



Title	On Three Spider Mites of Schizotetranychus from Japan (With 35 Text-figures)
Author(s)	EHARA, Shōzō
Citation	北海道大學理學部紀要, 13(1-4), 15-23
Issue Date	1957-08
Doc URL	<a href="https://hdl.handle.net/2115/27194">https://hdl.handle.net/2115/27194</a>
Type	departmental bulletin paper
File Information	13(1_4)_P15-23.pdf



# On Three Spider Mites of *Schizotetranychus* from Japan<sup>1)</sup>

By

**Shôzô Ehara**

(Zoological Institute, Hokkaido University)

(With 35 Text-figures)

Concerning the spider mites belonging to the genus *Schizotetranychus* from Japan, the present author preliminarily reported three species at the 26th Annual Meeting of the Zoological Society of Japan (1955). These three species will be described in detail in the present paper.

Prior to description, the author wishes to acknowledge his indebtedness to Professor Tohru Uchida for his kind guidance. His thanks are also due to Assist. Prof. M. Yamada, Mr. S. Kato, Dr. H. F. Reck and Dr. S. Hukusima for their kindness shown him during this work.

## *Schizotetranychus schizopus* (Zacher) Figs. 1-12

*Tetranychus schizopus* Zacher, 1913, Mitt. Kais. Biol. Anst. f. Land. u. Forst., 9 : 40, Fig. 4; Hirst, 1920, Proc. Zool. Soc. Lond., 1920 : 50, Figs. 1a, 2a, 2b, 2c, 2d, 3b.

*Schizotetranychus schizopus*, Trägårdh, 1915, Zs. angew. Ent., 2 : 162; Geijskes, 1939, Meded. Landb. Hooges. Wageningen, 42 : 28, Figs. 1, 12, 13; McGregor, 1950, Amer. Midl. Nat., 44 : 313, Fig. 8; Pritchard & Baker, 1955, Rev. Spider Mite Fam. Tetr., p. 240, Figs. 192, 193; Ehara, 1956, Zool. Mag., 65 : 150.

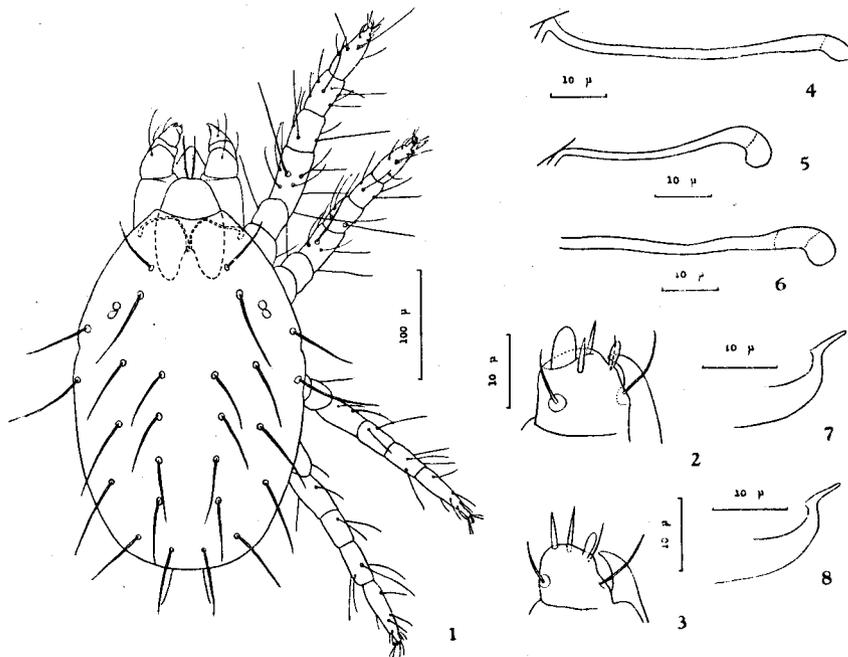
*Female.* Body from above rather widely oval, lightly constricted between propodosoma and hysterosoma laterally, 350  $\mu$  long in average and 230  $\mu$  wide in average in widest part, pale yellow to pale orange in colour. Terminal sensillum of palpus about twice as long as broad; dorsal sensillum spindle-shaped. Mandibular plate (ratio of length to breadth, 10 : 6.2) slightly notched. Relative lengths of segments in leg I as follows : trochanter, 10; femur, 23; patella, 12; tibia, 13; tarsus (empodium exclusive), 18. Tarsus I with two tactile and one sensory setae proximal to proximal set of duplex setae; proximal duplex setae of tarsus I with proximal member about one-fourth as long as distal member; distal duplex setae of the tarsus with proximal member about one-sixth as long as distal member; tibia I with nine tactile and one sensory setae. Tarsus II with only one sensory seta proximal to duplex setae; tibiae II and III with five tactile setae respectively. Empodia provided with a pair of tiny proximoventral hairs,

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1) Contribution No. 376 from the Zoological Institute, Faculty of Science, Hokkaido University, Sapporo, Japan.

