

THREE NEW CHIGGER MITES OF THE GENUS *TROMBICULA* FROM PANAMA, WITH A KEY TO THE KNOWN ADULTS OF *TROMBICULA* OF THE NEW WORLD

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Three new species of the genus *Trombicula* were contained in a small collection of mites sent in for identification from Panama, by L. H. Dunn, medical entomologist of the Gorgas Memorial Laboratory, Ancon, Canal Zone. Two of these are represented by adult specimens taken from caves. These cave species are blind, and in addition one of them differs from any known described species in having the tarsal claws of the first pair of legs trifurcate. At first the writer was inclined to establish a new genus for this species, but he decided that it probably represents a form already known in the larval stage.

Until many more rearings are made it will be best to use larval characters for our genera of chigger mites, as less than one species in 10 is known from the adult stage. Eventually, however, this process will probably be reversed, and our genera of the Trombiculinae will be based chiefly on adult characters.

The known adults of *Trombicula* of the New World may be separated by the following key:

KEY TO ADULTS OF THE GENUS *TROMBICULA* OF THE NEW WORLD

1. Claws of first pair of legs simple, not trifurcate..... 2  
Claws of first pair of legs trifurcate distally; this pair not only much larger than the others but also much more sclerotized.  
trifurca, new species
2. Eyes present and well developed; setae of body but slightly longer on posterior margin than on shoulders, and colored..... 3  
Eyes vestigial or absent; setae of body usually considerably longer on posterior margin than on shoulders..... 5
3. Eyes with strongly convex corneas and situated far in front of base of dorsal groove; length of adults, over 2 mm..... 4  
Eyes with corneas less convex and situated approximate, laterally, to expanded base of dorsal groove; length of adults about 1 mm..... irritans (Riley)

- 4. Setae of body shorter and distinctly barbed to tips, those on shoulders about half as long as femur I.....alleei Ewing
- Setae of body longer and indistinctly barbed toward tips, those on shoulders about as long as femur I.....peruviana Ewing
- 5. Pseudostigmatic area angulate laterally and with a pair of posterior, diverging, curved processes.....cavernarum, new species
- Pseudostigmatic area rounded laterally and without diverging posterior processes..... 6
- 6. Posterior lobes of pseudostigmatic area smaller, more or less angulate and situated immediately behind pseudostigmata. coarctata Berlese
- Posterior lobes of pseudostigmatic area larger, rounded, and not situated behind pseudostigmata.....splendens Ewing

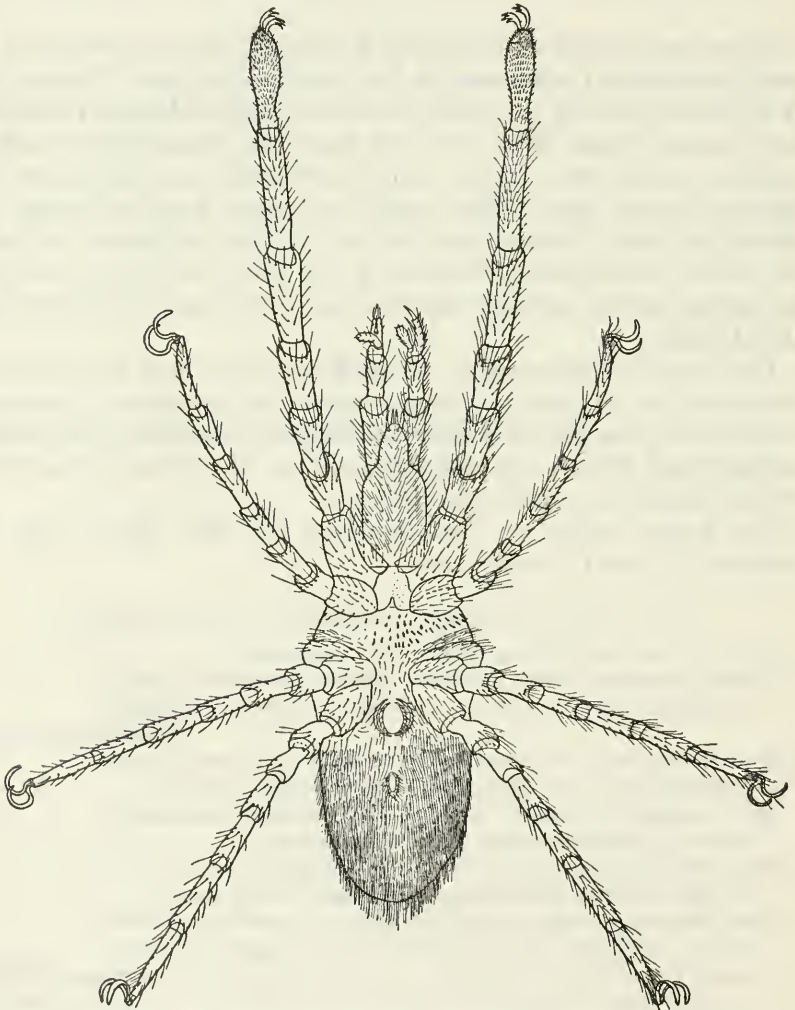


FIGURE 1.—Ventral view of *Trombicula trifurca*, new species. (Drawn by Eleanor A. Carlin.)

