

NOTES ON SOME TETRANYCHID MITES OF JAPAN^{*}
(WITH 37 TEXT-FIGURES)

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In the present paper the following species are treated :

Eotetranychus uchidai n. sp.

Eotetranychus sexmaculatus (RILEY)

Tetranychus desertorum BANKS

Tetranychus cinnabarinus (BOISDUVAL)

Among them, the second and the third species have been first recorded from Japan, and the fourth, though recently recorded by BOUDREAUX (1956) from this country, has as yet been little known.

The author wishes to express here his hearty thanks to Professor Tohru UCHIDA for his helpful guidance. Thanks are also due to Dr. Jirô FUKUDA and Mr. Norizumi SHINKAJI of the National Tôkai-Kinki Agricultural Experiment Station, to Mr. Michiaki KOHONO of the Kagoshima Prefectural Agricultural Experiment Station, and to Mr. Shô YABUKI of the Okayama Prefectural Agricultural Experiment Station, for their kindness in placing material at his disposal.

Eotetranychus uchidai n. sp.

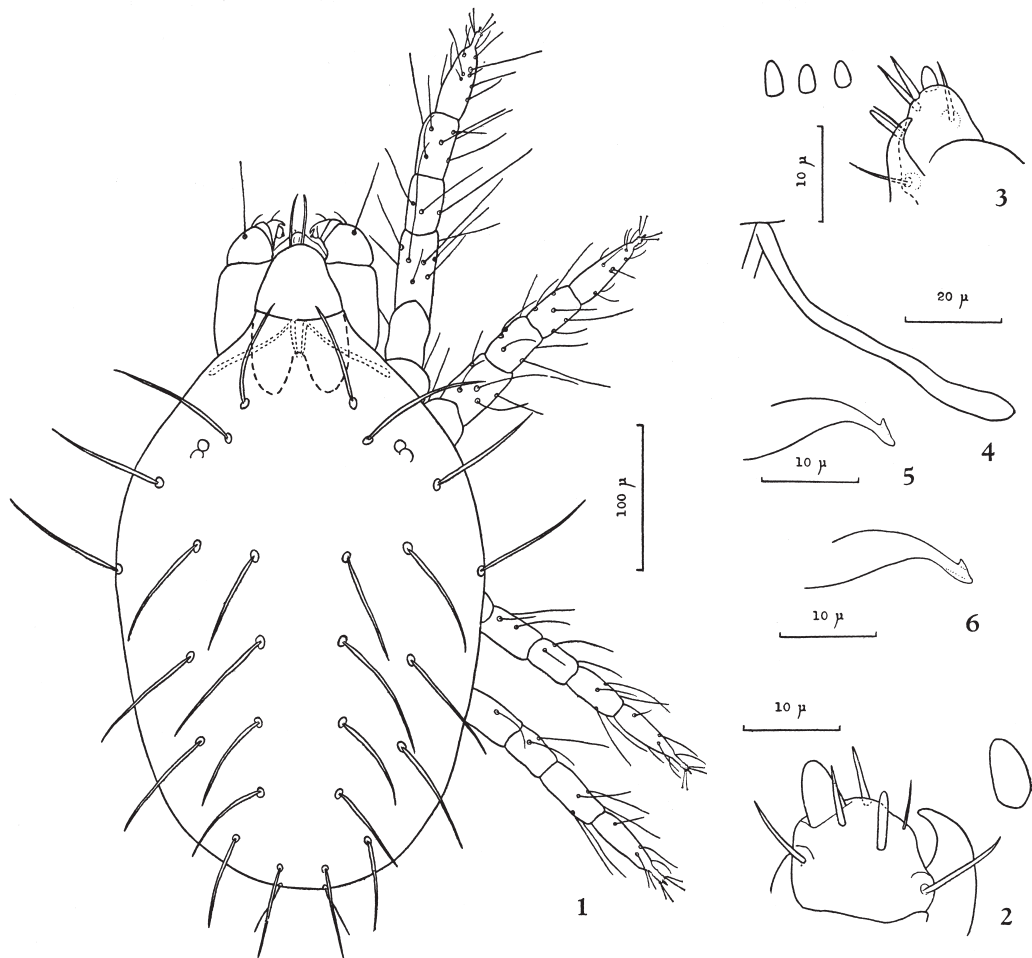
(Figs. 1-10)

