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LANIATORES (OPILIONES) OF THE YUCATAN PENINSULA AND BELIZE
(BRITISH HONDURAS)

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In previous papers, we have described some elements of the opilionid fauna of the Yucatán Peninsula, particularly the Mexican portion (see Goodnight and Goodnight, 1947a and b, 1951, 1953). As this information is scattered, this present paper should be useful for presenting a clearer picture of the relationships of the fauna of this area.

The Yucatán Peninsula, a northeastern projection of Central America, lies between the Gulf of México and the Caribbean, between the latitudes of 22° and 16° north. Its area, some 55,500 square miles, includes the Mexican states of Campeche, Yucatán, and Quintana Roo, and much of northern Belize (British Honduras) and eastern Guatemala.

The peninsula is low, and is almost wholly composed of a bed of coralline and porous limestone rocks which form a low tableland gradually rising toward the south. The limestone rocks are covered with a layer of thin, dry soil, formed by the slow weathering of the coral rocks. To the north, the peninsula is low, sandy, and semi-barren; the eastern coast of México has many bluffs indented with bays. There are many off-shore islands. There is little or no surface water in many areas, but the ground is perforated with many natural wells, the cenotes, around which the ancient Mayas often settled.

Northern Yucatán is quite hot and dry, but the moisture increases from 18 inches of rain annually in the north to a maximum of 80 inches in the south. The scrub forests of northern Yucatán gradually give

way to taller trees as one moves southward. Though the temperatures are quite high (75° to 98° F) sea breezes tend to moderate the climate. There is a pronounced dry season extending from December to May; the hottest months are May and June.

Belize (British Honduras) is bounded on the north by México, to the west and south by Guatemala, and to the east by the Caribbean. Three regions are usually recognized. In the north, Belize is a part of the Yucatán Peninsula, and like the Mexican portion is a limestone region of low relief. The Rivers New and Hondo are located here and flow into Chetumal Bay. As is true of most of the coastal regions of Belize, the coast is very low in this northern region and has many mangrove swamps and lagoons. Inland there are grass savannas with pines and palmettos.

The northern region gradually rises toward the south, changing into the central mountainous region. This central region is characterized by the tripartite Maya Mountains which are formed of granite and late paleozoic formation. Locally these mountains trend nearly north-south though the original structural trend was east-west. The Mountain Pine Ridge, a centrally located area, is covered with oaks and pines (*Pinus caribaea*); the highest point is Baldy Beacon, 3348 feet. The Cockscomb range, east of the main divide of the Maya Mountains has the highest peak in the country, Victoria Peak, with an elevation of 3680 feet. South of Belize City the coastal lowlands skirt the highlands and are crossed by short

river valleys.

The third region, approximately that section south of the Maya Mountains, is a high hill land, much fractured, which descends from an elevation of about 2900 feet to sea level.

While there are some high areas in Belize, most of the country is low, averaging less than 200 feet above sea level. Near shore, the sea is very shallow, a submarine escarpment supports a barrier reef which runs the length of the coast some 15 miles offshore. Outward from the barrier reef are Glovers and Light-house Reefs as well as the Turneffe Islands. Within the reef are numerous small islands. All of these islands and reefs are very low, barely above sea level and subject to extensive damage from the occasional hurricanes which sweep across them.

The climate of Belize is subtropical; the rainfall varies from 52 inches annually in Corozal to approximately 180 inches annually on the southern border. The dry season, December to May, is well defined. The forests of the southern areas are classed as tropical wet forests in the Holdridge Life Zone classification.

Most of the country has seasonal broadleaf forests; swamp forests border the rivers, grass savannas are found on the coastal south and inland of Belize City. Mangroves fringe the coast, and oaks and pines are found on the Mountain Pine Ridge. The vegetation of the Caribbean islands is characterized by the presence of many coconut palms.

Politically, Belize is divided into districts. These are Corozal, the northernmost; Orange Walk, just south of Corozal; Cayo to the west; Belize, the central coastal area and the off-shore islands and reefs; Stann Creek, south of Belize City; and Toledo, the largest and most southern.

During the summers of 1971 and 1972, Marie Goodnight and our son, Charles, collected over much of Belize, traveling and collecting in representative sections of each of the three main geographical regions. Two weeks were spent on Glover's Reef some 22 miles offshore. The material studied from Yucatán, Campeche, and Chiapas, was collected by Robert Mitchell and his colleagues of Texas Tech University. A few collections were contributed by Drs. S. and J. Peck with whom we worked for a brief time in Belmopan in July of 1972.

Unless otherwise noted, all collections made in Belize were done by Marie and Charles Goodnight; the material from Yucatán is acknowledged under the species descriptions. Holotypes of new species are deposited in the collections of the American Museum of Natural History, New York. Paratypes are deposi-

ted both there and in the collections of The Museum, Texas Tech University in Lubbock.

The fauna of this study area shows its relationships to that of the main portion of México and Guatemala as well as to Central America and the islands such as Cúba. Many forms first described by Cambridge (1905) from Guatemala were found in Belize, but few known from Costa Rica were encountered.

In doing this study, we have followed the taxonomic scheme which we first used in 1953. In that study, we synonymized many genera, hopefully simplifying and clarifying the relationships of the opilionid fauna of Chiapas and contiguous areas. Because so many previous workers have tended to multiply the number of genera, the relationships of the fauna were obscured; we feel that the scheme we devised gives a much clearer picture of a complex situation.

We have attempted to illustrate salient features which we believe will be helpful in future identification of material from this area. We have not used the male genitalia for specific identification, but have illustrated it whenever possible. Hopefully future workers in this area will find this attempt to understand the opilionid fauna helpful.

We wish to express our appreciation to the many individuals who were helpful during our work in Belize. Particularly, we wish to thank the Educational Foundation of the American Association of University Women for the support and encouragement which they gave to Marie Goodnight.

Special appreciation must also be made to our son, Charles, whose enthusiasm and helpfulness during the field work were invaluable.

SUBORDER LANIATORES THORELL

PHALANGODIDAE SIMON

Phalangodinae Roewer

Cynortina Banks

Cynortina Banks, 1909, Proc. Acad. Nat. Sci. Philadelphia, 61:228. Roewer, 1923, Die Weberknechte der Erde, p. 120. Sorensen, 1932, K. Danske Vidensk. Selsk. Skr., 9:263. Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:14.

This is a much abbreviated synonymy of this genus. In 1953, Goodnight and Goodnight synonymized many genera into this single genus. The complete synonymy is in that publication.

Phalangodids with a common rounded eye tubercle which is usually removed from the anterior margin of the cephalothorax. Tubercle without large median spine above, but it may have a small spine. The

abdominal scute with five dorsal areas, the first without a median line. Tarsi of third and fourth legs without scopulae and with simple untoothed double claws. Femur of first leg normal, not elongate or heavily spined. The tarsus of the first leg with three segments, distitarsus with two; distitarsus of second tarsus with three or four segments. The tarsi of the other legs have a varying number of segments. The metatarsi of the legs are not divided into astragali and calcanea. The maxillary lobe of the second coxa without a ventral projection. The secondary sexual characters of the male are variable, but usually consist only of heavier spines on the fourth leg.

Genotype: *Cynortina tarsalis* Banks.

Cynortina acanthotibialis Goodnight and Goodnight
Figs. 1a-1b

Cynortina acanthotibialis Goodnight and Goodnight, 1953; American Mus. Novitates, 1610:15-16, figs. 2-8.

Male.—Total length of body, 2.8 mm. Cephalothorax, 0.7 mm. Width of body at widest portion, 2.1 mm.

	I	II	III	IV
Trochanter	0.2mm	0.4mm	0.4mm	0.5mm
Femur	0.9	1.6	1.3	2.6
Patella	0.5	0.8	0.6	1.1
Tibia	0.7	1.3	1.1	2.1
Metatarsus	1.0	1.7	1.5	2.1
Tarsus	0.7	1.3	0.8	0.8
Total	4.0mm	7.1mm	5.7mm	9.2mm

Cephalothorax smooth, often with a few small tubercles on the anterior margin and scattered over the surface. Eye tubercle removed from the anterior margin, rounded, usually with a small spine above. Dorsal scute rounded, areas defined by darker markings, smooth; second, third, and fourth areas often strongly curved posteriorly. Each dorsal area with many hair-tipped tubercles, which are arranged in transverse rows. Each free tergite with a transverse row of large spinose tubercles. These vary in size in the different specimens: in the males they are most often large and conspicuous, while in the females they are much smaller. Free sternites smooth; anal operculum with large spines as in illustration. Coxae granulate, fourth coxa with a distal posterior spine which only partially conceals the spiracle.

Trochanters tuberculate, remainder of legs clothed throughout with hairs. Femora, patellae, and tibiae, with tubercles. These are largest on the fourth leg, where they are more conspicuous, with the distal one

being greatly enlarged. Tarsal segments: 3-6-5-5. Distitarsus of tarsus of first leg with two segments, second with three.

Palpus: trochanter, 0.2 mm long; femur, 0.5; patella, 0.4; tibia, 0.4; and tarsus, 0.4. Total length, 1.9 mm. Palpus quite small, armed as in figure.

Chelicera smooth, with only a few hairs on the distal segment.

The entire body and appendages are light reddish brown with much darker brown marking indicating the dorsal areas. Palpi, chelicerae, and trochanters of legs almost yellow; legs with much darker mottling, tarsi somewhat lighter.

Female.—Total length of body, 3 mm. Cephalothorax, 0.9 mm. Width of body at widest portion, 2.3 mm. The body shape and general coloration are similar to those of the male, but the female lacks the heavy spines of the anal operculum and free tergites. The fourth leg is much shorter than that of the males, with only a few spines which also are much less pronounced than those of the male.

Type locality.—Male holotype and male and female paratypes from Finca Guatimoc, Chiapas, August 4, 1950.

Records.—BELIZE: Columbia Forest, Toledo District, numerous males and females, July 6-17, 1971. Guacamallo Bridge, July 13, 1972, one female. Rio Frio Cave, July 1, 1971, one male, one female. Silkgrass, one female, August 3, 1972. Baldy Beacon, males and females, July 1, 1971.

GUATEMALA: Tikal, July 1, 1971.

Remarks.—The male from Tikal had the median spine of the anal operculum greatly enlarged; the other spines were relatively smaller. Its tarsal segments numbered 3-6-5-6.

Cynortina minutus, new species

Fig. 2

Male holotype.—Total length of body, 1.4 mm. Cephalothorax, 0.4 mm. Width of body at widest portion, 0.9 mm.

	I	II	III	IV
Trochanter	0.2mm	0.2mm	0.2mm	0.3mm
Femur	0.5	0.7	0.5	0.6
Patella	0.2	0.3	0.3	0.3
Tibia	0.3	0.5	0.4	0.5
Metatarsus	0.4	0.5	0.5	0.6
Tarsus	0.3	0.6	0.3	0.4
Total	1.9mm	2.8mm	2.2mm	2.7mm

Cephalothorax with a row of blunt tubercles extending from the eye, diagonally to the lateral area. The eye tubercle is at the apex of the triangle thus

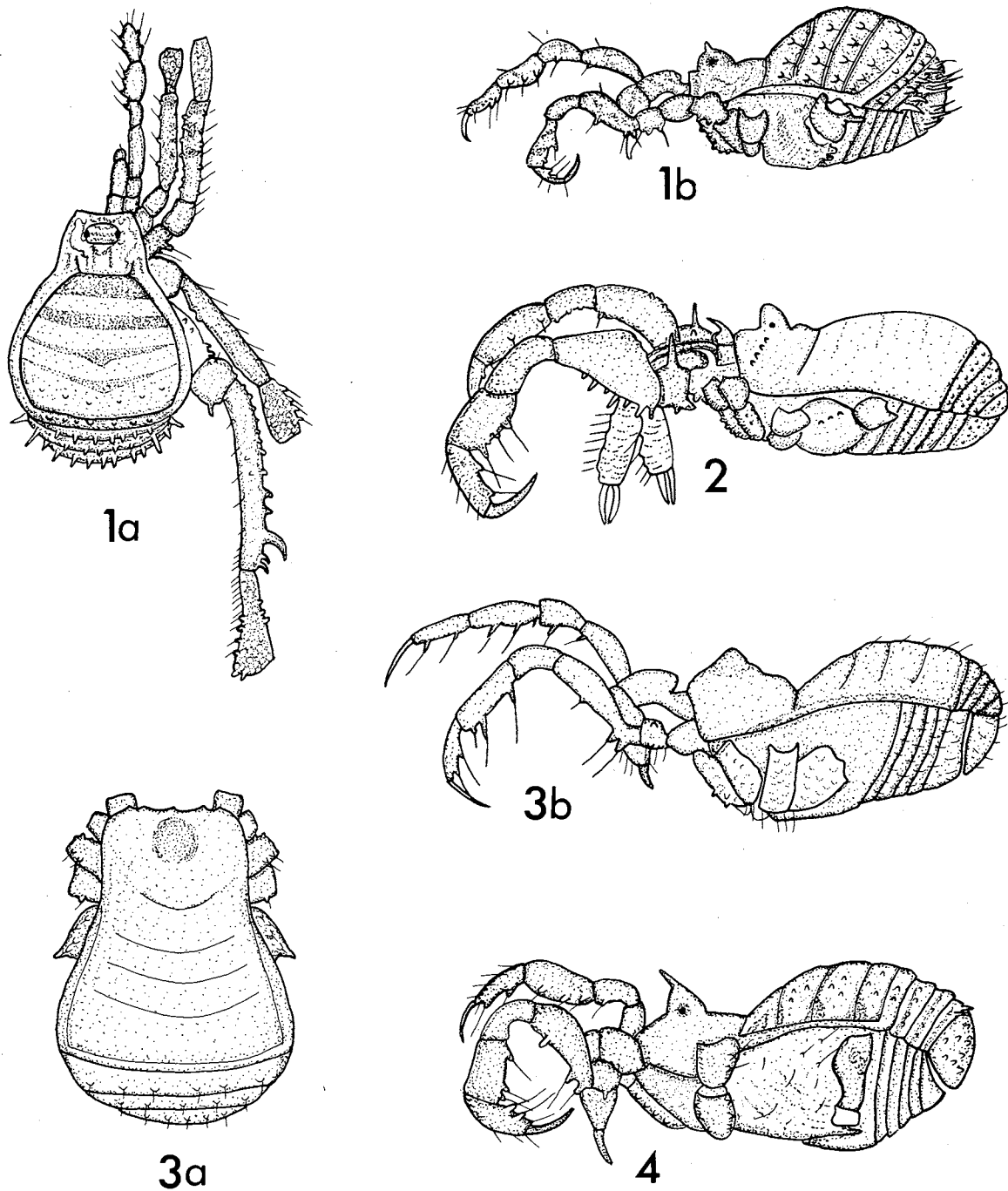


Fig. 1.—*Cynortina acanthotibialis* Goodnight and Goodnight: a, dorsal view of male; b, lateral view of male.
 Fig. 2.—*Cynortina minutus*, new species: lateral view of male.
 Fig. 3.—*Cynortina mistica*, new species: a, dorsal view of female; b, lateral view of female.
 Fig. 4.—*Pachylicus acutus* (Goodnight and Goodnight): lateral view of male.

formed. The eye tubercle is only slightly removed from the anterior margin, and is cone-shaped. A small "hump" is present just posterior to the eye tubercle. The abdominal scute is smooth, with the dorsal areas being poorly defined. Each free tergite with a row of low tubercles. Ventral surface quite smooth, coxae of first and second legs with some low tubercles. The anterior surfaces of the third and fourth coxae with only a few tubercles. Palpal trochanter dorsally bears a single large spine and a smaller inner one. Free sternites smooth, anal operculum with scattered low tubercles.

