

NEW AND LITTLE KNOWN PSEUDOSCORPIONS, MAINLY FROM CAVES IN MEXICO
(ARACHNIDA, PSEUDOSCORPIONIDA)

William B. Muchmore

Department of Biology, University of Rochester
Rochester, New York 14627

Since the preparation of my recent papers on some pseudoscorpions from Mexican caves (Muchmore, 1972a, b) many new specimens have been collected and sent to me for identification and study. Much of this material pertains to the family Chernetidae, which is in serious need of gross reorganization, and will not be reported on at present. However, many of the new forms belonging to the Chthoniidae, Neobisioidea, and Cheliferidae are described and discussed below (see also Muchmore, 1973). It is becoming more and more clear that the pseudoscorpions of México and Central America, both cavernicolous and epigeal, are an extremely interesting and important group of animals.

Types of new species are deposited in the collection of the American Museum of Natural History in New York, except as noted otherwise.

I am exceedingly grateful to Robert W. Mitchell, James R. Reddell, Stewart B. Peck and their associates for sending me their pseudoscorpion material for study. Also, I wish to acknowledge the invaluable assistance of Charlotte H. Alteri in the study of the specimens and preparation of the illustrations for this paper. The research was supported in part by a grant (GB 17964) from the National Science Foundation.

FAMILY CHTHONIIDAE HANSEN

Genus *Aphrastochthonius* Chamberlin

Aphrastochthonius Chamberlin, 1962, p. 307; Muchmore, 1972b, p. 433.

Type Species—*Aphrastochthonius tenax* Chamberlin, 1962.

This genus and the Middle American species assigned to it have been reviewed recently by the author (1972b). Based on knowledge of the new species described below, the generic diagnosis must be emended in one respect, namely, to include species with seven (as well as five or six) setae on the hand of the chelicera.

Aphrastochthonius major, new species

Fig. 1

Material—Holotype female (WM2733.01001) from Cueva de la Capilla, 13.5 km NW Gómez Farías, Tamaulipas, México, on 14 March 1972 (G.D. Campbell).

Diagnosis—With the characteristics of the genus as redefined by Muchmore (1972b) and above. In the key provided by Muchmore (1972b, p. 441) this spe-

cies will run out to *A. verapazanus*, from which it can be distinguished by its larger size, the occurrence of seven setae (rather than six) on the cheliceral hand, and the occurrence of six setae (rather than four) on the fourth tergite.

Description of Female—Carapace with surface scaly; anterior margin straight but with about 10 small denticles near center; no eyes present; chaetotaxy m4m-4-4-2-2=16+2m. Coxal chaetotaxy 1+m-2-1(3m):3m-3-1-CS:3-2-CS:2-5:2-5: maxilla with three microsetae (3m) on dorso-lateral surface; each coxa I and II with seven spines; small bisetose intercoxal tubercle present. Tergal chaetotaxy 4:4:4:6:6:6:6:6:6:4:T2T:0. Sternal chaetotaxy 8:(4)10(4):(4)11(4):12:11:11:11:10:7:0:2.

Chelicera four-fifths as long as carapace. Hand with seven setae, *es* small; fixed finger with eight tall sharp teeth and two small basal denticles; movable finger with 12 similar teeth and two denticles; galea a low elevation; serrula exterior of 15 blades; serrula interior of 12 blades; flagellum of nine pinnate setae, the proximal one quite short.

Palps typically attenuated; femur 1.8 and chela 2.58 times as long as carapace. Proportions of palpal segments shown in Figure 1. Trochanter 1.6, femur 7.6, tibia 2.25, and chela 5.7 times as long as broad; hand 2.3 times as long as deep; movable finger 1.63 times as long as hand. Trichobothria of chela as in other species. Movable finger with marginal row of 10 spaced, acute teeth; fixed finger with 16 similar teeth, and with one small accessory tooth on external surface at distal end. Typical sensory pit just proximal to last marginal tooth and presumed bipolar neuron associated with terminal tooth of movable finger.

Legs of typical facies. Leg IV with entire femur 3.8 and tibia 6.1 times as long as deep; tactile setae on metatarsus 0.58 and on telotarsus 0.45 length of segment from proximal end.

Male—Unknown.

Measurements (in mm)—Body length 1.50. Carapace length 0.465. Chelicera 0.38 by 0.18. Palpal trochanter 0.21 by 0.13; femur 0.835 by 0.11; tibia 0.29 by 0.13; chela 1.20 by 0.21; hand 0.46 by 0.20; movable finger 0.75 long. Leg IV: entire femur 0.68 by 0.18; tibia 0.46 by 0.075; metatarsus 0.21 by 0.06; telotarsus 0.57 by 0.05.

Etymology—This species is named for its relatively large size.

Genus *Mundochthonius* Chamberlin

Mundochthonius Chamberlin, 1929, p. 64.

Type Species—*Mundochthonius erosidens* Chamberlin, 1929.

This genus is represented by a number of species in North America, Europe and Asia. They are characterized by the occurrence on the coxa of each leg II of a single, flat and deeply incised or divided coxal spine and the possession of a small bisetose intercoxal tubercle. Only rarely are representatives found in caves, most forms living deep in forest litter.

***Mundochthonius mexicanus*, new species**

Figs. 2-5

Material—Holotype male (WM1905.01003) and numerous paratypes from Chipinque Mesa, Monterrey, Nuevo León, México, on 22 June 1969 (S. and J. Peck); berlese separation of 176 liters (166 pounds) of forest soil and litter. Paratype female from Crystal Cave, Rancho del Cielo, 5 km NW Gómez Farías, Tamaulipas, México, on 10 January 1971 (J. Reddell, J. Cooke, S. Wiley, and V. Tipton); found in a pile of rat dung.

Diagnosis—Generally similar to northern species of the genus, but with no discernible eyes and chaetotaxy of anterior tergites 4:6:6:6:6:6.

Description—(Based on six mounted specimens, three males and three females.) Males and females essentially similar, but females slightly larger and more robust. Carapace about as long as broad; anterior margin with numerous denticulations and a prominent serrate epistome (Fig. 2); surface smooth dorsally; no eyes or eyespots visible; chaetotaxy 6-4-4-2-2=18. Coxal area typical; chaetotaxy 2-1-2: mmm-2-1:2-4-CS:2-5:1-6; the spine on each coxa II a broad, flat, deeply incised blade (Fig. 3); a small, bisetose intercoxal tubercle present.

Abdomen typical; surfaces of sclerites smooth; pleural membranes longitudinally plicate and covered with minute papillae. Tergal chaetotaxy of both sexes 4:6:6:6:6:6:6:6:6:4:1T2T1:0. Sternal chaetotaxy of holotype male 12:[4-4]: $\frac{14-13}{(5)10(5)}:(3)8(3):11:11:9:8:8:T1T1T1T:0:2$; sternal chaetotaxy of female 10:(5)11(5):(3)8(3):11:10:8:9:8:T1T1T1T:0:2.

Chelicera distinctly shorter than carapace; hand with six setae; fixed finger with six large and five small teeth; movable finger with an isolated, sub-terminal tooth and row of nine or ten smaller teeth; spinneret present as a very small elevation in the male, larger in the female; flagellum of ten or eleven pinnate setae; serrula exterior of 12 to 14 blades and serrula interior of 10 or 11 blades.

Palps generally similar to those of other species of the genus. Femur 0.75-0.87 and chela 1.21-1.38 times as long as carapace. Proportions of segments as shown in Figure 4; trochanter 1.7-1.8, femur 3.3-3.6, tibia

