A Revision of the Genus Tetrugnatha Latreille (Araneae, Tetragnathidae) of Asia, Part II

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A Revision of the Genus *Tetrugnatha* Latreille (Araneae, Tetragnathidae) of Asia, Part II*

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This paper (Part II) includes the species of the major group B of *Tetragnatha* of Asia. New records of distribution are as follows : *T. mandibulata* and *T. maxillosa* from Bangladesh, *T. hasselti* from Bangladesh and Thailand, *T. vermiformis* from Bangladesh and Malaysia, *T. geniculata* and *T. serra* from Thailand, *T. chauliodus* from Philippines and Taiwan and *T. lauta* from Taiwan and Hong Kong.

The squamata-group

Diagnosis. Male chelicera well developed, fang with an outer cusp near base, tip of (a) simply pointed, (Gl) robust, with a tubercle or 2–3 tubercles ; female chelicera small, without particular features.

KEY TO THE SPECIES

Male

1 (Gl) with a tubercle, (AXl) present 2
– (Gl) with 2-3 tubercles, (AXl) absent 4
2 Cheliceral fang with an inner cusp ..... ***hiroshii***
– Cheliceral fang without inner cusps 3
3 (U2) widely separated from (Gu), situated about the middle of chelicera ..... ***tanigawai***
– (U2) not so widely separated from (Gu), situated beyond the middle of chelicera ..... *squamata*
4 ***(U2)*** widely separated from (Gu), situated about the middle of chelicera ..... ***yesoensis***
– (U2) rather close to (Gu), situated beyond the middle of chelicera .....*esakii*

Tetragnatha hiroshii Okuma, 1988
(Fig. 1, Table 1)

Tetragnatha hiroshii Okuma, 1988, Esakia, (26) : 72.

Distribution : Taiwan.

* Contribuion from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 257).

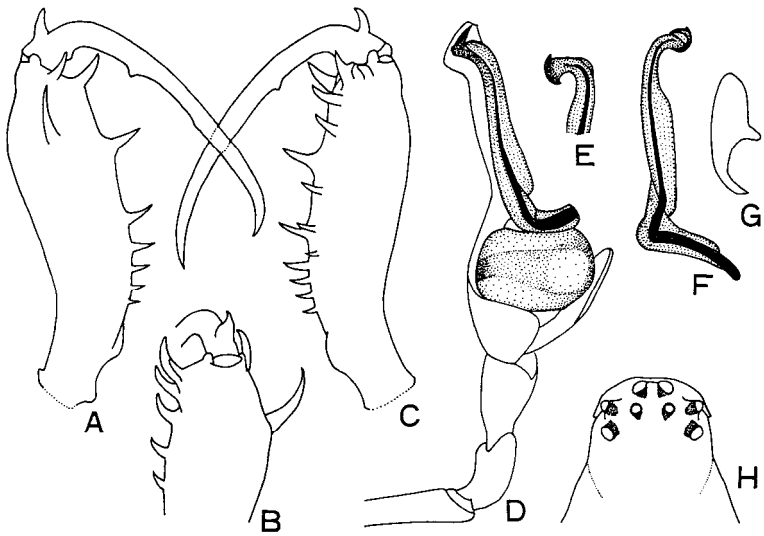

Fig. 1. *Tetragnatha hiroshii* Okuma. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Left palpus of male. E and F : Conductor and embolus of male. G: Paracymbium of male. H : Eye group of male. (After Okuma, 1988).

Table 1. Tetragnatha hiroshii Okuma. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio	(r)	3rd legs ratio	(r)	4th legs ratio	(r)
(Legs)											
TAIWAN	♂	1	18.35		100	69		35		58	
(Femora)											
TAIWAN	♂	1	4.70			78		47		76	

n = Number of specimens.
r = coefficient of correlation.

Note : This species is very similar to ***T.*** *squamata* Karsch and ***T. tunigawai*** Okuma in many respects, but is easily separable from them by having an inner cusp on the chericeral fang in the male. The shape of the male conductor is also different from those of *squamata* and ***tunigawai.*** Carapacial length : male 1.9 mm.

Tetragnatha tanigawai Okuma, 1988
(Fig. 2, Table 2)

Tetragnatha tanigawai Okuma, 1988, Esakia, (26) : 73.

Distribution : Iriomote Is. of the Ryukyus, Japan.

Note : This species is very similar to ***T.*** *squamata* Karsch in many respects, but is easily separable from the latter in having a pair of small blackish markings near the spinnerets in both sexes. In addition, the number of spines on legs different from the latter (first femur with 2-3 spines in ***tanigawai,*** whereas that of *squamata* with 6-7), and

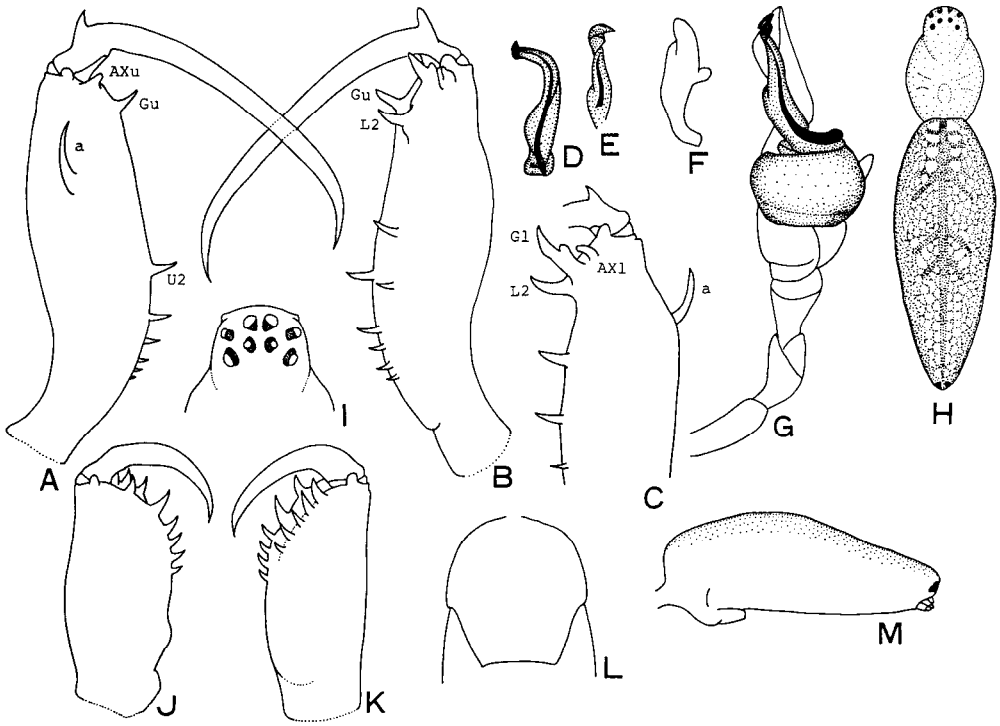

Fig. 2. *Tetragnatha tanigawai* Okuma. A: Left chelicera of male, upper view. B: Ditto, lower view. C : Ditto, lateral view. D and E : Conductor and embolus of male. F : Paracymbium of male. G : Left palpus of male. H : Female. I : Eye group of female. J : Left chelicera of female, upper view. K : Ditto, lower view. L : Genital fold of female. M : Abdomen of female, lateral view. (After Okuma, 1988).

Table 2. Tetragnatha *tanigawai* Okuma. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
Iriomote Is.	♂	2	16.67		100	74	39	64
Iriomote Is.	V	4	14.69f0.85	14.20-16.00		74 (0.997)	39 (0.9701	65 (0.998)
(Femoral								
Iriomote Is.	♂	2	4.50			81	50	81
Iriomote Is.	♀	4	3.94±0.21	3.75- 4.20		80 (0.913)	50 (0.835)	83 (0.915)

the arrangement of cheliceral teeth in the male also somewhat different from that of the latter. Body length : male 4.8-5.1 mm, female 5.2-5.8 mm.

Tetragnatha yesoensis Saito, 1934
(Fig. 3, Table 3)

Tetragnatha yesoensis Saito, 1934, J. Agr. Hokkaido Univ., 33 : 334 ; Yaginuma, 1960, Spiders of Japan in Colour, : 73.

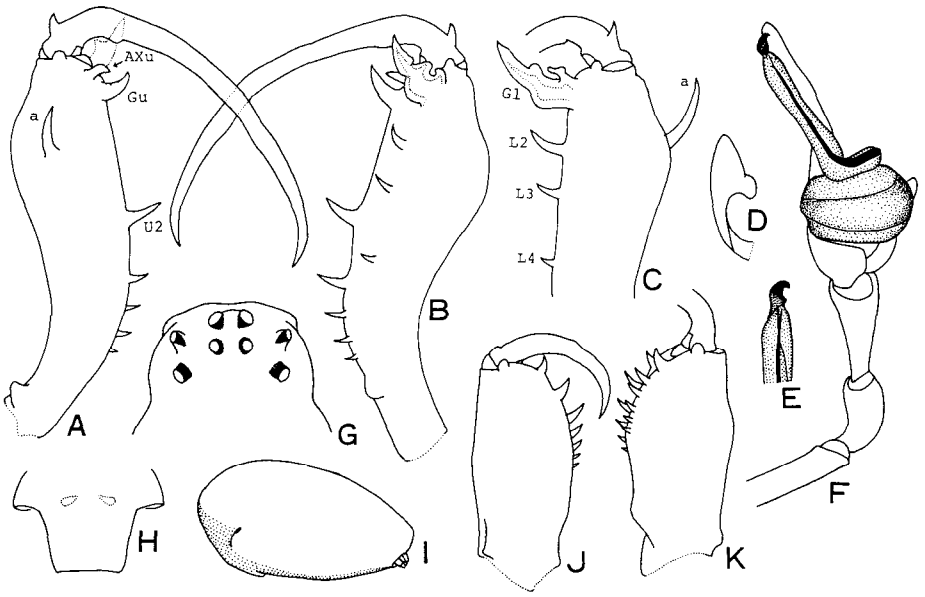

Fig. 3. *Tetragnatha yesoensis* Saito. A : Left chelicera of male, upper view. B : Ditto, lower view. C: Ditto, lateral view. D: Paracymbium of male. E: Distal portion of conductor and embolus of male. F: Left palpus of male. G: Eye group of male. H : Genital fold of female. I : Abdomen of female, lateral view. J : Left chelicera of female, upper view. K : Ditto, lower view.