All segments of the legs but the tibiae and tarsi somewhat roughened in appearance, with scattered hairs. Tarsal segments: 3-4-4-4. Distitarsus of first tarsus with two segments; of second, also with two.

Palpus: trochanter, 0.2 mm long; femur, 0.5; patella, 0.3; tibia, 0.4; and tarsus, 0.3. Total length, 1.7 mm. Palpus armed with spines and tubercles as illustrated. Surface generally smooth on both chelicera and palpus, except for the distal segment of the chelicera which has spines arranged as in the figure. The trochanters of both the chelicera and palpus are armed dorsally with spines; that of the chelicera is angled so as to be pointing forward.

Entire animal light yellow brown.

Type locality.—Holotype from Columbia Forest Station, Toledo District, Belize. Collected on July 6, 1971.

Record.—BELIZE: Rio Om, near Augustine, July 22, 1972.

Remarks.—Actual determination of the sex of this form was extremely difficult due to the small size and the few animals available to us. Because of the rather pronounced spination, it was assumed that both specimens were males. The unique spination of the palpi and chelicerae distinguish this animal from previously known forms. While the distitarsi of the second tarsi possess but two segments, it was felt better to place it in this genus.

Cynortina mistica, new species

Figs. 3a-3b

Female holotype.—Total length of body, 3.1 mm. Cephalothorax, 1 mm. Width of body at widest portion, 2.4 mm.

	I	II	III	IV
Trochanter	0.2mm	0.2mm	0.1mm	0.3mm
Femur	1.5	2.0	1.4	1.8
Patella	0.5	1.3	0.5	0.6
Tibia	0.8	1.4	1.0	1.9
Metatarsus	1.5	1.8	1.6	1.0
Tarsus	1.5	1.4	0.8	1.0
Total	2.7mm	8.1mm	5.4mm	6.6mm

Entire dorsum relatively smooth, without conspicuous tubercles or spines. Eye tubercle only slightly removed from the anterior margin of the cephalothorax, without spines or tubercles, without eyes, very low and somewhat rounded. Body more or less pear-shaped; first area without a median line. Venter smooth, coxae of legs with very low tuberculations which are somewhat more conspicuous on the first coxa. Free sternites and tergites with low tuberculations and some hairs which are arranged more or less in rows. Stigma small, but visible.

Ovipositor lobed at the tip, with numerous coarse hairs.

All segments of the legs bearing numerous hairs; fourth trochanter with a few tubercles. Hairs are most conspicuous on the femora of the fourth legs and most abundant on the tarsi. Tibiae without astragalus or calcaneus. Tarsal segments: 3-7-5-6. Distitarsus of first tarsus with two segments; second with four.

Palpus: trochanter 0.3 mm long, femur, 0.7; patella, 0.4; tibia, 0.7; tarsus, 0.6. Total length, 2.7 mm. Palpus armed as in figure. Dorsal surfaces of segments are slightly roughened.

Entire animal light yellow-brown; the color is darker than that of most cave-adapted forms. Appendages somewhat lighter than dorsum; tarsi nearly white.

Type locality.—Female holotype and female paratype from Footprint Cave, 4 km southwest of Caves Branch, Cayo District, Belize. Collected on August 6, 1976, by L. McNatt, T. Miller, and M. Shawcross.

Remarks.—*C. mistica* probably has its closest relationship to *C. acanthotibialis* which is abundant throughout the area; however, its lack of eyes and generally lighter appearance distinguish it clearly from that form. Its general appearance is more nearly like that of *Cynortina pecki* Rambal from Jamaica. This species does represent the first cave-adapted form of this genus in Central America.

Pachylicus Roewer

Metapachylus (non Cambridge, 1905) Banks, 1909, Proc. Acad. Nat. Sci. Philadelphia, 61:230.

Paramitraceras (part) Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 3, p. 155.

Pachylicus Roewer, 1923, Die Weberknechte der Erde, p. 118; Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:21.

Cerroa Roewer, 1928, Abhandl. Ver. Naturgesch. Bremen, 26:533.

Mexscotolemon Goodnight and Goodnight, 1942, American Mus. Novitates, 1163:1.

Brima Roewer, 1949, Senckenbergiana, 30:19.

Phalangodids with a common eye tubercle which is usually located on the anterior margin of the cephalothorax. Eye tubercle with a single prominent median spine. Abdominal scute with five areas, the boundaries of which are parallel to one another. First area without a median line. Tarsi of third and fourth legs without scopulae and with untoothed claws. Femur of first leg normal, not elongate or spinose. Tarsus of first leg with three segments; distitarsus of first tarsus with two segments, second with three. Metatarsi not divided into astragali and calcanea. Maxillary lobe of second coxa without a ventral projection. Chelicera normal. Secondary sexual characteristics variable, often lacking.

Genotype: *Pachylicus rugosus* Banks.

Pachylicus acutus (Goodnight and Goodnight)

Fig. 4

Mexscotolemon acutus Goodnight and Goodnight, 1942, American Mus. Novitates, 1163:1, figs. 3-5.

Pachylicus acutus: Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:21-22, fig. 10.

Male.—Total length of body, 2.4 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.9 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.4mm	0.6mm
Femur	1.2	2.5	1.5	3.5
Patella	0.5	1.0	0.5	1.0
Tibia	0.9	2.1	1.3	3.0
Metatarsus	1.5	2.8	1.8	3.6
Tarsus	0.8	1.5	0.9	0.9
Total	5.2mm	10.3mm	6.4mm	12.6mm

Body pyriform in shape. Dorsum finely granulate, cephalothorax without tuberculations. Eye tubercle on the anterior margin of the cephalothorax, with a median spine. Abdominal segments without median armature, but with a few dorsal tubercles and a few very small tubercles at the distal lateral area. Fifth area and each free tergite with a transverse row of tubercles which are enlarged into small spines in the median portion of the third free tergite. Anal operculum with small tuberculations. Free sternites and coxae with granulations, third coxa with an anterior and posterior row of small teeth; first coxa with some low teeth on the ventral and anterior surfaces. Fourth coxa partially concealing the spiracle.

Legs clothed throughout with hairs, surface finely granulate, but without many tuberculations. Tarsal segments: 3-7-5-5. Distitarsus of first tarsus with two segments; second with three.

Palpus: trochanter, 0.3 mm long; femur, 0.5; patella, 0.3; tibia, 0.5; and tarsus, 0.3. Total length, 1.9 mm. Palpus armed as in figure. Chelicera smooth, movable claw with a few teeth on the inner surface.

Entire animal a uniform light yellow brown, dorsal areas vaguely outlined in a darker brown. Palpi, chelicerae, and distal portions of leg lighter.

Female.—Total length of body, 2.2 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.9 mm.

In general appearance, the female is similar to the male. The most noticeable difference between them is in the length of the legs, particularly that of the fourth. In the male, the femora measure: 1.2, 2.5, 1.5, and 3.5 mm respectively. In the female, the femora measure: 1.0, 1.5, 1.3, and 1.9 mm respectively.

Records.—BELIZE: Burrell Boom, July 18, 1972. Cacao Plantation, Hummingbird Highway, August 1, 1972. Corozal, July 13 and 15, 1972. Hummingbird Highway, near Middlesex, August 1, 1972.

GUATEMALA: Tikal, July 3, 1971.

MEXICO: *Yucatán*: Pyramid, Izamal, August 10, 1973, J. Reddell. Chichén Itzá, August 8, 1973, J. Reddell. Ruinas de Mayapán, August 24, 1973, J. Reddell. 7 km SW Oxkutzcab, July 31, 1973, J. Reddell, D. Denson, M. Kawakatsu, R. W., D. R., R. W. Jr., S. A., and S. R. Mitchell.

Tabasco: surface near Grutas del Coconá, Teapa, R. Mitchell and W. Russell.

Chiapas: Ruinas de Palenque, July 15, 1973, J. Reddell, R. W. Mitchell.

Campeche: 10 km N Hopelchen, July 27, 1973, J. Reddell and J. M. Rowland.

Note: Numerous males and females were present in all collections.

Remarks.—As was previously noted (Goodnight and Goodnight, 1953) this abundant and widespread species shows considerable variation in the size of the low spines of the third free tergite.

Paramitraceras Cambridge

Paramitraceras Cambridge, 1905, Biologia Centrali-Americana, Arachnida, 2:575. Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 3, p. 155 (in part); 1923, Die Weberknechte der Erde, p. 117. Goodnight and Goodnight, 1953, American Mus. Novitates, 1619:23.

Panzosus Roewer, 1949, Senckenbergiana, 30(1-3): 12.

Solola Roewer, 1949, Senckenbergiana, 30(1-3):30.

Phalangodids with a common eye tubercle which

is located on the anterior margin of the cephalothorax. Eye tubercle in the form of a forward-slanting, pointed cone. Abdominal scute with five areas, the first without a median line. On each side of the first area, there is a small lateral enlargement. Tarsi of third and fourth legs without scopulae and with un-toothed claws. Femur of first leg not enlarged. Tarsus of first leg with three or four segments. Distitarsus of first tarsus with two segments; second also with two. Metatarsi of legs not divided into calcanea and astragali. Maxillary lobe of second coxa without a ventral projection. Chelicera enlarged, palpus usually heavy, with little ventral spination. Secondary sexual characters of the male usually seen in the heavier chelicerae.

Genotype: *Paramitraceras granulatus* Cambridge.

Paramitraceras hispidulus Cambridge
Figs. 5-6

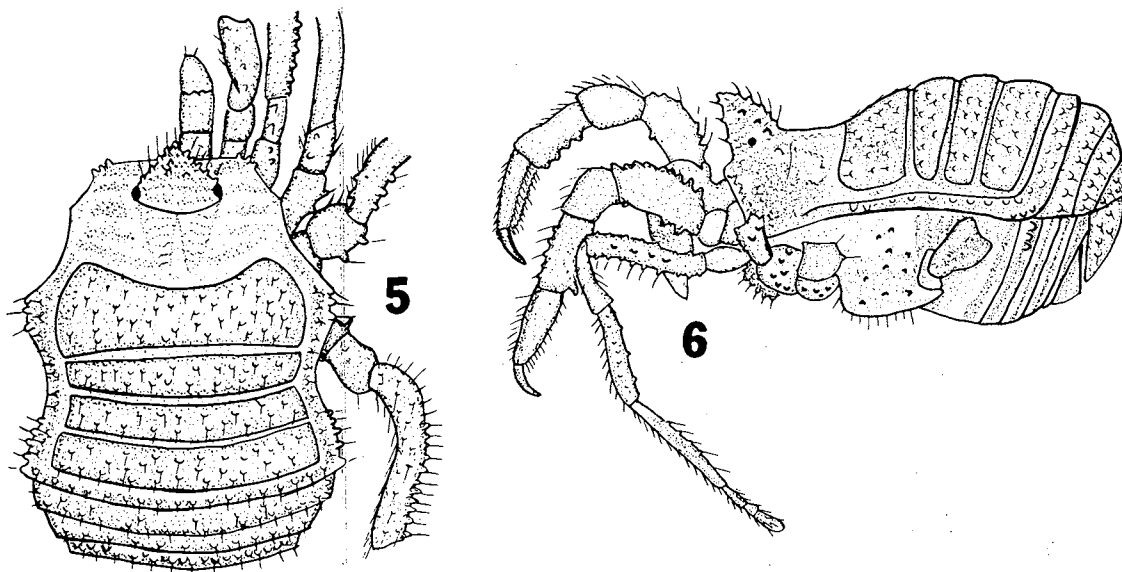
Paramitraceras hispidulus Cambridge, 1905, *Biologia Centrali-Americana, Arachnida*, 2:576, pl. 54, figs. 4, 4a-d, 5, 5a-b. Roewer, 1912, *Arch. Naturgesch.*, 78, sect. A, no. 3, p. 155; 1923, *Die Weberknechte der Erde*, p. 117, figs. 119, 120A-B.

Male.—Total length of body, 3.9 mm. Cephalothorax, 1.3 mm. Width of body at widest portion, 3 mm.

	I	II	III	IV
Trochanter	0.4mm	0.4mm	0.4mm	0.5mm
Femur	1.3	1.5	1.3	1.7
Patella	0.5	0.8	0.4	0.8
Tibia	0.8	1.2	1.1	1.3
Metatarsus	1.0	1.3	1.3	1.7
Tarsus	0.7	1.0	0.7	0.7
Total	4.7mm	6.2mm	5.2mm	6.7mm

Cephalothorax quite smooth, with a few small granulations on the anterior lateral margin. Eye tubercle on the anterior margin, in the form of a cone, covered with hair-tipped tubercles. Dorsum with five well defined areas, each with a transverse row of low hair-tipped tubercles. Small tubercles present on the disto-lateral borders of the dorsal scute. Each free tergite with numerous hair-tipped tubercles which are more or less arranged in rows. Anal operculum similarly covered with hair-tipped tubercles. Venter quite smooth, with hair-tipped tubercles at the lateral areas. Spiracle visible between the fourth coxae and the first free sternite. Coxae of legs and palpi with hair-tipped tubercles which are most conspicuous on the posterior border of the second coxa and the ventral surface of the first.

Trochanters of legs relatively smooth, the first with a few tubercles. Femora, patellae, and tibiae of legs with numerous large hair-tipped tubercles giving



Figs. 5-6.—*Paramitraceras hispidulus* Cambridge: 5, dorsal view of male; 6, lateral view of male.

a roughened appearance to the legs. Metatarsi with smaller tubercles and many hairs. Tarsi with hairs. Tarsal segments: 3-4-5-5. Distitarsi of both first and second tarsi each with two segments.

Palpus: trochanter, 0.4 mm long; femur, 0.8; patella, 0.5; tibia, 0.6; and tarsus, 0.7. Total length, 3 mm. Surface of palpus relatively smooth, with some ventral and dorsal spination as illustrated. All segments somewhat flattened laterally, tarsus almost triangular in shape, ventrally flattened, with bordering rows of low tubercles. Chelicera quite smooth, first segment with a few dorsal spines. Fixed portion of claw with teeth.

Overall color of animal is dark reddish brown. Areas of dorsum are separated by a lighter color. Cephalothorax with much darker marking. Trochanters and tarsi of legs lighter, remaining segments dark. Palpus and chelicera somewhat lighter.

Female.—Total length of body, 4.1 mm; cephalothorax, 1.3; width of body at widest portion, 2.9 mm.

