K. Kumada leg.; 2 ♂, Inokashira-kôen Park, Musashino-shi, Tokyo, 18–XII–1982 & 26–II–1983, S. Matsumoto leg.

Description. Male (holotype): Body length 1.39 mm, prosoma length 0.68 mm, width 0.49 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.27 mm (0.39+0.44+0.22+0.22), II 1.16 mm (0.37+0.39+0.20+0.20), III 0.97 mm (0.29+0.32+0.18+0.18), IV 1.34 mm (0.39+0.49+0.24+0.22).

Prosoma: Carapace light yellowish brown, radiating lines darker and distinct, head lighter coloured and raised, sulci present (Fig. 65); each eye with black ring, anterior eye-row straight, anterior median eyes adjoining, distance between anterior median eye and anterior lateral eye slightly shorter than the diameter of anterior median eye; posterior eye-row slightly procurved, distance between posterior median eyes almost equal to the radius of the median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the radius of the median one, clypeus

projecting forward at the middle and forming a large hump, and shorter than the length of median ocular area. Sternum longer than wide, cordate and rounded, sparsely covered with long hairs. Chelicera light yellowish brown, tinged with red, stridulating files present at the side, pro- and retromargins of fang furrow respectively with 4 teeth; legs light yellowish brown, distance between coxae IV slightly longer than the diameter of the coxa, the order of spines on the tibiae I–IV, 1111, Tm IV absent, Tm I ca. 0.47, tarsal claws with several teeth.

Male palp (Figs. 66–68). Length of femur and patella in ratio 5:2, tibia longer than patella, with 2 dorsal trichobothria and 2 dorso-prolateral slender apophyses, the prolateral one filiform, long and slender, curved in the ectal direction along the dorsal surface of cymbium (Fig. 68); tegulum large and projecting ventrad, embolic division slender and S-shaped, twisted at the middle.

Opisthosoma grey, with 2 pairs of sigilla.

Female (a topotypical paratype; NSMT-Ar 4599): Body length 1.30 mm, prosoma length 0.54 mm, width 0.41 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.13 mm (0.34+0.39+0.20+0.20), II 1.09 mm (0.34+0.39+0.18+0.18), III 0.93 mm (0.27+0.32+0.17+0.17), IV 1.26 mm (0.37+0.46+0.22+0.21).

General appearance and coloration similar to those of the male. Head much lower than that of male, without sulci; anterior eye-row slightly procurved, anterior median eyes adjoining, distance between anterior median eye and anterior lateral eye shorter than the radius of the median eye, posterior eye-row slightly procurved, distance between posterior median eyes slightly shorter than the diameter of the median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the median eye; clypeus shorter than the length of median ocular area, without any hump as in male. Chelicera with 5 teeth on promargin of fang furrow and 4 teeth on retromargin; tarsal claws of legs I–II with several distinct teeth.

Female genitalia (Fig. 69): Epigynum wider than long, with a trapezoid dorsal plate and furrows to the genital opening; spermatheca globular and visible through integument.

Etymology. This species is dedicated to Mr. Yôhei Suganami, Ibaragi, the collector of the type material of this new spider.

Distribution. Japan (Honshu).

Remarks. The present new species is closely related to *Tapinocyba silvicultrix* H. Saito, 1980, the only species of the genus hitherto known from Japan, but separated from the latter by the peculiar shape of tibial apophysis on male palp and the structure of epigynum.

Genus *Tojinium* nov.

[Japanese-name: Touji-nukagumo-zoku]

Type species. *Tojinium japonicum* sp. nov., by monotypy.

Diagnosis. Small erigonine spiders with body length 1.3–1.8 mm, desmitracheate, standing in the genus group of *Tapinocyba* established by Millidge (1977) on the basis of the structure of male palpal organ, especially close to *Conithorax* recently established by Eskov (1988). The new genus is, however, distinguishable from *Conithorax* by the presence of a trichobothrium on metatarsus of leg IV and by having a different order (2211) of spines on tibiae I–IV, as well as by the situation of the trichobothrium on metatarsus of leg I (Tm I 0.66–0.72).

Description. Prosoma: Carapace light yellowish brown, darker marginated; head highly raised but without sulci (postocular pits); ocular area densely covered with strong and vertical bristles; clypeus shorter than the length of median ocular area; chelicera without stridulating files on the retrolateral surface, promargin of fang furrow with 4 teeth; legs light yellowish brown, leg I shorter than leg IV, the order of spines on the tibiae I–IV, 2211, Tm IV present, Tm I 0.66–0.72. Male palp: tibia with a dorsal trichobothrium and a hook-shaped apophysis on the dorso-apical margin; paracymbium relatively slender and L-shaped, distal part strongly curved, tegulum well-developed and projecting ventrad. Opisthosoma high; female genitalia with a flat and semicircular epigynum and a pair of large and globular spermathecae.

Etymology. The generic name is derived from a Japanese word “toji” meaning a chief brewer at sake brewery, which is the main business of the senior author of this paper; neuter.

Remark. Only one species has been known under this genus.

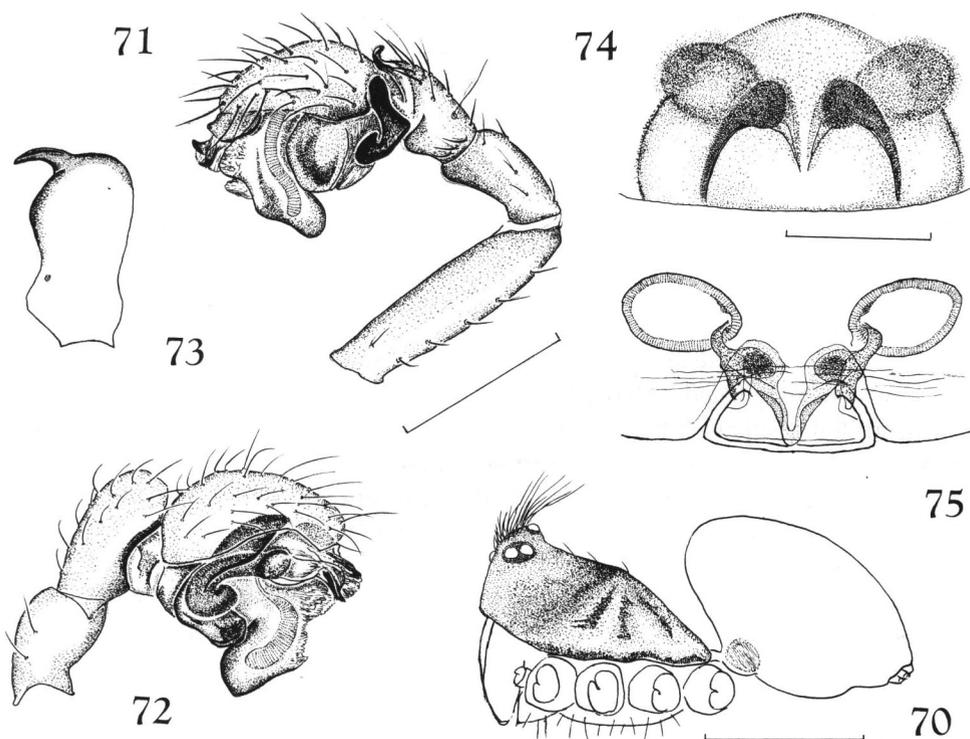
Tojinium japonicum sp. nov.

[Japanese name: Yamato-touji-nukagumo]

(Figs. 70–75)

Type specimens. Holotype: ♂, Nagusa-chô, Ashikaga-shi, Tochigi Pref., Honshu, Japan, 26–IV–1980, H. Saito leg. (NSMT-Ar 4576); paratypes: 1 ♀, same locality and collector as for the holotype, 16–V–1981 (NSMT-Ar 4577), 6 ♀, Mt. Sengen-yama, Ashikaga-shi, Tochigi Pref., 18–V–1979 & 22–V–1980, H. Saito leg. (NSMT-Ar 4578–4579), 1 ♀, Otsuki-chô, Ashikaga-shi, Tochigi Pref., 19–V–1979, H. Saito leg. (NSMT-Ar 4585), 15 ♀, Mt. Takadate-yama, Masiko-chô, Haga-gun, Tochigi Pref., 7–VI–1975, 9–VI–1979 & 26–VIII–1980, H. Saito leg. (NSMT-Ar 4580–4582), 1 ♂, Unryû-keikoku Valley, Nikkô-shi, Tochigi Pref., 25–V–1984, H. Saito leg. (NSMT-Ar 4583), 3 ♀, Nikkô-shi, Tochigi Pref., 3–VII–1983, A. D. Blest leg. (NSMT-Ar 4584).

Other specimens examined. 1 ♀, Mt. Myôken-zan, Nibetsu, Akita-shi, Akita



Figs. 70–75. *Tojinium japonicum* gen. et sp. nov., male holotype (NSMT-Ar 4576) from Tochigi Pref. and a female paratype (NSMT-Ar 4577) from type locality. — 70, Male body, lateral view; 71, male palp, retrolateral view; 72, male palp, prolateral view; 73, tibia of male palp, dorsal view; 74, epigynum, ventral view; 75, internal organ of female genitalia, dorsal view. [Scales: 70, 0.5 mm; 71–73, 0.2 mm; 74–75, 0.1 mm.]

Pref., 20–V–1994, A. Fukushima leg., 11 ♀2 ♂, Aobayama-kôen Park, Sendai-shi, Miyagi Pref., 30–V–1983, A. D. Blest leg., 1 ♀, Izunuma, Hasama-chô, Tome-gun, Miyagi Pref., 1–VI–1986, A. Tanikawa leg., 1 ♀, Hatomachi-tôge, 1,700 m alt., Oze-gahara, Katashina-mura, Tone-gun, Gunma Pref., 26–VII–1995, Y. Suganami leg., 3 ♀1 ♂, Inokashira-kôen Park, Mitaka-shi, Tokyo, 10–V–1983, S. Matsumoto leg., 3 ♀3 ♂, Zenpukuji-kôen Park, Suganami-ku, Tokyo, 21–IV–1985, K. Kumada leg., 2 ♀♂, the Imperial Palace, Chiyoda-ku, Tokyo, 24–IV–1996, 21–III, 1–22–V–1997, K. Konishi and S. Nomura leg. leg., 1 ♂, Mt. Oyama, Miyakejima Island, Izu Islands, Tokyo, 29–III–1985, H. Ono leg., 2 ♀1 ♂, Lake Shibire-ko, Ichikawa-daimon-chô, Nishi-yatsushiro-gun, Yamanashi Pref., 14–V–1994, H. Saito leg.