Table 3. *Tetragnatha yesoensis* Saito. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
Hokkaido	♂	10	18.81±2.67	14.40-23.40	100	73 (0.999)	38 (0.996)	59 (0.995)
Nikko	♂	8	20.64±3.24	16.80-26.40		73 (0.997)	38 (0.985)	60 (0.994)
Tottori	♂	13	22.38±2.29	17.15-25.40		71 (0.997)	37 (0.989)	59 (0.993)
Tsushima Is.	♂		24.75			72	37	59
Fukuoka	♂	11	22.63	-20.30-24.95		71	37	60
Kumamoto	♂	4	24.45±1.11	23.15-25.40		71 (0.989)	36 (1)	58 (0.992)
KOREA (900m)	♂	4	21.90±1.87	20.15-24.00		72 (1)	37 (0.993)	60 (0.998)
KOREA (500m)	♂	10	21.13±2.51	16.80-23.95		72 (0.998)	37 (0.993)	59 (0.996)
Hokkaido	♀	5	14.09±1.86	10.80-15.30		75 (0.999)	41 (0.997)	64 (0.988)
Nikko	♀	11	16.53±1.49	14.45-19.60		73 (0.994)	39 (0.967)	62 IO.9891
Tottori	♀	4	16.98±0.54	16.20-17.40		73 (0.892)	39 (0.828)	62 i0.985,
Kumamoto	♀	7	18.61±1.13	17.10-20.00		72 (0.993)	39 (0.986)	62 CO.9661
KOREA (900m)	♀	3	15.75±1.92	13.65-17.40		73 (1)	40 (0.997)	63 (1)
KOREA (500m)	♀	6	16.96±0.97	15.65-18.55		73 (0.996)	39 (0.979)	62 (0.937)
(Femora)								
Hokkaido	♂	10	5.14±0.73	4.00- 6.40		79 (0.995)	47 (0.985)	72 (0.993)
Nikko	♂	8	5.70±0.90	4.50- 7.25		79 (0.997)	47 (0.985)	72 (0.998)
Tottori	♂	13	6.09±0.60	4.75- 6.80		78 (0.993)	46 (0.983)	71 (0.991)
Tsushima Is.	♂	1	6.75			77	46	70
Fukuoka	♂	2	6.08	5.55- 6.60		77	47	72
Kumamoto	♂	4	6.66±0.36	6.30- 6.95		77 (0.976)	46 (0.978)	71 (0.986)
KOREA (900m)	♂	4	5.89±0.53	5.40- 6.50		78 (1)	46 (0.920)	72 (0.995)
KOREA (500m)	♂	10	5.72±0.68	4.50- 6.35		78 (0.996)	46 (0.976)	72 (0.976)
Hokkaido	♀	5	3.97±0.49	3.10- 4.30		79 (0.992)	49 10.999)	76 (0.987)
Nikko	♀	11	4.59±0.38	4.05- 5.30		79 (0.983)	48 (0.963)	75 (0.984)
Tottori	♀	4	4.68±0.09	4.55- 4.75		78 (0.953)	48 (0.667)	75 (0.7931
Kumamoto	♀		5.09±0.32	4.70- 5.50		78 (0,984)	49 (0.993)	75 (0.973)
KOREA (900m)	♀	11	4.2B±0.58	3.65- 4.80		79 (1)	49 (0.987)	76 (0.999)
KOREA (500m)	♀	6	4.66±0.27	4.25- 5.05		79 (0.995)	48 (0.959)	76 (0.845)

Male. Body length, exclusive of chelicerae, 3.9-7.6 mm ; carapacial length 1.5-2.8 mm, width LO-l.7 mm ; abdominal length 2.3-5.0 mm, width 0.9-1.6 mm ; cheliceral length 1.3-2.9 mm.

Eyes. Posterior row of eyes slightly narrower than anterior row of eyes ; viewed from above, two rows nearly parallel and gently recurved.

Chelicerae. Basal segment about as long as carapace ; (a) slender and pointed at tip ; (AXu) pointed at tip, close to (Gu), (U2) widely separated from (Gu), situated about the middle of chelicera ; (rsu) 5-6 in number ; (AXl) absent, (Gl) very large, with two tubercles, (rsl) about 3 in number ; fang with an outer cusp near base.

Legs. Leg formula 1. 2. 4. 3 ; all legs with spines, first femur with 5-7 spines ; relative lengths of legs as shown in Table 3.

Palpi. Paracymbium bluntly rounded at tip ; both conductor and embolus long, tip of conductor hook-like and distinctly twisted as shown in Fig. 3, E and F.

Abdomen. Not so long, less than 3 times as long as broad, distal end of abdomen somewhat overhanging spinnerets.

Color in alcohol. Generally yellowish brown ; abdomen covered with many silvery spangles.

Female. Body length, exclusive of chelicerae, 5.7 - 7.2 mm ; carapacial length 1.9-2.5 mm, width 1.2-1.6 mm ; abdominal length 3.6-4.8 mm, width 1.6-2.2 mm ; cheliceral length 0.9-1.1 mm.

Eyes. Nearly as in male.

Chelicerae. Basal segment slightly shorter than one-half of carapace, without paticular features.

Legs. Nearly as in male, relative lengths of legs as shown in Table 3.

Abdomen. Not so long, less than 2.5 times as long as broad, somewhat swollen at the middle.

Color in alcohol. Similar to male.

Specimens examined : KOREA : 166, 9 ♀, Mt. Sudo-san, Gyongangbug-Do, 8. VI. 1977, K. Yamagishi. JAPAN : 15 specimens from Ehime (Ishizuchi-san), Tsushima Is. (Mine-mura and Mt. Oboshi-yama), Fukuoka (Mt. Hiko-san), Kumamoto (Mt. shiratori-yama); and many other specimens of both sexes from Hokkaido and Honshu.

Distribution : Japan and Korea (new record).

Tetragnatha esakii Okuma, 1988
(Fig. 4, Table 4)

Tetragnatha esakii Okuma, 1988, Esakia, (26) : 71.

Distribution : Taiwan.

Note : This species is very similar to *T. **yesoensis*** Saito in many respects, but is separable from the latter in the arrangement of cheliceral teeth in the male (the space between (Gu) and (U2) is very long in ***yesoensis,*** and short in this species). The shapes of the male conductor and the male (EX) are also different from those of ***yesoensis.*** Body length : male 7.7-9.5 mm, female 7.4-9.3 mm.

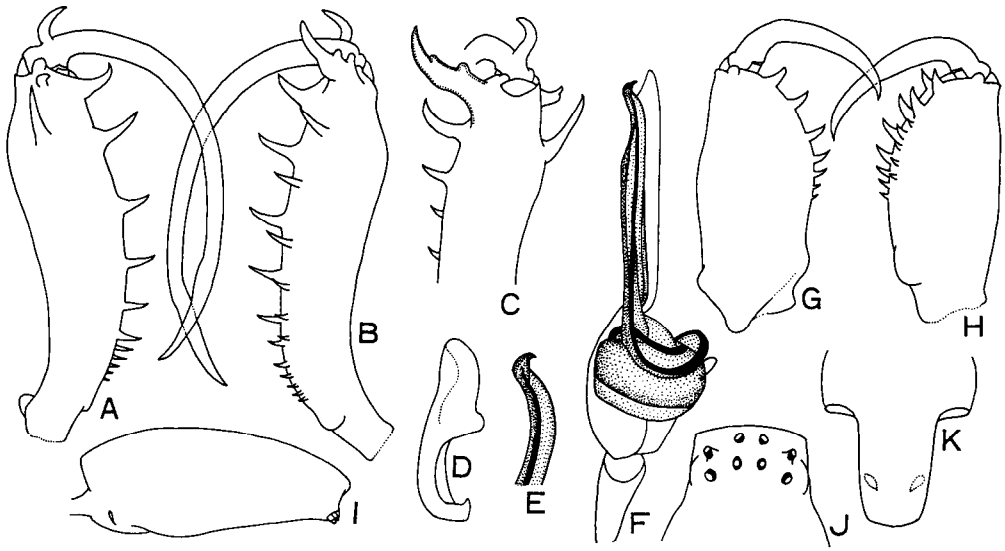

Fig. 4. *Tetragnathu esakii* Okuma. A : Left chelicera of male, upper view. B : Ditto, lower view. C : Ditto, lateral view. D : Paracymbium of male. E : Distal portion of conductor and embolus of male. F : Left palpus of male. G : Left chelicera of female, upper view. H : Ditto, lower view. I : Abdomen of female, lateral view. J : Eye group of female. K : Genital fold of female. (After Okuma, 1988).

Table 4. *Tetragnatha* esakii Okuma. Relative lengths of total legs and femora.

Locality		n	length of legs mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
TAIWAN	♂	5	26.95f2.19	24.05-30.00	100	74 **(0.978)**	39 (0.959)	60 **(0.986)**
TAIWAN	♀	4	21.45f0.70	20.50-22.20		74 **(0.988)**	40 **(0.880)**	62 (0.887)
(Femora)								
TAIWAN	♂	5	7.00f0.50	6.30-7.70		83 (0.953)	52 (0.923)	76 (0.967)
TAIWAN	♀	4	5.60f0.15	5.50-5.80		82 (0.975)	53 (0.510)	**80** (0.881)

Tetragnatha squamata Karsch, 1879
(Fig. 5, Table 5)

Tetragnatha squamata Karsch, 1879, Verh. Nat. Ver. Rheinl. Westf., 36: 65; Strand, 1918, Archn. Naturg., 82 (A ; 11) : 95 ; Boesenberg et Strand, 1906, Abh. Senckenbg. Ges., 30 (l-2) : 176 ; Saito, 1934, Trans. Sapporo Nat. Hist. Soc., 13: 338; Saito, 1934, J. Agr. Hokkaido Univ., 33: 333; Saito Ho-on Kai Mus. Res. Bull., 18: 59; Yaginuma, 1960, Spiders of Japan in Colour,: 74 ; Okuma, 1985, Esakia, (23) : 41.

Male. Body length, exclusive of chelicerae 3.2-5.3 mm ; carapacial length 1.3-1.9 mm, width 0.9-1.25 mm ; abdominal length 2.0-3.4 mm, width 0.9-1.15 mm ; cheliceral length 1.1-1.5 mm.

Eyes. Posterior row of eyes slightly narrower than anterior row of eyes ; viewed from above, two rows nearly parallel and gently recurved.

Chelicerae. Basal segment about 0.8 times as long as carapace; (a) slender,

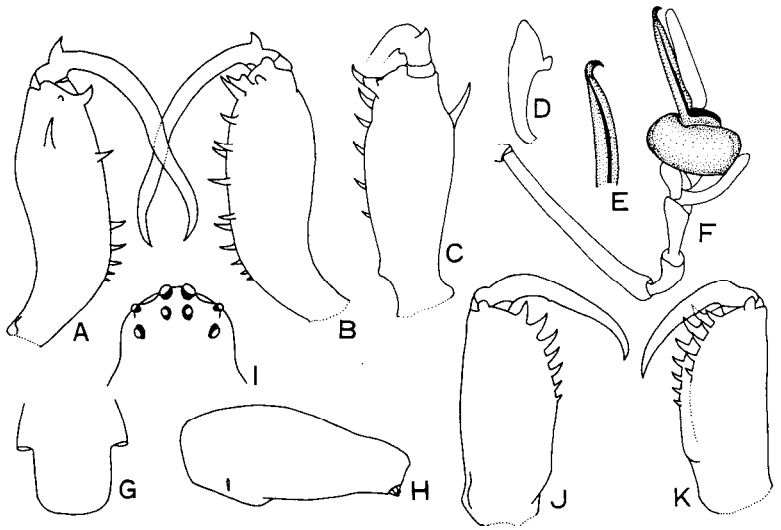

Fig. 5. *Tetragnatha squamata* Karsch. A: Left chelicera of male, upper view. B: Ditto, lower view. C : Ditto, lateral view. D : Paracymbium of male. E : Distal portion of conductor and embolus of male. F : Left palpus of male. G : Genital fold of female. H : Abdomen of female, lateral view. I : Eye group of female. J : Left chelicera of female, upper view. K : Ditto, lower view.

Table 5. *Tetragnatha squamata* Karsch. Relative lengths of total legs and femora.

Locality		n	length of mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
JAPAN	♂	10	14.23f1.22	12.25-15.80	100	76 (0.975)	39 (0.954)	65 (0.977)
JAPAN	♀	8	23.94f2.29	11.50-18.85		74 (0.981)	40 (0.962)	64 (0.956)
(Femora)								
JAPAN	♂	10	3.83f0.31	3.30-4.30		81 (0.969)	50 (0.866)	80 (0.963)
JAPAN	♀	8	3.80f0.64	3.10-5.15		80 (0.969)	51 (0.949)	79 (0.917)

pointed at tip ;(AXu) bluntly rounded at tip, slightly separated from (Gu) ; (Gu), (U2) and (U3) subequal in size and spacing ;(AXl) present, close to (Gl);(Gl) large, with a tubercle at the middle, (rsl) 4-5 in number ; fang with an outer cusp near base.

Legs. Leg formula 1. 2. 4. 3 ; all legs with spines, first femur with 5-6 spines ; relative lengths of legs as shown in Table 5.

Palpi. Paracymbium bluntly rounded at tip; tip of conductor hook-like and somewhat twisted as shown in Fig. 5, E and F.

Abdomen. Not so long, less than 3 times as long as broad.

Color in alcohol. Generally yellowish brown; abdomen covered with many yellowish silvery spangles ; some specimens with reddish dorsal markings.

Female. Body length, exclusive of chelicerae 4.0-5.8 mm ; carapacial length 1.6-2.4 mm, width 1.1-1.6 mm ; abdominal length 2.4-3.5 mm, width 1.1-1.4 mm ; cheliceral length 0.75-0.8 mm.

