

STUDIES OF QUEENSLAND TETRANYCHIDAE (ACARINA:  
PROSTIGMATA)

6. A NEW GENUS AND FIVE NEW SPECIES OF SPIDER MITES FROM  
NATIVE PLANTS

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ABSTRACT

*Drepanonychus hapsis* gen. nov., sp. nov., *Eotetranychus pronus* sp. nov., *E. pseudomori* sp. nov., *Schizotetranychus russeus* sp. nov., and *S. sagatus* sp. nov., are described. All five mites feed on Queensland native plants.

The tribal placement of the new genus *Drepanonychus* is discussed and a key given to genera of the tribe Eurytetranychini, family Tetranychidae.

The two species of *Schizotetranychus* are the first in this genus to be recorded from Australia.

This paper is one of a series describing the spider mites (Tetranychidae) of Queensland, Australia. The first five parts were published in the Queensland Journal of Agricultural and Animal Sciences **23**: 569–72 (1966), **24**: 201–5 (1967), and **25**: 57–67, 69–72, 73–5 (1968).

Genus ***Drepanonychus*** nov.

DEFINITION

Empodium on each leg of males and females consisting only of a long slender curved claw more than half as long as the tenaculate hairs of the padlike true claws; tarsus I of both males and females with two pairs of “ associated ” setae distally, one pair dorsal, one pair ventro-lateral, but unlike typical duplex setae in that the distal sensory member is short and curved and only slightly longer than the proximal tactile member; tarsus II without paired setae of this kind; legs long and slender, the foreleg of the male nearly twice as long as the body not including the palpi; three pairs of dorsal propodosomal setae, ten pairs of hysterosomal setae, and two pairs of para-anal setae present.

The generic type species is designated as *Drepanonychus hapsis* sp. nov. The generic name is derived from the Greek *drepane*, *drepan—onyx*, *onych—*, referring to the shape of the empodial claw, and is of masculine gender.

**Drepanonychus hapsis** sp. nov.

## MATERIAL EXAMINED

HOLOTYPE: Female, (525  $\mu$  long to tip of palpi, 330  $\mu$  wide), Kilkivan (5.4 miles west of Kilkivan township by the road to Tansey), on *Eucalyptus melanophloia* F. Muell. (silver-leaf ironbark), J. J. Davis, 29.ix.65, in Hoyer's medium, Qd Mus. W2794.

ALLOTYPE: Male (465  $\mu$  long to tip of palpi, 270  $\mu$  wide), same data as holotype, in Hoyer's medium, Qd Mus. W2795.

PARATYPES: Male mounted laterally in Hoyer's medium Qd Mus. W2796, same data as holotype except collected 17.ii.66. Six females three males collected 11.xii.64; one female two males, collected 29.ix.65; three females two males collected 17.ii.66; otherwise same data as holotype, in Hoyer's and Heinze P.V.A. media, in collection of Queensland Department of Primary Industries. Mounted paratype females range from 450  $\mu$  to 540  $\mu$  long to tip of palpi and from 300  $\mu$  to 375  $\mu$  wide, males 405  $\mu$  to 480  $\mu$  and 240  $\mu$  to 300  $\mu$ .

## DESCRIPTION

FEMALE: (Fig. 1A). Body broadly oval, slightly wider in front, somewhat flattened, reddish-brown in life, the hysterosoma filled with brown oval granules evident in mounted specimens; stylophore evenly rounded in front; dorsal striae dotted, mostly transverse, but irregularly anastomosing in the median propodosomal region (fig. 2A); dorsal setae moderately stout, evenly tapering, pointed, and conspicuously pubescent; dorso-central hysterosomal setae and inner sacral setae much shorter than the other dorsal setae, the dorso-centrals being only about one-third as long as the dorso-lateral hysterosomal setae, and very much shorter than the intervals between successive setae; the longitudinal interval between dorso-central setae II and III longer than the intervals between dorso-central setae I and II and between dorso-central III and the inner sacral setae; posterior para-anal (post-anal) setae present, short and slender; peritreme variable, but with a slightly expanded chamber at the tip, bent or weakly hooked (fig. 2B); palpus with terminal sensillum nearly five times as long as wide, thin walled and tapering, and slightly proximal to this are two slightly shorter, slender, stiff, rod-like sensilla and a spindle-shaped sensillum with cross-striated walls (fig. 2C); legs long and slender, only slightly shorter than the body not including the palpi; tarsus I with a pair of setae dorsally and well towards the distal end of the segment, perhaps comparable with duplex setae but differing in that the distal sensory component is short and curved, the proximal tactile member almost as long; latero-ventrally and distally on tarsus I is a second similar pair of setae; proximal to these two pairs of "associated" setae are six tactile setae and a sensory seta; tarsus II without anything resembling duplex setae, but distally on the dorsal side of this segment is a stout spindle-shaped and curved seta with thin cross-striated walls; tarsi II, III and IV each with a single curved sensory seta proximally and dorsally; tibia I with nine tactile setae and distally a curved sensory seta; tibiae II, III, and IV with nine, eight, and nine tactile setae respectively; tactile setae on all legs are short, stout, and pointed, while the sensory setae are short and curved; on each leg the empodium consists only of a simple claw, rather sharply curved and sickle shaped,