*Jour. Fac. Sci. Hokkaido Univ. Ser. VI, Zool. 13, 1957 (Prof. T. Uchida Jubilee Volume).*

split into two claws, each with a distinct dorsal hair. Peritreme often slightly bent in distal portion, ending in a swollen chamber. Dorsal setae not arising from tubercles, slender but somewhat obviously widened near each base, and

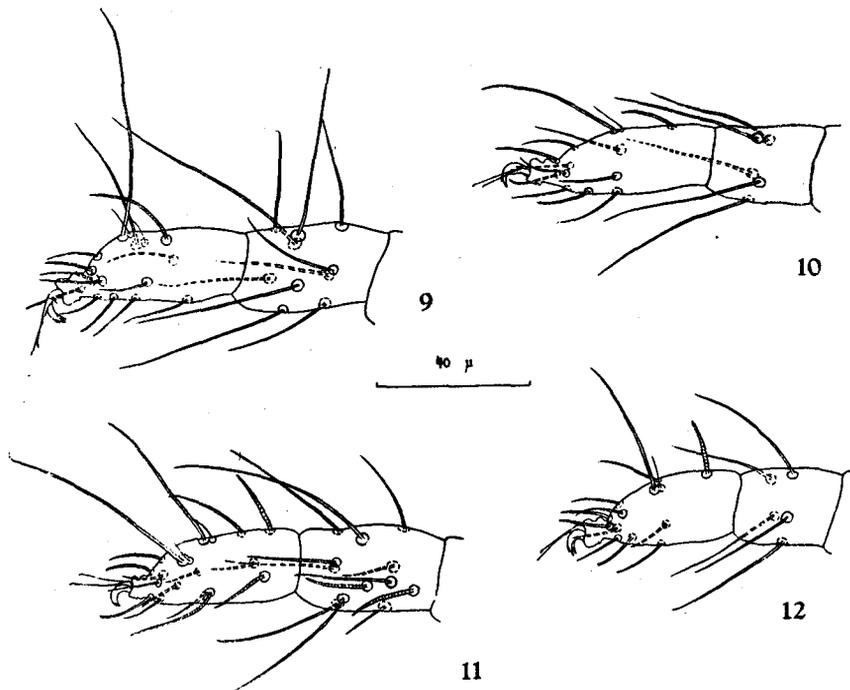


Figs. 1-8. *Schizotetranychus schizopus*. 1. Dorsal view of female. 2. Distal segment of palpus of female. 3. Distal segment of palpus of male. 4-6. Dorsal view of peritreme of female. 7-8. Aedeagus.

tapering, pubescent and barely or distinctly surpassing base of seta next behind. Area immediately anterior to genital flap with transverse striae; genital flap with transverse striae, except for the posterior restricted portion which is rather longitudinally striated.

*Male.* Body about  $230\ \mu$  long and about  $160\ \mu$  wide in widest part. Distal segment of palpus devoid of terminal sensillum; dorsal sensillum spindle-shaped. Tarsus I usually with two tactile and two sensory setae proximal to duplex setae; tibia I with nine tactile and three sensory setae. Tarsus II with one sensory seta proximal to duplex setae; tibiae II and III each with five tactile setae. Empodia without proximoventral hairs as seen in female. The aedeagus is as in Figs. 7 and 8: shaft narrowing backward and curving upward to the barb which is acutely angled anteriorly but obtusely terminated posteriorly; the axis of the barb forming a definite angle with the axis of the shaft.

*Specimens examined.* Sapporo, 4 ♂♂ & 12 ♀♀, 25. VIII, 1955, 22 ♀♀, 21. IX, 1956, on willow, S. Ehara leg.



Figs. 9-12. *Schizotetranychus schizopus*. 9. Tarsus and tibia I of female. 10. Tarsus and tibia II of female. 11. Tarsus and tibia I of male. 12. Tarsus and tibia II of male.

