

REPORT ON CAVERNICOLE AND EPIGEAN SPIDERS FROM THE YUCATAN PENINSULA

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INTRODUCTION

Up to the present the principal work on Yucatán cave spiders has been that of Chamberlin and Ivie (1938), who recorded 25 species as part of a volume by A. S. Pearse on The Cave Fauna of Yucatan. Two of these spiders, *Wanops coecus* and *Anopsicus pearsei*, were the first blind troglobites to be found in México. The dominant family in that report was the Pholcidae with seven species placed in five genera. The present systematic study supplements that of Chamberlin and Ivie with consideration of important new material from a wider region, the Yucatán Peninsula, comprising the area originally occupied by the Mayan people. In addition to records for 35 cavernicoles, 13 species presently known from epigeal habitats are included because of their close relationship to those from caves and the likelihood that they also live in caves as troglaphiles.

The typical cave fauna comprehends a graduated spectrum of taxa ranging from accidental visitors finding temporary refuge to the extreme of those that now are so committed to specific cave habitats that they seemingly cannot exist outside them. All of these categories are found in the present collection. A big-eyed, diurnal jumping spider, *Corythalia* sp., was found in the entrance sink of Cueva (Actún) Xpukil. Cribellate species of *Uloborus* and *Goeldia* and the related ecribellate agelenids, such web spinners as the theridiids and linyphiids, and various

wandering clubionids favor the duskiness of cave entrances and often penetrate into the superficial zones. Many other species are troglaphiles that seem to live and reproduce with equal comfort inside or outside of caves. In this category are most of the species of the present paper, notably the Pholcidae, Oonopidae, Ochyroceratidae, and others, all of which shun the light and live on cave walls or in ground detritus. Two new eyeless cavernicoles occur in the present collection and some others have the eyes reduced in size.

Analysis of the relationships of the new material from the Yucatán Peninsula brings out the following data. Four of the species, *Scytodes fusca* Walckenaer, *Physocyclus globosus* (Taczanowski), *Uloborus geniculatus* Olivier, and *Theridion rufipes* Lucas, are widespread tropicopolitan types presumably transplanted from outside faunas. *Ariadna pilifera* O. Pickard-Cambridge ranges from the southwestern United States to the Isthmus of Tehuantepec in México. Most of the other species are restricted to the Yucatán Peninsula or range little beyond its western limits. The dominant family is the Pholcidae with 18 species; of these *Metagonia chiquita* is an eyeless troglabite from Cenote Chen Mul in Yucatán. New descriptions and figures are provided for the pholcid species of Chamberlin and Ivie. The blind *Wanops coecus* Chamberlin and Ivie of the family Oonopidae, now known from the female, is transferred to the widespread genus *Oonops* in the belief that it represents only an eyeless congener of that group; four additional species are described in *Oonops*. The family Ochyroceratidae is represented by four new species,

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three belonging to the genus *Theotima* and a fourth assigned to the genus *Speocera*. Especially notable is an eyeless agelenid of the genus *Cicurina* from Cueva (Actún) Tucil, Yucatán, which is matched by similar species from Texas and Coahuila. Finally can be mentioned a new genus, *Tixcocoba*, proposed for a small clubionid from Yucatán and Campeche.

SYSTEMATIC SECTION

SUBORDER MYGALOMORPHAE

Family Theraphosidae

Discussion.—Identification of theraphosids poses difficult generic and specific problems even with mature examples of both sexes available. Because most of the material listed below is immature, its referral to genera is not at present possible.

Records.—*Campeche*: Quarried cave, N of Champotón, 22 August 1972, W. Russell, J. Cooke, R. W. Mitchell.

Yucatán: Cenote Hunto Chac (Cueva del Pozo), 12 April 1973, J. Reddell, M. McKenzie. Cenote Xtoloc, Chichén Itzá, 8 August 1973, R. W. Mitchell. Cenote Amil, 6 km S Abalá, 28 March 1973, J. Reddell. Cenote (Cueva) de Hochtún, 16 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick. Cueva (Actún) Xpukil, 3 km S Calcehtok, 3 August 1973, J. Reddell; 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick.

SUBORDER ARANEOMORPHAE

Family Scytodidae

Scytodes fusca Walckenaer

Scytodes fusca Walckenaer, 1837, p. 272. Chamberlin and Ivie, 1938, p. 126.

Records.—*Yucatán*: Loltún Cave, near Nakab mouth, 16 July (Chamberlin and Ivie, 1938). Cenote de San Luis, San Luis, 14 km S Buenaventura, 2 April 1973, J. Reddell, female. Cenote Chen Mul, Ruinas de Mayapán, 24, 26 April 1973, J. Reddell, D. and M. McKenzie, M. Butterwick, two females, immature.

Scytodes meridana Chamberlin and Ivie

Scytodes meridana Chamberlin and Ivie, 1938, p. 126, figs. 4-5. Bonnet, 1958, p. 3987.

Records.—*Yucatán*: San Bulhá Cave, Mérida, 13 July, female holotype, male, immature (Chamberlin and Ivie, 1938, p. 128). Cueva (Actún) Xpukil, 3 km S Calcehtok, 3 August 1973, J. Reddell, female and

egg sac from entrance sink. 1 km S Muna, 21 July, 4 July 1973, M. Ay Canul, E. Gonzalez, female. Pyramid, Izamal, 10 August 1973, J. Reddell, immature. Ruinas de Mayapán, 14 August 1973, J. Reddell, two females. Surface at Cueva (Actún) Kaua, 23 August 1972, J. Cooke, W. Russell, female. Cueva de Cenote Xtoloc, Chichén Itzá, 8 August 1973, J. Reddell, immature. 3 km S Calcehtok, 3 August 1973, J. Reddell, immature.

Chiapas: Ruinas de Palenque, 25 July 1973, J. Reddell, J. M. Rowland, immature.

Campeche: 2 km N Hopelchen, 23 August 1972, J. Cooke, W. Russell, male.

Loxosceles yucatana Chamberlin and Ivie

Loxosceles yucatana Chamberlin and Ivie, 1938, p. 126, fig. 3. Gertsch, 1973, p. 161.

Distribution.—Common species of Yucatán Peninsula caves and suitable surface stations, ranging southward into Belize and Guatemala.

Records.—*Yucatán*: Cenote Hunto Chac (Cueva del Pozo), 12 April 1973, J. Reddell, M. McKenzie, female, immature. Cenote Hunto Chac (Cueva Mamey), 12 April 1973, D. McKenzie, S. Murphy, two females. Cueva Sodzil, 5 km W Sucopo, 31 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy. Cenote Sabacah, 1 km W Sucopo, 31 March 1973, J. Reddell, two males, female, immature. Cueva (Actún) Xpek, 1 km S Muna, 2 August 1973, R. W. Mitchell, J. Reddell. Cueva (Actún) Ziizhá, 2 km S Muna, 3 August 1973, M. Ay Canul, E. Gonzalez, F. Abernethy, R. W. Mitchell and group, female. Cueva de Santa Elena (=Cueva de los Camarones), 5 km S Telchac Puerto, 22 March 1973, J. Reddell, immature. Cueva (Actún) Chom, 1 km S Calcehtok, 1 May 1973, J. Reddell, female. Cueva de Cenote Xtoloc, Chichén Itzá, 8 August 1973, J. Reddell, immature. Cenote de Tixcancal, Tixcancal, 2 April 1973, S. Murphy, immature. Cenote de Sihunchén, Sihunchén, 23 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick, male, females, immature. Grutas de Tzab-Nah, 2 km S Tecoh, 26 April 1973, J. Reddell, M. McKenzie, immature. Cenote Chan si kin (Norte), 1 km E Ruinas de Mayapán, 24 April 1973, J. Reddell, female. Cenote Chen Mul, Ruinas de Mayapán, 2 May 1973, J. Reddell, R. W. Mitchell, female, immature. Cenote Xtacabihá, 1 km SW Xalau, 11 April 1973, J. Reddell, M. McKenzie, S. Murphy, immature. Cueva (Actún) Xkyc, 1 km S Calcehtok, 1 May 1973, J. Reddell, D. McKenzie, E. Alexander, M. Butterwick, male, females, immature. Cueva (Actún) Tucil, 2 km S Muna, 27 March 1973, J. Reddell, female, imma-

ture; 3 August 1973, M. Ay Canul, E. Gonzales, F. Abernethy, R. W. Mitchell and group, immature. Cueva (Actún) Kaua, Kaua, 23 August 1973, R. W. Mitchell, J. Cooke, females. Cueva (Actún) Xpukil, 3 km S Calcehtok, 18-19 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick, female, immature, from entrance sink; 4-5 April 1973, J. Reddell, S. Murphy, D. and M. McKenzie, females; 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick, females, immature.

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

Family Pholcidae

The members of this family have undergone a remarkable adaptive radiation in North America in terms of the large number and variety of the taxa. Most of the Mexican and Central American species occur in quite narrow geographic zones and few have wide ranges. Almost every Mexican state has representatives exclusive to it and this is also true for the Yucatán Peninsula, where few of the species occur outside its limits.

Genus *Metagonia*

The genus *Metagonia* is well represented in the area under consideration with all but one of the species seemingly exclusive to it. All share the prime characters of the genus as defined by me in another place (Gertsch, 1971, p. 82) and consist of surface forms, notably *caudata* and *goodnighti*, and various cavernicoles. The former are yellowish spiders with sparse dark spotting of their bodies and narrow dark rings of the legs. The cave dwellers are pallid types with little dark pattern; these have longer legs and smaller eyes. Only one of the species, *chiquita*, is eyeless, but some of the others are probable troglobites.

The principal structural features of the several species are the following, which will not be repeated in the descriptions. The subround carapace is convex with the prominent downwardly projecting clypeus equal in height to about three diameters of an anterior lateral eye, with the pars cephalica moderately elevated and delimited by shallow cephalic grooves and a linear cervical groove. The six eyes on two separated triads are quite prominent but rest on low connate tubercles little elevated above the pars cephalica. The suboval eyes are subequal in size and in cavernicoles are about 0.12 mm in long diameter, somewhat larger in surface forms. The posterior eye row is recurved with the triads of eyes moderately separated in surface forms and more widely separated

in cavernicoles. The chelicerae of the males may or may not have distinctive patches of spines, but in one species, *torete*, small horns are present. The legs are very long, the first one sometimes exceeding thirty times the length of the carapace in males, and the femora are only slightly heavier than succeeding segments. The abdomen is similar in both sexes, usually suboval and as high as broad, bluntly rounded behind or produced to a conical or elongated caudal projection.