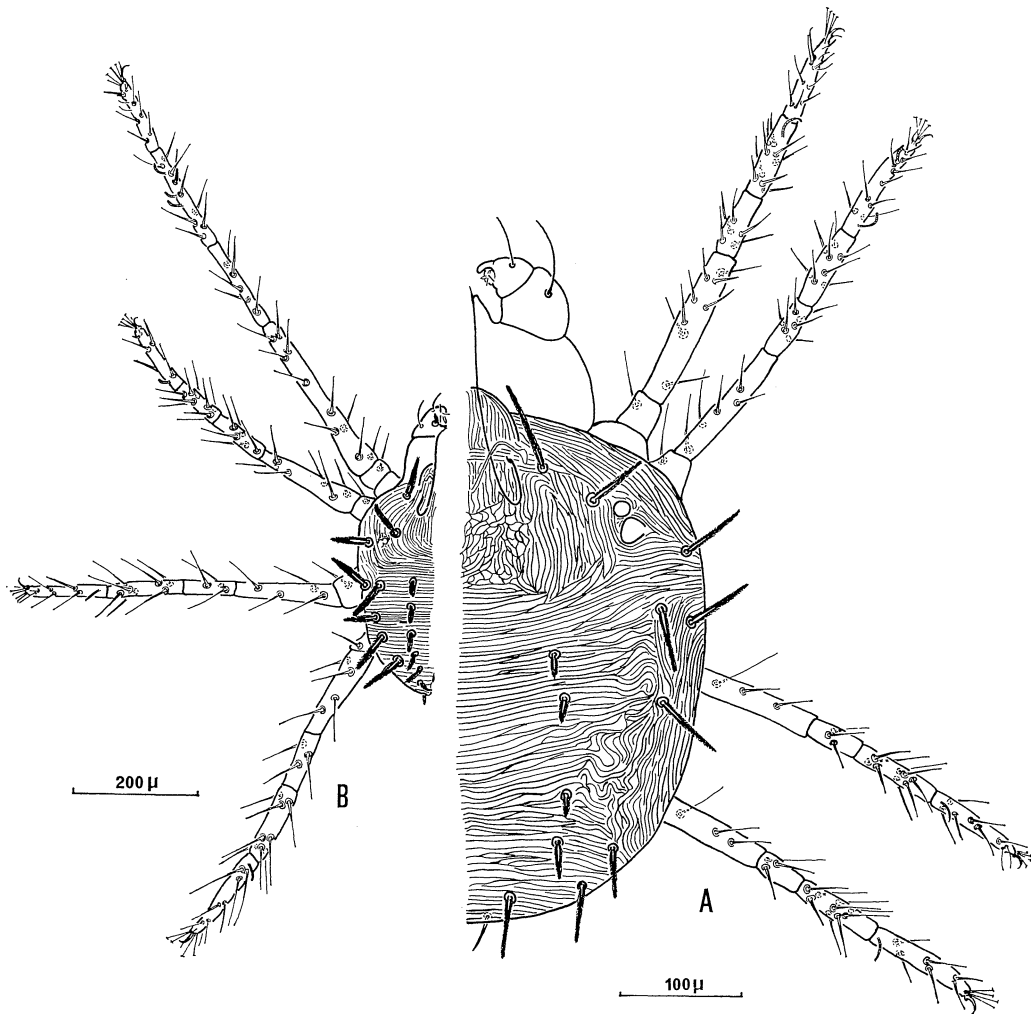


FIG. 1: *Drepanonychus hapsis*. A, female; B, male.

long and slender—more than half as long as the tenant hairs arising from the pad-like true claws. Eggs are round, yellow-green to amber, flattened above, radially striated and about  $150\ \mu$  in diameter.

MALE: (Fig. 1B). Body elongate oval, slightly pointed caudad; peritreme variable, bent at tip (figs. 2D, E); palpus with terminal sensillum about three times as long as wide and apparently bifid at the tip, and slightly proximal to this are two long slender rods—much longer than the terminal sensillum—and a spindle-shaped cross-striated sensillum (fig. 2F); legs all longer than the body, leg I being nearly twice as long as the body not including the palpi; tarsi I and II (figs. 2G, H) with arrangement of distal setae similar to that previously described for the female, tarsus I with six or seven tactile setae and two short curved sensory setae proximal to the two pairs of “associated” setae; tibia I with nine tactile and three short curved sensory setae; tarsi II, III and IV each with a short curved sensory seta proximally; tibiae II, III and IV each with eight tactile setae; empodia on all legs similar to those of the female; aedeagus stout, in sheath, bent upwards then back in a gentle sigmoid curve, bluntly pointed at the tip (fig. 2I).

#### HABITAT

This species occurs on the (morphologically) upper surface of the leaves of the host plant and at the type locality is fairly common but not abundant, on trees covered in dust by the roadside. Webbing is practically absent and the small colonies of mites so far observed have caused no significant damage to the host plant.