Female. Body from above elliptical, 380 μ long in average and 250 μ wide in average in widest part. Colour pale greenish yellow ; several dark body spots present. Rostrum about reaching the distal portion of femur I. Terminal sensillum rapidly narrowed from base to apex, much longer than wide ; dorsal sensillum slender. Mandibular plate (ratio of length to breadth, 10 : 6.7) rounded distally. Legs thick. Relative lengths of segments in leg I as follows : Trochanter, 14 ; femur, 22 ; patella, 13 ; tibia, 14 ; tarsus (empodium exclusive), 19. Tarsus I dorsally provided with two adjacent sets of duplex setae ; four tactile setae borne proximad of proximal set of duplex setae, one sensory seta closely set to duplexes ; proximal duplex setae of tarsus I with proximal member about one-third as long as distal member ; distal duplex

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setae of the tarsus with proximal member about one-fifth as long as distal member ; tibia I with nine tactile and one sensory setae. Tarsus II with one tactile and one sensory setae proximal to duplex setae ; tibia II distinctly shorter than patella II,



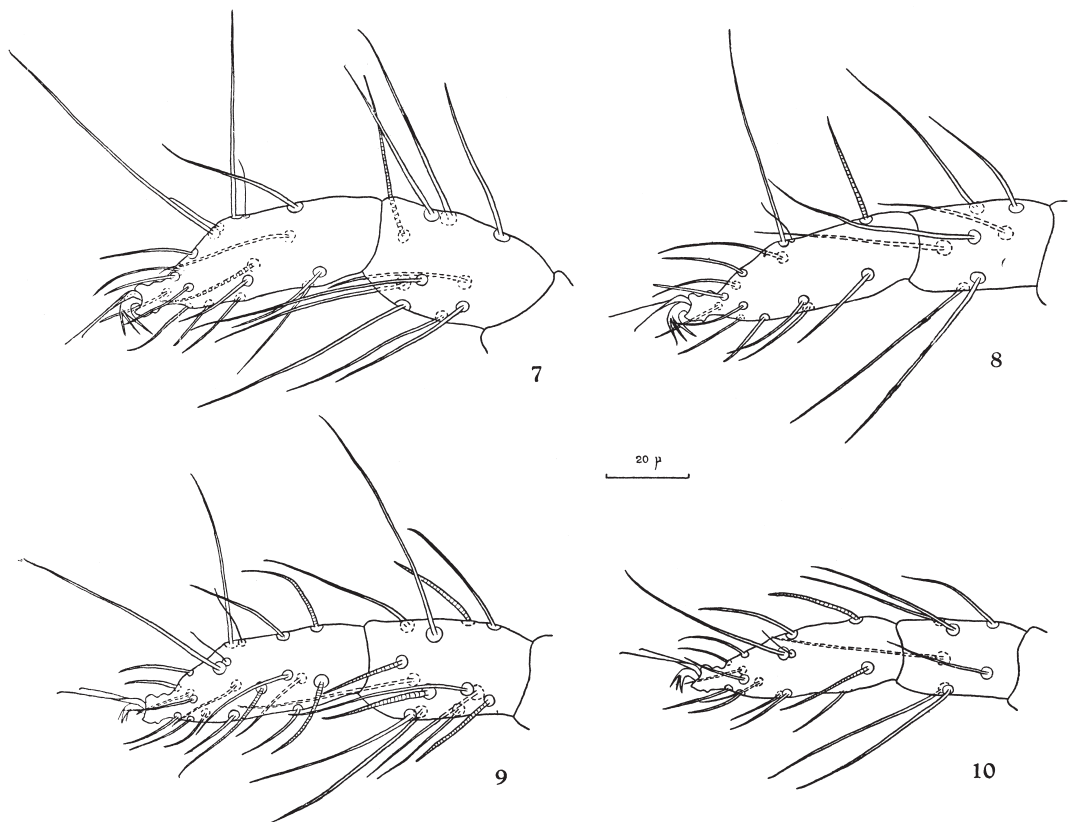
Figs.1-6. *Eotetranychus uchidai* n. sp. 1. Dorsal view of female. 2. Distal part of palpus of female, with terminal sensillum of other specimen. 3. Distal part of palpus of male, and showing variation of terminal sensillum. 4. Dorsal view of peritreme of female. 5-6. Aedeagus.

