A Revision of the Japanese Spiders of the Genus
Metleucauge LEVI, 1980 (Araneae: Tetragnathidae)

Akio TANIKAWA

After an examination of many specimens from various parts of Japan, I recognized four species of the genus Metleucauge occurring in the country. These are two known species, M. yunohamensis (Bösenberg et Strand, 1906) and M. kompirensis (Bösenberg et Strand, 1906), and two new species.

Before LEVI (1980) described Metleucauge as a new genus, Japanese spiders of the genus were placed in Meta. Bösenberg and Strand (1906) described two new species Meta kompirensis and Meta yunohamensis in their publication entitled “Japanische Spinnen.” YAGINUMA (1958) already pointed out that these species are quite different from the other species of the genus Meta and should be placed in a separate genus or subgenus. When LEVI (1980) described Metleucauge, he transferred these species from Meta to Metleucauge.

On the other hand, Bösenberg and Strand (1906) reported Meta reticulata (Linнé, 1758) from Japan. It was synonymized with Meta segmentata (CLerck, 1758) by decision of the starting point of the international code of zoological nomenclature (1985, 3rd ed., Article 3), and transferred from Meta to Metellina by LEVI (1980). YAGINUMA (1986a) compared the Japanese specimens with those of Metellina segmentata from Europe. As a result, he confirmed that the spider recorded as Meta segmentata by many Japanese authors was misidentified. Besides, he pointed out that the Japanese species should be placed in Metleucauge. In this paper, the spider will be described as a new species under the name Metleucauge vaginumai.

I recognized one more new species occurring in Japan. It will be described under the name Metleucauge chikunii.

All the type specimens designated in this paper are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

The abbreviations used in this paper are as follows: MNHN, Muséum


**Diagnosis.** *Metleucauge* can be separated from *Meta* or *Metellina* by following features. The abdomen is oval and widest at about the middle. The epigynum is rather flat and has pockets on the sides. The male palp is rather long and its trochanter has a distal spur. The paracymbium of male palp is small.

**Description.** Carapace longer than wide. MOA as wide as long or slightly wider than long, wider behind than in front. Chelicera with 3 promarginal and 3–4 retromarginal teeth. Labium wider than long. Sternum longer than wide. Trochanter of the male palp with distal spur (Figs. 4, 12, 20, 27), cymbium caudally with projection (Figs. 3, 6, 10, 14, 18, 22, 26, 29), paracymbium small (Figs. 2, 11, 19, 25). Abdomen oval, longer than wide, widest at about the middle (Figs. 1, 7, 8, 15, 16, 23; except *M. kompirensis*, as Figs. 24, 30). Epigynum rather flattened, sclerotized, with bulge in the middle, with pockets on the sides (Figs. 5, 13, 21, 28).

**Species.** Including two new species described in this paper, five species are known under this genus. Of these, one species is described from North America, remaining four species are known from East Asia. Four species are occurring in Japan.

**Remarks.** The placement of *Meta* and its related group, including *Metleucauge*, has been controversial. Simon (1929) placed it in the subfamily Tetragnathinae of the family Argiopidae. Many authors placed it in the family Araneidae (Roewer, 1942; Bonnet, 1957; Yaginuma, 1958, 1968, 1970, 1977, 1986a; Palmgren, 1978; Levi, 1980; Zhu, 1983; Paik & Kim, 1985; Wunderlich, 1987; Chikuni, 1989; Kim, 1991). Brignoli (1983) treated it as an independent family Metidae. Recently, it seems to be placed in the family Tetragnathidae (Locket, Millidge & Merrett, 1974; Heimer & Nentwig, 1982; Roberts, 1985; Levi, 1986; Platnick, 1989). In this paper, I will place it in the family Tetragnathidae, agreeing with Levi's (1986) discussion. I considered the following features are important. The male palp is elongated; it lacks a prominent radix and a median apophysis; it has a spherical tegulum. The epigynum is a relatively flat structure. Legs are held straight in resting position. However, a further examination is necessary to solve the phylogenetic problems not only about the relationship between Araneidae and Tetragnathidae but also about the taxonomic position of the other genera group or subfamily of the large family Araneidae.

