

Mites Associated with Plants in Hong Kong*

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Very little is known about the plant-inhabiting mites of Hong Kong. Prior to the present study, sixteen species of Phytoseiidae (Swirski and Shechter, 1961) and only two species of Tetranychidae (Manson, 1963) were known from Hong Kong. Species of Tenuipalpidae and Tuckerellidae have not been recorded from this area. The materials on which this study is based were taken from plants of Hong Kong in 1970 by the members of the IBP Expedition working on "Field survey of biological control of rice stem-borers, aphids, diaspine scales and phytophagous mites in S.E. Asia." Most of these materials were collected by the senior author (S. E.) in the middle of October and at the end of December, and some were taken by Dr. H. Mori at the end of August, and by Dr. K. Nohara at the end of December.

The following twenty-one species representing four families of mites, three of which are new to science, are treated in this paper:

Fam. Phytoseiidae

1. *Typhlodromus*(*Anthoseius*) *chinensis* Ehara et Lee, n. sp.
2. *Amblyseius*(*Amblyseius*) *okinawanus* Ehara
3. *Amblyseius*(*Amblyseius*) *siaki* Ehara et Lee, n. sp.
4. *Amblyseius*(*Amblyseius*) *longispinosus* (Evans)
5. *Amblyseius*(*Amblyseius*) *largoensis* (Muma)
6. *Amblyseius*(*Amblyseius*) *newsami* (Evans)
7. *Amblyseius*(*Amblyseius*) *nicholsi* Ehara et Lee, n. sp.
8. *Amblyseius*(*Amblyseius*) *ovalis* (Evans)
9. *Amblyseius*(*Paraphytoseius*) *multidentatus* Swirski et Shechter
10. *Phytoseius*(*Pennaseius*) *hongkongensis* Swirski et Shechter
11. *Phytoseius*(*Phytoseius*) *crinitus* Swirski et Shechter
12. *Phytoseius*(*Phytoseius*) *rachelae* Swirski et Shechter

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Fam. Tenuipalpidae

13. *Pentamerismus oregonensis* McGregor14. *Brevipalpus obovatus* Donnadieu

Fam. Tuckerellidae

15. *Tuckerella pavoniformis* (Ewing)

Fam. Tetranychidae

16. *Eutetranychus orientalis* (Klein)17. *Schizotetranychus celarius* (Banks)18. *Oligonychus perditus* Pritchard et Baker19. *Tetranychus kanzawai* Kishida20. *Tetranychus neocaledonicus* André21. *Tetranychus piercei* McGregor

The holotypes of the new species are retained in the Biological Institute, Faculty of Education, Tottori University.

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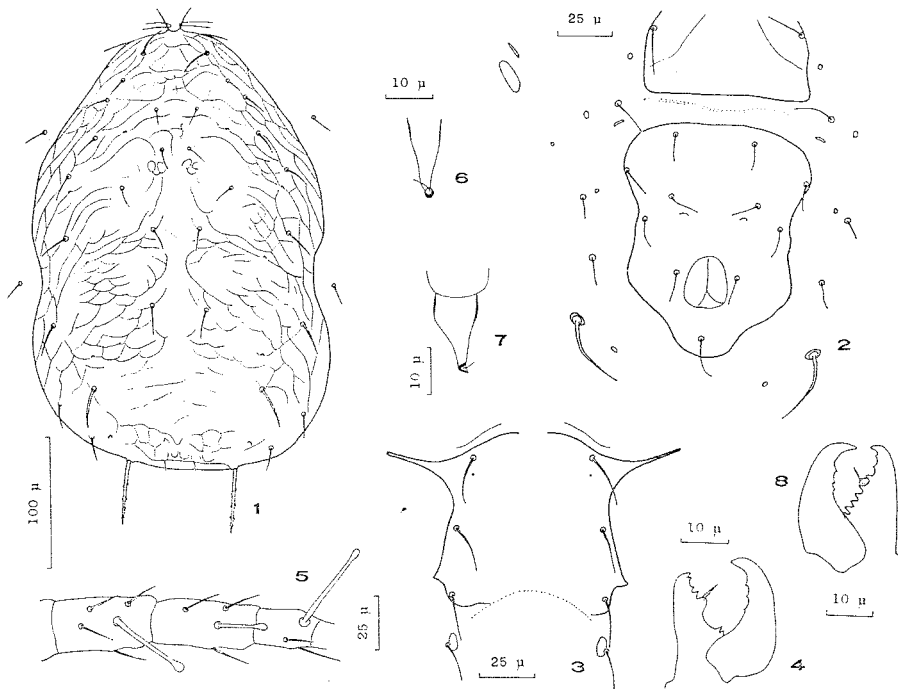
Family PHYTOSEIIDAE

(1) *Typhlodromus* (*Anthoseius*) *chinensis* Ehara et Lee, n. sp.

(Figs. 1-7)

Female. Dorsal shield imbricate, with at least five pairs of pores; six pairs of dorsocentral setae. Setae on dorsal shield: L_{10} and M_2 stout, barbed, L_{10} approximately as long as distance L_{10} to opposite D_6 , M_2 shorter than distance M_2 to L_9 ; remaining setae much smaller, smooth. Setae S_1 and S_2 on interscutal membrane. Peritreme extending forward to seta D_1 . Sternal shield with three pairs of setae; metasternal platelets slender. Ventrianal shield longer than wide, slightly wider than, or as wide as genital shield, the lateral margins slightly concave; four

pairs of preanal setae; a pair of conspicuous, crescentic pores between and slightly behind caudomedian pair of preanals. Four pairs of setae on membrane surrounding ventrianal shield. Two pairs of metapodal platelets, the anterior pair very



Figs. 1-7. *Typhlodromus*(*Anthoseius*) *chinensis* Ehara et Lee, n. sp.(♀). 1, dorsal shield. 2, posterior ventral surface. 3, sternal shield. 4, chelicera. 5, genu, tibia and basitarsus of leg IV. 6, 7, spermatheca. Fig. 8. *Amblyseius*(*Amblyseius*) *okinawanus*, chelicera(♀).

slender. Spermatheca as figured. Fixed digit of chelicera with three teeth distal to pilus dentilis, and with two proximal teeth; movable digit with three teeth. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with a capitate macroseta on genu, tibia and basitarsus. Measurements in microns: length of dorsal shield 300, width of dorsal shield 210; lengths of setae: L_1 21, L_2 13, L_3 18, L_4 18, L_5 20, L_6 22, L_7 21, L_8 19, L_9 16, L_{10} 48, M_1 15, M_2 29, D_1 20, D_2 13, D_3 14, D_4 16, D_5 20, D_6 7, S_1 16, S_2 15, VL_1 31, macrosetae of leg IV: genu 32, tibia 23, basitarsus 37.

Male. Not known.