Eyes. Nearly as in male.

Chelicerae. Basal segment slightly shorter than one-half of carapace ; without

paticular features.

Legs. Nearly as in male, relative lengths of legs as shown in Table 5.

Abdomen. Not so long, less than 2.5 times as long as broad, somewhat swollen at the middle.

Color in alcohol. Similar to male ; abdominal marking absent.

Specimens examined : KOREA : 26, Kah-zan, Dalung, Gyongsangbug-Do, 19. VI. 1977, K. Yamagishi. TAIWAN : 2♂, 1♀, Lishan, Taichung, 8-10. VI. 1980, H. Makihara ; 1♂, Baron, Taoyua, 20. V. 1980, H. Makihara. JAPAN : Many specimens of both sexes from Honshu, Shikoku, Kyushu and the Ryukyus.

Distribution : Japan, Taiwan and Korea.

The rubriventris-group

Diagnosis. Posterior row of eyes evidently narrower than anterior row; male chelicera as long as or longer than carapace.

Tetragnatha rubriventris, an Australasian species, does not occur is Asia.

Tetragnatha hasselti Thorell, 1890
(Fig. 6, Table 6)

Tetragnatha hasselti Thorell, 1890, Ann. Mus. Civ. Genova, 28 : 217 ; Merian, 1911, Zool. Jahrb Syst., 31 (2) : 185 ; Gravely, 1921, Rec. Ind. Mus. Calcutta, 22 (4 ; 24) : 428.

Male. Body length, exclusive of chelicerae 8.2-9.7 mm ; carapacial length 2.4-2.9

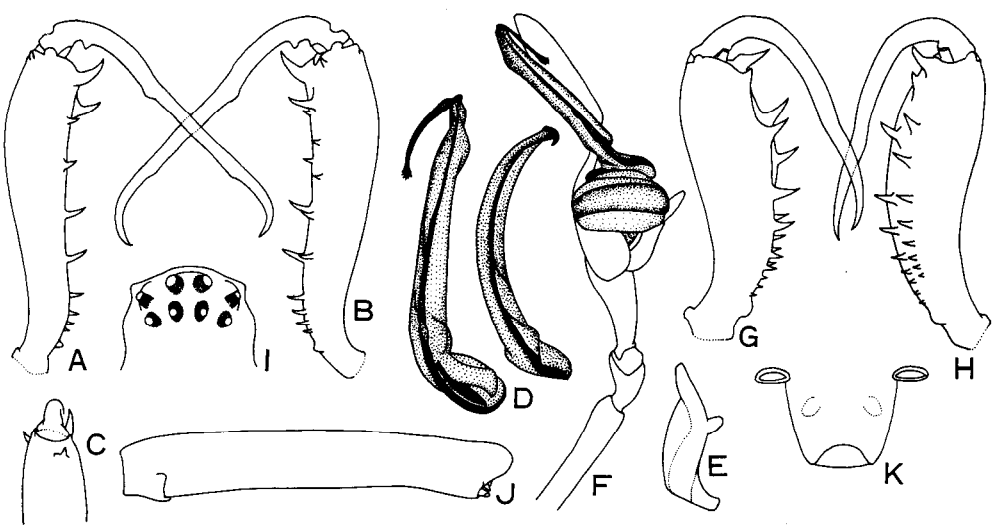

Fig. 6. *Tetragnatha hasselti* Thorell. A : Left chelicera of male, upper view. B : Ditto, lower view. C : Ditto, lateral view. D : Conductor and embolus of male. E : Paracymbium of male. F : Left palpus of male. G : Left chelicera of female, upper view. H : Ditto, lower view. I: Eye group of male. J : Abdomen of male, lateral view. K: Genital fold of female.

Table 6. *Tetragnatha hasselti* Thorell. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
THAILAND	♂	4	32.10f1.70	30.00-33.90	100	61 (0.999)	30 (0.973)	55 (0.985)
(Femora)								
THAILAND	♂	4	8.60±0.50	8.00- 9.00		69 (0.992)	41 (0.966)	72 (0.966)

mm, width 1.2-1.5 mm ; abdominal length 5.6-6.9 mm, width 0.9-1.1 mm ; cheliceral length 3.0-3.6 mm.

Eyes. Anterior row of eyes occupying full width of head ; posterior row considerably narrower than anterior one ; viewed from above, anterior row somewhat strongly recurved, posterior row moderately recurved, so that lateral eyes slightly closer than median eyes.

Chelicerae. Long and slender, basal segment about 1.2 times as long as carapace ; (a) situated near apex, very small, not bifurcated at tip ; (Gu) longest, (U2) and (U3) smaller than (U4) ; (Gl) small, (L2) somewhat long, (L3) and (L4) somewhat smaller than (L5); fang with two inner cusps.

Legs. Leg formula 1. 2. 4. 3 ; all legs with rather week spines, first femur with about 8-10 spines. relative lengths of legs as shown in Table 6.

Palpi. Paracymbium bluntly rounded at tip; both conductor and embolus long; tip of conductor variable in shape as shown in Fig. 6, D.

Color in alcohol. Legs, carapace and mouth parts light yellowish brown, sternum pale yellow ; basal half of abdomen somewhat reddish, apical half grayish and covered with yellowish silvery spangles dorsally.

Female. Body length, exclusive of chelicerae, 7.2 mm ; carapacial length 2.2 mm, width 1.25 mm ; abdominal length 5.1 mm, width 1.2 mm ; cheliceral length 2.0 mm.

Eyes. Nearly as in male.

Chelicerae. Basal segment slightly shorter than carapace ; without (s) on outer side near apex ; (Gu) shorter than (U2), (rsu) 7 in number ; (Gl) somewhat large, (rsl) 8 in number ; fang without cusps.

Legs. Nearly as in male ; relative lengths of legs as shown in Table 6.

Abdomen. Similar to male ; genital fold as shown in Fig. 6, K.

Color in alcohol. Nearly as in male.

Specimens examined : BANGLADESH : 16, Mymensingh, 12. IV. 1987, Y. Hirashima. THAILAND : 3♂, Rangsit, 13. XI. 1970, C. Okuma ; 1♀, Lan Poon, 11. XII. 1985, T. Sasaki.

Distribution : Bangladesh (new record), Burma, Java, Celebes and Thailand (new record).

The striata-group
(= The jaculator-group)

Diagnosis. Posterior row of eyes evidently narrower than anterior row of eyes ; cheliceral length shorter than carapace in both sexes ; lateral eyes more separated than median eyes ; distal end of abdomen slightly overhanging spinnerets.

Tetragnatha striata, a Euaropian species, does not occur in Asia.

KEY TO THE SPECIES

1 Conductor with tip bifurcated ; paracymbium with tip broadened and rounded ..... *laqueata*
– Conductor and paracymbium not as above 2
2 Conductor with tip narrow and straight ..... *jaculator*
– Conductor not as above 3
3 Male cheliceral fang with one inner cusp at about the middle ..... *vermiformis*
– Male cheliceral fang with two inner cusps, the basal one at about one fifth from base, another one at about the middle ..... *virescens*

Tetragnatha vermiformis Emerton, 1884
(Fig. 7, Table 7)

Tetragnatha vermiformis Emerton, 1884, Trans. Connect. Acad. Sci., 6 : 333 ; Okuma, 1983, Esakia, (20) : 77.

Additional specimens : BAMGLADESH : 26, 1♀ , Central Bangladesh, VIII-IX. 1978, H. D. Catring. MALAYSIA : 1♂, Alor Sata, III. 1981, K. Umeya.

Distribution : Bangladesh (new record), India, Sri Lanka, Burma, Thailand, Malaysia (new record), China, Korea, Japan and U. S. A.

Note : This species has been known to occur widely in warm and tropical parts of the world and certainly inhabit near water. Body length : male 5.0-9.5 mm, female 6.5-10.5 mm.

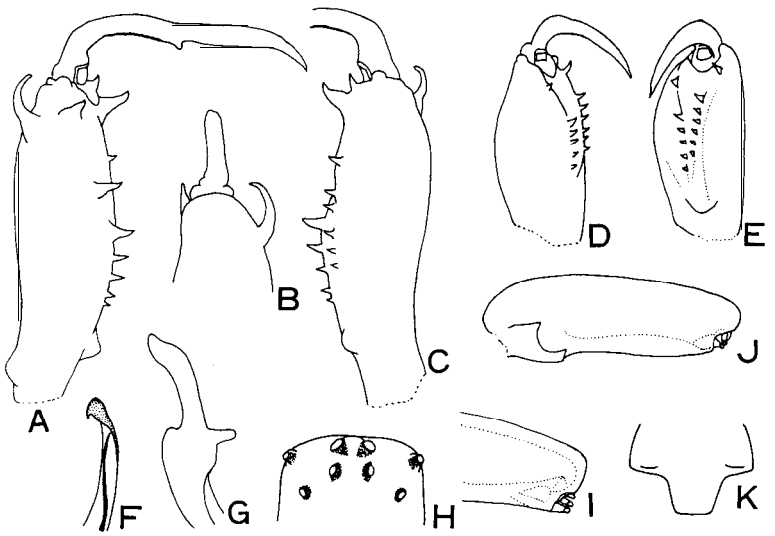

Fig. 7. *Tetragnatha vermiformis* Emerton. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Left chelicera of female, upper view. E : Ditto, inner view. F : Distal portion of conductor and embolus of male. G : Paracymbium of male. H : Eye group of male. I : Distal portion of Abdomen of male. J : Abdomen of female, lateral view. K : Genital fold of female. (After Okuma, 1983).

Table 7. *Tetragnatha vermiformis* Emerton. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
Tokyo	♂	5	19.21±3.44	14.80-23.30	100	70 (0.998)	30 (0.995)	64 (0.998)
Tokushima	♂	8	19.91±1.17	18.15-21.75		68 (0.994)	29 (0.869)	63 (0.963)
Fukuoka	♂	2	22.15±4.53	18.95-25.35		68	29	64
Tsushima Is.	♂	1	21.65			70	31	65
Tokyo	♀	4	17.00±1.20	15.40-17.90		69 (0.991)	32 (0.995)	67 (0.996)
Tokushima	♀	5	15.86±0.77	14.65-16.75		68 (0.978)	31 (0.988)	66 (0.988)
Fukuoka	♀	6	16.46±1.73	13.55-18.85		69 (0.998)	31 (0.987)	67 (0.985)
Tsushima Is.	♀	1	17.95			71	31	68
KOREA	♀	2	17.80	15.00-20.60		71	32	66
(Femora)								
Tokyo	♂	5	5.42±1.01	4.20- 6.60		76 (0.997)	35 (0.997)	75 (0.997)
Tokushima	♂	8	5.61±0.34	5.15- 6.10		74 (0.994)	35 (0.923)	74 (0.966)
Fukuoka	♂	2	6.33±1.10	5.55- 7.10		74	34	76
Tsushima Is.	♂	1	6.30			69		
Tokyo	♀	4	4.90±0.29	4.50- 5.20		74 (0.958)	36 (0.996)	79 (0.999)
Tokuahim	♀	5	4.52±0.14	4.35- 4.70		74 (0.956)	37 (0.786)	77 (0.931)
Fukuoka	♀	6	4.72±0.50	3.90- 5.40		74 (0.995)	36 (0.957)	80 (0.981)
Tsushima Is.	♀	1	5.25			76	35	80
KOREA	♀	2	5.05	4.30- 5.80		76	37	78

Tetragnatha laqueata L. Koch, 1871
(Fig. 8, Table 8)

Tetragnatha laqueata L. Koch, 1871, Die Arachniden Australiens, 1 : **190** ; Okuma, 1980, Esakia, (15) : 75.

Distribution : Samoa Is., Societe Is. and Ogasawara Is.

Note : The spider of this species usualy inhabits on the tree, and the body is brilliant light green in color in life. Body length : male 5.2-6.6 mm, female 6.2-6.5 mm.