**Key to the Japanese Species**

1. Female ........................................................................ 2.
— Male ...................................................................... 5.
2. Epigynum with nose-shaped swelling in the middle (Fig. 21) ..............  
   \textit{Metleucauge chikunii} sp. nov.
   \begin{itemize}
   \item Epigynum with gently sloping bulge in the middle (Figs. 5, 13, 28) \ldots 3.
   \end{itemize}
3. Openings of epigynum widely separated (more than a half of the width of epigynum) (Fig. 13) ..............  
   \textit{Metleucauge yaginumai} sp. nov.
   \begin{itemize}
   \item Openings of epigynum separated not so widely (less than a half of the width of epigynum) (Figs. 5, 28) \ldots 4.
   \end{itemize}
4. Epigynum with somewhat spherical bulge in the middle (Fig. 28); carapace with V-shaped dark brown marking not including a pair of light coloured spots (Fig. 24) ..............................................  
   \begin{itemize}
   \item The middle bulge of epigynum sloping more gently (Fig. 5); carapace with V-shaped dark coloured marking including a pair of light coloured spots (Fig. 1) \ldots \textit{Metleucauge yunohamensis} (Bösenberg et Strand, 1906)
   \end{itemize}
5. Tibia of palp longer than cymbium (tibia/cymbium 1.11–1.71; Figs. 20, 22, 27, 29); femur of palp about one and a half times as long as tibia (femur/tibia 1.49–1.71; Figs. 20, 27). Dark brown marking between eye area and median fovea not include a pair of light coloured spots (Figs. 23, 30) ......................................................... 7.
   \begin{itemize}
   \item Tibia of palp shorter than cymbium or almost as long as cymbium (tibia/cymbium 0.85–1.02; Figs. 4, 6, 12, 14); femur of palp about two times as long as tibia (femur/tibia 1.79–2.08; Figs. 4, 12). Dark brown marking between eye area and median fovea include a pair of light coloured spots (Figs. 7, 15; rarely without such spots in \textit{M. yaginumai}) \ldots 6.
   \end{itemize}
6. Tip of the sclerite between conductor and embolus point inward (Fig. 2). Basal part of conductor somewhat constricted (Fig. 2). Projection of posterior part of cymbium smaller than that of the following species (Fig. 3) \ldots \textit{Metleucauge yunohamensis} (Bösenberg et Strand, 1906)
   \begin{itemize}
   \item Tip of the sclerite between conductor and embolus point forward (Fig. 11). Basal part of conductor not constricted (Fig. 11). Projection of posterior part of cymbium larger than that of the preceding species (Fig. 10) \ldots \textit{Metleucauge yaginumai} sp. nov.
   \end{itemize}
7. Tibia of palp about one and a half times as long as cymbium (tibia/cymbium 1.33–1.71; Figs. 20, 22); femur of palp more than two times as long as cymbium (femur/cymbium 2.15–2.55; Fig. 20). In lateral view, posterior part of cymbium thicker than that of the following species (Fig. 22) \ldots \textit{Metleucauge chikunii} sp. nov.
   \begin{itemize}
   \item Tibia of palp rather longer than cymbium (tibia/cymbium 1.11–1.25; Fig. 29); femur of palp about two times as long as cymbium (femur/cymbium 1.83–1.98; Fig. 27). In lateral view, posterior part of cymbium thinner than that of the preceding species (Fig. 29) \ldots \textit{Metleucauge kompirensis} (Bösenberg et Strand, 1906)
Meteucauge yunohamensis (Bösenberg et Strand, 1906)

(Figs. 1-7)


Meta yunohamensis: Saito, 1939, p. 9; 1959, p. 100.


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Description. Measurement (in mm). Body length ♀♂ 5.80–13.25, ♂ 4.30–6.95; carapace length ♀♂ 2.18–4.40, ♂ 2.13–3.36, width ♀♂ 1.75–3.60, ♂ 1.74–2.72; abdomen length ♀♂ 3.92–9.80, ♂ 2.69–4.40, width ♀♂ 2.88–7.30, ♂ 1.69–2.60. Length of legs of 1♀♂ from Kanagawa Pref. as shown in Table 1.