With relatively few distinctive characters available from coloration or general morphology, reliance for separation of the species rests largely on the genitalia. The male palpi of *Metagonia* are remarkably developed organs exceeding in complexity those of most other pholcid genera. The complicated tarsus consists of a hinged process distinctive in length and shape for each species and a principal process forming an apical fringe which bears a series of spurs, membranes and teeth on each lateral surface.

The epigyna of the females have proved to be far more complicated than suggested by superficial study of these organs. The patterns of external details, with emphasis on the sclerotized plaques and special features in front and behind the orifice, are still in most cases clearly diagnostic. The epigynum (used by me in the broad sense to designate both external and internal features of this secondary reproductive system) is often borne on an inflatable or erectile appendage, probably lying flat against the integument most of the time but inflated by the female during courtship or mating. In the *maya* group (see Figs. 10-18) a distinct central tongue or lobe, flanked by lateral lobes bearing several setae, is present, and in front of this is a transverse blind atrium possibly serving as an anchoring point for a process of the tarsus of the male palpus. The orifice of the epigynum is a wide transverse groove which opens into a voluminous chamber covered by dorsal and ventral concave valves bearing more or less well defined sclerotized receptacles and tubules. The pattern of these units is still enigmatic in terms of conventional nomenclature. The lower or outer valve probably bears the receptacles and orifices to receive the emboli of the male palpus whereas the inner or upper valve features ridges and grooves to aid as a guide for the bulbs and emboli during mating. The patterns of these valves are diagnostic for each species.

Metagonia caudata O. Pickard-Cambridge

Figs. 1-4, 7-8, 19-20

Metagonia caudata O. Pickard-Cambridge, 1895, p. 150, pl. 21, figs. 8, 8a-d; 1898, p. 246, pl. 31,

figs. 7, 7a-c. F. Pickard-Cambridge, 1902, p. 370, pl. 35, figs. 5, 5a. Bonnet, 1957, p. 2808.

Diagnosis.—Large caudate species of surface habitats with brown spotting on carapace (Figs. 1, 3) and legs and brown sternum of female, readily recognized by distinctive genitalia of both sexes as illustrated.

Discussion.—Although there is not too much correspondence among the genitalic figures provided by the two Pickard-Cambridges, there is little doubt that this is the *caudata* of O. Pickard-Cambridge.

Female.—Total length 5 mm. Carapace 1.3 mm long, 1.1 mm wide. Abdomen 3.7 mm long, 2 mm wide.

Carapace (Fig. 1) white with brown spot on each side of cervical groove and eye tubercles brown; sternum dusky brown with numerous small pale flecks. Legs yellow with conspicuous brown patellae and dark rings at apex of tibiae. Abdomen (Fig. 1) white with few scattered bluish spots on dorsum.

Structure typical of *tinaja* group. Ocular tubercle of medium height with eyes large (Fig. 3); ratio of eyes: ALE:PLE:PME = 18:15:16. Anterior lateral eyes separated by two diameters. Posterior median eyes separated by about one long diameter. Abdomen (Fig. 1) much longer than broad with apically narrowly rounded caudal appendage half as long as abdomen. First leg: femur 7 mm, patella 0.55 mm, tibia 6.7 mm, metatarsus 11 mm, tarsus 1.8 mm; total length 27.05 mm; first leg about 20 times, first femur 5.4 times as long as carapace.

Epigynum (Figs. 7-8) suboval plaque with external and internal features as shown.

Male.—Total length 3.8 mm. Carapace 1.5 mm long, 1.3 mm wide. Abdomen 2.35 mm long, 1.15 mm wide.

Carapace (Fig. 4) yellow with pars cephalica brown and this color extending over half of clypeus, with eye tubercles dark brown; sternum plain yellow. Legs yellow with patellae brown and brown rings at end of tibiae. Abdomen (Fig. 4) dull yellow with heavy blue flecks on dorsum, fewer in some specimens.

Structure like that of female. Clypeus equal in height to little more than four diameters of anterior lateral eye. Ocular tubercle well elevated and eyes larger than those of female (Fig. 2); ratio of eyes: ALE:PLE:PME = 20:18:20. Anterior lateral eyes separated by more than two long diameters (20/44). Posterior median eyes separated by more than long diameter (20/21). Abdomen (Fig. 4) narrower than that of female. Outer face of chelicera with small patch of about nine spinules in apical third of segment. First leg: femur 10.5 mm, patella 0.7 mm, tibia 10.2 mm, metatarsus 18 mm, tarsus 2 mm; total

length 41.4 mm; first leg 27.6 times, first femur seven times as long as carapace.

Male palpus (Figs. 19-20) with stout segments; accessory process of tarsus about as long as principal segment.

Type data.—Female type from Teapa, Tabasco, México.

Distribution.—Yucatán Peninsula to San Luis Potosí in México.

Records.—*Tabasco*: Teapa, 16 July 1947, C. and M. Goodnight, male from along river.

Chiapas: Pichacales, 18 July 1947, C. and M. Goodnight, immature. 1 km N Palenque, 25 July 1973, J. Reddell, R. W. Mitchell, and group, female.

San Luis Potosí: Tamazunchale, 26 June 1947, B. Malkin, immature; 20 May 1952, W. J. Gertsch, immature; 19 April 1963, W. J. Gertsch, W. Ivie, three males, two females.

Texas: Edinburg, 1 April 1936, S. Mulaik, one female from Mexican banana bunch.

***Metagonia goodnighti*, new species**

Figs. 5-6, 27-28

Diagnosis.—Small epigeal species with caudate projection of abdomen, distinguished by details of the epigynum and male palpus as illustrated.

Etymology.—Named for Dr. Clarence Goodnight of Western Michigan University.

Female.—Total length 2.3 mm. Carapace 0.8 mm long, 0.7 mm wide. Abdomen 1.5 mm long, 0.75 mm wide.

Carapace yellowish with brown streaks at sides and middle of pars cephalica and few radiating from cervical groove; eyes fairly large and eye tubercles black; legs yellowish, first with dusky patella and dusky ring at end of tibia. Abdomen dull yellow.

Clypeus precipitous, equal in height to nearly two diameters of anterior lateral eyes. Ocular tubercle of medium height; ratio of eyes: ALE:PLE:PME = 15:12:13. Anterior lateral eyes separated by less than two long diameters (15/25). Posterior median eyes separated by long diameter. Abdomen longer than broad, produced behind into triangular projection third as long as abdomen. First leg: femur 3.8 mm, patella 0.34 mm, tibia 3.8 mm, metatarsus 6.2 mm, tarsus 1.2 mm; total length 15.34 mm; first leg 19 times, first femur 4.7 times as long as carapace.

Epigynum (Figs. 5-6) small transverse plaque with few external and internal features as shown.

Male.—Total length 2.1 mm. Carapace 0.9 mm long, 0.75 mm wide. Abdomen 1.2 mm long, 0.85 mm wide.

Carapace yellow with dusky brown pars cephalica

Etymology.—Specific name from Spanish *torete*, a small bull.

Female from Grutas de Tzab-Nah.—Total length 2 mm. Carapace 0.7 mm long, 0.7 mm wide. Abdomen 1.3 mm long, 0.9 mm wide.

Base color of cephalothorax and appendages pale yellow except for duskiness at junctures of leg segments; abdomen whitish.

Eyes relatively small, evanescent, faintly margined with dusky; eye triads separated by width of one; ratio of eyes: ALE:PLE:PME = 10:10:10. Anterior lateral eyes separated by two and one-half diameters. Posterior median eyes separated by one and one-half diameters. Abdomen elevated, broadly subconical at apex. First leg: femur 3.4 mm, patella 0.35 mm, tibia 3.7 mm, metatarsus 5.4 mm, tarsus 1.15 mm; total length 14 mm; first leg 20 times, first femur nearly five times as long as carapace.

Epigynum (Figs. 29-30) broadly lobed behind.

Male holotype from Cueva Sodzil.—Total length 1.8 mm. Carapace 0.68 mm long, 0.68 mm wide. Abdomen 1.1 mm long, 0.65 mm wide.

Coloration and structure like those of female unless otherwise noted. Chelicera smooth, without spinules but armed on outer side beyond middle with small incurved horn. First leg: femur 4.4 mm, patella 0.3 mm, tibia 4.65 mm, metatarsus 7.2 mm, tarsus 1.25 mm; total length 17.8 mm; first leg 26 times, first femur 6.5 times as long as carapace.

Male palpus (Figs. 25-26) with thin curved accessory process of tibia about as long as principal segment.

Type data.—Male holotype, two females and immature from Cueva Sodzil, 5 km W Sucopo, Yucatán, 31 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy.

Distribution.—Yucatán.

Records.—*Yucatán*: Grutas de Tzab-Nah, 2 km S Tecoh, 26 April 1973, J. Reddell, M. McKenzie, male, three females; 23 April 1973, J. Reddell, D. McKenzie, male, immature. Cenote de Orizaba, 8 km S Buenaventura, April 1973, J. Reddell, S. Murphy, female.

Metagonia chiquita, new species

Figs. 31-32

Diagnosis.—Small eyeless troglobite with legs of medium length, distinguished by subtriangular dusky epigynal structure (Figs. 31-32).

Etymology.—Specific name from Spanish *chiquita*, very small.

Female.—Total length 1.3 mm. Carapace 0.78 mm long, 0.7 mm wide. Abdomen 0.6 mm long, 0.6 mm

wide.

Base color of cephalothorax and appendages whitish with some duskiness at junctures of segments and sclerites and chelicerae dusky; abdomen whitish, darker below, with spinnerets and epigynal sclerites dusky.

Carapace about as broad as long; pars cephalica weakly elevated and ocular tubercles obsolete, without trace of eyes. Abdomen suboval, higher than broad, broadly rounded behind. First leg: femur 2.8 mm, patella 0.3 mm, tibia 3 mm, metatarsus 3.8 mm, tarsus 0.8 mm; total length 10.7 mm; first leg 14 times, first femur nearly four times as long as carapace.

Epigynum (Figs. 31-32) inflated tubular appendage, subtriangular in ventral view.

Type data.—Female holotype from Cenote Chen Mul, Ruinas de Mayapán, Yucatán, 2 May 1973, J. Reddell, R. W. Mitchell.

Metagonia maya Chamberlin and Ivie

Figs. 13-15, 23-24

Metagonia maya Chamberlin and Ivie, 1938, p. 132, figs. 23, 24. Bonnet, 1957, p. 2808.

Diagnosis.—Small whitish, long-legged species with reduced, evanescent eyes, possible troglobite, separated from related species by details of genitalia as illustrated.