#### COMMENTS

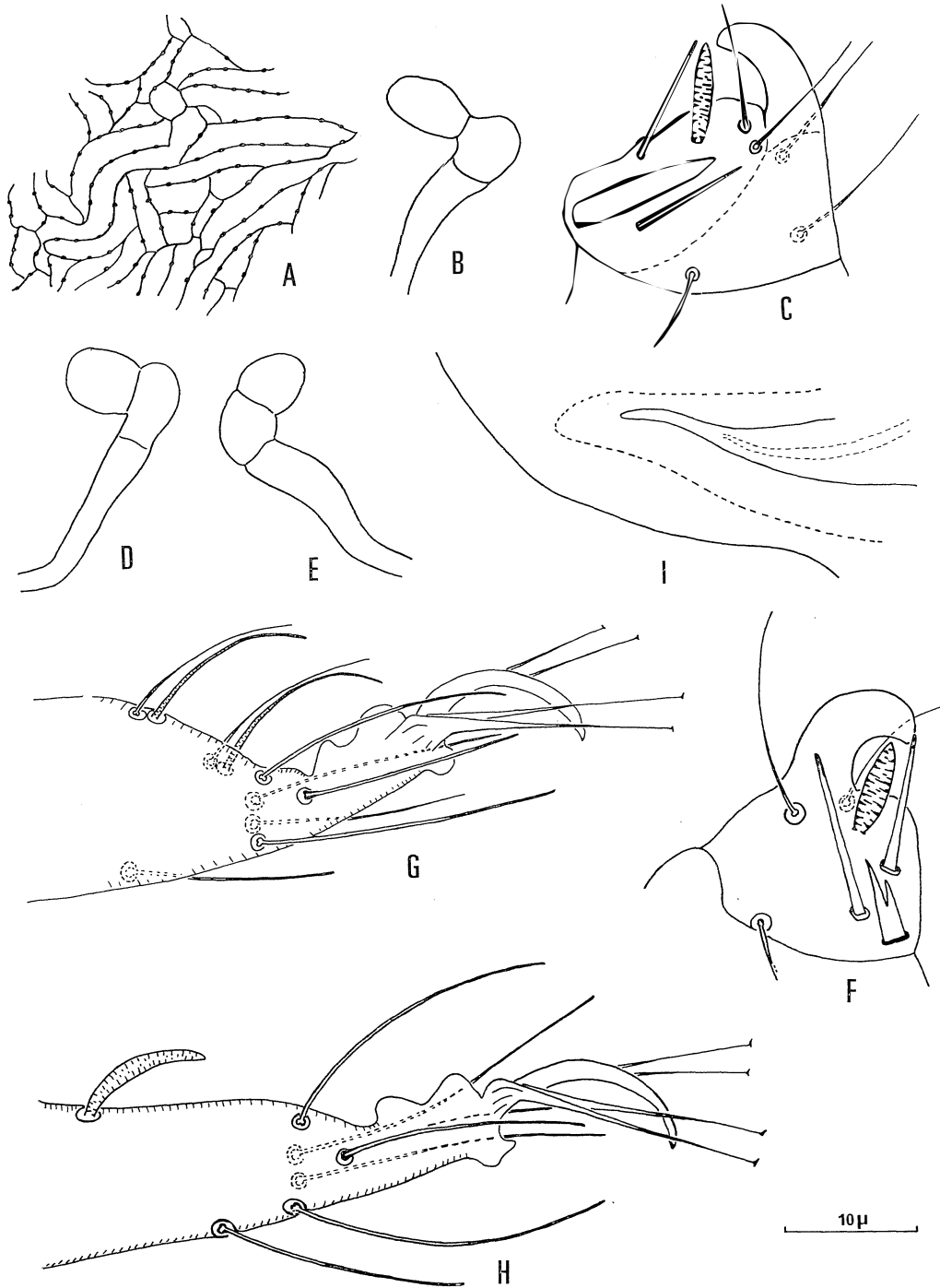
The specific name of the generic type refers to the form of the dorsal propodosomal striae.

The genus *Drepanonychus* is proposed for this single species which is apparently related to mites of the tribe Eurytetranychini because, in common with these, it lacks the typical “duplex” setae characteristic of all other tribes of the family Tetranychidae (Pritchard and Baker, 1955).

Eurytetranychine species are either entirely without anything resembling duplex setae, or they may have on tarsi I and II pairs of setae which seem to be comparable to duplex setae but differ in being rather less closely associated and especially in having the distal sensory seta of the pair scarcely longer than the proximal tactile seta. Two pairs of setae of this kind are found on tarsus I of *Drepanonychus hapsis* and none on tarsus II. For this reason *Drepanonychus* is placed in the tribe Eurytetranychini.

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FIG. 2: *Drepanonychus hapsis*. A, female, propodosomal striae; B, female, distal end of peritreme; C, female, palpus, terminal segment; D, E, male, distal end of peritreme; F, male, palpus, terminal segment; G, male, distal end tarsus I; H, male, distal end tarsus II; I, male, aedeagus.



*Drepanonychus* is readily distinguished from *Eurytetranychus* Oudemans, 1931 and *Eutetranychus* Banks, 1917 by the long empodial claw, the empodium being only a tiny uncinuate projection in *Eurytetranychus* and to all appearances absent in *Eutetranychus*.

*Drepanonychus* resembles the monotypic genus *Synonychus* Miller, 1966. *D. hapsis* differs from *S. eucalypti* in having much longer and differently proportioned legs, a relatively longer and more slender empodial claw, and in having two pairs of "associated" setae on tarsus I. *D. hapsis*, moreover, has peculiarly anastomosing dorsal striae on the propodosoma, while lacking, caudo-laterad of the first dorso-lateral hysterosomal seta, the "pore" common to *S. eucalypti* and species of *Eutetranychus*.

*Drepanonychus* also resembles the monotypic genus *Anatetranychus* established by Womersley (1940) for *Anatetranychus hakea* described from females only, on *Hakea* sp. Claremont, Western Australia. *D. hapsis* is similar to *A. hakea* in the proportions of the palpi and legs and particularly in the shape of the empodium. Womersley's description is deficient, however, in a number of important particulars—for example it is not clear whether or not *A. hakea* has duplex setae on tarsi I and II. The only material available is a type slide in the South Australian Museum, but the specimen is too fragmentary to be of any use. Attempts to obtain topotype material have been unsuccessful. The determination of the relationship between *Drepanonychus* and *Anatetranychus* must await discovery of topotype material of *A. hakea*.