A. TANIKAWA

Table 1. Measurement of leg segments of *Metleucauge yunohamensis* Bös. et Str., 1906 (in mm; ♂/♀).

<table>
<thead>
<tr>
<th>Leg</th>
<th>Tarsus</th>
<th>Metatarsus</th>
<th>Tibia</th>
<th>Patella</th>
<th>Femur</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1.63/1.50</td>
<td>5.33/5.27</td>
<td>4.47/4.40</td>
<td>1.63/1.33</td>
<td>5.13/5.13</td>
<td>18.19/17.63</td>
</tr>
<tr>
<td>II</td>
<td>1.23/1.07</td>
<td>3.93/3.67</td>
<td>3.23/3.13</td>
<td>1.40/1.20</td>
<td>4.13/4.00</td>
<td>13.92/13.07</td>
</tr>
<tr>
<td>III</td>
<td>0.77/0.63</td>
<td>1.90/1.60</td>
<td>1.57/1.30</td>
<td>0.80/0.70</td>
<td>2.37/2.03</td>
<td>7.41/6.26</td>
</tr>
<tr>
<td>IV</td>
<td>0.87/0.70</td>
<td>3.17/2.60</td>
<td>2.70/2.30</td>
<td>0.97/0.80</td>
<td>3.67/3.03</td>
<td>11.38/9.43</td>
</tr>
</tbody>
</table>

Female. Carapace length/width 1.22–1.27, MOA length/width 0.89–0.95, anterior width/posterior width 0.84–0.89. Chelicera with 3 promarginal and 4 retromarginal teeth. Labium length/width 0.60–0.65, sternum length/width 1.02–1.12. Length of leg I/carapace 5.35–5.61. Abdomen length/width 1.28–1.44. Epigynum with gently sloping bulge in the middle (Fig. 5).

Male. Carapace length/width 1.22–1.24, MOA length/width 0.91–1.00, anterior width/posterior width 0.87–0.94. Chelicera with 3 promarginal and 3–4 retromarginal teeth. Labium length/width 0.69–0.81, sternum length/width 1.03–1.08. Length of leg I/carapace 5.90–7.14. Male palp (Figs. 2–4, 6): tibia slightly shorter or almost as long as cymbium (tibia/cymbium 0.86–1.02); femur more than one and a half times as long as cymbium (femur/cymbium 1.62–1.89); femur more than one and a half times as long as tibia (femur/tibia 1.79–1.92). Abdomen length/width 1.55–1.72.

Coloration and markings. Female and male. Carapace light brown, margined with dark brown, with waving dark brown marking near the margin of thoracic part, with V-shaped dark brown marking including a pair of light coloured spots between eye area and median fovea (Figs. 1, 7). Abdomen white or yellowish white, with dark coloured markings (Figs. 1, 7).


Remarks. As for the distinction from the other species, see the key to the species and the remarks of *M. yaginumai*.

*Metleucauge yaginumai* sp. nov.

(Figs. 8–15)

*Meta reticulata*: BÖSENBERG & STRAND, 1906, p. 182. [nec *M. reticulata* (LINNÉ, 1758)]


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Description. Measurement (in mm). Body length ♀ 7.80–11.00, ♂ 5.13–6.33; carapace length ♀ 3.07–3.84, ♂ 2.40–3.24, width ♀ 2.47–3.20, ♂ 1.93–2.60; abdomen length ♀ 5.60–7.60, ♂ 3.36–3.90, width ♀ 3.53–5.20, ♂ 1.69–2.20. Length of legs of holotype ♀ and paratype 1♂ from Hokkaido as shown in Table 2.

Table 2. Measurement of leg segments of Mettrcauge yaginumai sp. nov. (in mm; ♀/♂).