Type-series. Holotype: ♀, Shek O, Hong Kong Island, 18-X-1970(S. Ehara leg.), on *Bauhinia* sp. Paratypes: 4 ♀♀, data same as for holotype; 1 ♀, Chai Wan, H. K. Id., 18-X-1970(S. Ehara leg.), on a grass.

Remarks. *Typhlodromus chinensis* is similar to *T. vulgaris* Ehara, 1959(Japan), but seta M_2 of the former is shorter than the distance between its base and that

of seta L_9 , and much longer than seta L_1 . Swirski and Shechter (1961) recorded *T. vulgaris* from Victoria Peak, Hong Kong Island, but it is probable that their mite might be referred to *T. chinensis*.

(2) *Amblyseius*(*Amblyseius*) *okinawanus* Ehara

(Fig. 8)

Amblyseius(*Amblyseius*) *okinawanus* Ehara, 1967, p. 72, Figs. 17-24.

Previously *Amblyseius okinawanus* was reported from Okinawa Island and Taiwan. The fixed digit of the female chelicera is multidentate (eight to ten teeth). The movable digit is provided with three teeth. Chaetotactic formula (♀): genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1.

Specimens examined. Four ♀♀ & 4 ♂♂, Shek Kiu Tau, New Territories, 19-X-1970 (S. Ehara leg.), on wild chrysanthemum; 2 ♀♀ & 2 ♂♂, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on a cucurbitaceous plant.

(3) *Amblyseius*(*Amblyseius*) *siaki* Ehara et Lee, n. sp.

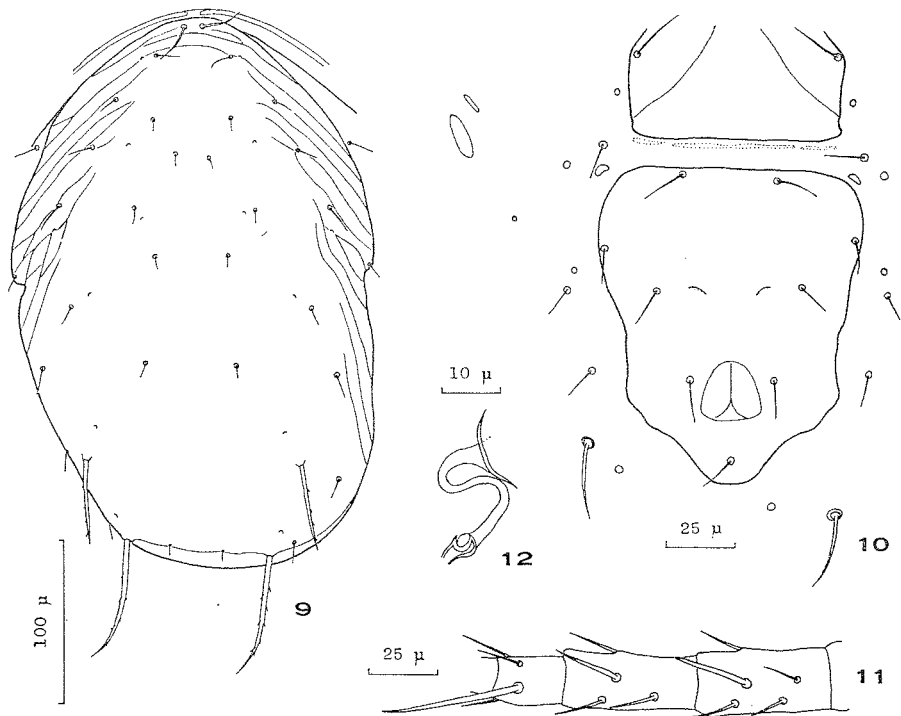
(Figs. 9-12)

Female. Dorsal shield striated along the margin, with at least seven pairs of pores; six pairs of dorsocentral setae. Setae on dorsal shield: M_2 and L_9 stout, with barbs, M_2 longer than distance M_2 to L_8 , L_9 slightly shorter than distance between L_9 ; remaining setae smooth, D_1 noticeably larger. Seta S_1 on interscutal membrane, S_2 on dorsal shield. Peritreme extending forward to seta D_1 . Sternal shield with three pairs of setae; metasternal platelets oval. Ventrianal shield longer than wide, wider than genital shield, with lateral margins slightly concave. Three pairs of preanal setae on ventrianal shield; a pair of conspicuous, crescentic pores in a transverse line with the posterior preanal pair. Four pairs of setae on membrane surrounding ventrianal shield. Two pairs of metapodal platelets, the anterior pair very slender. Spermatheca as illustrated. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with a macroseta on genu, tibia and basitarsus, that on genu subcapitate. Measurements in microns: length of dorsal shield 320, width of dorsal shield 210; lengths of setae: L_1 14, L_2 12, L_3 15, L_4 18, L_5 10, L_6 15, L_7 12, L_8 11, L_9 72, M_1 8, M_2 50, D_1 24, D_2 8, D_3 7, D_4 10, D_5 10, D_6 6, S_1 14, S_2 12, VL_1 26, macrosetae of leg IV: genu 26, tibia 22, basitarsus 47.

Male. Not known.

Type. Holotype: ♀, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on wild chrysanthemum.

Remarks. *Amblyseius siaki* is closely related to *A. linearis* Corpuz et Rimando, 1966 (the Philippines), in that seta S_2 is placed on the dorsal shield. It differs, however, from the latter in having seta L_4 smooth, less than twice as long as seta L_9 , and in having macrosetae on genu IV and tibia IV not capitate but acuminate.



Figs. 9-12. *Amblyseius(Amblyseius) siaki* Ehara et Lee, n. sp.(♀). 9, dorsal shield. 10, posterior ventral surface. 11, basitarsus, tibia and genu of leg IV. 12, spermatheca.

This species is named in honor of Mr. P.L. Siak.

(4) *Amblyseius(Amblyseius) longispinosus* (Evans)

Typhlodromus longispinosus Evans, 1952, p. 413, Figs. 1, 2.

Amblyseius longispinosus has been recorded from Japan (Hokkaido, Honshu, Shikoku, Kyushu, Amami-ōshima Id., Okinawa Id.), Taiwan, the Philippines, Malaya, Indonesia, India, Tasmania, New Zealand, Hawaii, and South America. This species is well known to prey on spider mites of *Tetranychus* (Evans, 1952; Ehara, 1965). The present materials were found in association with *Tetranychus neocaledonicus* André.

Specimens examined. Five ♀♀, Tai Lung Farm, N.T., 28-XII-1970 (K. Nohara leg.), on banana.

(5) *Amblyseius(Amblyseius) largoensis* (Muma)

Amblyseius largoensis Muma, 1955, Ann. Ent. Soc. Amer. 48: 266, Figs. 10-12.