*Anatetranychus hakea* was placed by Pritchard and Baker (1955) in *Neotetranychus* Trägårdh, 1915. Wainstein (1960) considered that *Anatetranychus* is a valid genus—a view which is shared by the present author—but its relationships must remain uncertain until topotype material is established. Miller (1966) also was of this opinion when establishing the genus *Synonychus*. It might eventually be found that either *Synonychus* or *Drepanonychus* is synonymous with *Anatetranychus*.

Tuttle and Baker (1968) placed *Anatetranychus* in the tribe Tetranychini and included in this genus two Arizona species with "normal" duplex setae, apparently because these species resemble *A. hakea* in the form of the empodium. This is in some agreement with the action of Pritchard and Baker (1955) in placing *A. hakea* in *Neotetranychus*. Relationships with *Synonychus* and *Drepanonychus*, however, have now been indicated and it is just as possible that a more suitable position for *Anatetranychus* is in the Eurytetranychini. It is also possible that as more Tetranychid mites are described, the tribal grouping will be replaced by a more natural classification.

#### KEY TO GENERA OF TRIBE EURYTETRANYCHINI RECK

Tetranychid mites lacking the duplex setae of tarsi I and II characteristic of other tribes of the family; empodium either apparently absent or simply claw-like.

This key does not include *Aponychus* Rimando, 1966. This genus, erected for two species from the Philippine Islands, was placed in Eurytetranychini by Tuttle and Baker

(1968) but its true affinities are uncertain and it was placed in a new sub-family by Rimando. Species of *Aponychus* resemble those of *Eutetranychus* by having the empodium reduced to a rudimentary knob.

1. Empodium rudimentary, rounded, and to all appearances absent. . . . .  
     . . . . . *Eutetranychus* Banks  
     Empodial claw present. . . . . 2
- 2 (1). Empodial claw small—a minute uncinatè projection. . . . .  
     . . . . . *Eurytetranychus* Oudemans  
     Empodial claw well developed, at least about half as long as the tenant  
     hairs of the true claws. . . . . 3
- 3 (2). Tarsus I without pairs of “associated” setae; legs short, about half as  
     long as the body not including the palpi; empodial claw stout, about  
     half as long as the tenant hairs of the true claw. . . . . *Synonychus* Miller  
     Tarsus I with two pairs of “associated” setae with some resemblance to  
     true duplex setae, but with the proximal tactile member of the pair as  
     strongly developed as distal sensory member; legs long, nearly as long  
     as the body not including the palpi, with the forelegs of the male nearly  
     twice as long; empodial claw long and slender, more than half as long  
     as the tenant hairs of the true claw. . . . . *Drepanonychus* gen. nov.

Tribe TETRANYCHINI Reck

Genus *Eotetranychus* Oudemans

*Eotetranychus pronus* sp. nov.

MATERIAL EXAMINED

HOLOTYPE: Male (300  $\mu$  long to tip of palpi, 135  $\mu$  wide), Skyring Ck near Pomona, on *Ficus coronata* Spin. (a sandpaper-fig), J. J. Davis, 7.ii.66, in Hoyer's medium, Qd Mus. W2828.

ALLOTYPE: Female (375  $\mu$  long to tip of palpi, 195  $\mu$  wide), same data as holotype, in Hoyer's medium, Qd Mus. W2829.

PARATYPES: Four males, three females, same data as holotype. Three males, six females, Black-fellow Ck near Ridgewood on *Ficus* sp., J. J. Davis, 10.iii.65. Male, Kondallila National Park near Montville on *Ficus* sp., J. J. Davis, 15.i.66. All paratypes in Hoyer's and Heinze P.V.A. media in collection of Queensland Department of Primary Industries. Mounted paratype females range from 360  $\mu$  to 375  $\mu$  long to tip of palpi and 165  $\mu$  to 195  $\mu$  wide, males from 300  $\mu$  to 330  $\mu$  and 135  $\mu$  to 165  $\mu$ .

DESCRIPTION

FEMALE: Body in life yellow-green, with dark spots laterally including a prominent dark spot towards the caudal end on each side. Dorsal setae moderately slender, conspicuously pubescent, evenly tapering; dorso-central setae each about twice as long as the interval to the base of the seta next behind; stylophore evenly rounded in front, about one and one half times as long as wide; peritreme distally, a slightly expanded

*E. pronus* and *E. cernuus* indeed seem to be very closely related, but on the basis of the material presently available they can be distinguished morphologically as males or females. A tabular comparison between the two follows:

	<i>E. cernuus</i>	<i>E. pronus</i>
Male: tactile setae tibia II .. .. .	seven	eight
Female: tactile setae proximal to duplex setae, tarsus I	four	five
Female: ratio length/breadth terminal sensillum of palpus .. .. .	2 : 1	3 : 1
Host plant .. .. .	<i>Anona chrysophylla</i>	<i>Ficus coronata</i> , <i>Ficus</i> sp.
Distribution .. .. .	Congo	S. Qld.

Baker and Pritchard (1960, p. 473) in the key to species stated that there were eight tactile setae on tibia II of male *E. cernuus*, but the description (p. 478) and the relevant figure both indicate seven tactile setae so placed and there is no mention of any variability.

*E. friedmanni* described recently from Madagascar on several species of host plants (Gutierrez, 1968) resembles *E. pronus* and differs from *E. cernuus* in having eight tactile setae on tibia II of males. This species differs from *E. pronus* however in having four tactile setae and two sensory setae—rather than five tactile and one sensory—proximal to the duplex setae on tarsus I of females, and in the proportionately stouter terminal sensillum of the female palpus.