with seven tactile setae ; tibia III with five tactile setae. Empodia normally consisting of three pairs of hairs. Peritreme large, the distal part nearly straight and slightly enlarged. Dorsum of body with transverse striae not only between the inner sacral setae and between the inner lumbar setae, but also in the area between these setae. Dorsal setae not arising from tubercles, slender, tapering, pubescent, and longer than intervals between their neighbouring bases. Area immediately anterior to genital flap

with transverse striae; genital flap with transverse striae.

Male. Body 250μ long in average and 175μ wide in average in widest part. Terminal sensillum of palpus subconical, generally about one and one-half times as long as broad at base; dorsal sensillum very slender, much longer than terminal sensillum. Empodium I with three pairs of digits, the middle pair being the stoutest. Tarsus I with four tactile and two sensory setae posterior to duplex setae, and another sensory seta closely set to duplexes; tibia I with nine (sometimes eight) tactile and four sensory setae. Tarsus II with one tactile and two sensory setae proximal to duplex setae; tibia II with seven tactile setae; tibia III with five tactile setae. The aedeagus is as given in Figs. 5-6: Shaft rapidly narrowed posteriorly in the middle portion, with the subdistal portion bent downward, the distal portion bearing a terminal barb which is acutely angled dorso-anteriorly and is slightly flaring ventrally.

Holotype. ♂, Sapporo, Hokkaido, 26. VI, 1956 (on the elm, *Ulmus Davidiana*



Figs. 7-10. *Eotetranychus uchidai* n. sp. 7. Tarsus and tibia I of female. 8. Tarsus and tibia II of female. 9. Tarsus and tibia I of male. 10. Tarsus and tibia II of male.

var. *japonica*), S. EHARA leg.

Allotype. ♀, 4. VII, 1956; locality, host and collector same as in the holotype.

Paratypes. 1 ♂ & 6 ♀♀, 25. VI, 1956, 4 ♂♂ & 9 ♀♀, 26. VI, 1956, 6 ♀♀, 29. VI, 1956, 1 ♂, 3. VII, 1956, 4 ♂♂ & 7 ♀♀, 4. VII, 1956, 1 ♂ & 4 ♀♀, 9. VIII, 1956; locality, host and collector same as in the holotype.

The types are preserved in the Zoological Institute, Faculty of Science, Hokkaido University.

Host and distribution. Japan (Hokkaido), parasitic on elm.

Remarks. *Eotetranychus uchidai* n. sp. is strikingly unique from all other known members of the genus in the chaetotaxy of legs and the structure of aedeagus. The new species is named in honor of Professor Tohru UCHIDA.

