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CHIGGERS OF PERU (ACARINA: TROMBICULIDAE)

BY

James M. Brenan and Eleanor K. Jones.


ABSTRACT.


A key to species and new figures for Neotrombicula shannoni are given.

This report derives from miscellaneous collections of Peruvian chiggers received from Dr. Carl B. Koford, formerly of the University of California’s Museum of Vertebrate Zoology, Dr. Rupert L. Wenzel, Chicago Museum of Natural History, and Dr. Douglas J. Gould, Walter Reed Army Institute of Research. In the text, unless otherwise shown, collections establishing new records were by Dr. Koford.

Of the 39 species recorded from Peru, 2 are omitted. These are Trombicula peruviana Ewing known only from the adult and Trombicula japa Ribeyro and Bambaren which is, according to Jenkins (1949), unidentifiable. Of the remaining 37 species, 31 are parasites of rodents, and 19 occur at elevations from 11,000 to higher than 15,000 feet.

Type material of new species is deposited as indicated in the Rocky Mountain Laboratory (RML), Chicago Natural History Museum (CNHM), United States National Museum (USNM), Bristish Museum (BM), and South Australian Museum (SAM).

KEY TO SPECIES.

1. Leg segmentation 6-6-6; spiracles and tracheae present; scutum with anteromedian projection; cheliceral blades with rows of teeth .................................................. 2
   Leg segmentation 7-7-7; spiracles and tracheae absent; scutum without anteromedian projection; cheliceral blades without rows of teeth ........................................ 3

2. More than 50 dorsal setae; tarsala I = tarsala II; on rodents ... Odontacarus kofordi
   Less than 50 dorsal setae; tarsala I > tarsala II; on lizards. Odontacarus australis

3. (r.) Scutum with at least 7 setae. .......................................................... Kastia pernensis
   Scutum with no more than 5 setae ................................................................... 4

4. Sensillae flagelliform ...................................................................................... 5
   Sensillae expanded ......................................................................................... 27

5. PL's off scutum; coxae II and III each with 2 setae ........ Fereus biseifer
   PL's on scutum; coxae II and III each with 1 seta ....................................... 6

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   Palpal tibial claw with more than one prong. ............................................. 11

7. Two mastitibialae III ...................................................................................... 6
   No mastitibialae III ....................................................................................... 8

8. One genuala I .................................................................................................... 9
   Two genuulae I .............................................................................................. 10

9. Humeral setae 2/2; scutum with evenly rounded posterior margin. ............ Crotiscus aetherios
   Humeral setae 1/1; scutum with angular posterior margin. ......................... Crotiscus dispar

10. (8.) Galeal seta nude. ..................................................................................... Crotiscus frigipes
    Galeal seta branched. ................................................................................ Crotiscus thomasi

11. (6.) Palpal claw bifurcate. ............................................................................ Eutrombicula alfreddugesi tropica
    Palpal claw trifurcate. ................................................................................ 12

12. At least one mastitarsala III ......................................................................... 13
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13. Three mastitarsalae III; a mastitibiala III. ................................................. Neotrombicula shannoni
    One mastitarsala III; no mastitibiala III .................................................. 14

14. Five genuala I ................................................................................................ 15
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15. Three genuulae I ........................................................................................... 18
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    Palpal genual seta and galeal seta branched; less than 50 dorsal setae .......... 17

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Euschöngastia euryphylla

Dorsal setae of usual form; PL’s anterior to widely separated sensillary bases. .........

Euschöngastia tryssa

Odontacarus kofordi n. sp.

Fig. 1.

Type data: Holotype and 3 paratypes, RML No. 31551, off Chinchillula sahamae 8 miles SSW of Limbani, Puno, 15000 feet, 11 June 1951; 7 paratypes, same host and locality, 10-19 June 1951; 2 paratypes off Abrocoma cinerea, Caccachara, Puno.

Holotype RML; paratypes RML, USNM, BM, CNHM.

Diagnosis: Sensillae barbed, a barbed mastitarsala III, no subterminala. Many more than 50 dorsal setae and equal lengths of tarsalae I and II separate this species from O. australis (Ewing).