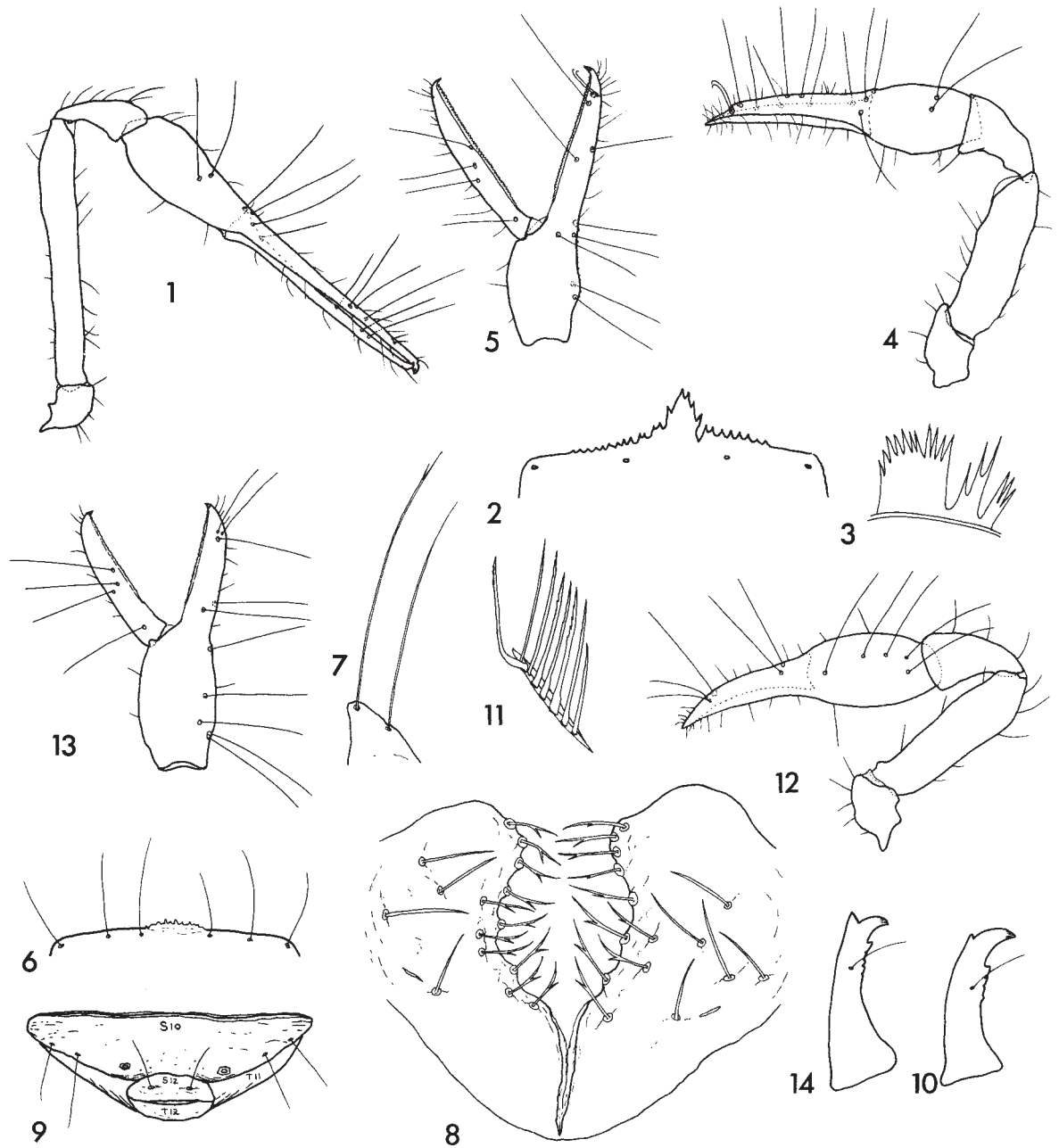


Fig. 1. *Aphrastochthonius major*, new species. Left palp, dorsal view.

Figs. 2-5. *Mundochthonius mexicanus*, new species. 2. Anterior margin of carapace. 3. Coxal spine. 4. Right palp, dorsal view. 5. Left chela, lateral view.

Figs. 6-14. *Lechytiacavicola*, new species. 6. Anterior margin of carapace. 7. Setae on apex of palpal coxa. 8. Posterior genital operculum of male. 9. Posterior end of abdomen, ventral view. 10. Movable finger of chelicera of male. 11. Cheliceral flagellum. 12. Right palp, dorsal view. 13. Left chela, lateral view. 14. Movable finger of chelicera of female.

1.6-1.8 and chela 3.75-4.2 times as long as broad; hand 1.4-1.6 times as long as deep; movable finger 1.68-1.81 times as long as hand; female palps slightly larger and more robust than those of male. Palpal

surfaces smooth, except distinctly granulate on dorsum of chelal hand and base of fixed finger. Trichobothria of chela as shown in Figure 5. Fixed finger with marginal row of 48-56 low, basally contiguous

teeth and a tiny accessory denticle on the internal surface alongside the fourth marginal tooth; movable finger with 52-60 similar marginal teeth and with a small elevated sensillum on external surface just proximal to level of *st*.

Legs typical. Leg IV with entire femur 2.2-2.4 and tibia 3.1-3.3 times as long as deep; with long tactile setae on metatarsus 0.21-0.28 and on telotarsus 0.23-0.28 length of segment from proximal end.

Measurements (in mm)—(Ranges for the six mounted types): Body length 1.10-1.40. Carapace length (including epistome) 0.435-0.48. Chelicera 0.33-0.38 by 0.16-0.20. Palpal trochanter 0.17-0.19 by 0.10-0.11; femur 0.34-0.38 by 0.095-0.11; tibia 0.20-0.215 by 0.11-0.13; chela 0.54-0.60 by 0.135-0.155; hand 0.21-0.22 by 0.135-0.155; movable finger 0.355-0.385 long. Leg IV: entire femur 0.33-0.38 by 0.15-0.16; tibia 0.245-0.265 by 0.075-0.08; metatarsus 0.11-0.125 by 0.05-0.06; telotarsus 0.21-0.23 by 0.04-0.045.

Etymology—The species is named *mexicanus* because it is the first *Mundochthonius* known from México.

Remarks—The genus *Mundochthonius* has representatives over much of the Holarctic Region but has not previously been recorded from so far south. It will not be surprising to find it represented in other mountain localities in México. The specimen from Crystal Cave is included among the paratypes of the present species because of its general similarity to the other specimens. However, it is slightly larger and more slender than the other mounted females and may later be found to belong to a distinct species.

Genus *Lechytia* Balzan

Lechytia Balzan, 1891, p. 498; Chamberlin, 1929, p. 77.

Type Species—*Roncus chthoniiformis* Balzan, 1890.

This genus is characterized by the occurrence of four trichobothria on the dorsum of the chelal hand and the complete absence of coxal spines. It is well represented in North and South America, Africa and Asia, but is not well known because of the small size and secretive habits of most forms, which live in forest litter.

Lechytia cavicola, new species

Figs. 6-14

Material—The holotype male (JC1671.01001), paratype male and paratype female from Grutas de Cacahuamilpa, 17 km NE Taxco, Guerrero, México;

collected by F. Bonet on 14 December 1939 (Bonet Collection No. 69). These specimens are presently in the J. C. Chamberlin Collection, at Pacific University, Forest Grove, Oregon (Dr. David R. Malcolm, curator).

Diagnosis—Typical of the genus, and generally similar to *L. trinitatis* Beier (1968) but slightly larger and more robust and male with a small but distinct spinneret on the movable finger of the chelicera.

Description of Male—Carapace slightly longer than broad; no epistome, but anterior margin slightly convex at center and with 15-20 distinct denticles (Fig. 6); no eyes evident; chaetotaxy 6-4-4-2-2=18. Coxal area typical; chaetotaxy 2-3-0:1-3-0:2-4:1-6:1-6; medial seta on apex of palpal coxa bifurcate at tip (Fig. 7); no coxal spines or intercoxal tubercle present. Pleural membranes of abdomen with longitudinal rows of tiny granules. Tergal chaetotaxy 6:6:6:6:6:6:6:4:1T2T1:0. Sternal chaetotaxy 10:[4-4]:

$\frac{11-10}{(3)10(3)}:(3)8(3):10:8:8:8:8:2TT2:0:2$; most setae on

posterior operculum flanking the genital opening bifurcate near tips (Fig. 8); eleventh sternite reduced to a very narrow membranous band and bearing no setae (Fig. 9).

Chelicera about three-fourths as long as carapace; hand with five setae; fingers with several distinct teeth; serrula exterior of about 15 blades; spinneret represented by a small, but distinct elevation (Fig. 10); flagellum of eight denticulate setae, the second from the distal end sharply curved near the base and set out ventrally from the others (Fig. 11).

Palps fairly short and stout; femur 0.83 and chela 1.25 times as long as carapace. Proportions of palpal segments as shown in Figure 12; trochanter 1.6-1.7, femur 3.15-3.3, tibia 1.65, and chela 3.6-3.65 times as long as broad; hand 1.55-1.6 times as long as deep; movable finger 1.16-1.19 times as long as hand. Trichobothria of chela as indicated in Figure 13; areoles of *st* and *sb* of movable finger separated by about two-thirds of an areolar diameter; *it* of fixed finger very slightly distal to level of *est*. Fixed finger with five small, distal denticles followed by 20-22 long, low teeth with posteriorly displaced cusps, and with a small, internal accessory tooth at level of second marginal tooth; movable finger with 3-4 small denticles, followed by about 20 long, low teeth without cusps.

Legs typical. Leg IV with femur 1.85 and tibia 3.3-3.4 times as long as deep; telotarsus with a tactile seta 0.45 length of segment from proximal end.

Female—Essentially like male in all features except a few, which are sex related. Sternal chaetotaxy 8:(3)4(3):(3)6(3):8:8:8:7:7:2TT2:0:2. Spinneret represented by much larger elevation than in male (Fig.

14). Teeth of both fingers of palpal chela slightly better developed (or better preserved) than in male.

Measurements (in mm)—Figures given first for the two males followed in parentheses by those for female. Body length 1.33, 1.14(1.35). Carapace length 0.40, 0.39(0.395). Chelicera 0.27(0.295) by 0.15, 0.14(0.15). Palpal trochanter 0.16, 0.155(0.175) by 0.10, 0.09(0.105); femur 0.33(0.34) by 0.105, 0.10(0.105); tibia 0.20(0.20) by 0.12(0.12); chela 0.52, 0.51(0.51) by 0.14(0.145); hand 0.25, 0.235(0.24) by 0.155, 0.15(0.155); movable finger 0.29, 0.28(0.27) long. Leg IV: entire femur 0.35(0.36) by 0.19(0.19); tibia 0.23, 0.255(0.24) by 0.07, 0.075(0.075); metatarsus 0.13, 0.135(0.14) by 0.055, 0.05(0.06); telotarsus 0.23, 0.22(0.22) by 0.03(0.035).