Description. Male (holotype). Body length 1.37 mm, prosoma length 0.68 mm, width 0.54 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.58 mm (0.46+0.54+0.34+0.24), II 1.53 mm (0.44+0.51+0.34+0.24), III 1.36 mm (0.41+0.44+0.29+0.22), IV 1.81 mm (0.54+0.59+0.41+0.27).

Prosoma: Carapace light yellowish brown, black at the sides, indistinctly marginated, cervical furrow and radiating lines darker and distinct; head relatively raised but sulci (postocular pits) absent; ocular area densely covered with thick and long, vertical bristles, the posterior bristles especially long and distally curved backward (Fig. 70); each eye with black ring, anterior eye-row strongly recurved, anterior median eyes adjoining, distance between anterior median eye and anterior lateral eye twice as long as the diameter of anterior median eye; posterior eye-row relatively procurved, distance between posterior median eyes one and a half times as long as the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to the diameter of posterior median eye; clypeus narrow, shorter than the length of median ocular area. Sternum light yellowish brown, tinged with black, widely marginated with black, evenly convex, sparsely covered with long hairs. Chelicera light yellowish brown, tinged with red, retrolaterally without stridulating files, pro- and retromargins of fang furrow with 4 teeth, respectively; legs very light yellowish brown, leg I shorter than leg IV, distance between coxae IV shorter than the diameter of the coxa, the order of spines on the tibiae I–IV, 2211, all metatarsi with a trichobothrium, Tm I ca. 0.67.

Male palp (Figs. 71–73): Length of femur and patella in ratio 11 : 7, tibia as long as patella, with a dorsal trichobothrium and a hook-shaped apophysis at the retrolateral side on the apical margin (Fig. 73); paracymbium slender and simple, L-shaped, the distal part strongly curved; tegulum developed and large, projecting ventrad.

Opisthosoma relatively high.

Female (a topotypical paratype; NSMT-Ar 4577): Body length 1.71 mm, prosoma length 0.73 mm, width 0.61 mm; lengths of legs (palp omitted) [total length (femur + patella and tibia + metatarsus + tarsus)]: I 1.79 mm (0.54 + 0.61 + 0.37 + 0.27), II 1.66 mm (0.49 + 0.56 + 0.37 + 0.24), III 1.52 mm (0.44 + 0.49 + 0.37 + 0.22), IV 1.97 mm (0.59 + 0.68 + 0.46 + 0.24).

General appearance and coloration similar to those of the male. Head lower than that of the male, ocular area not densely haired, anterior eye-row procurved, distance between anterior median eye and anterior lateral eye equal to the radius of the median eye, distance between anterior median eye and anterior lateral eye one and a half times as long as the diameter of the median eye, posterior eye-row slightly procurved, distance between both posterior median eyes equal to their diameter, distance between posterior median eye and posterior lateral eye shorter than the diameter of the median eye; clypeus shorter than the length of median ocular area.

Female genitalia (Figs. 74–75): Epigynum flat, semicircular; inner organ with a pair of globular spermathecae.

Etymology. Specific name is derived from the country of origin.

Distribution. Japan (Honshu).

Remark. This new species is peculiar in the structure of genital organ of both the sexes. No related species has been known.

Genus *Erigone* Savigny et Audouin, 1825

[Japanese name: Hizagumo-zoku]

Erigone edentata sp. nov.

[Japanese name: Marumune-hizagumo]

(Figs. 76–80)

Type specimens. Holotype: ♂, Hazu-chô, Hazu-gun, Aichi Pref., Honshu, Japan, 19–II–1991, K. Ogata leg. (NSMT-Ar 4286); paratypes: 6 ♀3 ♂, same data as for the holotype (NSMT-Ar 4287–4288), 2 ♀2 ♂, Hanazono-chô, Toyota-shi, Aichi Pref., 5–XI–1987, K. Ogata leg. (NSMT-Ar 4289), 4 ♀2 ♂, Kyoto-shi, Kyoto Pref., 19–VI–1983, A. D. Blest leg. (NSMT-Ar 4290).

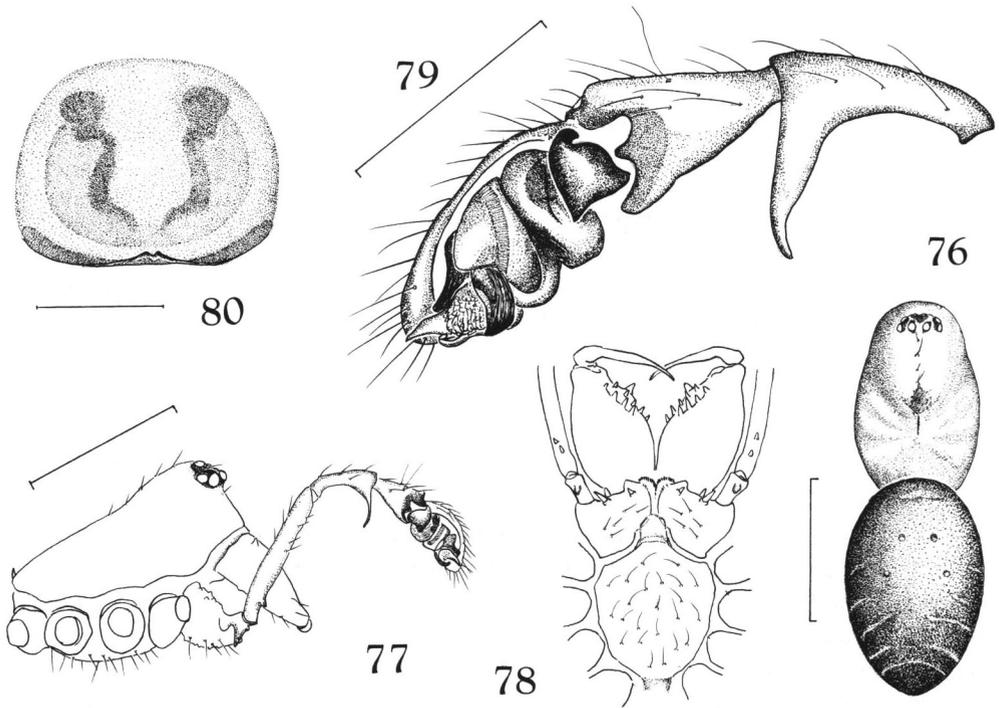
Description. Male (holotype): Body length 1.38 mm, prosoma length 0.68 mm, width 0.50 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.69 mm (0.50+0.58+0.34+0.27), II 1.53 mm (0.43+0.51+0.33+0.26), III 1.27 mm (0.36+0.41+0.26+0.24), IV 1.67 mm (0.50+0.58+0.34+0.25).

Prosoma: Carapace light yellowish brown, radiating lines indistinct, median furrow distinct and black, its margin not serrated, with only a pair of vertical spiniform apophyses on the posterior margin (Fig. 76), posterior margin covered by the anterior part of abdomen and the apophyses not visible from above (Fig. 77); head raised high, a row of several strong hairs present between fovea and ocular area; each eye with black ring, anterior eye-row slightly procurved, distance of anterior median eyes equal to their radius, distance between anterior median eye and anterior lateral eye slightly shorter than the diameter of anterior median eye; posterior eye-row almost straight, distance between posterior median eyes slightly shorter than the diameter of the median eye; distance between posterior median eye and posterior lateral eye almost equal to the radius of the median eye, clypeus obliquely projecting forward, as long as the length of median ocular area. Sternum yellowish brown, well tinged with black. Chelicera yellowish brown, tinged with red, a small spiniform apophysis present on the proximal part of dorsal surface and on the distal part near the base of fang, respectively, promargin of fang furrow with 5 teeth, retromargin with 4 teeth, of these the basal one on promargin very small (Fig. 78); legs yellowish brown, distance between coxae IV slightly wider than the diameter of the coxa, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I ca. 0.36.

Male palp (Fig. 79). Length of femur and patella in ratio 2 : 1, patella as long as tibia and with a large, hook-shaped, ventral apophysis apically situated, tibia with 2 dorsal trichobothria, distally repeatedly notched.

Opisthosoma greyish black, with a pair of sigilla.

Female (a topotypical paratype; NSMT-Ar 4287): Body length 1.34 mm, prosoma length 0.54 mm, width 0.37 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.52 mm (0.45+0.51+0.29+0.27), II 1.41 mm (0.39+0.49+0.27+0.26), III 1.23 mm (0.34+0.39+0.27+0.23), IV 1.58



Figs. 76–80. *Erigone edentata* sp. nov., male holotype (NSMT-Ar 4286) from Aichi Pref. and a female paratype (NSMT-Ar 4287) from type locality. — 76, Male body, dorsal view; 77, male prosoma, lateral view; 78, male prosoma, ventral view; 79, male palp, retrolateral view; 80, epigynum, ventral view. [Scales: 76–78, 0.5 mm; 79, 0.2 mm; 80, 0.1 mm.]

mm (0.49+0.56+0.29+0.24).

General appearance and coloration similar to those of the male. Head not highly raised as in the male. Anterior eye-row procurved, distance of anterior median eyes equal to the radius of the median eye, distance between anterior median eye and anterior lateral eye slightly shorter than the radius of the median eye, posterior eye-row almost straight, distance between posterior median eyes equal to the diameter of the median eye, distance between posterior median eye and posterior lateral eye equal to the radius of the median one; promargin of cheliceral fang furrow with 6 teeth, retro-margin with 4 teeth.

Female genitalia (Fig. 80): Epigynum large, wider than long, without scape or slit.

Etymology. Specific name from Latin meaning “edentate,” derived from the condition of carapace not serrated.

Distribution. Japan (Honshu).

Remarks. This new species is related to *Erigone prominens* Bösenberg et

Strand, 1906 and *E. koshiensis* Oi, 1960, but is distinguished from these species by following characteristics: carapace of male without serrated spines on lateral margins, the embolic division compactly set, and the epigynum relatively large.

Genus *Saitonia* Eskov, 1992

[Japanese name: Zubuto-nukagumo-zoku]

Notes. This genus was established by Eskov (1992) based on Japanese species described under the genus *Araeoncus* Simon, 1884: *A. muscus* H. Saito, 1989, *A. longicephalus* H. Saito, 1988, *Araeoncus orientalis* Oi, 1960, and a further, undescribed species based on a personal letter dated in 1986 from the senior author of this paper (H. Saito). The undescribed species mentioned by Eskov (1992) at the time was in fact *Araeoncus ojiroensis* published by H. Saito in 1990. Unfortunately, *Araeoncus ojiroensis* was passed unnoticed by Ono, Kamura & Nishikawa (1999) and left under the original genus, while the other three species were put into *Saitonia* following Eskov's arrangement. Therefore, the present authors treat the fourth species also a member of the genus *Saitonia* [*Saitonia ojiroensis* (H. Saito, 1990), comb. nov.]. Besides, there is no *Araeoncus* (Japanese name: hira-nukagumo-zoku) species known in Japan at present, because an European species *Araeoncus humilis* (Blackwall, 1841) recorded by Peelle & Saito (1932) from Etorofu Island (Iturup Island), Japanese Kurile Islands, was regarded by Eskov (1994) as a misidentification.

