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THE TETRANYCHID MITES OF TASMANIA

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(With 1 plate & 20 figures.)

ABSTRACT

Formerly only four species of the family Tetranychidae had been recorded from Tasmania. Collections of mites from both introduced and native plants have revealed that the family is represented by ten genera of which two are new. Fifteen species, five being new, are now recorded from the State.

The following new genera and species are described:—

New genera—*Synonychus, Tylonychus.*
New species—*Synonychus eucalypti, Eutetranychus acaciae, Tylonychus tasmaniensis, Eotetranychus hudsoni* and *Tetranychus rhagodiae.*

In addition the male of *Schizonobia sycophanta* Wom. is described for the first time.

INTRODUCTION

Mites of the family Tetranychidae are all phytophagous species, many being important pests of cultivated plants throughout the world.

Previously published records have listed only a very few species of tetranychid mites from Tasmania. Evans (1942) listed three introduced species which were of economic importance in the State, and Womersley (1940), in the only review that has been published on this family in Australia, described an apparently native species from Tasmania.

The present paper contains records of fifteen species from Tasmania including five new species. This knowledge has been based on collections over a number of years from both introduced and native plants. Further collecting will probably yield additional species since it is apparent that the fauna of tetranychid mites in the State is richer than was previously thought.

The complete synonymy of previously known species has not been listed since this can be obtained by reference to the comprehensive publication on the family by Pritchard and Baker (1955) and the opinions of Boudreaux and Dosse (1963b) on synonymy in the "*telarius* complex".

Family TETRANYCHIDAE DONNADIEU 1875

Tétranychidés Donnadieu, 1875, Recher. Serv. Hist. Tetranych., p. 9.

The family Tetranychidae may be recognized by the clawlike fourth palpal segment and by having from 12 to 16 pairs of setae on the dorsum of the idiosoma.

Key to Genera recorded from Tasmania

1. Propodosoma with four pairs of dorsal setae and hysterosoma with twelve pairs of setae; true claw uncinate and bearing tenent hairs medially .... *Bryobia*
   Propodosoma with three pairs of dorsal setae and hysterosoma with nine or ten pairs of setae; true claw padlike with a terminal pair of tenent hairs 2
2. Empodium with tenent hairs .. 3
   Empodium without tenent hairs 4
3. Empodium clawlike with a single pair of tenent hairs .... *Schizonobia*
   Empodium clawlike with two ventrally directed rows of tenent hairs .... *Petrobia*
4. Tarsus I lacking typical duplex setae; but may have a single pair of loosely associated setae dorsally 5
   Tarsus I with two pairs of duplex setae dorsally 6
5. Empodium clawlike and well developed .... *Synonychus*
   Empodium reduced to a tiny rounded protruberance .... *Eutetranychus*
6. Opisthosoma with two pairs of para-anal setae 7
   Opisthosoma with one pair of para-anal setae 9
7. Empodium clawlike and with three pairs of proximoventral hairs .... *Panonychus*
   Empodium not as above 8
8. Empodium clawlike without proximoventral hairs .... *Tylonychus*
   Empodium (excluding legs I and II of male) consisting of three pairs of hairs .... *Eotetranychus*
9. Empodium clawlike, about as long as or longer than proximoventral hairs .... *Oligonychus*
   Empodium (excluding legs I and II of male) consisting of three pairs of hairs, the proximordorsal spur short when present .... *Tetranychus*

Genus: **BRYOBIA** Koch, 1836

Bryobia Koch, 1836, Deutsch. Crust. Myr. Arach. 1: 8-9.

Mites of the genus *Bryobia* have four pairs of dorsal propodosomal setae and the true claws are hooked with lateral tenent hairs.

The species of this genus recorded from Tasmania are members of what has been known as the "*praetiosa* complex". In recent years overseas acarologists have recognized a number of biotypes of *B. praetiosa* and in some cases have listed morphological characters which have been used to separate several species out of the complex. In Tasmania three species of the "*praetiosa* complex" can be recognized on morphological characters.

1. *Bryobia rubrioculus* (Scheuten)

Sannio rubrioculus Scheuten, 1857, Arch. Naturg. 23 (1): 104.

Eyndhoven (1956) proposed that the name *rubrioculus* Scheuten be applied to the species on fruit trees in Europe. This name has since been used for the species on fruit trees in Japan by Ehara (1959) and in Africa by Baker and Pritchard (1960). Morgan and Anderson (1957) however, questioned the validity of Eyndhoven's action in resurrecting the name *rubrioculus* and therefore proposed a new name, *B. arborea,* for the mite found exclusively on fruit trees in British Columbia. Subsequently Morgan (1960) identified as *arborea,* mites from fruit trees in Holland, England, South Africa, U.S.A., Australia, Chile and Turkey. Thus it is most probable that the two names are being applied to the same species.

As recognized here *rubrioculus* has the following characters:—

Female. Propodosomal lobes deeply cleft, outer lobes with narrow bases, adventitious growths present on lobes. Setae on outer lobes generally reaching the middle of those on inner lobes. Body length (posterior margin of opisthosoma to distal end of propodosomal lobes, excluding dorsal setae) 583-638μ, mean 609μ. Length of leg I (excluding coxa and tarsal claws) 531-676μ, mean 631μ. (In most specimens examined leg I exceeded body length). Lateral distance between paired dorsocentral hysterosomal setae DC_1, 75μ; DC_2, 53μ; DC_3, 37μ.

Larvae. Setae foliaceous in shape similar to dorsal body setae of adult. Lateral distance between paired dorsocentral hysterosomal setae—DC_1, 50μ; DC_2, 23μ; DC_3, 18μ. Distance between bases of first pair of dorsocentral hysterosomal setae approximately twice length of seta.

Male. Unknown—species parthenogenetic.

B. rubrioculus is widespread on fruit trees—particularly pome fruits throughout Tasmania.

Collections examined—

On apple—Huonville, 14.iii.41; Hobart, 5.ii.52; Gordon, 13.xi.52, and 16.x.57; Koonya, 24.xi.56; Ouse, 4.x.57, and 18.xi.58.

On pear—Rowella, 23.viii.49; Launceston, 30.x.59; Middleton, 11.xi.59.

On *Prunus serrulata* Lindl.—Launceston, 12.xii.61.

2. *Bryobia praetiosa* Koch.

Bryobia praetiosa Koch, 1836, Deutsch. Crust. Myr. Arach. 1: 8.

This species occurs on herbaceous plants and is commonly found on clovers in Tasmania. It occasionally invades houses.

As recognized here *B. praetiosa* has the following morphological characters:—

Female. Cleft separating outer propodosomal lobes from inner lobes comparatively shallow, outer lobes wider at base than in *rubrioculus* and often with swellings on inner margin. Propodosomal anterior angulations present. (These are two swellings on the fore margin of the propodosoma just proximad of the lobes. They cannot always be seen in mounted specimens but can be readily seen in unmounted material). Setae on outer lobes generally not reaching beyond bases of those on inner lobes. Body length 825-1001μ, mean 893μ. Length leg I, 734-848μ, mean 782μ. (In all specimens examined leg I was shorter than the body). Lateral distance between paired dorsocentral hysterosomal setae—DC_1, 150μ; DC_2, 139μ; DC_3, 98μ.

Larva. Setae lanceolate in shape, unlike those of adult. Lateral distance between paired dorsocentral hysterosomal setae—DC_1, 96μ; DC_2, 41μ; DC_3, 30μ. Distance between bases of first pair of dorsocentral hysterosomal setae approximately four times length of seta.

Male. Unknown—species parthenogenetic.

Collections examined—

On clover—Bridport, 7.iii.52; Flower Pot, 6.vi.57; Grove, 17.vii.57; New Town, 11.ix.57, and 11.xi.58; Flinders Island, 9.xi.61, and 28.x.63.

On *Spergula arvensis* L.—Grove, 16.viii.57.

On Cyclamen—Hobart, 16.vii.53.

On *Galium aperine* L.—Sandy Bay, 17.viii.64.

In House—Penna, 4.xi.57.

3. *Bryobia kissophila* Eyndhoven

Bryobia kissophila Eyndhoven, 1955, Ent. Ber. 15: 344.

Eyndhoven (1955) when describing this species was mainly concerned with characters that could be used to separate it from *rubrioculus* on apple and pear. It is however more difficult to distinguish between *kissophila* and *praetiosa.* Characters of *kissophila* which may be used for this purpose are:—

Female. Cleft separating outer propodosomal lobes from inner lobes rather deep, outer lobes wide at base and somewhat triangular in shape. Setae on outer lobes approximately 1½ to 2 times as long as those on inner lobes. Body length 836-891μ, mean 860μ. Length of leg I, 811-856μ, mean 834μ. Lateral distance between paired dorsocentral hysterosomal setae, DC_1, 120μ; DC_2, 81μ; DC_3, 68μ.