*Host and distribution.* Japan (Hokkaido); Europe, Georgian S.S.R., U.S.A.; parasitic on willow.

A comparison of leg chaetotaxy of *Schizotetranychus schizopus* between Japanese and American specimens. (T; number of tactile setae. S; number of sensory setae.)

Sex	Specimen	Tarsus I (proximal to duplex setae)		Tibia I		Tarsus II (proximal to duplex setae)		Tibia II	
		T	S	T	S	T	S	T	S
Females	Japanese	2	1	9	1	0	1	5	0
	American	2	2+ (1?)	8	1	1	1	5	0
Males	Japanese	2	2	9	3	0	1	5	0
	American	1	2+ (1?)	8	3	0	1	5	0

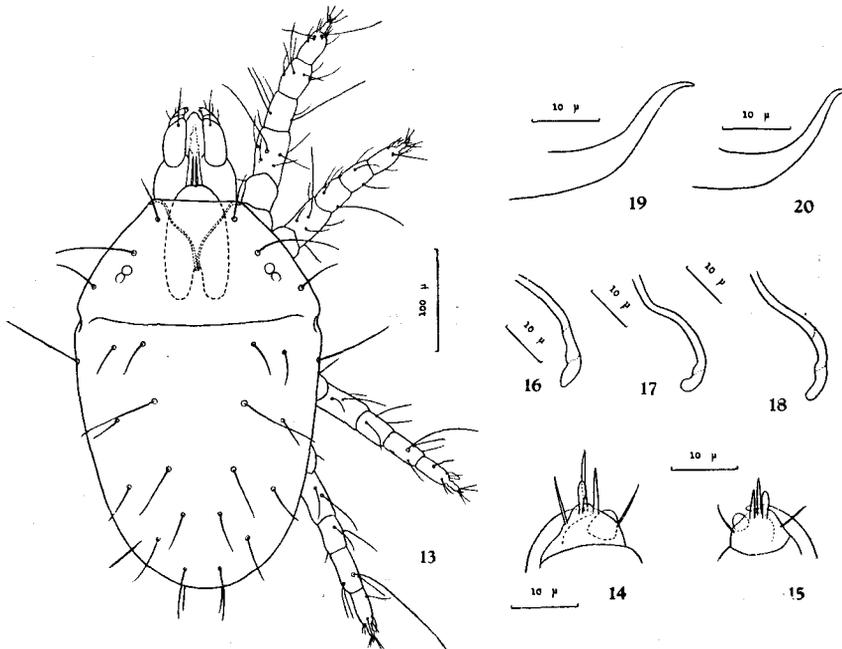
*Remarks.* Referring Pritchard and Baker's (1955) figure of legs of the species, Japanese specimens here examined are differentiated from American specimens in the leg chaetotaxy, as shown above.

***Schizotetranychus celarius* (Banks) Figs. 13-24**

*Stigmaeopsis celarius* Banks, 1917, Ent. News., 28 : 196, pl. 15, Figs. 9, 11.

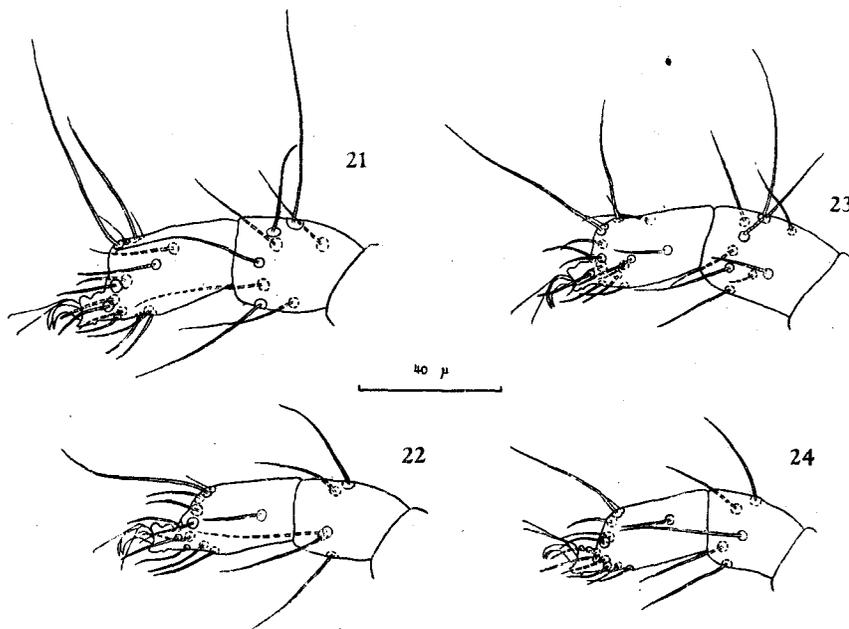
*Schizotetranychus celarius*, McGregor, 1950, Amer. Midl. Nat., 44 : 308, pl. 19; Pritchard & Baker, 1955, Rev. Spider Mite Fam. Tetr., p. 249, Figs. 205-207; Ehara, 1956, Zool. Mag., 65 : 150.