Etymology.—Named for the Maya of Yucatán.

Female from Cenote Xtacabihá.—Total length 1.8 mm. Carapace 0.8 mm long, 0.6 mm wide. Abdomen 1 mm long, 0.74 mm wide.

Base color and cephalothorax and appendages whitish to pale yellow, without contrasting markings except for duskiness at junctures of leg segments; abdomen dull white.

Eyes relatively small, evanescent, without pigment; triads of eyes separated by about width of one; ratio of eyes: ALE:PLE:PME = 8:6:6. Anterior lateral eyes separated by three diameters. Posterior median eyes separated by three diameters, nearly touching lateral eyes. Abdomen suboval, as long as broad, produced behind but broadly rounded. First leg: femur 4.7 mm, patella 0.45 mm, tibia 4.7 mm, metatarsus 7.5 mm, tarsus 1.3 mm; total length 18.65 mm; first leg 23.2 times, first femur about six times as long as carapace.

Epigynum (Figs. 13-15) with small rounded lobe not much longer than lateral lobes.

Male from Cenote Xtacabihá.—Total length 2.2 mm. Carapace 0.8 mm long, 0.7 mm wide. Abdomen 1.3 mm long, 0.9 mm wide.

Coloration and structure in close agreement with those of female unless otherwise noted. Ratio of eyes: ALE:PLE:PME = 10:8:8. Eyes closer together; posterior median eyes separated by less than three diameters (20/8). Chelicerae smooth, without trace of distinctive spinules. First leg: femur 6 mm, patella 0.4 mm, tibia 6.8 mm, metatarsus 11.4 mm, tarsus 1.5 mm; total length 26.1 mm; first leg 32.6 times, first femur nearly eight times as long as carapace.

Male palpus (Figs. 23-24) with pointed accessory process of tarsus much longer than principal lobe.

Type data.—Male holotype from Chac Mol Cave, Tohil, Yucatán, in American Museum of Natural History (University of Utah collection).

Distribution.—Yucatán.

New records.—Yucatán: Cueva (Actún) Kaua, Kaua, 9, 12 April 1973, J. Reddell, M. McKenzie, three females. Cenote Xtacabihá (=Cenote Xalau), 1 mi SW Xalau, 11 April 1973, J. Reddell, M. McKenzie, S. Murphy, male, female, immature. Grutas de Balankanche (=Cueva Bolonchén), Chichén Itzá, July 1948, C. Goodnight, male, eight females. Cueva de las Derrumbes, 0.5 km E Tixcancal, 2 April 1973, J. Reddell, female. Pozo (Cenote) Santa Elena, 5 km S Telchac Puerto, 22 March 1973, S. Murphy, female.

Metagonia yucatanana Chamberlin and Ivie
Figs. 10-12, 21-22

Metagonia yucatanana Chamberlin and Ivie, 1938, p. 132, fig. 21 (not female, figs. 19, 20).

Metagonia yucatanensis Bonnet, 1957, p. 2808 (emendation).

Metagonia viabilis Chamberlin and Ivie, 1938, p. 133, fig. 22. Bonnet, 1947, p. 2808 (New Synonymy).

Discussion.—The species *yucatanana* was based on a male holotype from Loltún Cave at Oxkutzcab, Yucatán. The male palpus is especially diagnostic in the length and shape of the large spatuliform accessory process of the tarsus, which also bears other distinctive spurs. This male was found associated with females of *viabilis* in Cueva (Actún) Xpukil and seems to be properly assigned to that female. The female placed with *yucatanana* is a sibling relative known from few specimens and is presumed to represent a new species so far known only from that sex. Its association with the male *yucatanana* in Loltún Cave is presumed to be accidental or erroneous and unusual in that only rarely are such closely related species found together in the same cave.

Diagnosis.—Pale troglophile with very long legs, distinguished in both sexes by distinctive genitalia which are figured.

Female from Cueva (Actún) Xpukil.—Total length 2.8 mm. Carapace 1.1 mm long, 1 mm wide. Abdomen 1.7 mm long, 1.35 mm wide.

Cephalothorax and appendages whitish to pale yellow; eye tubercles dusky and dusky smudge on posterior declivity of pars cephalica; legs with dusky patellae and rings at ends of tibiae; abdomen whitish.

Clypeus equal in height to three diameters of anterior lateral eye; ratio of eyes: ALE:PLE:PME = 12:11:11; eyes broadly oval in shape and averaging about 0.12 mm in long diameter. Abdomen longer than broad, produced behind into broadly rounded apical projection, rarely more pointed. First leg: femur 5.5 mm, patella 0.45 mm, tibia 5.75 mm, metatarsus 9 mm, tarsus 1.6 mm; total length 22.3 mm; first leg 20 times, first femur five times as long as carapace.

Epigynum (Figs. 10-12) with triangular median lobe flanked by small setose lobes on each side.

Male from Cueva (Actún) Xpukil.—Total length 2.1 mm. Carapace 0.85 mm long, 0.82 mm wide. Abdomen 1.3 mm long, 0.9 mm wide.

Structure like that of female; eyes subequal in size. Anterior lateral eyes separated by less than three diameters (30/12). Posterior median eyes separated by more than long diameter (12/16). Eyes of male from Ruinas de Palenque larger with posterior median eyes separated by full diameter. Chelicera without spines or secondary sexual features. Abdomen broadly pointed behind. First leg: femur 6.8 mm, patella 0.35 mm, tibia 6.8 mm, metatarsus 12 mm, tarsus 1.7 mm; total length 27.65 mm; first leg 32.5 times, first femur eight times as long as carapace.

Male palpus (Figs. 21-22) with heavy spatulate accessory process of tarsus and subtruncate principal element.

Type data.—Male holotype from Loltún Cave, near Nakab Mouth, Oxkutzcab, Yucatán, 26 July, A. S. Pearse, in American Museum of Natural History (University of Utah collection).

Distribution.—Yucatán and Chiapas.

New records.—Yucatán: Cueva (Actún) Ziizhá, 2 km S Muna, 3 August 1973, R. W. Mitchell and group, male. Chichén Itzá, 6 July 1948, C. J. Goodnight, female. Cueva (Actún) Xpukil, 18-19 March 1973, S. Murphy, M. McKenzie, M. Butterwick, male, three females; 4-5 April 1973, J. Reddell, S. Murphy, M. McKenzie, four females; 30 April 1973, J. Reddell, R. W. Mitchell, female; 15 April 1973, J. Reddell, three females. Cueva (Actún) Chom, 1 km S Muna, 1 May 1973, J. Reddell, female. Oxkutzcab (in cave) July 1936, A. S. Pearse, fragments of male.

Chiapas: Las Ruinas de Palenque, July 1948, C. and M. Goodnight, male.

Metagonia iviei, new species

Figs. 16-18

Metagonia yucatanana (misidentification): Chamberlin and Ivie, 1938, p. 132, figs. 19-20 (female only).

Diagnosis.—Pale long-legged species with caudate abdomen, related to *maya* and *yucatanana* and readily identified by long basally thin lobe or tongue of epigynum; male unknown.

Etymology.—Named for the late Wilton Ivie.

Female from Quarried Cave.—Total length 2.5 mm. Carapace 0.8 mm long, 0.7 mm wide. Abdomen 1.7 mm long, 1.3 mm wide.

Cephalothorax and appendages whitish to pale yellow; eye tubercles and posterior declivity of carapace with slight duskiness; legs dusky at patellae and at ends of tibiae. Eyes and eye tubercles of medium size and clypeus as high as three diameters of anterior lateral eye; ratio of eyes: ALE:PLE:PME = 12:10:11. Anterior lateral eyes separated by two and one-half diameters. Posterior median eyes separated by more than diameter (15/10). Abdomen longer than broad, produced behind into bluntly conical projection. First leg: femur 5 mm, patella 0.35 mm, tibia 5 mm, metatarsus 7.7 mm, tarsus 1.5 mm; total length 19.55 mm; first leg 24.3 times, first femur 6.2 times as long as carapace.

Epigynum (Figs. 16-18) with basally thin, curved tongue much longer than the lobes of *yucatanana* and *maya*, and prominent lateral lobe on each side set with few setae; ventral and dorsal valves with distinctive details as shown.

Type data.—Female holotype and female from Quarried Cave, N of Champotón, Campeche, 27 August 1972, R. W. Mitchell, W. Russell, J. Cooke.

Distribution.—Yucatán and Campeche.

Records.—*Yucatán*: Chichén Itzá, 6 July 1948, C. J. Goodnight, female. Loltún Cave, Oxkutzcab, 26 July 1936, A. S. Pearse, female paratype of *yucatanana*.

Genus Pholcophora

In an earlier paper (Gertsch, 1971, p. 76) I proposed and continue to use here the name *Pholcophora* Banks for the shorter-legged pholcids closely allied to *Psilochorus*. The genotype of *Pholcophora*, based on *americana* Banks of the western United States, is a fairly large species with eight eyes. Two similar species occur in eastern México along with a series of very small ones, all undescribed, with even shorter legs, that range from Texas deep into Mexico. A new species from Yucatán, herein named *Pholcophora maria* (Fig. 35), belongs in this series. All the other *Pholcophora* so far described by me from México

show no trace of the anterior median eyes, although they otherwise differ in no important respects from *Pholcophora*. If this six-eyed series (Fig. 52) were to be given full generic rank, the name *Anopsicus*, based on the eyeless species *pearsei* of Oxolotl Cave, Yucatán, should be used inasmuch as it antedates *Pholcophorina* (Gertsch, 1939, p. 1). New descriptions and illustrations are given for the species now regarded as *placens* O. Pickard-Cambridge and for *pearsei* and *speophila* of Chamberlin and Ivie, described from Yucatán. Four more species are described as new.

The species of *Pholcophora* herein described are similar in size, coloration and general appearance and share structural features which are not repeated in the following descriptions. Most are small, under 2 mm in total length, with pale yellow to dusky brown cephalothoraces and appendages and pale blue, greenish or gray abdomens, these colors fading in preserved specimens. The cephalothorax is subround, convex, with a moderately elevated pars cephalica flanked by weak cephalic grooves but with the cervical groove a distinct linear depression. The wide clypeus protrudes downward, is narrowed and rounded in front and equal in height to four or five diameters of an anterior lateral eye. The fairly large suboval eyes form two triads (Fig. 52) and a smaller anterior median pair of eyes may be present or absent. The three eyes of each triad rest on connate tubercles of medium height, are subequal in size and subcontiguous. The eyes are reduced in size in cavernicoles and sometimes missing. The posterior eye row is gently to moderately procurved. The chelicerae of the males bear horns of differing length and position for each of the species. The abdomen of all species is subglobose, as high as long and broadly rounded behind.