Larva. Setae lanceolate in shape unlike those of adult. Lateral distance between paired dorsocentral hysterosomal setae, DC_1, 90μ; DC_2, 37μ; DC_3, 24μ. Distance between bases of first pair of dorsocentral hysterosomal setae approximately 2½ times length of seta.

B. kissophila is apparently confined to ivy, *Hedera helix* L. Collections from this host have been examined from Hobart, 21.vii.57 and 7.ix.61.

Morgan (1960) plotted the distances between the paired dorsocentral hysterosomal setae and showed that there was a different pattern between *arborea* and *praetiosa*. He then stated that in adults of *arborea*, DC_2 always lies mesad of an imaginary line joining DC_1 and DC_3, whereas in *praetiosa*, DC_2 was laterad of this line. In this statement it is assumed that the position of the paired DC_2 setae is midway between DC_1 and DC_3.

In Tasmanian specimens however the paired DC_2 setae do not lie midway between DC_1 and DC_3, thus the pattern cannot be determined by direct examination. Nevertheless the position of the dorsocentral hysterosomal setae is a useful character to aid in species separation within the complex in Tasmania. Instead of plotting the pattern by artificially placing DC_2 midway between DC_1 and DC_3 (Morgan 1960), the lateral distances between the three sets of paired dorsocentral hysterosomal setae are measured and the ratio $R = \frac{DC_1 - DC_2}{DC_2 - DC_3}$ determined. Values of $R > 2$ are found in all stages of *rubrioculus*, *kissophila*, and in the immature stages of *praetiosa*, whereas values of $R < 2$ are found in adults of *praetiosa*.

Genus: **SCHIZONOBIA** Womersley, 1940

Schizonobia Womersley, 1940, Trans. Roy. Soc. S. Aust. 64 (2) 251.

Womersley's description of the genus was—"Roundish species dorsally strongly convex with strong dorsal setae arising from papillae. Mandibles styliform with distinct mandibular plate. Palpi stout with strong tibial claw. Peritreme almost straight but ending externally in a very large globular chamber. Legs not excessively long, tarsi about two-thirds length of tibiae, claws modified as two pads ending in paired tenent hairs, empodium clawlike but only with one pair of lateral tenent hairs".

This description should however be expanded in the following manner:—

Female tarsus I with two pairs of duplex setae adjacent at distal end, tarsus II with single pair of duplex setae. Male tarsus I with two pairs of duplex setae adjacent at distal end and up to four pairs of duplex setae along dorsum of tarsus; tibia I with up to eight pairs of duplex setae. Tarsus II with a single pair of duplex setae.

Beer and Lang (1957) proposed the genus *Schizonobiella* for the species *S. aeola* Beer and Lang, which they recognized as having considerable affinity to *Schizonobia* Womersley. The degree of affinity between these two genera is even greater than Beer and Lang were in a position to judge since the previously undescribed male of *Schizonobia sycophanta* also has the unusual character of possessing numerous pairs of duplex setae on both tarsus I and tibia I.

1. *Schizonobia sycophanta* Womersley

(Figs 1, 2 and 3. Plate 1)

Schizonobia sycophanta Womersley, 1940, Trans. Roy. Soc. S. Aust. 64 (2): 251.

This species was originally described from females collected in Tasmania. In his description Womersley (1940) listed the locality and host as "attacking couch grass Hobart, Tasmania, 1939 (J.W.E.)".

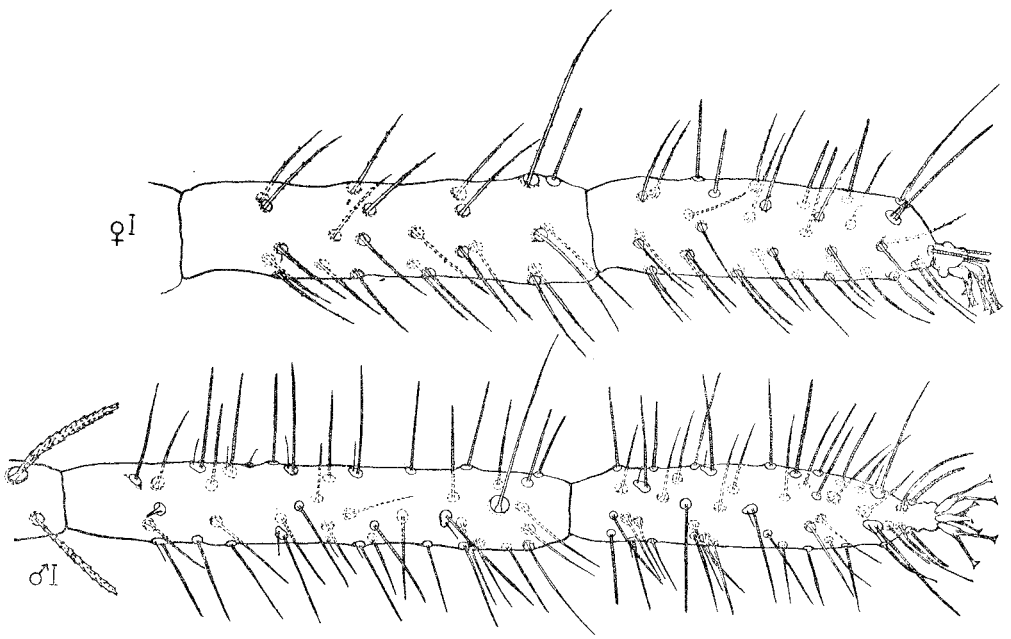

FIG. 1.—*Schizonobia sycophanta* Wom. Tibia and Tarsus I of male and female.

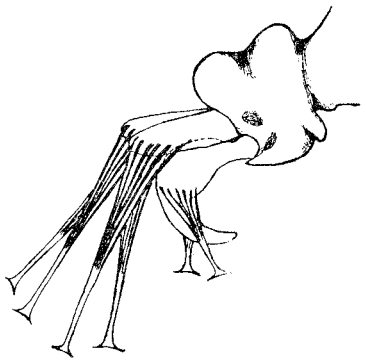

FIG. 2.—*Schizonobia sycophanta* Wom. Empodium I, female.

I was unable to locate this mite in Tasmania until an examination of departmental files revealed that the original collection had been made by Dr. J. W. Evans from corn spurry, *Spergula arvensis* L., at Cygnet, and not from "couch grass Hobart" as stated by Womersley.

S. sycophanta is of widespread occurrence on corn spurry during the winter and has not been collected from any other host.

Because of certain inaccuracies in the original description of the female, a redescription has been included. In addition the male is described for the first time.

Female. Colour in life reddish. Rostrum short reaching middle of femur I. Palpus stout with claw not reaching to end of fifth segment. Peritreme short ending externally in a globular enlargement consisting of a complex series of branches arising from a basal trunk. Legs with large numbers of short finely pubescent tactile setae. Leg I almost as long as body, leg II two-thirds length of leg I. Tarsus I with two pairs of duplex setae adjacent at distal end and twenty-three tactile and six sensory setae distinctly proximal to the duplex setae. Tibia I with twenty-three tactile setae, one of which is much longer than the rest, and one distal sensory seta. Tarsus II with a single pair of duplex setae and seventeen tactile and one sensory setae proximal to duplex setae; Tibia II with seventeen tactile setae. Empodium uncinate with a single pair of ventrally directed hairs borne medially. Body strongly convex, dorsal integument coarsely striated; dorsal setae similar in length, strong, ciliated, and blunt, approximately as long as intervals between their bases, set on strong tubercles. Propodosoma with three pairs of dorsal setae, hysterosoma with ten pairs including three pairs of dorsolaterals.

Length of body 900μ; including rostrum 979μ, width 671μ.

Male. Similar to female but body less rounded. Leg I longer than body. Tarsus I with two pairs of duplex setae adjacent at distal end and a further four pairs of duplex setae on dorsal surface of tarsus; fourteen smooth tactile setae and twenty-one sensory setae proximal to distal duplex setae; sensory setae largely on dorsal surface. Tibia I with about eight pairs of duplex setae along dorsal surface of segment; twelve tactile setae of which one near the distal end is much longer than rest and two of the remainder are very short; twenty-one sensory setae and one very short sensory spine near proximal end of segment. Dorsal surface of genu and femur I bearing strong ciliated setae similar to those on dorsum of body. Tarsus II with a single pair of duplex setae, twenty tactile and two sensory setae. Tibia II with nineteen tactile setae. Dorsal integument of body less coarsely striated than in female. Aedeagus long slender, slightly curved and tapering to a fine point. Length of body 619μ; including rostrum 707μ; width of body 398μ.

Collections examined—

On *Spergula arvensis* L.—*Cygnet, 1939, J. W. Evans; Grove, 16.viii.57 and 22.iv.58; Margate, 13.ix.57; Spreyton, July 1959; Gravelly Beach, 19.vii.54.