Etymology—The name *cavicola* refers to its occurrence in a cave.

Remarks—Certain morphological features which are unique to the genus *Lechytia*, are reported for the first time, including the bifurcate tip of the median seta on the apex of the palpal coxa, the denticulate nature of the setae in the cheliceral flagellum, the peculiar form of the second flagellar seta, the bifurcate setae on the posterior genital operculum of the male, and the obsolescence of the eleventh sternite. These features and their implications will be described and discussed more fully in another paper on the genus (in preparation).

Like *L. trinitatis*, the present specimens were found in a cave on bat guano. Because it shows no obvious modifications for cave life, it may be a troglaxene. However, this is presently impossible to judge for certain, in the absence of any records of epigeal *Lechytia* from México.

SUPERFAMILY NEOBISIOIDEA CHAMBERLIN

Because of growing uncertainties about their present taxonomic placement, the following neobisioid genera will not be assigned to families. They deserve further study, but critical work is hampered by the small numbers of specimens available and by the fact that males are still unknown in several of the genera, specifically *Apohya*, *Paravachonium*, *Troglohya* and *Vachonium*. It is confidently expected that as more material becomes available, our concepts of family relations of these genera will change radically.

Genus *Leucohya* Chamberlin

Leucohya Chamberlin, 1946, p. 7; Muchmore, 1972a, p. 271.

Type Species—*Leucohya heteropoda* Chamberlin, 1946.

Study of the two adult specimens of *Leucohya heteropoda* described below provides clarification of some of the problems which arose when the genus was based upon a single nymphal individual. It is now evident that adults of both *L. magnifica* Muchmore and *L. heteropoda* have all tarsi divided, and that the undivided tarsi I and II of *L. heteropoda* are characteristic only of nymphs. Such a situation is now not so remarkable, because similar undivided tarsi are known to occur in nymphs of another neobisioid genus, *Mexobisium* (see Muchmore, 1973). Similarly, it appears that the three flagellar setae reported for the tritonymph of *L. heteropoda* is also a nymphal condition, for the adults have four setae, all finely serrate, as in *L. magnifica*. At present, then, it appears that adults of the genus *Leucohya* may be characterized as having all pedal tarsi divided and four serrate setae in the cheliceral flagellum, while nymphs may have at least some of the tarsi undivided and fewer than four (acuminate?) setae in the flagellum.

For comparison with other related genera, it seems important to note the positions of certain trichobothria on the palpal chela—specifically, in the adult *it* is located proximad of *et*, *ist* is far proximad of *est*, and *ib* is on the dorsum of the hand proximad of the middle.

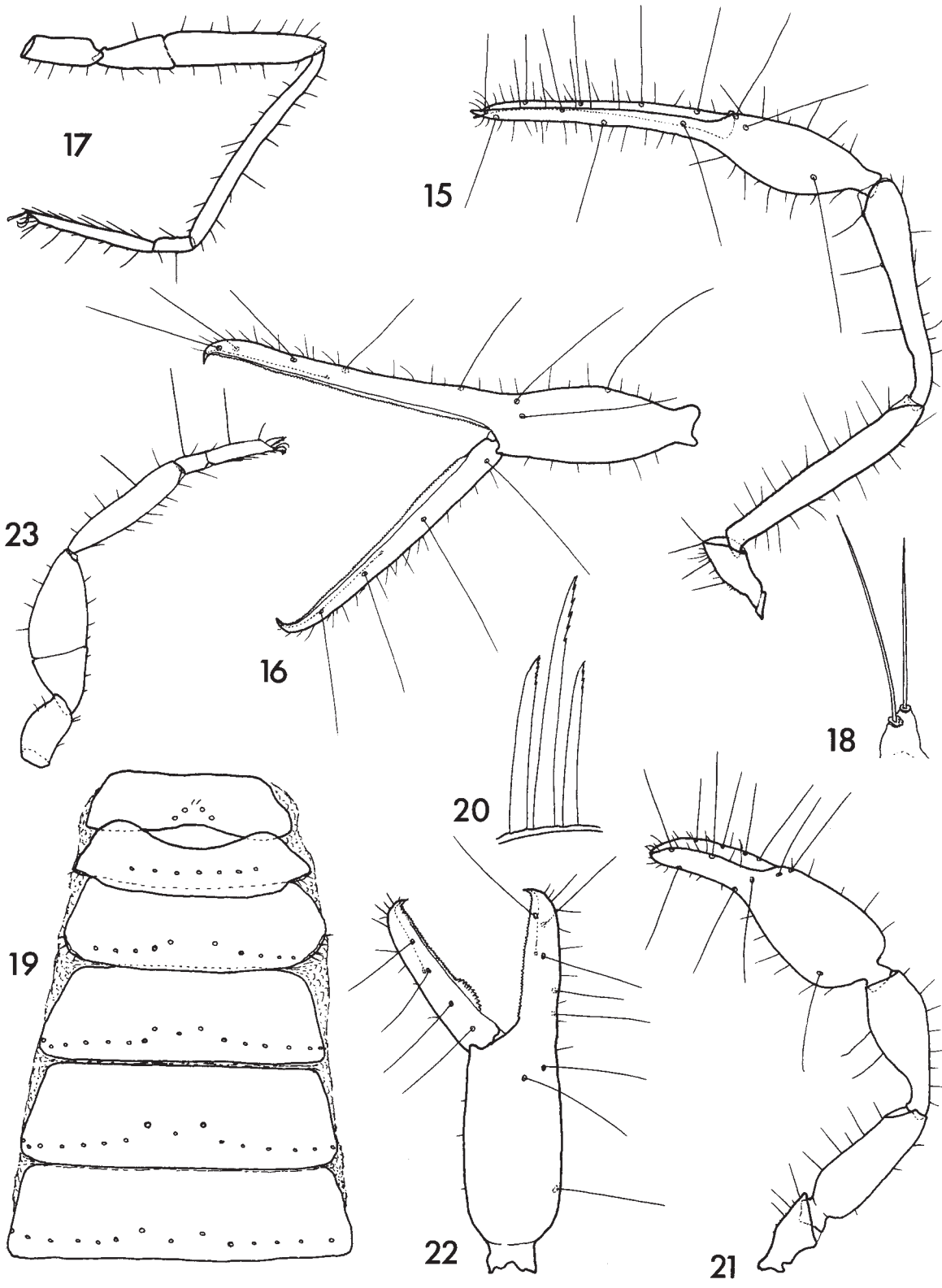
Leucohya heteropoda Chamberlin Figs. 15-17

Leucohya heteropoda Chamberlin, 1946, p. 8.

This species was described from a tritonymph holotype and until now no other specimens have been available. On 19 February 1972, James Reddell found two adult specimens, a male and a female, at the type locality, Grutas del Palmito, 7 km SW Bustamante, Nuevo León, México.

Information provided by the mature specimens allows us to answer some of the questions posed about the species and the genus (see Muchmore, 1972a, pp. 271-2). The following description applies to both the male and the female unless otherwise specified.

Description—The adults are much like the tritonymph in most respects, but are larger, more darkly colored and have more slender appendages. Carapace 1.6 times as long as broad; with small, triangular epistome; no eyes; about 42 vestitural setae, six at anterior and five or six at posterior margin. Palpal coxa with two large, subequal setae on the apex, set close together, anterior foraminal seta not as long as apical setae. Pleural membranes of female distinctly longitudinally granulo-striate, the granules often conical



and with sclerotic apices. Tergal chaetotaxy of male 8:8:9:9:11:12:11:11:10:7:TT1TT:2; female similar.

Sternal chaetotaxy of male $\frac{16}{12}$: [2-2] : (3) $\frac{14}{8}$ (3): (4) 12

(4): 16: $\frac{2}{15}$: 14: 13: 13: 11: 1T1T1: 2; of female 11: (3) 8

(3): (4) 12 (3): 15: $\frac{2}{16}$: 16: 16: 13: 10: 1T1T1: 2; sixth sternite with two large discal setae medially in addition to those of marginal row.

Cheliceral hand with six setae; flagellum of four subequal setae, each denticulate along outer third; galea long and curved; serrula exterior with about 35, and serrula interior with about 30 blades.

Palps very long and slender; femur 1.32-1.40 and chela 2.20-2.30 times as long as carapace. Proportions of segments as shown in Figure 15; trochanter 2.5-2.7, femur 6.7-6.85, tibia 5.1-5.4 and chela (without pedicel) 5.4-6.0 times as long as broad; hand (without pedicel) 1.9-2.25 times as long as deep; movable finger 1.80-1.89 times as long as hand. Trichobothria on chela as shown in Figure 16; *ib* on dorsum of hand, *it* proximad of *et*, and *ist* far proximad of *est*. Fixed finger with 124-140 marginal teeth; movable finger with 125-138 teeth, the last 20 or so raised into a conspicuous crest.