<table>
<thead>
<tr>
<th>Leg</th>
<th>Tarsus</th>
<th>Metatarsus</th>
<th>Tibia</th>
<th>Patella</th>
<th>Femur</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1.67/1.67</td>
<td>5.33/5.67</td>
<td>4.67/4.83</td>
<td>1.67/1.63</td>
<td>5.20/5.57</td>
<td>18.54/19.37</td>
</tr>
<tr>
<td>II</td>
<td>1.30/1.23</td>
<td>3.97/4.33</td>
<td>3.53/3.83</td>
<td>1.47/1.43</td>
<td>4.30/4.57</td>
<td>14.57/15.39</td>
</tr>
<tr>
<td>III</td>
<td>0.87/0.80</td>
<td>2.03/2.13</td>
<td>1.67/1.73</td>
<td>0.93/0.83</td>
<td>2.60/2.57</td>
<td>8.10/8.06</td>
</tr>
<tr>
<td>IV</td>
<td>1.00/0.97</td>
<td>3.23/3.30</td>
<td>2.90/2.97</td>
<td>1.03/0.97</td>
<td>3.83/3.70</td>
<td>11.99/11.91</td>
</tr>
</tbody>
</table>

Female. Carapace length/width 1.18–1.28, MOA length/width 0.89–0.94, anterior width/posterior width 0.83–0.89. Chelicera with 3 promarginal and 4 retromarginal teeth. Labium length/width 0.65–0.94, sternum length/width 1.02–1.08. Length of leg I/carapace 5.39–5.80. Abdomen length/width 1.29–1.58. Epigynum with gently sloping bulge in the middle (Fig. 13); openings separated more than a half of the width of the epigynum (Fig. 13).

Male. Carapace length/width 1.22–1.31, MOA length/width 0.94–1.00, anterior width/posterior width 0.83–0.90. Chelicera with 3 promarginal and 3–4 retromarginal teeth. Labium length/width 0.79–0.86, sternum length/width 1.01–1.07. Length of leg I/carapace 5.83–6.40. Male palp (Figs. 10–12, 14): tibia slightly shorter than cymbium (tibia/cymbium 0.85–0.92); femur more than one and a half times as long as cymbium (femur/cymbium 1.63–1.85); femur almost two times as long as tibia (femur/tibia 1.91–2.08); tip of the sclerite between conductor and embolus point forward (Fig. 11). Abdomen length/width 1.57–1.81.

Coloration and markings. Female and male. Carapace light brown, marginated with dark brown, with waving dark brown marking near the margin of thoracic part, with V-shaped dark brown marking including a pair of light
coloured spots between eye area and median fovea (Figs. 8, 15), rarely without a pair of light coloured spots (Fig. 9). Abdomen white or yellowish white, with dark coloured markings (Figs. 8, 15).

**Range.** Japan.

**Remarks.** This species resembles *M. yunohamensis* Bösenberg et Strand, 1906, but can be easily distinguished by the following points. The openings of the epigynum are widely separated in *M. yaginumai* (Fig. 13; more than a half of the width of the epigynum), but they are more closely situated in *M. yunohamensis* (Fig. 5; within a half of the width of the epigynum). The tip of the sclerite between conductor and embolus of male palp points forward in *M. yaginumai* (Fig. 11), but it points inward in *M. yunohamensis* (Fig. 2). The conductor of male palp is basally rather constricted in *M. yunohamensis* (Fig. 2), but it is not constricted and it's inner outline is almost straight in *M. yaginumai* (Fig. 11). As for the distinction from the other species, see the key to the species.

**Etymology.** Named after Dr. Takeo Yaginuma, Osaka.

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Japanese Spiders of the Genus *Metleucauge*

*Metleucauge chikunii* sp. nov.  
(Figs. 16–23)


Description. Measurement (in mm). Body length ♀ 7.50–11.56, ♂ 6.40–8.10; carapace length ♀ 3.32–4.55, ♂ 3.36–4.15, width ♀ 2.70–3.60, ♂ 2.64–3.30; abdomen length ♀ 4.55–6.75, ♂ 3.72–4.60, width ♀ 3.20–5.20, ♂ 1.76–2.95. Length of legs of holotype ♀ and allotype ♂ as shown in Table 3.