Body: Ellipsoidal. Eyes large, 2/2, in a plate. Anus at about third row of ventral setae. Spiracles and tracheae distinct. Length and width of holotype, slightly engorged, 525 by 305 microns.

Gnathosoma: Punctate. Blades with about 6 evenly spaced teeth dorsally and an equal number of ventral teeth unevenly spaced. Palpal setae B/B/BBB, each with many branches; claw trifurcate; tarsus with 7 branched setae and a tarsala. Galeal seta branched.


Legs: Punctate. Specialized setae as figured. Nonspecialized setae long, densely branched.

Body setae: Dorsal setae about 80, similar to scutal setae, 32 to 55 microns, increasing in length laterally and posteriorly. Ventral setae 2 sternals plus about 52, no ventral humerals, postanals similar to dorsals.

Named for Dr. Carl B. Koford who collected most of the material which has prompted the preparation of this paper.

Odontacarus australis (Ewing).

Trombicula australis Ewing 1929, p. 10.

No records available other than the type series off lizard, Tropidurus peruvianus, Verrugas Cañon, below Chosica, Lima, 2500 feet, 15 April 1928.

Crotiscus aetherios Brennan.


No Peruvian records other than the type series off Chinchillula sahamae and Neotomys ebriosus, SSW of Limbani, Puno, 15000 feet, June and September 1951.

One specimen of C. aetherios was taken from a "rat" in Trinidad, B.W.I.

Crotiscus dispar Brennan.

Crotiscus dispar Brennan 1958, p. 678.

Known only from the holotype, off Punomys lemminius, 8 miles SSW of Limbani, Puno, 15000 feet, 31 August 1951.
**Crotiscus frigipes** Brennan.

*Crotiscus frigipes* Brennan 1958, p. 678.

Known only from the type series off *Chinchillula sahamae*, *Phyllotis pictus* and *Neotomys ebriosus*, SSW of Limbani, Puno, 15000 feet, June to September 1951.

**Crotiscus hayesi** Brennan.


No records other than the type series off *Lagidium peruanum*, SSW of Limbani, Puno, 15000 feet, 12 July 1951.

**Crotiscus thomasi** (Oudemans).

*Microthrombidium thomasi* Oudemans 1910, p. 84.

Described from several specimens off *Akodon jelskii*, central Peru. No additional records available.

**Doloisia inca** n. sp.

Fig. 2.

*Type data*: Holotype and 2 paratypes, RML No. 33554, off *Oryzomys heaysi* (rice rat), Quince Mil, Cuzco, 2250 feet, 8 August 1953, C. Kalinowski, collector. Holotype RML; paratypes RML and USNM.

*Diagnosis*: Scutum small with obsolescent or no posterior margin, extrascutal PL’s, legs stubby, coxa II with 2 and coxa III with 4 setae, no tibiala III, 3 pairs sternal setae.

Presumably, *D. inca* differs from *D. brasiliensis* (Fonseca) 1936, by ovate, instead of “quasi circulares” sensillae and by a bifurcate palpal tibial claw. The identity of the latter (off unidentified rat, São Paulo, Brazil, 25 September 1933) is uncertain because it was incompletely described from a single specimen mounted in a lateral position.

*Body*: Ellipsoidal, constricted. Eyes small 2/2, no plate. Anus between third and fourth rows of ventral setae. Length and width of holotype, engorged, 948 by 640 microns.

*Gnathosoma*: Finely and sparsely punctate. Blades small, strongly curved, with minute subapical dorsal tooth. Palpal setae B/B/NNN; claw bifurcate to base, the accessory prong outer; tarsus with 5 branched setae and a tarsala. Galeal seta nude.

Fig. 2. — Doloisia inca n. sp. Scutum, eyes, and specialized setae of legs.
Legs: With fine puncta. Specialized setae as figured, no tibiala III. Non-specialized setae with moderate number of long branches; coxa II with 2 and coxa III with 4 branched setae.

Body setae: Dorsal setae similar to AM of scutum, 28 to 36 μ long, arranged 2-6-6-4-2-2. Ventral setae 2-2-2 sternals, plus 16.

Ectonyx ovicornis Brennan.

Ectonyx ovicornis Brennan 1960, p. 91.

Four specimens (type series) off Proechimys hendeei, Quince Mil, Cuzco, 2250 feet, 8 August 1953. No additional records.