Legs very slender (Fig. 17); leg IV with entire femur 6.75-6.9 and tibia 11.5-13.0 times as long as deep. All tarsi divided; subterminal tarsal setae denticulate; arolia nearly as long as claws, which are long and slender. Legs III and IV with surfaces of femora distinctly scaly, and femoral sutures located about one-third the length of the femur from the proximal end and slightly oblique to the transverse axis.

Measurements (in mm)—Figures are given first for the male, followed in parentheses by those for the female. Body length 5.17(6.34). Carapace length 1.65(1.67). Chelicera 0.77(0.78) by 0.355(0.355). Palpal trochanter 0.91(0.87) by 0.34(0.35); femur 2.315(2.20) by 0.34(0.33); tibia 2.22(2.05) by 0.41(0.40); chela (without pedicel) 3.82(3.68) by 0.64(0.68); hand (without pedicel) 1.37(1.26) by 0.605(0.665); pedicel 0.16(0.19) long; movable finger 2.47(2.38) long. Leg I: basifemur 1.235(1.19) by 0.21(0.19); telofemur 0.605(0.55) by 0.17(0.18); tibia 1.26(1.13) by 0.12(0.12); metatarsus 0.41(0.36) by 0.11(0.11); telotarsus 0.87(0.83) by 0.11(0.11). Leg IV: entire femur 1.87(1.79) long; basifemur 0.67(0.66) by 0.27

(0.265); telofemur 1.29(1.22) by 0.27(0.265); tibia 1.945(1.78) by 0.125(0.12); metatarsus 0.385(0.355) by 0.125(0.12); telotarsus 1.04(0.99) by 0.115(0.11).

Apohya, new genus

Type Species—*Apohya campbelli*, new species.

Diagnosis—(Based upon the single female.) Of fairly typical neobisioid facies and apparently closely related to *Leucohya* Chamberlin. Carapace longer than broad; anterior margin without an epistome; antero-ventral corners each with a small conical protuberance; no eyes or eyespots; surface smooth; with about 40 vestitural setae. Palpal coxa with two large, subequal, apical setae, set close together. Abdominal tergites and sternites smooth; pleural membranes with longitudinal rows of small, smoothly rounded elevations. Tergites with 12-16 marginal setae; sternites with about same numbers of setae; sternite 6 unusual in having two large discal setae medially. Anterior genital operculum of female with only four small setae. Cheliceral hand with six setae, *es* rather short; galea long and slender; flagellum of three terminally denticulate setae, the middle one being longer than the other two. Palps only moderately slender; surfaces nearly smooth. Trichobothria fairly evenly spaced along chelal fingers, but with *ib* on dorsum of hand near base; *it* distinctly proximad of *et*, and *ist* far proximad of *est*. Chelal fingers with numerous contiguous marginal teeth, the basal ones on the movable finger raised into a conspicuous crest. Venom apparatus well developed in both fingers, with long ducts. Legs relatively stout; femoral suture of leg IV located about one-third length of femur from proximal end and slightly oblique; all tarsi divided; arolia slender and longer than claws, which are moderately heavy; subterminal tarsal setae denticulate.

Remarks—The genus *Apohya* is quite similar to *Leucohya* in many features. However, *Apohya* differs markedly from *Leucohya* in the following respects: flagellum of three rather than four setae, the middle one being longer than the others; arolia longer than tarsal claws rather than shorter; four small setae on female genital operculum rather than ten or more; the lack of an epistome on the anterior margin of the carapace; and the presence of a prominent conical protuberance on each antero-ventral angle of the carapace. In many of these features *Apohya* also re-

←Figs. 15-17. *Leucohya heteropoda* Chamberlin. 15. Right palp, dorsal view. 16. Left chela, lateral view. 17. Leg IV, anterior view.

←Figs. 18-23. *Apohya campbelli*, new species. 18. Apex of palpal coxa. 19. Sternites 2-7, showing locations of setae. 20. Cheliceral flagellum. 21. Right palp, dorsal view. 22. Left chela, lateral view. 23. Leg IV, anterior view.

sembles *Mexobisium* Muchmore, but it lacks the tarsal spines characteristic of that genus. These three genera are certainly closely related to one another and in turn are probably related to *Paravachonium* Beier, although the latter genus has been considered a member of the family Vachoniidae (Beier, 1956; Muchmore, 1972). The relations of these genera, together with *Vachonium* and *Troglohya*, are of great importance to an understanding of Mexican cave faunas and will be considered in detail at a later time.

***Aphoya campbelli*, new species**

Figs. 18-23

Material—Holotype female (WM2731.01001) from El Tinieblo, Tamaulipas, México, on 12 March 1972 (G. D. Campbell); found under a rock.

Description—Female: Carapace, chelicerae and palps reddish-brown, body and legs much lighter. Carapace 1.3 times as long as broad; anterior margin without an epistome; a small conical protuberance at antero-ventral corner; no eyes or eyespots present; surface smooth; with about 42 vestitural setae, seven at anterior and eight at posterior margin. Coxal area without special features; palpal coxa with two large, subequal, apical setae, set close together (Fig. 18).

Abdomen long ovoid; tergites and sternites smooth; pleural membranes with longitudinal rows of smoothly rounded elevations. Tergal chaetotaxy 12:12:12:13:15:15:16:16:16:12:T2T:2. Sternal chaetotaxy 4:(3)7(3):(4)12(4):16: $\frac{2}{14}$:15:16:14:11:T2T4T2T:2; sternite 6 with two large discal setae medially (Fig. 19).

Chelicera less than half as long as carapace. Hand with six acuminate setae, *es* rather short; fixed finger with about 12 teeth of varied sizes spread along margin; movable finger with about three moderate-sized teeth and several tiny denticles, all on distal half of margin; galea long, slender, unbranched; serrula exterior with about 25 blades; serrula interior with about 23 blades; flagellum of three setae, the middle one longer than the others, all finely serrate on anterior sides near tips (Fig. 20).

Palps only moderately long and slender; femur 0.90 and chela 1.46 times as long as carapace. Proportions of segments as shown in Figure 21; trochanter 2.1, femur 3.2, tibia 2.45 and chela (without pedicel) 3.0 times as long as broad; hand (without pedicel) 1.95 times as long as deep; movable finger 0.85 as long as hand. Surfaces smooth, except for a few small granules on trochanter, proximal end of

femur, and bases of chelal fingers. Trichobothria of chela as shown in Figure 22. Fixed finger with 63 contiguous, retroconical or rounded teeth; movable finger with 55 similar teeth, but with the last 15 or so elevated into a conspicuous crest (see Fig. 22). Venom apparatus well developed in both fingers; nodus ramosus in fixed finger nearly at level of *est*, that of movable finger just proximad of *st*.

Legs relatively stout; leg IV (Fig. 23) with entire femur 2.8 and tibia 4.35 times as long as deep. All tarsi divided; leg IV with long, tactile setae on metatarsus 0.40 and on telotarsus 0.38 length of segment from proximad end. Arolia slender and longer than claws, which are moderately heavy. Subterminal tarsal setae denticulate near tips.

Measurements (in mm)—Body length 3.0. Carapace 0.78 long, greatest breadth 0.605. Chelicera 0.33 long by 0.17 deep; movable finger 0.22 long. Palpal trochanter 0.39 by 0.185; femur 0.70 by 0.22; tibia 0.665 by 0.27; chela (without pedicel) 1.14 by 0.38; hand (without pedicel) 0.605 by 0.31; movable finger 0.51 long. Leg I: basifemur 0.33 by 0.11; telofemur 0.17 by 0.095; tibia 0.325 by 0.075; metatarsus 0.095 by 0.05; telotarsus 0.21 by 0.045. Leg IV: entire femur 0.56 long; basifemur 0.245 by 0.185; telofemur 0.41 by 0.20; tibia 0.48 by 0.11; metatarsus 0.125 by 0.075; telotarsus 0.235 by 0.06.

Etymology—This species is named for G. D. Campbell, who collected it and other interesting pseudoscorpions.

Genus *Troglohya* Beier

Troglohya Beier, 1956, p. 83.

Type Species—*Troglohya carranzai* Beier, 1956.

This genus was described on the basis of only one specimen, a tritonymph, of the species *T. carranzai* from Cueva de Monteflor, 5 km NE Valle Nacional, Oaxaca, México. Until now, no other representatives have been known. Study of the adult female, described below, makes it possible to expand and improve the generic diagnosis. The new specimen was compared directly with the holotype of *T. carranzai*, borrowed through the courtesy of Dr. C. Bolívar y Pieltain and mounted on a microscope slide.