In the original designation of *Saitonia*, Eskov (1992) pointed out the absence of suprategular outgrowths in the male palpal organ and the fusion of the frontal portion of the lateral plates of the epigynum as distinguishing characters. However, if Eskov used the term "suprategular outgrowths" same as "suprategular apophysis" proposed by Millidge (1977), the apophysis is present on the male palp of Japanese *Saitonia* species. It is adjoining with the frontal surface of tegulum and extending in the ectal direction. The shape of epigynum also seems unreliable as a diagnostic character to the present authors. The relationship between *Araeoncus* species and Japanese *Saitonia* species should be re-examined in future.

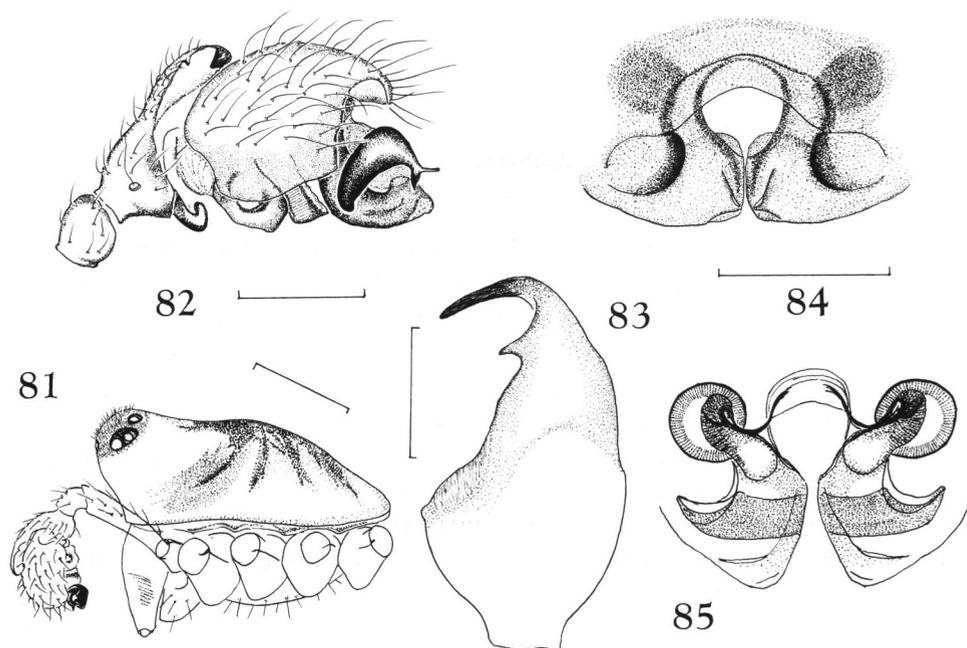
Saitonia kawaguchikonis sp. nov.

[Japanese name: Kawaguchiko-konukagumo]

(Figs. 81–85)

Type specimens. Holotype: ♂, Kawaguchiko-machi, Minami-tsuru-gun, Yamaguchi Pref., Honshu, Japan, 12–VI–1983, A. D. Blest leg. (NSMT-Ar 4602); paratypes: 2 ♀ 1 ♂, same data as for the holotype (NSMT-Ar 4603–4604).

Other specimens examined. 1 ♀ 6 ♂, Shinrin-kôen Park, Sendai-shi, Miyagi Pref., Honshu, Japan, 23–V, 6–7–XI and 13–XI–1982, K. Sasaki leg.; 1 ♀, Tôhoku University, Sendai-shi, Miyagi Pref., 26–V–1983, A. D. Blest leg.; 1 ♀, Mt. Yaotome-



Figs. 81–85. *Saitonia kawaguchikonis* sp. nov., male holotype (NSMT-Ar 4602) from Yamanashi Pref. and a female paratype (NSMT-Ar 4603) from type locality. — 81, Male prosoma, lateral view; 82, male palp, retrolateral view; 83, tibia of male palp, dorsal view; 84, epigynum, ventral view; 85, internal organ of female genitalia, dorsal view. [Scales: 81, 0.2 mm; 82, 0.1 mm; 83, 0.05 mm; 84–85, 0.1 mm.]

yama, Nanakita, Izumi-shi, Miyagi Pref., 12–XII–1982, K. Sasaki leg.; 1♀1♂, Izunuma Lake, Hasama-chô, Tome-gun, Miyagi Pref., 15–XI–1986 & 22–III–1987, A. Tanikawa leg.; 4♀6♂, Shinden-chô, Okazaki-shi, Aichi Pref., 24–XI–1990, K. Ogata leg.; 1♀1♂, Kanpachi-chô, Toyota-shi, Aichi Pref., 7–XII–1990, K. Ogata leg.; 1♀, Nagase, Nabari-shi, Mie Pref., 26–VII–1983, K. Kaihotsu leg.

Description. Male (holotype): Body length 1.28 mm, prosoma length 0.55 mm, width 0.45 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.17 mm (0.35+0.39+0.23+0.20), II 1.08 mm (0.33+0.35+0.20+0.20), III 0.97 mm (0.29+0.31+0.19+0.18), IV 1.25 mm (0.38+0.44+0.24+0.19).

Prosoma: Carapace yellowish brown, marginated with black, radiating lines darker and distinct (Fig. 81); head raised from its base and projecting forward but without sulci; ocular area densely covered with short hairs; each eye with black ring, anterior eye-row almost staright, distance between anterior median eyes equal to the radius of the median eye, distance between anterior median eye and anterior lateral eye relatively longer than the diameter of anterior median eye, posterior eye-row procurved, distance between posterior median eyes one and a half times as long as the

diameter of the median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the diameter of the median eye; clypeus precipitous and depressed inwards, slightly longer than the length of median ocular area. Sternum light yellowish brown, tinged with black, widely marginated with blackish brown, cordate and rounded, as long as wide. Chelicera light yellowish brown, stridulating files present, promargin of fang furrow with 5 teeth, retromargin with 4 small teeth; legs light yellowish brown, the order of spines on the tibiae I–IV, 0001, Tm IV absent, Tm I ca. 0.50.

Male palp (Figs. 82–83). Length of femur and patella in ratio 3 : 1, tibia longer than patella, with a dorsal trichobothrium, and dorso-apically projecting and furnished with 2 large and small pointed apophyses, the large one curved and hook-shaped; supratregular outgrowths present and projecting in ectal direction.

Opisthosoma black.

Female (a topotypical paratype; NSMT-Ar 4603): Body length 1.34 mm, prosoma length 0.59 mm, width 0.46 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.22 mm (0.37+0.41+0.23+0.21), II 1.13 mm (0.34+0.37+0.22+0.20), III 0.93 mm (0.29+0.29+0.18+0.17), IV 1.30 mm (0.39+0.49+0.24+0.18).

General appearance and coloration similar to those of the male. Head relatively high, but not projecting forward as in male; anterior eye-row straight, anterior median eyes close to each other, distance between anterior median eye and anterior lateral eye shorter than the radius of the median eye, posterior eye-row relatively procurved, distance between posterior median eyes slightly shorter than the diameter of the median eye, distance between posterior median eye and posterior lateral eye shorter than the radius of the median eye; clypeus narrow, a half the length of median ocular area. The order of spines on the tibiae I–IV, 2211.

Female genitalia (Figs. 84–85): Epigynum with a slit at the middle, the opening part circular, spermatheca relatively small and globular.

Etymology. Specific name is derived from the type locality, Lake Kawaguchi-ko, one of the Fuji-goko (Five Lakes) around Mt. Fuji.

Distribution. Japan (Honshu).

Remarks. This new species can be distinguishable from all the Japanese species by the structure of genital organs of both the sexes. It seems to be closely related to *Saitonia orientalis* (Oi, 1960), but resembles also *Araeoncus humilis* (Blackwall, 1841) and *A. crassiceps* (Westring, 1861) from Europe in general appearance and the shape of tibia of male palp.

Figs. 86–91 (on p. 42). *Diplocephalus hispidulus* sp. nov., male holotype (NSMT-Ar 4281) from Kumamoto Pref. and a female paratype (NSMT-Ar 4282) from type locality.. — 86, Male body, dorsal view; 87, male body, lateral view; 88, male palp, retrolateral view; 89, male palp, dorsal view; 90, epigynum, ventral view; 91, internal organ of female genitalia, dorsal view. [Scales: 86–87, 0.2 mm; 88–89, 0.2 mm; 90–91, 0.1 mm.]

Genus *Diplocephalus* Bertkau, 1883

[Japanese name: Munakigumo-zoku]

Diplocephalus hispidulus sp. nov.

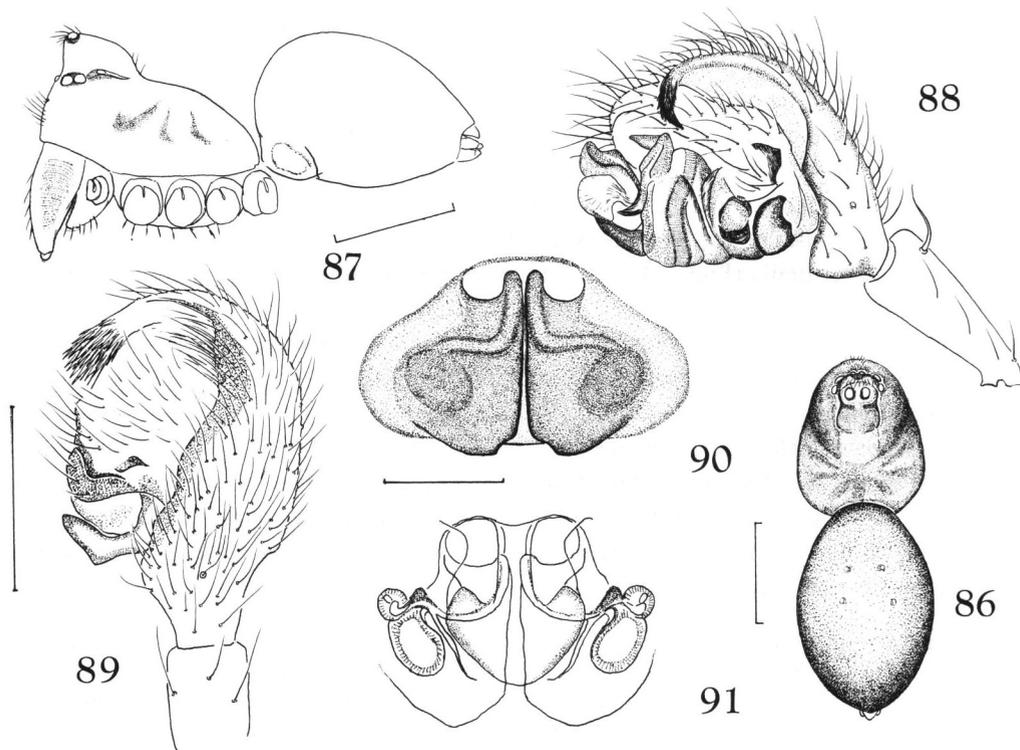
[Japanese name: Fusa-munakigumo]

(Figs. 86–91)

Type specimens. Holotype: ♂, Ose-no-tateana Cave, Kuma-mura, Kuma-gun, Kumamoto Pref., Kyushu, Japan, 22–IX–1968, T. Irie leg. (NSMT-Ar 4281); paratypes: 2 ♀, same data as for the holotype (NSMT-Ar 4282–4283), 1 ♀, Hondo-shi, Kumamoto Pref., 29–XI–1978, N. Kikuya leg. (NSMT-Ar 4284), 1 ♀, Yokoza-tôge, Miyanojô-machi, Satsuma-gun, Kagoshima Pref., 23–XI–1993, K. Suzuki leg. (NSMT-Ar 4285).