Amblyseius largoensis was previously recorded from various locations of Hong

Kong(Swirski and Shechter, 1961). This mite is widely distributed in warm parts of the world. It commonly occurs on citrus trees in Japanese orchards, and it is well known to prey upon the citrus red mite *Panonychus citri* (McGregor) in that country(Ehara, 1962; Mori, 1964).

Specimens examined. One ♀, Tai Po Au, N.T., 27-VIII-1970(H. Mori leg.), on citrus; 1 ♂, Lin Tong Mei, N.T., 27-VIII-1970(H. Mori leg.), on guava; 2 ♀♀, Botanic Garden, H.K. Id., 28-XII-1970(S. Ehara leg.), on *Juniperus* sp.; 1 ♀, Victoria Peak, H.K. Id., 28-XII-1970(S. Ehara leg.), on citrus.

(6) *Amblyseius*(*Amblyseius*) *newsami* (Evans)

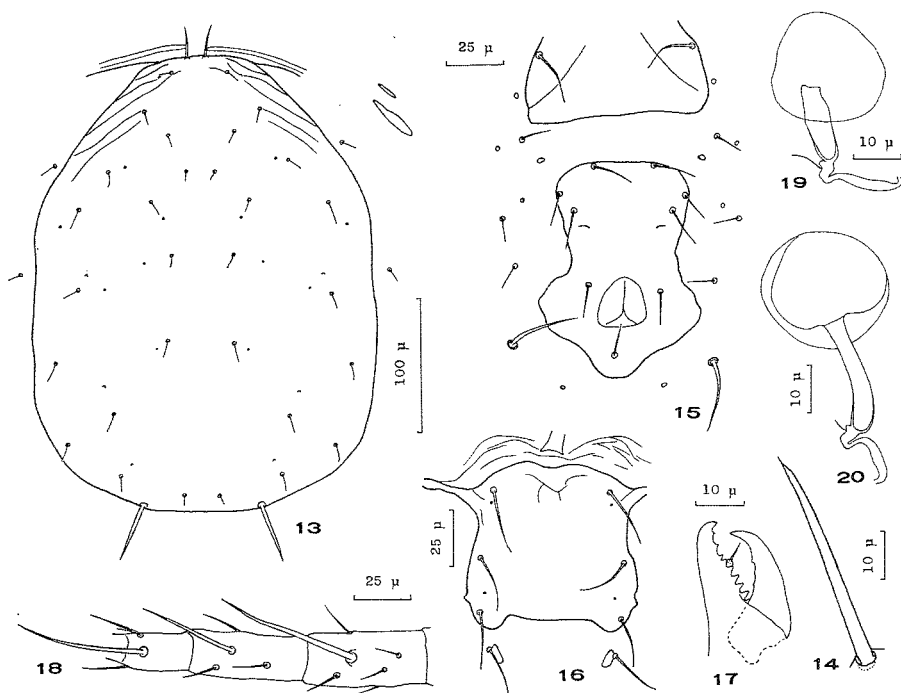
(Figs. 13-20)

Typhlodromus newsami Evans, 1953, p. 450, Figs. 1-4.

Typhlodromus(*Amblyseius*) *newsami*, Chant, 1959, p. 96, Figs. 220, 221.

Amblyseius(*Amblyseius*) *newsami*, Ehara, 1966, p. 24.

Female. Dorsal shield reticulate only along anterolateral margins, with at least ten pairs of pores; six pairs of dorsocentral setae. Setae on dorsal shield: L_9 stout, practically smooth(sometimes minute barbs recognizable near tip), with distal end of characterized shape (Fig. 14); remaining setae much smaller, smooth, D_1



Figs. 13-20. *Amblyseius*(*Amblyseius*) *newsami*(♀). 13, dorsal shield. 14, seta L_9 . 15, posterior ventral surface. 16, sternal shield. 17, chelicera. 18, basitarsus, tibia and genu of leg IV. 19, 20, spermatheca.

noticeably larger than the rest. Setae S_1 and S_2 on interscutal membrane. Peritreme extending forward to seta D_1 . Sternal shield with three pairs of setae; metasternal platelets slender. Ventrianal shield vase-shaped, widest at level of anus, slightly narrower than genital shield; three pairs of preanal setae; a pair of conspicuous, crescentic pores behind and slightly inside posterior pair of preanals. Four pairs of setae on membrane surrounding ventrianal shield. Two pairs of metapodal platelets, the anterior pair very slender. Spermatheca as figured. Fixed digit of chelicera multidentate, movable digit with a few weak teeth. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Measurements in microns: length of dorsal shield 330, width of dorsal shield 240; lengths of setae: L_1 11, L_2 10, L_3 11, L_4 15, L_5 14, L_6 14, L_7 13, L_8 13, L_9 45, M_1 9, M_2 14, D_1 24, D_2 9, D_3 9, D_4 10, D_5 14, D_6 8, S_1 13, S_2 13, VL_1 33, macrosetae of leg IV: genu 50, tibia 38, basitarsus 49.

Male. Not available to the authors.

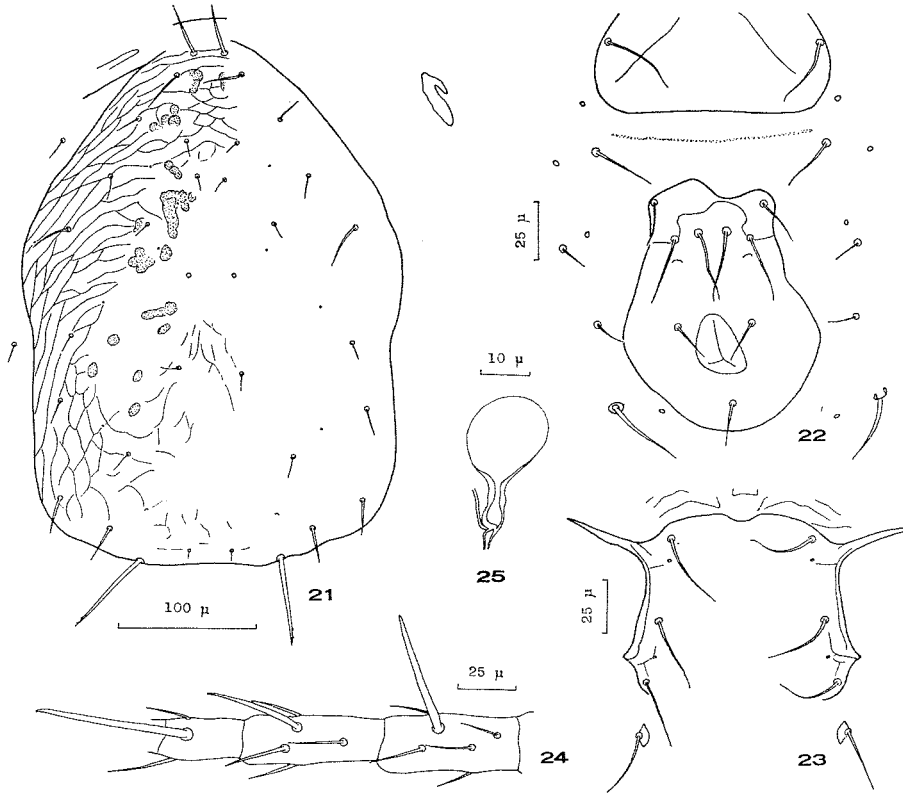
Specimens examined. Four ♀♀, Tai Po Au, N.T., 27-VIII-1970 (H. Mori leg.), on citrus; 1 ♀, Hong Lok Yuen, N.T., 19-X-1970 (S. Ehara leg.), on *Triumphetta batramia* L.