Diagnosis (emended)—Of general neobisioid facies but modified for cave life by increase in size, elongation of appendages and reduction in color. Carapace longer than broad; anterior margin without an epistome; no eyes or eyespots; surface smooth; with small number of vestitural setae (16-22). Palpal coxa with two large, subequal setae positioned in tandem, and some distance apart, on the apex; anterior forami-

nal seta very long. Abdominal tergites and sternites smooth; pleural membranes longitudinally striate, with occasional tiny granules. Tergites with four to six marginal setae, sternites with about ten. Anterior genital operculum of female with 12 small setae. Cheliceral hand with six setae; galea long and slender; flagellum of four or five setae, the distal one short and acuminate, the others long and finely dentate along outer half; movable finger with a large, laterally displaced, subterminal tooth. Palps very long and slender; surfaces mostly smooth; trichobothria fairly evenly spaced along fingers but with *ib* on dorsum of hand proximal to middle, *it* slightly distad of *et*, and *ist* distad of *est*. Chelal fingers with numerous, contiguous marginal teeth, and (in adult female of *T. mitchelli*) fixed finger with a prominent accessory tooth on internal surface near distal end. Both chelal fingers with well developed venom apparatus, ducts long. Legs long and slender; all tarsi divided; legs III and IV with femoral surfaces scaly and with femoral sutures located one-sixth the length of femur from proximal end and strongly oblique to transverse axis; subterminal tarsal setae finely pinnate; arolia shorter than claws, which are long and slender.

Remarks—As Beier has pointed out (1956, p. 83), *Troglohya* bears considerable resemblance to *Leucohya* Chamberlin. On the other hand, there are some marked differences between the two genera, and in some respects *Troglohya* is remarkably like *Vachonium*, which has been placed in a separate family (see Muchmore, 1972a). The relationships among the neobisioid pseudoscorpions of Mexican and Central American caves are probably much more complicated than anyone has realized before now and deserve intensive study. Consideration of these relationships will be the subject of a later paper.

***Troglohya mitchelli*, new species**
Figs. 24-31

Material—Holotype female (WM2943.01001) from Grutas de Zapaluta, 6.5 km SE La Trinitaria, Chiapas, México, on 28 August 1972 (J. Cooke, W.H. Russell).

Diagnosis—The only other species in the genus is *Troglohya carranzai* Beier, which is known only from the tritonymph holotype. The new species is easily distinguished from *T. carranzai* by its much larger size, the greater number of setae on the carapace, and the occurrence of only four setae in the cheliceral flagellum.

Description (based on the holotype female)—Carapace, chelicerae and palps light reddish brown; body and legs much paler. Carapace 1.5 times as long as broad; without epistome; eyeless; surface finely reti-

culated; vestitural setae 4-4-2-6-5=21, lateral ones in posterior row reduced in size. Coxal chaetotaxy 2-2(3)-7-1-3:2-3(4):2-4(3):2-4(5); the two large setae on the apex of the palpal coxa in tandem and some distance apart, anterior foraminal seta very long (Fig. 24).

Abdomen elongate; tergites and sternites nearly smooth; pleural membranes smoothly longitudinally striate, with only occasional granulations. Tergal chaetotaxy 4:4:6:5:6:5:6:6:6:7:T1T1T1T:2. Sternal chaetotaxy 12:(3)14(3):(2)10(3):11:10:10:11:10:10:T1T:2; genital opercula as in Figure 25.

Chelicera slightly less than half as long as carapace. Palm with six setae; flagellum of four setae, the distal one short and simple, the other three subequal in length and finely dentate along outer half (Fig. 26); serrula exterior with 33 blades; galea a long, slightly curved stylet; fixed finger with 9-10 irregular teeth, the distal one slightly isolated; movable finger with a large, laterally displaced, subterminal tooth, which is continuous with the dental ridge onto base of finger (Fig. 27).

Palps long and very slender; femur 1.80 and chela 2.68 times as long as carapace. Proportions of segments as shown in Figure 28: trochanter 2.15, femur 8.3, tibia 7.4, and chela (without pedicel) 8.2 times as long as broad; hand (without pedicel) 3.2 times as long as deep; movable finger 1.52 times as long as hand. Surfaces smooth except for a few small granules on trochanter and on bases of chelal fingers. Trichobothria on chela as shown in Figure 29. Movable chelal finger with 136 contiguous, rectangular teeth, the outer margins being flat or slightly convex. Fixed finger with 161 contiguous, retroconical teeth having distinct cusps, and with one prominent accessory tooth on the internal surface at the level of the twelfth marginal tooth; the accessory tooth evidently acts as a stop for the end of the movable finger, which overlaps the fixed finger internally upon closing. Venom apparatus well developed in both fingers; ducts quite slender and long, but not reaching to level of *st* in movable finger or to *ist* in fixed finger.

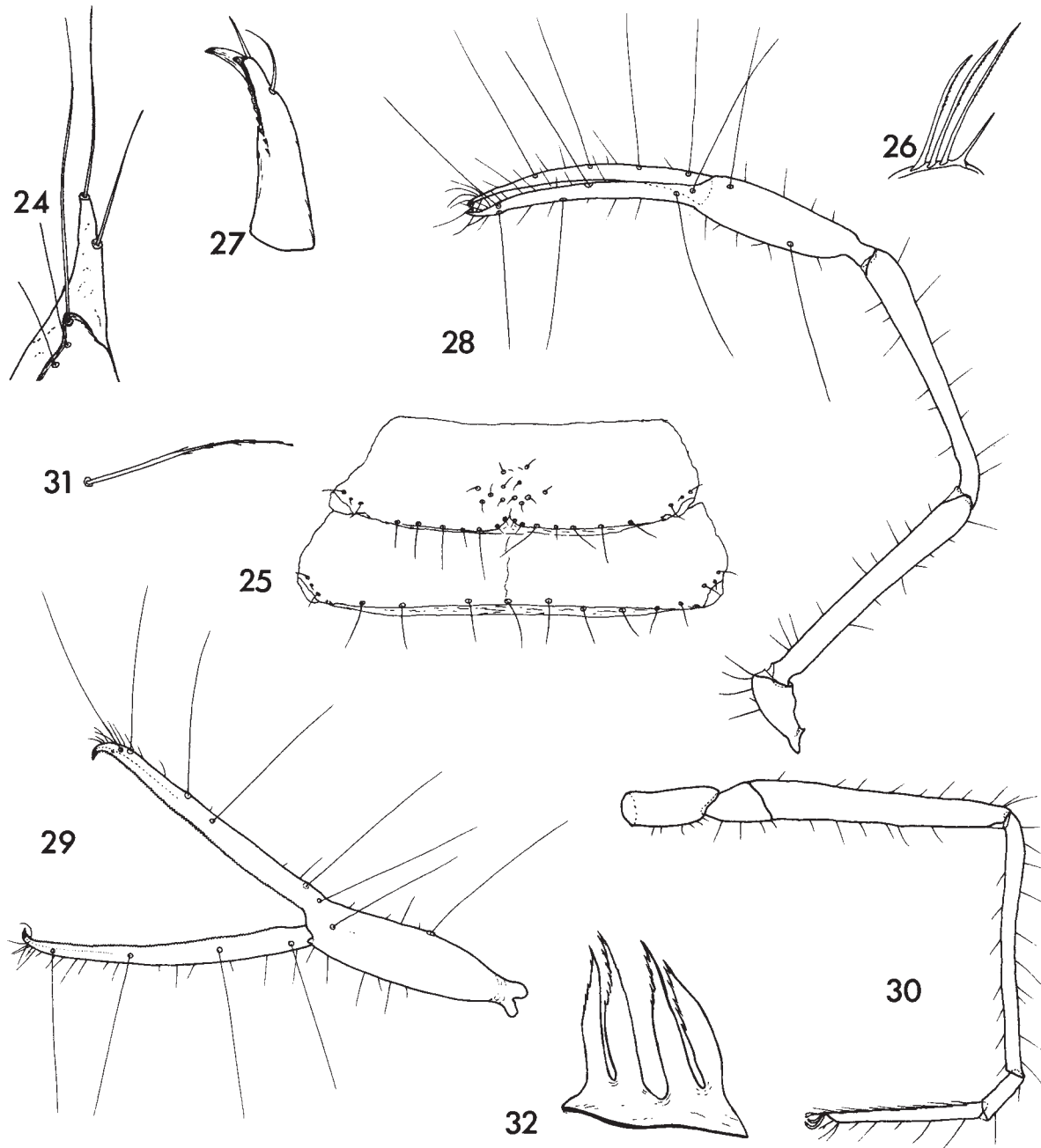
Legs very long and slender; leg IV (Fig. 30) with entire femur 7.75 and tibia 12.8 times as long as deep. Legs III and IV with surfaces of femora conspicuously scaly, and with femoral sutures located one-sixth the length of the femur from proximal end and strongly oblique to the transverse axis. All tarsi divided; subterminal tarsal setae finely pinnate on distal half (Fig. 31); arolia shorter than claws, which are long and slender. Leg IV with several large (tactile?) setae on tibia and tarsi.