Description. Male (holotype): Body length 1.75 mm, prosoma length 0.88 mm, width 0.68 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.44 mm (0.69+0.81+0.50+0.44), II 2.22 mm (0.63+0.74+0.45+0.40), III 1.93 mm (0.53+0.63+0.40+0.34), IV 2.41 mm (0.69+0.84+0.50+0.38).

Prosoma: Carapace brown tinged with red, radiating lines and median furrow



distinct and darker, head raised very high, posterior median eyes situated on its top, sulci present at both the sides of the base of head (Figs. 86–87); each eye with black ring, anterior eye-row straight, distance of anterior median eyes slightly narrower than their diameter, distance between anterior median eye and anterior lateral eye equal to the diameter of anterior median eye; posterior eye-row almost straight, distance between posterior lateral eyes slightly narrower than the diameter of posterior median eye; clypeus projecting at the middle, densely covered by straight and short setae, wider than the length of median ocular area. Sternum yellowish brown, tinged with grey, margined by black. Chelicera yellowish brown, tinged with red, stridulating files present at the side, promargin of fang furrow with 5 teeth, retromargin with 4 teeth; legs yellowish brown, distance between coxae IV slightly wider than the diameter of the coxa, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I ca. 0.48.

Male palp (Figs. 88–89). Length of femur and patella in ratio 5 : 3, tibia very large, larger than patella, curved retrolaterad and covering cymbium, distally narrowed, its apical part with a tuft of bristles (Fig. 86); embolic division divided into small parts compactly set, suprategular apophysis strongly curved interiad at the distal part of tegulum and apically pointed.

Opisthosoma with a pair of sigilla.

Female (a topotypical paratype; NSMT-Ar 4282): Body length 2.10 mm, prosoma length 0.88 mm, width 0.62 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.58 mm (0.70+0.95+0.50+0.43), II 2.28 mm (0.68+0.75+0.50+0.35), III 2.03 mm (0.58+0.68+0.50+0.38), IV 2.58 mm (0.75+0.95+0.50+0.38).

Coloration similar to that of the male. Head not raised, without sulci. Anterior eye-row slightly procurved, anterior median eyes almost adjoining, distance between anterior median eye and anterior lateral eye almost equal to the radius of the median eye, posterior eye-row straight, distance between posterior median eyes equal to the radius of the median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the radius of the median one; clypeus shorter than the length of median ocular area, without short setae as in male.

Female genitalia (Figs. 90–91): Epigynum with a slit at the middle, intromittent orifices situated in the anterior part; spermatheca oval.

Etymology. Specific name from Latin meaning “hispidulous,” derived from the condition of tibia distally with a tuft of short bristles.

Distribution. Japan (Kyushu).

Remarks. This new species can be separated from all species of the genus known from Europe and Siberia by presence of a tuft of bristles on tibia and condition of embolic division and suprategular apophysis of bulb in males, and by the structure of female genitalia, especially the shape of epigynum. Because *Diplocephalus yasudai* H. Saito, 1986 was transferred from the original genus to *Savignya*

Blackwall, 1833, and *Diplocephalus bicurvatus* Bösenberg et Strand, 1906 was regarded as a dubious species in generic registration by Eskov (1988 b, 1992), this new species is the only species of the genus *Diplocephalus* known from Japan at present.

Subfamily Linyphiinae, *s. lat.*

[Japanese name: Saragumo-aka]

Genus *Tibioploides* Eskov et Marusik, 1991

[Japanese name: Kuro-saragumo-zoku]

Notes. This genus was established by Eskov and Marusik (1991) based on three species *Tibioplus arcuatus* Tullgren, 1955, *Tibioploides kurenstchikovi* Eskov and Marusik, 1991, and *Tibioploides pacificus* Eskov and Marusik, 1991, known from the Arctic Region and northern Asia. *Tibioploides* is herewith recorded from Japan for the first time with descriptions of two new species as follows.

Tibioploides eskovianus sp. nov.

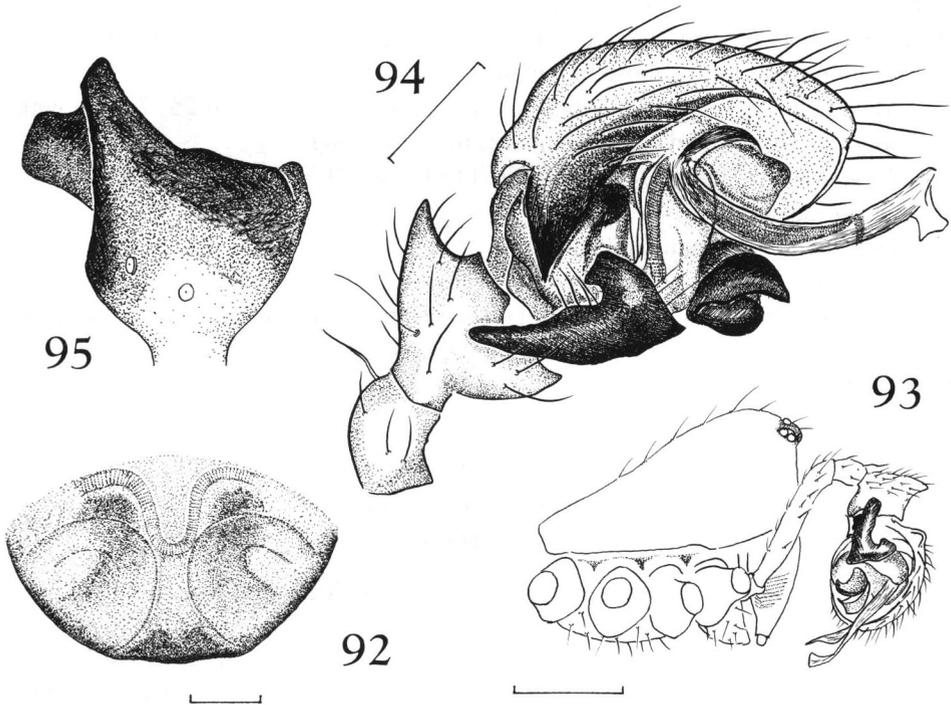
[Japanese name: Esukofu-kuro-saragumo]

(Figs. 92–95)

Type specimens. Holotype: ♀, Oshidomari, Higashirishiri-chô, Rishiri-gun, Rishiritô Is., Hokkaido, 26–IX–1978, K. Kumada leg. (NSMT-Ar 4272); paratypes: 1 ♂, same data as for the holotype (NSMT-Ar 4273), 1 ♂, Daisetsu-genseirin Forest, Kamikawa-gun, Hokkaido, 8–VII–1982, N. Yasuda leg. (NSMT-Ar 4274), 1 ♂, Mt. Kuro-dake, Daisetsuzan Mts., Kamikawa-gun, Hokkaido, 21–VII–1981, N. Yasuda leg. (NSMT-Ar 4275), 2 ♂, Sarobetsu-geya, Teshio-gun, Hokkaido, 9–VI–1991, N. Yasuda leg. (NSMT-Ar 4276).

Description. Female (holotype): Body length 2.13 mm, prosoma length 1.15 mm, width 0.90 mm; lengths of palp and legs [total length (femur+patella and tibia+metatarsus+tarsus)]: palp 1.31 mm (0.48+0.43+—+0.40), leg I 3.02 mm (0.89+1.00+0.63+0.50), II 2.70 mm (0.80+0.90+0.55+0.45), III 2.35 mm (0.70+0.75+0.50+0.40), IV 3.03 mm (0.90+1.05+0.65+0.43).

Prosoma: Carapace blackish brown, radiating lines and median furrow distinct and black, a row of setae present between ocular area and median furrow; head highly raised but not projecting; eyes relatively small, each eye with black ring, anterior eye-row slightly recurved, distance between anterior median eyes narrower than radius of anterior median eye, distance between anterior median eye and anterior lateral eye almost equal to the radius of anterior median eye; posterior eye-row slightly procurved, distance between posterior median eyes slightly narrower than the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye equal to the diameter of posterior median eye; clypeus wide and vertical, longer than



Figs. 92–95. *Tibioploides eskovianus* sp. nov., female holotype (NSMT-Ar 4272) from Rishiri-tō Island, Hokkaido and a male paratype (NSMT-Ar 4273) from type locality. — 92, Epigynum, ventral view; 93, male prosoma, lateral view; 94, male palp, retrolateral view; 95, tibia of male palp, dorsal view. [Scales: 92, 0.1 mm; 93, 0.5 mm; 94–95, 0.2 mm.]

the length of median ocular area. Sternum cordate and rounded, convex, furnished with a few long and strong hairs. Chelicera reddish brown, stridulating files present at the side, promargin of fang furrow with 5 teeth, retromargin with 4 denticles; legs yellowish brown, distance between coxae IV slightly narrower than the diameter of coxa, the order of spines on the tibiae I–IV, 2222, Tm IV absent, Tm I ca. 0.33; tibia of palp with 2 dorsal trichobothria.

Female genitalia (Fig. 92): Epigynum large and projecting posteriad, with a semicircular ventral plate.

Opisthosoma ovate, blackish grey, with two pairs of sigilla.

Male (a topotypical paratype; NSMT-Ar 4273): Body length 2.08 mm, prosoma length 1.27 mm, width 0.98 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.39 mm (1.02+1.12+0.71+0.54), II 2.99 mm (0.90+1.00+0.63+0.46), III 2.54 mm (0.73+0.81+0.56+0.44), IV 3.27 mm (0.98+1.12+0.71+0.46).