## DESCRIPTIONS OF NEW SPECIES

The first two descriptions given here are based on adults, the third upon larvae. The adults have been cleared in potassium hydroxide, and in the case of one species have been stained in addition. This staining has brought out the male genital armature, which is described probably for the first time for any species. It will be interesting to note whether this character will be of value in the differentiation of closely related species.

## TROMBICULA TRIFURCA, new species

## FIGURE 1

*Adult*.—Slender, with anterior pair of legs, mouth parts, and anterior part of cephalothorax darker and more sclerotized than the other parts. Mouth parts situated on a more or less distinct capitulum, which has parallel sides and is terminated below in a large, trowel-shaped hypostome. Palpi slender, extending to about the middle of first patellae; palpal claw weak, slightly curved, about two thirds as long as segment which bears it; palpal thumb very slightly swollen, reaching base of palpal claw; only one accessory spine present, which is about one half as broad as palpal claw. Chelicerae very long and slender, basal segment about four fifths as long as capitulum; chela slender, with a sharp upper edge. Crista broad, platelike, with pseudostigmatic area reduced and near the posterior end; pseudostigmata small, circular, and far apart; pseudostigmatic organs apparently absent. Eyes absent. Abdomen fully twice as long as broad and with the usual constriction at the level of third and fourth coxae; setae longest around posterior margin. Genital opening large, situated about half its diameter from fourth pair of coxae; genital suckers six, first pair slightly larger than the others. Anal opening about half as broad and two thirds as long as genital opening, and situated about its greatest diameter from the latter. Coxae of first two pairs of legs united to a sternum and those of first pair each expanded along its anterior margin into a shelf-like lamella. Anterior pair of legs much larger and longer than the others and each ending in a pair of trifurcate claws. Legs II and III rather weak, subequal; legs IV considerably stouter and longer; claws of legs II, III, and IV simple, but inflated toward the tips. Length, 2.7 mm; width, 0.9 mm.

*Type locality*.—Chilibrillo Caves, Panama.

*Type slides*.—U.S.N.M. no. 1063.

*Remarks*.—Described from four mounted and cleared adults, in nature found crawling on the walls of Chilibrillo Caves, Panama, by L. H. Dunn. Evidently this species does not belong to *Trombicula*, but, for reasons stated at the beginning of this paper, it is for the present placed there. Its larvae probably parasitize bats.

## TROMBICULA CAVERNARUM, new species

FIGURE 2

*Adult*.—Moderate in size and of the shape typical of the genus. No capitulum present. Palpi reaching beyond the middle of the first patellae; palpal claw weak, but little over half as long as the arched segment which bears it; accessory spines four, subequal, forming a

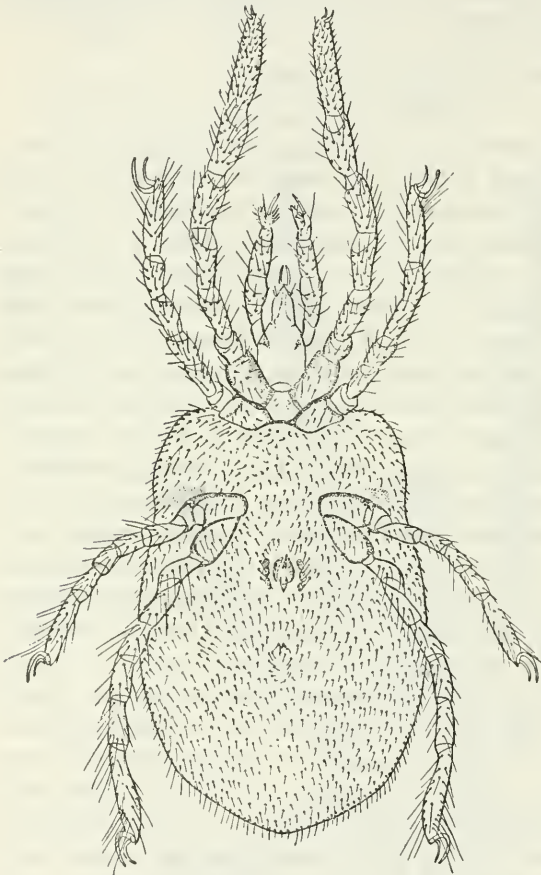


FIGURE 2.—Ventral view of male of *Trombicula cavernarum*, new species. (Drawn by Eleanor A. Carlin.)