Measurements (in mm)—Body length 4.85. Carapace length 1.56. Chelicera 0.865 by 0.36. Palpal

trochanter 0.95 by 0.445; femur 2.805 by 0.34; tibia 2.81 by 0.38; chela (without pedicel) 4.81 by 0.51; hand (without pedicel) 1.665 by 0.52; pedicel 0.22 long; movable finger 2.515 long. Leg I: basifemur 1.56 by 0.22; telofemur 0.59 by 0.185; tibia 1.26 by 0.14; metatarsus 0.35 by 0.11; telotarsus 0.895 by

0.10. Leg IV: entire femur 2.40 long; basifemur 0.50 by 0.295; telofemur 2.07 by 0.31; tibia 2.05 by 0.16; metatarsus 0.445 by 0.14; telotarsus 1.235 by 0.12.

Etymology—This species is named for Robert W. Mitchell, an inspiring leader in the study of Mexican cave creatures.



Figs. 24-31. *Troglonya mitchelli*, new species. 24. Anterior end of palpal coxa, showing apical and foraminal setae. 25. Genital opercula of female. 26. Cheliceral flagellum. 27. Movable finger of chelicera, lateral view. 28. Right palp, dorsal view. 29. Left chela, lateral view. 30. Leg IV, anterior view. 31. Subterminal tarsal seta.

Fig. 32. *Paravachonium bolivari*, Beier, holotype female. Cheliceral flagellum.

Genus *Paravachonium* Beier

Paravachonium Beier, 1956, p. 81; Muchmore, 1972a, p. 268.

Type Species—*Paravachonium bolivari* Beier, 1956.

No new material pertaining to this genus has been found. However, it seems worthwhile to record some further data about the type species.

Paravachonium bolivari Beier

Fig. 32

Paravachonium bolivari Beier, 1956, p. 82.

Contrary to the statements of Beier (1956) and the author (1972a), the holotype is a female, not a male! Though the internal genitalia are not well preserved, the pattern of setae on the genital opercula is clearly of the female type. The complete chaetotaxy of the sternites is 7:(3)10(3):(4)13(3):18:17:19:18:16:13:T1T:2, which is somewhat different from Beier's estimate, "Sternite mit je 12 Marginalborste" (p. 82). Also, Beier's statement concerning tergal setae, "Abdominaltergite in der Mehrzahl mit je 6" is inaccurate, actual tergal chaetotaxy being 6:9:9:9:10:10:11:9:9:7:T1T1T1T:2. It is also pertinent to note that the pleural membranes are longitudinally granulo-striate, the individual granules being pointed but without distinct apical spinules. Further, the four setae of the cheliceral flagellum are all strongly serrate along the anterior side on the outer half (Fig. 32); and like the adult, the deutonymph has four setae in the flagellum. Also, it may be noted that in the deutonymph the marginal teeth of the movable chelal finger are not elevated to form a crest or lamella, as they are in the adult.

Genus *Vachonium* Chamberlin

Vachonium Chamberlin, 1947, p. 4.

Type Species—*Vachonium boneti* Chamberlin, 1947.

The genus has been well characterized by Chamberlin (1947). The two new species described below add little to our understanding of the genus except to extend its known distribution somewhat to the south and to show that the tritonymph is not much different from adults (females).

Vachonium kauae, new species

Figs. 33-35

Material—Holotype female (WM2944.01001) from Cueva de Kaua, 1 km S Kaua, Yucatán, México, on 24 August 1972 (W.H. Russell, J.W. Cooke).

Diagnosis—Very similar to *V. maya* Chamberlin but with fewer setae on carapace, more setae on anterior tergites and genital opercula of female, and all appendages less attenuated.

Description of Female—Carapace, chelicerae and palps light brown, other parts much paler. Carapace about one-third longer than broad; without an epistome; surface distinctly reticulated, with no trace of a transverse furrow; no eyes or eyespots; chaetotaxy 6-6-4-2-4=22, the lateral ones in the posterior row reduced in size. Palpal coxa with two stout, but short setae on apex, in tandem and some distance apart; anterior foraminal seta very long. Anterior three or four tergites and sternites slightly reticulated, others smooth; pleural membranes longitudinally smoothly striate, the striae apparently divided into many more segments than are actually present (pseudosegmented). Tergal chaetotaxy 5:5:6:6:6:6:6:6:4:TTTT:3; there is obviously an extra seta on the anal plate of this specimen. Sternal chaetotaxy 16:(3)19(3):(2)10(3):9:4mm4:4mm4:4mm4:9:8:1TT1:2. Internal genitalia much like those figured for *V. maya* (Chamberlin, 1947, figs. 34 and 35) but details difficult to make out.

Cheliceral hand with eight setae, two in position of *es*; flagellum of five setae, the distal four subequal and dentate in the outer half, the proximal one short and only sparsely denticulate; galea a long curved stylet.

Palps long and slender; femur 1.68 and chela 2.69 times as long as carapace. All segments completely, but not evenly, covered with heavy granules. Proportions of segments as shown in Figure 33; trochanter 2.35, femur 7.7, tibia 6.55, and chela (without pedicel) 6.7 times as long as broad; hand (without pedicel) 2.05 times as long as deep; movable finger 2.03 times as long as hand. Femoral tubercle well developed, similar in position to that of *V. maya*, apparently with two separate pores near summit. Trichobothria on chela as shown in Figure 34. Fixed finger blunt at tip, with no venedens or trace of venom duct; end of finger broadened and bearing 12 heavily sclerotized denticles in a double row, which is continuous with the marginal row of 131 sharply conical teeth; and with a prominent accessory tooth on the internal side at level of 19th marginal tooth.

Legs slender; leg IV with entire femur 5.6 and tibia 9.6 times as long as deep. All tarsi divided; subterminal tarsal setae denticulate (Fig. 35); arolia shorter than claws, which are rather stout. Legs III and IV with surfaces of telofemora distinctly scaly, and femoral sutures located one-fifth the length of femur from proximal end and distinctly oblique to the transverse axis.

Male—Unknown.

Measurements (in mm)—Body length 4.07. Carapace length 1.37. Chelicera 0.755 by 0.35. Palpal trochanter 0.805 by 0.34; femur 2.30 by 0.30; tibia 2.03 by 0.31; chela (without pedicel) 3.69 by 0.55; hand (without pedicel) 1.095 by 0.53; pedicel 0.14 long; movable finger 2.22 long. Leg I: basifemur 1.035 by 0.185; telofemur 0.46 by 0.16; tibia 1.00 by 0.11; metatarsus 0.185 by 0.09; telotarsus 0.88 by 0.075. Leg IV: entire femur 1.63 long; basifemur 0.34 by 0.25; telofemur 1.375 by 0.29; tibia 1.44 by 0.15; metatarsus 0.22 by 0.12; telotarsus 1.185 by 0.095.

Etymology—This species is named after Cueva de Kaua, where it lives.

Vachonium belizense, new species

Figs. 36-38

Material—Holotype tritonymph (WM2942.01001) from Mountain Cow Cave, Caves Branch, Belize (British Honduras), on 5 August 1972 (S.B. Peck).

Diagnosis—The largest known species of the genus, with palpal chela of tritonymph nearly 4 mm in length. Other diagnostic features impossible to identify in the absence of adults of this species and of tritonymphs of other species.

Description of Tritonymph—Generally like adults of other species in the genus, and with the following notable features. All sclerotized parts light tan, other parts nearly white. Carapace longer than broad; without epistome or transverse furrow; no eyes; chaetotaxy 6-6-2-4-2-4=24. Pleural membranes of abdomen longitudinally smoothly striate and pseudosegmented. Tergal chaetotaxy 4:4:6:6:7:6:6:6:6:6:TTTT:2. Sternal chaetotaxy 3:(2)9(2):(2)8(1):8:4mm4:6mm5:5mm6:11:11:2T1T1:2.

Chelicera with seven setae on hand; flagellum of right chelicera with three setae, that of left chelicera with four setae, all setae subequal in length and finely denticulate in the distal third; galea long, slender, curved and partially recumbent on the surface of the finger.

Palps very long and slender; femur 1.73 and chela 2.82 times as long as carapace. Surfaces smooth, except chelal hands and fingers with small granules. Proportions of palpal segments as shown in Figure 36; trochanter 2.15, femur 8.0; tibia 6.45, and chela (without pedicel) 5.95 times as long as broad; hand (without pedicel) 1.95 times as long as deep; movable finger 1.90 times as long as hand. Femoral tubercle well developed, with a large, reinforced pore at its summit. Trichobothria of chela as shown in Figure 37; *sb* apparently missing from movable finger and *isb*

from fixed finger. Both chelal fingers more curved than in other known species of the genus. Movable finger with well developed venedens and long venom duct; marginal teeth numbering 89, the distal ones extremely flattened. Fixed finger blunt at tip; with no venedens, but with a long, very slender venom duct; end broadened and bearing 11 heavily sclerotized denticles in a double row, continuous with marginal row of 109 teeth; with a prominent accessory tooth internally at level of 27th marginal tooth.

Legs very slender; femur 7.95 and chela 12.3 times as long as deep. All tarsi divided (Fig. 38); telotarsi swollen basally; subterminal tarsal setae sparsely denticulate; arolia shorter than claws. Femoral suture of leg IV one-fifth length of femur from proximal end and distinctly oblique to transverse axis.

Male and Female—Unknown.