Fereus, n. gen.

Trombiculine larvae with pentagonal scutum, the apex anterior, sensillae flagelliform; posterolateral setae extrascutal. Eyes present. Cheliceral blades short, sharply curved, with subapical dorsal tooth. Palpal tibial claw trifurcate; palpal tarsus with 5 branched setae and a tarsala. Leg segmentation 7-7-7; legs without mastisetae; coxae II and III each with more than one seta.

Type species: Fereus bisetifer n. sp.

Fereus is distinct from Tecomatlana Hoffmann which has a quadrifurcate palpal claw, cheliceral blades with a series of minute subapical teeth, scutum with apex posterior, and coxae II and III unisetose.

Fereus bisetifer, n. sp.

Fig. 3.

Type data: Holotype, RML No. 33552, off Thomasonys sp., Tambo Huanca-bamba, Piura 9500 feet, 8 May 1954, C. Kalinowski, collector. In the Chicago Natural History Museum.

Legs: Punctate. Specialized setae as figured. Nonspecialized setae with long branches; coxae II and III bisetose.

Body setae: Dorsal setae similar to scutals, 34 to 53 μ, increasing in length laterally, arranged 2-6-4-6-6-2. Ventral setae 2-2-2 (sternals) plus about 36.

Fig. 3. — *Fereus bisetifer* n. gen., n. sp. Scutum, eyes, and specialized leg setae.
Eutrombicula alfreddugesi tropica (Ewing).

Trombicula irritans var. tropica Ewing 1925, p. 258.

Two specimens identified off lizard, Tropidurus peruvianus, Verrugas Cañon, below Chosica, Lima, 2500 feet, 15 April 1928.

These were part of a mixed series misidentified by Ewing (1929) and labelled as cotypes of Odontacarus australis (Ewing).

Euschongastia colombiae (Boshell and Kerr).

Neoschongastia colombiae Boshell and Kerr 1942, p. 16.

Thirty specimens identified off the bats Microtus megalotis and Carollia perspicillata, Marcapata, Cuzco, 11000 feet, 7 June to 22 September 1950, C. Kalinowski, collector; 7 off Peropteryx sp., La Pampa, Madre de Dios, 23 October 1941, C. C. Sanborn, collector.

As stated by Brennan and Jones (1960, p. 500) the Peruvian as well as Trinidadian forms of this species are larger than the typical form from Colombia.

Euschongastia euryphylla n. sp.

Type data: Holotype and 2 paratypes, RML No. 33550, off Oryzomys keaysi (rice rat), Limacpunco, Marcapata, Cuzco, 8000 feet, 13 July 1953, C. Kalinowski, collector.

Holotype CNHM; paratypes RML.

Diagnosis: Scutum rectangular, PL's narrow lanceolate, about 5 kinds of body setae, many of them broad-foliate, with large and numerous setules, no genualae II and III.

The sensille, anteromedian and anterolateral setae are missing in all specimens of the series.


Gnathosoma: Sparsely punctate. Cheliceral blades with tricuspid cap. Palpal setae B/B/BBB; claw slender, trifurcate; tarsus with 6 heavily branched setae and a tarsala. Galeal seta nude.


Legs: Punctate. Specialized setae as figured, no genualae II or III. Non-specialized setae moderately branched.
FIG. 4. — *Euschöngastia euryphylla* n. sp. Scutum, eyes, dorsum of body, three forms of dorsal setae, and specialized setae of legs.
Body setae: Dorsal setae shaped and arranged approximately as figured, the broader leaf-like ones with large setules densely distributed, the narrower lanceolate ones barbed somewhat like the PL's. Length and width of three foliate setae: medial 25 by 18 μ, lateral 26 by 6, posterior 22 by 10. Ventral setae 2-2 sternals plus about 50; sternals and preanals are ordinary setae with the usual fine branches, postanals consist of narrow-lanceolate setae and foliate setae similar to posterodorsals.

Euschongastia frondosa.

Fig. 5.

Type data: Holotype and 5 paratypes, RML No. 31557, off Phyllotis phaeus, 1 mile S of Limbani, Puno, 11500 feet, 11 August 1951.
Holotype RML; paratypes RML, USNM.