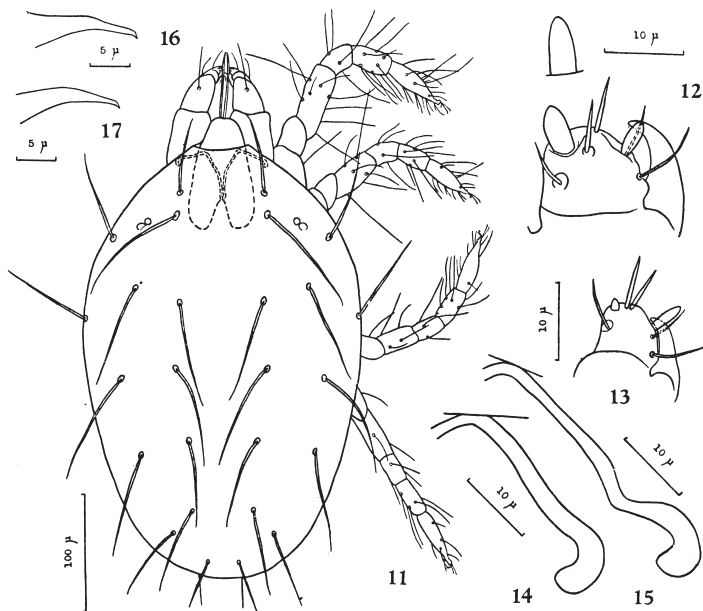
Eotetranychus sexmaculatus (RILEY)

(Figs. 11-21)

Tetranychus 6-maculatus RILEY, Insect Life, 2 : 225 (1890).

Tetranychus sexmaculatus, BANKS, U.S. Dept. Agr. Div. Ent., Tech. Ser., Bull., 8 : 75, fig. 13 (1900); MCGREGOR, Amer. Midl. Nat., 44 : 301, pl. 17 (1950).

Eotetranychus sexmaculatus, PRITCHARD & BAKER, Rev. Spider Mite Fam. Tetr., p.202, figs. 155, 156 (1955).



Figs. 11-17. *Eotetranychus sexmaculatus*. 11. Dorsal view of female. 12. Distal part of palpus of female, with terminal sensillum of other specimen. 13. Distal part of palpus of male. 14-15. Dorsal view of peritreme of female. 16-17. Aedeagus.

Female. Body from above elliptical, 350μ long in average and 230μ wide in average in widest part. Terminal sensillum of palpus nearly twice as long as broad, bluntly pointed distally, larger than the dorsal sensillum which is spindle-shaped. Mandibular plate (ratio of length to breadth, $10 : 6.2$) generally rounded in front. Relative lengths of segments in leg I as follows: Trochanter, 11; femur, 20; patella, 11; tibia, 12; tarsus (empodium exclusive), 17.

Tarsus I dorsally provided with two proximate sets of duplex setae, five tactile setae borne proximad of proximal set of duplex setae; proximal duplex setae of tarsus I with distal member about three times as long as proximal member; distal duplex setae of the tarsus with distal member about five and one-half times as long as proximal member; tibia I with nine tactile and one sensory setae. Tarsus II with three tactile and one sensory setae posterior to duplex setae; tibia II with eight tactile setae. Peritreme slender, the distal portion bent and enlarged. Dorsum of body with transverse striae not only between the inner sacral setae and between the inner lumbar setae, but also in the area between these setae. Dorsal setae not arising from tubercles, slender, tapering, pubescent, and much longer than intervals to bases of setae next behind. Genital flap with longitudinal striae on anterior portion but with transverse striae on posterior portion; area immediately anterior to the flap with longitudinal striae.

Male. Body 260μ long in average and 150μ wide in average in widest part. Terminal sensillum of palpus tiny, cone-like, extremely smaller than the dorsal sensillum which is spindle-shaped. Middle pair of digits of empodium I stouter than other two pairs. Tarsus I with four tactile and two sensory setae proximal to duplexes; tibia I with nine tactile and four sensory setae. Tarsus II with three tactile and one sensory setae posterior to duplex setae; tibia II with eight tactile setae. The aedeagus is as in Figs. 16-17: Shaft curved caudoventrally in middle portion, with the distal part gradually acuminate to a tip which bends downward.