Females are very similar in appearance to the males, but the spination of the legs is somewhat reduced. Actually it is usually very difficult to distinguish the sexes.

Type locality.—Petén, Guatemala.

Records.—BELIZE: Blue Hole, August 1, 1972. Caves Branch, near St. Herman's Cave, August 25, 1972. Cacao Plantation, Hummingbird Highway, August 1, 1972. Belmopan, July 20, 1972, S. and J. Peck. Hummingbird Gap, August 8, 1972, S. and J. Peck.

Remarks.—Cambridge (1905) described both *Paramitraceras hispidulus* and *Paramitraceras granulatus* from Guatemala. He differentiated the two species by their average difference in size (*P. granulatus* = 7 mm; *P. hispidulus*, 5 mm) and the general appearance.

Stygnomma Roewer emend. Goodnight
and Goodnight

Stygnomma Roewer, 1912, Mem. Soc. Neuchatel, 5:155; 1923, Die Weberknechte der Erde, p. 144. Petrunkevitch, 1925, Trans. Connecticut Acad. Arts and Sci., 27:62-63. Goodnight and Goodnight, 1951, American Mus. Novitates, 1491:3; 1953, American Mus. Novitates, 1610:30-31.

For a complete synonymy of this genus, consult Goodnight and Goodnight, 1953.

Members of the family Phalangodidae without a common eye tubercle and with five dorsal areas on the abdominal scute, the first without a median line. Tarsi of third and fourth legs without scopulae and with simple untoothed double claws. Femur of first

leg normal. Distitarsus of first tarsus with two segments; second with two or three. Metatarsi not divided into astragali and calcanea. Palpus and chelicera somewhat enlarged, varying in individual species. Maxillary lobe of second coxa without a ventral projection. Secondary sexual characters of the male apparent in the increased spination of the palpus and chelicera and in the enlargement of some portion of the metatarsus of the third leg.

Genotype: *Stygnomma fuhrmanni* Roewer from Plateau of Camelia, Colombia.

Since the 1951 revision of the genus by Goodnight and Goodnight, several additional species have been described. Members of this genus are found throughout Middle America, Cúba, and northern South America. Though they do vary considerably in appearance, all share the character of lacking an eye tubercle; the eyes are directly on the cephalothorax. In some forms, there is a spine between the eyes, and the eyes may be at varying distances from this spine. In fact, it can be quite difficult to be certain that the animals under consideration are members of this genus; usually, however, other traits are helpful, particularly the enlargement of a portion of the metatarsus of the third leg.

Stygnomma belizense, new species

Fig. 7

Male.—Total length of body, 2.5 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.9 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.4mm	0.5mm
Femur	1.9	1.9	1.4	1.7
Patella	0.7	0.7	0.5	0.6
Tibia	1.5	1.6	1.1	1.5
Metatarsus	1.8	1.8	1.7	2.2
Tarsus	1.7	1.7	1.1	1.4
Total	7.9mm	8.1mm	6.2mm	7.9mm

Cephalothorax without an eye tubercle, but with a small dorsal pointing spine between the eyes. The position of the spine is somewhat variable. Cephalothorax quite smooth, with only a slight appearance of granulations. Small spine-bearing tubercles at the anterior lateral margin. The five dorsal areas of the abdomen are clearly defined by small spine-bearing tubercles arranged transversely across each area. These are somewhat darker than the rest of the area. A similar row of small tubercles is along each lateral border and at the posterior margin of the fifth area. The free tergites also have transverse rows of small spine-bearing tubercles. Ventrally all surfaces are covered

with small tubercles; in most cases they are spine-bearing. The coxa of the palpi are somewhat enlarged; third coxa of legs, each with a row of low teeth on both anterior and posterior surfaces. Free sternites, like the free tergites, have transverse rows of small spine-bearing tubercles; the anal operculum is covered with similar tubercles.

All leg segments quite rough in appearance due to the presence of many small spine-bearing tubercles, including the coxae, which from a dorsal view can be seen to be quite rough. In the male, the metatarsus of the third pair of legs is somewhat enlarged in the median section. Tarsal segments: 4-6-5-5. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter 0.4 mm long; femur, 1.1; patella, 0.6; tibia, 0.9; and tarsus, 0.7. Total length, 3.7 mm. Palpus armed as in figure. The general appearance is somewhat roughened, and the enlarged coxa can be clearly seen from either dorsal or lateral view. The chelicera likewise are roughened in appearance, particularly on the second segment where the slightly enlarged roughened areas have short spines.

Color of entire animal is light yellowish brown, the only darker areas are the transverse rows of tubercles on the dorsal area. In the median section of the first and second areas of the abdomen is a lighter portion which looks somewhat like a saddle; it terminates at the distal portion of the third dorsal area.

Female.—Total length of body, 2.7 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.9 mm.

The female is very similar in appearance to the male, but lacks the enlargement of the middle section of the third metatarsus. The median section of the dorsum is not so light as that of the male.

Type locality.—Male holotype from Rio Frio, near Augustine, July 20, 1972.

Records.—BELIZE: Paratypes from Rio Frio, July 20, 1972. Blue Hole, near Belmopan, August 1, 1972. Belmopan, August 1, 1972. Belmopan, July 20, 1972, S. and J. Peck.

Remarks.—Though *S. belizense* shows its closest relationship to *S. spinifera*, it differs in the degree of spination of the dorsum and the shape of the spine between the eyes. There are also slight differences in the spination of the palpus.

Stygnomma granulosa (Goodnight and Goodnight)

Fig. 8

Pellobunus granulosa Goodnight and Goodnight, 1947, Fieldiana, 32(1):4, fig. 1.

Male.—Total length of body, 2.5 mm. Cephalo-

thorax, 1 mm. Width of body at widest portion, 1.9 mm.

	I	II	III	IV
Trochanter	0.3mm	0.3mm	0.3mm	0.3mm
Femur	1.0	1.6	1.1	1.4
Patella	0.4	0.5	0.5	0.5
Tibia	0.6	1.2	0.9	1.3
Metatarsus	0.9	1.5	1.3	1.7
Tarsus	0.9	1.5	0.8	0.9
Total	4.1mm	6.6mm	4.9mm	6.1mm

Cephalothorax with some scattered low tuberculations, without eye tubercle, but with a blunt median spine located between the eyes. This spine is covered with tuberculations which reach nearly to the tip. The five dorsal areas are indicated only by transverse rows of slightly darker, low tubercles. These are slightly larger on the fifth area. Each free tergite with a transverse row of low tubercles, those of the third are slightly larger. Anal operculum also covered with rough tubercles. Ventrally, the coxae are covered with tuberculations. The palpal coxa ventrally have two enlarged tubercles; first coxa with ventral median row of enlarged tubercles; second also with a similar row, but with larger ones at the distal posterior margin; third coxa with slightly enlarged tubercles at the anterior distal borders; fourth with enlarged tubercles at the anterior lateral border, and a single enlarged tubercle near the median ventral line. The latter is visible from the lateral view. Each free sternite with a transverse row of low tubercles; spiracle barely visible between the fourth coxa and the first free sternite.

All leg segments but the metatarsi and tarsi with low tuberculations. Metatarsi with many hairs. Third metatarsus with a slight enlargement of the apical two-thirds. Tarsal segments: 4-6-5-6. Distitarsus of first tarsus with two segments; second with three.

Palpus: trochanter, 0.3 mm long; femur, 0.9; patella, 0.5; tibia, 0.8; and tarsus, 0.5. Total length 3 mm. Palpus armed as in figure. Chelicera covered with low tuberculations; claws with low teeth.

The general color is a uniform brownish yellow. The low tubercles of the dorsal areas are somewhat darker. There is some darker mottling on the metatarsi and tarsi of the legs.

Female.—Total length of body, 2.5 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.7 mm.

Female similar in general appearance to the male, but lacking the enlargement of the third metatarsus.

Type locality.—Silkgrass, Belize, November 17, 1939, I. T. Sanderson.

Record.—BELIZE: Corozal, July 15, 1972.

Remarks.—*S. granulosa* was originally described as *Pellobunus granulosa* from a single specimen. Additional material from Corozal, leads us to believe that this form actually should be in *Stygnomma*. While it is difficult to be absolutely certain, we believe the eyes are not on the eye tubercle; also, the enlargement of the distal portion of the third metatarsus would tend to support this decision to place this species in the genus *Stygnomma*.

***Stygnomma pecki*, new species**

Fig. 11

Male.—Total length of body, 2.3 mm. Cephalothorax, 0.8 mm. Width of body at widest portion, 1.8 mm.

	I	II	III	IV
Trochanter	0.4mm	0.4mm	0.3mm	0.5mm
Femur	1.8	2.8	1.9	2.4
Patella	0.6	0.9	0.5	0.7
Tibia	1.3	2.1	1.4	1.9
Metatarsus	1.5	2.5	1.9	2.4
Tarsus	0.8	2.5	1.0	1.1
Total	6.4mm	11.2mm	7.0mm	9.0mm

A very small animal, the cephalothorax with only a few tuberculations at the posterior portion, no eyes present; cephalothorax rounded and somewhat elevated. Dorsal scute with five areas, indicated by shallow furrows; each area with a median row of small tuberculations, and a second smaller row somewhat anterior to the first more conspicuous row. Free tergites and fifth area with larger, transversely arranged spine-bearing tubercles. These are almost spinose on the free tergites. Anal operculum also with large spinose tubercles, all of which bear hairs. Ventrally the general surface of the coxae is roughly tuberculate, the free sternites with rows of low spine-bearing tubercles, ventral portion of anal operculum somewhat wider, covered with spinose tubercles. Genital operculum is located between the fourth coxae, spiracles just visible at the posterior junction of the fourth coxa and the first free sternite.

All segments of the legs covered with hairs. Trochanters covered with small tubercles; femora with some small tubercles, but mainly they are covered with quite conspicuous hairs.

Palpus: trochanter, 0.4 mm long; femur, 1.9; patella, 1.4; tibia, 1.8; tarsus, 2.5. Total length, 8 mm. Palpi greatly enlarged, especially the femur which is broadened both dorso-ventrally as well as laterally. There are two heavy spines which can be observed in the illustration; dorsal surface with many spine-like

projections on the dorsal surface. All segments armed with spines as in the figure. The chelicerae likewise have unusual spination.

Entire animal light yellow in color; legs and palpi extremely light; tarsi nearly white.

Female.—Total length of body, 2.1 mm. Cephalothorax, 0.6 mm. Width of body at widest portion, 1.5 mm.

Female similar in appearance to male, but somewhat smaller. Palpi are less robust, not nearly so spinose in appearance. Coloration similar to that of the male.

Type locality.—Male holotype from St. Herman's Cave, Caves Branch, Belize, July, 1972, S. and J. Peck.

Record.—BELIZE: Male and female paratypes from Mountain Cow Cave, Caves Branch, July, 1972, S. and J. Peck.

Remarks.—This species, named in honor of Dr. and Mrs. Peck, is the first cave-adapted opilionid to be found in Belize. It is unusual in appearance; and it would be useful to have more material from other localities, better to indicate its relationships. It bears no obvious relationships to any forms we have previously observed.

***Stygnomma spinifera tancahensis* Goodnight and Goodnight**
Figs. 12-16

Stygnomma spinifera tancahensis Goodnight and Goodnight, 1951, American Mus. Novitates, 1491: 13, figs. 13 and 14.

Male.—Total length of body, 2.5 mm. Cephalothorax, 0.9 mm. Width of body at widest portion, 1.8 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.3mm	0.3mm
Femur	1.0	1.7	1.1	1.8
Patella	0.5	0.7	0.5	0.5
Tibia	0.5	1.2	1.0	1.3
Metatarsus	1.0	1.5	1.3	1.3
Tarsus	0.7	1.8	1.0	1.0
Total	4.3mm	7.3mm	5.2mm	6.8mm

Cephalothorax with small granulations, those at the base of the median spine somewhat larger. Eyes large, widely separated. Five areas of the dorsum clearly indicated by transverse rows of tubercles. Each free tergite also with a transverse row of tubercles; anal operculum with numerous tubercles. Ventral surface with numerous granulations; a transverse row on the first and second coxa, tooth-like tubercu-

lations on the anterior and posterior surfaces of the third coxa, fourth coxa with numerous scattered tuberculations. Each free sternite with a transverse row of granulations. Stigmen somewhat obscured by the fourth coxa.

All segments of the legs but the metatarsi and tarsi with granulations, which are somewhat larger on the femora. Metatarsi and tarsi with hairs. Distal portion of the third metatarsus somewhat clavate. Tarsal segments: 4-7-5-5. Though this is a relatively constant number, some few forms had 4-8-5-5. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter, 0.4 mm long; femur, 1.1; patella, 0.7; tibia, 0.8; and tarsus, 0.9. Total length, 3.9 mm. Palpus armed as in figure. The basal spines of the femur are median in position. Chelicera with roughened surfaces; movable claw with but a single "tooth."

In color, this species is light orange yellow. Distal portions of the second femur, all of the patella, metatarsus, and tarsus darker brown; distal segments of other legs only slightly darker.

Female.—Total length of body, 2.5 mm. Cephalothorax, 0.7 mm. Width of body at widest portion, 1.8 mm.

Very similar in appearance to the male, lacking only the enlargement of a portion of the metatarsus of the third leg.

Type locality.—Male holotype and paratype from Tancah, near the Ruins of Tulum, Quintana Roo, México, August 12, 1949.

Records.—BELIZE: Males and females from Southeast Cay, Southwest Cay, and Long Cay, all on Glover's Reef, July 1971. Glover's Reef is some 25 miles off the coast of Belize.

MEXICO: *Quintana Roo*: Cueva de Abispa, Tancah, 1 July 1975, J. Reddell, A. Grubbs, S. Wiley.

Remarks.—Members of this species are widely distributed from Florida to Cuba and Quintana Roo, México; these records extend their distribution into Belize. As is to be expected, the material from Belize shows its closest affinities to that from the Yucatán Peninsula. Specimens from the different cays are illustrated here to show the variations that exist even within a single subspecies. We do not feel the differences are distinctive enough to regard them as a new subspecies.

***Stygnomma toledensis*, new species**

Figs. 9-10

Male.—Total length of body, 2.5 mm. Cephalothorax, 1 mm. Width of body at widest portion, 2 mm.

	I	II	III	IV
Trochanter	0.3mm	0.3mm	0.3mm	0.5mm
Femur	1.1	1.7	1.4	1.5
Patella	0.5	0.5	0.5	0.6
Tibia	0.8	0.8	1.3	1.4
Metatarsus	1.0	1.0	1.3	1.8
Tarsus	0.9	0.9	1.7	1.2
Total	4.6mm	5.2mm	6.5mm	7.0mm

Cephalothorax quite smooth, with a few larger tubercles at the anterior-lateral margin. A median spine is present between the eyes and has many low tubercles on its surface. The five dorsal areas are not clearly defined, though a few tubercles can be discerned on each one. Free tergites are quite smooth, second with a transverse row of low tubercles on the posterior border, third with some low scattered tuberculations. Anal operculum likewise with scattered low tuberculations. Ventral surfaces of coxae with numerous tuberculations. First coxa with a few larger median tubercles; second with a few enlarged tubercles in the dorsal area; third coxa with anterior and posterior rows of teeth-like tubercles; fourth coxa with three or four enlarged tubercles at the posterior-lateral border. Spiracles barely visible. Free sternites each with a transverse row of very low tubercles.