* Part of collection from which original description was made.

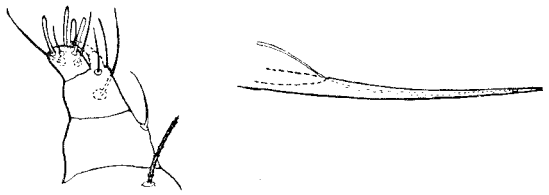

FIG. 3.—*Schizonobia sycophanta* Wom. Palp and aedeagus, male.

There is considerable variation in the number of duplex setae on the male tarsus I and tibia I and also in the length of the proximal member of the pairs.

Although *S. sycophanta* was described from Tasmania the only host on which it has been collected is corn spurry, an introduced weed of European origin. It is therefore not certain whether the species is truly native.

During the winter and early spring all stages of the mite may be found on corn spurry. The species apparently aestivates as an egg since the active stages disappear during the summer but large numbers of eggs remain on the dried off stems of the host plants. The eggs are red and of a more or less spherical shape with a whitish striated top.

Genus: **PETROBIA** Murray, 1877

Petrobia Murray, 1877, Econ. Ent. Aptera, p. 118.

The true claws in this genus are modified to pads, each bearing a pair of tenent hairs distally, whereas the empodium is uncinate with two rows of ventrally directed tenent hairs.

1. *Petrobia latens* (Muller)

Acarus latens Muller, 1776, Zool. Dan. Prodr. p. 187.

Petrobia latens is mainly a grass or cereal infesting species that is more or less cosmopolitan in distribution. Womersley (1940) recorded it from N.S.W. and Western Australia. In Tasmania it has been found in widely scattered areas but in no case has it achieved the status of an economic pest.

Collections examined—

On clover—Bridport, 7.iii.52; Cressy, 18.xii.56.
On pasture—Swansea, 28.xi.59; Sheffield, 27.iii.63.
On onion—Scottsdale, 14.i.63.
On bracken, *Pteridium esculentum* (Forst. f.) Nakai—Cradoc, 2.iv.64.

Genus: **SYNONYCHUS** gen. n.

Type of genus—*Synonychus eucalypti* sp. n.

The genus *Synonychus* is proposed for a single species that is allied to both *Eurytetranychus* Oudemans and *Eutetranychus* Banks. Like these latter genera, mites of the genus *Synonychus* lack, on tarsi I and II the duplex setae characteristic of other genera of the family Tetranychidae. In *Synonychus*, however, the empodium is a stout clawlike member approximately half as long as the tenent hairs of the true claws, whereas in *Eurytetranychus* the empodium is reduced to a rudimentary uncinate projection and in *Eutetranychus* it is virtually absent, being reduced to only a tiny knob.

The body is oval with short slender legs. There are three pairs of dorsal propodosomal setae, ten pairs of dorsal hysterosomal setae and two pairs of para-anal setae. The inner sacrals are further apart than the third pair of dorsocentrals.

1. *Synonychus eucalypti* sp. n.

(Figs. 4, 5 and 6)

Female. Colour in life brownish yellow. Palpus with terminal sensillum stout, approximately twice as long as broad. Peritreme terminating in a simple enlargement. Legs slender shorter than body. Tarsus I lacking duplex setae but with six tactile and five sensory setae, the latter being all on distal half of segment; two of the distal tactile setae pectinate. Tibia I with five tactile and one sensory setae. Empodium a stout clawlike member approximately half as long as the tenent hairs of the true claws. Tarsus II lacking duplex setae but with a total of five tactile and five sensory setae of which only one tactile and one sensory setae are on proximal half of segment, and one pair of the distal tactile setae are pectinate. Tibia II with five tactile setae. Body oval in shape, dorsal integument with fine striae. Hysterosoma with a pore caudo-laterad of first dorsolateral setae. Dorsal setae short, blunt and serrate, inner sacrals wider apart than third pair of dorsocentrals, outer sacrals only slightly further apart than inner sacrals, two pairs of para-anal setae. Length of body 338μ, greatest width 230μ.

Male. Similar to female but body more tapered. Palpus with terminal sensillum smaller and more slender than in female. Tarsus I without duplex setae but with five tactile setae, one pair of which are pectinate, and seven blunt sensory setae. Tibia I with five tactile and two blunt sensory setae. Tarsus II lacking duplex setae but with five tactile setae of which two at distal end are pectinate and seven blunt sensory setae. Tibia II with five tactile setae. Inner and outer sacrals approximately the same distance apart and both are further apart than the third pair of dorsocentrals. Outer sacral setae one and one half times as long as inner sacrals. Aedeagus curving gradually dorsad with a slightly sigmoid tip. Length of body 257μ; greatest width 171μ.

FIG. 4.—*Synonychus eucalypti* sp. n. Dorsal aspect of female.

Holotype. Female, on *Eucalyptus ovata* Labill, Franklin, Tasmania 21.viii.63, in Australian National Insect Collection, Canberra, A.C.T.

Paratypes. Five males, forty-four females, same data as holotype, in Australian National Insect Collection, Canberra, A.C.T.; South Australian Museum, Adelaide, S.A.; and Department of Agriculture, Hobart, Tasmania.

Womersley (1940) erected the genus *Anatetranychus* for the species *A. hakea.* Subsequently Pritchard and Baker (1955) placed *Anatetranychus* in synonymy with *Neotetranychus* Tragardh, basing their opinion on the published description but recognizing that the female of *hakea* differed from other members of the genus *Neotetranychus* in that the empodia were described as being simply clawlike.

It is not clear from Womersley's description however, whether the female of *hakea* possesses duplex setae on tarsi I and II. If not, then *Anatetranychus* Womersley could not be placed in synonymy with *Neotetranychus* Tragardh and the genus *Synonychus* here proposed might prove to be a synonym of *Anatetranychus.*

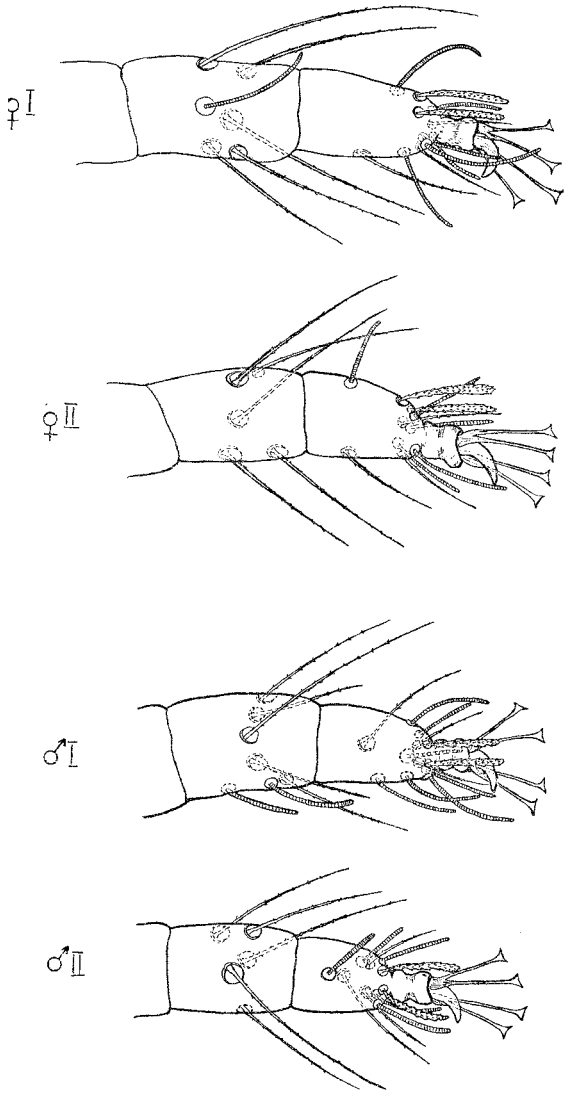

FIG. 5.—*Synonychus eucalypti sp.n.* Tibia and Tarsus I and II, male and female.

Unfortunately the type of *Anatetranychus hakea* Womersley could not be located in the South Australian Museum nor has it been possible to locate any material of the species in any other Australian institution. Thus until topotype material is collected from *Hakea* sp. in Western Australia the problem cannot be resolved.

Genus: **EUTETRANYCHUS** Banks, 1917

Neotetranychus (*Eutetranychus*) Banks, 1917, Ent. News. 28: 197.

The genus *Eutetranychus* may be recognized by the rudimentary empodium which is reduced to a tiny knob. Tarsi I and II lack the characteristic duplex setae and the hysterosoma bears a pore caudo-laterad of the first dorsolateral setae.