The specific characters are largely centered in the genitalia. The male palpi feature short, apically rounded or truncated tarsal appendages and have a femoral spur near the end of that segment. The epigynum is a simple transverse band or an elevated lobe of distinctive shape from ventral view and presents sclerotized features in posterior and internal views differing among the species. A dorsal view of the epigynum (Fig. 41) of *Pholcophora quieta* (Gertsch, 1973, p. 148) from Gruta de Silvino, Izabal, Guatemala, is included for comparison with the species from the Yucatán Peninsula.

Pholcophora maria, new species

Figs. 33-35

Diagnosis.—Small dusky species with smooth carapace largely devoid of cephalic sutures and with eight eyes present (Fig. 35), related to *texana* Gertsch of

row diameter. Median ocular quadrangle broader than long (21/13), narrowed in front (21/11). First leg: femur 1.05 mm, patella 0.32 mm, tibia 0.93 mm, metatarsus 1.08 mm, tarsus 0.43 mm; total length 3.81; first leg five times, first femur 1.4 times as long as carapace.

Epigynum (Figs. 33-34) small convex elevation without distinctive external sclerites but presenting lateral sclerites and two small spermathecae in internal view.

Type data.—Female holotype from Cueva (Actún) Xpukil, 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick.

Pholcophora placens (O. Pickard-Cambridge)
Figs. 36-38

Spermophora placens O. Pickard-Cambridge, 1896, p. 222, pl. 27, fig. 10. F. Pickard-Cambridge, 1902, p. 370, pl. 35, fig. 4. Bonnet, 1958, p. 3606.

Pholcophorina placens (misidentification): Gertsch, 1939, p. 3.

Discussion.—O. Pickard-Cambridge's *Spermophora placens* was based on a single six-eyed female from Teapa, Tabasco, México, and cannot be identified on the basis of the verbal descriptions or illustrations of that author or those later supplied by F. Pickard-Cambridge. In 1939 the species was transferred by me to the new genus *Pholcophorina* and this position among the cited species is still regarded as the proper assignment. However, the species called *placens* by me is now clearly not the one described by O. Pickard-Cambridge, which will eventually receive another name. Three females from Teapa are here assigned to *placens* with reasonable confidence. Details of the epigynum clearly distinguish this species from others from the Yucatán Peninsula.

Female.—Total length 2.3 mm. Carapace 0.8 mm long, 0.77 mm wide. Abdomen 1.5 mm long, 1.1 mm wide.

Carapace and appendages dusky yellowish brown; eye tubercles black; abdomen gray.

Structure typical with cephalic and linear cervical grooves deeply impressed; ratio of eyes: ALE:PLE:PME = 11:10:10. Anterior lateral eyes separated by nearly diameter (11/10). Posterior eye row moderately procurved; posterior median eyes separated by full diameter. First leg: femur 2.7 mm, patella 0.3 mm, tibia 3 mm, metatarsus 3.5 mm, tarsus 0.85 mm; total length 10.35 mm; first leg about 13 times, first femur 3.3 times as long as carapace.

Epigynum (Figs. 36-38) transverse elevation with broad sclerotized band in front of genital groove, and presenting in posterior and internal views two dark

sclerites separated by their width, presumed to be guides to internal receptacles.

Type data.—Female type from Teapa, Tabasco, México.

Distribution.—Tabasco and Chiapas.

Records.—*Tabasco*: Teapa, 16 July 1947, C. and M. Goodnight, three females.

Chiapas: Pichuacalco, 18 July 1947, C. and M. Goodnight, female.

Pholcophora speophila (Chamberlin and Ivie)
Figs. 42-44

Spermophora speophila Chamberlin and Ivie, 1938, p. 130, figs. 15-16. Bonnet, 1958, p. 4115.

Pholcophora speophila: Gertsch, 1971, pp. 76-77.

Diagnosis.—Small pale cavernicole and epigean species known only from females, readily identified by distinctive epigynum.

Etymology.—Specific name from Latin *spelaeum*, cave, living in cave.

Female from Grutas de Tzab-Nah.—Total length 1.7 mm. Carapace 0.7 mm long, 0.6 mm wide. Abdomen 1 mm long, 0.75 mm wide.

Cephalothorax whitish to dusky yellow; abdomen light gray.

Carapace with faintly indicated cephalic and linear cervical grooves; eyes six, small, set on weakly developed ocular elevation; ratio of eyes: ALE:PLE:PME = 5:5:5. Anterior lateral eyes separated by more than diameter (5/7). Posterior median eyes separated by about two diameters. First leg: femur 1.5 mm, patella 0.23 mm, tibia 1.45 mm, metatarsus 1.62 mm, tarsus 0.55 mm; total length 5.35 mm; first leg 7.65 times, first femur 2.1 times as long as carapace.

Epigynum (Figs. 42-44) small suboval elevation with distinctive sclerites shown in posterior and internal views.

Type data.—Female holotype from Chac Mol Cave, Tohil, Yucatán, 27 June, A. S. Pearse, in American Museum of Natural History (University of Utah collection).

Distribution.—Yucatán and Campeche.

Records.—*Campeche*: Grutas de Xtacumbilxunam, 2 km SW Bolonchenticul, 13 May 1973, J. Reddell, D. and M. McKenzie, M. Butterwick, female; 19 April 1973, immature. 5 km SSW Ich-Ek, 27 July 1973, J. Reddell, J. M. Rowland, female. 10 km N Hopelchen, 27 July 1974, J. Reddell, J. M. Rowland, female.

Yucatán: Grutas de Tzab-Nah, 2 km S Tecoh, 22 April 1973, J. Reddell, D. McKenzie, female. Tixco-cob, 12 August 1973, J. Reddell, female.

Pholcophora pearsei (Chamberlin and Ivie)

Figs. 47-49

Anopsicus pearsei Chamberlin and Ivie, 1938, p. 130, figs. 17-18. Bonnet, 1955, p. 330.

Pholcophora pearsei: Gertsch, 1971, pp. 48, 76-77.

Diagnosis.—Essentially eyeless troglobite with long legs, known only from females, readily identified by distinctive epigynum as illustrated.

Female from Cueva (Actún) Kaua.—Total length 1.5 mm. Carapace 0.73 mm long, 0.7 mm wide. Abdomen 0.8 mm long, 0.7 mm wide.

Cephalothorax and legs dusky yellow; abdomen gray.

Carapace about as broad as long, with sutures fairly distinct; pars cephalica subtriangular with low eye tubercle and declining steeply to clypeus. Eyes essentially obsolete, visible as well separated corneal vestiges. First leg: femur 2.6 mm, patella 0.3 mm, tibia 2.7 mm, metatarsus 3.25 mm, tarsus 0.9 mm; total length 9.75 mm; first leg about 13 times, first femur 3.6 times as long as carapace.

Epigynum (Figs. 47-49) transversely suboval elevation with sclerotized lateral guides to orifices as shown.

Type data.—Female holotype, female paratype and immature from Oxolodt Cave, Kaua, Yucatán, 18 June, A. S. Pearse, in American Museum of Natural History (University of Utah collection).

Distribution.—Caves near Kaua, Yucatán.

Record.—Yucatán: Cueva (Actún) Kaua, 23 August 1972, R. W. Mitchell, J. Cooke, female.

Pholcophora palenque, new species

Figs. 50-54

Diagnosis.—Epigeal species with triads of eyes close together, legs of medium length, distinctive in genitalia of both sexes: epigynum longer than broad; tarsus of male palpus bent and enlarged at apex.

Etymology.—Named for the famous type locality, Ruinas de Palenque.

Female.—Total length 1.6 mm. Carapace 0.8 mm long, 0.7 mm wide. Abdomen 0.85 mm long, 0.75 mm wide.

Cephalothorax and appendages dusky yellow; carapace with dusky lines and shadings and eye tubercles black; abdomen with bluish cast and faint pale linear marking above running back from base.

Eyes six (Fig. 52) in close-set triads; ratio of eyes: ALE:PLE:PME = 10:10:9. Anterior lateral eyes separated by nearly diameter. Posterior eye row gently procurved; median eyes separated by long diameter. First leg: femur 1.8 mm, patella 0.26 mm, tibia 2.1

mm, metatarsus 2.45 mm, tarsus 0.63 mm; total length 7.34 mm; first leg 9.2 times, first femur 2.4 times as long as carapace.

Epigynum (Figs. 50-51) elevated tubercles longer than broad with distinctive internal sclerites as shown.

Male.—Total length 1.25 mm. Carapace 0.7 mm long, 0.6 mm wide. Abdomen 0.65 mm long, 0.55 mm wide.

Coloration and structure like those of female unless otherwise indicated. Anterior lateral eyes separated by less than diameter (8/10). Chelicera (Fig. 54) armed with sharp spur placed high up on segment. First leg: femur 1.92 mm, patella 0.27 mm, tibia 2.1 mm, metatarsus 2.5 mm, tarsus 0.8 mm; total length 7.59 mm; first leg 10.8 times, first femur 2.74 times as long as carapace.

Male palpus (Fig. 53) with sharp femoral spur at apex; tarsal appendage strongly bent and enlarged at apex, bearing thin lobe with curved spine.

Type data.—Male holotype, two males, three females and immature from 0.8 km N Ruinas de Palenque, 25 July 1973, J. Reddell, R. W. Mitchell from Berlese of litter.

Distribution.—Known only from Palenque region.

Records.—Chiapas: Ruinas de Palenque, 13, 16 July 1947, C. J. Goodnight, two males, two females, immature. 1 km N Palenque, 25 July 1973, J. Reddell, R. W. Mitchell and group, male, three females.

Pholcophora jeanae, new species

Figs. 39-40, 55-56

Diagnosis.—Long-legged epigeal species with long cheliceral horns in male and distinctive genitalia; female epigynum broader than long with widely separated sclerotized guides; tibia of male palpus enlarged and tarsal appendage subtruncate at apex.

Etymology.—Named for the late Jean Ivie.

Female.—Total length 2.2 mm. Carapace 0.8 mm long, 0.77 mm wide. Abdomen 1.3 mm long, 1.1 mm wide.

Cephalothorax and appendages dusky yellow to brown with dark shadings on sutures and brownish clypeus and chelicerae; abdomen gray with bluish markings on dorsum.