All segments but the metatarsi and tarsi of the legs with numerous hair-tipped tubercles. Trochanters with tuberculations. Tarsal segments: 4-7-5-5. Distitarsus of first tarsus with two segments, second with three.

Palpus: trochanter, 0.4 mm long; femur, 1; patella, 0.5; tibia, 0.9; and tarsus, 0.8. Total length, 3.6 mm. Palpus armed as in figure; basal spine-bearing tubercles of the femur are ventral and median in position. First segment of chelicera quite long, both segments with somewhat enlarged tubercles which bear hairs.

Entire animal dark yellow brown, darker netting present on the eye tubercle; irregular darker markings on the cephalothorax. Dorsal areas vaguely indicated by darker markings; palpus and chelicera netted with darker markings. Free tergites darker, legs with darker, net-like markings.

Female.—Total length of body, 2.4 mm. Cephalothorax, 0.9 mm. Width of body at widest portion, 1.7 mm.

Female similar to male in appearance, but the chelicerae are somewhat smaller and the areas more clearly delineated by darker central mottlings. The third metatarsi of both male and female do not show the typical enlargement which usually is conspicuous in members of this genus.

Type locality.—Male holotype and female para-

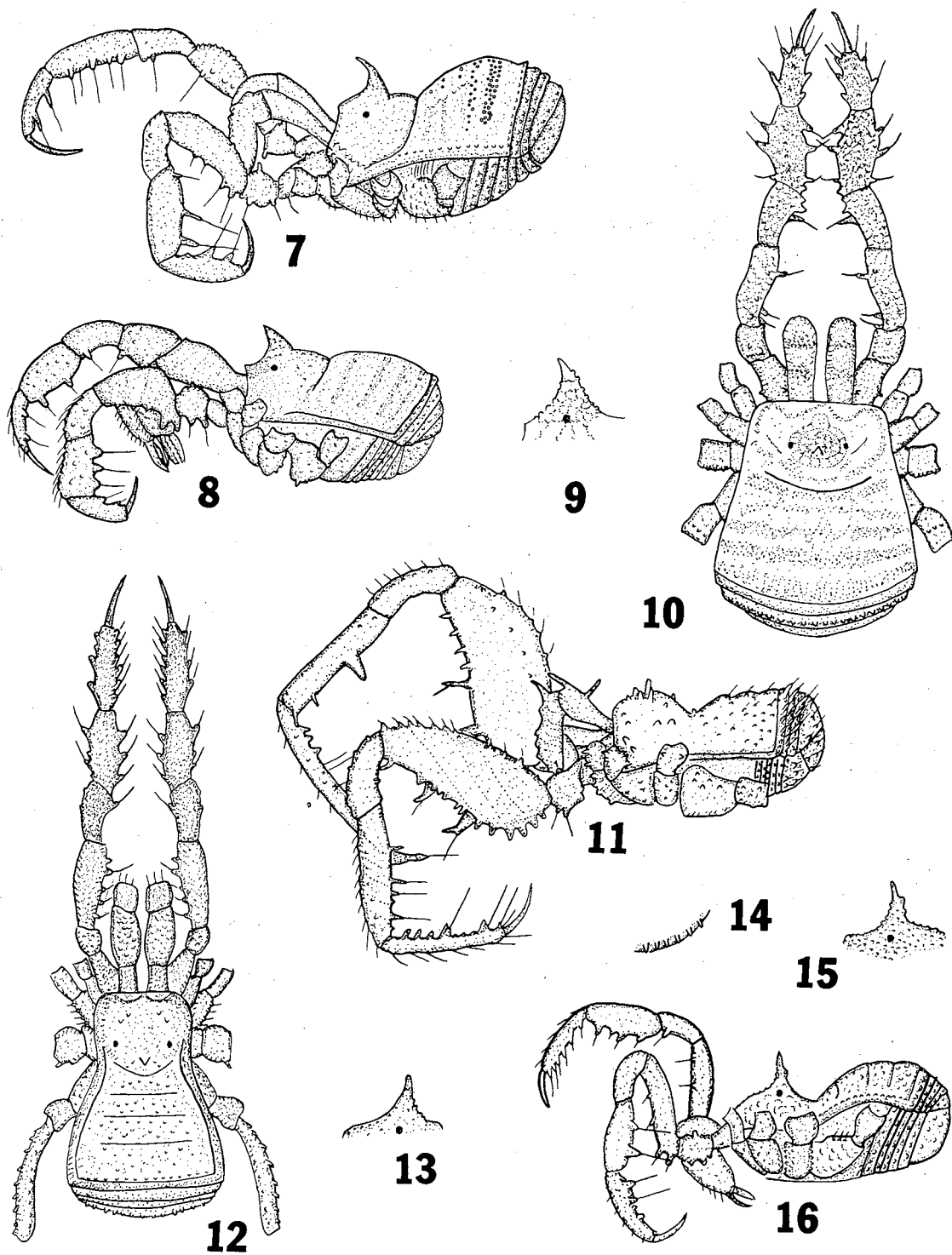


Fig. 7.—*Stygnomma belizense*, new species: lateral view of male.

Fig. 8.—*Stygnomma granulosa* (Goodnight and Goodnight): lateral view of male.

Figs. 9-10.—*Stygnomma toledensis*, new species: 9, lateral view of eye tubercle of male; 10, dorsal view of male.

Fig. 11.—*Stygnomma pecki*, new species: lateral view of male.

Figs. 12-16.—*Stygnomma spinifera tancahensis* Goodnight and Goodnight: 12, dorsal view of male from Long Cay, Glover's Reef; 13, lateral view of eye tubercle of male from Long Cay, Glover's Reef; 14, third free tergite of male from Southwest Cay, Glover's Reef; 15, lateral view of eye tubercle of male from Southwest Cay, Glover's Reef; 16, lateral view of male from Southeast Cay, Glover's Reef.

type from Columbia Forest Station, Toledo District, Belize, July 19, 1971.

Remarks.—This form is related to *S. spinifera*, but has somewhat different spinal arrangement on the palpi, is considerably darker, and has a different form to the eye tubercle.

COSMETIDAE SIMON

Cosmetinae Cambridge

The problem of defining genera among the members of the subfamily Cosmetinae is not a simple one. Roewer in his numerous publications used various combinations of characters as valid traits for genera; unfortunately, he considered every possible combination as a different genus. Because of the variation of tarsal segments and dorsal spination or tuberculation, the number of possible different combinations is astronomical. This led to a multiplication of the number of genera, most of which were monotypic, to a point where it became virtually impossible to recognize relationships. Goodnight and Goodnight (1953) attempted to simplify this problem for members of the subfamily found in Chiapas, México. We recognized three genera (*Cynorta*, *Vonones*, *Paecilaelma*) based primarily upon the number of segments in the tarsi of the first pair of legs, namely, 5, 6, or more than 6. Continued work has reinforced our opinion that this is a valid differentiation for the many cosmetids of much of México.

Our present study of the cosmetids of Belize has both reinforced and somewhat altered our viewpoint as expressed in 1953. We still feel that we were essentially correct in the criteria used for separation of the genera; but we also realize that generic concepts must constantly be examined. The study of these forms appears to indicate that throughout much of Central America and extending into southern México, another group of cosmetids with but six segments in the first tarsi should be recognized. Males of these forms have heavily spined fourth legs and often elaborate dorsal white patterns. The females tend to have somewhat heavier fourth legs which are usually less spinose than those of the males. In general, this character is a valid, easily recognized one; however, as is usually true, there are forms which are somewhat intermediate in form and whose exact taxonomic position may be difficult to determine. Nevertheless, in the interest of clarifying relationships, we feel that this is a valid difference.

Roewer in 1912 gave the name *Erginulus* to "robust animals with heavier third and fourth legs...first tarsus 6 segmented, 2-4 tarsi more than 6, variable."

This genus and diagnosis appear valid to us to be applied to these forms which are abundant throughout Central America and southern México.

As we studied the cosmetids from Belize, it immediately became apparent that we were dealing with a complex group of closely related forms. The variations of color pattern and leg spination as well as that of the spines and/or tubercles of the dorsum were exceedingly complex. While Cambridge illustrated these, it is often difficult to interpret his drawings. His illustrations do not account for many possible variations. As nearly as possible, we have identified species first described by him in Guatemala which also range into Belize. We have probably made errors, but hope that others who have wrestled with these problems will be understanding of our efforts.

Cynorta C. L. Koch

Cosmetus Perty, 1833, *Delectus animalium articulorum*, fasc. 3, pp. 203-208 (in part). Gervais, 1844, in Walckenaer, C. A., and F. L. P. Gervais, *Histoire naturelle des insectes apteres*, 3:115 (in part).

Cynorta C. L. Koch, 1839, *Ubers Arachniden*, 2:2; 1839, in Hahn, C. W. and C. L. Koch, *Die arachniden*, 7:100-102. Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 1:557. Roewer, 1912, *Arch. Naturgesch.*, 78, sect. A, no. 10, p. 31; 1923, *Die Weberknechte der Erde*, p. 310; 1926, *Abhandl. Naturwiss. Ver. Bremen*, 16:570. Goodnight and Goodnight, 1953, *American Mus. Novitates*, 1610:37-38; 1973, *Bull. Assoc. Mexican Cave Stud.*, 5:92.

For a more nearly complete synonymy of this large genus, see Goodnight and Goodnight (1953).

Cosmetids with simple untoothed double claws on the third and fourth tarsi, with but six segments in the first tarsus. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and spines. Third and fourth legs similar in size and appearance to first and second.

Genotype: *Cynorta conspersa* (Perty).

Cynorta columbiana, new species

Fig. 17

Male.—Total length of body, 3.4 mm. Cephalothorax, 1.1 mm. Width of body at widest portion, 2.5 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.4mm	0.4mm
Femur	1.6	2.9	2.3	3.3
Patella	0.7	0.9	0.8	1.1
Tibia	1.2	2.3	1.4	1.4
Metatarsus	1.6	2.9	2.2	2.6
Tarsus	1.3	2.9	1.5	1.6
Total	6.7mm	12.3mm	8.6mm	10.4mm

Small, slender animal. Dorsum smooth with paired spines on the median portion of the third area. Five dorsal areas indicated by lighter markings. Cephalothorax smooth, eye tubercle low, with eyes quite closely placed. A few very low tubercles are present on the lateral border of the dorsal scute, smaller tubercles are present on the posterior border of each of the free tergites. Venter, including the genital operculum and coxal surfaces smooth. Coxa I with a transverse row of low tubercles, coxa III with a posterior lateral, low tubercle. Free sternites smooth. Spiracles visible between the fourth coxae and first free sternites.

Legs slender, smooth except for some scattered hairs. Fourth femur with some low tubercles on the distal third of the medial surface; this portion of the fourth femur is slightly dilated. Basitarsus of first tarsus slightly enlarged. Tarsal segments: 6-12-7-7. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.4 mm long; femur, 0.8; patella, 0.5; tibia, 0.8; tarsus, 0.3. Total length, 2.8 mm. Trochanter of palpus without spines or tubercles, femur laterally compressed, somewhat triangular in shape, with low tubercles on the ventral surface, patella slender, tibia flattened, tarsal claw small. Chelicera normal in size, claws smooth.

Dorsum reddish brown, with darker markings on the cephalothorax and along the lateral border of the dorsal scute. Lighter areas delineate the suture between the cephalothorax and abdomen and between the areas. Trochanters and tarsi slightly lighter; remainder of legs similar in color to the dorsum.

Female.—Total length of body, 3.8 mm. Cephalothorax, 1.1 mm. Width of body at widest portion, 2.4 mm.

Female very similar in appearance to the male, but lacking the enlarged basitarsus of the first tarsus, and the fourth femur is somewhat shorter.

Type locality.—Male holotype and male and female paratypes from Columbia Forest Station, Toledo District, Belize, July 19, 1971.

Remarks.—*C. columbiana* differs from other members of this genus by its small size, lack of dorsal color pattern, and number of tarsal segments.

Cynorta dentipes Cambridge

Fig. 19

Cynorta dentipes Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 1:558, pl. 52, figs. 15-15b. Roewer, 1912, *Arch. Naturg.*, 78, sect. A, no. 10, p. 34; 1923, *Die Weberknechte der Erde*, p. 313, figs. 340a and b.

Male.—Total length of body, 5.4 mm. Cephalothorax, 2.1 mm. Width of body at widest portion, 4.8 mm.

	I	II	III	IV
Trochanter	0.4mm	0.6mm	0.8mm	0.9mm
Femur	3.5	7.2	4.8	6.0
Patella	1.1	1.4	1.4	1.5
Tibia	2.2	6.0	2.9	4.2
Metatarsus	3.7	7.2	4.6	6.4
Tarsus	2.6	4.8	2.9	3.2
Total	13.5mm	27.2mm	17.4mm	22.2mm

Entire dorsum smooth, eye tubercle low, on the anterior third of the cephalothorax, without spines or tuberculations. Dorsal areas clearly indicated by white markings; low paired spines in the median portion of the third area. First free tergite smooth, second and third each with a transverse row of low tubercles at the posterior border. Ventral surfaces of coxae, genital operculum, and free sternites with very low hair-bearing tubercles. Spiracles clearly visible.

Leg segments quite smooth, with only a few low hair-bearing tubercles. First trochanter with a proximal-posterior low tubercle, third with small tubercles on both the proximal and distal areas of the posterior surface, fourth coxa with a small, blunt spine at the posterior distal surface. Fourth femur with a curved small spine at the distal, medial surface, a smaller lower spine at the distal retro-lateral surface. Tarsi clothed with hairs. Tarsal segments: 6-13-8-9. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.5 mm long; femur, 1; patella, 0.7; tibia, 1.4; and tarsus, 0.7. Total length, 4.3 mm. Palpus quite smooth, clothed with scattered hairs. Femur laterally compressed, with a ventral row of low teeth (visible in illustration). Tibia flattened, tarsal claw small, smooth. Chelicera normal in size, with some scattered hairs, claws with roughened surfaces.

Entire animal dark reddish brown with darker (almost black) over the eye tubercle and at the lateral portions of the dorsal areas. White markings very conspicuous: a v-shaped arrangement behind the eye tu-

bercle, joining with markings on the lateral border of the scute; first three areas outlined by white dot-like markings, 4th and 5th areas with posterior markings. First and second free tergites with some white. Legs lighter than the dorsum, almost yellow, with much darker mottling, giving a somewhat annulate appearance. Trochanters lighter than the dorsum, with some darker mottlings. Palpi and chelicerae quite dark, some mottlings on the tibia.