Diagnosis: Scutum wider than long with broadly curved posterior margin, anterolaterals unusually long and thick, posterolaterals lanceolate, sensillae obcordate; dorsal setae lanceolate.

Body: Ellipsoidal. Eyes 2/2 in a plate. Anus between fourth and fifth rows of ventral setae. Length and width of holotype, slightly engorged, 443 by 260 microns.

Gnathosoma: Densely punctate. Blades with tricuspid cap, the ventral tooth larger. Palpal setae B/B/BBB; claw trifurcate; tarsus with 5, possibly 6, branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. The shorter non-specialized setae moderately branched, the longer ones plumose.

Body setae: Dorsal setae about 50, more than 30 of them broad-lanceolate with mid-rib and stout barbs, arranged and shaped as figured. They tend to become narrower laterally and posteriorly. Posteriormost setae scarcely lanceolate, and arise from tuberculate bases. Length and width of a seta from mid-front row, 66 by 14 μ. Ventral setae 2-2 sternals plus about 60; sternals and preanals of ordinary form, postanals similar to posteriormost dorsals and arise from tubercles.

Euschongastia herniosa n. sp.

Fig. 6.

Type data: Holotype and 20 paratypes, RML No. 31563, off Lagidium peruanum (viscacha), 8 miles SSW of Limbani, Puno, 15000 feet, 4 June 1951; 25 paratypes, same host and locality, 12 July 1951.
Holotype RML; paratypes RML, USNM, CNHM, BM, SAM.
Fig. 5. — Euschongastia frondosa n. sp. Scutum, eyes, dorsum of body, specialized leg setae, and different kinds of dorsal setae.
Diagnosis: Scutum deep, roughly pentagonal, ovate sensillae thinwalled, anterolaterals and posterolaterals unusually long; dorsal setae long.

Body: Ovate. Eyes 2/2, in a plate. Anus between third and fourth rows of ventral setae. Length and width of holotype, slightly engorged, 309 by 190 microns.

Fig. 6. — Euschongastia herniosa n. sp. Scutum showing both surfaces of sensillae, eyes, and specialized leg setae.
Gnathosoma: Densely punctate. Blades with tricuspid cap and an additional ventral tooth. Palpal setae B/B/B/BNB, the laterotibial sometimes, forked; claw trifurcate; tarsus with 7 branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae moderately to heavily branched.

Body setae: Dorsal setae similar to scutals, 56 to 62 microns long, arranged 2-8-6-4-2-2. Ventral setae 2-2 sternals plus about 30, postanals like dorsals.

Euschongastia insolita n. sp.

Fig. 7.

Type data: Holotype and 30 paratypes, RML No. 31557, off Phyllotis phaeus, 1 mile S of Limbani, Puno, 11500 feet, 11 August 1951.

Holotype RML; paratypes RML, USNM, CNHM, BM, SAM.

Diagnosis: Scutum with mildly sinuous margins, sensillae nearly round, dorsal setae numerous, each with 2 long erect basal branches, 3 genualae I.

Body: Ellipsoidal. Eyes 2/2, in a plate. Anus at about fifth row of ventral setae. Length and width of holotype, partly engorged, 525 by 335 microns.

Gnathosoma: Densely punctate. Blades with tricuspid cap. Palpal setae B/B/BBB; claw slender, trifurcate; tarsus with 7 branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae moderately branched to plumose.

Body setae: Dorsal setae about 120, each with 2 long erect branches basally, 38 to 50 μ, increasing in length laterally and posteriorly. Ventral setae 2-2 sternals plus more than 100, postanals with 2 erect basal branches, like the dorsals.

Euschongastia phylloti Wharton.

Euschongastia phylloti Wharton 1948, p. 90.

Two specimens identified off Abrocoma cinerea, Caccachara, Puno, 15200 feet, 24 April 1952, O. P. Pearson and R. Traub, collectors.
The species was described from 17 specimens off *Phyllotis darwini* and *Chinchillula sahamae*, Caccachara, Puno, 5-7 October 1946. No other records available.

*Eus. phylloti* is unusual in that the ventral setae extend forward to or beyond the level of coxae III.