*Female.* Body flattened, from above rather oval, 350  $\mu$  long in average and 230  $\mu$  wide in average in widest part, pale greenish yellow to pale green in colour. The demarcation between propodosoma and hysterosoma is clearly observable, the former trapeziform. Rostrum generally reaches the distal portion of femur I, but is often highly extruded artificially with Hoyer's medium, surpassing the base of tibia I in maximum. Second segment of palpus long; the fifth segment distinctly wider than long, without slender seta set adjacently to dorsal sensillum, which is present in the allied species; terminal sensillum about as broad as long,



Figs. 13-20. *Schizotetranychus celarius*. 13. Dorsal view of female. 14. Distal segment of palpus of female. 15. Distal segment of palpus of male. 16-18. Dorsal view of peritreme of female. 19-20. Aedeagus.

shorter than the dorsal sensillum which is spindle-shaped. Mandibular plate slender (ratio of length to breadth, 10: 5.2), subparallel laterally, notched medio-distally. Legs stubby, tarsi I and II declivate from the duplex setae portion to the onychium. Relative lengths of segments in leg I as follows: trochanter, 13; femur, 22; patella, 12; tibia, 12; tarsus (empodium exclusive), 15. tarsus



Figs. 21-24. *Schizotetranychus celarius*. 21. Tarsus and tibia I of female. 22. Tarsus and tibia II of female. 23. Tarsus and tibia I of male. 24. Tarsus and tibia II of male.

I with only one tactile seta proximal to proximal set of duplex setae, and with another sensory seta set near the duplex setae; proximal duplex setae of tarsus I with proximal member one-fifth to one-fourth as long as distal member; distal duplex setae of the tarsus with proximal member one-eighth to one-seventh as long as distal member; tibia I with seven tactile and one sensory setae. Tarsus II with one sensory seta proximal to duplex setae; tibia II with five tactile setae. Tibia III with five tactile setae; tibia IV with extremely long tactile seta dorsodistally. Empodia composed of two simple claws, without dorsal or proximolateral hairs. Posterior eyes generally very obscure. The distal portion of peritreme slightly enlarges and somewhat bends, and the two distal chambers are often observable. The chaetotaxy on dorsum of body is unique in length, as shown in Fig. 13; the setae not set on tubercles, very slender, pubescent. Area immediately anterior to genital flap with transverse striae; genital flap with transverse striae.

**Male.** Body about 280  $\mu$  long and about 160  $\mu$  wide in widest part. Accessories on distal segment of palpus similar to those of female. Tarsi I and II similar to those of female in contour. Tarsus I with one tactile and one sensory setae proximal to proximal set of duplex setae; tibia I with seven tactile and two sensory setae. Tarsus II with one sensory seta proximal to duplex setae; tibiae II and III with five tactile setae respectively. Empodia similar to those of female. Aedeagus broadly bent dorsad and tapering to the caudally directed tip.

*Specimens examined.* Hokkaido — Sapporo, 6♂♂ & 15♀♀, 4. IX, 1954, 2♂♂ & 24♀♀, 26. VII, 1955, 5♀♀, 24. VIII, 1955, on sasa bamboo, S. Ehara leg. Honshu — Hiro-saki, Aomori Pref., 4♂♂ & 21♀♀, 2. VIII, 1955 (on sasa bamboo), S. Hukusima leg.; Yamagata, Yamagata Pref., 4♀♀, 11. IX, 1952 (on a bamboo, *Phyllostachys reticulata* C. Koch), I. Hanaoka leg.; Mitake near Tokyo, 1♂ & 4♀♀, 17. X, 1955 (on a bamboo, *Phyllostachys reticulata* C. Koch), S. Ehara leg.