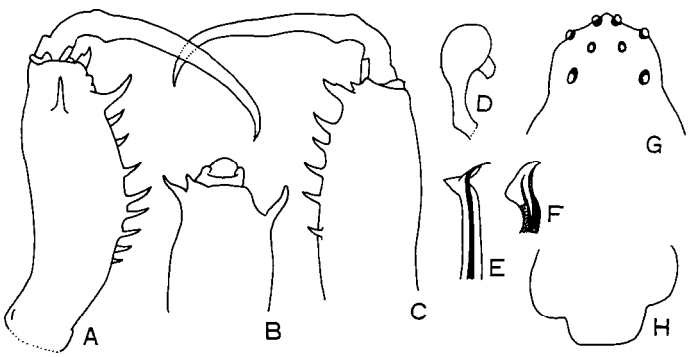

Fig. 8. *Tetragnatha laqueata* L. Koch. A: Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Paracymbium of male. E and F : Distal portion of conductor and embolus of male. G : Eye group of female. H : Genital fold of female. (After Okuma, 1980).

Table 8. *Tetragnatha laqueata* L. Koch. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
Ogasawara IS.	♂	17	15.14±1.34	11.05-16.50	100	73 (0.997)	38 (0.982)	68 (0.993)
Ogasawara Is.	♀	6	12.44±0.53	11.85-13.25		74 (0.980)	40 (0.921)	72 (0.970)
(Femora)								
Ogasawara IS.	♂	17	4.09±0.23	3.50- 4.45		80 (0.979)	50 (0.951)	86 (0.979)
Ogasawara Is.	♀	6	3.48±0.16	3.30- 3.70		70 (0.963)	50 (0.814)	88 (0.974)

Tetragnatha virescens Okuma, 1979
(Fig. 9, Table 9)

Tetragnatha virescens Okuma, 1979, Esakia, (14) : 73.

Additional specimens : MALAYSIA : 3♂, 2♀, Alor Sata, III. 1981, K. Umeya.

Distribution : Sri Lanka, Thailand, Malaysia, Indonesia and Philippines.

Note : This species is common in paddy fields of Tropical Asia, and the body is light green in color similar to the leaf of rice plant in life. Body length: male 5.5-8.0 mm. female 6.5-8.5 mm.

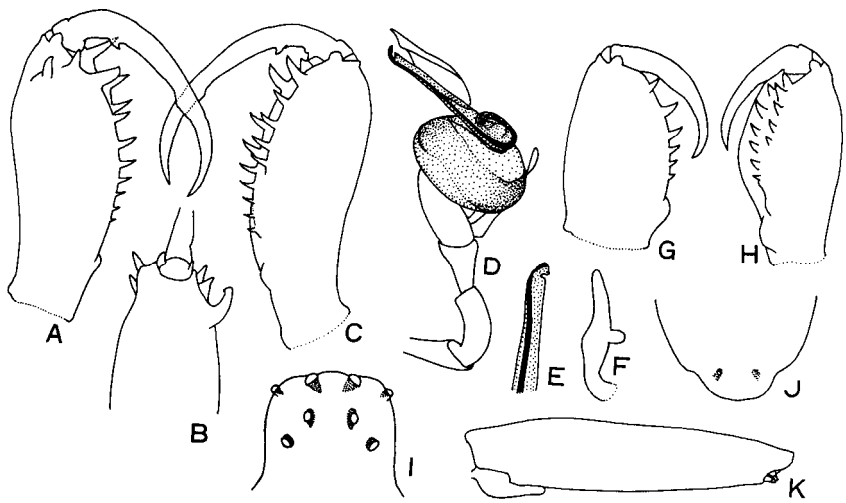

Fig. 9. *Tetragnatha virescens* Okuma. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Left palpus of male. E : Distal portion of conductor and embolus of male. F: Paracymbium of male. G: Left chelicera of female, upper view. H : Ditto, lower view. I : Eye group of male. J : Genital fold of female. K : Abdomen of female, lateral view.

Table 9. *Tetragnatha* virescens Okuma. Relative lengths of total legs and femora.

Locality		n	length of mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
THAILAND	♂	20	17.50f1.23	14.95-20.85	100	68 (0.994)	31 (0.884)	65 (0.980)
THAILAND	♀	20	15.54f1.27	13.53-18.20		67 (0.990)	31 (0.965)	67 (0.985)
(Femora)								
THAILAND	♂	20	5.06f0.36	4.25- 6.00		73 (0.984)	36 (0.939)	76 (0.955)
THAILAND	♀	20	4.59f0.36	3.95- 5.30		72 (0.984)	36 (0.939)	78 (0.975)

Tetragnatha jaculator Tullgren, 1910
(Fig. 10, Table 10)

Tetragnatha jaculator Tullgren, 1910, Aran. in : Sjöstedt Kilimand. Exped., 3 : 150 ; Okuma, 1984, Esakia, (22) : 87 ; Okuma, 1987, Esakia, (25) : 55.

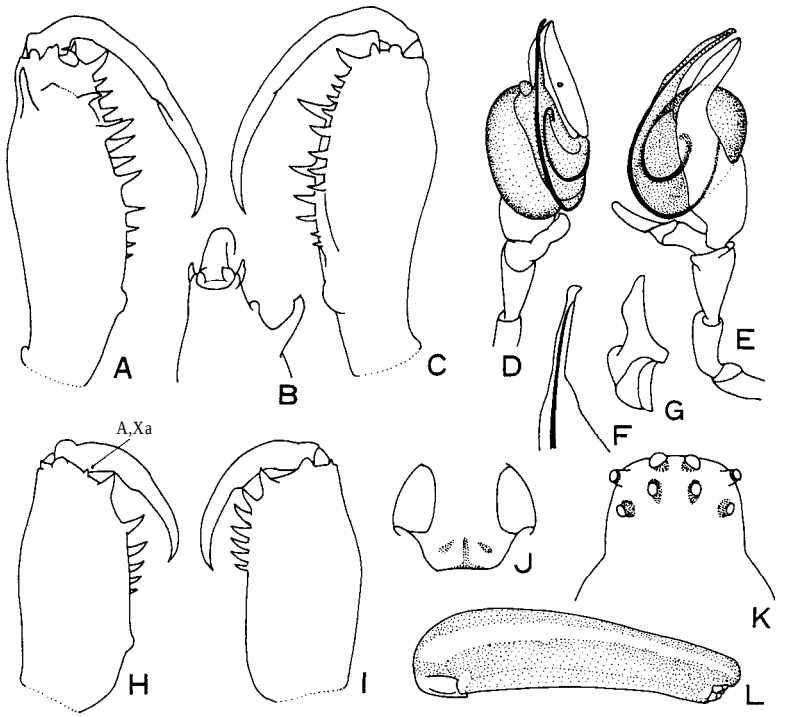

Fig. 10. *Tetragnatha jaculator* Tullgren. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto lower view. D and E : Left palpus of male. F : Conductor and embolus of male. G: Paracymbium of male. H : Left chelicera of female, upper view. I : Ditto, lower view. J : Genital fold of female. K : Eye group of female. L : Abdomen of female, lateral view. (After Okuma, 1987).

Table 10. *Tetragnatha jaculator* Tullgren. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
THAILAND	♂	3	14.92f1.10	14.10-16.05	100	64 (0.991)	28 (0.963)	60 (1)
PHILIPPINES	♀	1	19.13			62	28	62
(Femora)								
THAILAND	♂	3	4.25f0.23	4.05- 4.50		70 (0.996)	35 (0.954)	71 (0.982)
PHILIPPINES	♀	1	5.55			67	33	75

Distribution : Africa, SE Asia and New Guinea.

Note : This species mainly inhabits on grass near water. This specie is related to ***T.*** *vermiformis* but is separable from the latter by the shape of the male palp as shown in Fig. 10, D and E. Body length: male 4.5-8.1 mm, female 6.1-9.7 mm.

The cylindrica-group

Diagnosis. Anterior and posterior rows of eyes equal or subequal in width ; abdomen very long, about 6-10 times as long as broad, tail absent.

Tetragnatha cylindrica, an Australasian species, does not occur in Asia.

KEY TO THE SPECIES

1 Paracymbium slender, with tip pointed ; distal end of conductor unique as shown in Fig. 12, D and F ..... *gressitti*
– Paracymbium not slender 2
2 Paracymbium rather broad, with tip pointed ; conductor simple ..... *chauliodus*
– Paracymbium broad, with tip bifurcated ; distal end of conductor unique as shown in Fig. 13, D and E ..... *geniculata*

Tetragnatha chauliodus (Thorell, 1980)
(Fig. 11, Table 11)

Limoxere chauliodus Thorell, 1890, Ann. Mus. Civ. Genova, 30 : *292.*
Tetragnatha chauliodus : Gravely, 1921, Rec. Ind. Mus., 22 : 425 ; Okuma, 1987, Esakia, (25) : 62.
Tetragnatha sp. Okuma, 1970, Mushi, 44 : 74 ; Okuma, 1973, Mushi 47 : 8.

Male. Body length, exclusive of chelicera 6.0-10.0 mm ; carapacial length 1.8-2.5 mm, width 0.9-1.0 mm ; abdominal length 4.0-7.5 mm, width 0.5-1.0 mm ; cheliceral length 1.0-1.7 mm.

Eyes. Anterior row of eyes occupying full width of head, posterior row about as wide as anterior one; viewed from above, two rows nearly parallel and moderately recurved.

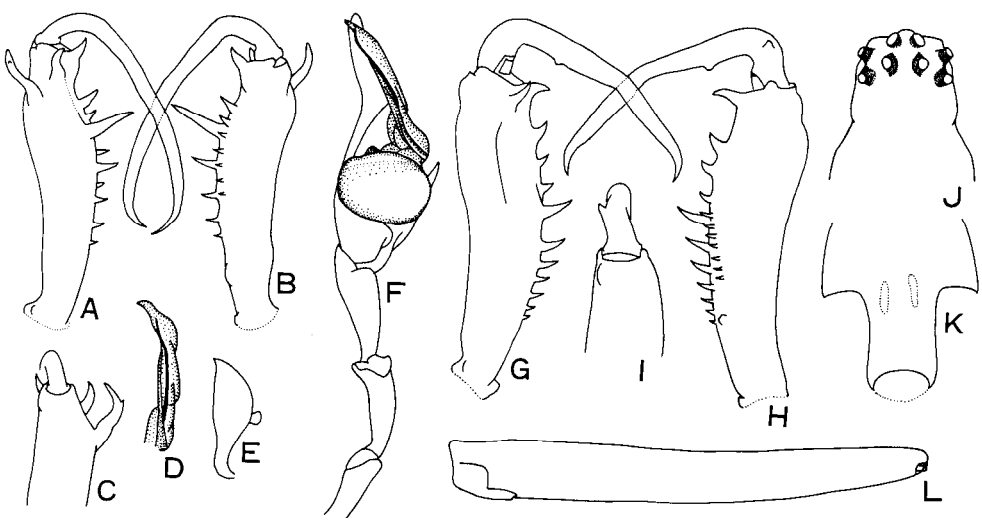

Fig. 11. *Tetragnatha chauliodus* (Thorell). A : Left chelicera of male, upper view. B : Ditto, lower view. C : Ditto, lateral view. D : Distal portion of conductor and embolus of male. E : Paracymbium of male. F : Left palpus of male. G : Left chelicera of female, upper view. H : Ditto, lower view. I : Ditto, lateral view. J : Eye group of female. K: Genital fold of female. L: Abdomen of female, lateral view.

Table 11. *Tetragnatha chauliodus* (Thorell). Relative lengths of total legs and femora.

Locality		n	length of legs mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
TAIWAN	♂	4	24.26f1.60	22.20-25.60	100	55 (0.988)	24 (0.948)	59 (0.937)
TAIWAN	♀	4	26.80±0.30	26.60-27.15		55 (0.947)	25 (0.852)	61 (0.895)
(Femora)								
TAIWAN	♂	4	7.13f0.40	6.60-7.50		60 (0.996)	31 (0.974)	72 (0.988)
TAIWAN	♀	4	8.00f0.10	7.85-8.20		60 (0.915)	32 (0.943)	73 (0.904)

Chelicerae. Basal segment about 0.6 times as long as carapace ; (a) bifid at tip, (AXu) and (Gu) absent, (sl) somewaht curved, directed forward, (T) large, (rsu) about 4 in number ; (Gl) directed forward, (rsl) about 7 in number ; fang unarmed.