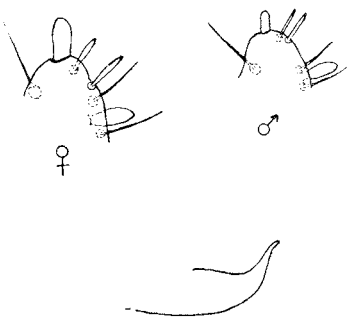

FIG. 6.—*Synonychus eucalypti* sp. n. Palps—male and female, and aedeagus.

1. *Eutetranychus acaciae* sp. n.

(Figs. 7, 8, 9, and 10)

Eutetranychus acaciae shows some similarity to the polytypic *E. banksi* (McGregor). It differs however, in the shape of the dorsal setae, the setation of the legs and the shape of the palpus.

Female. Colour in life pinkish yellow with dark marginal spots. Stylophore with shallow mediodorsal furrow distally. Palpus with a tubercle exterior to dorsal chaeta on first segment, terminal sensillum slender almost four times as long as broad. Peritreme ending in a simple enlargement. Legs all shorter than body. Tarsus I with thirteen tactile and four sensory setae; without duplex setae. Tibia I with eight tactile and one short, blunt sensory setae. Tarsus II with twelve tactile and three sensory setae; without duplex setae. Tibia II with four tactile setae. Tarsi III and IV each with a pair of pectinate tactile setae distally. Empodium reduced to a very tiny knob. Propodosoma with mediodorsal striae longitudinal and finely granulate, hysterosoma with dorsal integument irregularly striate. Idiosoma with dorsal setae strong, serrate, rodlike, borne on strong tubercles; inner sacrals of similar length to dorsocentrals and much longer than outer sacrals or clunals. Length of body 427μ; greatest width 336μ.

Male. Similar to female but body more slender and tapering and legs longer relative to body. Terminal sensillum of palpus short and slender. Tarsus I with twelve tactile and seven sensory setae, mainly on distal half of segment; without duplex setae. Tibia I with nine tactile and four short blunt sensory setae. Tarsus II with ten tactile and five sensory setae. Tibia II with five tactile and two sensory setae. Idiosoma with propodosomal and dorsolateral setae approximately twice length of dorsocentral setae. Inner sacrals of similar length to dorsocentrals and appreciably longer than outer sacrals or clunals. Aedeagus curved abruptly dorsad with blunt tip. Length of body 302μ; greatest width 216μ.

Holotype—Female, on *Acacia dealbata* Link, Hayes, Tasmania, 23.viii.63, in the Australian National Insect Collection, Canberra, A.C.T.

Paratypes—Eight males, thirteen females, on *Acacia dealbata* Link, Hayes, Tasmania, 23.viii.63, 29.viii.63, 10.x.63, 10.ix.64, and 14.xii.64, in the

Australian National Insect Collection, Canberra, A.C.T., South Australian Museum, Adelaide, S.A., and Department of Agriculture, Hobart, Tasmania.

Genus: **PANONYCHUS** Yokoyama, 1929

Panonychus Yokoyama, 1929, Saishin Nippon Sangyo Gaishu Zensho: 531.

The genus *Panonychus* may be recognized by having the dorsal setae arising from strong tubercles and a clawlike empodium with three pairs of proximo-ventral hairs.

1. *Panonychus ulmi* (Koch)

Tetranychus ulmi Koch, 1836, Deutsch. Crust. Myr. Arach. 1: 11.

Metatetranychus ulmi (Koch) Oudemans, 1931, Ent. Ber. 8 (177): 198; Womersley, 1940, Trans. Roy. Soc. S. Aust. 64 (2): 261.

This species, the European red mite, is of widespread occurrence in Tasmania being an important pest on apples.

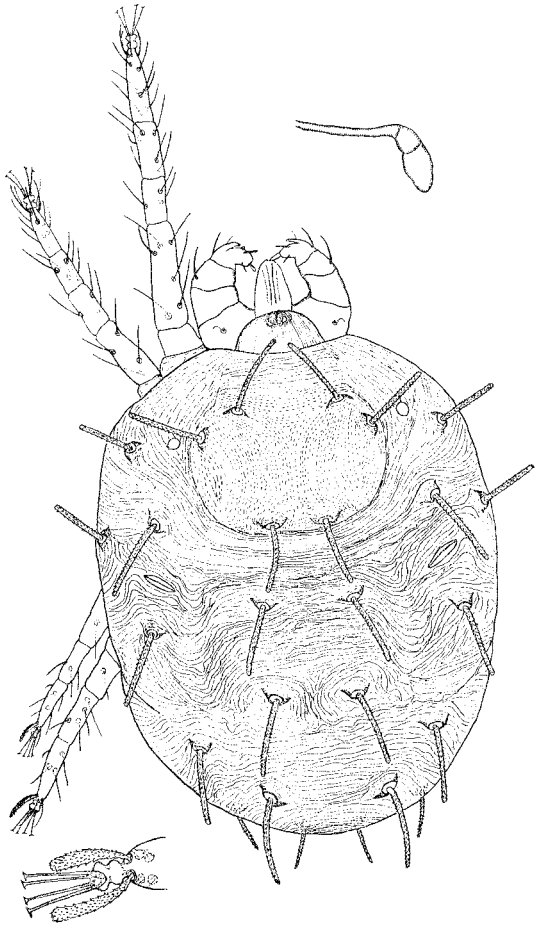

FIG. 7.—*Eutetranychus acaciae* sp. n. Dorsal aspect of female, and peritreme.

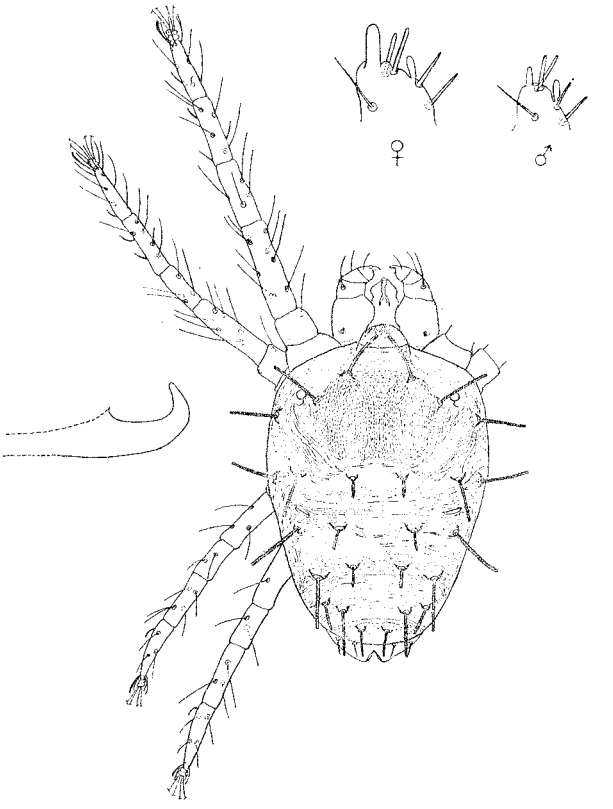

FIG. 8.—*Eutetranychus acaciae* sp. n. Dorsal aspect of male, aedeagus, and male and female palps.

The first reference in a taxonomic paper to the occurrence of this species in Tasmania was by Womersley (1940) but it had obviously become established in the State much earlier since it was already a widespread economic pest in 1935 (Miller 1949).

Collections examined—

On apple—Margate, 6.ii.40, and 7.ii.42; Grove, 18.ix.50, and 8.xi.50; Hobart, 4.iv.52, and 20.v.52; Cygnet, 15.iii.55; Castle Forbes Bay, 14.i.57.

On Rowan, *Sorbus aucuparia* L. —Hobart, 5.xii.56.

Genus: **TYLONYCHUS** gen. n.

Type of genus *Tylonychus tasmaniensis* sp. n.

The genus *Tylonychus* is proposed for a single species the affinities of which are obscure. It is probably closest to *Neotetranychus* Tragardh and could perhaps be placed in that genus if one accepted the action of Pritchard and Baker (1955) in synonymizing the species *Anatetranychus hakea* Womersley in *Neotetranychus* even though the empodium was described as simply clawlike, whereas the empodia of females of all other species in *Neotetranychus* have long curved bases dividing distally into paired hairs.

In my opinion species in which the empodia of the females are clawlike (i.e., undivided) should not be included in *Neotetranychus*. Even so, however,

the relationship of *Tylonychus* to *Anatetranychus* cannot be determined until topotype material of *A. hakea* is obtained (see discussion on the genus *Synonychus*).

Mites of the genus *Tylonychus* are unusual in the excessively long and slightly downwardly curved gnathosoma. The dorsal integument of the female bears coarse striae with numerous irregularly shaped spinules. The dorsal setae are stout and heavily pilose, arising from strong tubercles and there are two pairs of short pilose para-anals. There are two pairs of duplex setae adjacent on tarsus I and a single pair on tarsus II. The dorsal setae of the legs are short and pilose arising from tubercles. The empodium of all legs in both sexes is a simple curved claw.