Remarks. *Amblyseius newsami* was originally described from Malaya, and was later recorded from Hong Kong Island and the New Territories by Swirski and Shechter (1961). This mite was reported to feed on tetranychids (Evans, 1953).

(7) *Amblyseius* (*Amblyseius*) *nicholsi* Ehara et Lee, n. sp.

(Figs. 21-25)

Female. Dorsal shield reticulate, with at least six pairs of pores; six pairs of dorsocentral setae. Dorsal body setae diverse in length: L_9 stout, faintly barbed near tip, approximately as long as distance between L_9 and opposite D_6 ; remaining setae smooth, D_1 stout, much shorter than L_9 ; L_1 and L_4 subequal in length, shorter than D_1 ; L_7 and L_8 equal in length, much longer than M_2 ; M_2 less than half as long as distance M_2 to L_8 . Setae S_1 and S_2 on interscutal membrane. Peritreme reaching about to middle of coxa I (between levels of D_1 and L_1). Sternal shield with three pairs of setae; metasternal platelets slender, fusiform. Ventrianal shield nearly oval, widest at level of anus, narrower than genital shield; three pairs of preanal setae, the two medial pairs in almost a line; a pair of conspicuous, transverse pores behind the posteriormost preanals; paranal setae flanking anterior end of anus. Four pairs of setae on membrane surrounding ventrianal shield. A pair of hook-shaped metapodal platelets. Spermatheca as figured. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with three macrosetae, the tip of the latter soft, blunt-ended. Measurements in microns: length of dorsal shield 360, width of dorsal shield 260; lengths of setae: L_1 28, L_2 18, L_3 18, L_4 30, L_5 14, L_6 18, L_7 26, L_8 26, L_9 62, M_1 12, M_2 16, D_1 35, D_2 11, D_3 11, D_4 missing, D_5 14, D_6 7, S_1 15, S_2 14, VL_1 32, macrose-



Figs. 21-25. *Amblyseius(Amblyseius) nicholsi* Ehara et Lee, n. sp.(♀). 21, dorsal shield. 22, posterior ventral surface. 23, sternal shield. 24, basitarsus, tibia and genu of leg IV. 25, spermatheca.

tae of leg IV: genu 52, tibia 41, basitarsus 66.

Male. Not known.

Type. Holotype: ♀, Chai Wan, H.K. Id., 18-X-1970(S. Ehara leg.), on a grass.

Remarks. *Amblyseius nicholsi* is characterized in a hook-shaped metapodal platelet on either side, that appears to be originated from the joining of two metapodal platelets. *A. nicholsi* closely resembles *A. sojaensis* Ehara, 1964 (Japan), and *A. haramotoi* Prasad, 1968(Hawaii), but it differs from these species in the unique metapodal platelets, and in the presence of the metasternal platelets. The authors examined a female specimen of *A. haramotoi* kindly forwarded by Dr. F. H. Haramoto, University of Hawaii. This new species is named in honor of Mr. E. H. Nichols.

(8) *Amblyseius(Amblyseius) ovalis* (Evans)

Typhlodromus ovalis Evans, 1953, p. 458, Figs. 5, 6.

Amblyseius ovalis was previously recorded from the New Territories and Tai

Yu Shan Island (Swirski and Shechter, 1961). It is also known from Okinawa Island, Taiwan, the Philippines, Malaya, India, Mauritius, Mexico, Hawaii, and New Zealand.

Specimen examined. One ♀, Tai Lung Farm, N.T., 28-XII-1970 (K. Nohara leg.), on banana.

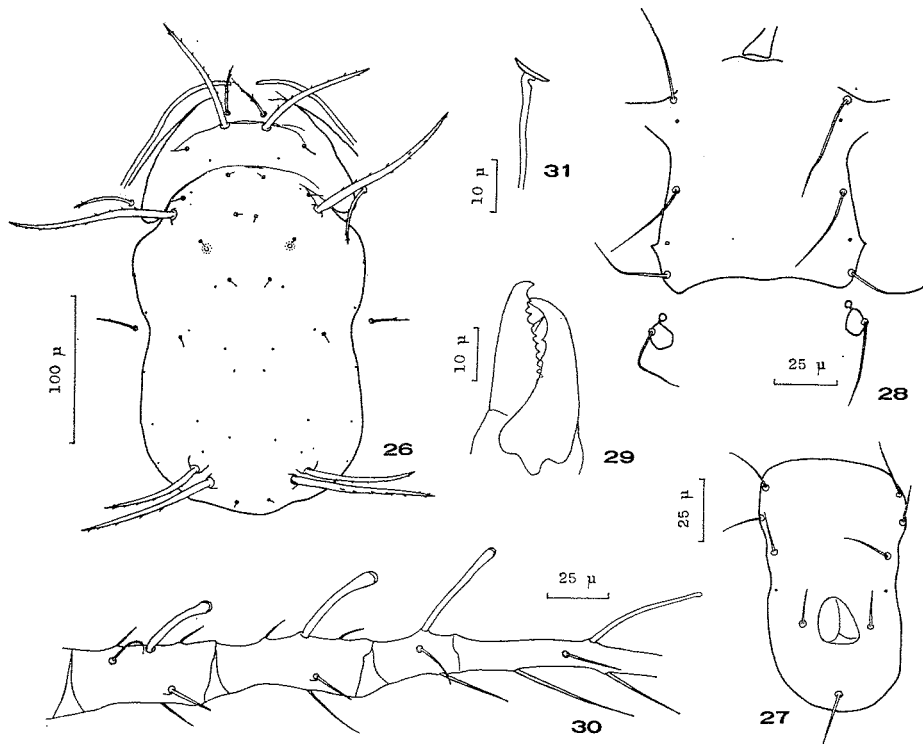
(9) **Amblyseius(Paraphytoseius) multidentatus** Swirski et Shechter

(Figs. 26-31)

Paraphytoseius multidentatus Swirski et Shechter, 1961, p. 114, Figs. 7, 26-28; De Leon, 1965, p. 130; Ehara, 1966, p. 25.

Amblyseius(Paraphytoseius) multidentatus, Ehara, 1967, p. 77.

