Bull. Univ. Osaka Pref., Ser. B, Vol. 16.
大阪府立大学紀要, 農学・生物学, Jan., 1965.

Three New Species of the Genus *Stomaphis* in Japan, with a Redescription of *S. yanonis* TAKAHASHI (Aphididae, Homoptera)

By

Masato SORIN

Laboratory of Veterinary Physiology and Animal Feeding, College of Agriculture

(Received August 28, 1964)

In 1960 Dr. R. TAKAHASHI reported the Japanese species of the genus *Stomaphis*, viz. *S.* (*Neostomaphis*) *fagi* TAKAHASHI, *S. aceris* TAKAHASHI, *S. ulmicola* INOUYE, *S. yanonis* TAKAHASHI, *S. yanonis aesculi* TAKAHASHI, *S. quercus japonica* TAKAHASHI and *S. quercus pini* TAKAHASHI. Recently the author found three additional forms of the present genus in Japan, and now describes these as new species.

The author is indebted to the late Dr. R. TAKAHASHI for his kind guidance and encouragement, and to Dr. D. HILLE RIS LAMBERS of the Netherlands for kind informations about the difference between his and the Japanese material on *Betula latifolia*, and is also grateful to Profs. S. NAGAHATA and S. ITO of the University of Osaka Prefecture for their helpfull advice.

The material is preserved in the author's collection.

Stomaphis takahashii n. sp.

Apterous viviparous female: Head almost fused with pronotum, a suture being recognized, with many setae which are a little longer than middle diameter of 3rd antennal segment. Antennae about 2.1 times as long as width of head across eyes; 1st segment about 1.8 times as long as 2nd; 3rd almost pale, a little curved, long setae about four-fifths as long as middle diameter of segment, without sensoria; 4th with one sensorium on distal part; processus terminalis about 1.7 times as long as width, with one auxiliary sensorium; relative length of segments as follows: III-27, IV-13, V-17, VI-24. Fourth segment of rostrum excluding apical part (5th segment) about 0.7 times as long as 2nd segment of hind tarsus, with many setae, rough with minute spinules at two-fifths of basal part; long setae shorter than middle diameter of 3rd antennal segment. Setae of hind tibiae a little longer than half of middle width of it; sensory setae on 1st segment of tarsi 6 in fore, 5 in middle, 2 in hind legs; hind tarsus long, about 2.9 times as long as fore tarsus; upper side of 1st segment about one-third as long as lower side, as long as basal diameter of segment; 2nd segment very elongated, about 10 times as long as width at midlength, about 4.8 times as long as 1st segment of hind tarsus, a little longer than 3rd antennal segment, about 1.45 times as long as 4th segment of rostrum excluding apical part. Longitudinal diameter of sclerite around cornicle about 0.9 times as long as 3rd antennal segment. Width of anal plate larger than length. Cauda round at apex, with many setae along hind margin, long setae as long as middle diameter of 3rd antennal segment. Median nude part of genital plate does not reach middle part of it, median part and hind margin of genital plate not pigmented and not sclerotized. Gonochaetae consisted of 4 clusters; median 2 of them small and apart from each other. Abdomen with 5 median dark nude patches on venter, which are narrowed at hind end, an additional small broken median nude patch sometimes present on 2nd sternite, setae

present between these patches. Mesonotum with a pair of large spinal sclerites, almost fused with each other; metanotum with a pair of small broken spinal sclerites, which are apart from each other; basal 3 abdominal segments without spinal sclerites and with some scattered small sclerites on each segment; 4th and 5th with a pair of large spinal sclerites which are almost fused; 7th with large dorsal sclerites which are broken at lateral and hind margin, with about 50 setae on whole surface; sclerites of 8th entirely fused with about 70 setae along hind margin, long ones as long as middle diameter of 3rd antennal segment. Body 5 mm. in length.

Apterous oviparous female: Similar to apterous viviparous female, but differing in the following respects; long setae of 3rd antennal segment about two-thirds as long as middle diameter of segment; 4th antennal segment with 2 or 3 protruding sensoria on distal part; processus terminalis about twice as long as width. Abdomen with an additional broken median nude patch on 2nd sternite. Meso- and metanota, 5th and 6th abdominal segments with small sclerites; 7th with a pair of spinal sclerites, and with about 6 setae on each sclerites; long setae of 8th tergite about 1.7 times as long as middle diameter of 3rd antennal segment. Width of genital plate a little larger than length of hind tarsus. Body 5 mm. in length.