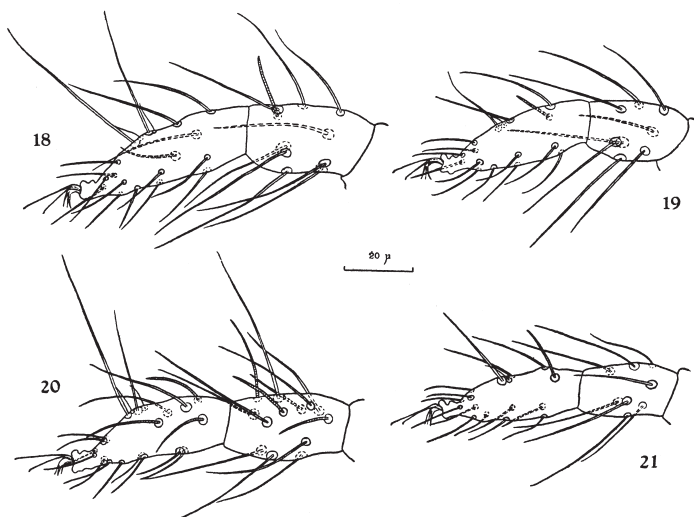
Specimens examined.

Tarumizu, Kagoshima Pref., Kyushu, 9 ♂♂ & 16 ♀♀ (on citrus), 10. VII, 1956, M. KOHONO leg.

Hosts. In U. S. A., the present species is known to be parasitic on several kinds of plants, including the citrus, the favoritest host.

Distribution. Japan (Kyushu), *new record*; Formosa, U. S. A.

Remarks. This species is similar to *Eotetranychus kankitus* EHARA,



Figs. 18-21. *Eotetranychus sexmaculatus*. 18. Tarsus and tibia I of female. 19. Tarsus and tibia II of female. 20. Tarsus and tibia I of male. 21. Tarsus and tibia II of male.

a pest of Japanese citrus, in the ventral striation of opisthosoma, but is easily distinguished from the latter by the deficiency of the distinct mediodorsal spur of the female empodia and by the tiny terminal sensillum of male palpus (EHARA, 1955).

Japanese specimens here studied seem to be somewhat differentiated from American specimens in the shape of aedeagus, though the figure of aedeagus by PRITCHARD and BAKER (1955, p. 140, fig. 104, bottom of left side) is very similar to the organ in Japanese material.

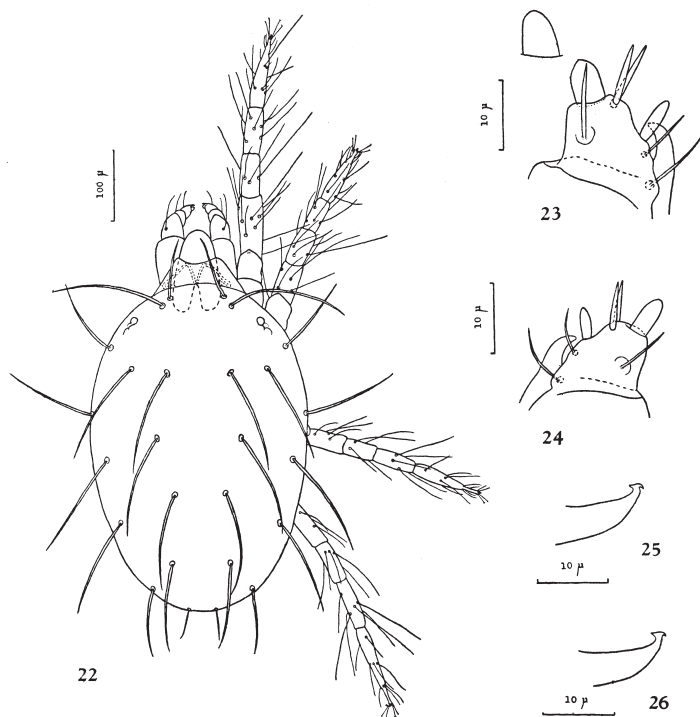
Tetranychus desertorum BANKS

(Figs. 22-30)

Tetranychus desertorum BANKS, U.S. Dept. Agr. Div. Ent., Tech. Ser., Bull., 8:76, fig. 14 (1900); PRITCHARD & BAKER, Rev. Spider Mite Fam. Tetr., p.403, figs.350-353 (1955).