Female. Dorsal shield incised near seta L_4 , smooth; with many pairs of pores, the pair near M_1 very large, the remainder minute; five pairs of dorsocentral setae (D_5 absent). Setae on dorsal shield: L_1 , L_4 , L_6 , and M_2 stout, sparsely barbed, set on tubercles; D_1 sparsely barbed, smaller than these setae; remaining setae very small. Setae S_1 and S_2 on interscutal membrane, well developed, sparsely barbed. Peritreme extending beyond seta D_1 . Sternal shield with three pairs of setae;



Figs. 26-31. *Amblyseius(Paraphytoseius) multidentatus* (♀). 26, dorsal shield. 27, ventrianal shield. 28, sternal shield. 29, chelicera. 30, genu, tibia and tarsus of leg IV. 31, spermatheca.

metasternal platelets constricted. Ventrianal shield slender, much narrower than genital shield, the lateral margins very slightly concave; three pairs of preanal setae in a longitudinal line on each side; a pair of minute pores caudal to posterior pair of preanals. Four pairs of setae on membrane surrounding ventrianal shield, seta VL_1 stout, sparsely barbed. Metapodal platelets not observable. Spermatheca as illustrated. Fixed digit of chelicera multidentate, movable digit with three teeth. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/1, 2/0-1. Leg IV with a spatulate macroseta on genu, tibia, basitarsus, and distitarsus; tip of each macroseta with a hyaline envelope. Measurements in microns: length of dorsal shield 280, width of dorsal shield 150; lengths of setae: L_1 75, L_2 11, L_3 8, L_4 106, L_5 7, L_6 92, M_1 6, M_2 68, D_1 31, D_2 6, D_3 5, D_4 6, D_6 4, S_1 41, S_2 25, VL_1 66, macrosetae of leg IV: genu 29, tibia 36, basitarsus 44, distitarsus 45.

Male. Not known.

Specimens examined. Two ♀ ♀, Hong Lok Yuen, N.T., 19-X-1970 (S. Ehara leg.), on *Triumphetta batramia* L.

Remarks. This species was originally described from specimens taken in the New Territories and Hong Kong Island under the name *Paraphytoseius multidentatus*. Swirski and Shechter overlooked the lateral notches of the dorsal shield.

(10) **Phytoseius(Pennaseius) hongkongensis** Swirski et Shechter
(Figs. 32-37)

Phytoseius(Phytoseius) hongkongensis Swirski & Shechter, 1961, p. 99, Figs. 1-5; Amitai & Swirski, 1966, p. 19, Fig. 2; Denmark, 1966, p. 44, Fig. 17.

Phytoseius(Pennaseius) hongkongensis, Ehara, 1966, p. 25.

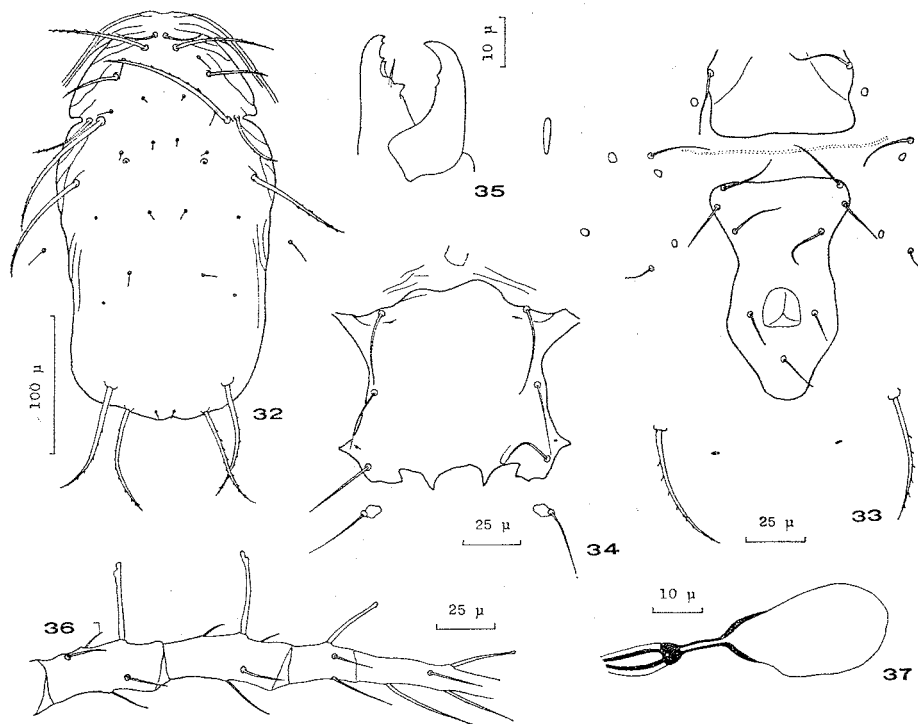
Female. Dorsal shield with reticulations along lateral margins, with three pairs of pores; six pairs of dorsocentral setae. Setae on dorsal shield: L_1 , L_5 , L_6 , L_7 and M_2 stout, strongly serrate, set on tubercles; D_1 , L_3 , and S_1 smaller, strongly serrate; remaining setae very small, smooth. Seta S_2 on interscutal membrane, smooth. Peritreme not reaching D_1 . Sternal shield with three pairs of setae, the posterior margin with indentations; metasternal platelets variable in shape and size. Ventrianal shield much longer than wide, narrower than, or approximately as wide as genital shield; the lateral margins strongly concave; three pairs of preanal setae. Three pairs of setae on membrane surrounding ventrianal shield, VL_1 stout, strongly serrate. A pair of slender metapodal platelets. Spermatheca as illustrated. Fixed digit of chelicera with three subapical and one middle teeth, movable digit with two teeth. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/0, 2/0-1. Leg IV with a capitate macroseta on genu, tibia, basitarsus, and distitarsus; apex of genual macroseta with a lateral notch, tibial macroseta with apex similar to that of genual one. Measurements in microns: length of dorsal shield 270, width of dorsal shield 140; lengths of setae: L_1 65, L_2 15, L_3 40, L_4 12, L_5 92, L_6 77, L_7 75, M_1 5, M_2 80, D_1 27, D_2 5, D_3 5, D_4 6, D_5 10, D_6 6, S_1 44, S_2 16,

VL₁ 49, macrosetae of leg IV: genu 30, tibia 32, basitarsus 24, distitarsus 26.

Male. Not available to the authors.

Specimens examined. Five ♀♀, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on a cucurbitaceous plant; 2 ♀♀, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on a leguminous plant; 1 ♀, Hong Lok Yuen, N.T., 19-X-1970 (S. Ehara leg.), on *Triumphetta batramia* L.

Remarks. *Phytoseius hongkongensis* was originally described from specimens collected at "Victoria Mt. forest (H.K. isl.)," and it was recently redescribed by Denmark (1966) on the basis of a paratype specimen. This species is known only from Hong Kong.