Male: Frontal setae of head as long as middle diameter of 3rd antennal segment. Compound eyes small, of about 5 facets, with small ocular tubercles. Antennae about 3.3 times as long as width of head across eyes; 3rd segment not curved, long setae a little shorter than middle diameter of segment; processus terminalis about 1.5 times as long as width, with 2 auxiliary sensoria; relative length of segments as follows: III-17, IV-9, V-13, VI-15. Rostrum wanting. Sensory setae on 1st segment of tarsi 3 in fore, 2 in middle, one in hind legs; upper side of 1st segment of hind tarsus about one-fifth as long as lower side, about two-fifths as long as basal diameter of segment. Thorax and abdomen sclerotized on dorsum of each segment; dorsal setae of abdomen subequal in length, as long as middle diameter of 3rd antennal segment. No cornicle. Anal plate round at apex, with many long setae which are a little longer than middle diameter of 3rd antennal segment. Genital plate sclerotized and fused with basal parts of claspers, with some long setae on hind margin. Claspers are sclerotized, united at basal parts with many setae, round at apex, no setae at distal parts. Marginal area of penis sheath membranous, dorsal area well sclerotized. Cauda round, with many long setae, long ones about 1.3 times as long as middle diameter of 3rd antennal segment. Body 2.7 mm. in length.

Host plants: *Acer pictum* var. *typicum* (Aceraceae), *Betula latifolia* (Betulaceae).

Described from some specimens (cotypes) on *Acer* taken near Lake Shikotsu, Hokkaido (23. IX. 1962, M. SORIN leg.); collected also on *Betula* at Jozankei, Sapporo (22. IX. 1962, M. SORIN leg.).

This species is distinguished from *S. aceris* TAKAHASHI by the following points; 2nd segment of hind tarsus about 10 times as long as middle diameter of segment, about 4.8 times as long as 1st semgent of hind tarsus, a little longer than 3rd antennal segment; 4th segment of rostrum excluding apical part about 0.7 times as long as 2nd segment of hind tarsus; basal 3 abdominal segments without spinal sclerites, 4th and 5th with a pair of small broken spinal sclerites on each segment in apterous viviparous female.

Close to *S. fagi* TAKAHASHI but different in the 4th segment of rostrum with minute spinules on two-fifths of basal part.

The present species is dedicated to the late Dr. R. TAKAHASHI who had given the author kind instruction and guidance for many years.

Stomaphis alni n. sp.

Apterous viviparous female: Body deep brown. Head entirely fused with pronotum.