Female.—Total length of body, 5.4 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 4.5 mm.

Similar in appearance to the male, but without enlarged basitarsus and without the spines of the fourth femur.

Type locality.—Quirigua, Guatemala (Cambridge, 1905).

Records.—BELIZE: Columbia Forest, Toledo District, July 11-15, 1971.

GUATEMALA: Tikal, July 3, 1971.

Cynorta multilineata (Goodnight and Goodnight)

Fig. 18

Eucynortula multilineata Goodnight and Goodnight, 1947, Fieldiana, 32(1):35, fig. 17.

Male.—Total length of body, 5.2 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.5 mm.

	I	II	III	IV
Trochanter	0.4mm	0.6mm	0.6mm	0.6mm
Femur	3.2	7.4	4.5	6.1
Patella	0.9	1.4	1.3	1.3
Tibia	2.1	5.7	2.7	3.8
Metatarsus	3.4	6.1	4.5	6.0
Tarsus	2.5	4.5	2.5	3.0
Total	12.5mm	25.6mm	16.1mm	20.8mm

A slender long-legged animal, dorsal surfaces smooth. Cephalothorax without tuberculations, eye tubercle low with the eyes closely placed. Third dorsal area with low tubercles. Free tergites smooth. Venter with only some scattered hair-bearing low tubercles. First coxa with a mid-ventral row of low tubercles; third coxa with an anterior and posterior row of tooth-like tubercles. Free sternites with only a few low hair-bearing tubercles. Anal operculum with only a few hair-bearing tubercles. Spiracles visible.

Legs long and slender, all segments smooth, clothed only with scattered hairs. Tarsal segments: 6-13-9-9. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus somewhat enlarged.

Palpus: trochanter, 0.4 mm long; femur, 0.9; pa-

tella, 0.8; tibia, 1.4; and tarsus, 0.6. Total length, 4.1 mm. Palpal segments smooth, clothed only with scattered hairs. Femur laterally compressed, with teeth on the ventral border; tibia flattened; palpal claw quite long and smooth. Chelicera smooth, clothed only with scattered hairs.

Penis a slender shaft, with typically expanded distal portion consisting of three separate portions.

Entire animal reddish brown in color with some darker mottling around the anterior margin of the cephalothorax and on the lateral portions of the first and third areas. Legs yellowish, with darker markings, giving a striped appearance. The striped legs give this species a very distinctive appearance.

Female.—Total length of body, 5 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 4.5 mm.

Female very similar in general appearance to the male, but lacking the enlarged basitarsus of the first tarsus.

Type locality.—Silkgrass, Belize, December 5, 1939, Ivan T. Sanderson.

Records.—BELIZE: Columbia Forest, Toledo District, July 13, 1971. Near St. Herman's Cave, Caves Branch, July 7, 1972. Lower Pine Ridge, June 30, 1971.

Erginulus Roewer

Erginus (part) Cambridge, 1905, Biologia Centrali-Americana, Arachnida, 2:559. Banks, 1906, Bull. American Mus. Nat. Hist., 11:189; (part) 1909, Proc. Acad. Nat. Hist. Philadelphia, 61:229.

Erginulus Roewer, 1912, Arch. Naturg., 78, sect. A, no. 10, p. 78; 1923, Die Weberknechte der Erde, p. 350.

Euerginus Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 10, p. 84; 1923, Die Weberknechte der Erde, p. 359.

Cynorta (part) Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:37.

Cosmetids with simple untoothed double claws on the third and fourth tarsi, with but 6 segments in the first tarsus. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and/or spines, third and fourth legs conspicuously heavier than the first and second. Males having spinose fourth legs, heavier chelicerae, and usually an enlarged basitarsus on the first tarsus.

Genotype: *Erginulus serratifer* (Cambridge) from Coban, Guatemala.

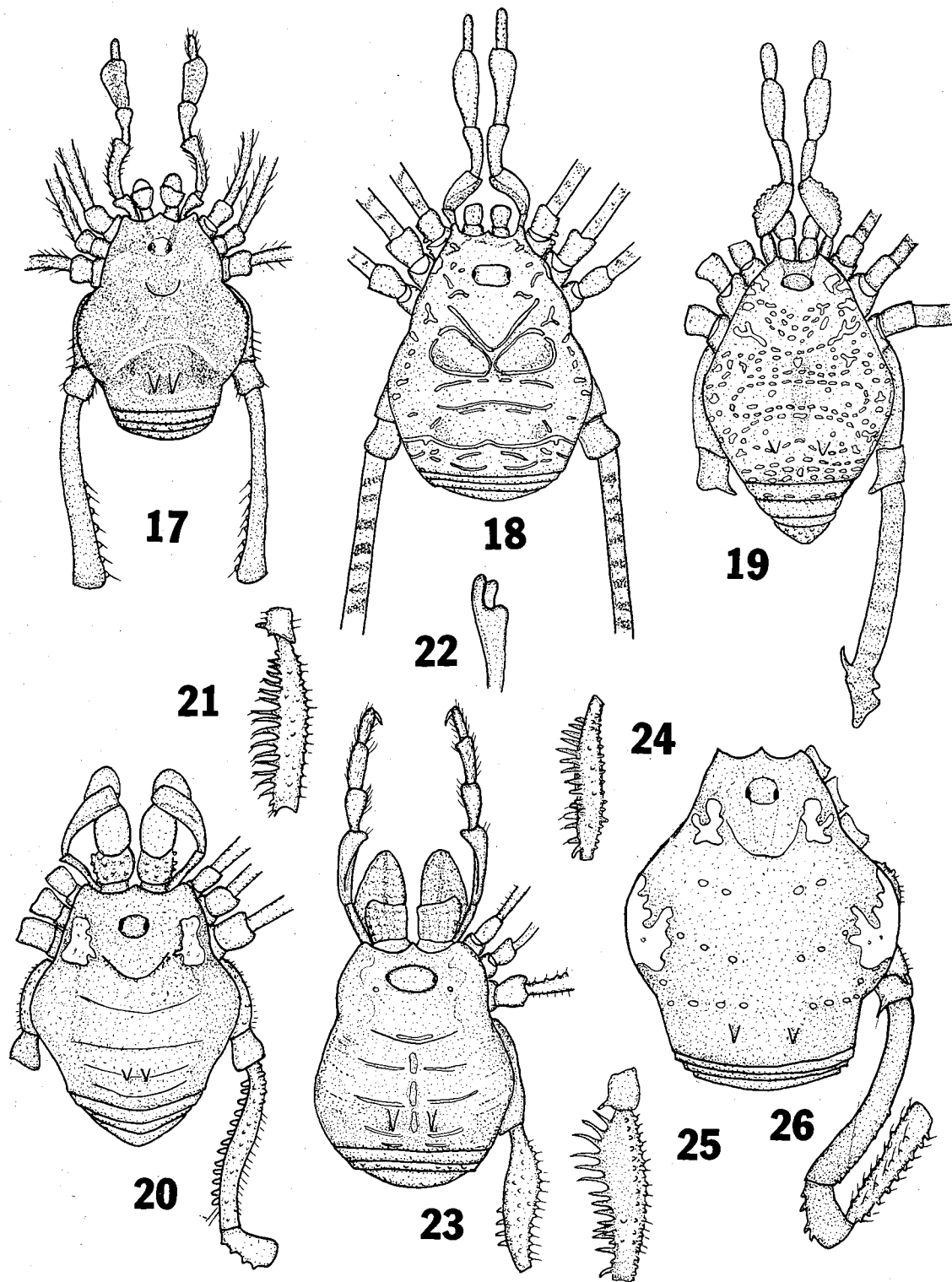


Fig. 17.—*Cynorta columbiana*, new species: dorsal view of male.
 Fig. 18.—*Cynorta multilineata* (Goodnight and Goodnight): dorsal view of male.
 Fig. 19.—*Cynorta dentipes* Cambridge: dorsal view of male.
 Figs. 20-21.—*Erginulus bimaculata*, new species: 20, dorsal view of male; 21, ventral view of right fourth femur of male.
 Figs. 22-25.—*Erginulus serratififer* (Cambridge): 22, lateral view of tip of male penis; 23, dorsal view of male; 24, ventral view of fourth femur of male; 25, ventral view of fourth femur of male.
 Fig. 26.—*Erginulus roeweri* (Goodnight and Goodnight): dorsal view of male.

Erginulus bimaculata, new species

Figs. 20-21

Male.—Total length of body, 4.3 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.6 mm.

	I	II	III	IV
Trochanter	0.4mm	0.8mm	0.7mm	0.8mm
Femur	2.9	4.7	3.7	4.2
Patella	0.9	1.3	1.1	1.5
Tibia	1.9	4.0	2.5	3.4
Metatarsus	3.0	4.7	3.5	4.7
Tarsus	1.8	4.3	2.1	2.5
Total	10.9mm	19.8mm	13.6mm	17.1mm

A moderately sized animal, dorsal surface smooth: eye tubercle low, eyes closely placed. First area of dorsum with very low tubercles, third with low spines. Free tergites smooth, anal operculum with numerous low tubercles. Venter smooth, first coxa with a median row of low tubercles, third with anterior and posterior rows of low teeth, fourth coxa with some low tubercles on the dorsal surface. Spiracle visible.

All segments of the legs but the metatarsi and tarsi with low tubercles; each femur with a ventral row of low blunt spines; on the fourth femur, these are much enlarged. From the dorsal view of the fourth femur, a retrolateral row of low spines is visible; from the ventral view, the spines of the median border are visible as in the figure. Tarsal segments: 6-13-7-8. Basitarsi of both first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: Trochanter, 0.9 mm long; femur, 1.8; patella, 0.9; tibia, 1.5; and tarsus, 0.9. Total length, 6 mm. Palpus having a very slender trochanter; the femur is laterally flattened, with a ventral row of teeth, dorsally with roughened areas; tibia flattened, with spine-like hairs on lateral borders; tarsus slender, also with hairs, Chelicera somewhat enlarged, first segment with numerous low tubercles.

Penis a slender shaft, with typical tip consisting of three parts, 2.2 mm long.

Color a uniform reddish brown, with two conspicuous white spots, one at each side of the lateral posterior portion of the cephalothorax. Appendages only slightly lighter in color than the dorsum.

Female.—Total length of body, 5.7 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.6 mm.

Similar in appearance to the male, but lacking the heavy spines of the fourth femur, the enlarged chelicera and basitarsus of the first tarsus.

Type locality.—Male holotype from Grutas de Xtacumbilxunam, Bolonchenticul, Campeche, México,

May 13, 1973, J. Reddell, D. McKenzie, M. H. McKenzie, M. Butterwick. Found under rocks and rotten wood on guano in main passage.

Records.—MEXICO: *Campeche*: Paratypes from Grutas de Xtacumbilxunam, Bolonchenticul, April 19, 1973, J. Reddell, D. McKenzie, M. H. McKenzie, S. Murphy, M. Butterwick.

Yucatán: Female from Cenote de la Paca, 7 km E Tikuch, April 11, 1973, S. Murphy.

Remarks.—A long series of animals was available for study, and there was a slight variation in the number of tarsal segments. Most forms had 6-13-7-8; but some were 6-13-7-7 or 6-12-7-8. This form is probably most closely related to *Erginulus serratofemoralis* (Goodnight and Goodnight); the chief difference is in the dorsal color pattern; possibly this species represents only a geographical variation.

Erginulus roeweri (Goodnight and Goodnight)

Fig. 26

Euerginus serratotibialis (Cambridge) Roewer, 1923, Die Weberknechte der Erde, p. 361, figs. 428, 429.

Acromares roeweri Goodnight and Goodnight, 1947, Fieldiana, 32(1):14-16, fig. 6.

Cynorta clavotibialis Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:46-48, figs. 34-38 (part).

Male.—Total length of body, 6.9 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 5.8 mm.

	I	II	III	IV
Trochanter	0.4mm	0.8mm	0.8mm	0.8mm
Femur	3.0	5.0	4.2	4.7
Patella	0.9	1.4	1.4	1.4
Tibia	2.1	4.0	2.6	3.7
Metatarsus	3.0	5.4	3.7	5.7
Tarsus	1.5	3.2	2.1	2.5
Total	10.9mm	19.8mm	14.8mm	18.8mm

Dorsum smooth, cephalothorax with the eye tubercle slightly removed from the anterior margin. Five dorsal areas indicated by extremely low tubercles, low paired spines on the fourth area. Free tergites with a few low tubercles on the posterior margin of each. Venter quite smooth, first coxa with three rows of low tubercles, the most anterior of which is slightly larger at the distal portion; second coxa with a few tubercles at the proximal anterior area; third coxa with low teeth on the distal portion of both the anterior and posterior margins; fourth coxa with a few tubercles (visible from dorsal view) at the anterior margin. Free sternites with low tubercles. Anal operculum with low tuberculations. Spiracle visible.

Trochanters of legs quite smooth, fourth with a small median spine. All segments of the legs but the metatarsi and tarsi somewhat roughened. Third and fourth femora curved, slightly enlarged. Fourth femur with a heavier row of tubercles on the prolateral margin. Two larger spines and numerous tubercles on the retrolateral surface of the patella. Tibia with a prolateral row of spines, a row of four or five spines at the proximal portion of the retrolateral margin, and a median row of spines, making three rows in all. Tarsal segments: 6-10-7-8. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 1.1 mm long; femur, 1.8; patella, 1.3; tibia, 1.8; and tarsus, 0.9. Total length, 6.9 mm. Femur of palpus laterally compressed, with a ventral row of low teeth. Tibia flattened, with a row of small granulations on the dorsal portion. A few very small spinules on the dorsal margin of the patella and one spinule on the dorsal distal portion of the femur. Chelicera somewhat enlarged, proximal segment with a row of four or five spinules at the proximal portion and a prolateral spinule at the distal portion. Distal segment with a very slight elevation.

Dorsum reddish brown, giving the appearance of having four spots. Two of these spots are located on either side of the cephalothorax; the other two are on either side of the median portion of the abdomen. A few irregular white markings are just posterior to the abdominal spots. Transverse rows of very small white flecks are present across the fifth area and each free tergite; and a few light flecks are often present on the first three dorsal segments. Venter and coxae reddish brown, appendages somewhat lighter.

Female.—Total length of body, 7.5 mm. Cephalothorax, 2.6 mm. Width of body at widest portion, 6.1 mm.

Female very similar to male in appearance, but lacking the enlarged chelicera and basitarsus and the heavy spination of the fourth leg.

Records.—MEXICO: *Yucatán*: Actún Xpukil, 3 km S Calcehtok, August 3, 1973, J. Reddell; Hochtún, August 12, 1973, J. Reddell; Tixcocob, August 12, 1973, J. Reddell; 7 km SW Oxkutzcab, July 31, 1973, J. Reddell; surface at Actún Kaua, Kaua, August 12, 1972, J. Cooke, W. H. Russell.

Remarks.—In general appearance, this form is quite distinctive; but future collections from more localities may indicate that it is but a variation on *Erginulus serratotibialis* (Cambridge).