Figs. 32-37. *Phytoseius* (*Pennaseius*) *hongkongensis* (♀). 32, dorsal shield. 33, posterior ventral surface. 34, sternal shield. 35, chelicera. 36, genu, tibia and tarsus of leg IV. 37, spermatheca.

(11) *Phytoseius* (*Phytoseius*) *crinitus* Swirski et Shechter

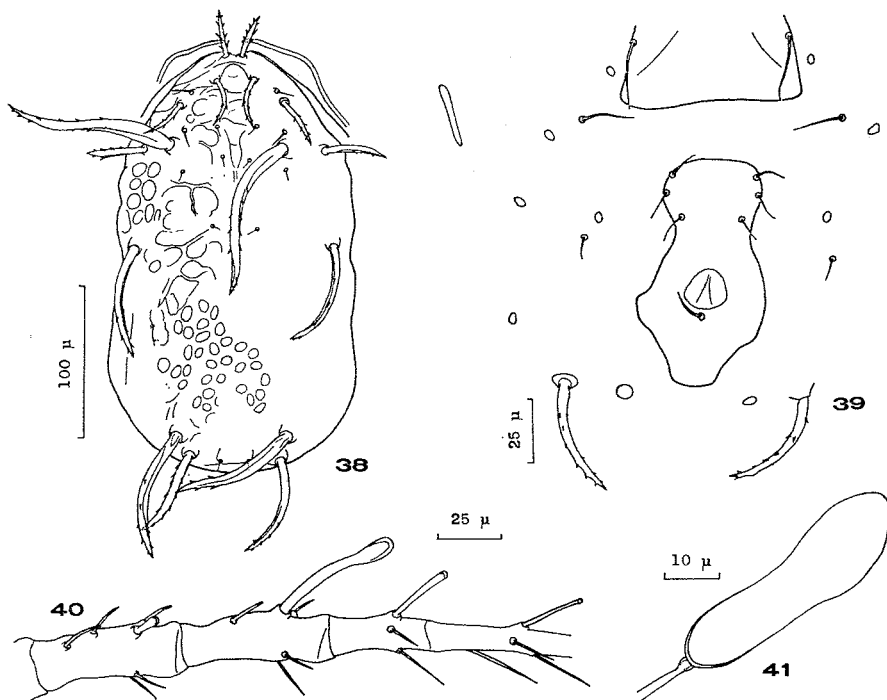
(Figs. 38-41)

Phytoseius (*Dubininellus*) *crinitus* Swirski & Shechter, 1961, p. 102, Figs. 6, 8-10; Swirski & Amitai, 1966, p. 11, Figs. 1-3; Amitai & Swirski, 1966, p. 21, Figs. 3a, 3b; Denmark, 1966, p. 66, Fig. 27.

Phytoseius (*Phytoseius*) *crinitus*, Ehara, 1966, p. 26; Ehara, 1967, p. 79, Figs. 44-47.

Swirski and Shechter recorded this species from Hong Kong Island and the New Territories. It was recently redescribed by Denmark (1966, paratype) and Ehara (1967, Okinawa Id.). It is known only from Hong Kong and Okinawa Island. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/0, 2/0-1.

Specimen examined. One ♀, Lin Tong Mei, N.T., 27-VIII-1970 (H. Mori leg.), on guava.



Figs. 38-41. *Phytoseius(Phytoseius) crinitus*(♀). 38, dorsal shield. 39, posterior ventral surface. 40, genu, tibia and tarsus of leg IV. 41, spermatheca.

(12) ***Phytoseius(Phytoseius) rachelae*** Swirski et Shechter

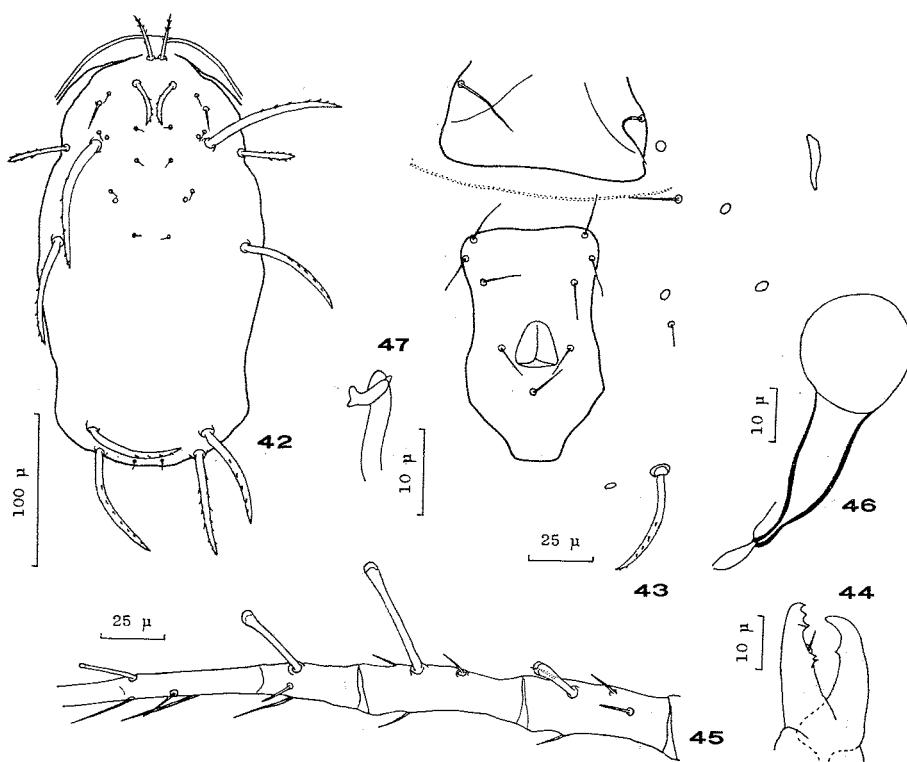
(Figs. 42-47)

Phytoseius(Dubininellus) rachelae Swirski & Shechter, 1961, p. 108, Figs. 17-19; Swirski & Amitai, 1966, p. 15, Figs. 7-9; Amitai & Swirski, 1966, p. 21, Figs. 6a, 6b, 6c; Denmark, 1966, p. 62, Fig. 25.

Phytoseius(Phytoseius) rachelae, Ehara, 1966, p. 26.