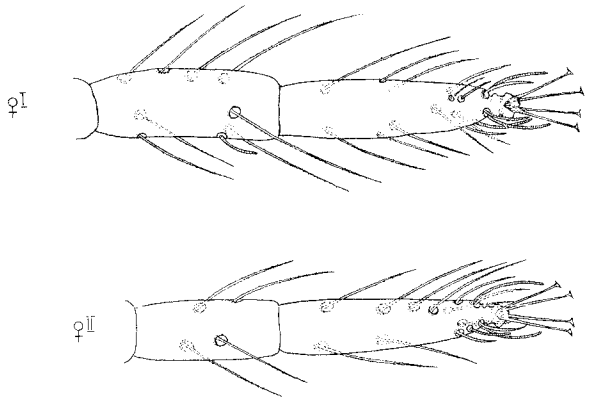

FIG. 9.—*Eutetranychus acaciae* sp. n. Tibia and Tarsus I and II, female.

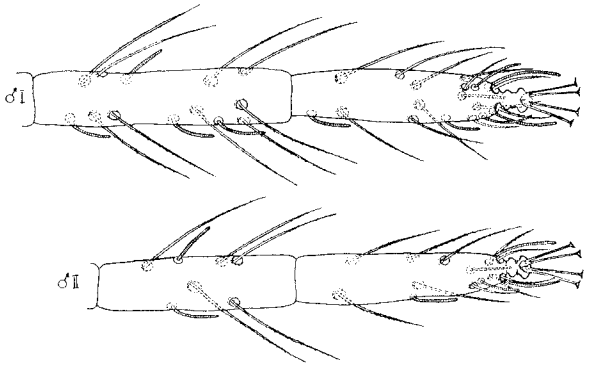

FIG. 10.—*Eutetranychus acaciae* sp. n. Tibia and Tarsus I, male.

1. *Tylonychus tasmaniensis* sp. n.

(Figs. 11, 12, 13 and 14)

Female. Colour in life purplish sometimes almost black. Palpus with terminal sensillum slender three times as long as broad; other sensillae rodlike and slightly curved. Peritreme hooked distally. Tarsus I with two pairs adjacent duplex setae and three tactile setae proximad of the proximal pair of duplex setae. Tibia I with six tactile setae and one sensory seta. Tarsus II with three tactile setae proximal to the single pair of duplex setae. Tibia II with five tactile setae. Tarsus III with seven tactile setae and one short sensory seta. Tibia III with four tactile setae. Tarsus IV with seven tactile setae and one short sensory seta. Tibia IV with four tactile setae. Empodia on all legs stout, curved, clawlike. Dorsal tactile setae on all legs stout and pilose. Stylophore long narrow, rounded anteriorly. Body tapering posteriorly, gnathosoma long and curved slightly ventrad. Dorsal integument with coarse striae bearing irregularly shaped spinules. Dorsal setae stout and pilose arising from strong tubercles. Dorsocentral setae slightly longer than longitudinal

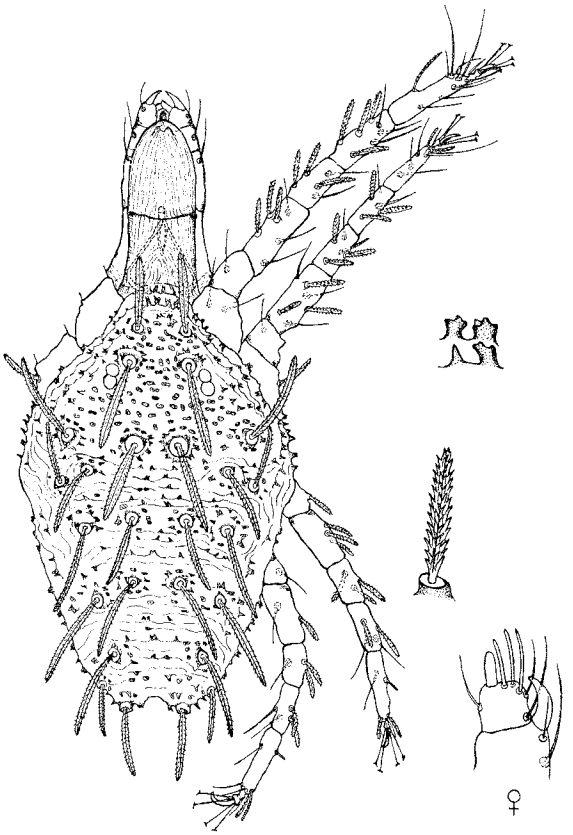

FIG. 11.—*Tylonychus tasmaniensis* sp. n. Dorsal aspect of female and palp.

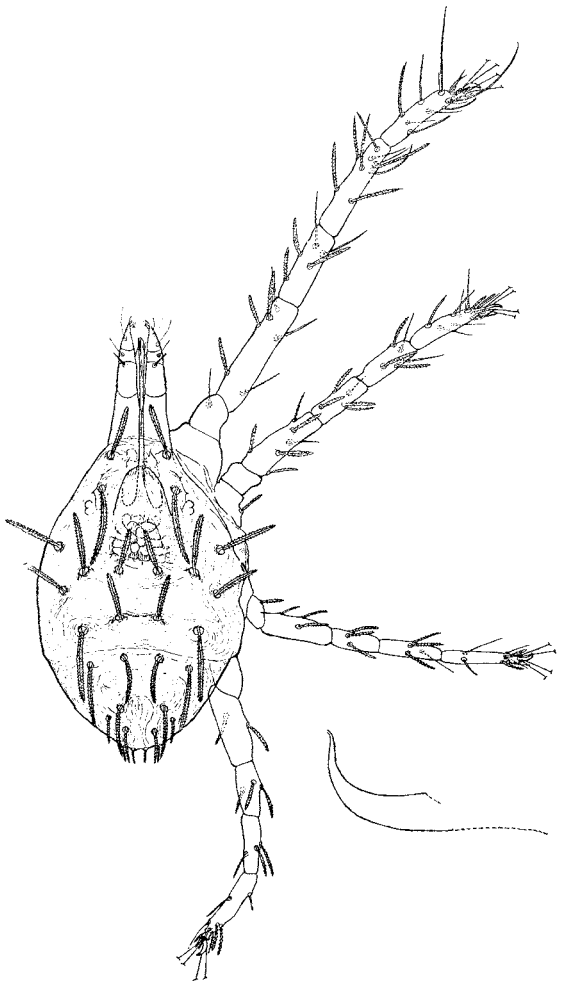

FIG. 12.—*Tylonychus tasmaniensis* sp. n. Dorsal aspect of male, and aedeagus.

distance between them. Inner sacrals almost as far apart as outer sacrals and approximately twice as long as latter setae. Two pairs of short pilose para-anal setae. Length of body 279μ; greatest width 185μ.

Male. Precise details of distal segment of palpus not observable; first segment with stout sensory seta distad on dorsal surface. Peritreme hooked distally. Legs longer than body. Tarsus I with two pairs adjacent duplex setae, and three tactile and two sensory setae proximad of the proximal pair of duplex setae. Tibia I with seven tactile and two sensory setae. Tarsus II with two tactile and two sensory setae proximal to the single pair of duplex setae. Tibia II with five tactile setae. Tarsus III with seven tactile and one short sensory setae. Tibia III with four tactile setae. Tarsus IV with seven tactile and one short sensory setae. Tibia IV with four tactile setae. Empodia on all legs stout, curved, clawlike. Dorsal tactile setae on legs stout and pilose. Dorsal integument coarsely striate and wrinkled but lacking spinules. Propodosoma with a reticulate pattern medially. Dorsal setae, stout, pilose, arising from strong tubercles. Dorsocentral hysterosomal setae approximately as long as longitudinal interval between them. Inner sacrals approximately twice length of outer sacrals. Aedeagus as figured, sickle shaped, curved abruptly dorsad and tapering to tip. Length of body 225μ; greatest width 144μ.

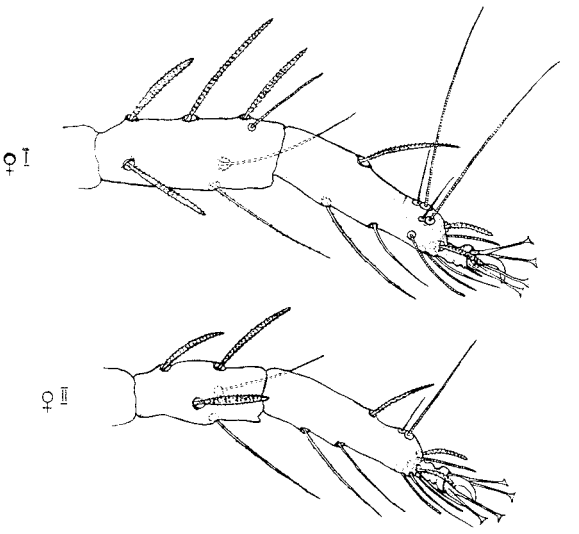

FIG. 13.—*Tylonychus tasmaniensis* sp. n. Tibia and Tarsus I and II, female.