comb; palpal thumb slightly swollen and extending to middle of palpal claw. Chelicerae very slender; chelae slender, sharp, tips extending slightly beyond the tips of second palpal segments. Crista rodlike, expanded near its posterior end into a diamond-shaped pseudostigmatic area slightly beyond which the crista ends in two strongly diverging lateral arms. Pseudostigmata moderate, situated near lateral angles of pseudostigmatic area; pseudostigmatic organs very long, setiform, with two barbs. Eyes absent. Abdomen about one and a half times as long as broad; setae short for the genus. Genital opening

about one half of its diameter from posterior coxae. Genital armature of male composed of a basal plate, a protruding penis, and an inwardly projecting manubrium; basal plate horseshoe-shaped; penis a cone-shaped, sclerotized structure, situated between the two arms of the basal plate; manubrium somewhat longer than penis and arising from base of the same. Anus somewhat smaller than genital opening and situated about one and a half times its greatest diameter behind the same. Anterior legs only slightly larger than posterior.

Tarsal claws all simple, those of the first legs quite small and subequal, those of the other legs unequal, the posterior claw being larger than the anterior. Length, 1.12 mm; width, 0.7 mm.

*Type locality.*—Chilibrillo Caves, Panama.

*Type slide.*—U.S.N.M. no. 1064.

*Remarks.*—Described from two males and one female cleared in potassium hydroxide and stained with acid fuchsin. They were taken from the rock walls of caves at the type locality, by L. H. Dunn. This species is most nearly related to *T. coarctata* Berlese, from which it may be differentiated by having the pseudostigmatic area angulate laterally instead of rounded.

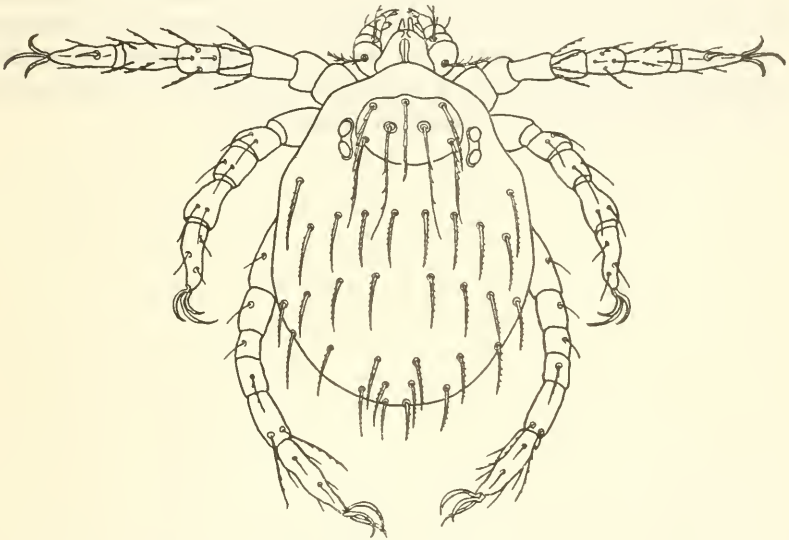


FIGURE 3.—Dorsal view of *Trombicula hominis*, new species. (Drawn by Mrs. Katherine Munroe.)

TROMBICULA HOMINIS, new species

FIGURE 3

*Larva.*—Palpi about reaching tips of chelicerae; second segment (palpal femur) about as broad as long and outwardly rounded laterally; first palpal seta subplumose, second with a few long barbs, third simple; palpal claw bifurcate, the outer prong larger than the inner and surpassing the latter, both sharp at apex. Chelicerae each with a single tooth on the upper margin and also on the lower margin. Dorsal plate porose, slightly broader than long, front margin incurved on each side of unpaired seta, posterior margin broadly and evenly outcurved; setae on dorsal plate all similar, those at the posterior corners somewhat longer than the others. Pseudostigmata circular, situated about halfway between the front and posterior

margins of dorsal plate and twice the diameter of either from each other; pseudostigmatic organs almost flagelliform, longer than dorsal plate, and with 3 to 5 inconspicuous barbs. Eyes well developed, posterior corneas distinct and almost as large as anterior ones. Dorsal abdominal setae 30 to 36. Dorsal spine of tarsus I rather short, slightly curved, and situated more than its length from base of segment. Length of unengorged specimens, 0.41 mm; width, 0.32 mm.

*Type host*.—Man.

*Type locality*.—Aguabuenas, Republic of Panama.

*Type slide*.—U.S.N.M. no. 1065.

*Remarks*.—Described from five specimens, mounted on type slide, taken from ear and scalp of child at hut near Aguabuenas, Republic of Panama, by L. H. Dunn. This species is most nearly related to *Trombicula brasiliensis* Ewing but has at least 30 dorsal abdominal setae, while *brasiliensis* has about 26 dorsal setae.