**Fig. 7.** *Euschönastia insolita* n. sp. Scutum showing anterior and posterior surfaces of sensillae, eyes, a typical dorsal seta, and specialized leg setae.
Euschöngastia reversa n. sp.

Type data: Holotype and a paratype, RML No. 34759, off Hesperomys ducilla, 80 miles west of Puno, 14,000 feet, 9 March 1952, O. P. Pearson, collector. In the Rocky Mountain Laboratory.

Fig. 8. — Euschöngastia reversa n. sp. Scutum, eyes, and specialized setae of legs.
Diagnosis: Scutum trapezoidal with sinuous margins, anterolaterals longer than posterolaterals, sensillae round, 2 genualae I, a tibiala III, numerous dorsal setae.

Body: Broad ellipsoidal. Eyes 2/2, in a plate. Anus at fifth row of ventral setae. Length and width of holotype, nearly engorged, 765 by 525 microns.

Gnathosoma: Densely punctate. Cheliceral blades with tricuspid cap. Palpal setae B/B/BBB, all thickly branched; claw trifurcate; tarsus with 6 heavily branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae densely branched to plumose.

Body setae: Dorsals like scutal setae, 36 to 54 microns, increasing in length laterally and posteriorly, about 80 in irregular rows. Ventral setae 2-2 sternals plus about 70, postanals similar to dorsal setae.

Euschöngastia tryssa n. sp.

Fig. 9.

Type data: Holotype, RML No. 33549, off Proechimys hendeei (spiny rat), Quince Mil, Cuzco, 2250 feet, 8 August 1953, C. KALINOWSKI, collector. In the Chicago Natural History Museum.

Diagnosis: Scutum shallow, much wider than long, margins sinuate, no genualae II or III, no parasubterminala.

Body: Broad ellipsoidal, mildly constricted. Eyes minute 2/2, in a plate. Anus between third and fourth rows of ventral setae. Length and width of holotype, engorged, 340 by 230 microns.


Scutum: As figured, about 3 times wider than long, sparsely punctate, sinuous margins, sensillae broken. Measurements of holotype: AW-46, PW-55, SB-25, ASB-14, PSB-10, AP-7, AM-14, AL--, PL-33, S--.

Legs: Finely punctate. Specialized setae as figured, no parasubterminala or genualae II and III. Nonspecialized setae short, sparsely branched.

Body setae: Dorsal setae short and thick, 20 to 24 μ long, arranged 2-12-10-12-7-4. Ventral setae 2-2 sternals plus 34, postanals like dorsals.
Fig. 9. — *Euschönastia tryssa* n. sp. Scutum, eyes, and specialized leg setae.
Euschüngastia wenzeli n. sp.

Fig. 10.

Type data: Holotype, RML No. 33551, off Oryzomys keaysi (rice rat), Quince Mil, Cuzco, 2250 feet, 10 August 1953, C. Kalinowski, collector. In the Chicago Natural History Museum.

Diagnosis: Scutum about twice as wide as long, posterior margin very broadly curved, sensillae obcordate; 2 genualae 1, dorsal formula begins 2-6.

Body: Long ellipsoidal, Eyes 2/2, in a plate. Anus at fifth row of ventral setae. Length and width of holotype, slightly engorged, 370 by 206 microns.

Gnathosoma: Moderately punctate. Blades with tricuspid cap. Palpal setae B/B/BBB; claw trifurcate; tarsus with more than 4 branched setae and a tarsala. Galeal seta nude.


Legs: Punctate. Specialized setae as figured, tarsala I more slender than usual. Nonspecialized setae moderately to densely branched.

Body setae: Dorsal setae with appressed barbs, 26 to 37 µ, increasing in length laterally and posteriorly, arranged 2-6-6-2-6-4-2. Ventral setae 2-2 sternals plus 34, postanals similar to dorsals.

Named for Dr. Rupert L. Wenzel, Curator of Insects, Chicago Natural History Museum.

Kaaia peruensis Brennan.

Kaaia peruensis Brennan, 1958a, p. 74.

No records other than those of the type series off Punomys lemninus, Neotomys ebriosus and Phyllotis osilae, Puno, 13000 feet, April, June and August 1951.

Trombicula biops Wharton.

Trombicula biops Wharton 1948, p. 94.