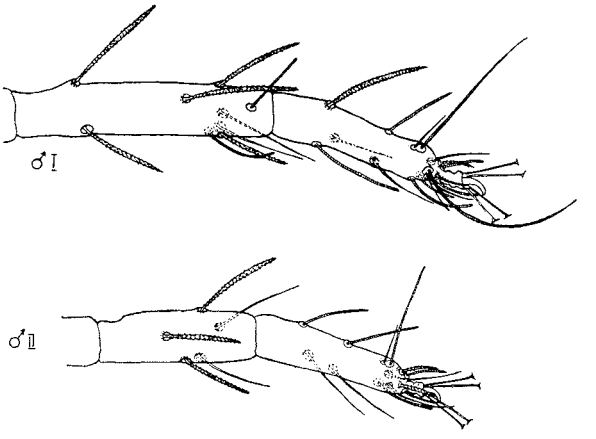

FIG. 14.—*Tylonychus tasmaniensis* sp. n. Tibia and Tarsus I and II, male.

Holotype. Female, on *Acacia mearnsii* de Wild, Hayes, Tasmania, 19.ix.63 in the Australian National Insect Collection, Canberra, A.C.T.

Paratypes. One male, five females, on *Acacia mearnsii* deWild, Hayes, Tasmania, 19.ix.63, 4.iv.64, and 29.iv.64. Sixteen females on *Acacia dealbata* Link, Hayes, Tasmania, 29.viii.63, 10.x.63, 21.xi.63, and 10.ix.64, in the Australian National Insect Collection, Canberra, A.C.T., South Australian Museum, Adelaide, S.A. and Department of Agriculture, Hobart, Tasmania.

Genus: **EOTETRANYCHUS** Oudemans, 1931

Eotetranychus Oudemans, 1931, Ent. Ber. 8 (178): 224.

Mites of the genus *Eotetranychus* may be recognized by having two pairs of para-anal setae, by the empodium consisting of three pairs of hairs (except on leg I and sometimes leg II of the male) and by having the duplex setae on tarsus I adjacent.

1. *Eotetranychus hudsoni* sp. n.

(Figs. 15 and 16)

This species is somewhat similar to *Eotetranychus mandensis* Manson, in the shape of the aedeagus but differs in the shape of the male palpus and the setation of the body and legs.

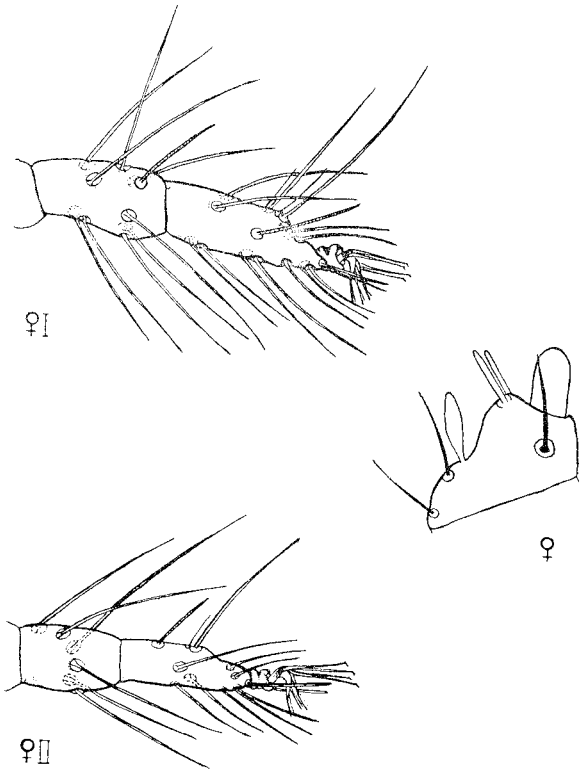

FIG. 15.—*Eotetranychus hudsoni* sp. n. Tibia and Tarsus I and II, palp—female.

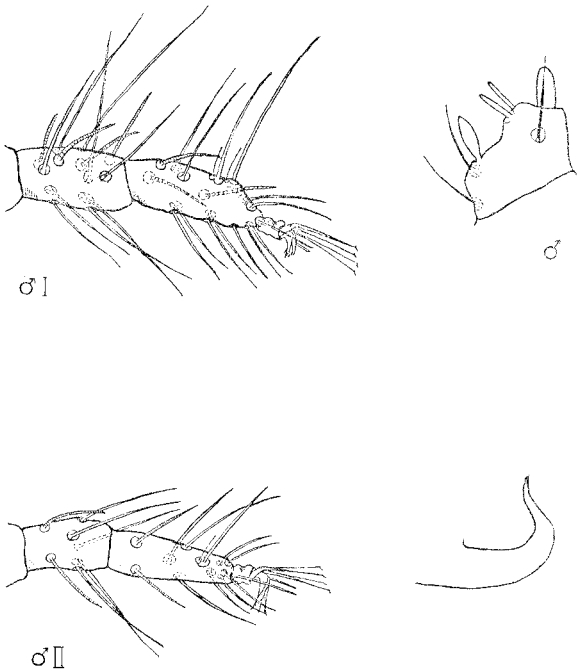

FIG. 16.—*Eotetranychus hudsoni* sp. n. Tibia and Tarsus I and II, palp and aedeagus—male.

Female. Colour in life yellow with dark marks along sides of body. Palpus with terminal sensillum stout, twice as long as broad. Peritreme straight distally terminating in a simple bulb. Tarsus I with thirteen tactile and one sensory setae in addition to the two pairs of adjacent duplex setae. Tibia I with nine tactile and one sensory setae. Tarsus II with ten tactile and one sensory setae in addition to a pair of duplex setae. Tibia II with six tactile setae. Tarsus III with eight tactile and one sensory setae. Tibia III with four tactile setae. Tarsus IV with eight tactile and one sensory setae. Tibia IV with six tactile setae. Dorsal body setae long and tapering. Dorsocentral hysterosomal setae about twice as long as the longitudinal distance between them. Dorsal striae transverse between third pair of dorsocentral hysterosomals. Striae on and anterior to genital flap transverse. Length of body 360μ; greatest width 270μ.

Male. Palpus with terminal sensillum stout approximately twice as long as broad. Peritreme straight distally terminating in a simple bulb. Tarsus I with thirteen tactile and three sensory setae in addition to the two pairs of adjacent duplex setae. Tibia I with nine tactile and four sensory setae. Empodium I bifid, each side being tridigitate with the ventral member much larger than the other two. Tarsus II with ten tactile and two sensory setae in addition to the single pair of duplex setae. Tibia II with five tactile and two sensory setae. Empodium II with three pairs of hairs of which the ventral are strongest. Tarsus III with eight tactile and one sensory setae. Tibia III with five tactile and one sensory setae. Tarsus IV with eight tactile and one sensory setae. Tibia

IV with six tactile and one sensory setae. Aedeagus as figured, slender, tapering, bent abruptly dorsad with tip curved slightly posteriorly. Length of body 261μ, greatest width 167μ.

Holotype. Male, on *Xerotes longifolia* R. Br., Lindisfarne, Tasmania, 2.v.63, in the Australian National Insect Collection, Canberra, A.C.T.

Paratypes. Six males, fourteen females, on *Xerotes longifolia* R. Br., Lindisfarne, Tasmania, 29.iv.63, and 2.v.63, in the Australian National Insect Collection, Canberra, A.C.T., South Australian Museum, Adelaide, S.A., and Department of Agriculture, Hobart, Tasmania.

Genus: **OLIGONYCHUS** Berlese, 1886

Oligonychus Berlese, 1886, Acari. Dann. Piante. Coltiv. p. 24.

The genus *Oligonychus* may be recognized by the well developed clawlike empodium bearing proximoventral hairs and the absence of the caudal pair of para-anal setae.

A single species of the genus occurs commonly on oaks, *Quercus* sp., in Tasmania.

The specific identity of this species is in doubt. The aedeagus and palpus of the male, and the palpus of the female are similar to those figured by Hirst (1920) for a mite which he identified as *Oligonychus quercinus* (Berlese) from oaks in England. This similarity is further borne out by a comparison I have made of females of the mite from Tasmania with these forming part of the original collection made by Hirst from oaks at Wimbledon, England.

Pritchard and Baker (1955) however considered that *quercinus* Berlese was a synonym of *Eotetranychus aurantii* (Targioni Tozzetti), and that Hirst's *quercinus* was a misidentification of *O. brevipodus* (Targioni Tozzeti). They also expressed the opinion that the specific status of *O. brevipodus* must be based on topotype material.