Legs. Leg formula 1. 4. 2. 3 ; all legs with only a few spines, first femur with 1–2 spines ; relative lengths of legs as shown in Table 11.

Palpi Paracymbium broad at the middle, not bifurcated at tip; conductor of embolus simple, gently twisted as shown in Fig. 11, D and F.

Abdomen. Elongate, about 7-8 times as long as broad, not extended posteriorly to spinnerets.

Color in alcohol. Generally light brown ; abdomen light gray, dorsum with dusky spots on lateral sides.

Female. Body length, exclusive of chelicerae 8.4–12.0 mm ; carapacial length 2.4-2.6 mm, width 1.1-1.2 mm ; abdominal length 6.0-9.5 mm, width 0.9–1.0 mm ; cheliceral length 1.7-1.8 mm.

Eyes. Nearly as in male.

Chelicerae. Basal segment about 0.7 times as long as carapace ; (Gu) and (T) widely separated, (rsu) about 6 in number ; (Gl) present, (rsl) about 10 in number ; fang with (EX) near base, and an additional inner tooth at about 1/3 from base ; this additional tooth very variable in size, generally very long in the specimens from Singapore and New Guinea, short and small in the specimens from Taiwan and intermediate in those from Philippines.

Legs. Leg formula 1. 4. 2. 3 ; all legs with a few spines, first femur with l-3 spines ; relative lengths of legs as shown in Table 11.

Abdomen. Elongate, about 6.5-9.5 times as long as broad, not extended posteriorly to spinnerets ; genital fold as shown in Fig. 11, K.

Color in alcohol. Similar to male.

Specimens examined : SINGAPORE : 1 ♀, Uln Sembawang, 5. XII. 1976, Joseph Koh. PHILIPPINES : 1 ♀, Luzon, 28. VII. 1985, Y. Nishikawa (NSMT-AR. 1126). TAIWAN : 2♂, 1 ♀, Urai, Taipei Hsien, 14. IV 1981, K. Ohara ; 1 ♀, Changlotsun, 16. VI. 1976, H. Makihara ; 1 ♀, Haianshan, 2. VI. 1980, H. Makihara ; 1 ♀. Hungyehwen-chuan, 13. VI. 1976, H. Makihara.

Distribution : Burma, Thailand, Malaysia, Singapore, New Guinea, Philippines (new record) and Taiwan.

Tetragnatha gressitti Okuma, 1988

(Fig. 12, Table 12)

Tetragnatha gressitti Okuma, 1988, Esakia, (26) : 75.

Distribution : Borneo.

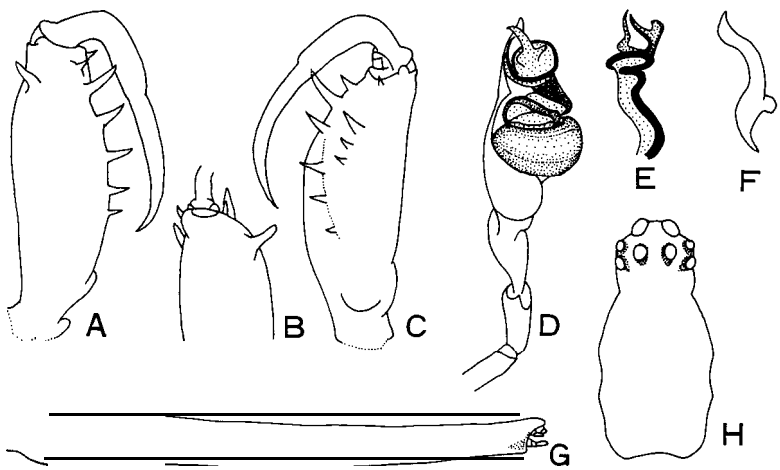

Fig. 12. *Tetragnatha gressitti* Okuma. A : Left chelicera of male, upper view. B: Ditto, lateral view. C : Ditto, lower inner view. D : Left palpus of male. E : Conductor and embolus of male. F : Paracymbium of male. G : Abdomen of male, lateral view. H : Carapace of male, upper view. (After Okuma, 1988).

Table 12. *Tetragnatha* gressitti Okuma. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
BORNEO	♂	2	17.25	15.90-18.60	100	54	24	59
(Femora)								
BOENEO	♂	2	5.33	4.95- 5.70		57	29	68

Note : This species is related to *T. biseriata* Thorell from New Guinea, Aru I. and Australia, but is easily distinguished from the latter by the characteristic the male palpal conductor and paracymbium as shown in Fig. 12, D and E. Body length : male 5.5-6.0 mm.

Tetragnatha geniculata Karsch, 1891
(Fig. 13, Table 13)

Tetragnatha geniculata Karsch, 1891, Berlin. Ent. Zeitschr., 36 : 286 ; Thorell, 1895, Descr. Catal. Spid. Burma : 140 ; Pocock, 1900, Faun. Brit. Ind. Arachn. : 215 ; Gravely, 1921, Rec. Ind. Mus. Calcutta, 22 (4 ; 24) : 426, 441.

Male. Body length, exclusive of chelicerae, 9.5 mm ; carapacial length 2.8 mm, width 1.2 mm ; abdominal length 6.8 mm, width 0.9 mm ; cheliceral length 2.5 mm.

Eyes. Anterior row of eyes occupying full width of head ; posterior row of eyes slightly wider than anterior one ; viewed from above, anterior row somewhat strongly recurved, posterior row moderately recurved, so that lateral eyes closer than median eyes.

Chelicerae. Basal segment about 0.9 times as long as carapace ; (a) bifurcated at tip ; (AXu) present, (Gu) somewhat large, (T) not so large, (T) and (U3) nearly equal in

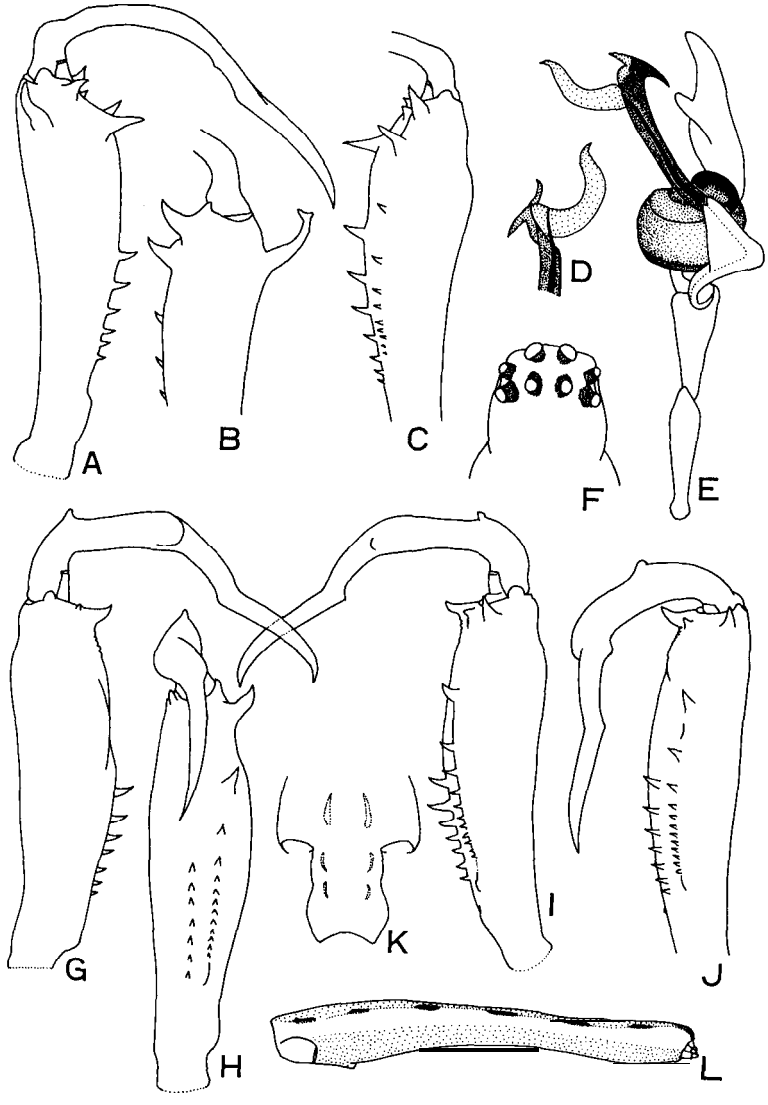

Fig. ***13.*** *Tetragnatha geniculata* Karsch. A: Left chelicera of male, upper view. B: Ditto, lateral view. C : Ditto, lower view. D : Distal portion of conductor and embolus of male. E : Left palpus of male. F : Eye group of female. G : Left chelicera of female, upper view. H : Ditto, inner view. I : Ditto, lower view. J : Ditto, lower inner view. K : Genital fold of female. L : Abdomen of female, lateral view.

size, (rsu) 6-7 in number ; (Gl) and (L2) somewhat large, nearly equal in size, (rsl) 9 in number ; an additional tubercle present inside of fang furrow on distal portion ; fang long, armed with two inner cusps at about the middle.

Legs. Leg formula 1. 4. 2. 3; all legs with many spines, first femur with 11-12

Table 13. *Tetragnatha geniculata* Karsch. Relative lengths of total legs and femora.

Locality		n	length of means±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
CHINA	♂	1	30.73		100	55	25	56
CHINA	v	1	28.80			55	26	57
THAILAND	♀	1	36.70			54	26	58
(Femora)								
CHINA	♂	1	9.10			64	32	67
CHINA	v	1	8.50			60	34	68
THAILAND	♀	1	10.90			61	33	69

spines ; relative lengths of legs as shown in Table 13.

Palpi. Paracymbium with a distal notch ; conductor unique as shown in Fig. 13, D and E.

Abdomen. Very long, about 7 times as long as broad, not extended posteriorly to spinnerets.

Color in alcohol. Chelicerae, carapace and legs light brown; fangs, maxillae, labium and sternum somewhat dark brown ; abdomen somewhat pale brown, with pale blackish longitudinal lines and several dots dorso-laterally, grayish brown ventrally.

Female. Body length, exclusive of chericerae 11.8 mm, carapacial length 2.7-3.1 mm, width 1.2-1.4 mm ; abdominal length 8.7-9.1 mm, width 1.3-1.4 mm ; cheliceral length 2.4-2.7 mm.

Chelicerae. Basal segment about 0.9 times as long as carapace ;(AXu) present, very small, (Gu) and (U2) neary equal in size, (U2) widely separated from (Gu), (rsu) 6 in number ;(Gl) present, (rsl) 12 in number ; an additional tubercle present inside of fang furrow on distal portion ; fang strongly geniculate, armed with blunt (EX) on outer margin near base.

Legs. Nearly as in male ; relative lengths of legs as shown in Table 13.

Abdomen. Long, about 6.5 times as long as broad, not extended posteriorly to spinnerets; genital fold as shown in Fig. 13, K.

Color in alcohol. Similar to male.

Specimen examined : THAILAND : 1 ♀, Khao Yai National Park, 20. IX. 1985, T. Sasaki.

Distribution : Sri Lanka, India, Burma and Thailand (new record).

The lauta-group

Diagnosis. Posterior row of eyes slightly narrower than anterior row of eyes, lateral eyes closer than median eyes ; all legs without spines; generally weak and glossy surface.

Tetragnatha lauta Yaginuma, 1959
(Fig. 14 and 15, Table 14)

Tetragnatha lauta Yaginuma, 1959, Bull. Osaka Mus. nat Hist., 11 : 11 ; Yaginuma, 1960, Spiders of Japan in Colour : 73 ; Yaginuma, 1986, Spiders of Japan in Color, New Edition : 131.

Male. Body length, exclusive of chelicerae 3.7-4.7 mm ; carapacial length 1.3-1.5 mm, width 0.7-1.0 mm ; abdominal length 2.4-3.2 mm, width 0.7-0.9 mm ; cheliceral length 0.85-1.1 mm.