Female. Dorsal shield smooth, with two pairs of pores; five pairs of dorsocentral setae (D_5 absent). Setae on dorsal shield: L_5 , L_6 , L_7 , and M_2 stout, strongly serrate; D_1 , L_1 , and S_1 smaller, strongly serrate, L_3 much smaller, practically smooth; remaining setae minute. Peritreme not extending between setae D_1 . Sternal shield with three pairs of setae; metasternal platelets rather oval. Ventrianal

shield slender, much narrower than genital shield; the lateral margins slightly concave; three pairs of preanal setae. Three pairs of setae on membrane surrounding ventrianal shield, VL_1 stout, strongly serrate. A pair of slender metapodal platelets. Spermatheca as figured. Fixed digit of chelicera with three subapical teeth and with two very adjacent teeth proximal to pilus dentilis; movable digit



Figs. 42-47. *Phytoseius(Phytoseius) rachelae*. 42, dorsal shield(♀). 43, posterior ventral surface(♀). 44, chelicera(♀). 45, tarsus, tibia and genu of leg IV(♀). 46, spermatheca. 47, spermatophoral process of ♂ chelicera.

with one tooth. Chaetotactic formula: genu II, 2-2/0, 2/0-1; genu III, 1-2/0, 2/0-1. Genu IV with macroseta spatulate, widened by a hyaline envelope; tibia, basitarsus, and distitarsus of leg IV with macroseta similar in nature to that on genu IV. Measurements in microns: length of dorsal shield 270, width of dorsal shield 140; lengths of setae: L_1 27, L_2 7, L_3 16, L_4 6, L_5 82, L_6 69, L_7 69; M_1 5, M_2 60, D_1 27, D_2 6, D_3 6, D_4 5, D_6 6, S_1 38, VL_1 42, macrosetae of leg IV: genu 19, tibia 43, basitarsus 28, distitarsus, 21.

Male. Peritreme not reaching seta D_1 . Ventrianal shield with three pairs of preanal setae. Spermatophoral process of chelicera as figured. Measurements in microns: length of dorsal shield 210, width of dorsal shield 120; lengths of setae:

L_1 22, L_2 6, L_3 12, L_4 6, L_5 54, L_6 38, L_7 33, M_1 5, M_2 35, D_1 21, D_2 6, D_3 5, D_4 5, D_6 4, S_1 28, VL_1 12, macrosetae of leg IV: genu 11, tibia 18, basitarsus 17, distitarsus 19.

Specimens examined. Four ♀♀ & 1 ♂, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on leguminous plant.

Remarks. Swirski and Shechter recorded this species from the New Territories and Hong Kong Island. A redescription based on a paratype specimen was recently presented by Denmark (1966). This species is known only from Hong Kong.

Family TENUIPALPIDAE

(13) *Pentamerismus oregonensis* McGregor

Pentamerismus oregonensis McGregor, 1949, Mem. S. Calif. Acad. Sci. 3: 27, Fig. 9, Pl. 9.

Previous recordings are from Japan, Taiwan, U.S.S.R. (Armenia, Georgia, Ukraine), Italy, Canada, U. S. A., and Brazil on *Cupressus*, *Juniperus*, *Libocedrus*, and *Thuja*.

Specimens examined. Three ♀♀, Botanic Garden, H.K. Id., 28-XII-1970 (S. Ehara leg.), on *Chamaecyparis* sp.

(14) *Brevipalpus obovatus* Donnadieu

Brevipalpus obovatus Donnadieu, 1875, Rech. serv. Hist. Tetranych. p. 116, Pl. 5, Figs. 43-48.

This species has been recorded from most parts of the world, being collected on numerous kinds of plants. It is first recorded from Hong Kong.

Specimens examined. Thirteen ♀♀, Ling Tong Mei, N.T., 27-VIII-1970 (H. Mori leg.), on azalea; 9 ♀♀, Shek Kiu Tau, N.T., 19-X-1970 (S. Ehara leg.), on wild chrysanthemum.

Family TUCKERELLIDAE

(15) *Tuckerella pavoniformis* (Ewing)

Eupalopsis pavoniformis Ewing, 1922, Proc. Ent. Soc. Wash. 24: 106.

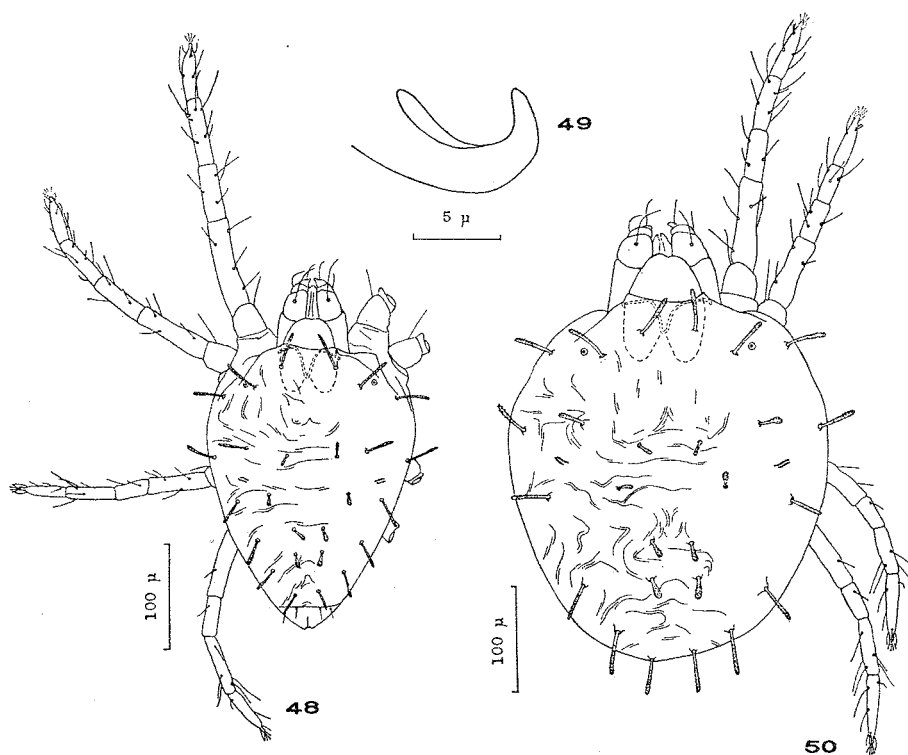
Previously this species was known from Japan (Honshu, Kyushu, Okinawa Id.), Taiwan, Georgian S.S.R., Mauritius, California, Florida, and Hawaii on various plants.

Specimen examined. One ♀, Shek O, H.K. Id., 18-X-1970 (S. Ehara leg.), on *Bauhinia* sp.

Family TETRANYCHIDAE

(16) *Eutetranychus orientalis* (Klein)

(Figs. 48-50)

Anychus orientalis [Zacher] Klein, 1936, Bull. Agr. Res. Sta. Rehovoth 21: 3.*Eutetranychus orientalis* has been recorded from Taiwan, the Philippines, Thailand, India, Afghanistan, Iran, Israel, Cyprus, Egypt, Sudan, Senegal, and South Africa on a wide variety of plants.

Figs. 48-50. *Eutetranychus orientalis*. 48, dorsum of male. 49, aedeagus. 50, dorsum of female.