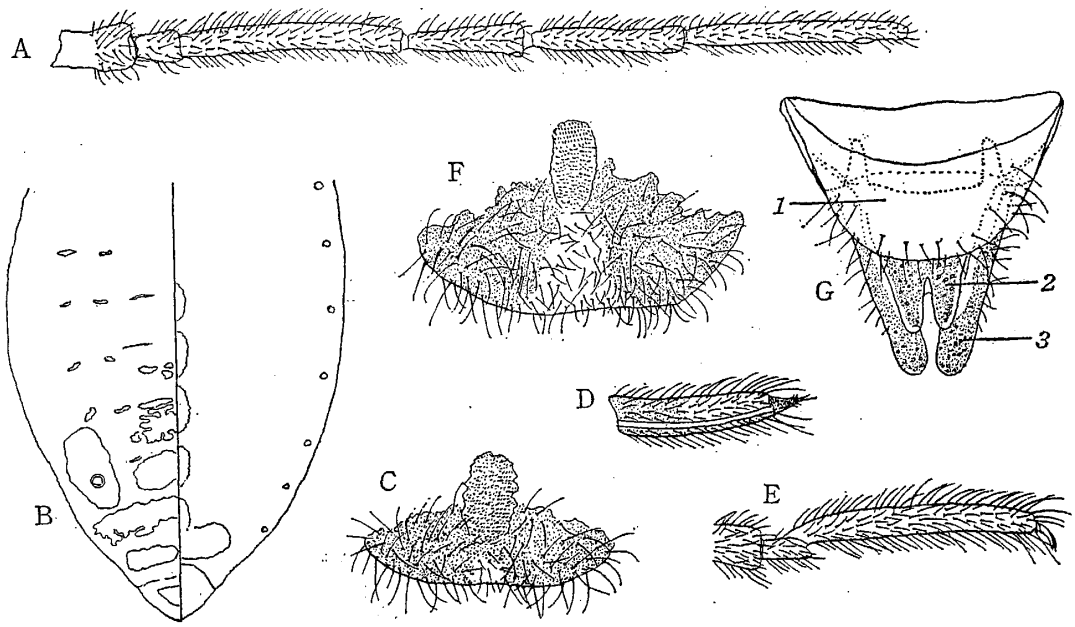

Fig. 1. *Stomaphis takahashii* n. sp.
Apterous viviparous female: (A) Antenna. (B) Sclerites and nude patches of abdomen. (C) Genital plate. (D) Ultimate segment of rostrum. (E) Hind tarsus. Apterous oviparous female: (F) Genital plate. Male: (G) Hind end of body. (1) Anal plate. (2) Basal sheath of penis. (3) Clasper.

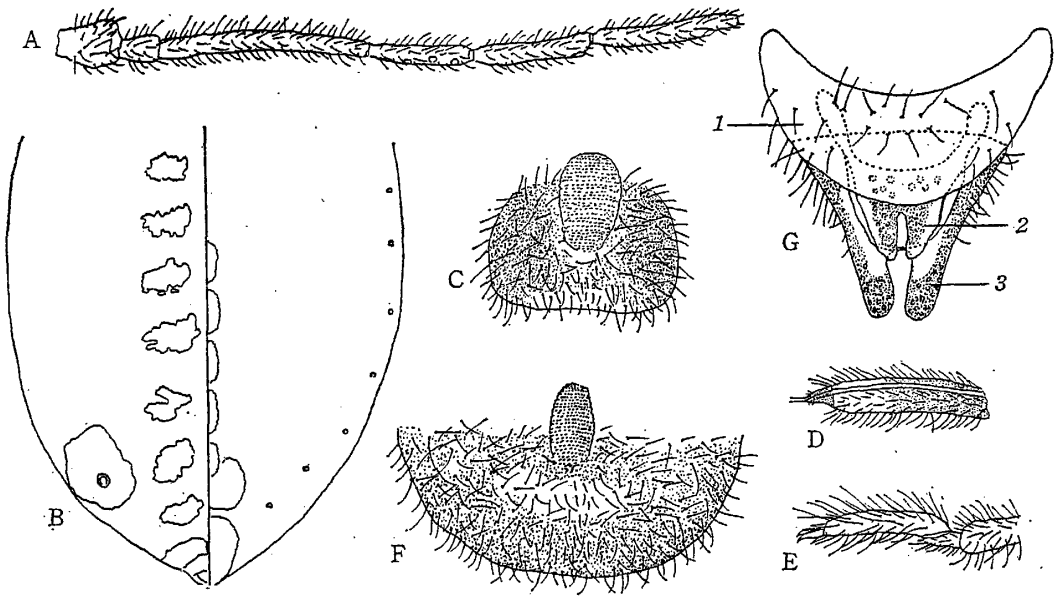

Fig. 2. *Stomaphis alni* n. sp.
Apterous viviparous female: (A) Antenna. (B) Sclerites and nude patches of abdomen. (C) Genital plate. (D) Ultimate segment of rostrum. (E) Hind tarsus. Apterous oviparous female: (F) Genital plate. Male: (G) Hind end of body. (1) Anal plate. (2) Basal sheath of penis. (3) Clasper.