#### *Eotetranychus pseudomori* sp. nov.

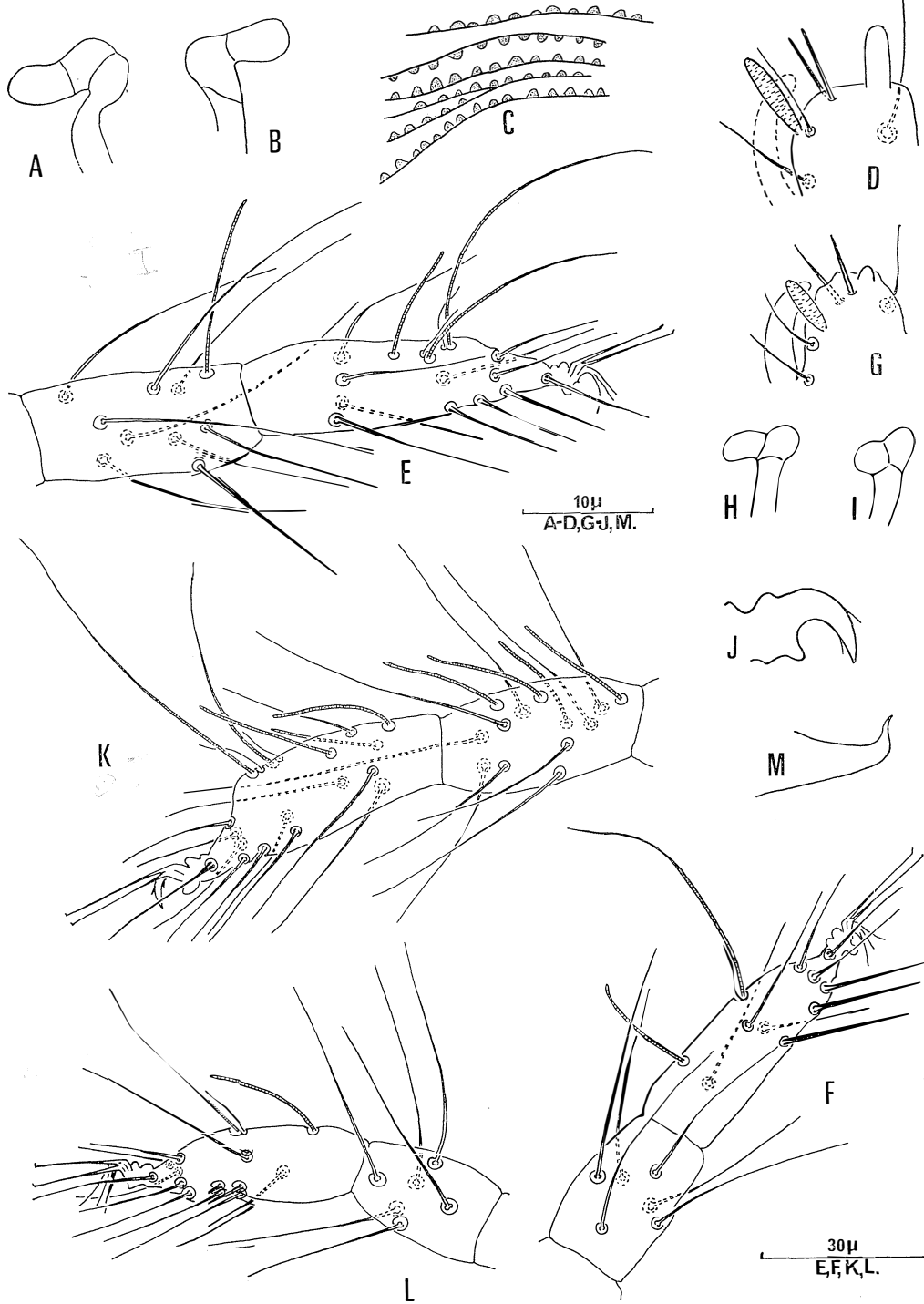
##### MATERIAL EXAMINED

HOLOTYPE: Male (275  $\mu$  long to tip of palpi, 135  $\mu$  wide), Lower Wonga, at junction of Woonga Ck and Widgee Ck, about twelve miles north-west of Gympie, on *Pseudomorus brunoniana* (Endl.) F. Muell. (a whalebone tree), J. J. Davis, 10.iii.67, in Hoyer's medium, Qd Mus. W2792.

ALLOTYPE: Female (435  $\mu$  long to tip of palpi, 270  $\mu$  wide), same data as holotype but collected 10.iii.65, in Hoyer's medium, Qd Mus. W2793.

PARATYPES: Two males, five females, same data as holotype. Five males, six females same data as allotype. All paratypes in Hoyer's and Heinze P.V.A. media, in collection of Queensland Department of Primary Industries. Mounted paratype females range from 390  $\mu$  to 435  $\mu$  long and 240  $\mu$  to 255  $\mu$  wide, males from 285  $\mu$  to 325  $\mu$  and 125  $\mu$  to 160  $\mu$ .

FIG. 4: *Eotetranychus pseudomori*. A, B, female, distal end of peritremes; C, female, dorsal integumentary lobes; D, female, palpus, terminal segment; E, female, tibia and tarsus I; F, female, tibia and tarsus II; G, male, palpus, terminal segment; H, I, male distal end of peritremes; J, male, empodium I; K, male, tibia and tarsus I; L, male, tibia and tarsus II; M, male, aedeagus.