Erginulus serratifer (Cambridge)

Figs. 22-25

Erginulus serratifer Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 2:561, pl. 52, fig. 18.

Erginulus serratifer: Roewer, 1912, *Arch. Naturgesch.*, 78, sect. A, no. 10, p. 84; 1923, *Die Weberknechte der Erde*, p. 358-359.

Male.—Total length of body, 4.7 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.6mm	0.6mm	0.6mm	0.9mm
Femur	2.5	4.3	3.2	4.3
Patella	0.9	1.3	1.1	1.4
Tibia	1.8	3.4	1.9	2.9
Metatarsus	3.0	4.6	3.4	4.5
Tarsus	1.9	4.3	2.5	2.7
Total	10.7mm	18.5mm	12.7mm	16.7mm

Dorsum smooth, eye tubercle in center of the cephalothorax, eyes widely separated. Five dorsal areas indicated by lighter markings, paired sharp spines on the third area. Free tergites smooth except for some very small sharp tubercles along the posterior borders. In some forms the first area had paired low tubercles. Venter, anal operculum, and free sternites quite smooth, with only a few scattered hairs. Spiracle clearly visible. First coxa with a row of low tubercles which are somewhat enlarged at the distal portion; fourth coxa with many hair-tipped low tubercles, visible from the dorsal view.

First and second legs with a few low tubercles, especially visible on the femur; many scattered hairs also present, but the surfaces are generally quite smooth. Third and fourth legs slightly heavier, all segments with hairs. Femur of the third leg with low, spinose tubercles arranged more or less in two rows. Fourth femur somewhat curved as in the illustration; fourth patella and tibia with some heavier tubercles on the dorsal surface. One male specimen had larger spines, also had small spines on the distal medial surface of the third and fourth patella. Tarsal segments: 6-12-8-8. Distitarsi of both first and second tarsi with three segments; basitarsus of first tarsus somewhat enlarged.

Palpus: trochanter, 0.9 mm long; femur, 1.6; patella, 0.9; tibia, 1.3; tarsus, 0.9. Total length, 5.6 mm. Palpus somewhat enlarged, all segments with hairs. Femur laterally compressed, with a few tubercles

on the ventral surface, tibia flattened. Tarsal claw smooth. Chelicera enlarged, second segment very large, first with some laterally placed hair-bearing tubercles. Moveable claw with median, large tooth-like protuberances.

Dorsum a uniform reddish-brown overlain with darker netting which is most pronounced on the appendages. Venter with much darker mottling. Some small white markings usually present between cephalothorax and abdomen and lateral area of cephalothorax. Areas outlined with lighter markings.

Female.—Total length of body, 5 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 4 mm.

Female similar to male in appearance, but lacking the enlarged basitarsus of the first tarsus, the enlarged chelicera, and the heavy spines of the fourth femur. Some specimens did have enlarged spines at the distal portion of the fourth femur, but they were much smaller than those of the male.

Type locality.—Cobán, Cubilguitz, Guatemala (Cambridge's record).

Records.—BELIZE: Columbia Forest Station, Toledo District, July 6-17, 1971.

Erginulus serratofemoralis Goodnight and Goodnight
Figs. 30-31

Erginulus serratofemoralis Goodnight and Goodnight,
1947, Fieldiana, 32(1):29-30, fig. 14.

Male.—Total length of body, 4.7 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.6 mm.

	I	II	III	IV
Trochanter	0.4mm	0.6mm	0.9mm	0.9mm
Femur	2.5	4.5	3.5	4.5
Patella	0.8	1.1	1.3	1.5
Tibia	1.5	4.0	1.9	3.2
Metatarsus	2.5	4.5	3.5	4.5
Tarsus	1.8	3.8	2.1	2.6
Total	9.5mm	18.5mm	13.2mm	17.2mm

A robust animal with heavy legs. Dorsum smooth. Eye tubercle on the anterior third of the cephalothorax, eyes widely separated, with scattered low tubercles above. Dorsal areas smooth except for paired low spines on the third area. Free tergites armed only with low spinose tubercles on their posterior margins. Most portions of the venter smooth; first coxa with a row of rounded tubercles, fourth with scattered tubercles on the lateral and dorsal surfaces. Free sternites smooth except for a few low tubercles at the lateral margins. Anal operculum with scattered hairs and low tubercles. Spiracle visible.

Penis a slender shaft; distal end slightly dilated, with two outer flared processes; central process rounded.

Legs having most segments with tuberculations or spines of varying sizes, but particularly large on the third femur and the fourth tibia. On the fourth femur, these processes are enlarged into heavy spines; this femur is somewhat compressed laterally, is somewhat oval in cross-section, and the spines are actually ventral and dorsal in position. In the illustration, the leg has been turned, better to show these spines. Those projected toward the median line are actually dorsal in position. Tarsal segments: 6-12-8-9. Basitarsi of both first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.6 mm; femur, 1.5; patella, 0.9; tibia, 1.4; and tarsus, 0.8. Total length, 5.2 mm. Trochanter with a rounded tubercle at the ventral-distal portion; femur typically laterally compressed, with a row of teeth on the ventral border. Femur flattened, broad. Tarsal claw smooth. Chelicera enlarged, both portions of the claw with a median large tooth; a row of tubercles on the proximal portion of the lateral margin of the first segment.

Dorsum dark reddish brown, appendages somewhat lighter in color, with darker mottling over most surfaces. White pattern present, though variable. There are usually markings at the anterior-lateral portion of the junction of the cephalothorax and abdomen, a transverse white bowed line behind the spines of the third area, and a shorter line posterior to the fourth area. In some specimens, a few white markings were present at the lateral portion of the dorsal areas.

Female.—Total length of body, 5.2 mm. Cephalothorax, 1.5 mm. Width of body at widest portion, 3.6 mm.

Female similar in appearance to the male, but lacking the enlarged chelicera, the heavy spines of the fourth leg, and the enlarged basitarsi of the first tarsi. The white markings are generally more conspicuous on the females.

Type locality.—Male holotype and male and female paratypes from Silkgrass, Belize, November 17, 1939, I. T. Sanderson. In the collection of the Chicago Natural History Museum.

Records.—BELIZE: Guacamallo Bridge, July 13, 1972. Mountain Pine Ridge, near Augustine and the Rio Frio, June 29, 1971, July 20 and 23, 1972. Highway near Belmopan, July 30, 1972. Belmopan, July 20, 1972, S. and J. Peck.

Remarks.—*E. serratofemoralis* and *E. serratipes* (Cambridge) appear to have overlapping ranges; we have found them to be difficult to distinguish one from another; however, there are differences in the

dorsal color patterns. The leg spination differs slightly also, but we have noted that this may vary within individuals in a single population. The general pattern of the spination is quite constant, but the details differ. *Future studies* may indicate that these should be considered a single species with geographic variations.

Erginulus serratipes (Cambridge)

Fig. 37

Erginus serratipes Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 2:565, pl. 53, figs. 5, 5a.

Erginulus serratipes: Roewer, 1912, *Arch. Naturgesch.*, 78, sect. A, no. 10, p. 82; 1923, *Die Weberknechte der Erde*, p. 352, figs. 401-402.

Male.—Total length of body, 5.4 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.4mm	0.6mm	0.6mm	0.6mm
Femur	2.2	3.8	3.2	4.0
Patella	0.8	1.1	1.1	1.3
Tibia	2.5	3.0	2.1	2.7
Metatarsus	2.7	4.2	3.4	4.5
Tarsus	1.9	3.2	1.9	2.2
Total	9.5mm	15.9mm	12.3mm	15.3mm

General body surface smooth, cephalothorax with some low scattered tuberculations. Eye tubercle low, in the anterior third of the cephalothorax, with low tuberculations above. Five dorsal areas clearly defined by white markings. Paired, very low tubercles on the first area, paired spines on the third. Free tergites smooth. All ventral surfaces with scattered, low, hair-bearing tuberculations. First coxa, ventrally, with a median row of low tubercles; third coxa with a few low teeth on both the anterior and posterior surfaces toward the apical region. Fourth coxa with hair-bearing larger tubercles. Free sternites and anal operculum covered also with hair-bearing tubercles. Stigmen visible.

Penis a slender shaft, distal area somewhat broadened, with two smaller projections at the apical end.

All segments of the legs but the metatarsi and tarsi with hair-bearing tubercles; metatarsi and tarsi covered with hairs. Trochanters somewhat roughened, third trochanter with distal low spine on posterior surface; fourth with a median blunt spine. Third femur with a ventral row of spinose tubercles which are larger toward the apical end; third tibia with heavier tuberculations. Fourth femur somewhat oval in cross section, with a ventral row of large spines and a dorsal row of shorter spines. An inner low row of heavy tu-

bercles is visible at the base of the larger ventral row on the prolateral surface; this latter surface also may have low, heavy tubercles. Tarsal segments: 6-12-8-8. Distitarsi of both first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.8 mm long; femur, 1.1; patella, 0.8; tibia, 1.3; and tarsus, 0.4. Total length, 4.4 mm. Femur of palpus laterally compressed, dorsal surface with heavy granulations, ventrally with a row of teeth. Patella covered with hairs; tibia flattened, with spinose hairs on lateral borders, tarsus covered with hairs, claw slender. Chelicera enlarged, proximal portion of first segment with low tubercles on lateral surface; second segment smooth; both portions of claws with large triangular shaped tooth in basal region.

Dorsum and appendages reddish brown; some darker brown mottling at the junction of the cephalothorax and abdomen, at the anterior margin of the cephalothorax, and over the eye tubercle. White markings outline the dorsal areas, with a curved line behind the third and fourth areas; that of the third continues to the lateral border. Small white area lateral and just posterior to the eye tubercle.

Female.—Total length of body, 5.2 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 2.5 mm.

Similar to the male in general appearance, but lacking the enlarged chelicerae, spinose fourth leg, and enlarged basitarsus. The white color pattern tends to be more prominent in the females than in the males. In many the white lines appear as scallops outlining both the lateral and posterior borders of the dorsal areas; the fourth area is also distinctly outlined.

Type locality.—Tikal, Guatemala (Cambridge's record).

Records.—GUATEMALA: Tikal, July 3, 1971.

BELIZE: Rio Frio Cave, near Augustine, July 1, 1971. Columbia Forest Station, Toledo District, July 17, 1971.

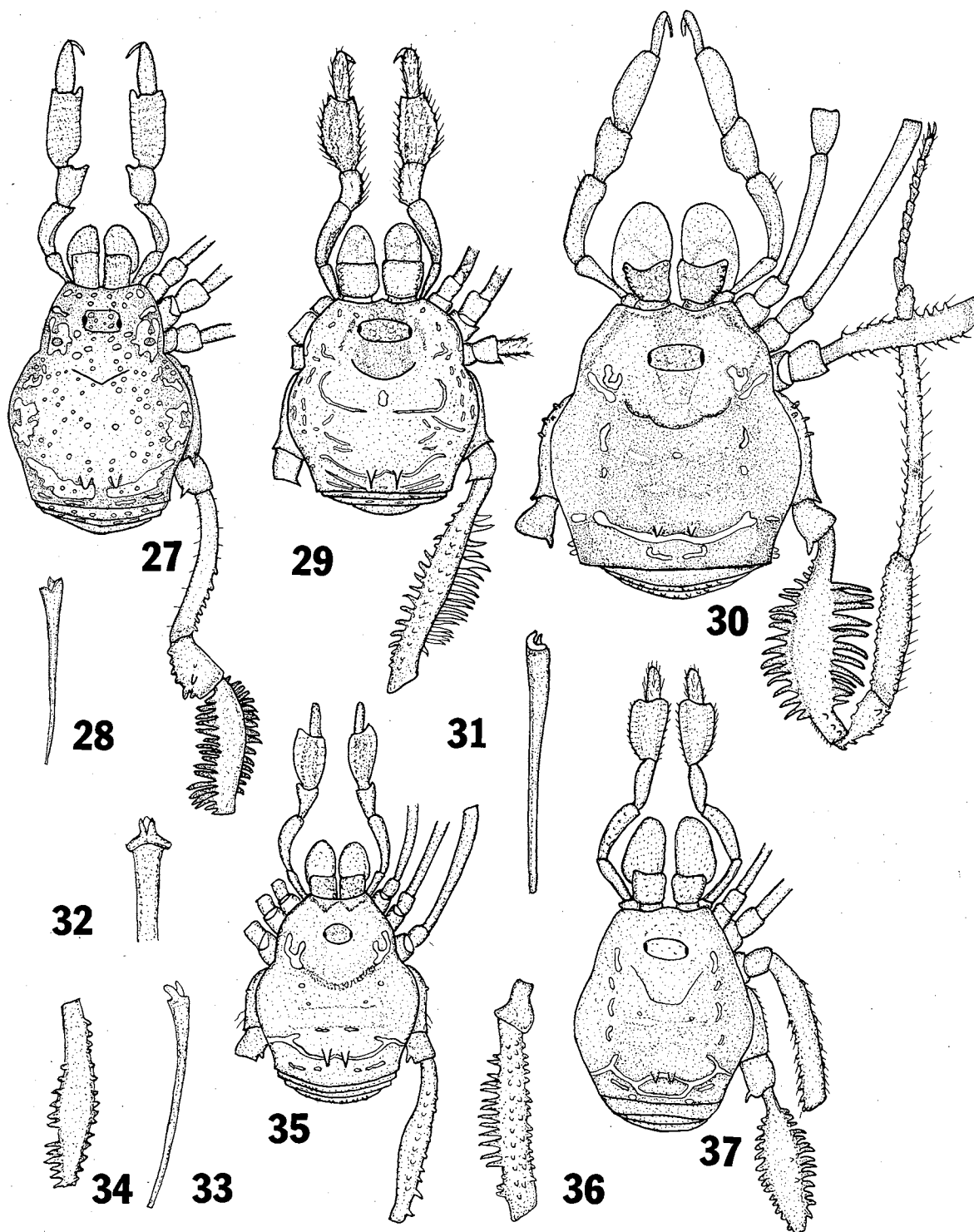
Erginulus clavotibialis (Cambridge)

Figs. 27-28

Erginus clavotibialis Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 2:562, pl. 52, figs. 19, 19b.

Erginus serratotibialis Cambridge, 1905, *Biologia Centrali-Americana*, Arachnida, 2:562, pl. 52, figs. 20, 20a.

Euerginus clavotibialis: Roewer, 1912, *Arch. Naturgesch.*, 78, sect. A, no. 10, p. 86; 1923, *Die Weberknechte der Erde*, p. 361, figs. 426, 427a-b.



Figs. 27-28.—*Erginulus clavotibialis* (Cambridge): 27, dorsal view of male; 28, male penis.
 Fig. 29.—*Erginulus weyerensis*, new species: dorsal view of male.
 Figs. 30-31.—*Erginulus serratofemoralis* Goodnight and Goodnight: 30, dorsal view of male; 31, lateral view of male penis.
 Figs. 32-36.—*Erginulus singularis*, new species: 32, ventral view of tip of male penis; 33, lateral view of male penis; 34, ventral view of fourth femur of male; 35, dorsal view of male; 36, prolatateral view of fourth femur of male.
 Fig. 37.—*Erginulus serratipes* (Cambridge): dorsal view of male, femur of leg turned slightly to demonstrate ventral and dorsal spines.