Female. Body from above oval, 420 to 480 μ long, and 230 to 300 μ wide in widest part. Terminal sensillum of palpus less than twice as long as wide, often bluntly pointed distally; dorsal sensillum large, spindle-shaped. Mandibular plate (ratio of

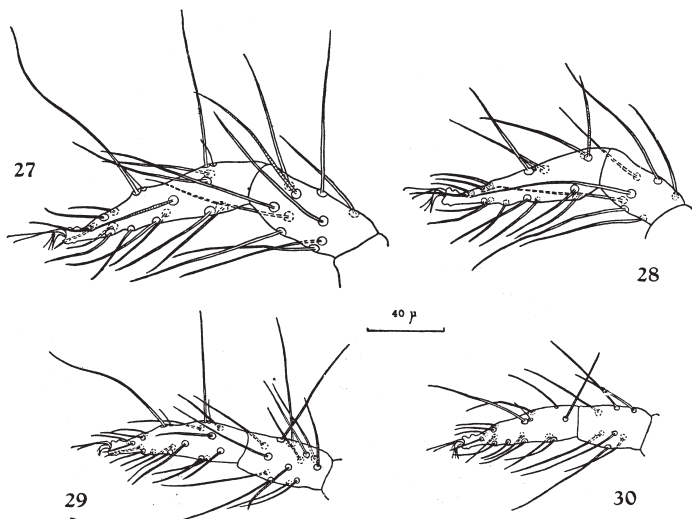
length to breadth, 10:6) nearly rounded anteriorly. Relative lengths of segments in leg I as follows: Trochanter, 16; femur, 35; patella, 19; tibia, 21; tarsus (empodium exclusive), 35. Tarsus I dorsally furnished with two widely separated sets of duplex setae, the proximal set being more or less in line with four tactile setae; the proximal duplex setae with proximal member about one-fifth as long as distal member; the distal duplex setae with proximal member about one-seventh as long as distal member; tibia I



Figs. 22-26. *Tetranychus desertorum*. 22. Dorsal view of female. 23. Distal part of palpus of female, with terminal sensillum of other specimen. 24. Distal part of palpus of male. 25-26. Aedeagus.

with nine tactile and one sensory setae. Tarsus II with three tactile and one sensory setae proximal to duplex setae; tibia II with seven tactile setae. Peritreme moderate in breadth, strongly hooked (U-shaped) in distal part. Dorsum of body with longitudinal striae between the inner lumbar setae and between the inner sacral setae, the area between these setae striated transversely. Dorsal integumentary folds bearing triangularly rounded to semi-circular lobes, showing the type of *Tetranychus cinnabarinus*. Dorsal setae not set on tubercles, slender, tapering, pubescent, and much longer than intervals between bases. Genital flap with transverse striae; area immediately anterior to the flap with longitudinal striae.

Male. Body 300μ long in average and 180μ wide in average in widest part. Terminal sensillum of palpus about three times as long as wide, larger than the dorsal sensillum which is spindle-shaped. Tarsus I with proximal duplex setae being more or less in line with four tactile setae, and with two sensory setae posterior to the duplex setae; tibia I with nine tactile and four sensory setae. Tarsus II with three tactile and one sensory setae posterior to duplex setae; tibia II with seven tactile setae. Empodia with a mediodorsal spur. Aedeagus with barb about one-fourth or one-fifth as long as dorsal margin of shaft, the anterior angulation of the barb acute and the posterior angulation acutely bent downwards.



Figs. 27-30. *Tetranychus desertorum*. 27. Tarsus and tibia I of female. 28. Tarsus and tibia II of female. 29. Tarsus and tibia I of male. 30. Tarsus and tibia II of male.

Specimens examined. Kitagata, Okayama, Okayama Pref., 6 ♂♂ & 25 ♀♀ (on cucumber), 28. VIII, 1955, 1 ♂ & 15 ♀♀ (on egg-plant), 1. VI, 1955, 1 ♂ & 23 ♀♀ (on melon, in greenhouse), 28. VI, 1955, S. YABUKI leg.