Table 3. Measurement of leg segments of *Metleucauge chikunii* sp. nov.  
(in mm; ♀/♂).

<table>
<thead>
<tr>
<th>Leg</th>
<th>Tarsus</th>
<th>Metatarsus</th>
<th>Tibia</th>
<th>Patella</th>
<th>Femur</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2.40/2.20</td>
<td>8.20/7.30</td>
<td>6.90/6.30</td>
<td>2.30/1.80</td>
<td>8.00/7.20</td>
<td>27.80/24.80</td>
</tr>
<tr>
<td>II</td>
<td>1.80/1.50</td>
<td>6.30/5.30</td>
<td>5.00/4.50</td>
<td>2.00/1.60</td>
<td>6.30/5.50</td>
<td>21.40/18.40</td>
</tr>
<tr>
<td>III</td>
<td>1.10/0.90</td>
<td>3.30/2.55</td>
<td>2.40/1.95</td>
<td>1.20/0.95</td>
<td>3.75/2.95</td>
<td>11.75/9.30</td>
</tr>
<tr>
<td>IV</td>
<td>1.25/0.95</td>
<td>4.95/3.80</td>
<td>4.10/3.30</td>
<td>1.40/1.00</td>
<td>5.60/4.35</td>
<td>17.30/13.40</td>
</tr>
</tbody>
</table>

Female. Carapace length/width 1.20–1.26, MOA length/width 0.94–1.00, anterior width/posterior width 0.86–0.90. Chelicera with 3 promarginal and 4
retromarginal teeth. Labium length/width 0.64–0.74, sternum length/width 1.02–1.26. Length of leg I/carapace 5.55–6.47. Abdomen length/width 1.30–1.42. Epigynum with nose-shaped swelling in the middle (Fig. 21).

Male. Carapace length/width 1.23–1.27, MOA length/width 0.92–1.03, anterior width/posterior width 0.90–0.93. Chelicera with 3 promarginal and 4 retromarginal teeth. Labium length/width 0.82–0.89, sternum length/width 1.02–1.15. Length of leg I/carapace 6.29–7.29. Male palp (Figs. 18–20, 22): tibia about one and a half times as long as cymbium (tibia/cymbium 1.33–1.71); femur more than two times as long as cymbium (femur/cymbium 2.15–2.55); femur about one and a half times as long as tibia (femur/tibia 1.49–1.61). Abdomen length/width 1.56–2.11.

Coloration and markings. Female and male. Carapace light brown, marginated with dark brown (Figs. 16–17, 23); with dark brown marking between eye area and median fovea (Figs. 17, 23), this marking often includes light coloured median line (Fig. 16). Abdomen white, with dark grey markings (Figs. 16, 23).

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**Range.** Japan, Taiwan.

**Remarks.** This species resembles *M. eldorado* *Levi*, 1980, but can be distinguished from the latter by the following points. The epigynum of *M. chikunii* has a nose-shaped swelling in the middle (Fig. 21), but that of *M. eldorado* has a gently sloping bulge in the middle (*Levi*, 1980, Figs. 137–138). The shapes of the sclerites between conductors and emboli of the male palpi are also different from each other (Fig. 19; *Levi*, 1980, Figs. 146–150). As for the discrimination from other Japanese species, see the key to the species.

**Etymology.** Named after Mr. Yasunosuke Chikuni, Nagano.

*Metteleucauge kompirensis* (*Bösenberg et Strand, 1906*)

(Figs. 24–30)


**Specimens examined.** Type series. Syntypes: 1♀ 1 juv., Kompira, Saga, W. *Donitz* leg. (SMF 3978).


Table 4. Measurement of leg segments of *Metleucauge kompirensis* Bös. et Str., 1906 (in mm; ♀/♂).