Measurements (in mm)—Body length 4.76. Carapace length 1.43. Chelicera 0.89 by 0.37. Palpal trochanter 0.835 by 0.39; femur 2.40 by 0.30; tibia 2.13 by 0.33; chela (without pedicel) 3.93 by 0.66; hand (without pedicel) 1.235 by 0.64; pedicel 0.20 long; movable finger 2.35 long. Leg I: basifemur 1.24 by 0.19; telofemur 0.52 by 0.17; tibia 1.17 by 0.12; metatarsus 0.245 by 0.10; telotarsus 1.065 by 0.13; Leg IV: entire femur 1.99 long; basifemur 0.445 by 0.245; telofemur 1.70 by 0.25; tibia 1.725 by 0.14; metatarsus 0.30 by 0.125; telotarsus 1.45 by 0.15.

Etymology—This species is named for Belize (the new name for British Honduras), the country in which it lives.

FAMILY CHELIFERIDAE HAGEN

This family of pseudoscorpions is characterized by the following criteria: all legs monotarsate; femora of legs I and II quite different from those of legs III and IV; both chelal fingers with well developed venedens and venom apparatus; absence of accessory teeth from chelal fingers, or at most a single, small denticle on internal surface of fixed finger near the tip.

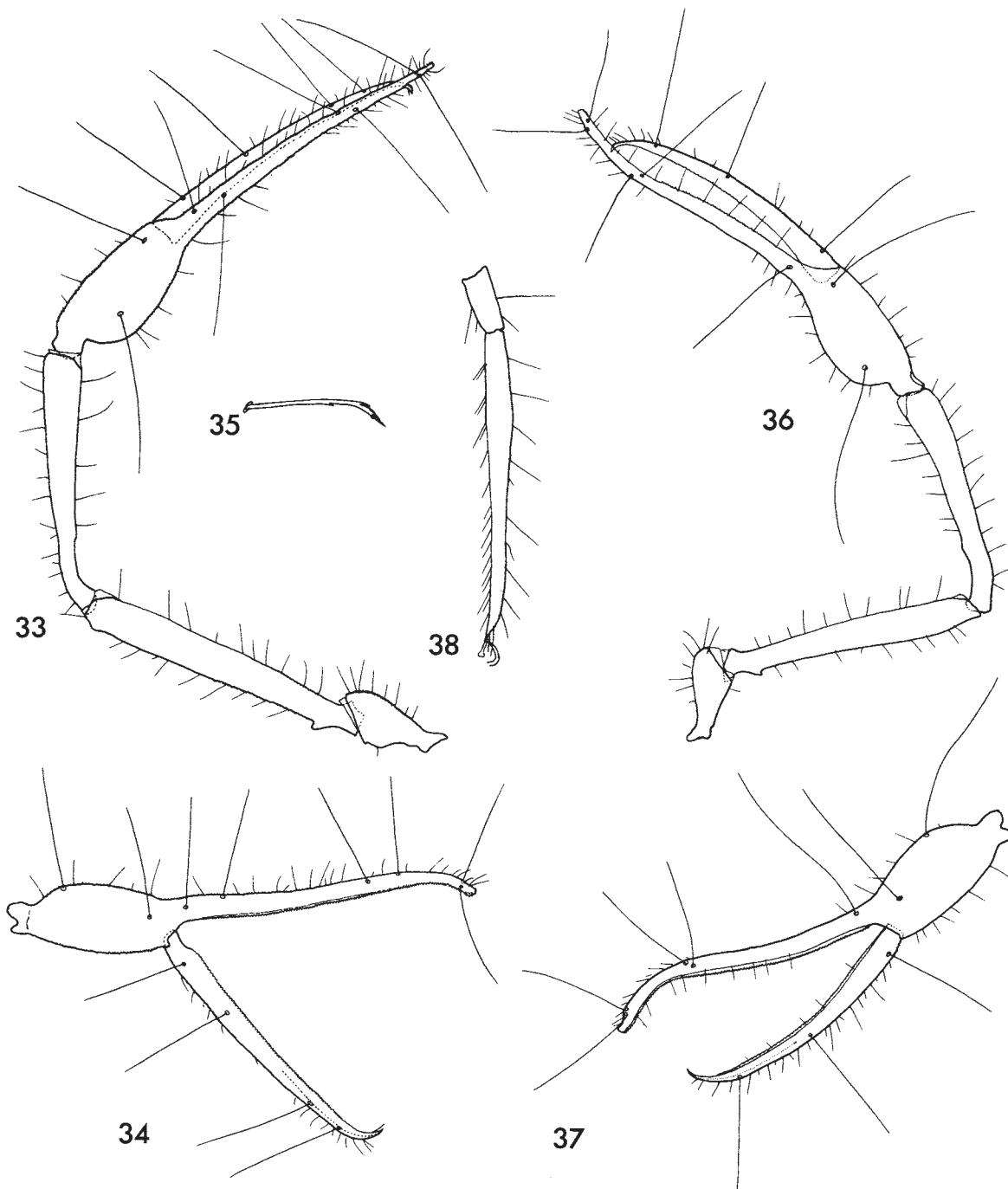
Mexichelifer, new genus

Type Species—*Mexichelifer reddelli*, new species.

Diagnosis—Of fairly general cheliferid facies. Carapace with numerous (80-100) setiferous tubercles; eyes large, corneate; transverse furrows distinct; no posterolateral keels in male. Tergites and sternites all apparently divided, though halves not widely separated; single discal seta on each half of tergites 5-10, in addition to marginal row. Most setae of dorsal surfaces clavate to denticulate, those of ventral surfaces mostly acuminate. Coxal area not remarkable, except for prominent patches of long setae on posteromedial

corners of coxae III and IV of male. Coxa IV of male without a lateral spur; containing a large coxal sac provided with a prominent atrium. Large ramshorn organs present in male. Statumen convolutum of male

genitalia deeply invaginated anteriorly and with a poorly sclerotized median rod. Medial cribriform plates of female indistinct, but certainly paired. Cheliceral hand with four setae, all acuminate, as quite



Figs. 33-35. *Vachonium kauae*, new species. 33. Left palp, dorsal view. 34. Right chela, lateral view. 35. Subterminal tarsal seta.

Figs. 36-38. *Vachonium belizense*, new species. 36. Right palp, dorsal view. 37. Left chela, lateral view. 38. Metatarsus and telotarsus of leg IV.

long. Palpal trochanter and femur with prominent setiferous tubercles. Venom apparatus well developed in both chelal fingers, but ducts slender and relatively short, not reaching to levels of trichobothria *t* or *ist* in movable and fixed fingers, respectively. In addition to marginal teeth, fixed finger with one small accessory tooth on inner surface at level of fifth marginal tooth. Pedal claws and subterminal setae simple. Tarsus of leg IV with long, tactile seta near distal end. First tarsus of male modified; outer margin with a conical terminal spine and two or three smaller subterminal projections; posterior claw smaller than anterior and with an inconspicuous lateral ridge.

Remarks—Like several other cheliferid genera, *Mexichelifer* is paradoxical in that it possesses the anteriorly invaginated statumen convolutum of the male and paired medial cribriform plates of the female, usually considered peculiar to the Cheliferini, and at the same time has a distinct atrium on the coxal sac of the male, usually considered peculiar to the Dactylocheliferini. In these and some other respects, this genus resembles *Florichelifer* Hoff (1964) from Florida, *Kashimachelifer* Morikawa (1957) from Japan, *Ancistrochelifer* Beier (1951) and *Metachelifer* Redikortzev (1938) from Indochina, and *Tyrannochelifer* Chamberlin (1932) from the West Indies and Florida. However, *Mexichelifer* is easily distinguished from these other genera by the presence of only four setae on the cheliceral hand and the strong modification of the first tarsus of the male. The relations of these genera to typical members of the Cheliferini and Dactylocheliferini remain to be determined.

Even though it has not been reported prior to this time, the presence of an internal accessory on the fixed chelal finger is probably not unusual among the Cheliferidae. A brief survey of specimens in my collection has revealed one or more small accessory teeth or denticles in representatives of *Chelifer*, *Parachelifer*, *Hysterochelifer*, *Tyrannochelifer* and *Dactylochelifer*. All of these structures were at the distal ends of the fingers and were never of a size comparable to the accessory teeth commonly found in the Chernetidae.

***Mexichelifer reddelli*, new species**

Figs. 39-46

Material—Holotype male (WM1075.01001) and paratype female from Cueva de Carnicerías, Valle de los Fantasmas, 17 km W Sta. Catarina, San Luis Potosí, México, on 4 August 1966 (J.R. Reddell).