Wainstein (1960) recorded and figured *O. brevipodus* from Kazakhstan and listed *O. quercinus* (Berlese) sensa Hirst, as a synonym. The mite he figured is quite unlike Hirst's material which I have examined. Thus if Wainstein is correct in his diagnosis of *brevipodus* the mite identified as *quercinus* by Hirst is a different species.

Since the species on oaks in Tasmania is most probably introduced, its specific identity must remain in doubt until the problem of the species of this genus on oaks in England and Europe is resolved. Meanwhile the species in Tasmania has been provisionally identified as *Oligonychus brevipodus?* (Targioni Tozzetti). The description is as follows: —

1. *Oligonychus brevipodus?* (Targioni Tozzetti)

(Figs. 17 and 18)

Heteronychus? brevipodus Targioni Tozzetti, 1878, Ann. Agric. 1: 255.

Female. Colour in life yellow with black markings. Palpus with terminal sensillum stout, one and one half times as long as broad, dorsal sensillum short and slender. Peritreme straight distally ending in a bulb. Tarsus I with three tactile and one sensory setae distinctly proximad of proximal pair of duplex setae. Tibia I with seven tactile and one sensory setae. Empodium I with a strong curved claw and four (sometimes apparently three) pairs of proximoventral hairs. Tarsus II with two tactile and one sensory setae distinctly proximad of the duplex setae, and two tactile setae more or less in line with the duplex setae. Tibia II with five tactile setae. Stylophore slightly emarginate anteromedially. Dorsal integument of hysterosoma with striae lobed and transverse except for longitudinal striae between third pair of dorsocentrals. Dorsal setae of idiosoma long, slender, tapering, and serrate. Dorsocentral hysterosomal setae more than twice as long as the longitudinal distance between their bases. Para-anal setae longer than clunals. Length of body 261μ; greatest width 189μ

Male. Similar to female. Palpus with terminal sensillum rudimentary. Tarsus I with three tactile and two sensory setae distinctly proximad of proximal pair of duplex setae, and one sensory seta approximately in line with that pair of duplex setae. Tibia I with seven tactile and two sensory setae. Tarsus II with three tactile and one

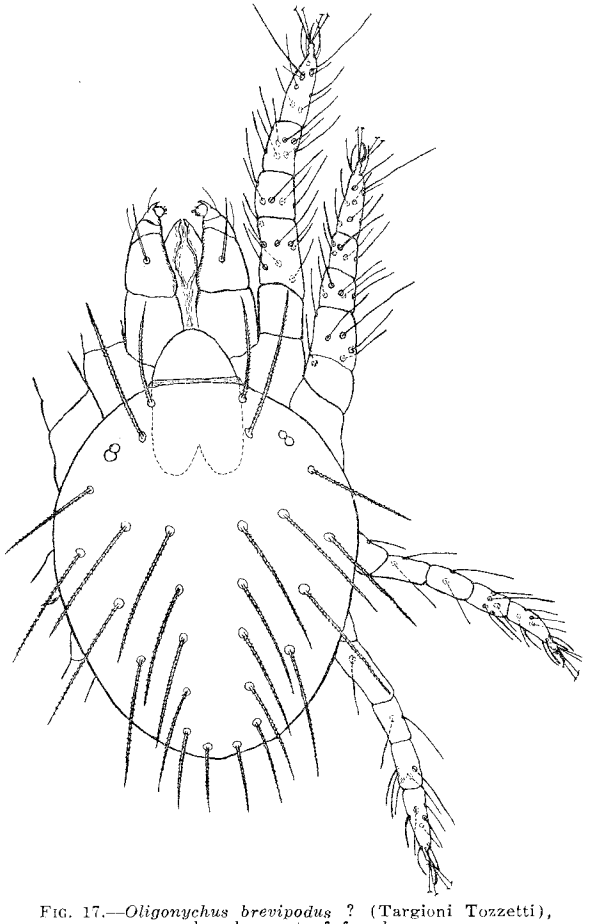

FIG. 17.—*Oligonychus brevipodus* ? (Targioni Tozzetti), dorsal aspect of female.

sensory setae proximad of duplex setae and two tactile setae approximately in line with duplex setae. Tibia II with five tactile setae. Dorsal integument of hysterosoma with transverse striae. Aedeagus as figured, bent gradually ventrad, distal end narrow. Length of body 243μ; greatest width 149μ.

Collection examined—

On Oak, *Quercus* sp., Kingston, 5.xi.57; Cradoc, 11.xi.57; New Norfolk, 25.i.63, and 8.ii.63.

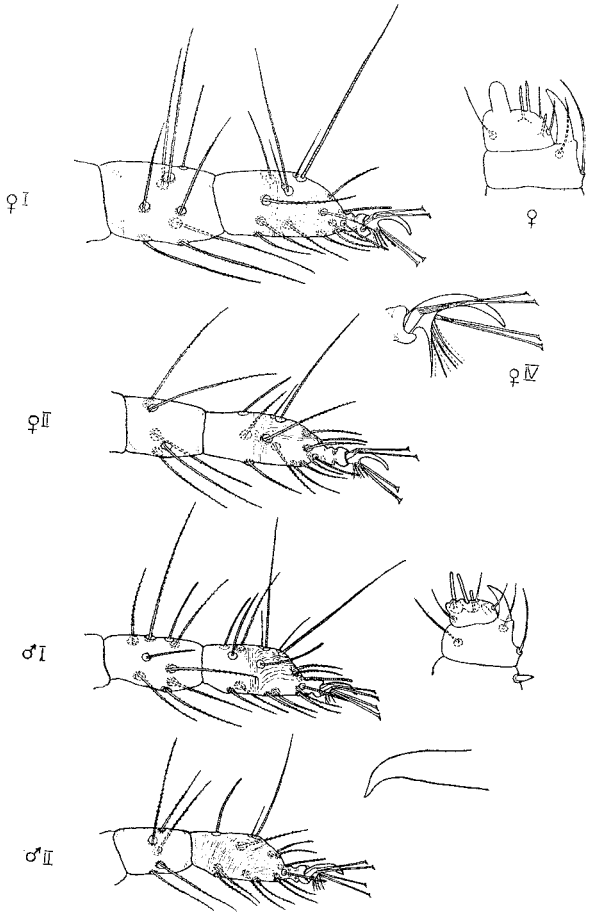

FIG. 18.—*Oligonychus brevipodus* ? (Targioni Tozzetti), Tibia and Tarsus I and II: palps—male and female; empodium IV, female; and aedeagus.

Genus: **TETRANYCHUS** Dufour, 1832

Tetranychus Dufour, 1832, An. Sci. Natl. Paris 25: 276.

Mites of the genus *Tetranychus* have only one pair of para-anal setae and the empodium of the female consists of three pairs of proximoventral hairs above which there is a small or rudimentary spur. The duplex setae on tarsus I are widely separated. Empodium I of the male usually consists of a pair of tridigitate appendages with or without a mediodorsal spur.

The taxonomy of this genus has been very confused owing to the large number of closely related species. In addition there have been long existing nomenclatural problems particularly within what has been known as the "*telarius* complex".

Boudreaux (1956) and Boudreaux and Dosse (1963a) have shown the value of the cuticular lobes of summer females in aiding species separation particularly within the "*telarius* complex". More recently (1963b) they have attempted to clarify and stabilize the names of species within the complex.

1. *Tetranychus lambi* Pritchard and Baker

Tetranychus lambi Pritchard and Baker, 1955, Pac. Coast Ent. Soc. Mem. Ser. 2: 399.

The females of *T. lambi* have transverse striae between the third pair of dorsocentral hysterosomals and longitudinal striae between the inner sacral setae. The empodia of both males and females lack mediodorsal spurs. The aedeagus has the axis of the knob parallel to the axis of the shaft, slender, the anterior angulation acute and pronounced, the caudal angulation very slender and acute.

This species was described from New Zealand on apple and strawberry, but, to date, it has been collected only from two species of native plants in Tasmania.

Collections examined—

On *Amperea spartioides* Bron., Lindisfarne, 22.vii.63.

On *Goodenia ovata* Sm., Nubeena, 7.iii.63.

2. *Tetranychus ludeni* Zacher

Tetranychus ludeni Zacher, 1913, Mitt. kais. biol. Anst. Lan.-Forstw. 14: 40.

Summer females of *T. ludeni* are carmine red in colour. In females of this species the proximal pair of duplex setae on tarsus I are in line with most other proximal setae. The dorsal cuticular lobes are small, narrow and pointed at the tip, separated by spaces at the bases. Ventral lobes are broad and low and extend anteriorly to the region of the ventral propodosomal setae. The aedeagus of the male has a gradual dorsal curve, the distal knob is small with an acute anterior angulation but with virtually no posterior angulation.