Described from Phyllotis darwini (type series) and Phyllotis boliviensis, Cacachará (50 miles SW of Iłave), Puno, September and October 1946.

New records — 6 specimens off Phyllotis osilae, Heda, Paimanui (24 miles S of Iłave), Puno, 13000 feet, 15 April 1951; 18 off Punomys lemninus, 8 miles SSW of Limbani, Puno, 15000 feet, 31 August 1951; 1 off Nectomys ebriosus, same locality and date.
Fig. 10. — *Euschongastia wenzeli* n. sp. Scutum, eyes, and specialized setae of legs.
Trombicula chaetosa n. sp.

Fig. II.

Type data: Holotype and 6 paratypes, RML No. 34062, off Tropidurus peru-vianus (iguana), Piura, no date, received from CNHM.
Holotype CNHM; paratypes RML, USNM.

Diagnosis: A large chigger, scutum wider than long, sensillae with a few median barbs only, a mastitarsala III, 3 genualae I, about 200 body setae, 2 pairs of humerals.

Body: Ellipsoidal. Eyes large, 2/2 in a plate. Anus at fifth row of ventral setae. Length and width of holotype, slightly engorged, 630 by 400 microns.

Gnathosoma: With large and many puncta. Chelicer blades with tricuspid cap. Palpal setae B/N/NNN, the genual occasionally forked; claw apparently
bifurcate, small accessory prong outer; tarsus with 6 branched setae, a subterminala
and a long slender tarsala. Galeal seta nude.

Scutum: As figured, puncta large and densely distributed; sensillae with only
2 or 3 small barbs in median section. Measurements of holotype: AW-103, PW-

Legs: Conspicuously punctate. Specialized setae as figured. Nonspecialized
setae long, sparsely to moderately branched.

Body setae: Dorsal setae similar to scutals, 38 to 50 μ long, 2 pairs of humerals
plus about 100. Ventral setae 2-2 sternals plus 100, postanals like dorsals.

_Trombicula chara_ Wharton

_Trombicula chara_ Wharton 1948, p. 98.

Described from _Phyllotis darwini_ (type series) and _Phyllotis boliviensis_, Cacca-
chara, Puno, September and October 1946.

New records — 3 specimens off _Phyllotis osilae_, Heda, Pairumani (24 miles S of
Ihaye), Puno 13000 feet, 15 April 1951; 54 specimens off _Chinchillula sahamae,
Neotomys ebriosus_ and _Punomys lemminus_, 8 miles SSW of Limbani, Puno,
15000 feet, 11 June to 22 September 1951.

_Trombicula cuzcoensis_ n. sp.

Fig. 12.

*Type data*: Holotype and 2 paratypes, RML No. 33550, off _Oryzomys keaysi_
(rice rat), Limacpunco, Marcapata, Cuzco, 8000 feet, 13 July 1953, C. KALINOWSKI,
collector.

Holotype CNHM; paratypes RML.

*Diagnosis*: Scutum wider than long, broadly convex posterior margin, 2 genua-
lae I, no mastitarsala III, dorsal formula begins 2-8.

.Body*: Nearly round. Eyes 2/2, in a plate. Anus at fourth row of ventral
setae. Length and width of holotype, partly engorged, 463 by 425 microns.

_Gnathosoma*: Punctate. Blades with tricuspid cap, the ventral tooth larger.
Palpal setae B/B/NNB; claw trifurcate; tarsus with 7 branched setae and a tar-
sala. Galeal seta nude.


Legs: Punctate. Specialized setae as figured. Nonspecialized setae moder-
tely to densely branched.

Body setae: Dorsal setae similar to scutals, 39 to 52 μ, decreasing in length
posteriorly, arranged 2-8-8-6-4-2. Ventral setae 2-2 sternals plus 36, postanals
like dorsals.
*Trombicula dunni* Ewing.


One atypical specimen off *Oryzomys keaysi*, Quince Mil, Cuzco, 2250 feet, 10 August 1953, C. Kalinowski, collector.

Differs from typical *dunni* only by the more sparsely punctate scutum and shorter body setae. This form may be a subspecies.

**Fig. 12.** *Trombicula cuscoensis* n. sp. Scutum, eyes, and specialized leg setae.
Trombicula macrochaeta n. sp.

Fig. 13.