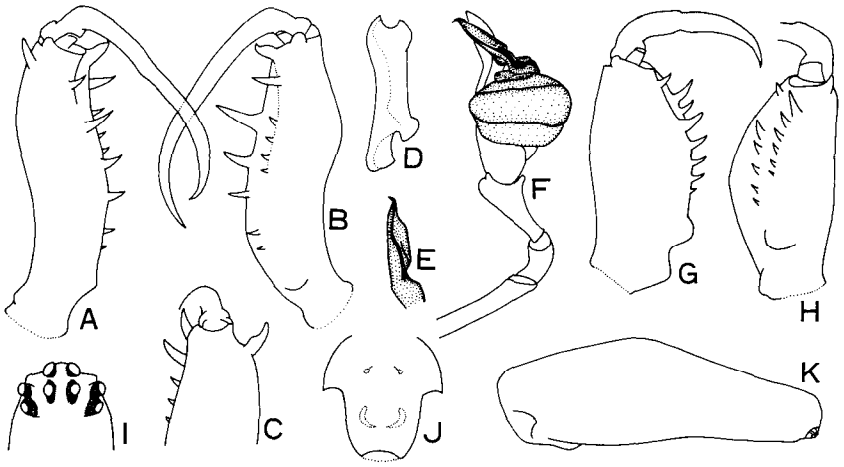

Fig. 14. *Tetragnatha lauta* Yaginuma. A: Left chelicera of male, upper view. B: Ditto, lower view. C : Ditto, lateral view. D : Paracymbium of male. E : Distal portion of conductor and embolus of male. F : Left palpus of male. G : Left chelicera of female, upper view. H : Ditto, lower inner view. I: Eye group of male. J : Genital fold of female. K : Abdomen of female.

Table 14. *Tetragnatha lauta* Yaginuma. Relative *lengths* of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio	(r)	3rd legs ratio	(r)	4th legs ratio	(r)
(Legs)											
Chiba	♂	1	17.65		100	47		21		46	
Okinawa	♂	1	15.50			48		21		47	
TAIWAN	♂	11	14.70	14.20-15.20		50		23		48	
HONG KONG			11.90			49		24		50	
Okinawa	♀	1	13.95			47		22		47	
TAIWAN	♀	4	15.84f2.00	12.90-17.00		44	(0.996)	21	(0.990)	46	(0.993)
(Femora)											
Chiba	♂		5.00			52		24		56	
Okinawa	♂	11	4.40			53		25		56	
TAIWAN	♂	2	4.20	4.05- 4.35		55		28		61	
HONG KONG	♂	1	3.40			56		28		62	
Okinawa	♀	1	4.05			51		26		57	
TAIWAN	Q	4	4.64f0.56	3.80- 5.00		50	(0.998)	26	(0.993)	57	(0.999)

Eyes. Anterior row of eyes occupying full width of head, posterior row of eyes slightly shorter than anterior one ; viewed from above, two rows somewhat strongly recurved, lateral eyes slightly closer than median eyes.

Chelicerae. Basal segment 0.6-0.7 times as long as carapace ; (a) simple, not bifurcated at tip ; (AXu) and (Gu) absent ; (sl) directed forward, (T) somewhat large, (rsu) 3-4 in number; (AXl) absent, (Gl) somewhat robust, (L2) somewhat long, (rsl) about 4 in number ; fang unarmed.

Legs. Leg formula 1. 4. 2. 3 ; all legs without spines ; relative lengths of legs as shown in Table 14.

Palpi. Paracymbium bifurcated at tip; conductor and embolus as shown in Fig. 14, E and F ; distal end of tibia somewhat swollen.

Abdomen. Long, about 3-4 times as long as broad ; rather weak ; distal end of

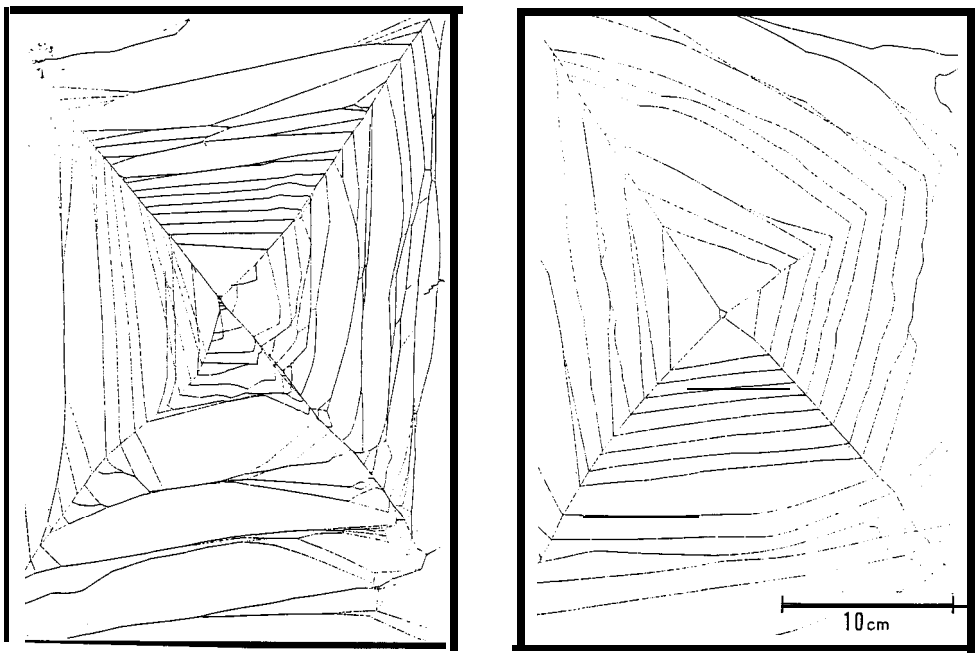

Fig. 15. Horizontal orb (?) webs of *Tetragnatha lauta* from Chiba Pref., Japan. The radial threads in these webs are only four each. Courtesy of Mr, S. Asama.

abdomen not extended posteriorly to spinnerets.

Color in alcohol. Legs, carapace and chelicerae generally glossy yellowish brown, carapacial sides with longitudinal silvery bands ; abdomen generally grayish brown, with a longitudinal abdominal marking dorsally, and with a central dark gray strip ventrally.

Female. Body length, exclusive of chelicerae 4.6-6.0 mm ; carapacial length 1.4-1.8 mm, width 0.8-1.0 mm, abdominal length 3.2-4.4 mm, width 1.0-1.4 mm, cheliceral length 0.6-0.7 mm.

Eyes. Nearly as in male.

Chelicerae. Basal segment shorter than one-half of carapace ; without paticular features.

Legs. Nearly as in male, relative length of legs as shown in Table 14.

Abdomen. Nearly as in male.

Color in alcohol. Similar to male.

Specimens examined: HONG KONG: 1♂, Tai Po Kaw, 21. IV. 1965, Y. Hirashima. TAIWAN :1♂, Fengtien, Pintung Hsien, 12. IV. 1975, Yau I Chu ;1♂, 2♀, Hungyehtsun, Taitung Hsien, 2. VI. 1980, H. Makihara ;2♂, Wulai, Taipei Hsien, 27. VI. 1976, H. Makihar. JAPAN :1♂, Kiyosumi yama, Chiba Pref., 29. VII. 1980, K. Suzuki; 2 young, Kamihori, Nobeoka City Miyazaki Pref., 18. VII. 1974, E. Shinkai and S. Matsumoto ;1♂, Hatsuno, Amami oshima, 11. XI. 1962, C. Okuma ;1♀, Yona, Okinawa, 25, 26. IV. 1965, H. Hirashima.

Distribution : Japan, Taiwan (new record) and Hong Kong (new record).

Note : In regard to the webbing habit of this species, very interestingly, it has been frequently observed that the web is composed of only four radial threads as shown in Fig. 15.

The serra-group

Diagnosis. Posterior row of eyes slightly larger than anterior row of eyes ; central ocular quadrangle nearly square ; female chelicera with long (s) near outer apex ; fang geniculate.

Tetragnatha serra Doleschall, 1857
(Fig. 16, Table 17)

Tetragnatha serra Doleschall, 1857, Naturk. Tijdschr. Ned. Ind., 13 : 408 ; Okuma, 1987, Esakia, (25) : 75.

Additional specimens : THAILAND : 1♀, Loey, Phuluang, 1,400 m, 16. XII. 1985, T. Sasaki ; 1♀, Khao Yai National Park, 20. I. 1986, T. Sasaki.

Distribution : Java, Sumatra, Sri Lanka, Amboina, New Guinea and Thailand (new record).

Body length : female 8.5-10.0 mm.

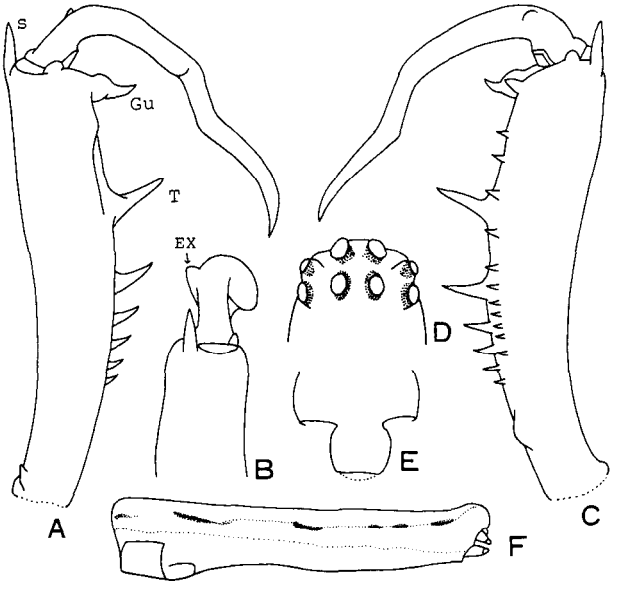

Fig. 16. *Tetragnatha serra* Doleschall. A : Left chelicera of female, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Eye group of female. E : Genital fold of female. F : Abdomen of female, lateral view. (After Okuma, 1987).

Table 17. *Tetragnatha serra* Doleschall. Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
THAILAND	♀	2	25.25	23.30-27.20	100	57	25	54
(Femora)								
THAILAND	♀	2	7.43	6.95- 7.90		61	32	65

The mandibulata-group

Diagnosis. Male chelicera without (t) and (T); (a) simple, not bifid at tip ; female chelicera with very strong (AXl) and (Gl); female fang with (EX).

Tetragnatha mandibulata Walckenaer, 1841

(Fig. 17, Table 15)

Tetragnatha mandibulata Walckenaer, 1841, Hist. Nat. Ins. Apt., 2 : 211 ; Okuma, 1983, Esakia, (20) : 70 ; Okuma, 1987 Esakia, (25) : 85.

Additional specimens : BANGLADESH : 1♂, Mymensingh, 12. IV. 1987, Y. Hirashima ; 1♂, 1♀, 14. IV. 1987, Y. Hirashima. MALAYSIA : 2♂, Alor Sata, III. 1981, K.

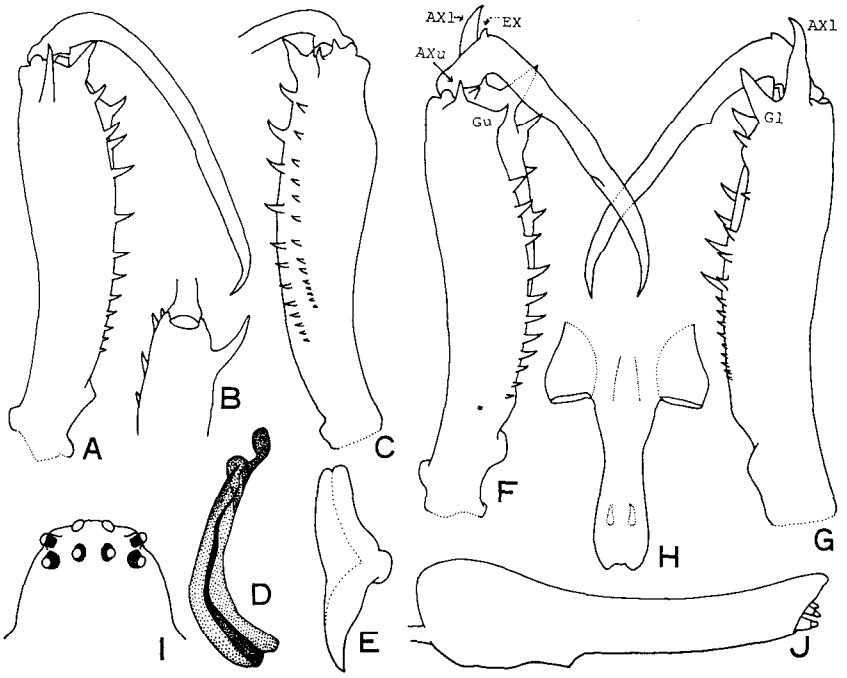

Fig. 17. *Tetragnatha mandibulata* Walckenaer. A : Left chelicera of male, upper view. B: Ditto, lateral view. C: Ditto, lower view. D: Distal portion of conductor and embolus of male. E : Paracymbium of male. F : Left chelicera of female, upper view. G : Ditto, lower view. H : Genital fold of famale. I : Eye group of female. J : Abdomen of female, lateral view. (After Okuma, 1987).