## DESCRIPTION

FEMALE: Body in life yellow-green with dark lateral spots. Dorsal setae stout, evenly tapering, conspicuously pubescent, and relatively short, the dorso-centrals being only about one-fifth to one-quarter as long again as the longitudinal intervals between setae; dorsal hysterosomal setae inserted on low but distinct tubercles; stylophore evenly rounded in front or very slightly emarginate, 1.5 times as long as wide; peritreme variable distally, usually not identical even on both sides of the same specimen, but never a simple straight bulb, the distal chamber forming a bend or slight hook (fig. 4A, B); dorsal striae mostly transverse, sometimes slightly irregularly so between the third dorso-central setae and between the inner sacral setae; dorsal integumentary lobes small, separated, sub-triangular or almost semi-circular, uniformly dense without obviously thickened tip or basal spot (fig. 4C); a few obscure lobes ventrally between the third pair of ventral hysterosomal setae, but ventral striae mostly without lobes; striae transverse on the genital flap but longitudinal in region immediately forward of the genital flap; terminal sensillum of palpus stout, a little more than twice as long as wide (fig. 4D); forelegs about half as long and other legs about one third as long as the body (to tip of palpi); empodia with three pairs of proximoventral hairs, the proximal pair the strongest; tarsus I with the two pairs of duplex setae closely approximated, and with one sensory seta and three or four tactile setae proximal to the duplex setae; nine tactile setae and one sensory seta on tibia I (fig. 4E); tibia II with six or seven tactile setae (fig. 4F); tibiae III and IV with six and five tactile setae respectively.

The eggs, which are fixed singly to the leaf surface, are globular, slightly flattened, radially striated, and with a short dorsal stipe.

MALE: Terminal sensillum of palpus reduced, variable in appearance, visible as a small bluntly conical structure (fig. 4G) or sometimes apparently absent; peritreme variable distally, but with a distinct bend or weak hook (figs. 4H, I); empodium I a pair of claws, the dorsal and ventral pairs of hairs much reduced (fig. 4J); tarsus I with two pairs of duplex setae closely approximated, and with four tactile and three sensory setae proximal to the duplex setae, tibia I with nine tactile and three or four sensory setae (fig. 4K); tibia II with six or seven tactile setae (fig. 4L); empodia II-IV each with three pairs of proximoventral hairs; tibiae III and IV with six and five tactile setae respectively; aedeagus bent dorsad, then back in a very slight sigmoid curve, tapering evenly to a point, the dorsally directed part only about half as long as the dorsal margin of the main shaft (fig. 4M).

## HABITAT

Colonies of *E. pseudomori* occur on the undersides of the leaves, especially beside the main veins. On the two occasions when collections were made, mite populations were low, but they can evidently reach sufficient numbers at times to cause cupping and distortion of leaves. The mite colonies produce very little webbing.

## COMMENTS

The specific name is derived from the generic name of the only known host plant.

*E. pseudomori* resembles *E. cendanai* Rimando, 1962, and *E. mandensis* Manson, 1963—both species from citrus in Philippines and India respectively—in having the aedeagus bent dorsad, slender and slightly sigmoid, and in the reduced (or absent) terminal sensillum of the male palpus. Several features distinguish *E. pseudomori* from these two species namely: the dorsal hysterosomal setae of *E. pseudomori* are borne on small tubercles; striae between the third dorso-centrals are transverse; there is an area of longitudinal striae ventrally just forward of the genital flap; the peritreme terminations are distinctly bent or slightly hooked rather than straight. There are also differences in leg setation, and although the aedeagus is similar to that of the other two species, it has a relatively much shorter dorsally directed portion.

Genus *Schizotetranychus* Trägårdh

The genus *Schizotetranychus* Trägårdh as defined by Pritchard and Baker (1955), is one of the larger genera of the family Tetranychidae and includes species from most countries of the world. The two species now described are the first of this genus to be recorded from Australia.

*Schizotetranychus russeus* sp. nov.

## MATERIAL EXAMINED

HOLOTYPE: Male (360  $\mu$  long to tip of palpi, 150  $\mu$  wide) Palmwoods, on a mat-rush (*Lomandra multiflora* (R. Br.) (J. Britt.), J. J. Davis, 11.x.66, in Hoyer's medium, Qd Mus. W2824.

ALLOTYPE: Female (450  $\mu$  long to tip of palpi, 180  $\mu$  wide), same data as holotype, in Hoyer's medium, Qd Mus. W2825.

PARATYPES: Ten males, eight females, same data as holotype. One male, one female, same data as holotype except collected D. A. Ironside, 7.x.67. All paratypes in Hoyer's and Heinze P.V.A. media, in collection of Queensland Department of Primary Industries. Mounted paratype females range from 375  $\mu$  to 465  $\mu$  long, and 160  $\mu$  to 225  $\mu$  wide, males from 300  $\mu$  to 375  $\mu$  and 120  $\mu$  to 180  $\mu$ .