Type data: Holotype and 2 paratypes, RML No. 31559, off Neotomys ebriosus, 8 miles SSW of Limbani, Puno, 15000 feet, 31 August 1951. Holotype RML; a paratype each RML and USNM.

Diagnosis: Large wider than long scutum, broadly rounded posterior margin, anterolaterals and posterolaterals unusually long, r genuala I.

Body: Ellipsoidal. Eyes 2/2, in a plate. Anus at fifth row of ventral setae. Length and width of holotype, partly engorged, 731 by 443 microns.
Gnathosoma: Punctate. Blades with tricuspid cap and an additional ventral tooth. Palpal setae B/B/NBN; claw trifurcate; setation of tarsus not discernible. Galeal seta nude.


Legs: Punctate. Specialized setae as figured. Shorter nonspecialized setae heavily branched, longer ones plumose.

Body setae: Dorsals 60 to 84 μ, increasing in length laterally, irregularly placed, about 42. Ventral setae 2-2 sternals plus about 34.

_Trombicula manueli_ Brennan and Jones.

_Trombicula manueli_ Brennan and Jones 1960, p. 520.

One specimen off _Oryzomys keaysi_, Quince Mil, Cuzco, 10 August 1953, C. KALINOWSKI, collector.
A common species from a wide variety of hosts in Trinidad, B.W.I.

_Trombicula oligoachaeta_ n. sp.

Fig. 14.

_Type data_: Holotype, RML No. 33549, off _Proechimys hendeei_ (spiny rat), Quince Mil, Cuzco, 2250 feet, 8 August 1953, C. KALINOWSKI, collector. In the Chicago Natural History Museum.

_Diagnosis_: Scutum deep with broadly rounded posterior margin, sensillary bases far forward, only 14 dorsal setae, 2 genualae I, a mastitarsala III.

Body: Ovate. Eyes 2/2, in a plate. Anus between third and fourth rows of ventral setae. Length and width of holotype, slightly engorged, 300 by 205 microns.


Scutum: As figured, deep, broadly rounded posterior margin, sensillary bases nearer anterior than posterior margin, sensillae broken. Measurements of holotype: AW-64, PW-78, SB-34, ASB-21, PSB-29, AP-21, AM-43, AL-29, PL-44, S-...

Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae sparsely to moderately branched.

Body setae: Dorsal setae like scutals, 37 to 57 μ, increasing in length laterally, arranged 2-4-4-2-2. Ventral setae arranged 2-2 sternals, 4-2-2 preanal, 2-2 postanal, the last similar to dorsals.
**Trombicula olympia** n. sp.

**Fig. 15.**

*Type data:* Holotype and 6 paratypes, RML No. 31557, off *Phyllotis phaeus*, 1 mile south of Limbani, Puno, 11500 feet, 11 August 1951.

Holotype RML; paratypes, RML, USNM, CNHM.

*Diagnosis:* Scutum roughly trapezoidal with broadly curving posterior margin, branched sensillae, 2 genualae I, no mastitarsala III, dorsal formula begins 2-6.

*Body:* Ovate. Eyes 2/2, in a plate. Anus between third and fourth rows of ventral setae. Length and width of holotype, partly engorged, 463 by 305 microns.
Gnathosoma: Densely punctate. Blades with tricuspid cap, ventral tooth large. Palpal setae B/B/NNB; claw trifurcate; tarsus with 7 branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae heavily branched to plumose.
Body setae: Dorsal setae similar to scutals, 53 to 60 μ long, arranged 2-6-6-6-4-2. Ventral setae 2-2 sternals plus 20, postanals like dorsals.

*Trombicula pearsoni* Wharton.

*Trombicula pearsoni* Wharton 1948, p. 92.
Described from 3 specimens off *Punomys lemminus*, Caccachara (50 miles SW of Ilave), Puno 15200 feet, 13 September 1946.
No other records are available.

*Trombicula punctata* Boshell and Kerr.

*Trombicula punctata* Boshell and Kerr 1942, p. 15.
One specimen off *Oryzomys keaysi*, Quince Mil, Cuzco, 2250 feet, 8 August 1953, C. Kalinowski, collector.

*Trombicula quintangula* n. sp.