Antennae about twice as long as width of head across eyes; 3rd segment a little curved, basal half pale, long setae about 1.5 times as long as middle diameter of segment, without sensoria; 4th with 4 protruding sensoria; 6th with 2 or 3 auxiliary sensoria; processus terminalis about 1.6 times as long as width; relative length of segments as follows: III-28, IV-14, V-15, VI-20. Fourth segment of rostrum excluding apical part (5th segment) as long as, or a little longer than 2nd segment of hind tarsus, with many long setae and rough with minute spinules at more than half parts. Hind tibiae about 1.4 times as long as hind femora, setae of hind tibiae about 1.2 times as long as middle diameter of it; sensory setae on 1st segment of tarsi 5-6 in fore, 2 in middle, one in hind legs; hind tarsus about 1.6 times as long as fore tarsus, upper side of 1st segment about one-third as long as lower side, a little shorter than basal diameter of segment, 2nd segment about 7 times as long as width at midlength, a little shorter than 6th antennal segment. Longitudinal diameter of sclerite around cornicle as long as 3rd antennal segment. Anal plate longer than width, partly pale. Cauda round at apex, with many long setae along hind margin, long setae about 1.4 times as long as middle diameter of 3rd antennal segment. Genital plate partly pale, hind margin not pigmented. Gonochaetae consisted of 3 clusters with many setae, median cluster divided. Abdomen with 5 median nude patches on venter, which are not broadened at middle part, round on both ends, an additional broken median nude patch present on 2nd sternite, setae present between these patches; median nude part of genital plate large, reaches middle part of it. Meso- and metanota and anterior 6 abdominal segments with a pair of large spinal sclerites which are apart from each other and partly broken; 7th with a pair of spinal sclerites, with 10-12 setae on each; 8th entirely fused, with many setae, long ones about 1.7 times as long as middle diameter of 3rd antennal segment. Body about 6 mm. in length.

Apterous oviparous female: Similar to apterous viviparous female but differing in the following respects; frontal setae about twice as long as middle diameter of 3rd antennal segment, long setae of 3rd antennal segment about 1.2 times as long as middle diameter of segment; processus terminalis about 1.3 times as long as width; relative length of segments as follows: III-27, IV-12, V-15, VI-18. Sensory setae on 1st segment of hind tarsus 2; 2nd segment of hind tarsus about 1.4 times as long as fore tarsus, about 6 times as long as middle width; setae of hind tibia about 1.3 times as long as middle width of it, about 1.6 times as long as middle diameter of 3rd antennal segment; Median dark patches on venter of abdomen 5. Genital plate large, width as long as fore tibia, a little sclerotized at basal area of setae and lateral area of genital plate. Gonochaetae consisted of 6 clusters, median clusters apart from each other.

Male: Frontal setae about 0.7 times as long as middle diameter of 3rd antennal segment. Antennae about twice as long as width of head across eyes; 3rd segment not curved, long setae about 0.8 times as long as middle diameter of segment; relative length of segments as follows: III-18, IV-9, V-14, VI-15. Compound eyes with 5 facets. Rostrum wanting. Sensory setae on 1st segment of tarsi 3 in fore, 4 in middle, 3 in hind legs. Thorax and abdomen sclerotized on dorsum of each segment; dorsal setae of abdomen subequal in length, about 1.5 times as long as middle diameter of 3rd antennal segment. No cornicle. Width of anal plate larger than length. Basal sheath of penis sclerotized, marginal area membranous, distal part with a notch, and both prominent projection sclerotized and apart from each other at distal parts. Genital plate sclerotized, not fused with basal parts of claspers. Claspers sclerotized except at central area of united basal parts, depth of notch about thrice as long as middle diameter of claspers. Body about 2.7 mm. in length.

Host plant: *Alnus hirsuta* Turcz. (Betulaceae).

Described from some specimens (cotypes) collected near Lake Shikotsu, Hokkaido (23. IX. 1962, M. SORIN leg.).

This species is distinguished from *S. yanonis* TAKAHASHI by the following points; head