In Tasmania this species has been encountered both out of doors and in greenhouses.

Collection examined—

On French beans, Lutana, 29.iii.56, and 22.vi.56. In greenhouse, New Town, 13.xi.56, and 26.ix.57.

3. *Tetranychus urticae* Koch

Tetranychus urticae Koch, 1836, D. Crust. Myr. Arach. Fasc. 1: 10.

Tetranychus urticae is the currently accepted name of the common red spider or two spotted mite. The summer females are yellowish to green in colour with a prominent pair of dark food spots and the hibernating females are orange.

The separation of this species from others in the complex is not easy and is based largely on the shape of the male aedeagus and the cuticular lobes of summer females. The aedeagus has a dorsally

directed bend of almost 90°, the knob is small, with small rather acute anterior and posterior projections, and the surface of the knob is broadly rounded or obtusely angulate. The axis of the knob is approximately parallel with the axis of the shaft.

As described by Boudreaux and Dosse (1963) the dorsal cuticular lobes of the female are mostly large, rounded, with some rather oblong and others narrower with an occasional pointed lobe. Ventrally lobes generally are lacking but there are small lobes between hysterosomal setae I and II.

T. urticae is practically cosmopolitan and has an extremely wide host range. In Tasmania it is an important economic pest on many cultivated plants. Specimens have been examined from the following hosts:—apple, beans, blackcurrant, cucumber, elderberry, hollyhock, hops, maize, passion fruit, pea, pear, strawberry, sweet pea, violet.

4. *Tetranychus rhagodiae* sp. n.

(Figs. 19 and 20)

The aedeagus of the male of *Tetranychus rhagodiae* is somewhat similar in shape to that found in *T. hydrangeae* Pritchard and Baker, *T. merganser* Boudreaux, and *T. kanzawai* Kishida. It differs, however in the angulation of the axis of the knob to the axis of the shaft. The shape of the terminal sensillum of the male palpus of *T. rhagodiae* also differs from that found in the above three species. Females of *T. rhagodiae* are carmine—like those of both *menganser* and *kanzawai*, but differ from either of these species in many other respects.

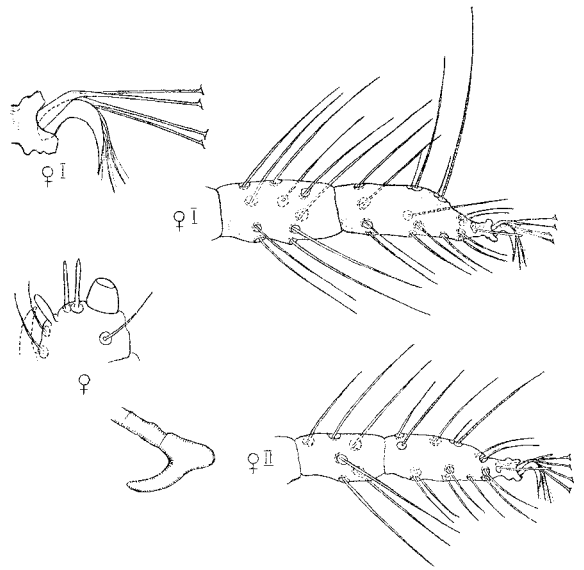

FIG. 19.—*Tetranychus rhagodiae* sp. n. Tibia and Tarsus I and II, empodium I, palp and peritreme—female.

Female. Colour in life deep carmine with dark food spots. Palpus with terminal sensillum stout almost as broad at base as long. Peritreme hooked distally. Tarsus I with four tactile setae distinctly proximad of proximal pair of duplex setae and two tactile and one sensory setae approximately in line

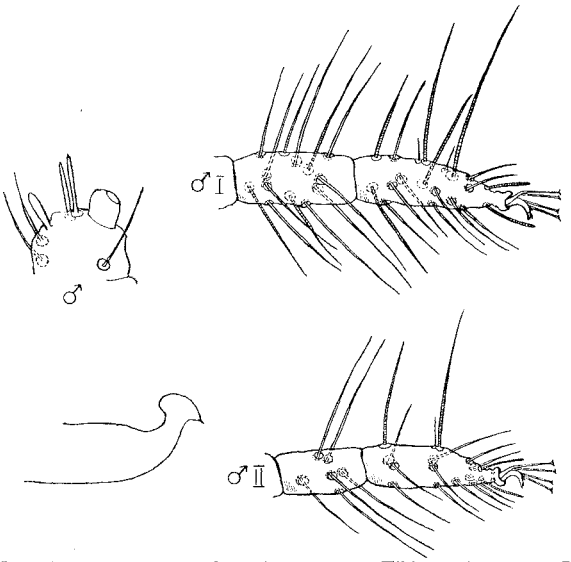

FIG. 20.—*Tetranychus rhagodiae* sp. n. Tibia and Tarsus I and II, palp and aedeagus—male.

with that pair of duplex setae. Tibia I with nine tactile and one sensory setae. Tarsus II with four tactile and one sensory setae proximal to the duplex setae and two tactile setae in line with the duplex setae. Tibia II with six tactile setae. Empodium lacking mediodorsal claw. Transverse striae between third pair of dorsocentral hysterosomal setae and between inner sacral setae. Cuticular lobes on dorsal striae of feeding females generally pointed with fairly wide space between their bases, but becoming more rounded anteriorly. No lobes on medioventral striae but some obscure lobes laterad of second pair of ventral hysterosomal setae. Length of body 378μ greatest width 293μ.

Male. Palpus with terminal sensillum stout almost as broad as long. Tarsus I with four tactile and two sensory setae proximad of proximal pair of duplex setae and one sensory seta in line with that pair of duplex setae. Tibia I with nine tactile and four sensory setae. Empodium I with proximoventral spurs tridigitate, mediodorsal claw very tiny. Tarsus II with three tactile and one sensory setae distinctly proximal to duplex setae and three tactile setae in line with duplex setae. Tibia II with six tactile setae. Empodium II similar to empodium I. Empodium III and IV with proximoventral hairs. Idiosoma with dorsal setae long slender and pubescent. Aedeagus with distal knob moderately large and with dorsal margin of the knob rounded. Axis of knob forming an angle with axis of shaft, knob with rounded anterior projection and acute posterior projection. Length of body 315μ, greatest width 198μ.

Holotype. Male, on *Rhagodia billardieri* R. Br., Cremorne, 10.vi.63, in Australian National Insect Collection, Canberra, A.C.T.

Paratypes. Eighteen males, twenty-six females, same data as holotype, in Australian National Insect Collection, Canberra, A.C.T., South Australian Museum, Adelaide, S.A., and Department of Agriculture, Hobart, Tasmania.

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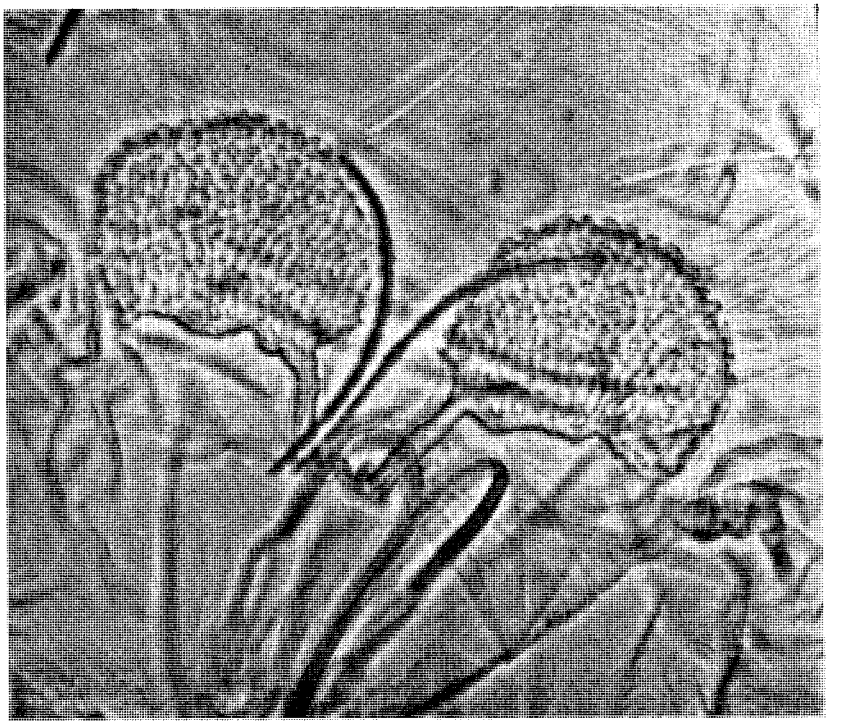

Plate 1.—*Schizonobia sycophanta* Wom. Peritreme, female.