Description—Male: Typically cheliferid in general facies. Body and palps reddish-brown, chelicera and

legs a little lighter. Carapace heavily granulate; with about 85 clavate setae, each on a prominent tubercle, four setae at anterior and 14 near posterior margin, no keels present at postero-lateral corners. Tergites apparently all divided, but the halves not distinctly separated; no keels present laterally; surfaces heavily granulate anteriorly, changing to scale-like elevations posteriorly. Tergal chaetotaxy 14:18:16:19:21:20:25:23:21:23:18:2; each half of tergites 5 to 10 with one discal seta as well as one or two lateral setae. Sternites divided or nearly so; surfaces finely reticulated; sternal chaetotaxy $\frac{45}{54}$: [4-4]:(0)25(0):(1)17(1):

16:19:22:19:20:15:7:2; positions of setae on genital opercula as shown in Figure 39; most setae missing from eleventh tergite and sternite, so that occurrence of tactile setae is uncertain. Coxal area unremarkable, except for large patches of long setae on medial edges of coxae III and IV; coxae IV without lateral spurs, but each with large coxal sac provided with a well defined atrium (Fig. 40). Anterior margin of statumen convolutum with a deep invagination, in which lies a poorly sclerotized rod (Fig. 41). Ramshorn organs well developed.

Chelicera about one-third as long as carapace, of general cheliferid facies. Flagellum of three setae, the distal one sparsely dentate on anterior side; hand with only four setae, all acuminate, es quite long; serrula exterior of 18 blades; galea long, slender, finely denticulate subterminally.

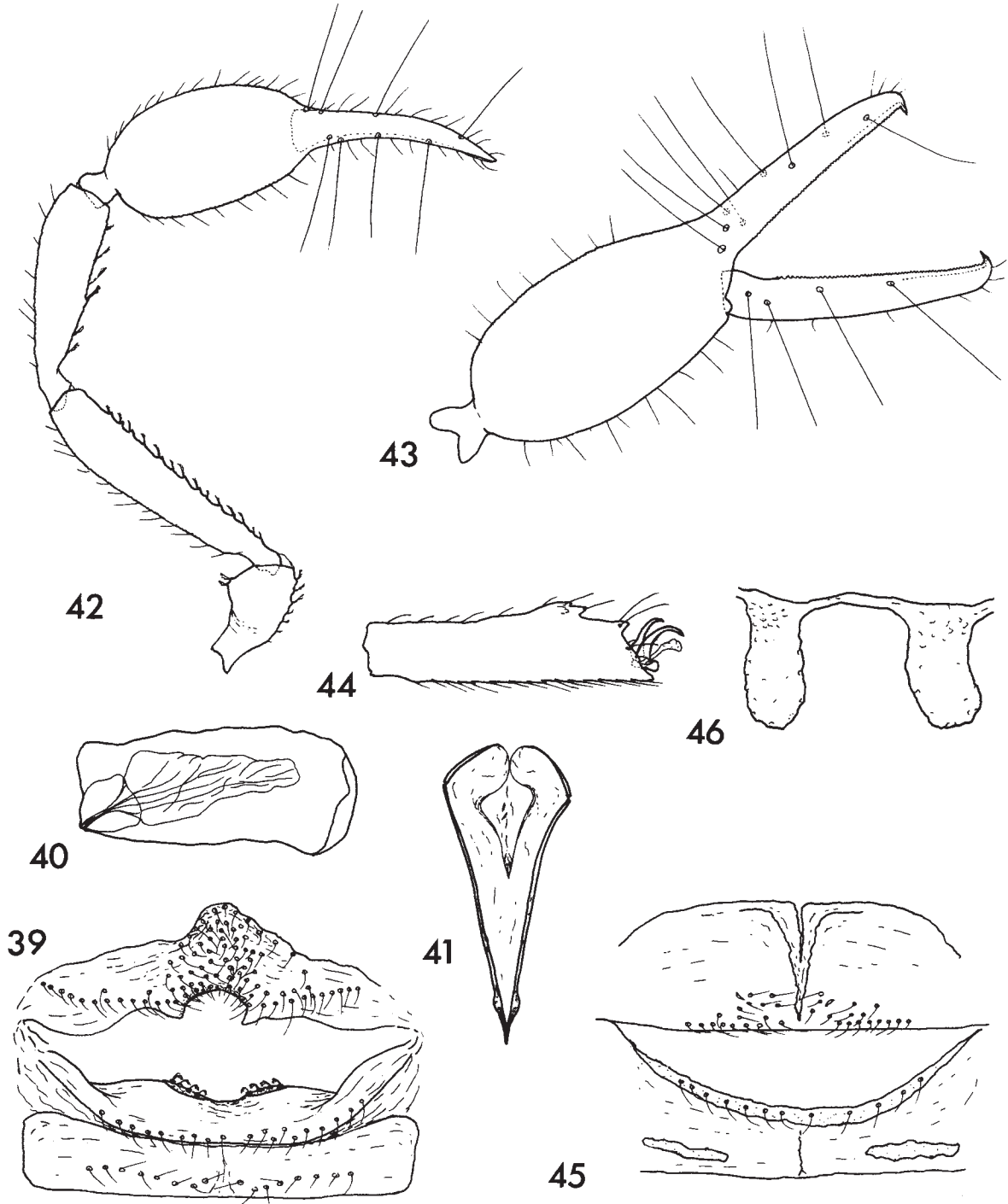
Palps moderately long and slender; surfaces granulate except for chelal fingers; setiferous tubercles conspicuous on trochanter and inner surfaces of femur and tibia. Proportions of segments as shown in Figure 42; trochanter 1.8, femur 5.15, tibia 3.65, and chela (without pedicel) 3.35 times as long as broad; hand (without pedicel) 1.8 times as long as deep; movable finger and hand of equal length. Trichobothria on chela as in Figure 43. Both fingers with well developed venom apparatus; venom ducts of equal length, relatively short and slender, with nodus ramosus of movable finger distad of *t* and that of fixed finger just distad of *ist*. Movable finger with 66 contiguous, cusped marginal teeth; fixed finger with 58 similar teeth and one small accessory tooth on the internal side at the level of the fifth marginal tooth.

Legs heavily sculptured with scale-like elevations. Tarsus of leg I strongly modified (Fig. 44); outer margin with a conical terminal spine and two or three smaller, subterminal projections; posterior claw distinctly smaller than anterior claw, and with an inconspicuous lateral ridge. Claws of all other legs rather stout, simple. Subterminal tarsal setae curved, simple,

Tarsus of leg IV only, with a long, tactile seta 0.76 length of segment from proximal end.

Female—Like the male in most respects, but slightly larger and with more slender appendages. Carapace

with about 100 setae, four at anterior and 16 near posterior margin. Tergal chaetotaxy 17:20:18:20:25:26:24:26:26:26:16:2. Sternal chaetotaxy 33:(0)12(0):(1)12(1):16:20:22:23:22:18:13:2; setae of geni-



Figs. 39-46. *Mexichelifer reddelli*, new species. 39. Genital opercula and fourth sternite of male. 40. Coxa of left leg IV of male, showing coxal sac. 41. Statumen convolutum of male. 42. Left palp of male, dorsal view. 43. Right chela of male, lateral view. 44. Tarsus of leg I of male, anterior view. 45. Genital opercula of female. 46. Spermathecae of female (after treatment with KOH).

tal opercula as in Figure 45. Internal genitalia of specimen treated with KOH as illustrated in Figure 46; medial cribriform plates not well developed, but spermathecae paired.

Chelicera like that of male, with only four acuminate setae on hand, *es* long. Serrula exterior of 20 blades; galea long, with 4-5 small subterminal rami.

Palps like those of male, but segments more slender. Trochanter 2.0, femur 5.15, tibia 3.85, and chela (without pedicel) 3.85 times as long as broad; hand (without pedicel) 2.2 times as long as deep; movable finger 0.92 as long as hand. Venom apparatus as in male, but venom ducts a little shorter. Movable finger with 71 and fixed finger with 60 marginal teeth; fixed finger with a small internal accessory tooth at level of fifth marginal tooth.

Legs unmodified. Claws and subterminal tarsal setae all simple. Leg IV, only, with long tactile seta on tarsus 0.77 length of segment from proximal end.

Measurements (in mm)—Figures for male holotype given first, those for female in parentheses. Body length 3.61(3.99). Carapace length 1.10(1.29), posterior breadth 1.22(1.15); diameter of eye 0.15(0.16). Chelicera 0.34(0.39) by 0.18(0.185). Palpal trochanter 0.635(0.72) by 0.355(0.36); femur 1.49(1.64) by 0.29(0.32); tibia 1.205(1.345) by 0.33(0.35); chela (without pedicel) 2.07(2.265) by 0.615(0.59); hand (without pedicel) 1.06(1.22) by 0.59(0.55); pedicel 0.13(0.14) long; movable finger 1.06(1.12) long. Leg I: basifemur 0.40(0.415) by 0.215(0.22); telofemur 0.58(0.68) by 0.18(0.19); tibia 0.585(0.665) by 0.15(0.14); tarsus 0.57(0.63) by 0.155(0.10). Leg IV: entire femur 1.10(1.32) long; basifemur 0.32(0.40) by 0.21(0.22); telofemur 0.925(1.06) by 0.32(0.33); tibia 0.925(1.05) by 0.155(0.17); tarsus 0.67(0.73) by 0.11(0.11).

Etymology—This species is named for James R. Reddell, who collected the specimens, and who has done so much to promote an understanding of Mexican cave faunas.

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