Carapace with deeply impressed cephalic and cervical grooves; pars cephalica well elevated with triads of eyes set on slightly raised ocular tubercles; ratio of eyes: ALE:PLE:PME = 12:11:11. Anterior lateral eyes separated by about full diameter. Posterior median eyes separated by more than diameter (11/14). First leg: femur 2.2 mm, patella 0.3 mm, tibia 2.3 mm, metatarsus 2.75 mm, tarsus 0.65 mm; total length 8.2 mm; first leg 10 times, first femur 2.75

times as long as carapace.

Epigynum (Figs. 39-40) transverse elevation much broader than long, presenting in subventral view conspicuous lateral brown sclerites, presumed guides to internal receptacles.

Male.—Total length 1.75 mm. Carapace 0.85 mm long, 0.8 mm wide. Abdomen 0.9 mm long, 0.7 mm wide.

Structure like that of female. Chelicera (Fig. 55) with long curved spur just below clypeal margin. First leg: femur 2.3 mm, patella 0.3 mm, tibia 2.45 mm, metatarsus 3.3 mm, tarsus 0.8 mm; total length 9.5 mm; first leg 10.7 times, first femur 2.7 times as long as carapace.

Male palpus (Fig. 56) with enlarged tibial segment; femoral spur stout long appendage below at apex; tarsal spur apically enlarged, subspatulate; short spine near apex of bulb below.

Type data.—Male holotype, two females from La Venta, Villahermosa, Tabasco, 13 August 1965, Jean and Wilton Ivie.

***Pholcophora debora*, new species**
Figs. 45-46, 57-59

Diagnosis.—Small epigeal species with short legs and distinctive genitalia: epigynum small transverse elevation; palpus with short truncated tarsal appendage.

Etymology.—Named for Deborah Denson.

Female.—Total length 1.8 mm. Carapace 0.77 mm long, 0.7 mm wide. Abdomen 1 mm long, 0.73 mm wide.

Cephalothorax and appendages dusky yellow to brown; abdomen bluish.

Eyes of medium size; ratio of eyes: ALE:PLE:PME = 10:9:9. Anterior lateral eyes separated by more than long diameter (9/11). First leg: femur 1.35 mm, patella 0.25 mm, tibia 1.33 mm, metatarsus 1.55 mm, tarsus 0.55 mm; total length 5.03 mm; first leg 6.5 times, first femur 1.76 times as long as carapace.

Epigynum (Figs. 45-46) small transverse elevation with narrow bands in front and behind genital groove, with distinctive pattern of elements in subventral view as shown.

Male.—Total length 1 mm. Carapace 0.63 mm long, 0.6 mm wide. Abdomen 0.4 mm long, 0.35 mm wide.

Chelicera (Figs. 58-59) with sharp spur at about middle of outer face of segment. First femur 1.2 mm long, 1.9 times as long as carapace.

Male palpus (Fig. 57) with all elements short; femoral spur close to apex below; tarsal appendage

broad, apically subtruncate; embolus small curved spine at end of suboval bulb.

Type data.—Male holotype and four females from Finca El Real, Ocosingo Valley, Chiapas, 1-7 July 1950, C. and M. Goodnight, L. J. Stannard, from floodplain debris.

Distribution.—Chiapas.

Records.—*Chiapas*: Monte Libano, 20 km E El Real, 4-5 July 1950, C. and M. Goodnight, L. Stannard, two females. 5 mi NE Chiapa, 22 August 1966, J. and W. Ivie, three females probably this species.

Genus *Modisimus*

The following three species from the Yucatán Peninsula area have restricted ranges on the basis of known specimens and are of especial interest. The recently described *Modisimus iviei* Gertsch has small enlargements armed with spinules at the base of the chelicerae, a condition found in some other members of the genus. The two newly described species below have developed distinctive horns in that position and these are not matched in any other known species of the genus.

***Modisimus palenque*, new species**
Figs. 61-63

Diagnosis.—Small epigeal species lacking anterior median eyes, distinguished by epigynum (Fig. 63) and curved, toothed tarsus of male palpus (Fig. 62).

Etymology.—Named for the type locality, Ruinas de Palenque.

Female.—Total length 2.1 mm. Carapace 0.8 mm long, 0.83 mm wide. Abdomen 1.5 mm long, 0.9 mm wide.

Carapace whitish with central dusky band on clypeus and running back through eye region to posterior declivity; eye tubercles black; sternum dusky brown with faint central streak; legs dusky brown without darker markings. Abdomen pale blue with dark blue spots covering most of dorsum but venter paler except for small blue spot at center.

Clypeus 0.3 mm long, precipitous, as high as not fully three diameters of anterior lateral eye. Ocular tubercle prominently elevated and large round eyes in following ratio: ALE:PLE:PME = 16:15:14; anterior median eyes obsolete except for tiny black fleck. Anterior lateral eyes separated by less than diameter (16/13). Posterior eye row gently recurved; posterior median eyes separated by about diameter, third as far from lateral eyes. Abdomen longer than broad, pointed behind. Front legs missing; second leg: femur 3.25 mm, patella 0.3 mm, tibia 2.9 mm,

metatarsus 4.35 mm, tarsus 1.25 mm; total length 12.05 mm; second femur four times as long as carapace.

Epigynum (Figs. 61, 63) transverse plaque with elevated ridge and distinctive internal sclerites.

Male.—Total length 2.5 mm. Carapace 0.95 mm long, 0.9 mm wide. Abdomen 1.6 mm long, 1 mm wide.

Coloration and structure like those of female except as follows: Clypeus 0.48 mm long, as high as four diameters of anterior lateral eye; ratio of eyes: ALE:PLE:PME = 18:18:15. Anterior lateral eyes separated by less than diameter (18/14). Posterior eye row essentially straight; posterior median eyes separated by less than diameter (15/12). Chelicera with small tubercular spur near base set with several spinules. Legs fragmented; first femur 6.25 mm long, 6.6 times as long as carapace.

Male palpus (Fig. 62) with robust segments; tarsus curved, with slender projection near base and bluntly pointed at apex.

Type data.—Male holotype from 1 km N Palenque, Chiapas, 25 July 1973, J. Reddell, R. W. Mitchell and group.

Distribution.—Known only from Palenque area.

Records.—*Chiapas*: Ruinas de Palenque, 25 July 1973, J. Reddell, J. M. Rowland, female.

Modisimus chiapa, new species

Fig. 60

Diagnosis.—Minute short-legged species with eye triads very close together and small horns at base of chelicerae longer than those of *palenque*; tarsus of male palpus ending in a thin spine.

Etymology.—Specific name from type locality area, Chiapa.

Male.—Total length 0.95 mm. Carapace 0.46 mm long, 0.44 mm wide. Abdomen 0.5 mm long, 0.4 mm wide.

Base color of cephalothorax and appendages pale yellow; carapace with dusky smudge on posterior declivity, duskiess on clypeus and eye tubercles black; sternum whitish; legs without dark markings. Abdomen greenish with faint pale dorsal stripe down middle.

Clypeus 0.24 mm long, sloping forward, equal in height to four diameters of anterior lateral eye. Ocular tubercle moderately elevated with six large eyes close together and no trace of anterior median eyes; ratio of eyes: ALE:PLE:PME = 8:8:7. Anterior lateral eyes subcontiguous, separated at most by half radius. Posterior eye row procurved, line along posterior edges of lateral eyes cutting near middle of medians;

posterior median eyes separated by about radius, subcontiguous with lateral eyes. Chelicera armed with small, bluntly pointed horn near base. Abdomen suboval, rounded behind. First leg: femur 1.3 mm, patella 0.15 mm, tibia 1 mm, metatarsus 1.15 mm, tarsus 0.4 mm; total length 3.64 mm; first leg eight times, femur 2.8 times as long as carapace.

Male palpus (Fig. 60) with apically thin tarsus and stout femoral spur.

Type data.—Male holotype from hillside 5 mi NE Chiapa, Chiapas, 22 August 1966, Jean and Wilton Ivie.

Modisimus iviei Gertsch

Modisimus inornatus Chamberlin and Ivie, 1938, p. 133 (Not *inornatus* O. Pickard-Cambridge).

Modisimus iviei Gertsch, 1973, p. 149, figs. 12-14.

Diagnosis.—Small troglophile and surface species of Yucatán Peninsula lacking anterior median eyes, separable from other Mexican species by details of the genitalia.

Type data.—Female holotype and male from Xmahit Cave, Tekax, Yucatán, 31 July 1936, A. S. Pearse, in American Museum of Natural History (University of Utah collection).

Distribution.—Yucatán and Campeche.

New records.—*Yucatán*: Mine 5 km N Valladolid, 11 April 1973, J. Reddell, female. Cenote Chac si kin (Norte), 1 km E Ruinas de Mayapán, 24 April 1973, J. Reddell, female. Cueva (Actún) Tucil, 2 km S Muna, 27 March 1973, J. Reddell, female. Cueva (Actún) Xpukil, 3 km S Calcehtok, 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick, male, three females. Chichén Itzá, 8 August 1973, J. Reddell, two males. Hochtún, 12 August 1973, J. Reddell, male, four females. Tixcocab, 12 August 1973, J. Reddell, female, immature. Oxkintok, 3 August 1973, J. Reddell, female. 1 km S Muna, 31 July, 1 August 1973, E. Gonzalez, M. Ay Canul, three females. Pyramid, Izamal, 19 August 1973, J. Reddell, female. Ruinas de Mayapán, 14 August 1973, J. Reddell, male, three females.

Campeche: 10 mi N Hopelchen, 27 July 1973, J. Reddell, J. M. Rowland, two males. 5 km SSW Ich-Ek, 27 July 1973, J. Reddell, J. M. Rowland, female, immature.

Genus *Physocyclus*

Physocyclus globosus (Taczanowski)

Pholcus globosus Taczanowski, 1873, p. 105.

Physocyclus globosus: F. Pickard-Cambridge, 1902, p. 368. Chamberlin and Ivie, 1938, p. 130.

Discussion.—This widespread tropicopolitan species, especially common in tropical México, Central America and the West Indies, is found in Yucatán and was reported from San Bulhá Cave, Mérida, by Chamberlin and Ivie in 1938.

Records.—*Yucatán*: Cueva (Actún) Xpek, 1 km S Muna, 2 August 1973, J. Reddell, R. W. Mitchell, male, female, immature. Artificial cave, Calle 24 x 19, Mérida, 20 March 1973, J. Reddell, female, immature. Cenote de Sihunchén, Sihunchén, 23 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick, male. Cueva (actún) Xpukil, 3 km S Calcehtok, 18-19 March 1973, J. Reddell, D. McKenzie, S. Murphy, M. Butterwick, female from entrance sink.