Table 15. *Tetragnatha mandibulata* Walckenaer. Relative lengths of total legs and femora.

Locality		n	length of means±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
JAPAN	♂	4	30.28±2.98	26.45-33.45	100	61 (0.991)	27 (0.970)	59 (0.994)
TAIWAN	♂	10	28.89f3.09	26.05-33.35		59 (0.990)	25 (0.977)	58 (0.986)
THAILAND	♂	10	29.48f4.15	22.10-33.80		58 (0.997)	25 (0.986)	57 (0.997)
JAPAN	♀	9	32.02±3.36	24.16-35.80		60 (0.992)	28 (0.983)	60 (0.977)
TAIWAN	♀	10	24.57f2.19	21.60-28.60		60 (0.995)	27 (0.830)	59 (0.991)
THAILAND	♀	10	31.77f2.54	27.45-35.80		59 (0.960)	26 (0.958)	58 (0.966)
(Femora)								
JAPAN	♂	4	8.4Gf0.91	7.30- 9.40		68 (0.977)	34 (0.953)	73 (0.989)
TAIWAN	♂	10	7.99f0.96	6.10- 9.30		67 (0.980)	33 (0.966)	72 (0.977)
THAILAND	♂	10	8.2Gf1.11	6.25-10.00		66 (0.997)	33 (0.985)	71 (0.997)
JAPAN	♀	9	9.16±0.96	6.90-10.35		67 (0.985)	35 (0.966)	73 (0.983)
TAIWAN	♀	10	7.07f0.63	6.20- 8.20		66 (0.984)	34 (0.928)	72 (0.970)
THAILAND	♀	10	9.17f0.77	7.90-10.30		65 (0.886)	33 (0.851)	71 (0.869)

Umeya.

Distribution : W Africa, Bangladesh (new record), SE Asia, Japan (the Ryukyus up to Amami-Oshima), Australia and Polynesia.

Body length : male 8.5-12.0 mm, famale 8.0-13.5 mm.

The maxillosa-group

Diagnosis. Posterior row of eyes slightly larger than anterior row of eyes ; central ocular quadrangle nearly square ; male chelicera with (a), (t), (Gu) and (T); female chelicera without (e) between (Gu) and (T).

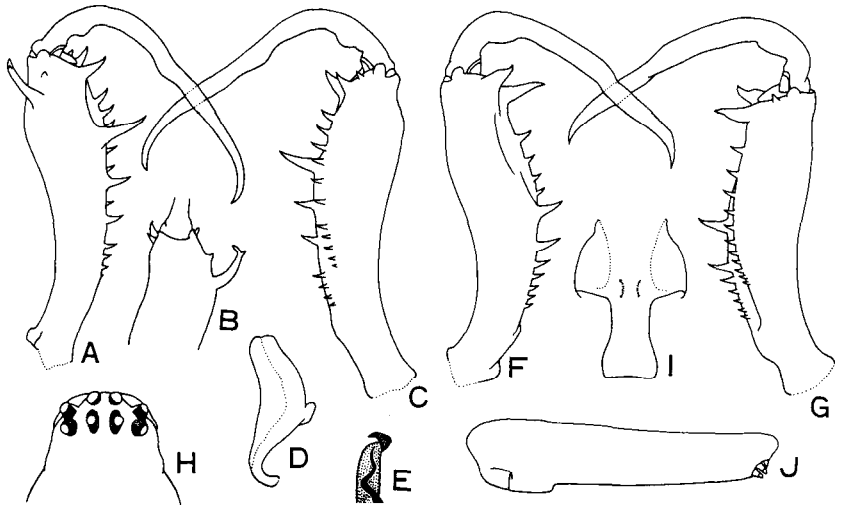

Fig. 18. *Tetragnatha maxillosa* Thorell. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Paracymbium of male. E : Distal portion of conductor and embolus of male. F : Left chelicera of female, upper view. G : Ditto, lower view. H : Eye group of male. I : Genital fold of female. J: Abdomen of female, lateral view. (After Okuma, 1987).

Tetragnatha maxillosa Thorell, 1895
(Fig. 18, Table 16)

Tetragnatha maxillosa Thorell, 1895, Descr. Catal Spid. Burma, : 139 ; Okuma, 1983, Esakia, (20) : 72 ; Okuma, 1987, Esakia, (25) : 83.

Additional specimens : BANGLADESH : 1♀, Mymensingh, 12. IV. 1987, Y. Hirashima.

Distribution : Widespread in Asia, New Guinea and Africa. This is the first record of the species from Bangladesh.

Body length : male 3.8-10.0 mm, female 6.8-13.5 mm.

The nitens-group

Diagnosis. Male chelicera with three strong apical teeth ; female chelicera with somewhat strong (AXl) and small (Gl); female cheliceral fang with strong (EX).

Table 16. *Tetragnatha maxillosa* Thorell. Relative lengths of total legs and femora.

Locality		n	length of mean±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
Niigata	♂	5	30.47f0.47	29.95-31.15	100	59 (0.859)	26 (0.921)	58 (0.899)
Tokyo	♂	13	23.42f5.03	12.95-29.00		58 (0.998)	27 (0.994)	58 **(0.997)**
Tokushima	♂	11	28.55f4.40	17.35-33.05		57 (0.994)	26 (0.987)	58 (0.994)
Fukuoka (May)	♂	8	24.91f3.19	20.45-28.65		60 (0.986)	28 (0.989)	60 (0.997)
. . . . . (Sep.)	♂	12	23.08f5.61	14.45-31.70		58 (0.998)	26 (0.998)	58 **(0.998)**
Yakushima Is.	♂	10	27.28t5.23	18.95-37.30		58 (0.997)	26 (0.993)	59 (0.998)
Okinawa Is.	♂	4	20.55t3.72	15.40-23.40		59 (1)	27 (0.997)	58 **(0.999)**
ogasawara IS.	♂	4	25.16f3.85	20.25-29.65		60 **(0.998)**	28 (0.994)	60 (0.999)
TAIWAN	♂	10	21.75f3.67	14.80-27.55		58 (0.989)	26 (0.974)	57 (0.988)
PHILIPPINES	♂	12	22.62t2.31	17.40-24.80		56 (0.992)	25 (0.977)	57 (0.990)
THAILAND	♂	10	23.52f2.66	18.55-27.25		56 (0.994)	25 (0.9891	56 (0.983)
Niigata	♀	12	27.77-f-2.52	24.90-31.55		61 (0.987)	28 (0.984)	57 (0.996)
Tokyo	♀	12	26.23f3.46	17.10-30.25		61 (0.996)	28 (0.992)	58 (0.993)
Tokushima	Q	11	27.71±2.57	21.65-32.00		60 (0.992)	27 **(0.988)**	57 **(0.981)**
Fukuoka (May)	♀	7	25.70f1.78	23.65-28.60		63 **(0.979)**	29 **(0.941)**	60 **(0.963)**
. . . . . (Sep.)	♀	10	26.80f2.15	23.10-30.85		60 (0.981)	27 **(0.968)**	57 **(0.973)**
Yakushima Is.	♀	13	24.44f2.54	20.35-28.25		60 (0.988)	27 (0.974)	58 **(0.984)**
Okinawa Is.	♀	10	25.71f3.67	20.10-32.30		60 (0.996)	27 (0.977)	58 **(0.991)**
Ogasawara Is.	♀	14	25.46f4.16	19.15-32.95		60 (0.996)	28 (0.971)	58 (0.992)
TAIWAN	♀	10	24.03f2.32	20.40-28.20		61 (0.995)	27 **(0.989)**	58 (0.987)
PHILIPPINES	♀	13	22.54±1.43	20.65-24.55		59 (0.980)	27 (0.942)	56 **(0.971)**
THAILAND	♀	10	24.53f2.73	21.05-29.50		58 (0.994)	26 (0.991)	55 (0.998)
SUMATORA	9	3	22.43f2.78	19.70-25.50		59 (1)	27 **(0.998)**	57 (1)
(Femora)								
Niigata	♂	5	8.41f0.21	8.20- 8.75		65 (0.641)	34 **(0.494)**	70 (0.577)
Tokyo	♂	13	6.48±1.35	3.70- 8.30		65 (0.998)	34 (0.996)	70 (0.998)
Tokushima	♂	11	7.85f1.23	4.75- 9.25		64 (0.996)	34 **(0.990)**	70 **(0.994)**
Fukuoka (May)	♂	8	6.99f0.83	5.80- 8.10		67 (0.987)	36 (0.975)	72 (0.991)
. . . . (Sep.)	♂	12	6.44f1.60	4.00- 8.75		64 (0.998)	34 (0.993)	70 **(0.998)**
Yakushima Is.	♂	10	7.60±1.48	5.30-10.40		64 (0.996)	34 **(0.994)**	71 **(0.996)**
Okinawa Is,	♂	4	5.80±1.06	4.35- 6.70		64 (1)	33 (0.999)	71 (1)
ogasawara IS.	♂	4	7.09t1.14	5.60- 8.35		66 (0.995)	35 (0.978)	72 (0.999)
TAIWAN	♂	10	6.36±1.08	4.10- 7.70		64 (0.987)	33 (0.976)	69 **(0.988)**
PHILIPPINES	♂	12	6.38f0.65	4.95- 7.00		63 (0.987)	32 **(0.980)**	69 (0.981)
THAILAND	♂	10	6.57f0.76	5.05- 7.65		62 (0.997)	32 **(0.989)**	68 (0.994)
Niigata	Q	12	8.00f0.73	7.20- 9.25		66 (0.985)	35 (0.982)	69 (0.987)
Tokyo	♀	12	7.54±0.98	5.00- 8.60		66 (0.994)	35 (0.985)	70 **(0.988)**
Tokushima	♀	11	7.89±0.75	6.10- 9.10		66 (0.981)	35 **(0.970)**	70 (0.950)
Fukuoka (May)	Q	7	7.49f0.54	6.85- 8.30		67 **(0.984)**	36 (0.936)	72 (0.958)
. . . . . (Sep.)	♀	10	7.70±0.63	6.60- 8.85		65 **(0.987)**	34 (0.978)	69 **(0.953)**
Yakushima Is.	Q	13	6.95±0.77	5.70- 8.05		66 **(0.987)**	35 (0.953)	71 **(0.983)**
Okinawa Is.	♀	10	7.38±1.08	5.80- 9.40		65 (0.995)	34 (0.982)	70 (0.990)
ogasawara IS.	♀	14	7.38i1.19	5.60- 9.60		65 (0.997)	35 (0.986)	70 (0.989)
TAIWAN	♀	10	6.83f0.71	5.90- 8.20		65 (0.991)	34 (0.971)	69 (0.976)
PHILIPPINES	Q	13	6.50f0.42	5.90- 7.05		64 **(0.970)**	33 (0.920)	69 (0.960)
THAILAND	Q	10	7.05f0.75	6.10- 8.50		63 (0.982)	33 (0.994)	67 (0.990)
SUMATORA	Q	3	6.33±0.81	5.60- 7.20		64 (1)	34 (1)	69 (0.999)

KEY TO THE SPECIES

1 Relative lengths of legs, from 1 to 4, as about 100 : 62 : 27 : 57 ..... *boydi*

– Relative lengths of legs, from 1 to 4, as about 100 : 68: 30: 63 ..... *nitens*

Tetragnatha **nitens** (Audouin, 1827)
(Fig. 19, Table 18)

Eugnatha nitens Audouin, 1827, Explic. Planch. Arachn. in Savigny, Desc. de l'Egypt., 22 : 323.