Head similar to that of female in shape but much raised (Fig. 93); chelicera with

5 large teeth on promargin of fang furrow and 4 small teeth on the retromargin, stridulating files present; Tm I ca. 0.27; other characteristics in general appearance and coloration as same as those in female.

Male palp (Figs. 94–95): Length of femur and patella in ratio 25 : 7, tibia with 2 trichobothria, longer than patella; embolus thick and long.

Etymology. This spider is dedicated to Dr. Kirill Y. Eskov, an excellent Russian arachnologist.

Distribution. Japan (Hokkaido).

Remarks. This new species is closely related to *Tibioploides kurestchikovi* Eskov et Marusik, 1991, but is distinguished from the latter by the details of bulb and the shape of tibia of the male palp and the structure of female genitalia visible through the epigynal surface.

***Tibioploides monticola* sp. nov.**

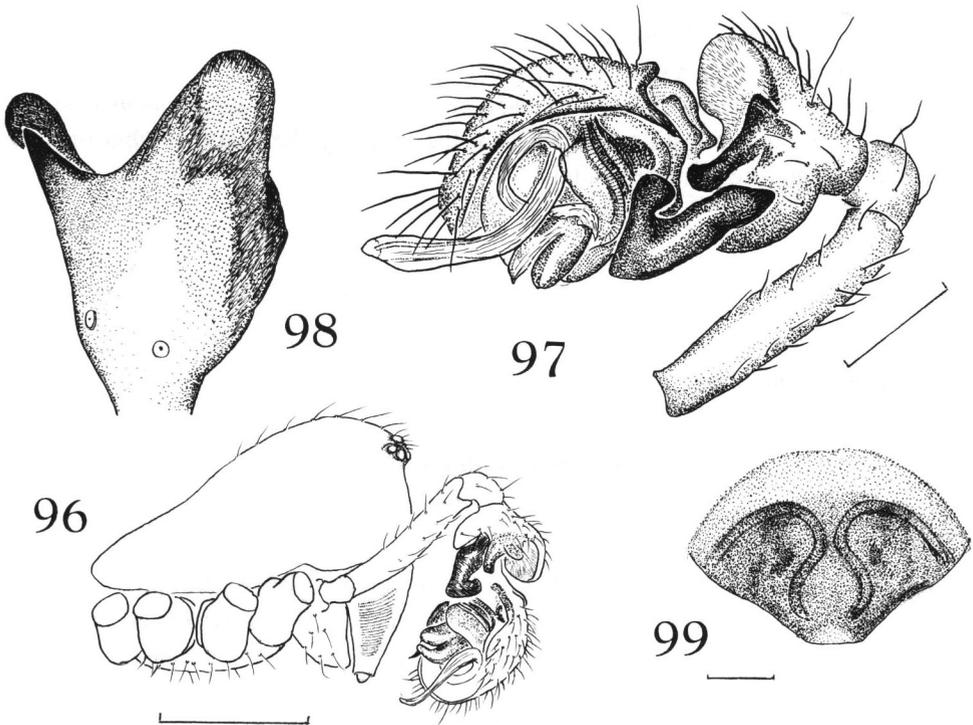
[Japanese name: Yama-kuro-saragumo]

(Figs. 96–99)

Type specimens. Holotype: ♂, Mt. Chôkai-zan, Yuri-gun, Akita Pref., Honshu, Japan, 20–VI–1980, K. Suzuki leg. (NSMT-Ar 4277); paratypes: 1 ♂, Mt. Chôkai-zan, Yuri-gun, Akita Pref., 20–IV–1980, K. Suzuki leg. (NSMT-Ar 4606), 2 ♂, Mt. Zaô-san, Yamagata-shi, Yamagata Pref., 28–V–1983, A. D. Blest leg. (NSMT-Ar 4278, 4607), 1 ♀, Hatomachi-tôge, 1,590 m alt., Oze, Katashina-mura, Tone-gun, Gunma Pref., Y. Suganami leg. (NSMT-Ar 4279), 1 ♀2 ♂, Mt. Shibutsu-san, 1,870 m alt., Oze, Gunma Pref., 3–IX–1995, Y. Suganami leg. (NSMT-Ar 4280), 1 ♂, Yama-no-hana, 1,440 m alt. Mt. Shibutsu-san, Oze, Gunma Pref., 2–IX–1995, Y. Suganami leg. (NSMT-Ar 4605).

Description. Male (holotype): Body length 2.15 mm, prosoma length 1.08 mm, width 0.88 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.76 mm (0.83+0.93+0.55+0.45), II 2.44 mm (0.73+0.83+0.48+0.40), III 2.11 mm (0.63+0.73+0.40+0.35), IV 2.70 mm (0.77+0.95+0.55+0.43).

Prosoma: Carapace light brown, radiating lines and median furrow distinct and coloured reddish, a row of several setae present behind ocular area, head relatively raised but without projection (Fig. 96); eyes small, each eye with black ring, anterior eye-row recurved, distance of anterior median eyes equal to their radius, distance between anterior median eye and anterior lateral eye equal to the diameter of anterior median eye; posterior eye-row slightly recurved, distance between posterior lateral eyes equal to the diameter of posterior median eye, distance between posterior median eye and posterior lateral eye slightly wider than the diameter of posterior median eye; clypeus vertical, wider than the length of median ocular area. Sternum cordate and convex, yellowish brown, widely margined with dark brown. Chelicera reddish brown, stridulating files present at the side, pro- and retromargins of fang furrow with



Figs. 96–99. *Tibioploides monticola* sp. nov., male holotype (NSMT-Ar 4277) from Akita Pref. and a female paratype (NSMT-Ar 4279) from Gunma Pref. — 96, male prosoma, lateral view; 97, male palp, retrolateral view; 98, tibia of male palp, dorsal view; 99, epigynum, ventral view. [Scales: 96, 0.5 mm; 97–98, 0.2 mm; 99, 0.1 mm.]

4 teeth, respectively, retromarginal ones smaller; legs yellowish brown, distance between coxae IV equal to the diameter of the coxa, the order of spines on the tibiae I–IV, 2222, Tm I ca. 0.31.

Male palp (Figs. 97–98): Length of femur and patella in ratio 16:3, tibia larger and longer than patella, dorsally with 2 trichobothria; embolus wide and long, its apical part straight.

Opisthosoma blackish grey, with a pair of sigilla.

Female (a paratype from Oze, Gunma Pref.; NSMT-Ar 4279): Body length 2.39 mm, prosoma length 1.17 mm, width 0.90 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.85 mm (0.85+0.98+0.56+0.46), II 2.63 mm (0.75+0.90+0.57+0.41), III 2.30 mm (0.68+0.76+0.49+0.37), IV 3.00 mm (0.88+1.05+0.66+0.41).

General appearances almost same as in male, Tm I ca. 0.34.

Female genitalia (Fig. 99): Epigynum large, strongly sclerotized, with a fan-

shaped ventral plate posteriorly truncated.

Etymology. Specific name from Latin meaning “dweller of mountains.”

Distribution. Japan (northern Honshu).

Remarks. This new species is closely related to *Tibioploides pacificus* Eskov et Marusik, 1991, but is distinguishable from the latter by the shape of tibia of male palp and the details of female genitalia.

Genus *Asthenargus* Simon et Fage, 1922

[Japanese name: Usuiro-saragumo-zoku]

Note. This is a well-known genus in Europe and northern Asia, but is recorded from Japan for the first time.

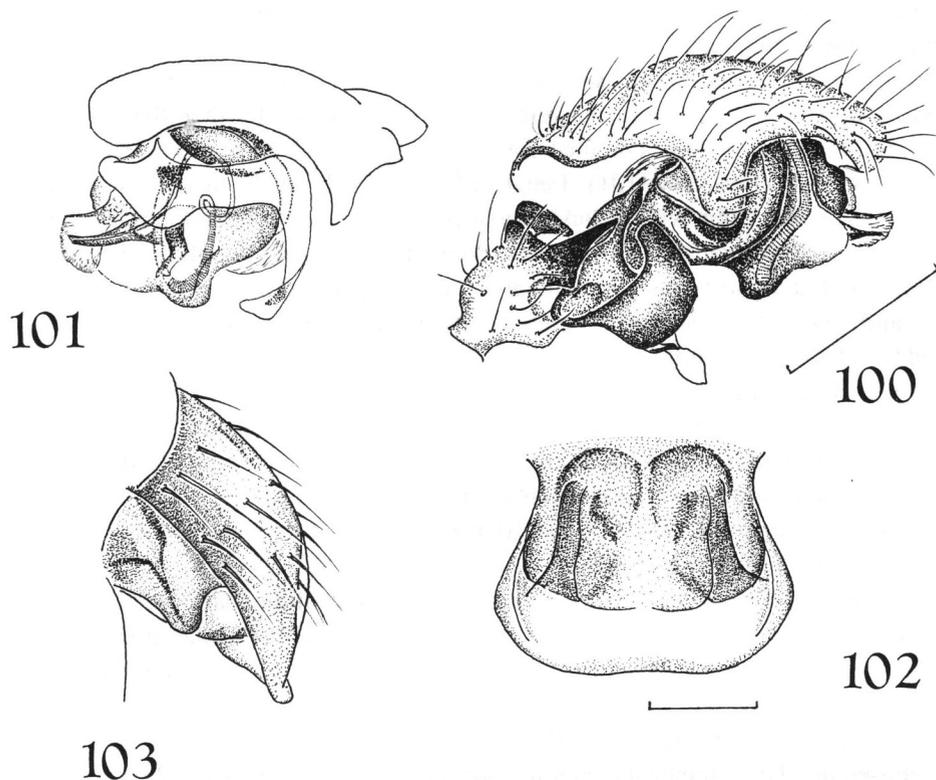
Asthenargus nipponius sp. nov.

[Japanese name: Nihon-usuiro-saragumo]

(Figs. 100–103)

Type specimens. Holotype: ♂, Nishizawa-keikoku Valley, Mitomi-mura, Higashi-yamanashi-gun, Yamanashi Pref., Honshu, Japan, 25–VII–1988, H. Saito leg. (NSMT-Ar 4291); paratypes: 21 ♀9♂, same data as for the holotype (NSMT-Ar 4292–4293).