Family Oonopidae

Genus *Oonops*

The oonopids are generalized six-eyed spiders that shun the light and live mostly under stones or in ground detritus. There are many Mexican species and some of these occur in cave habitats. Most notable of these is the blind *Wanops coecus* of Chamberlin and Ivie, an eyeless species of Yucatán caves that is herein placed in the widespread genus *Oonops* in the belief that it represents only a derivative of that group. Eyeless species are also known from termite galleries in Africa, from ground detritus in the Bahama Islands and México, and also from a cave in the Hawaiian Islands. The present material, comprising cavernicoles and surface forms, is all referred to the genus *Oonops* as understood by American students.

Oonops coecus (Chamberlin and Ivie)

Figs. 64-66

Wanops coecus Chamberlin and Ivie, 1938, p. 125, figs. 1-2. Bonnet, 1959, p. 4816. Gertsch, 1971, pp. 48, 56.

Diagnosis.—Eyeless troglobite with fairly long legs (longer in female from Grutas de Tzab-Nah) and distinctive internal epigynum (Fig. 66).

Female from Grutas de Tzab-Nah.—Total length 1.9 mm. Carapace 0.8 mm long, 0.67 mm wide. Abdomen 1 mm long, 0.55 mm wide.

Cephalothorax and appendages pale yellowish; abdomen white; hairs and spines of body dusky.

Carapace (Fig. 64) smooth, shiny, highest between third coxae, declining evenly to narrow clypeus, with few weak setae on pars cephalica, mostly rubbed off; pars cephalica weakly elevated, convex, only faintly marked by cephalic grooves and with trivial linear cervical groove barely apparent; width of pars cepha-

lica in front less than half greatest width. Eyes completely obsolete. Sternum (Fig. 65) 0.5 mm long, 0.4 mm wide, suboval, with blunt rounded lobe between posterior coxae. Labium 0.1 mm long, 0.14 mm wide, rounded apically. Endites 0.4 mm long, 0.18 mm wide, with bluntly pointed angle at apex. Chelicera projecting forward, narrowed at apex, with long claw but keel on margin smooth, without true teeth, with thin line of curved hairs on inner margin. Abdomen suboval, evenly covered on all surfaces with inconspicuous dusky hairs.

Epigynum (Fig. 66) presenting small inverted T-shaped structure as shown.

	I	II	III	IV
Femur	0.80	0.70	0.63	0.90
Patella	0.55	0.40	0.26	0.40
Tibia	0.80	0.66	0.55	0.82
Metatarsus	0.70	0.52	0.50	0.72
Tarsus	---	0.30	0.26	0.30
Total	---	2.68	2.20	3.14

Leg formula probably 1423 but first and fourth legs subequal; first leg probably about four times as long as carapace, first femur as long. Legs moderately spinose; first femur with five ventral pairs of long spines in basal two-thirds, without apical spines; first metatarsus with two similar pairs.

Female from Cenote Chen Mul.—Total length 1.5 mm. Carapace 0.68 mm long, 0.45 mm wide. Abdomen 0.8 mm long, 0.5 mm wide.

	I	II	III	IV
Femur	0.52	0.47	0.42	0.61
Patella	0.35	0.28	0.20	0.32
Tibia	0.55	0.38	0.31	0.56
Metatarsus	0.39	0.30	0.33	0.50
Tarsus	0.23	0.21	0.20	2.24
Total	2.04	1.73	1.46	2.23

Leg formula 4123; legs proportionately shorter and stouter than those of female from Grutas de Tzab-Nah but with same spination; first leg three times as long, first femur shorter than carapace.

Type data.—Male holotype from Balaam Canche Cave, Chichén Itzá, Yucatán, 10 June, A. S. Pearse from under laundry stone 95 meters from mouth, in American Museum of Natural History (University of Utah collection).

Distribution.—Yucatán caves.

Records.—*Yucatán*: Grutas de Tzab-Nah, 2 km S Tecoh, 17 April 1973, J. Reddell, M. McKenzie, female. Cenote Chen Mul, Ruinas de Mayapán, 24, 26 April 1973, J. Reddell, D. and M. McKenzie, M. Butterwick, three females.

0.35 mm wide, with thin covering of setae. Labium 0.07 mm long, 0.1 mm wide; endite 0.2 mm long, 0.09 mm wide. Abdomen suboval, broader than high. First leg: femur 0.4 mm, patella 0.21 mm, tibia 0.27 mm, metatarsus 0.23, tarsus 0.14 mm; total length 12.5 mm; first leg twice as long, first femur much shorter than carapace.

Epigynum (Fig. 77) transverse structure lacking median stem of other species.

Male.—Total length 1.45 mm. Carapace 0.6 mm long, 0.46 mm wide. Abdomen 0.8 mm long, 0.45 mm wide.

Coloration and structure like those of female. First leg: femur 0.4 mm, patella 0.23 mm, tibia 0.26 mm, metatarsus 0.24 mm, tarsus 0.15 mm; total length 1.28 mm; first leg twice as long, first femur much shorter than carapace.

Male palpus (Figs. 73-74) with relatively thick embolus with round end enclosing short projection.

Type data.—Male holotype from Cenote de Sihunchén, Sihunchén, Yucatán, 23 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick.

Distribution.—Yucatán.

Record.—Yucatán: Cueva (Actún) Tucil, 2 km S Muna, 26 March 1973, J. Reddell, male and two females from Berlese of swallow guano.

***Oonops mitchelli*, new species**

Figs. 72, 75-76

Diagnosis.—Troglophile species similar to *reddelli* with short legs, eyes in close-set group but front eyes separated by about radius, with distinctive epigynum (Fig. 72) and male palpus with embolus forming a coil (Figs. 75-76).

Etymology.—Named for Dr. R. W. Mitchell.

Female.—Total length 1.8 mm. Carapace 0.77 mm long, 0.57 mm wide. Abdomen 1 mm long, 0.6 mm wide.

Cephalothorax and appendages yellowish; sides of carapace with thin covering of dusky procumbent hairs and eye area black; abdomen whitish, thickly covered with dusky hairs, with or without pair of dark spots in front of epigynum.

Structure typical, like that of *reddelli*; clypeus equal in height to radius of anterior eye, with eight long bristles on margin. Eyes subequal in size, close together; anterior eyes separated by nearly radius of one; posterior eye row moderately recurved; posterior median eyes touching, slightly separated from lateral eyes. Sternum 0.48 mm long, 0.4 mm wide. Labium 0.1 mm long, 0.12 mm wide. Abdomen sub-oval. First leg: femur 0.51 mm, patella 0.34 mm, tibia 0.42 mm, metatarsus 0.35 mm, tarsus 0.21 mm;

total length 1.84 mm; first leg 2.4 times, first femur shorter than carapace.

Epigynum (Fig. 72) much broader than long, with small rounded stem projecting forward.

Male.—Carapace 0.55 mm long, 0.55 mm wide. Abdomen missing. First leg: femur 0.42 mm, patella 0.3 mm, tibia 0.34 mm, metatarsus 0.3 mm, tarsus 0.17 mm; total length 1.53 mm; first leg nearly three times, first femur shorter than carapace.

Male palpus (Figs. 75-76) with moderately long embolus forming a short coil.

Type data.—Female holotype from Cueva (Actún) Xpukil, Yucatán, 18-19 March 1973, J. Reddell.

Distribution.—Yucatán.

Records.—Yucatán: Cueva (Actún) Xpukil, 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick, two females. Hochtún, 12 August 1973, J. Reddell, female. Pyramid, Izamal, 10 August 1973, J. Reddell, female. 1 km S Muna, 31 July-4 August 1973, M. Ay Canul, R. Gonzalez, male probably this species.

***Oonops rowlandi*, new species**

Figs. 69, 71

Diagnosis.—Small epigeal species with blackish abdomen, distinguished by its narrow head and distinctive epigynum (Fig. 69).

Etymology.—Named for J. Mark Rowland.

Female.—Total length 1.65 mm. Carapace 0.63 mm long, 0.57 mm wide. Abdomen 1 mm long, 0.63 mm wide.

Cephalothorax and appendages yellow to orange; eye area black; abdomen purplish black above and on sides, white on center.

Structure typical; carapace rubbed nearly smooth, with few scattered hairs outlining pars cephalica; pars cephalica narrow, less than half width of carapace at second eye row (25/57); clypeus equal in height to radius of anterior eye. Eyes (Fig. 71) in close-set triads occupying most of width of pars cephalica; eyes equal in size; front eyes separated by about two-thirds diameter; posterior eye row moderately recurved, with line along posterior edges of median eyes cutting middle of lateral eyes, with contiguous median eyes slightly separated from lateral eyes. Sternum 0.43 mm long, 0.36 mm wide. Labium 0.07 mm long, 0.1 mm wide. Abdomen suboval. First leg: femur 0.5 mm, patella 0.22 mm, tibia 0.37 mm, metatarsus 0.32 mm, tarsus 0.27 mm; total length 1.68 mm; first leg 2.6 times, first femur shorter than carapace.

Epigynum (Fig. 69) of inverted T-shaped form, with thin stem and series of transverse tubules.

Type data.—Female holotype from Ruinas de Pa-

lenque, Chiapas, 25 July 1973, J. Reddell, J. M. Rowland.

Oonops mckenziei, new species
Figs. 67, 70

Diagnosis.—Close relative of *mittelli* but with front eyes more widely separated by full diameter and with distinctive epigynum (Fig. 70).

Etymology.—Named for David McKenzie.

Female.—Total length 1.9 mm. Carapace 0.77 mm long, 0.6 mm wide. Abdomen 1.1 mm long, 0.7 mm wide.

Cephalothorax and appendages golden yellow; eye tubercles black and eye area mostly dark; abdomen whitish, with pair of dusky marks in front of spinnerets. Carapace mostly rubbed but with erect setae in ocular area; pars cephalica of average width, equal at second eye row to half greatest width of carapace (30/60); clypeus equal in height to radius of front eye. Eye rows of about equal width and eyes (Fig. 67) subequal in size, mostly subcontiguous; anterior eyes separated by full diameter; posterior eye row moderately recurved, line along posterior edges of median eyes cutting through middle of lateral eyes; posterior median eyes contiguous, separated from lateral eyes by third narrow diameter of median. Sternum 0.45 mm long, 0.4 mm wide. Labium 0.1 mm long, 0.16 mm wide. Abdomen suboval. First leg: femur 0.61 mm, patella 0.34 mm, tibia 0.47 mm, metatarsus 0.44, tarsus 0.24 mm; total length 2.10 mm; first leg 2.7 times, first femur shorter than carapace.