## DESCRIPTION

FEMALE: (Fig. 5A). Body in life distinctly pink or reddish. Dorsal setae slender, very finely pubescent, tapered from a slight widening near the base; first dorso-central seta relatively short, about equal in length to the distance from its base to that of the second dorso-central seta; inner sacral setae more closely spaced than the dorso-central setae (fig. 5A); dorsal setae not set on tubercles; a slight division evident between

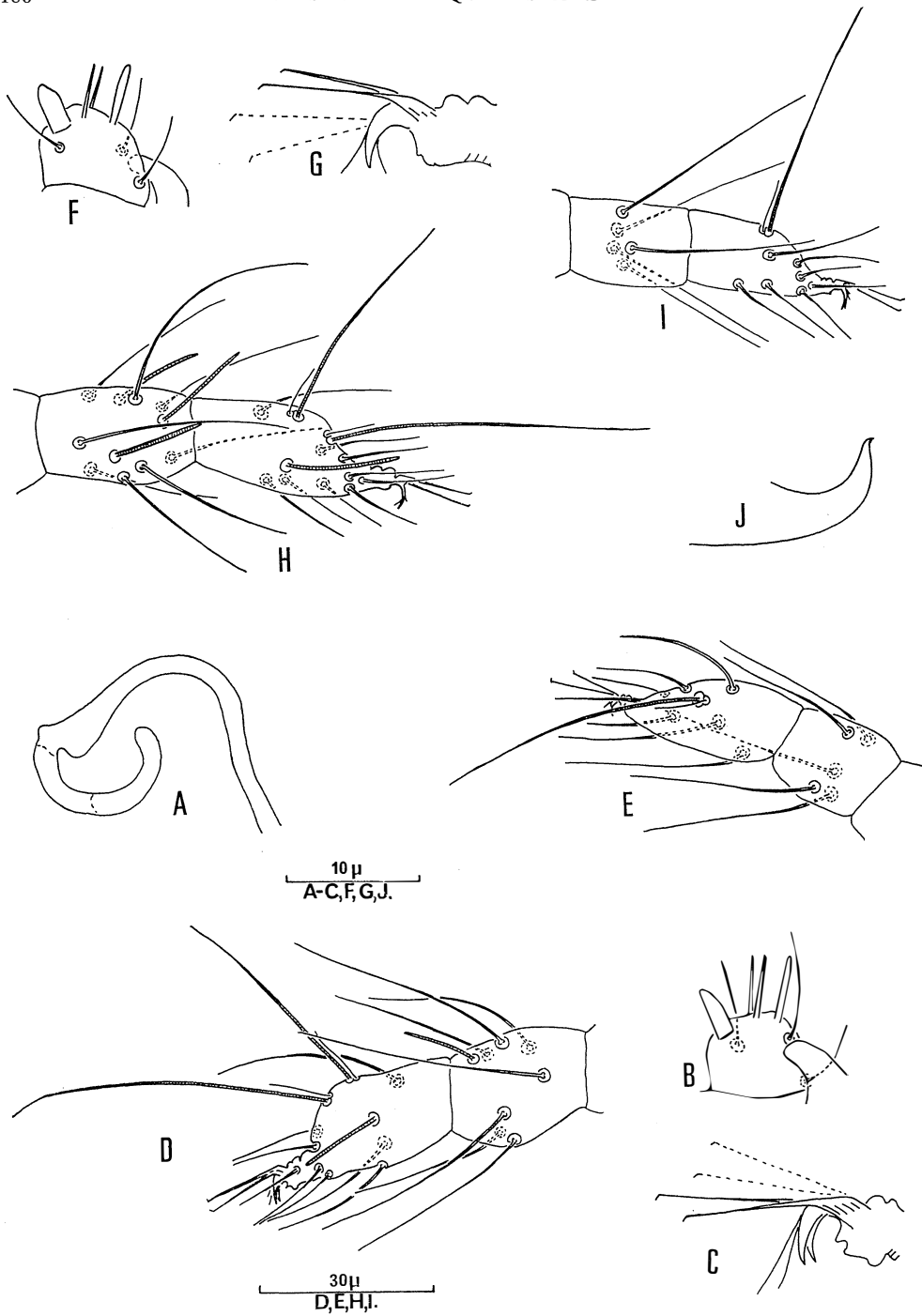


FIG. 6: *Schizotetranychus russeus*. A, female, distal end of peritreme; B, female, palpus, terminal segment; C, female, distal appendages tarsus I; D, female, tibia and tarsus I; E, female, tibia and tarsus II; F, male, palpus terminal segment; G, male, distal appendages tarsus I; H, male, tibia and tarsus I; I, male, tibia and tarsus II; J, male, aedeagus.