Other specimens examined. 1 ♀, Mt. Yaotome-yama, Izumi-shi, Miyagi Pref., 29–III–1983, K. Sasaki leg., 1 ♂, Kôrin-no-taki Fall, Naganohara-machi, Agatsuma-gun, Gunma Pref., 18–XI–1990, Y. Suganami leg., 1 ♀, Kamiyubara, Naganohara-machi, Agatsuma-gun, Gunma Pref., 29–IV–1990, Y. Suganami leg., 2 ♂, Dôwa State Forest, Naganohara-machi, Agatsuma-gun, Gunma Pref., 18–XI–1990 & 24–XI–1991, Y. Suganami leg., 1 ♂, Ryûgû, Ozegahara Marsh, 1,450 m alt., Katashina-mura, Tone-gun, Gunma Pref., 23–X–1995, Y. Suganami leg., 1 ♂, Mt. Akagi-san, Seta-gun, Gunma Pref., 2–XI–1993, K. Suzuki leg., 13 ♀, Unryû-keikoku Valley, Nikkô-shi, Tochigi Pref., 25–V–1984, H. Saito leg., 10 ♀, Matsuda-chô, Ashikaga-shi, Tochigi Pref., 2–VI–1979, H. Saito leg., 16 ♀, Hikoma, Tanuma-chô, Aso-gun, Tochigi Pref., 4–IV–1981, H. Saito leg., 1 ♀, Tashiro-rindô, Fujiwara-chô, Shioya-gun, Tochigi Pref., 25–IX–1995, Y. Suganami leg., 1 ♀, Onuma-kôsen, 960 m alt., Shiobara-chô, Shioya-gun, Tochigi Pref., 13–XI–1994, Y. Suganami leg., 1 ♀, Mt. Hanazono-yama, Kitaibaragi-shi, Ibaragi Pref., 17–XI–1985, Y. Suganami leg., 1 ♂, Tateware-yama, Takahagi-shi, Ibaragi Pref., 4–XI–1985, Y. Suganami leg., 1 ♀, Nakayama, Nishitama-gun, Tokyo, 23–X–1982, H. Sato leg., 2 ♀, Mt. Kushigata-yama, between Nakakoma-gun and Minamikoma-gun, Yamanashi Pref., 8–V–1994, H. Saito leg., 3 ♀, Kaza-ana Cave, Konami, Suwa-shi, Nagano Pref., 7–X–1976, Y. Chikuni leg., 1 ♀, Komagahara, 800 m alt., Shitara-chô, Kitashitara-gun, Aichi Pref., 23–X–1994, K. Ogata leg.



Figs. 100–103. *Asthenargus nipponius* sp. nov., male holotype (NSMT-Ar 4291) from Yamanashi Pref. and a female paratype (NSMT-Ar 4292) from type locality. — 100, male palp, retrolateral view; 101, bulb of male palp, prolateral view; 102, epigynum, ventral view; 103, epigynum, lateral view. [Scales: 100–101, 0.2 mm; 102–103, 0.1 mm.]

Description. Male (holotype): Body length 2.07 mm, prosoma length 1.00 mm, width 0.80 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 3.02 mm (0.85+1.05+0.63+0.49), II 2.81 mm (0.78+0.93+0.61+0.49), III 2.25 mm (0.66+0.73+0.49+0.37), IV 2.94 mm (0.85+1.00+0.63+0.46).

Prosoma: Carapace light yellowish brown; head raised high but not projecting; eyes relatively small, each eye with black ring, anterior eye-row recurved, anterior median eyes almost adjoining, distance between anterior median eye and anterior lateral eye slightly shorter than the diameter of anterior median eye; posterior eye-row almost straight, 4 eyes standing equidistantly, distance between posterior median eyes and distance between posterior median eye and posterior lateral eye almost equal to the diameter of the median eye, clypeus slightly longer than the length of median ocular area. Sternum light yellowish brown, tinged with black, cordate and convex, sparsely covered by long hairs. Chelicera light yellowish brown, tinged with red, pro-

laterally with a large hook-shaped boss (frontal odontoid process), the promargin of fang furrow forming a sclerotized carina (a longitudinal keel substituting promarginal teeth), a small vestigial tooth present between distal end of carina and the base of fang; legs yellowish brown, distance between coxae IV shorter than the diameter of the coxa, the order of spines on the tibiae I–IV, 2221, Tm IV absent, Tm I ca. 0.31.

Male palp (Figs. 100–101). Length of femur and patella in ratio 4:1, patella shorter than tibia, tibia with 2 dorsal trichobothria and a retrolateral apophysis triangular, strongly sclerotized and apically pointed; cymbium strongly curved and U-shaped, widest at the middle, embolic division L-shaped, its distal part extending ventrad and visible from ectal view, embolus siliquous, long and slender, apically covered by a flabellate embolic membrane.

Opisthosoma grey, without markings; haplotracheate.

Female (a topotypical paratype; NSMT-Ar 4292): Body length 1.95 mm, prosoma length 0.90 mm, width 0.71 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.53 mm (0.73+0.85+0.51+0.44), II 2.33 mm (0.68+0.77+0.49+0.39), III 1.97 mm (0.59+0.63+0.41+0.34), IV 2.48 mm (0.73+0.85+0.54+0.36).

General appearance and coloration similar to those of the male. Head not highly raised as in the male. Clypeus as long as the length of median ocular area. Chelicera without a hook-shaped frontal boss and promarginal carina, promargin of fang furrow with 5 teeth, retromargin with 4 small teeth.

Female genitalia (Figs. 102–103): Epigynum a thick plate distally widened and composed of a large, trapezoid ventral plate and a small, ovate dorsal plate.

Etymology. Specific name is derived from the name of the country.

Distribution. Japan (Honshu).

Remarks. This new species can be easily separated from congeners known from Europe, Caucasus, Nepal and Kirghizia by the presence of peculiar L-shaped embolic division in the male palp and the shape of epigynal plates in female genitalia. Some characteristics in male of this species are in common with species of the related genus *Asthenargoides* Eskov, 1993, for instance, the presence of a dorso-ectal apophysis on palpal tibia and a sclerotized carina (in place of teeth) on promargin of fang furrow of chelicera. Although Eskov (1993) put *Asthenargoides* in the subfamily Erigoninae, the respiratory system of spiders of the genus should have a haplotracheate form and the genus should stand in a linyphiine group.

Asthenargus matsudae sp. nov.

[Japanese name: Hime-usuiro-saragumo]

(Figs. 104–107)

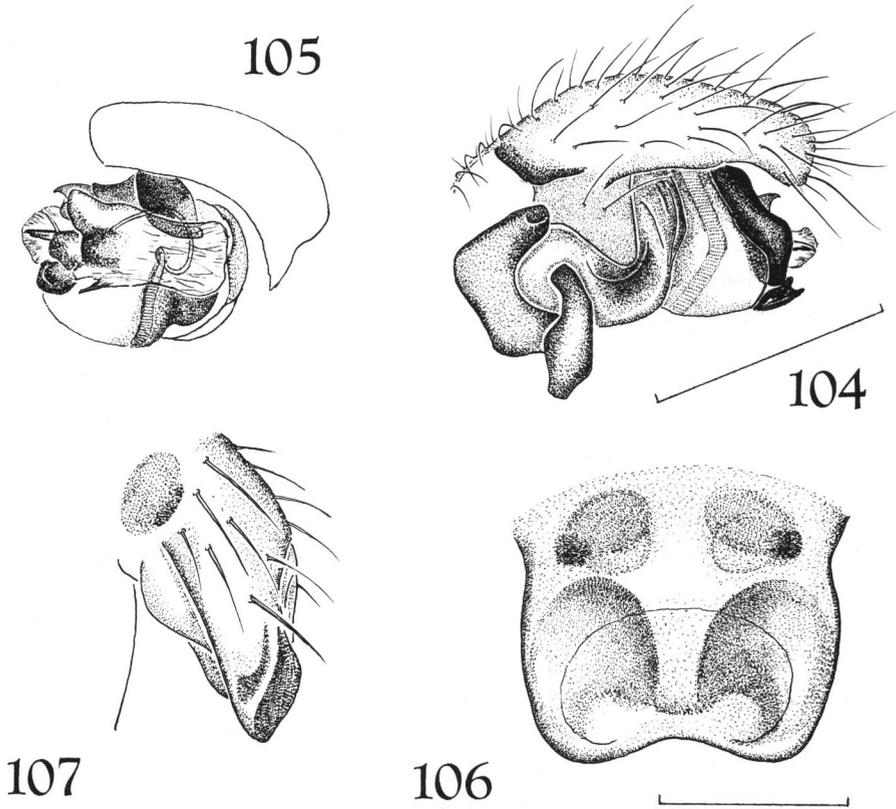
Type specimens. Holotype: ♂, Nagusa-chô, Ashikaga-shi, Tochigi Pref., Honshu, Japan, 18–IV–1981, H. Saito leg. (NSMT-Ar 4294); paratypes: 4 ♀ 3 ♂, same data

as for the holotype (NSMT-Ar 4295–4296), 2 ♀, same locality and collector as for the holotype, 11–V–1979 (NSMT-Ar 4297), 4 ♀1 ♂, Mt. Sekison-san, Komata-chô, Ashikaga-shi, Tochigi Pref., 30–XI–1980, H. Saito leg. (NSMT-Ar 4298), 1 ♂, Komata-chô, Ashikaga-shi, Tochigi Pref., 25–I–1980, H. Saito leg. (NSMT-Ar 4565), 10 ♀3 ♂, Oiwa-yama, Oiwa-chô, Ashikaga-shi, 6–V–1979, 4–IV–1980 & 22–III–1981, H. Saito leg. (NSMT-Ar 4299–4300, 4564), 2 ♀, Matsuda-chô, Ashikaga-shi, Tochigi Pref., 2–VI–1979, H. Saito leg. (NSMT-Ar 4566), 1 ♀, Mt. Gyôdô-san, Ashikaga-shi, Tochigi Pref., 19–V–1979, H. Saito leg. (NSMT-Ar 4567).