**Host and distribution.** Japan (Hokkaido and Honshu), U.S.A.; parasitic on bamboo.

**Remarks.** Judging from American literature (McGregor, 1950, Pritchard & Baker, 1955) Japanese specimens examined are differentiated from American specimens in the structure of distal segment of palpus. In the former the terminal sensillum is about as long as wide in both sexes, while, in the latter the organ is much longer than wide in female and greatly reduced or lacking in male. In addition to the presence of the terminal and dorsal sensilla, the palpal segment of the former is provided with only four setae, while that of the latter bears five setae.

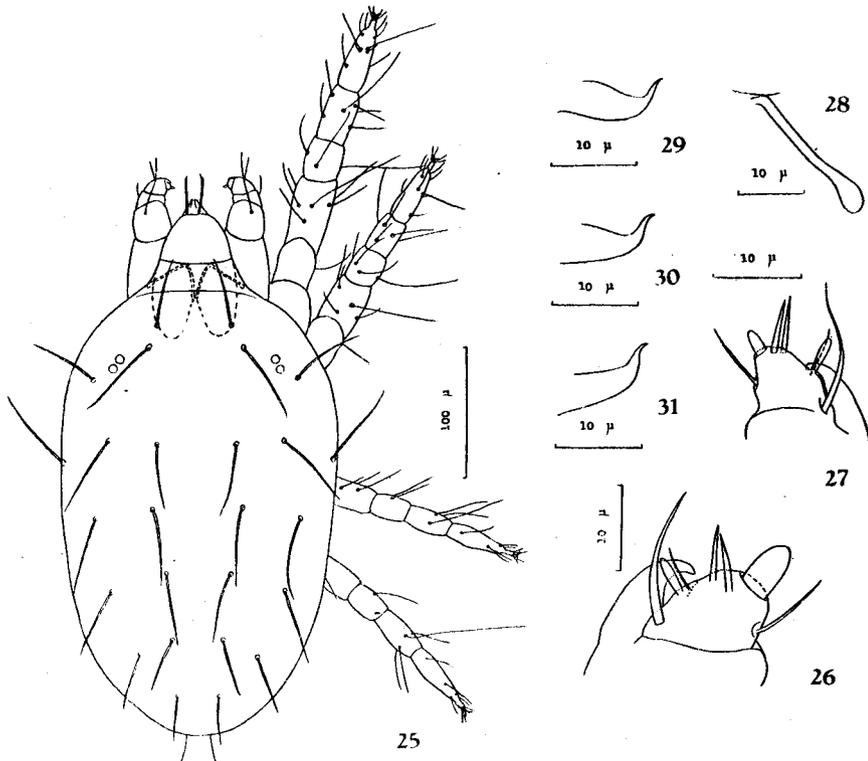
On the underside of the bamboo leaves mites of the species form colonies and live under a spinning cover. On the upper side of the leaves there can be often distinctly found the white feeding scars. The under surface of the scars harbours (or formerly harboured) the mite colony.

***Schizotetranychus recki* n. sp. Figs. 25-35**

*Schizotetranychus* sp., Ehara, 1956, Zool. Mag., 65: 150.

**Female.** Body from above elliptical, slender, 320  $\mu$  long in average and 190  $\mu$  wide in average in widest part, pale greenish yellow in colour. Terminal sensillum of palpus nearly twice as long as broad; dorsal sensillum spindle-shaped, and a little shorter than terminal sensillum. Mandibular plate (ratio of length to breadth, 10:6.5) usually slightly incised in front. Relative lengths of segments in leg I as follows: trochanter, 11; femur, 22; patella, 11; tibia, 12; tarsus (empodium exclusive), 17. Tarsus I dorsally provided with two adjacent sets of duplex setae; two tactile and one sensory setae borne proximad of proximal set of duplex setae; proximal duplex setae of tarsus I with proximal member one-fifth to one-fourth as long as distal member; distal duplex setae of the tarsus with proximal member one-eighth to one-seventh as long as distal member; tibia

I with seven tactile and one sensory setae. Tarsus II with one tactile and one sensory setae proximal to duplex setae; tibia II with six tactile setae. Tibia III with four tactile setae; tibia IV with extremely long tactile seta dorsodistally. Empodia without proximolateral hairs, split into two simple claws, Y-shaped, each