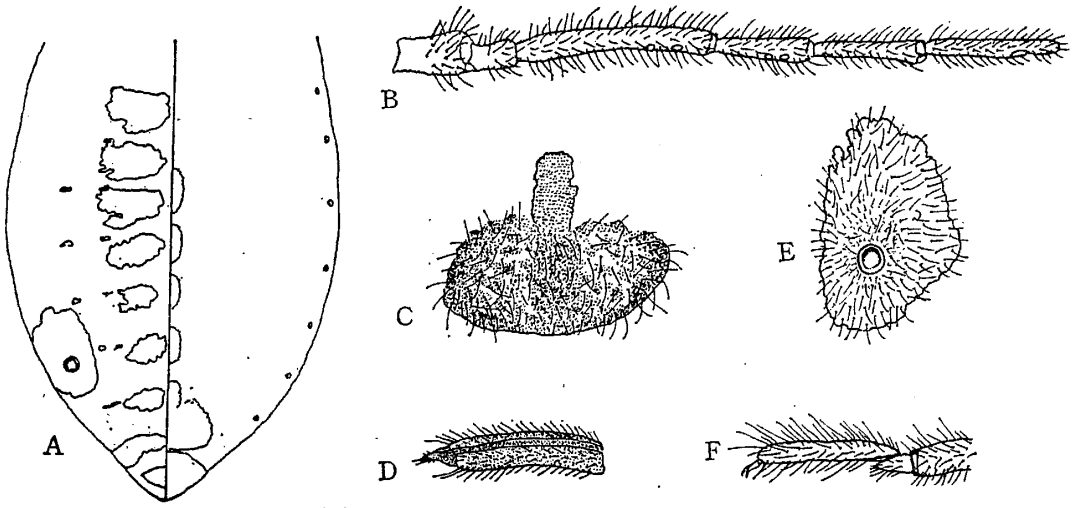

Fig. 3. *Stomaphis carpini* n. sp.
Apterous viviparous female: (A) Sclerites and nude patches of abdomen. (B) Antenna. (C) Genital plate. (D) Ultimate segment of rostrum. (E) Cornicle. (F) Hind tarsus.

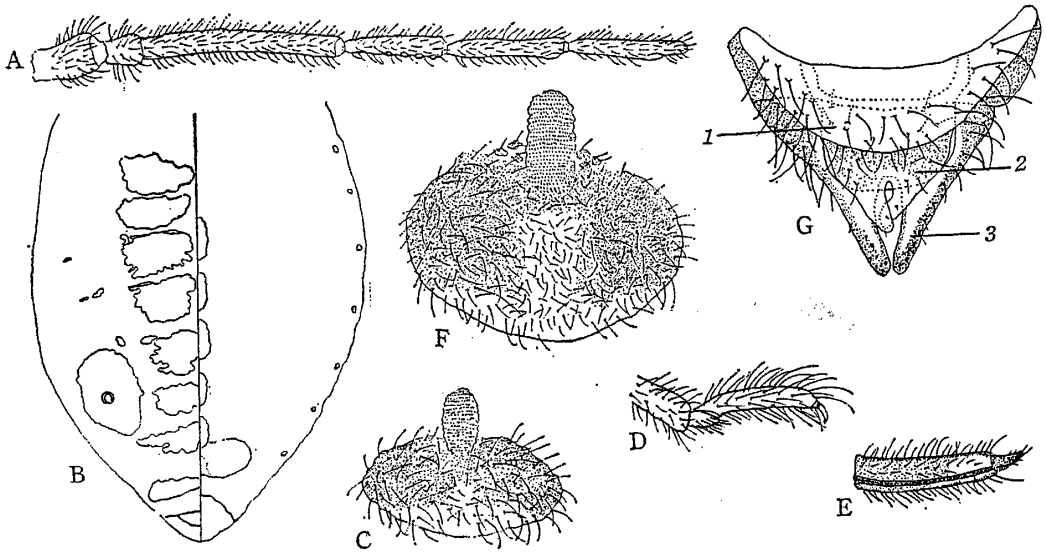

Fig. 4. *Stomaphis yanonis* TAKAHASHI
Apterous viviparous female: (A) Antenna. (B) Sclerites and unde patches of abdomen. (C) Genital plate. (D) Hind tarsus. (E) Ultimate segment of rostrum. Apterous oviparous female: (F) Genital plate. Male: (G) Hind end of body. (1) Anal plate. (2) Basal sheath of penis. (3) Clasper.

entirely fused with pronotum; long setae of 3rd antennal segment about 1.5 times as long as middle diameter of segment; 6th antennal segment about 1.3 times as long as 5th; processus terminalis about 1.6 times as long as width; spinal sclerites reduced in size, and broken; hind tibiae about 1.4 times as long as hind femora, long setae of hind tibiae about 1.2 times as long as middle width of it; 2nd segment of hind tarsus about 7 times as long as width at midlength, a little shorter than 6th antennal segment; and long setae on 8th spinal sclerites about 1.7 times as long as middle diameter of 3rd antennal segment in apterous viviparous female. In oviparous female, sensory setae on 1st segment of hind tarsus 2; genital plate large, width as long as fore tibia, a little sclerotized at basal area of setae; gonochaetae consisted of 6 clusters, median 2 of them apart from each other. In male, distal parts of prominent projection of basal sheath of penis apart from each other and not crossed; compound eyes with 5 facets.