Euerginus serratotibialis: Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 10, p. 86; 1923, Die Weberknechte der Erde, p. 362, figs. 428, 429.

Acromares banksi Goodnight and Goodnight, 1942, American Mus. Novitates, 1184:7, figs. 36, 37; 1947, Fieldiana, 32(1):16.

Cynorta clavotibialis: Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:46-48, figs. 34-38.

Male.—Total length of body, 7.6 mm. Cephalothorax, 2.7 mm. Width of body at widest portion, 5.7 mm.

	I	II	III	IV
Trochanter	0.6mm	0.6mm	0.8mm	1.1mm
Femur	3.2	4.7	4.2	4.5
Patella	0.9	1.4	1.5	1.5
Tibia	1.9	4.0	1.6	3.4
Metatarsus	3.2	5.2	2.7	5.6
Tarsus	1.5	3.7	1.9	2.1
Total	11.3mm	19.6mm	13.7mm	18.2mm

Dorsum quite smooth; eye tubercle approximately in the center of the cephalothorax; dorsum armed only with low paired spines on the third area. Free tergites smooth. Venter, coxae, and genital operculum with some low granulations and scattered hairs. Spiracle clearly visible.

Legs clothed with scattered hairs, relatively slender. Coxa of fourth leg with some tubercles which can be seen from the dorsal view; fourth femur with a row of low tubercles at the distal third of the pro-lateral surface; patella with a retrolateral row of spines, numbering 5, with the largest ones in the center and tapering to smaller sizes at both proximal and distal portions; tibia with 16-17 spines on both retrolateral and prolateral surfaces; metatarsus with rows of low hair-bearing tubercles; tarsus clothed only with hairs. Tarsal segments: 6-10-7-8. Distitarsi of both first and second tarsi with three segments; basitarsus of first tarsus somewhat enlarged.

Palpus: trochanter, 1.1 mm long; femur, 1.8; patella, 1.3; tibia, 1.8; and tarsus, 0.9. Total length, 6.9 mm. Palpus clothed with hairs; femur laterally compressed with low rounded teeth on the ventral surface; patella with an inner-distal spine; flattened tibia with small projections on either side of the distal portion. Chelicera somewhat enlarged. Claws without teeth.

Penis a slender shaft, distal end somewhat inflated, 3 mm long.

Entire animal reddish brown, black mottling present on the cephalothorax and on the outer border of the dorsal scute. Yellow white markings present as

illustrated. These markings are not pure white, rather they are somewhat dull yellow in appearance. The proximal segments of the legs are lighter than the dorsum. Darker mottling is present on the patellae, tibiae, and metatarsi and tarsi as well as on the chelicera and palpus. Venter somewhat lighter than the dorsum, free sternites darker.

Female.—Total length of body, 7.5 mm. Cephalothorax, 1.6 mm. Width of body at widest portion, 6.1 mm.

Female similar to male, but lacking the enlarged chelicera, spines of the fourth tibia, and enlarged basitarsus. Dorsal color pattern tends to be more distinctive than that of the male.

Type locality.—Vera Cruz (Cambridge's record).

Records.—MEXICO: Chiapas: 1 km N Palenque, July 25, 1973, J. Reddell, J. M. Rowland, D. Denson, M. Kawakatsu, R. W., D. R., R. W. Jr., S. A., and S. R. Mitchell.

BELIZE: Rio Frio near Augustine, July 20, 1972. Guacamallo Bridge, July 13, 1972. Columbia Forest, Toledo District, August 1, 1972. Caves Branch near St. Herman's Cave, July 20, 1972. Roaring Creek, August 1, 1972. Hummingbird Gap, August 19, 1972, S. and J. Peck. Belmopan, August, 1972, S. and J. Peck.

GUATEMALA: Tikal, July 1, 1971. El Petén, August 24, 1972, S. and J. Peck.

Erginulus singularis, new species

Figs. 32-36

Male holotype.—Total length of body, 4.5 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4 mm.

	I	II	III	IV
Trochanter	0.4mm	0.4mm	0.4mm	0.6mm
Femur	2.5	4.6	3.5	4.5
Patella	0.9	1.3	1.3	1.3
Tibia	1.5	4.0	2.5	3.2
Metatarsus	2.7	4.7	3.1	4.6
Tarsus	1.8	3.7	1.9	1.5
Total	9.8mm	18.7mm	12.7mm	16.7mm

Dorsum quite smooth, areas indicated by very shallow grooves. Third area with paired low spines, other areas without armature. Eye tubercle low, approximately in center of cephalothorax. Free tergites armed only with low tubercles on the posterior margins. Fourth coxa with a few low spinose tubercles which are visible from the dorsal view. Ventral surface of coxae with scattered hairs; first coxa with a median row of low tubercles; coxa three with a few tubercles at the distal-anterior portion; coxa four

with a few low tubercles as indicated above. Spiracles clearly visible. Free sternites with some scattered hairs; anal operculum with low tubercles.

Trochanters of legs smooth, third and fourth trochanters each with a small posterior spine. All leg segments with scattered hairs. Third femur with an anterior row of low spine-bearing tubercles. Fourth femur dorsally with a row of low tubercles; ventrally with a median row of spines extending over the distal two-thirds of the segment; femur nearly oval in cross-section. Tarsal segments: 6-11-7-8. Distitarsi of both first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.6 mm long; femur, 1.1; patella, 0.8; tibia, 1.3; and tarsus, 0.9. Total length, 4.7 mm. Trochanter of palpus with single large tubercle; femur laterally compressed with a ventral row of teeth; patella with a spine on outer surface; tibia flattened, with spinose hairs on lateral borders; tarsus with numerous hairs. Chelicera only slightly enlarged, each claw with a single large tooth.

Penis a slender shaft, with typically expanded apical end.

Dorsum and appendages reddish brown with scattered white markings as in the figure. While the illustration is typical of most forms, there are some specimens which have more yellow markings. Some lighter mottling present over the eye tubercle, extending to the anterior margin. Appendages somewhat lighter, netted with darker markings.

Female.—Total length of body, 5.2 mm. Cephalothorax, 1.8 mm. Width of body at widest portion, 4.3 mm.

Female similar to male, but lacking the enlarged chelicera, the spines of the fourth leg, and the enlarged basitarsus.

Type locality.—Male holotype from Baldy Beacon, Belize, July 1, 1971.

Records.—BELIZE: Baldy Beacon, July 1, 1971. Caves Branch, near St. Herman's Cave, August 8, 1972, S. and J. Peck.

Remarks.—This species appears to be related to *Erginulus arcuatus* (Cambridge) from Cubilguitz, Guatemala; but differs in the spination of the fourth leg and the dorsal color pattern.

Erginulus weyerensis, new species

Fig. 29

Male holotype.—Total length of body, 5.4 mm. Cephalothorax, 2.2 mm. Width of body at widest portion, 4.3 mm.

	I	II	III	IV
Trochanter	0.6mm	0.6mm	0.8mm	1.1mm
Femur	3.0	5.5	4.3	4.5
Patella	0.9	1.1	1.3	1.5
Tibia	2.1	4.0	2.5	3.5
Metatarsus	3.4	5.8	4.2	6.1
Tarsus	2.1	4.3	2.2	3.0
Total	12.1mm	21.3mm	15.3mm	19.7mm

Dorsum quite smooth, eye tubercle low, eyes widely separated. Cephalothorax separated from the abdomen by a rounded groove, indicated by white markings. Dorsum armed only with paired spines on the posterior portion of the third area. Free tergites smooth. Venter smooth, with a few low tubercles arranged in a row on the median surface of the first coxa. Second and third coxae each with very low tubercles arranged in a row as well as along the distal margin. Free tergites each with a very low row of hair-tipped tubercles. Anal operculum smooth. Spiracles clearly visible at the junction of the fourth coxa and first free tergite.

First and second legs clothed with scattered hairs; femur of third leg with spinose tubercles arranged in rows, patella covered with tubercles, remaining segments smooth. Fourth femur with enlarged spines as in illustration; their bases are slightly separated from one another. Fourth patella with heavy tuberculations, smaller tubercles on the tibia; metatarsus and tarsus quite slender. Tarsal segments: 6-12-8-9. Distitarsi of both first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.9 mm long; femur, 1.5; patella, 1.1; tibia, 1.5; tarsus, 0.6. Total length, 5.6 mm. Scattered hairs present on all segments. Femur laterally compressed, with a row of teeth on the ventral surface, a row of hair-tipped tubercles on the medial surface of the patella; tibia flattened, with spinous hair-tipped low tubercles on each lateral margin; tarsus only with hairs, claw smooth. Chelicera enlarged, some small tubercles on the retrolateral surface of the distal portion of the first segment; moveable claw with a basal tooth; immoveable claw with a more distal one.

Entire animal dark brown-red, with slender white markings outlining the areas and the dorsal scute as illustrated. Venter a deep brown, appendages somewhat lighter, with scattered darker markings. Some white markings on the free tergites.

Female.—Total length of body, 5.4 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 4.3 mm.

Female similar to male, though the color pattern tends to be more distinctive than that of the male. The female lacks the enlarged basitarsi, the enlarged chelicerae, and the spines of the fourth leg.

Type locality.—Male holotype and male and female paratypes from Columbia Forest, Toledo District, Belize, July 6, 13, and 19, 1971.

Remarks.—*E. weyerensis* appears to be related to *Erginulus triangularis* (Cambridge) but the spination of the fourth leg is quite different as is the white pattern of the dorsum. This species is named in honor of Mrs. Dora Weyer of Belize City.

Paecilaema C. L. Koch

Cosmetus Perty, 1833, *Delectus animalium articulatorum*, fasc. 3, pp. 303, 304 (in part). C. L. Koch, 1839, in Hahn, C. W., and C. L. Koch, *Die Arachniden*, 7:109-111.

Flirtea (in part) plus *Paecilaema* C. L. Koch, 1839, *Ubers Arachniden*, 2:20, 21; 1839, in Hahn, C. W., and C. L. Koch, *Die Arachniden*, 7:97, 104. Roewer, 1923, *Die Weberknechte der Erde*, p. 364. Goodnight and Goodnight, 1953, *American Mus. Novitates*, 1610:54-55.

For the complete synonymy of this genus, see Goodnight and Goodnight, 1953.

Cosmetids with simple untoothed claws on the third and fourth legs, with more than six segments in the tarsus of the first leg. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and spines. Secondary sexual characteristics of the male usually present as increased spination of the femur of the fourth leg.

Genotype: *Paecilaema U-flavum* (Perty)

Paecilaema toledensis, new species
Fig. 38

Female holotype.—Total length of body, 7.5 mm. Cephalothorax, 2.1 mm. Width of body at widest portion, 6.3mm.

	I	II	III	IV
Trochanter	0.8mm	0.9mm	1.1mm	1.3mm
Femur	6.0	12.4	8.7	12.1
Patella	0.9	1.9	1.9	2.1
Tibia	3.7	9.7	4.5	6.3
Metatarsus	6.3	13.8	8.7	12.7
Tarsus	2.7	6.0	4.0	4.7
Total	20.4mm	44.7mm	28.9mm	39.2mm

Large animal, with slender, long legs. Dorsum smooth, with paired tubercles on the first area and

slender spines on the third. Remaining areas and free tergites smooth, without armature. Eye tubercle low, in median portion of cephalothorax. Ventral surfaces of coxae with low, hair-tipped tubercles; first coxa with a mid-ventral row of low tubercles. Free sternites smooth, with but a single transverse row of very low tubercles on each. Spiracles clearly visible.

Legs smooth, straight, armed with low tubercles which have very small hairs at their tips. Palpus: trochanter, 1.3 mm long; femur, 2.9; patella, 1.5; tibia, 2.6; and tarsus, 1.4. Total length, 9.7 mm. All segments of palpus with hairs. Trochanter apically with a few rounded hair-tipped tubercles; femur laterally compressed, with a row of low teeth on the ventral surface (illustration shows these); patella with small projecting hair-tipped tubercles on the inner-apical region; tibia flattened; tarsus slightly flattened with low tubercles bearing spine-like hairs on the lateral surfaces. Chelicera smooth with some investing hairs; cheliceral claws with low teeth, confined to the distal half.

Dorsum and appendages dark reddish brown, with an elaborate white pattern as in illustration.

Type locality.—Female holotype from Columbia Forest, Toledo District, Belize, July 15, 1971.

Remarks.—This species appears to be related to *Paecilaema basalis* (Cambridge); however, the dorsal color pattern is far more elaborate in this form.

Paecilaema variegatus, new species
Fig. 39

Female holotype.—Total length of body, 6.3 mm. Cephalothorax, 1.9 mm. Width of body at widest portion, 5 mm.

	I	II	III	IV
Trochanter	0.4mm	0.6mm	0.8mm	0.8mm
Femur	2.7	5.7	4.3	5.2
Patella	0.9	1.3	1.3	1.3
Tibia	1.9	4.5	2.7	3.5
Metatarsus	3.0	6.0	4.3	6.0
Tarsus	1.5	4.0	2.5	2.7
Total	10.4mm	22.1mm	15.9mm	19.5mm

Slender animal with a conspicuous white pattern. Dorsum smooth. Eye tubercle located in the anterior third of the cephalothorax, low. Five dorsal areas well defined. Paired low tubercles on the first area; paired sharp spines on the third. Remaining areas and free tergites smooth. Venter smooth; third coxa with an anterior and posterior row of low teeth. Spiracles visible.