Epigynum (Fig. 70) with thin columnar projection with bifid enlargement at apex.

Type data.—Female holotype from surface near Grutas del Coconá, Tabasco, 25 August 1972, J. Cooke, R. W. Mitchell, W. Russell.

Family Tetrablemmidae

This small family, the few representatives of which are often assigned to the Oonopidae as an aberrant subfamily, has several species in México. The most interesting of these is the blind troglobite *Tetrablemma sbordonii* Brignoli from Cueva de Ojo de Agua de Tlilapan in the state of Veracruz. A detailed discussion of the status of the family was given by Brignoli (1972, p. 132) with good reasons for assigning the species to *Tetrablemma*. The present material from Yucatán is tentatively assigned to the Cuban species *cambridgei* but study of the type material is necessary to make the assignment explicit.

Tetrablemma cambridgei Bryant

Tetrablemma cambridgei Bryant, 1940, p. 269, figs. 8-10, 13.

Records.—*Yucatán*: Cueva (Actún) Xpukil, 3 km S Calcehtok, 18-19 March 1973, J. Reddell, S. Murphy, S. and M. McKenzie, M. Butterwick, two females. Chichén Itzá, 8 August 1973, J. Reddell, female. Pyramid, Izamal, 10 August 1973, J. Reddell, female. 3 km S Calcehtok, 16 April 1973, J. Reddell, male. Ruinas de Mayapán, 14 August 1973, J. Reddell, female.

Family Dysderidae

Ariadna pilifera O. Pickard-Cambridge

Ariadna pilifera O. Pickard-Cambridge, 1898, p. 235, pl. 32, figs. 9, 9a-c. Beatty, 1970, p. 41, figs. 20, 31, 36-37, 40-41, map.

Records.—*Yucatán*: Cueva (Actún) Xkyc, 1 km S Calcehtok, 1 May 1973, J. Reddell, D. McKenzie, E. Alexander, S. Butterwick, female. Cueva (Actún) Tucil, 2 km S Muna, 27 March 1973, J. Reddell, immature.

Family Symphytognathidae

Maymena mayana (Chamberlin and Ivie)

Nesticus mayanus Chamberlin and Ivie, 1938, p. 134, figs. 12-13.

Maymena mayana: Gertsch, 1971, p. 92; 1973, p. 163.

Records.—*Yucatán*: Cenote Chen Mul, Ruinas de Mayapán, 24, 26 April 1973, J. Reddell, D. and M. McKenzie, M. Butterwick, two females, 3 immatures. Cenote Aká Chen, 1 km NE Tixcancal, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick, female.

Campeche: Grutas de Xtacumbilxunam, 2 km SW Bolonchenticul, 29-30 July 1973, D. Denson, M. Kawakatsu, R. W. Mitchell and group, female; 13 May 1973, J. Reddell, D. and M. McKenzie, M. Butterwick, two females, immature.

Family Nesticidae

Eidmannella suggerens (Chamberlin)

Nesticus suggerens Chamberlin, 1924, p. 15, pl. 4, figs. 19-31.

Nesticus (Gondwanonesticus) dragani Dumitrescu, 1973, p. 295.

Discussion.—All the material from Yucatán is referred to *suggerens*, a sibling species related to *pallida*,

which occurs in the southeastern United States, north-eastern México and the West Indies. It seems to be the only species of *Eidmannella* found in the West Indies and has in the past been reported from many of the islands as *Nesticus pallidus* Emerton. Although *pallida* seems not to be present in the state of Yucatán, it is the dominant species west of there and widespread in México and the United States.

Records.—*Yucatán*: Cenote (Cueva) Luchil, 8 km SSE Mérida, 21 March 1973, J. Reddell, female. Artificial cave, Calle 24 x 19, Mérida, 20 March 1973, J. Reddell, female. Cenote de Sihunchén, Sihunchén, 23 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick, three females. Cenote G, Ruinas de Aké, 26 March 1973, J. Reddell, M. McKenzie, M. Butterwick, female, four immatures. Cenote Tekom, Tekom, 11 April 1973, J. Reddell, female, immature. Cenote de Sambulá, Motul, 28 March 1973, J. Reddell, S. Murphy, immature male.

Family Ochyroceratidae

The lucifugous spiders of this family live in ground detritus of mesic habitats and many occur in caves as troglophiles. A blind species and presumed troglobite, *Theotima pura* Gertsch (1973, p. 155), has been described from Cueva de los Vampiros in Tamaulipas. The species herein assigned to the genus *Theotima* represent a group widespread in México, especially in tropical areas, but they have so far been little mentioned in the literature. The three following species, and a fourth tentatively placed in *Speocera* on the basis of male genitalic characters, share several common features. The carapace is elevated, convex, highest just behind the middle, and the cephalic and cervical grooves are obsolete. The six nocturnal eyes are subequal in size, are subcontiguous, and lie in two rows, a front one comprising the anterior lateral and posterior median eyes in a transverse row and a posterior one consisting only of the posterior lateral eyes. The subtriangular labium has a small rounded emargination at its apex. The quite robust chelicerae have a series of seven teeth on the promargin, the largest innermost one being essentially a keel, and two denticles on the retromargin near the base of the fang. The leg formula is 4123, of which the first and fourth pairs are essentially subequal in length, and the first femur is about equal to the carapace in length. The elongate to subglobose abdomens of the females have the epigastric area swollen and at least lightly sclerotized in front of the genital furrow. The atriorbital orifices have migrated to a position on the abdomen just above the pedicel and are faintly evident as trivial sclerotized rings. The male palpi have an unusual

feature of the tibia and tarsus and have an oval bulb with or without prominent embolar development.

Genus *Theotima*

Theotima ruina, new species

Fig. 78

Diagnosis.—Minute epigean species similar to the genotype *radiata* of St. Vincent Island and adjacent Venezuela, with dusky pattern on carapace and abdomen and well developed eyes on black patch; legs of medium length, first femur being as long as carapace; best recognized by male palpus with long spine below enlarged tibia.

Etymology.—Named for Ruinas de Palenque.

Female.—Total length 0.94 mm. Carapace 0.44 mm long, 0.34 mm wide. Abdomen 0.5 mm long, 0.4 mm wide.

Carapace dull yellowish with series of pale brown chevrons radiating from center to sides and with narrow marginal brown seam around pars thoracica; eyes enclosing black area; sternum, labium and endites dusted with brown; legs dull yellowish with faint brown striping. Abdomen pale brown with purplish tinge, darker below.

Pars cephalica 0.2 mm wide at eyes; clypeus narrow, about equal to diameter of anterior lateral eye. Eyes occupying two-thirds width of head; front eye row faintly procurved, eyes subequal in size; posterior lateral eyes separated by two diameters. Sternum 0.26 mm long and wide. First leg: femur 0.4 mm, patella 0.09 mm, tibia 0.36 mm, metatarsus 0.23 mm, tarsus 0.2 mm; total length 1.28 mm; first leg about three times, first and fourth femora about as long as carapace.

Male.—Total length 0.82 mm. Carapace 0.4 mm long, 0.32 mm wide. Abdomen 0.42 mm long, 0.36 mm wide.

Coloration like that of female but brownish pattern less distinct. Structure similar except as noted; carapace narrowed with pars cephalica 0.2 mm wide at eyes. Eyes occupying little more than half width of head; eye relations same but front middle eyes more elongate and posterior lateral eyes separated by one and one-half diameters. First leg: femur 0.4 mm, patella 0.11 mm, tibia 0.39 mm, metatarsus 0.27 mm, tarsus 0.2 mm; total length 1.37 mm; first leg about 3.4 times, first and fourth femora as long as carapace.

Male palpus (Fig. 78) with oval bulb, short embolus, and long spine borne on small spur below enlarged tibia.

Type data.—Male holotype, three females and im-

mature from 0.8 km N Ruinas de Palenque, Chiapas, 23 July 1973, J. Reddell, R. W. Mitchell, from Berlese of litter.

Theotima martha, new species

Diagnosis.—Pale yellow cavernicole relative of *ruina* with reduced eyes and longer legs, fourth femur being longer than carapace.

Etymology.—Named for Martha Helen McKenzie.

Female.—Total length 1.05 mm. Carapace 0.5 mm long, 0.36 mm wide. Abdomen 0.55 mm long, 0.4 mm wide.

Cephalothorax and appendages pale yellowish without darker pattern; eye tubercles narrowly ringed with black; abdomen whitish.

Structure like that of *ruina* but carapace less elevated; pars cephalica 0.2 mm wide at eye group; clypeus twice as high as diameter of anterior lateral eye. Eyes reduced in size, evanescent, occupying half width of head; eyes of front row subequal in size and in essentially straight row; posterior lateral eyes separated by two and one-half diameters. Sternum 0.3 mm long and wide, nearly round. Legs mostly missing; fourth leg: femur 0.55 mm, patella 0.14 mm, tibia 0.53 mm, metatarsus 0.4 mm, tarsus 0.27 mm; total length 1.89 mm long; fourth leg 3.8 times, fourth femur slightly longer than carapace.

Type data.—Female holotype from Cueva Sodzil, 3 km W Sucopo, Yucatán, 31 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy.

Theotima elva, new species

Fig. 79

Diagnosis.—Pale epigean species related to *ruina* but with tibial spur of male palpus longer and bearing short curved spine.

Etymology.—Specific name from Elva, a girl's name.

Male.—Total length 0.84 mm. Carapace 0.4 mm long, 0.34 mm wide. Abdomen 0.44 mm long, 0.35 mm wide.

Cephalothorax and appendages yellow without darker pattern; eye group enclosing black patch. Abdomen yellowish, lightly shaded with dusky.

Structure like that of *ruina* except as noted; pars cephalica 0.2 mm wide at eye group; clypeus equal in height to two diameters of anterior lateral eye. Front eyes in slightly procurved row with oval middle eyes twice as long as broad; suboval posterior lateral eyes separated by little more than long diameter. Sternum 0.28 mm long, 0.25 mm wide. Legs mostly missing.

Male palpus (Fig. 79) with oval bulb, inconspicuous embolus, and with elongated tibial spur bearing short curved spine.

Type data.—Male holotype from 6 miles S Tuxtla Gutiérrez, Chiapas, 21 August 1966, Jean and Wilton Ivie.

Genus *Speocera*

Speocera machadoi, new species

Figs. 80-81

Diagnosis.—Small epigean species with strongly marked black pattern on carapace and abdomen, with large eyes, protruding clypeus, and especially distinct male palpus with long curved embolus on the bulb.