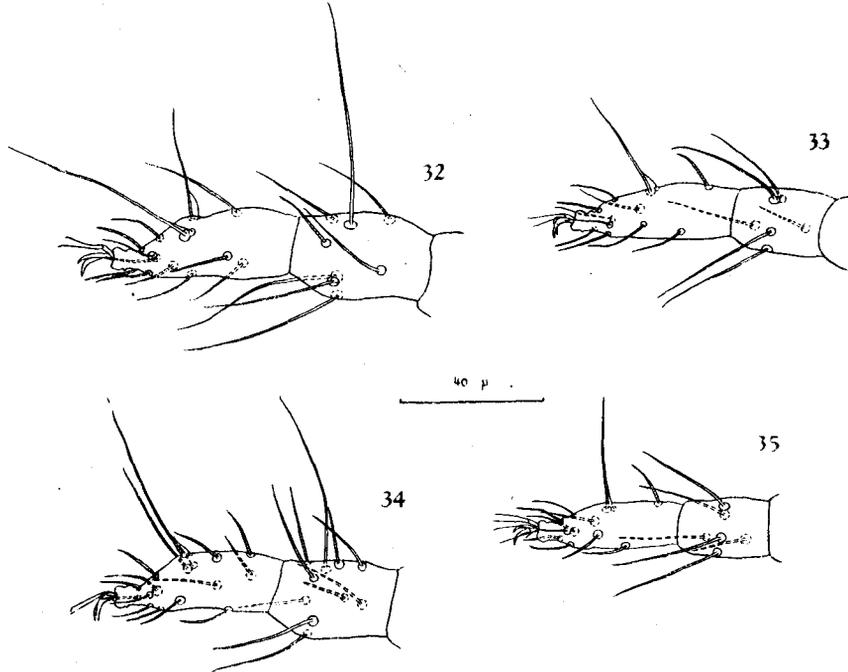


Figs. 25-31. *Schizotetranychus recki* n. sp. 25. Dorsal view of female. 26. Distal segment of palpus of female. 27. Distal segment of palpus of male. 28. Dorsal view of peritreme of female. 29-31. Aedeagus.

claw without dorsal hair. Peritreme sometimes slightly bent distally, ending in a swollen, often oval portion. Dorsal setae not set on tubercles, slender, tapering, pubescent, and longer than intervals between their neighbouring bases. Area immediately anterior to genital flap sometimes transversely striate, and sometimes irregularly striate; genital flap with transverse striae on anterior portion and with longitudinal striae on posterior portion.

*Male.* Body about  $190\ \mu$  long and about  $120\ \mu$  wide in widest part. Terminal sensillum of palpus two and one-half times to three times as long as broad, shorter than the dorsal sensillum which is spindle-shaped. Tarsus I with

two tactile and three sensory setae proximal to proximal set of duplex setae; tibia I with seven tactile and three sensory setae. Tarsus II with one tactile and one sensory setae proximal to duplex setae; tibia II with six tactile setae;



Figs. 32-35. *Schizotetranychus recki* n. sp. 32. Tarsus and tibia I of female. 33. Tarsus and tibia II of female. 34. Tarsus and tibia I of male. 35. Tarsus and tibia II of male.

tibia III with four tactile setae. Empodia similar to those of female. Aedeagus tiny, bent upward to form a sigmoid distal portion.

Holotype. ♂, Sapporo, Hokkaido, 23. VIII, 1955 (on sasa bamboo), S. Ehara leg.

Allotype. ♀, 24. VIII, 1955; locality, host and collector same as in the holotype.

Paratypes. *Hokkaido* — Sapporo, 3♂♂ & 3♀♀, 26. VII, 1955, 4♂♂ & 16♀♀, 23. VIII, 1955, 5♀♀, 24. VIII, 1955, S. Ehara leg.; Shikaribetsu, Prov. Tokachi, 5♀♀, 25. IX, 1955, S. Ehara leg. *Honshu* — Hirosaki, Aomori Pref., 1♂ & 13♀♀, 25. VIII, 1954, S. Ehara leg. The paratypes are collected on the same host as in the holotype.

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

*Remarks.* *Schizotetranychus recki* n. sp. somewhat resembles *S. bambusae* Reck which is known also from bamboo in Georgian S.S.R. (Reck, 1941, '48a, '48b), but is different from the latter in the empodia of female. Furthermore,

the new species is distinct from *bambusae* in the well developed dorsal sensillum of palpus in both sexes, the organ of the latter being tiny in female and absent in male. The new species is named in honour of Dr. H. F. Reck who kindly informed to the author of the diagnostic characters of *S. bambusae*.

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