Specimens examined. One ♀, Chai Wan, H.K. Id., 18-X-1970 (S. Ehara leg.), on a grass; 5 ♀♀ & 3 ♂♂, Victoria Peak, H.K. Id., 26-XII-1970 (K. Nohara leg.), on citrus; 9 ♀♀ & 3 ♂♂, Victoria Peak, 28-XII-1970 (S. Ehara leg.), on citrus.

(17) *Schizotetranychus celarius* (Banks)*Stigmaeopsis celarius* Banks, 1917, Ent. News 28: 196, Pl. 15, Figs. 9, 11.*Schizotetranychus celarius* was previously known to occur in Japan (Hokkaido,

Honshu, Shikoku, Kyushu, Okinawa Id.), and U. S. A. (Florida, Georgia, California, Hawaii). This species feeds primarily on bamboos in these areas. Rice (Honshu) and sugar cane (Okinawa Id.) are other recorded hosts.

Specimen examined. One ♀, Chai Wan, H.K. Id., 18-X-1970 (S. Ehara leg.), on a grass.

(18) ***Oligonychus perditus*** Pritchard et Baker

(Fig. 51)

Oligonychus perditus Pritchard & Baker, 1955, Pacif. Coast Ent. Soc. Mem. Ser. 2: 316, Figs. 270-273.

This species has been known to occur on *Juniperus* in Japan (Hokkaido, Honshu) and Taiwan.

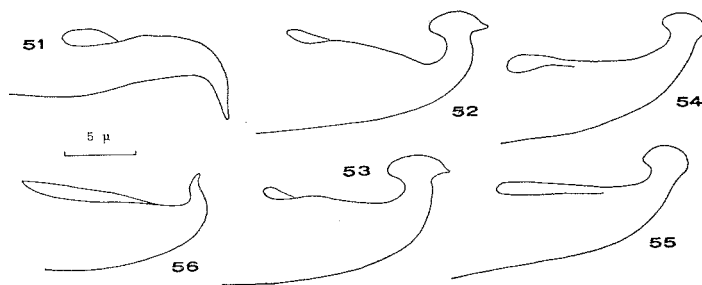
Specimens examined. Eight ♀♀ & 2 ♂♂, Botanic Garden, H.K. Id., 28-XII-1970 (S. Ehara leg.), on *Juniperus* sp.; 7 ♀♀ & 3 ♂♂, Botanic Garden, H.K. Id., 28-XII-1970 (S. Ehara leg.), on *Chamaecyparis* sp.

(19) ***Tetranychus kanzawai*** Kishida

(Figs. 52, 53)

Tetranychus kanzawai Kishida, 1927, Zool. Mag. 39: 105.

Tetranychus kanzawai has been recorded from Japan (Hokkaido, Honshu, Shikoku, Kyushu, Okinawa Id.), Taiwan, and the Philippines on a wide range of



Figs. 51-56. Aedeagi. 51, *Oligonychus perditus*. 52, 53, *Tetranychus kanzawai*. 54, 55, *Tetranychus neocaledonicus*. 56, *Tetranychus piercei*.

plants. This mite is of economic importance in Japan.

Specimens examined. Eighteen ♀♀ & 5 ♂♂, Sai Kung, N.T., 26-VIII-1970 (H. Mori leg.), on corn.

(20) ***Tetranychus neocaledonicus*** André

(Figs. 54, 55)

Tetranychus neocaledonicus André, 1933, Bull. Mus. nat. Hist. nat. Paris, 2^e sér. 5: 302, Figs. 1, 2.

Previous records are from Taiwan, the Philippines, India, Mauritius, Madagascar, Africa, the southeastern United States, Puerto Rico, the Bahamas, Venezuela, Brazil, Fiji, Hawaii, Australia, and New Zealand(imported). A wide variety of plants serve as hosts in these areas.

Specimens examined. Nineteen ♀♀ & 3 ♂♂, Tai Lung Farm, N.T., 28-XII-1970(K. Nohara leg.), on banana.

(21) ***Tetranychus piercei* McGregor**

(Fig. 56)

Tetranychus piercei McGregor, 1950, Amer. Midl. Nat. 44: 299, Fig. 7, Pl. 6(Fig. 13).

Tetranychus piercei has been recorded from Okinawa Island(sweet potato, a palm), Taiwan(peach, banana, papaya, *Ageratum*, wild grass), and the Philippines (*Clitoria*, *Musa*).

Specimen examined. One ♂, Tai Lung Farm, N.T., 28-XII-1970(K. Nohara leg.), on banana. This single male was collected in association with many female and male specimens of *T. neocaledonicus*. Some of these female specimens might be properly referred to *T. piercei*. But, females of these two species are indistinguishable from each other.

Species Previously Recorded and Not Treated in This Study

Fam. Phytoseiidae

1. *Typhlodromus*(*Anthoseius*) *vulgaris* Ehara (Swirski & Shechter, 1961)
2. *Typhlodromus*(*Typhloseiopsis*) *contiguus* Chant (ibid.)
3. *Amblyseius*(*Amblyseius*) *asiaticus* (Evans) (ibid.)
4. *Amblyseius*(*Amblyseius*) *floridanus* (Muma) (ibid.)
5. *Iphiseius*(*Iphiseius*) *degenerans* (Berlese) (ibid.)
6. *Phytoseius*(*Phytoseius*) *bambusae* Swirski et Shechter (ibid.)
7. *Phytoseius*(*Phytoseius*) *brevicrinis* Swirski et Shechter (ibid.)
8. *Phytoseius*(*Phytoseius*) *coheni* Swirski et Shechter (ibid.)
9. *Phytoseius*(*Phytoseius*) *taiyushani* Swirski et Shechter (ibid.)

Fam. Tetranychidae

10. *Panonychus citri* (McGregor) (Manson, 1963)
11. *Schizotetranychus* ? *baltazari* Rimando (ibid.)

Summary

This paper deals with twenty-one species of mites of the families Phytoseiidae, Tenuipalpidae, Tuckerellidae and Tetranychidae which were collected on plants in Hong Kong. Three new species are described: *Typhlodromus*(*Anthoseius*) *chinensis*, *Amblyseius*(*Amblyseius*) *siaki*, and *Amblyseius*(*Amblyseius*) *nicholsi*. The following previously known species are recorded from Hong Kong for the

first time: *Amblyseius*(*Amblyseius*) *okinawanus* Ehara, *Amblyseius*(*Amblyseius*) *longispinosus* (Evans), *Pentamerismus oregonensis* McGregor, *Brevipalpus obovatus* Donnadieu, *Tuckerella pavoniformis* (Ewing), *Eutetranychus orientalis* (Klein), *Schizotetranychus celarius* (Banks), *Oligonychus perditus* Pritchard et Baker, *Tetranychus kanzawai* Kishida, *Tetranychus neocaledonicus* André, and *Tetranychus piercei* McGregor. Information about the habitats(host plants) and distribution is presented for all species.

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