Legs slender, third and fourth trochanters each with a small posterior-apical spine. Fourth femur with

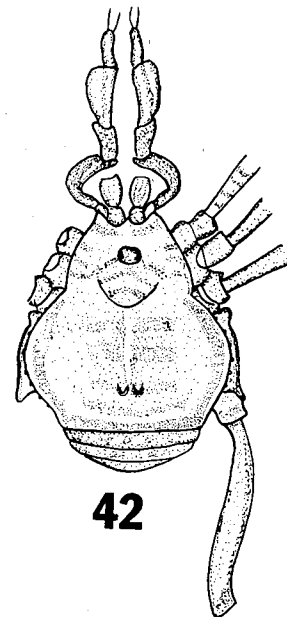
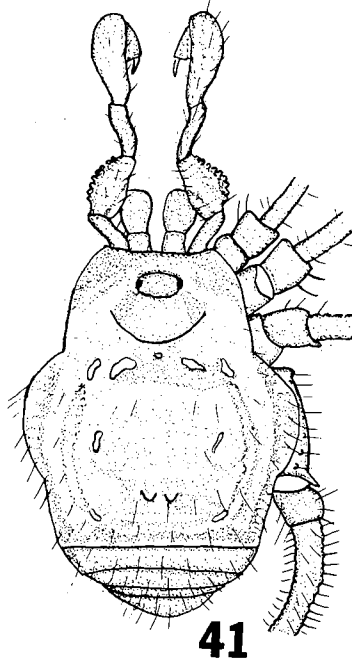
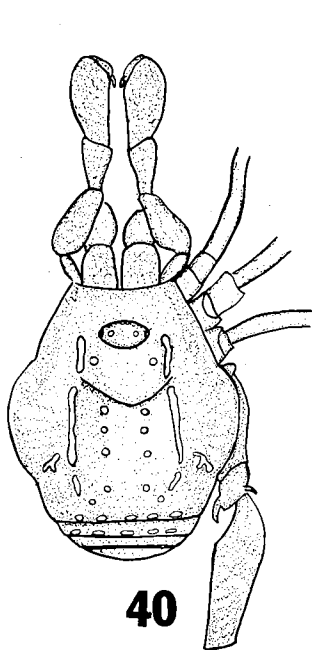
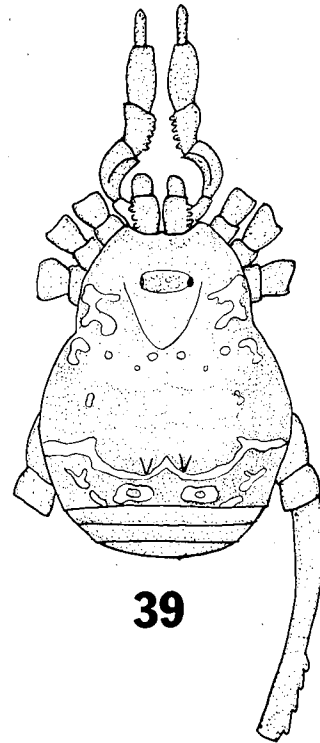
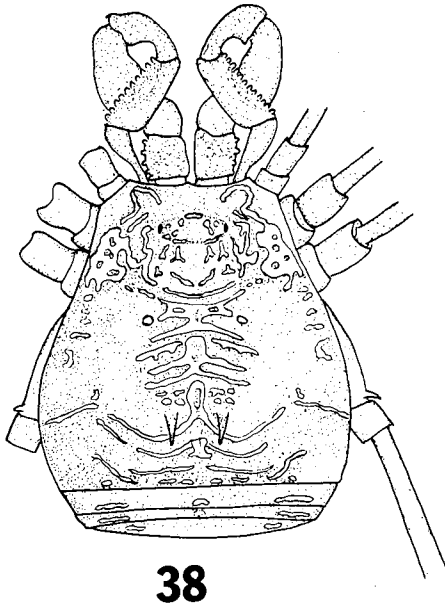


Fig. 38.—*Paecilaema toledensis*, new species: dorsal view of male.
Fig. 39.—*Paecilaema variegatus*, new species: dorsal view of female.
Fig. 40.—*Vonones compressus* (Cambridge): dorsal view of male.
Fig. 41.—*Vonones pilosa*, new species: dorsal view of male.
Fig. 42.—*Vonones sandersoni*, (Goodnight and Goodnight): dorsal view of male.

a few low spines at the lateral distal portion. Third and fourth femora slightly curved. Tarsal segments: 7-13-9-10. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.6 mm long; femur, 1.3; patella, 0.9; tibia, 1.3; and tarsus, 0.8. Total length, 4.9 mm. Femur of palpus laterally compressed with blunt teeth along the ventral border. Patella with some low tubercles on the medial surface. Femur flattened, tarsus with numerous spine-like hairs. Chelicera with first segment bordered dorsally with some large tuberculations; claws with low teeth.

Dorsum a uniform reddish brown, white markings at anterior lateral portion of the cephalothorax, at junction of the cephalothorax and abdomen, and along the lateral margins. A white bowed line behind the spines of the third area and a second line behind the fourth area, some smaller markings on the fifth area. Venter dark brown; chelicera and palpus mottled with black. Femora of legs lighter than the dorsum, patellae and tibiae netted with black, metatarsi marked with black appearing somewhat annulate, tarsi darker.

Type locality.—Female holotype and female paratypes from Columbia Forest Station, Toledo District, Belize, July 9-15, 1971.

Remarks.—The distinctive color pattern of the dorsum distinguishes this form from other members of the genus.

Vonones Simon

Gonyleptes Say, 1821, J. Acad. Nat. Sci. Philadelphia, 2:68. Wood, 1870, Proc. Essex Inst., 6:37.

Vonones Simon, 1879, Ann. Soc. Ent. Belgique, 22: 212. Banks, 1909, Proc. Acad. Nat. Sci. Philadelphia, 61:228; 1909, Rept. Exp. Sta. Cuba, 2:170. Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 10, p. 22; 1923, Die Weberknechte der Erde, p. 302. Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:59-60.

This is an abbreviated synonymy of this genus. For the entire synonymy, see Goodnight and Goodnight, 1953.

Cosmetids with simple untoothed double claws on the third and fourth legs, with five segments in the first tarsus. Distitarsi of both first and second tarsi with three segments. Dorsum with five areas, variously armed with tubercles and spines, without a median large spine on the third area.

Genotype: *Vonones octotuberculatus* Simon.

Vonones compressus (Cambridge)

Fig. 40

Paravonones compressus Cambridge, 1905, Biologia Centrali-Americana, Arachnida, 2:552, pl. 52, figs. 4, 4a.

Holovonones compressus: Roewer, 1912, Arch. Naturgesch., 78, sect. A, no. 10, p. 21; 1923, Die Weberknechte der Erde, p. 301.

Disvonones albilineatus Goodnight and Goodnight, 1944, Ciencia, 5(4-5):106-107, figs. 2, 4.

Disvonones albiornatus Goodnight and Goodnight, 1944, Ciencia, 5(4-5):107-108, fig. 3.

Disvonones bilineata Goodnight and Goodnight, 1944, Ciencia, 5(4-5):108-109, fig. 1.

Tecavonones clavipes Goodnight and Goodnight, 1944, Ciencia, 5(4-5):109, figs. 5, 6.

Vonones compressus: Goodnight and Goodnight, 1953, American Mus. Novitates, 1610:62, 63, figs. 54, 55.

Male.—Total length of body, 3.9 mm. Cephalothorax, 1.4 mm. Width of body at widest portion, 3.2 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.4mm	0.4mm
Femur	1.4	2.4	1.9	2.3
Patella	0.7	0.7	0.8	0.9
Tibia	1.0	2.0	1.2	1.5
Metatarsus	1.5	2.4	2.0	2.4
Tarsus	1.0	2.0	1.1	1.3
Total	5.9mm	9.9mm	7.4mm	8.8mm

Small animal, dorsum smooth, eye tubercle with a small tuberculation over each eye, otherwise smooth. Paired tubercles present on the first four dorsal areas. Fifth area and each free tergite and free sternite with a transverse row of tubercles. Anal operculum with scattered tubercles. Coxae smooth, first with a mid-ventral row of teeth, fourth with anterolateral projection. Spiracle visible.

Legs clothed with scattered hairs, fourth trochanter with a dorsal and a ventral spine at the apical portion, ventral spine quite large. Fourth femur somewhat triangular in cross section, without spines on the ventral portion. Tarsal segments: 5-9-6-6. Distitarsi of both first and second tarsi with three segments.

Palpus: trochanter, 0.3 mm long; femur, 1.2; patella, 0.9; tibia, 1.1; and tarsus, 0.4. Total length, 3.9 mm. Femur laterally compressed, quite smooth; tibia typically flattened. Second segment of chelicera

somewhat enlarged.

Penis a slender shaft, apical end with two lateral slightly expanded projections and a central blunted one.

Dorsum and venter a uniform reddish brown with white markings as illustrated. Legs only slightly lighter, with some darker mottling, particularly evident on the distal segments.

Female.—Total length of body, 3.9 mm. Cephalothorax, 1.7. Width of body at widest portion, 3.3 mm.

Female similar in appearance to male, but lacking the enlarged fourth femur and chelicerae.

Records.—BELIZE: Corozal, July 13 and 15, 1972, Road to Consejo, near Corozal, July 14, 1972. Burrell Boom, July 28, 1972. Lower Pine Ridge, June 30, 1971. Blancaneaux Lodge, Pine Ridge, June 29, 1971. Mountain Pine Ridge, July 23, 1972. Highway north of Punta Gordo, July 10, 1971. Columbia Forest Station, Toledo District, July 14, 1971.

MEXICO: *Yucatán*: 5-10 km N Valladolid, April 10, 1973, J. Reddell. Chichén Itzá, August 8, 1973, J. Reddell. Becanchén, August 1, 1973, J. Reddell. Ruinas de Mayapán, August 14, 1973, J. Reddell. 1 km S Muna, July 31, 1973, J. Reddell. Cenote Hunto Chac (Cueva del Pozo), April 12, 1973, J. Reddell and D. McKenzie. Tixcocab, August 12, 1973, J. Reddell.

Campeche: Surface at Grutas de Xtacumbilxunam, May 13, 1973, J. Reddell. 2 km S Bolonchenticul, July 29-30, 1973, D. Denson, M. Kawakatsu, R. W., D. R., R. W. Jr., S. A., and S. R. Mitchell.

Remarks.—This abundant form has also been recorded from Tabasco, Chiapas, and was originally described by Cambridge from Cahabon, Guatemala. Though the dorsal color pattern is recognizable in specimens from these many areas, there is considerable variation; for example, most of the animals from Yucatán lacked the lateral extension of the white markings in the region of the fourth coxae; animals from the Toledo District of Belize had the lateral markings more conspicuous. Variations can also be noted in the tarsal segments: 5-9-6-6; 5-10-6-6; 5-9-7-7; and 5-8-6-7 among the forms studied.

Vonones sandersoni (Goodnight and Goodnight)
Fig. 42

Bokwina sandersoni Goodnight and Goodnight, 1947, Fieldiana, 32(1):17-18, fig. 7.

Male.—Total length of body, 3.6 mm. Cephalothorax, 0.7 mm. Width of body at widest portion, 1.8 mm.

	I	II	III	IV
Trochanter	0.2mm	0.2mm	0.2mm	0.3mm
Femur	1.0	1.7	1.3	1.9
Patella	0.3	0.6	0.4	0.6
Tibia	0.7	1.2	0.9	1.2
Metatarsus	0.9	1.5	1.2	1.6
Tarsus	0.7	1.3	1.0	0.9
Total	3.8mm	6.5mm	5.0mm	6.5mm

Dorsum and appendages uniformly smooth, eye tubercle low. Low spines present on the posterior portion of the third area. Free tergites smooth, without spines or tubercles. Venter smooth, a few low teeth on the posterior portion of the third coxa and a larger tubercle at the posterior lateral portion. Fourth coxa with a tubercle at the anterior-lateral position. This is very close to the large tubercle of the third coxa and is visible from the dorsal view. Free sternites smooth, anal operculum also smooth. Spiracle slightly concealed by the fourth coxa.

Legs slender, fourth slightly curved. All segments with scattered hairs, very low tubercles present on all segments but the metatarsi and tarsi. Tarsal segments: 5-9-6-6. Distitarsi of both first and second tarsi with three segments. Basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.2 mm long; femur, 0.8; patella, 0.4; tibia, 0.6; and tarsus, 0.2. Total length, 2.2 mm. Femur of palpus laterally compressed; tibia flattened. Femur with a ventral row of teeth. Chelicera normal, proximal segment slightly enlarged.

Dorsum reddish brown, darker mottlings on margins of dorsum. Lighter portions between dorsal areas and in central region. Legs basally lighter than the dorsum; apical portion of femora, all of patellae, tibiae and metatarsi quite dark; tarsi lighter. Free tergites with darker mottling. Palpi and chelicerae with darker mottlings, but lighter than the dorsum.

Female.—Total length of body, 3.7 mm. Cephalothorax, 0.7 mm. Width of body at widest portion, 1.9 mm.

Female similar to male in appearance, lacking only the enlarged basitarsus.

Type locality.—Male holotype from Bokowina, Belize, November 1, 1939, I. T. Sanderson. In the collection of the Chicago Natural History Museum.

Records.—BELIZE: Baldy Beacon, July 1, 1971. Lower Pine Ridge, June 30, 1971. Blancaneaux Lodge, Mountain Pine Ridge, June 29, 1971. Mountain Pine Ridge, June 29 and 30, 1971. Blue Hole, August 1, 1972, Rio Frio, near Augustine, July 20, 1972. Columbia Forest Station, Toledo District, July 13, 1971.

Vonones pilosa, new species

Fig. 41

Male Holotype.—Total length of body, 3.6 mm. Cephalothorax, 0.9 mm. Width of body at widest portion, 2.7 mm.

	I	II	III	IV
Trochanter	0.3mm	0.4mm	0.4mm	0.4mm
Femur	1.5	2.3	2.0	2.6
Patella	0.4	0.8	0.5	0.8
Tibia	1.0	1.7	1.0	1.7
Metatarsus	1.4	2.3	1.7	2.4
Tarsus	1.1	2.0	1.3	1.3
Total	5.7mm	9.5mm	6.9mm	9.2mm

Dorsum relatively smooth, only third area with low paired spines, other areas without tubercles or spines. All surfaces, including legs, palpi, and chelicera with hairs, giving the animal an unusual appearance. Areas delineated by lighter markings. Eye tubercle slightly removed from the anterior margin, smooth above. Dorsally the fourth coxa with a posterior-lateral spine. Venter smooth. Each third coxa with a posterior rounded protuberance; fourth coxa with an anterior protuberance which is very close to that of the third. Fourth coxa also with posterior blunt low spines on both sides. Dorsal one visible from above; ventral one partially covers the spiracle. Free tergites with very low tuberculations, clothed with hairs. Free sternites smooth, also clothed with long hairs.

All segments but the tarsi of the legs somewhat roughened, all clothed with hairs, sparsest on the trochanters. Tarsal segments: 5-10-6-6. Distitarsi of first and second tarsi with three segments; basitarsus of first tarsus slightly enlarged.

Palpus: trochanter, 0.3 mm long; femur, 0.7; patella, 0.5; tibia, 0.8; and tarsus, 0.3. Total length, 2.6 mm. Femur laterally compressed, ventral surface with tooth-like appearance (visible in drawing). Inner-distal surface of femur with a blunt protuberance; patella somewhat triangular in cross section, tibia and tarsus flattened. All segments clothed with hairs. Chelicera normal in size.

Entire dorsum dark reddish brown, with some

lighter portions as indicated in figure. Some scattered white marking vaguely outlining areas in the lateral region.

Female.—Total length of body, 3.7 mm. Cephalothorax, 1 mm. Width of body at widest portion, 2.6 mm.

Female similar to male in appearance, lacking the enlarged basitarsus of the first tarsus.

Type locality.—Male holotype and male paratype from Blue Hole, Hummingbird Highway, Belize, August 1, 1972.

Records.—BELIZE: Rio Frio, July 20, 1972. Caves Branch, near St. Herman's Cave, July 20, 1972. Roaring Creek, August 1, 1972. Stamm Creek Valley, August 4, 1972. Belmopan, July 20-August 25, 1972, S. and J. Peck.

Remarks.—The unique "hairy" appearance of this form is quite unlike any other member of this genus.

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