Differs from *S. aceris* TAKAHASHI and *S. fagi* TAKAHASHI in the hind tarsus about 1.6 times as long as fore tarsus; 1st segment of hind tarsus with one sensory seta in apterous viviparous female.

Stomaphis carpini n. sp.

Apterous viviparous female: Head almost fused with pronotum; frontal setae about 1.3 times as long as middle diameter of 3rd antennal segment. Antennae about 1.65 times as long as width of head across eyes; 3rd segment almost pale, little curved, with about 2 or 3 not protruding sensoria, long setae about 1.3 times as long as middle diameter of segment; 4th with 2 protruding sensoria; primary sensorium on 5th large; 6th with 2 or 3 auxiliary sensoria; processus terminalis about 1.6 times as long as width; relative length of segments as follows: III-24, IV-11, V-13, VI-16. Fourth segment of rostrum excluding apical part (5th segment) longer than 2nd segment of hind tarsus, with many long setae and rough with minute spinules at almost whole length. Hind tibiae about 1.34 times as long as hind femora, setae of hind tibiae about 1.3 times as long as middle width of it; sensory setae on 1st segment of tarsi 5 in fore, 4 in middle, 2 or 3 in hind legs; hind tarsus about 1.6 times as long as fore tarsus; upper side of 1st segment about one-fourth as long as lower side, about three-fifths as long as basal diameter of segment; 2nd segment about 5.7 times as long as width at midlength, as long as 6th antennal segment. Longitudinal diameter of sclerite around cornicle about 1.1 times as long as 3rd antennal segment. Anal plate larger than length. Cauda round at apex, with many long setae along hind margin. Gonochaetae consisted of 3 clusters, median cluster divided. Genital plate well sclerotized, but partly broken, with many setae. Abdomen with 5 median dark nude patches on venter, setae present between these patches. Meso- and metanota with a pair of large spinal sclerites; anterior 3 abdominal segments with a pair of large spinal sclerites which are partly broken, 4th to 6th abdominal segments with a pair of small broken spinal sclerites on each segment; a median sclerite on 7th partly broken, with about 30 setae; a pair of sclerites on 8th well developed, almost fused, with many setae along hind margin, long setae about 1.3 times as long as middle diameter of 3rd antennal segment; ventral long setae of abdomen a little longer than middle diameter of 3rd antennal segment. Body about 5.5 mm. in length.

Host plant: *Carpinus tschonoskii* Maxim. (Betulaceae).

Described from 3 apterae (cotypes) collected in Mt. Kongo, Osaka Prefecture (4. IX. 1963, M. SORIN leg.).

This species is distinguished from the foregoing species and *S. yanonis* TAKAHASHI by the following points; sensory setae on 1st segment of hind tarsus with 2 or 3; 4th segment of rostrum excluding apical part (5th segment) rough with minute spinules at almost whole length; hind tibiae about 1.34 times as long as hind femora, long setae of hind tibiae about 1.3 times as long as middle diameter of it; antennae about 1.65 times as long as width

of head across eyes; 3rd antennal segment with about 2 or 3 not protruding sensoria, long setae about 1.3 times as long as middle diameter of segment; and processus terminalis about 1.6 times as long as width. Median parts of genital plate sclerotized and pigmented.

Stomaphis yanonis Takahashi

Zool. Mag. Tokyo, XXX, p.369 (1918); Proc. Ent. Soc. Washington, XXI, p. 176 (1919); Dept. Agr. Govt. Res. Inst. Formosa, Rept. 4, p. 139 (1923) and Rept. 10, p.116 (1924); Philippine Jl. Sc., LXXII, p.383 (1940); Bull. Univ. Osaka Pref. B, X, p.5 (1960); SHINJI, Monog. Japan. Aphid., p. 274 (1941).