Other specimens examined. 1 ♀, Izumi-shi, Miyagi Pref., Honshu, 29–III–1983, K. Sasaki leg., 2 ♀14 ♂, Shinrin-kôen Park, Sendai-shi, Miyagi Pref., date unknown, K. Sasaki leg., 3 ♀2 ♂, Konuma, Mt. Akagi-san, Seta-gun, Gunma Pref., 16–V–1979, H. Saito leg., 4 ♀3 ♂, Mt. Takadate-yama, Mashiko-chô, Haga-gun, Tochigi Pref., 4–XII–1998, H. Saito leg., 1 ♀1 ♂, Ashio-chô, Kamitsuga-gun, Tochigi Pref., 2–IV–1982, H. Saito leg., 1 ♀, Tsukui-ko Lake, Tsukui-gun, Kanagawa Pref., 13–IV–1986, A. Tanikawa leg., 1 ♀, Kawaguchi-ko Lake, Kawaguchiko-chô, Minamitsuru-gun, Yamanashi Pref., 12–VI–1983, A. D. Blest leg., many ♀♂, Kanpachi-chô, Toyota-shi, Aichi Pref., 13–XI–1990, 7–XII–1990 & 11–II–1991, K. Ogata leg., many ♀♂, Sanage-chô, Toyota-shi, Aichi Pref., 1–XI–1987, 5–X–1988 & 5–XI–1989, K. Ogata leg., 22 ♀1 ♂, Hiomo, Asuke-chô, Higashikamo-gun, Aichi Pref., 16–VIII–1987 & 25–X–1987, K. Ogata leg., 1 ♀, Mt. Rainichi-dake, 140–200 m alt., Kinoshiki-chô, Kinoshiki-gun, Hyôgo Pref., 29–V–1988, N. Tsurusaki leg., 1 ♀1 ♂, Iwayadô, Wakasachô, Yazu-gun, Tottori Pref., date unknown, N. Tsurusaki leg., 1 ♀, Mt. Hanamiyama, 780 m alt., Nichinan-chô, Hino-gun, Tottori Pref., 23–V–1988, N. Tsurusaki leg., 4 ♀1 ♂, Tottori-shi, 160 m alt., Tottori Pref., 19–IV–1988, N. Tsurusaki leg., 2 ♀, Mt. Hikosan, Fukuoka-shi, Fukuoka Pref., Kyushu, 13–16–III–1960, C. Okuma leg., 1 ♀, Fukuregi, Amakusa-chô, Amakusa-gun, Kumamoto Pref., 30–IV–1979, T. Irie leg., 1 ♀2 ♂, Mt. Kitamukiyama, Aso Mts., Kumamoto Pref., 17–XII–1972 & 9–XII–1973, T. Irie leg., 1 ♀, Itsuki-mura, Kuma-gun, Kumamoto Pref., 2–V–1982, T. Irie leg., 1 ♀, same locality, 2–II–1993, K. Suzuki leg., 1 ♀, Noda-mura, Izumi-gun, Kagoshima Pref., 23–XI–1993, K. Suzuki leg., 1 ♀, Mt. Shibi-san, Satsuma-gun, Kagoshima Pref., 9–VI–1993, K. Suzuki leg., 2 ♀, Mt. Takakumayama, Kagoshima-shi, Kagoshima Pref., 14–VIII–1993, K. Suzuki leg., 1 ♂, Mt. Miyatayama, So'o-gun, Kagoshima Pref., 1–XII–1993, K. Suzuki leg., 2 ♂, Mt. Inao-dake, Kimotsuki-gun, Kagoshima Pref., 19–XII–1993, K. Suzuki leg.

Description. Male (holotype): Body length 1.56 mm, prosoma length 0.71 mm, width 0.59 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.83 mm (0.54+0.63+0.37+0.29), II 1.67 mm (0.49+0.56+0.34+0.28), III 1.35 mm (0.39+0.44+0.28+0.24), IV 1.79 mm (0.54+0.61+0.38+0.26).

Prosoma: Carapace yellowish brown, radiating lines darker and distinct, median furrow also distinct and black, a row of equidistant 5 long hairs present between median furrow and posterior median eyes; head raised high but not projecting; each eye



Figs. 104–107. *Asthenargus matsudae* sp. nov., male holotype (NSMT-Ar 4294) from Tochigi Prêf. and a female paratype (NSMT-Ar 4295) from type locality. — 104, male palp, retrolateral view; 105, bulb of male palp, prolateral view; 106, epigynum, ventral view; 107, epigynum, lateral view. [Scales: 104–105, 0.2 mm; 106–107, 0.1 mm.]

with black ring, anterior eye-row relatively recurved, anterior median eyes adjoining, distance between anterior median eye and anterior lateral eye slightly shorter than the radius of anterior median eye; posterior eye-row slightly recurved, distance between posterior median eyes almost equal to the radius of the median eye, distance between posterior median eye and posterior lateral eye slightly shorter than the radius of the median one, clypeus shorter than the length of median ocular area. Sternum light yellowish brown, widely margined with dark brown. Chelicera light yellowish brown, tinged with red, promargin of fang furrow with 6 teeth, retromargin with 5 teeth; legs light yellowish brown, distance between coxae IV almost equal to the diameter of the coxa, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I ca. 0.33.

Male palp (Figs. 104–105). Length of femur and patella in ratio 23 : 7, patella as long as tibia, tibia with 2 dorsal trichobothria but without any apophysis; cymbium

slightly twisted and U-shaped, embolic division rectangular, basally semitransparent, suprategular apophysis well-developed, covering distal part of tegulum, embolus short and digitiform, covered by embolic membrane.

Opisthosoma greyish black, with 2 pairs of sigilla; haplotracheate.

Female (a topotypical paratype; NSMT-Ar 4295): Body length 1.54 mm, prosoma length 0.66 mm, width 0.49 mm; lengths of legs (palp omitted) [total length (femur+patella and tibia+metatarsus+tarsus)]: I 1.61 mm (0.49+0.56+0.29+0.27), II 1.51 mm (0.44+0.51+0.29+0.27), III 1.24 mm (0.37+0.56+0.29+0.24), IV 1.58 mm (0.49+0.56+0.29+0.24).

General appearance and coloration similar to those of the male.

Female genitalia (Figs. 106–107): Epigynum lingulated, anterior margin covered by a large, hollow ventral plate distally depressed.

Etymology. This species is dedicated to Mrs. Mayumi Matsuda, Hokkaido, in honor of her contribution to the Japanese arachnology.

Distribution. Japan (Honshu and Kyushu).

Remarks. On the basis of the structure of male palp, this new species obviously belongs to the genus group of *Asthenargus* designated by Millidge (1977). Although the authors could not find any genus exactly suitable for this species, it is regarded as a member of the genus *Asthenargus* in widest sense. In general appearance this new species resembles *Asthenargus thaleri* described from Nepal by Wunderlich (1983) and *A. caucasicus* from Caucasus by Tanasevitch (1987), but is clearly distinguished from these species by the absence of tibial apophysis of male palp and the frontal boss of male chelicera and by having a peculiar structure of ventral epigynal plate.

Genus *Ryojius* nov.

[Japanese name: Ôi-yamakeshigumo-zoku]

Type species. *Ryojius japonicus* sp. nov.

Other species included. *Ryojius occidentalis* sp. nov.

Diagnosis. Small linyphiine spiders with body length 1.6–2.4 mm, haplotracheate, standing in the genus group of *Aphileta* established by Millidge (1977) on the basis of the structure of male palpal organ, especially close to *Maro* O. Pickard-Cambridge, 1906. The new genus is, however, distinguishable from *Maro* by the presence of a peculiar apophysis on the tibia of male palp and by the condition of dorsal spines on the tibiae of legs.

Description. Prosoma: Carapace brown, head swollen; eyes small and with black ring, anterior median eye the smallest, other eyes in same size, three times as large as the anterior median one, clypeus as long as or slightly longer than the length of median ocular area; chelicera reddish brown, with stridulating files on the retrolateral surface, promargin of fang furrow with 5 teeth, retromargin with 4–6 denticles;

sternum cordate, convex, and furnished with a few long setae; legs yellowish brown, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I 0.30–0.35. Male palp: tarsal organ with a developed membranous lamella, tibia with two trichobothria and a small, sclerotized apophysis extending retrolaterad. Opisthosoma blackish grey, with two pairs of sigilla, but without markings. Female genitalia with a scape.

Etymology. The generic name is dedicated to the late Prof. Ryoji Oi in honor of his great contribution to the study of linyphiids; masculine.

Remark. Two species from Japan are known under this genus.

***Ryojius japonicus* sp. nov.**

[Japanese name: Yamato-ôi-yamakeshigumo]

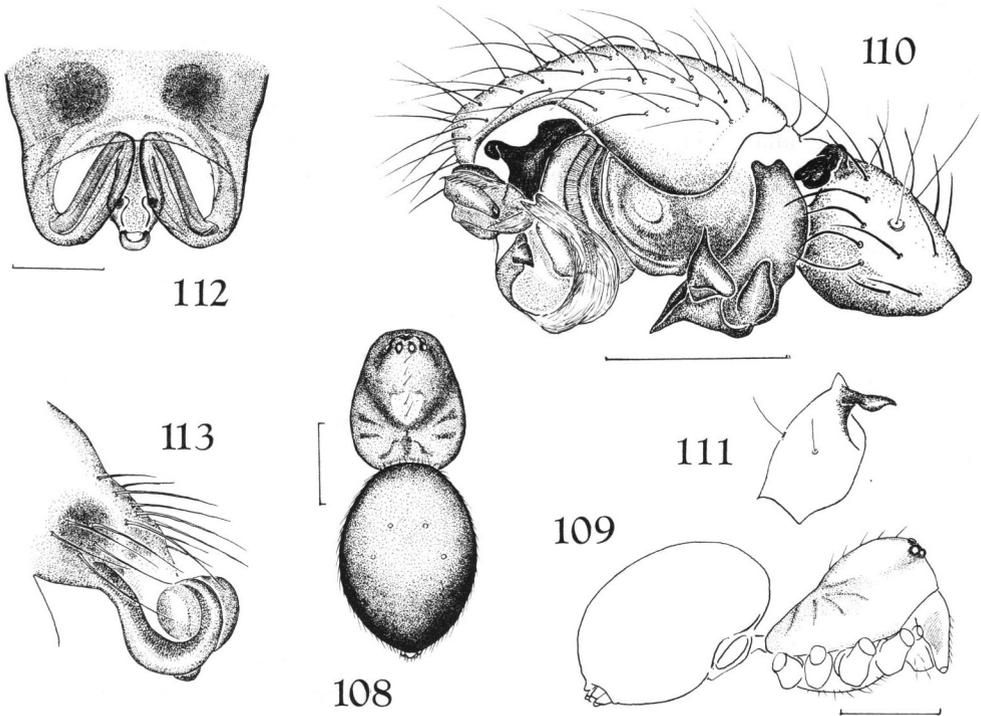
(Figs. 108–113)

Type specimens. Holotype: ♂, Mukaishima-chô, Mitsugi-gun, Hiroshima Pref., Honshu, Japan, 13–XI–1977, J. Aoki leg. (NSMT-Ar 4229); paratypes: 2 ♀, same data as for the holotype (NSMT-Ar 4179–4180).