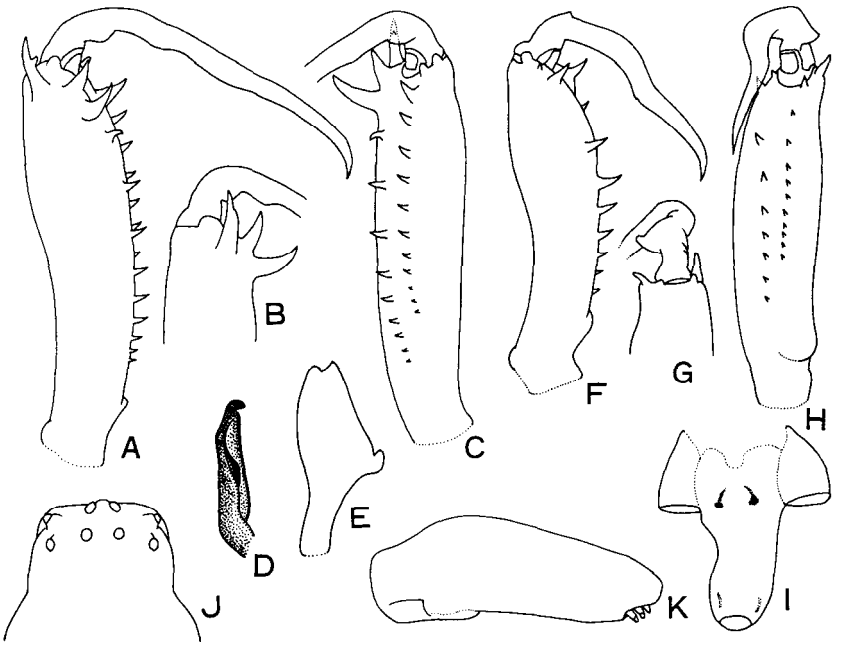

Fig. 19. *Tetragnatha nitens* (Audouin). A: Left chelicera of male, upper view. B: Ditto, lateral view. C : Ditto, lower view. D : Distal portion of conductor and embolus of male. E : Paracymbium of male. F : Left chelicera of female, upper view. G : Ditto, leteral view. H : Ditto, inner view. I : Genital fold of female. J : Eye group of female. K : Abdomen of female, lateral view. (After Okuma, 1987).

Table 18. *Tetragnatna nitens* (Audouin). Relative lengths of total legs and femora.

Locality		n	length of 1st legs mean±s.d.	range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
JAPAN	♂	7	25.25f3.44	20.30-26.40	100	69 (0.985)	31 (0.973)	64 (0.982)
TAIWAN	♂	10	23.61f4.12	17.55-30.90		68 (0.998)	30 (0.989)	63 (0.997)
THAILAND	♂	10	25.37±4.20	17.65-32.05		67 (0.998)	30 (0.992)	62 (0.998)
JAPAN	♀	10	23.99±4.48	15.65-30.80		68 (0.997)	31 (0.991)	64 (0.993)
TAIWAN	Q	10	20.64±2.88	16.60-24.90		68 (0.992)	31 (0.982)	65 (0.993)
(Femora)								
JAPAN	♂	7	7.13f1.06	5.55- 9.00		77 (0.994)	38 (0.986)	76 (0.991)
TAIWAN	♂	10	6.68±1.10	4.90- 8.60		76 (0.997)	37 (0.976)	75 (0.996)
THAILAND	♂	10	7.11f1.16	5.00- 9.15		75 (0.998)	37 (0.989)	74 (0.994)
JAPAN	♀	10	6.92f1.26	4.50- 8.65		75 (0.993)	37 (0.985)	76 CO.9931
TAIWAN	Q	10	5.97±0.84	4.80- 7.10		74 (0.994)	37 (0.973)	71 (0.997)

Tetragnatha nitens: Okuma, 1983, Esakia, (20) : 75 ; Okuma, 1987, Esakia, (25) : 84.

Distribution : Pantropical and Pansubtropical.

Note : This species has been known to occur widely in the tropical and subtropical parts of the world. This species is conspicuous in having the spur and the two contignous teeth on the chelicera in the male and the diagnostic posterior cusp on the fang in the female. These characters are very similar to those of *T. boydi, so* that the two species may be easily confused. However, they are separable by the relative lengths of the legs. Body length : male 7.3-11.0 mm, female 8.5-12.0 mm.

Tetragnatha boydi Cambridge, 1898
(Fig. 20, Table 19)

Tetragnatha boydi Cambridge, 1898, Proc. 2001. Soc. London, : 389 ; Okuma, 1983, Esakia, (20) : 70.

Distribution : Africa, Brazil and Nepal.

Note : According to Dr. Y. Murakami (Kyushu University) who collected this species in Brazil and to Dr. Y. Nishikawa (Ohtemon-Gakuin University) who collected this in Nepal, this species was frequently found on grasses near water.

Body length : male 8.0-8.8 mm, female 8.0-14.2 mm.

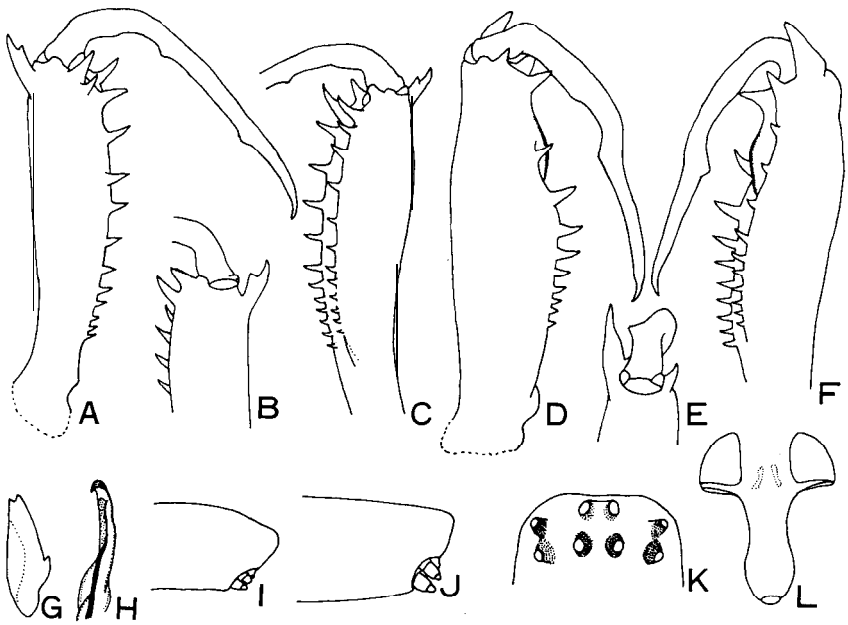

Fig. 20. *Tetragnatha boydi* Cambridge. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Left chelicera of female, upper view. E : Ditto, lateral view. F : Ditto, lower view. G : Paracymbium of male. H : Distal portion of conductor and embolus of male. I : Distal portion of abdomen of male, lateral view. J : Ditto, female. K : Eye group of female. L : Genital fold of female. (After Okuma, 1983).

Table 19. *Tetragnatha boydi* Cambridge. Relative lengths of total legs and femora.

Locality		n	length of means±s.d.	1st legs range	1st legs ratio	2nd legs ratio (r)	3rd legs ratio (r)	4th legs ratio (r)
(Legs)								
NEPAL	♀	11	31.26±8.73	24.78-34.00	100	62 (0.998)	28 (0.992)	57 60 (0.999)
(Femora)								
NEPAL	♂	1	7.70			69	34	69
NEPAL	♀	11	8.80±1.41	6.60-10.20		69 (0.994)	35 (0.991)	71 (0.999)

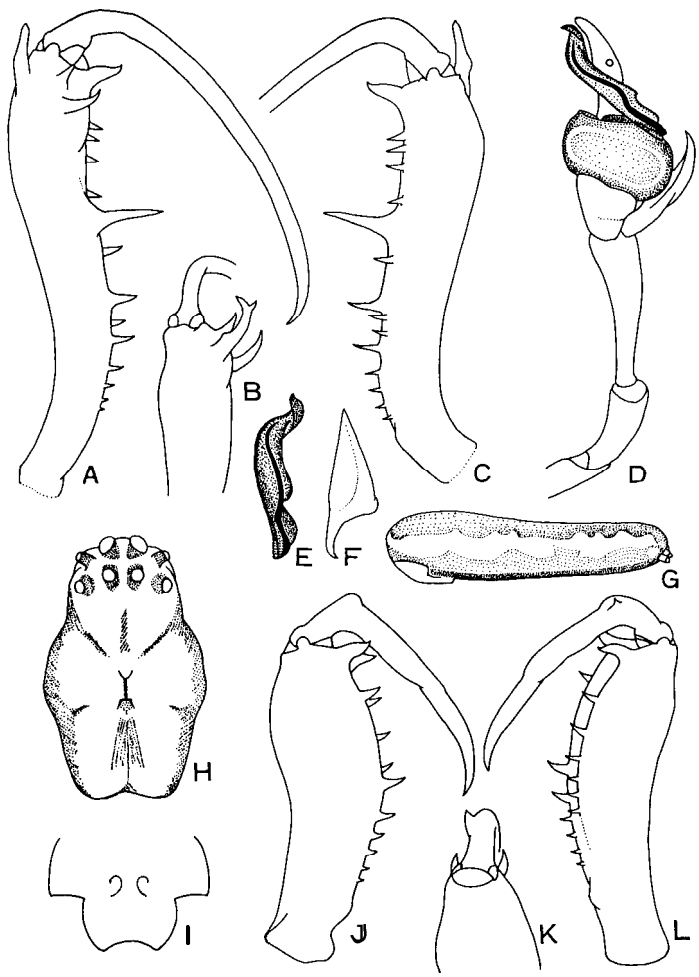

Fig. 21. *Tetragnatha josephi* Okuma. A : Left chelicera of male, upper view. B : Ditto, lateral view. C : Ditto, lower view. D : Left palpus of male, E : Conductor and embolus of male. F : Paracymbium of male. G : Abdomen of female, lateral view. H : Carapace of male, upper view. I : Genital fold of female. J : Left chelicera of female, upper view. K : Ditto, lateral view, L : Ditto, lower view. (After Okuma, 1988).

The josephi-group

Diagnosis. Two rows of eyes equal or subequal in width; abdomen about 3-5 times as long as broad ; male chelicera longer than carapace and with three strong teeth at upper apex and with conspicuous long (T).

Tetragnatha josephi Okuma, 1988

(Fig. 21, Table 20)

Tetragnatha josephi Okuma, 1988, Esakia, (26) : 76.

Distribution : Singapore.

Note: The upper distal portion of male chericere in this species is similar to *T. nitens* (Audouin) for the arrangement of three strong teeth, but is easily separable from *nitens* by having the large and long (T) on the upper margin of fang groov. It is also strikingly different from the congenric species of *Tetragnatha* by the shape of the male palpal paracymbium and conductor. Body length : male 5.5-5.8 mm, female 6.6-9.7 mm.

Table 20. *Tetragnatha josephi* Okuma. Relative lengths of total legs and femora.

Locality		n	length of 1st legs means.d.	range	1st legs ratio	2nd legs ratio	(r)	3rd legs ratio	(r)	4th legs ratio	(r)
(Legs)											
SINGAPORE	♂	2	26.20	26.05-26.35	100	60		27		58	
SINGAPORE	♀	2	25.40	21.20-29.65		63		31		64	
(Femora)											
SINGAPORE	♂	2	7.58	7.40-7.75		66		35		72	
SINGAPORE	♀	2	7.50	6.20-8.80		67		38		77	

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