Apterous viviparous female: Head fused with pronotum, a suture being recognized, with many setae which are about 1.5 times as long as middle diameter of 3rd antennal segment. Antennae about 1.85 times as long as width of head across eyes; 3rd segment a little curved, long setae as long as about half of middle diameter of segment, without sensoria; 4th with 4 protruding sensoria; processus terminalis about twice as long as width, with 2 auxiliary sensoria; relative length of segments as follows: III-27, IV-13, V-15, VI-16. Fourth segment of rostrum excluding apical part (5th segment) a little longer than 2nd segment of hind tarsus, with many long setae and rough with minute spinules at two-thirds of basal parts, long setae as long as middle diameter of 3rd antennal segment. Hind tibiae 1.5-1.6 times as long as hind femora, setae of hind tibiae about 0.6 times as long as middle diameter of it; sensory setae on 1st segment of tarsi 6-7 in fore, 2-3 in middle, one in hind legs; hind tarsus about 1.6 times as long as fore tarsus, upper side of 1st segment about one-fourth as long as lower side, a little shorter (about three-fifths) than basal width, 2nd segment about 5.7 times as long as width at midlength, as long as 6th antennal segment. Longitudinal diameter of sclerite around cornicle a little longer than 3rd antennal segment. Cauda round at apex, with many long setae along hind margin. Gonochaetae consisted of 3 clusters, median cluster divided. Median nude patches on venter of abdomen 5, a little broadened at middle, rounded at both ends, setae present between these patches. Middle and hind parts of genital plate not sclerotized; median nude part of genital plate reaches frontal margin of it. Anal plate sclerotized. Meso- and metanota and anterior 7 abdominal segments with a pair of large or broken spinal sclerites; sclerites of 5th-7th a little small, partly broken; 7th with about 15 setae on each side; 8th entirely fused with about 80 setae along hind margin, long setae about 1.3 times as long as middle diameter of 3rd antennal segment. Body 5 mm. in length.

Apterous oviparous female: Similar to apterous viviparous female, but differing in the following respects; head almost fused with pronotum, a suture being recognized; antennae about twice as long as width of head across eyes; long setae of 3rd antennal segment as long as middle diameter of segment; 4th with 3 sensoria; processus terminalis about 1.5 times as long as width, with 4 auxiliary sensoria; relative length of segments as follows: III-31, IV-13, V-15, VI-16. Genital plate large, well sclerotized, width about 1.1 times as long as 3rd antennal segment; central and hind marginal area membranous.

Male: Frontal setae as long as middle diameter of 3rd antennal segment; antennae abuot 2.2 times as long as width of head across eyes; long setae of 3rd antennal segment as long as middle diameter of segment; relative length of segments as follows: III-18. VI-9, V-12, VI-12. Compound eyes large, of 20-24 facets. Rostrum wanting. Long setae of hind tibiae as long as middle width of it; sensory setae on 1st segment of tarsi 5 in fore, 2 or 3 in middle, 1 or 2 in hind legs; 2nd segment of hind tarsus a little longer than fore tarsus, 5 times as long as width at midlength, long setae about 1.2 times as long as middle diameter of 3rd antennal segment. Thorax and abdomen sclerotized on dorsum of each segment; dorsal setae of abdomen subequal in length, about 1.5 times as long as middle diameter of 3rd antennal segment. No cornicle. Anal plate round, with many long setae which are about

1.3 times as long as middle diameter of 3rd antennal segment; basal sheath of penis sclerotized, distal part with a notch, and both prominent projections sclerotized and crossed at distal parts, marginal area a little membranous. Genital plate sclerotized, fused with basal parts of claspers. Claspers sclerotized, united at basal parts, round at apex, with many setae which are long on basal parts and minute on distal parts, depth of notch about 5 times as long as middle diameter of claspers. Body 2.6 mm. in length.

Host plants: *Celtis sinensis*, *Zelkowa*.

Specimens examined: Some apterae and sexual forms taken at Ishibashi, Osaka Prefecture (19. VII. and 8. XI. 1959, M. SORIN leg.), Nose, Osaka Pref. (25. VI. 1959, MORIMOTO leg.), Tokyo (26. X. 1959, M. SORIN leg.), Mt. Yoshino, Nara Pref. (9. VII. 1961, M. SORIN leg.), Mt. Kongo, Osaka Pref. (4. IX. 1963, M. SORIN leg).