Other specimens examined. 2 ♀, Sendai-shi, Miyagi Pref., Honshu, Japan, 26–V–1983, A. D. Blest leg., 2 ♀, Shinrin-kôen Park, Sendai-shi, Miyagi Pref., 7–XI–1982 & 3–V–1983, K. Sasaki leg., 1 ♀, Agatsuma-keikoku Valley, Agatsuma-chô, Agatsuma-gun, Gunma Pref., 16–VI–1991, Y. Suganami leg., 1 ♂, Fujiwara-chô, Shioya-gun, Tochigi Pref., 25–IX–1995, Y. Suganami leg., 1 ♀, Onuma-kôen Park, Shiobara-chô, Shioya-gun, Tochigi Pref., 13–XI–1994, Y. Suganami leg., 1 ♂, Nasu-chô, Nasu-gun, Tochigi Pref., 16–X–1994, Y. Suganami leg., 1 ♀ 1 ♂, Yokokawa, Takahagi-shi, Ibaragi Pref., 26–XI–1989, Y. Suganami leg., 3 ♀, Kawaguchi-ko Lake, Yamanashi Pref., 12–VI–1983, A. D. Blest leg., 7 ♀ 2 ♂, Kanpachi-chô, Toyota-shi, Aichi Pref., 2–II–1990, K. Ogata leg., 1 ♀, Shinden-chô, Okazaki-shi, Aichi Pref., 24–XI–1990, K. Ogata leg., 1 ♀, Kyoto-shi, Kyoto Pref., 16–VI–1983, A. D. Blest leg., 1 ♀, Suwabara, Kihoku-chô, So'o-gun, Kagoshima-Pref., Kyushu, 1–XII–1993, K. Suzuki leg.

Description. Male (holotype). Body length 1.88 mm, prosoma length 0.90 mm, width 0.73 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.33 mm (0.70+0.80+0.48+0.35), II 2.18 mm (0.63+0.75+0.45+0.35), III 1.65 mm (0.53+0.58+0.29+0.25), IV 2.29 mm (0.73+0.78+0.48+0.23).

Prosoma: Carapace yellowish brown with indistinct radiating lines, head relatively raised, a row of several long setae present between ocular area and median furrow (Figs. 108–109); eyes small with black ring, anterior eye-row slightly recurved, distance between anterior median eyes equal to a half of diameter of anterior median eye, distance between anterior median eye and anterior lateral eye slightly wider than diameter of anterior median eye; posterior eye-row recurved, posterior eyes equal in size, distance between posterior median eyes equal to diameter of posterior median eye, distance between posterior median eye and posterior lateral eye wider than diam-



Figs. 108–113. *Ryojius japonicus* gen. et sp. nov., male holotype (NSMT-Ar 4229) from Hiroshima Pref. and a female paratype (NSMT-Ar 4179) from type locality. — 108, Male body, dorsal view; 109, male body, lateral view; 110, male palp, retrolateral view; 111, tibia of male palp, dorsal view; 112, epigynum, ventral view; 113, epigynum, lateral view. [Scales: 108–109, 0.5 mm; 110–111, 0.2 mm; 112–113, 0.1 mm.]

eter of posterior median eye; width of clypeus equal to the length of median ocular area. Chelicera reddish-yellowish brown, retrolaterally with stridulating files, promargin of fang furrow with 5 teeth, retromargin with 4 denticles; legs yellowish brown, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I ca. 0.33.

Male palp (Figs. 110–111): Length of femur and patella in ratio 17:5, tibia as long as patella, with two trichobothria and a small apophysis strongly sclerotized, digitiform, curved retrolaterad and with a pointed tip; paracymbium distally with two short branches curved dorsad and with a pointed tip, respectively; embolic division with a membranous lamella plate-shaped and strongly curved.

Opisthosoma ovate, blackish grey with two pairs of sigilla.

Female (a topotypical paratype, NSMT-Ar 4179): Body length 2.00 mm, prosoma length 0.88 mm, width 0.68 mm; lengths of palp and legs [total length (femur+patella and tibia+metatarsus+tarsus)]: palp 0.87 (0.31+0.28+—+0.28); leg I 1.91 mm (0.60+0.64+0.36+0.31), II 1.78 mm (0.53+0.60+0.34+0.31), III

1.49 mm (0.45+0.48+0.30+0.26), IV 1.98 mm (0.63+0.68+0.38+0.29).

Head raised, but lower than that of the male, anterior eye-row almost straight, retromargin of fang furrow with 5 denticles, Tm I ca. 0.34; other characteristics in general appearance and coloration as same as those of the male.

Female genitalia (Figs. 112–113): Ventral plate wider than long, intromittent ducts curved, scape relatively small, with a genital socket large and sclerotized.

Etymology. Derived from the name of the country of origin.

Distribution. Japan (Honshu and Kyushu).

Remarks. This new species is closely related to *Ryojius occidentalis* sp. nov. described below. However, both the species are distinguishable from each other by the following characteristics: the dorso-lateral tibial apophysis on male palp is digitiform in *R. japonicus*, while that is apically spiniform in *R. occidentalis*; the ventral plate of epigynum of *R. japonicus* sp. nov. is longer than that of *R. occidentalis* sp. nov.

***Ryojius occidentalis* sp. nov.**

[Japanese name: Kansai-ōi-yamakesigumo]

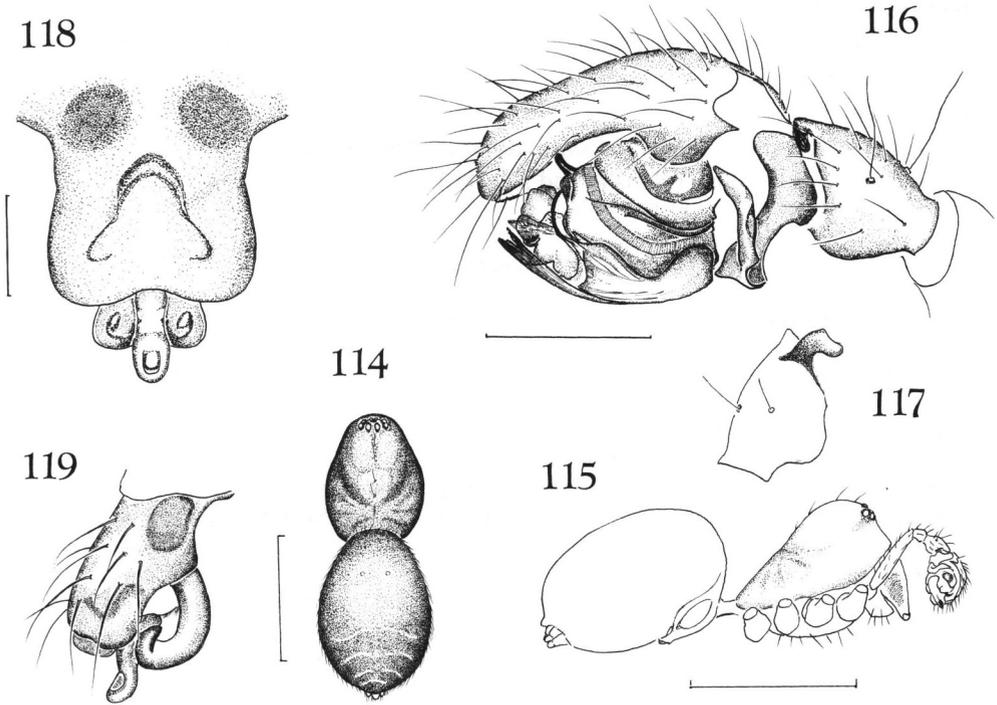
(Figs. 114–119)

Type specimens. Holotype: ♂, Ogi, Izumisano-shi, Osaka, Honshu, Japan, 2–IV–1984, Y. Nishikawa leg. (NSMT-Ar 4230); paratypes: 1 ♀3 ♂, same data as for the holotype (NSMT-Ar 4231–4232).

Other specimens examined. 5 ♀, Itsuki-mura, Kuma-gun, Kumamoto Pref., Kyushu, Japan, 9–X–1983, 3–XI–1984 & 15–IX–1985, T. Irie leg. (NSMT-Ar 4233–4235).

Description. Male (holotype): Body length 2.13 mm, prosoma length 1.00 mm, width 0.80 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.84 mm (0.83+0.98+0.58+0.43), II 2.74 mm (0.80+0.95+0.58+0.41), III 2.06 mm (0.60+0.68+0.45+0.33), IV 2.81 mm (0.85+0.98+0.60+0.38).

Prosoma: Carapace light brown with indistinct radiating lines and a distinct median furrow, head relatively raised, a row of several long setae present between ocular area and median furrow (Figs. 114–115); eyes small with black ring, anterior eye-row almost straight, distance between anterior median eyes equal to a half of diameter of anterior median eye, distance between anterior median eye and anterior lateral eye slightly wider than diameter of anterior median eye; posterior eye-row recurved, posterior eyes equal in size, distance between posterior median eyes equal to diameter of posterior median eye, distance between posterior median eye and posterior lateral eye wider than diameter of posterior median eye; clypeus wider than the length of median ocular area. Chelicera yellowish brown, more reddish than in former species, retrolaterally with stridulating files, promargin of fang furrow with 5 teeth, retromargin with 4 denticles; legs yellowish brown, distance between both the coxae IV equal to diam-



Figs. 114–119. *Ryojius occidentalis* gen. et sp. nov., male holotype (NSMT-Ar 4230) from Osaka Pref. and a female paratype (NSMT-Ar 4231) from type locality. — 114, Male body, dorsal view; 115, male body, lateral view; 116, male palp, retrolateral view; 117, tibia of male palp, dorsal view; 118, epigynum, ventral view; 119, epigynum, lateral view. [Scales: 114–115, 1.0 mm; 116–117, 0.2 mm; 118–119, 0.1 mm.]

eter of the coxa, the order of spines on the tibiae I–IV, 2211, Tm IV absent, Tm I ca. 0.31.

Male palp (Figs. 116–117): Length of femur and patella in ratio 3:1, tibia slightly longer than patella, with two trichobothria and a small apophysis strongly sclerotized and spiniform with a pointed tip; paracymbium distally with a stick-shaped, long process; embolic division with a membranous lamella flattened, long and penicillate.

Opisthosoma ovate, blackish grey with two pairs of sigilla.

Female (a topotypical paratype; NSMT-Ar 4231): Body length 2.01 mm, prosoma length 0.93 mm, width 0.68 mm; lengths of legs [total length (femur+patella and tibia+metatarsus+tarsus)]: I 2.29 mm (0.66+0.79+0.45+0.39), II 2.11 mm (0.63+0.73+0.39+0.36), III 1.82 mm (0.54+0.59+0.38+0.31), IV 2.32 mm (0.70+0.81+0.46+0.35).

Head raised, but not high as in male, distance between anterior median eye and

anterior lateral eye equal to diameter of anterior median eye, Tm I ca. 0.32; other characteristics in general appearance and coloration as same as those in male.

Female genitalia (Figs. 118–119): Ventral plate longer than wide, terminal part smaller than that of the former species, scape with a small genital socket.

Etymology. Specific name from Latin meaning “western.”

Distribution. Japan (Honshu and Kyushu).

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