Hosts. In U.S.A. many kinds of hosts of this species have been recorded but the cotton is known to be a favorite host (BAKER and PRITCHARD, 1953).

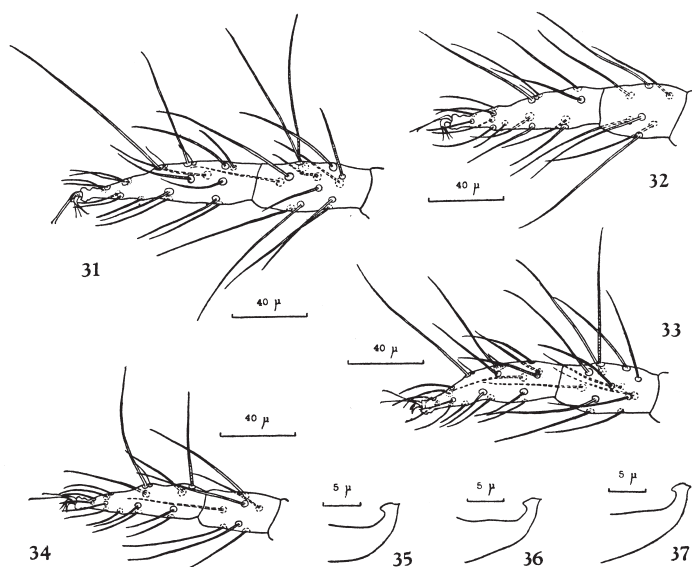
Distribution. Japan (Honshu), *new record*; North America, South America.

Tetranychus cinnabarinus (BOISDUVAL)

(Figs. 31-37)

Acarus cinnabarinus BOISDUVAL, Essai sur l'Ent. Hort., p.88 (1867).*Tetranychus multisetis* MCGREGOR, Amer. Midl. Nat., 44: 294, fig.6 (1950).*Tetranychus cinnabarinus*, BOUDREAUX, Ann. Ent. Soc. Amer., 49:46, figs. 2, 4, 6, 9, 11, 12 (1956).

The mite is carmine in colour. The female measures 380 to 480 μ long and 250 to 300 μ wide, while the male measures about 300 μ long and about 180 μ wide. The species is generally in accordance in structure with *Tetranychus telarius* (See EHARA, 1956), but is different from the latter in the following points :



Figs. 31-37. *Tetranychus cinnabarinus*. 31. Tarsus and tibia I of female. 32. Tarsus and tibia II of female. 33. Tarsus and tibia I of male. 34. Tarsus and tibia II of male. 35-37. Aedeagus.

The dorsal integumentary folds of the female bear triangularly rounded to semi-circular lobes. Sometimes, tarsus I and tibia I of the female bear the same chaetotaxy as in the male (tarsus I with four tactile and two sensory setae posterior to proximal duplex setae; tibia I with nine tactile and four sensory setae), and sometimes, the tarsus and tibia bear the same chaetotaxy as in the female of *telarius*.

The barb of the aedeagus of *cinnabarinus* is acutely angled posteriorly but slightly rounded anteriorly, the dorsal margin of the barb being obtusely angulate near the posterior end.

Specimens examined. Okitsu, Shizuoka Pref., 7♂♂ & 18♀♀ (on citrus, in greenhouse), 1♂ & 3♀♀ (on strawberry, in greenhouse), 13. X, 1954, S. EHARA & N. SHINKAJI leg.

Hosts. According to BOUDREAUX (1956) known host plants of the species are very numerous.

Distribution. Japan (Honshu); Europe, Israel, North America, South America, Turkey.

* The specimens were collected together with many specimens of *Metatetranychus citri* (MCGREGOR) from the citrus.

This species was recorded by BOUDREAUX from Japan, without showing the detailed locality.

Remarks. The present species was synonymized by PRITCHARD and BAKER (1952, 1955) with *T. telarius*, but was recently recognized to be a valid species by BOUDREAUX who was based on his morphological observations and crossing experiments of the *telarius*-complex.

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