<table>
<thead>
<tr>
<th>Leg</th>
<th>Tarsus</th>
<th>Metatarsus</th>
<th>Tibia</th>
<th>Patella</th>
<th>Femur</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2.00/2.15</td>
<td>7.80/7.95</td>
<td>5.95/6.10</td>
<td>2.10/1.90</td>
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</tr>
<tr>
<td>II</td>
<td>1.45/1.40</td>
<td>5.45/5.45</td>
<td>4.20/4.20</td>
<td>1.80/1.60</td>
<td>5.65/5.40</td>
<td>18.55/18.05</td>
</tr>
<tr>
<td>III</td>
<td>0.95/0.80</td>
<td>2.45/2.35</td>
<td>1.90/1.75</td>
<td>1.10/0.90</td>
<td>2.90/2.70</td>
<td>9.30/8.50</td>
</tr>
<tr>
<td>IV</td>
<td>1.05/0.95</td>
<td>4.15/3.90</td>
<td>3.60/3.25</td>
<td>1.30/1.00</td>
<td>4.80/4.30</td>
<td>14.90/13.40</td>
</tr>
</tbody>
</table>

Female. Carapace length/width 1.19–1.20, MOA length/width 0.94–1.00, anterior width/posterior width 0.85–0.86. Chelicera with 3 promarginal and 4 retromarginal teeth. Labium length/width 0.63–0.71, sternum length/width 1.04–1.13. Length of leg I/carapace 5.54–6.08. Abdomen length/width 1.34–1.65. Epigynum with somewhat spherical bulge in the middle (Fig. 28).

Male. Carapace length/width 1.20–1.26, MOA length/width 0.96–1.00, anterior width/posterior width 0.83–0.88, Chelicera with 3 promarginal and 4
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retromarginal teeth. Labium length/width 0.74–0.91, sternum length/width 1.03–1.13. Length of leg I/carapace 5.31–6.84. Male palp (Figs. 25–27, 29): tibia longer than cymbium (tibia/cymbium 1.11–1.25); femur almost two times as long as cymbium (femur/cymbium 1.83–1.98); femur more than one and a half as long as tibia (femur/tibia 1.59–1.71). Abdomen length/width 1.67–1.91.

Coloration and markings. Female and male. Carapace light brown, margined with dark brown, with V-shaped dark brown marking between eye area and median fovea (Figs. 24, 30). Abdomen white or yellowish white, with dark coloured markings (Figs. 24, 30); rarely without any marking.

Range. Japan, China (Fox, 1938; Zhu, 1983), Korea (Park & Kim, 1985; Kim, 1991).

Remarks. This species can be easily separated from the other species of the genus by its general appearance. As for the further distinction, see the key to the species.

Acknowledgments

I wish to express my hearty thanks to Dr. Hirotsugu Ono, National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and for correcting the manuscript of this paper, and to Dr. Takeo Yaginuma, Osaka, for variable informations and loaning many specimens.

For loaning invaluable specimens, I am deeply indebted to Dr. Manfred Grasshoff, Senckenberg Museum, Frankfurt, and Dr. Christine Rollard, Muséum National d'Histoire Naturelle, Paris.

My sincere thanks are also due to Mr. Nobuki Yasuda, Hokkaido, Ms. Mayumi Matsuda, Hokkaido, Mr. Yasunosuke Chikuni, Nagano, Mr. Ken-ichi Kumada, Yokohama, Ms. Sachiko Tazoe, Yokohama, Mr. Norihisa Tanaka, Yokohama, Mr. Hajime Yoshida, Yamagata, and Dr. Takahide Kamura, Otemon Gakuin Univ., Osaka, for their offering or loaning various specimens used in this study.

日本産の Metleucauge オオドヨウグモ属のクモ類について、各地から得られた標本をもとに再検討した結果、4種の生息を確認した。2既知種、M. yunohamensis (Bösenberg et Strand, 1906) メガネドヨウグモおよび M. kompientes (Bösenberg et Strand, 1906) タニマノドヨウグモについて再記載し、M. yaginumai sp. nov. キタドヨウグモおよび M. chikunii sp. nov. チクニドヨウグモ（新称）の2新種を記載した。

References

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