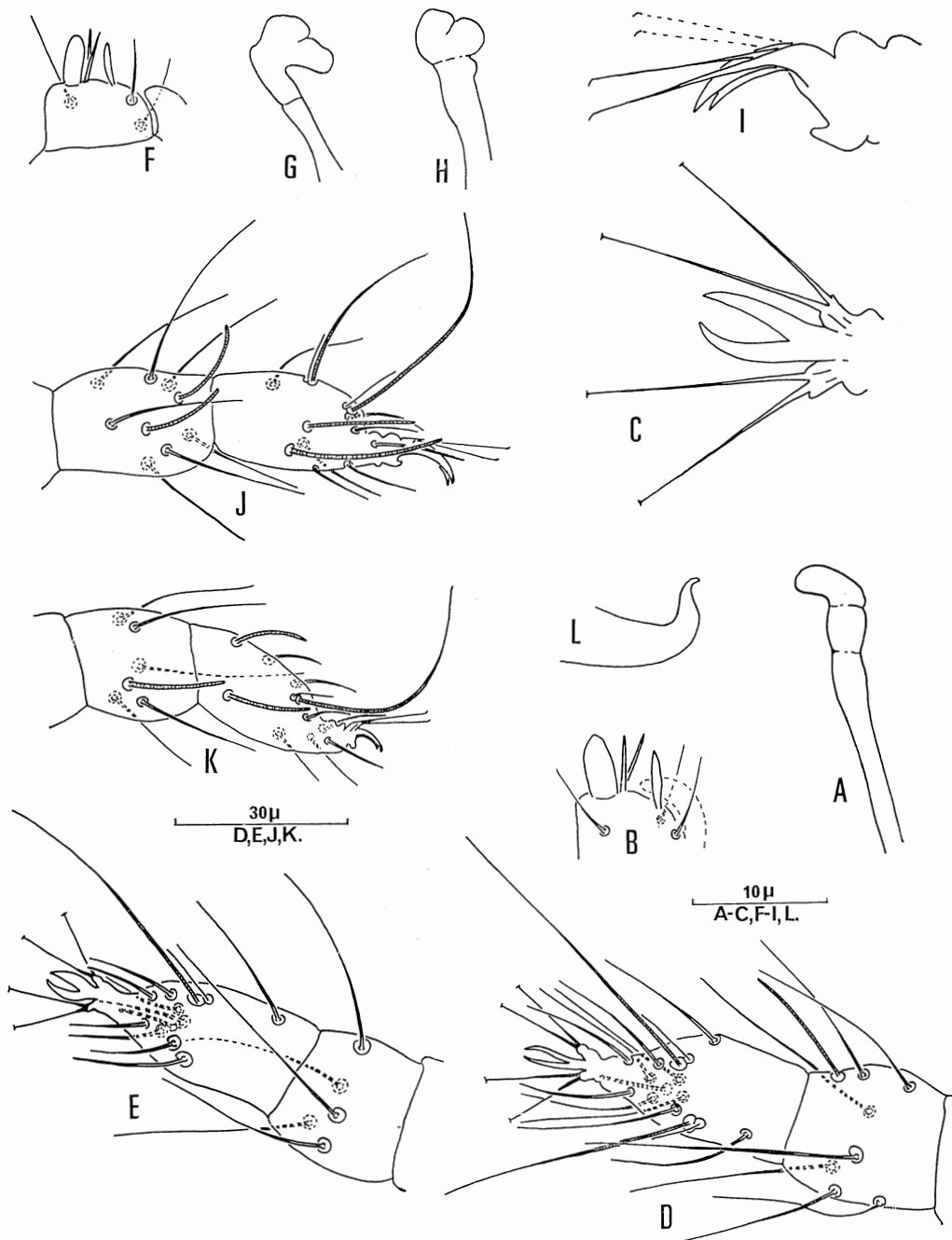


FIG. 7: *Schizotetranychus sagatus*. A, female, distal end of peritreme; B, female, palpus, terminal segment; C, female, distal appendages tarsus I; D, female, tibia and tarsus I; E, female, tibia and tarsus II; F, male, palpus, terminal segment; G, H, male, distal end of peritremes; I, male, distal appendages tarsus I; J, male, tibia and tarsus I; K, male, tibia and tarsus II; L, male, aedeagus.

## DESCRIPTION

FEMALE: (Fig. 5B) Body in life pale yellow-green with black spots along each side. Dorsal setae much thickened near the base, tapering evenly to a fine point almost without pubescence; dorso-centrals shorter than the longitudinal intervals between bases of setae (fig. 5B); inner sacral setae about the same distance apart as the dorso-central setae; dorsal setae not set on tubercles; dorsal striae smooth and transverse on the hysterosoma, including those areas between the third dorso-central setae and between the inner sacral setae; ventral striae transverse on the genital flap and on the region anterior to the genital flap; stylophore about one and one half times as long as wide, broadly rounded in front; peritreme variable distally, usually slightly bent (fig. 7A); terminal sensillum of palpus a little over twice as long as wide (fig. 7B); legs short, leg I about half as long as the body to the tip of the palpi; each empodium a pair of stout claws, without associated hairs (fig. 7C); arrangement of setae on tarsus I as in fig. 7D, seven tactile setae and one sensory seta on tibia I; five tactile setae on tibia II (fig. 7E), and also on tibiae III and IV.

The eggs are round, slightly flattened dorso-ventrally, without a dorsal stipe.

MALE: Terminal sensillum of palpus nearly three times as long as wide (fig. 7F); peritreme variable distally, bent or slightly hooked (fig. 7G, H); each empodium with a pair of stout claws, without associated hairs, similar to those of the female (fig. 7I); tarsus I as in fig. 7J, tibia I with seven tactile and two sensory setae; tibia II with five tactile setae and one sensory seta (fig. 7K); tibiae III and IV each with five tactile setae; aedeagus bent dorsad in a short sigmoid curve, ending in a blunt point, the dorsally directed part slightly shorter than the dorsal margin of the main shaft (fig. 7L).

## HABITAT

*S. sagatus* occurs on the undersides of the leaves in small colonies each protected by a closely woven cover. These patches of webbing, about three millimetres long, appear as a series of roughly oval white spots along either side of the midrib of the infested leaf.

## COMMENTS

The specific name is descriptive of the webbing covering each colony of this species.

*S. sagatus* resembles *S. spiraefolia* Garman (north-eastern U.S.A. on *Spiraea latifolia*) and *S. andropogoni* (Hirst) (India, on *Andropogon annulatus* and *Saccharum spontaneum*) as described by Pritchard and Baker. 1955, in the general form of the dorsal setae and of the aedeagus. It differs from *S. spiraefolia* in the number of setae on tibiae I and II and from *S. andropogoni* in leg setal patterns as well as having a more slender terminal sensillum on the female palpus and relatively shorter dorso-central setae.

## ACKNOWLEDGEMENTS

The author is grateful for the advice of Professor H. Bruce Boudreaux, Louisiana State University, and of Dr. E. W. Baker, United States Department of Agriculture, Washington D.C.

The Director of the South Australian Museum made available on loan all of the Museum's material of *Anatetranychus hakea* Womersley and paratypes of *Synonychus eucalypti* Miller.

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