Type data: Holotype and 5 paratypes, RML No. 34758, off *Phyllotis* sp., N. Tarata, Tacna, 13000 feet, 24 January 1952, O. P. Pearson and R. Traub, collectors; 1 paratype, RML No. 34757, off *Hesperomys* sp., Rio Santa Rosa, Puno, 13300 feet, 16 December 1951.
Holotype RML; paratypes RML, USNM, and CNHM.

Diagnosis: Scutum pentagonal, about 60 dorsal setae, ventral humeral setae between coxae II and III, 2 genualae I, a mastitarsala III.
Very similar to *T. biops* Wharton except for the mastitarsala III.

Body: Ellipsoidal. Eyes 2/2, the posterior obsolescent, in a plate. Anus between sixth and seventh rows of ventral setae. Length and width of holotype, engorged, 590 by 340 microns.

Gnathosoma: Punctate. Cheliceral blades with tricuspid tooth. Palpal setae B/B/BBB; claw trifurcate; tarsus with 6 branched setae and a tarsala. Galeal seta nude.


Legs: Punctate. Specialized setae as figured. Nonspecialized setae sparsely to moderately branched.

Body setae: Dorsal setae similar to scutals, 26 to 38 μ, increasing in length laterally, about 60 in irregular rows. Ventral setae 2-2 sternals, 3 to 5 humerals between coxae II and III plus about 60, postanals like dorsals.
Trombicula saccopteryx Brennan and Jones.

_Thomas saccocypteryx_ Brennan and Jones 1960, p. 530.

Ten specimens identified off _Saccopteryx b. bilineata_, Huajyumbe, Cuzco, 29 September 1950, C. Kalinowski, collector.

Known also off same host from Trinidad and Panama.

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**Fig. 16.** — _Trombicula quintangula_ n. sp. Scutum, eyes, and specialized setae of legs.
Trombicula (Neotrombicula) shannoni Ewing.

Fig. 17.

Trombicula shannoni Ewing 1929, p. 10.
Described from house cat, Felis domestica, Verrugas Cañon, Lima, 2500 feet, 28 May 1928.
New record — 20 specimens off Phyllotis darwini, 3 miles W of Atico, Araquipa, 19 March 1951.
Brennan and Wharton (1950) correctly placed this species in their "bisignata" group. It is easily separated from other members of the group by 6 sternal setae arranged 2-4.

Trombicula (Trägårdhula) sinnamaryi Floch and Fauran.

Trombicula (Trägårdhula) sinnamaryi Floch and Fauran 1956, p. 3.
Five specimens off Thryothorus genibarbis, San Juan, Tambopata, Sandia, Puno, 29 November 1950, Mrs. H. H. Heller, collector.

Trombicula sternalis n. sp.

Fig. 18.

Type data: Holotype and 3 paratypes, RML 34763, off Ctenomys peruanus, Pampa Quellecota, Puno, 13200 feet, 5 February 1952, O. P. Pearson and R. Traub, collectors.
Holotype RML; paratypes RML and USNM.
Diagnosis: Scutum pentagonal, many sternal and ventral humeral setae, 3 genualae I, no mastitarsala III.

Body: Ellipsoidal. Eyes 2/2, in a plate. Anus between sixth and seventh rows of ventral setae. Length and width of holotype, nearly engorged, 600 by 380 microns.

Gnathosoma: Densely punctate. Blades with small subapical dorsal tooth and hook proximal to it. Palpal setae B/B/BBB; claw trifurcate, tarsus with 7 branched setae and a tarsala. Galeal seta nude.


Legs: Densely punctate. Specialized setae as figured. Nonspecialized setae moderately branched.

Body setae: Dorsals similar to scutal setae, 28 to 38 μ, increasing in length laterally and posteriorly, about 70, in irregular rows. Ventral setae, sternals 6 to 12, irregularly grouped, 5 to 6 pairs of ventral humerals between coxae II and III, plus about 60, postanals similar to dorsals.
Fig. 17. — Trombicula (Neotrombicula) shannoni Ewing. Scutum, eyes, and specialized leg setae.
FIG. 18. — Trombicula sternalis n. sp. Scutum, eyes, and specialized setae of legs.
REFERENCES