Etymology.—Named for Dr. G. Barros Machado, now of Lisbon, Portugal, who has contributed much information on this group of spiders.

Female.—Cephalothorax and appendages yellowish; carapace with distinct pattern of broken black chevrons and narrow marginal black seam; eye group enclosing black patch; sternum, labium and endites dusted with tiny black flecks. Abdomen uniform dusky gray.

Structure much like that of *ruina*; pars cephalica moderately elevated, 0.26 mm wide at eye group; clypeus produced forward, equal in height to two diameters of anterior lateral eye. Eyes close together, group occupying two-thirds width of head; front eye row essentially straight, lateral eyes little larger; oval posterior eyes separated by two full diameters. Sternum 0.36 mm long, 0.33 mm wide. First leg: femur 0.6 mm, patella 0.14 mm, tibia 0.6 mm, metatarsus 0.55 mm, tarsus 0.27 mm; total length 2.16 mm; first leg four times, first and fourth femora slightly longer than carapace.

Male.—Total length 1.18 mm. Carapace 0.48 mm long, 0.43 mm wide. Abdomen 0.7 mm long, 0.57 mm wide.

Coloration like that of female but abdomen with inconspicuous dorsal chevron on dorsum and several pale spots on venter. Structure similar except as noted. Carapace proportionately broader; pars cephalica 0.23 mm wide at eye group; clypeus equal to one and one-half diameters of anterior lateral eye. Eyes occupying two-thirds width of head; front row gently procurved with oval medians and round lateral eyes subequal and subcontiguous; posterior lateral eyes separated by somewhat more than two diameters. Sternum 0.35 mm long, 0.32 mm wide. First leg: femur 0.58 mm, patella 0.17 mm, tibia 0.57 mm, metatarsus 0.44 mm, tarsus 0.3 mm; total length

2.06 mm; first leg four times, first and fourth femora slightly longer than carapace.

Male palpus (Figs. 80-81) with unmodified tibia, tarsus drawn to a point, and round bulb with long curved embolus.

Type data.—Male holotype, male, females and immature from 4 mi SE San Cristóbal, Chiapas, 23 August 1966, Jean and Wilton Ivie.

Family Uloboridae

Uloborus signatellus Bonnet

Uloborus signatus O. Pickard-Cambridge, 1898, p. 264. Chamberlin and Ivie, 1938, p. 130.

Uloborus signatellus Bonnet, 1959, p. 4769, footnote. (New name for *signatus*, preoccupied.)

Records.—*Yucatán*: Cenote Sabacah, 1 km W Supoco, 31 March 1973, J. Reddell, three males. Cueva de Cenote Xtolok, Chichén Itzá, 8 August 1973, J. Reddell, four males, female, immature. Cenote de San Luis, San Luis, 14 km S Buenaventura, 2 April 1973, J. Reddell, female.

Uloborus geniculatus (Olivier)

Uloborus geniculatus: Muma and Gertsch, 1964, p. 37, figs. 82-86.

Records.—*Yucatán*: Artificial cave, Calle 24 x 19, Mérida, 20 March 1973, J. Reddell, female.

Family Theridiidae

Thymoites spukilum (Chamberlin and Ivie)

Spelobion spukilum (Chamberlin and Ivie), 1938, p. 133, fig. 11.

Record.—*Campeche*: Grutas de Xtacumbilxunam, 2 km SW Bolonchenticul, 19 April 1973, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick, male, females.

Theridion rufipes Lucas

Theridion rufipes: Levi, 1957, p. 56, figs. 188-193, map 18.

Records.—*Yucatán*: Cenote Sodzil, 5 km W Supoco, 31 March 1973, J. Reddell, two females. Cenote de Tixcancal, Tixcancal, 2 April 1973, S. Murphy, male, immature.

Theridion hispidum O. Pickard-Cambridge

Theridion hispidum O. Pickard-Cambridge, 1898, p. 253, pl. 35, fig. 5.

Record.—*Yucatán*: Cenote de la Paca, 7 km E Tikuch, 11 April 1973, S. Murphy, immature male probably this species described from Teapa, Tabasco.

Theridion sp.

Record.—*Yucatán*: Cueva (Actún) Coch Leb, 3 km S Calcehtok, 16 April 1973, J. Reddell, male, female.

Family Linyphiidae

Eperigone sp.

Record.—*Campeche*: Grutas de Xtacumbilxunam, 2 km SW Bolonchenticul, 29-30 July 1973, D. Denison, M. Kawakatsu, R. W. Mitchell and group.

Meioneta sp.

Record.—*Yucatán*: Cenote de la Paca, 7 km E Tikuch, 11 April 1973, S. Murphy, female.

Family Amaurobiidae

Goeldia tizamina (Chamberlin and Ivie)

Titanoeca tizamina Chamberlin and Ivie, 1938, p. 129, figs. 8-9.

Goeldia tizamina: Leech, 1972, p. 104.

Records.—*Yucatán*: Cenote de Orizaba, Orizaba, 8 km S Buenaventura, 1 April 1973, J. Reddell, female. Cueva (Actún) Coch Leb, 3 km S Calcehtok, 16 April 1973, J. Reddell, female. Cueva (Actún) Kaua, Kaua, 23 April 1973, R. W. Mitchell, J. Cooke, immature. Cueva (Actún) Xpukil, 3 km S Calcehtok, 18-19 April 1973, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick, three females, two immature from entrance sink.

Family Agelenidae

Cicurina maya, new species Fig. 86

Diagnosis.—Small eyeless species of subgenus *Ci-curella* related to *buwata* Chamberlin and Ivie and other eyeless and six-eyed species of Texas, readily distinguished by broad epigynum with heavy bilobed spermathecae (Fig. 86).

Etymology.—Named for the Maya people of the Yucatán Peninsula.

Female holotype.—Total length 3.6 mm. Carapace 1.66 mm long, 1.08 mm wide. Abdomen 1.9 mm long, 1.1 mm wide.

Base color of cephalothorax and appendages bright orange, with covering of dusky hairs and spines; che-

licerae, labium and endites somewhat darker. Abdomen gray, covered evenly with dusky hairs.

Carapace typical in shape, smooth and shining, evenly convex, highest about at middle, truncated in front; pars cephalica 0.8 mm broad in front, about three-fourths of carapace length, with only faint indication of cephalic sutures and cervical groove distinct longitudinal linear depression. Eyes obsolete, their former position shown as indistinct whitish subintegumental spots. Clothing of carapace sparse with median and lateral rows of few suberect bristles on pars cephalica and several on clypeal middle. Sternum 0.9 mm long, 0.7 mm wide, produced behind into narrow band between close-set posterior coxae, thinly covered with suberect setae. Chelicerae moderately geniculate, with toothed margins: promargin with three unequal teeth and thin keel; retromargin with eight denticles in close-set row. Legs short: tibia and patella of first leg 1.5 mm long, of fourth leg 1.7 mm long.

Epigynum (Fig. 86) of typical pattern but proportionately wider than those of other species; atrium narrow transverse opening; connecting canals forming oval loops lying close to short suboval spermathecum with accessory sac.

Type data.—Female holotype and subadult male from Cueva (Actún) Tucil, 2 km S Muna, Yucatán, 27 March 1973, J. Reddell.

Family Clubionidae

Tixcocoba, new genus

Diagnosis.—Genus of subfamily Clubioninae without known close relatives, much smaller (about 3.3 mm) than taxa of *Clubiona*, *Lauricius*, etc., distinguished by combination of characters cited below and by details of genitalia of both sexes.

Etymology.—Generic name based on City of Tixcoba of Yucatán, used in feminine gender.

Description.—Carapace (Fig. 82) with trivial linear cervical groove. Eyes eight, close together in two transverse rows with narrow clypeus; anterior row slightly procurved in essentially straight line, with anterior median eyes smaller; posterior row slightly recurved with smaller median eyes closer together than distance to lateral eyes; median ocular quadrangle slightly broader than long. Labium longer than broad, about half as long as endites. Cheliceral margins toothed; promargin with three teeth of medium size, retromargin with two smaller teeth. Legs short: first leg of both sexes about 2.6 times as long as carapace; first tibia with 2-1-1-0 weak ventral spines. Posterior spinnerets with trivial conical segment at

apex. Epigynum with small curved fovea in front. Male palpus simple, with embolus a thin curved spine and tibial apophysis subdorsal in position.

Type of genus.—*Tixcocoba maya*, new species.

Tixcocoba maya, new species

Figs. 82-85

Diagnosis.—Small cavernicole and epigeal species of Yucatán and Campeche, without close relatives among American genera, readily distinguished by distinctive genitalia as illustrated.

Etymology.—Named for the Maya people of the Yucatán Peninsula.

Female from Cenote Hunto Chac.—Total length 3.3 mm. Carapace 1.35 mm long, 1.03 mm wide. Abdomen 1.8 mm long, 1 mm wide.

Cephalothorax and appendages quite uniform pale orange yellow; eye tubercles tinged with black; chelicerae, labium and endites slightly darker; few hairs and spines dusky. Abdomen whitish with inconspicuous dusky hairs.

Carapace (Fig. 82) of medium stoutness, relatively short and low, evenly convex, smooth and shiny, truncated in front; pars cephalica 0.65 mm wide at eyes, comprising more than two-thirds total carapace length, without obvious cephalic sutures but with trivial linear cervical groove; clothing of carapace sparse with few erect setae of which five are on clypeus. Eyes eight in two close-set transverse rows near clypeal edge, occupying about four-seventh width of front. Ratio of eyes: ALE:AME:PLE:PME = 12:6:10:5. Anterior eye row straight from above, slightly procurved from in front; anterior median eyes separated by nearly radius, about half as far from larger lateral eyes. Posterior eye row slightly recurved but front edges of four eyes form straight line; median eyes separated by about diameter, one and one-half diameters from larger lateral eyes. Median ocular quadrangle slightly broader than long (21/18), narrowed in front (21/10). Sternum 0.8 mm long, 0.67 mm wide, rounded behind at front edges of moderately separated posterior coxae, clothed sparsely with weak setae more numerous around margins. Labium 0.27 mm long, 0.23 mm wide, slightly narrowed and truncated at apex, with few setae. Endite 0.5 mm long, 0.25 mm wide, evenly rounded at apex, with few setae. Chelicerae inclined forward, geniculate at middle, with toothed margins: promargin with three teeth and thin inner carina; retromargin with two smaller teeth. Legs short with few hairs and weak spines. First leg: femur 1.05 mm, patella 0.56 mm, tibia 0.81 mm, metatarsus 0.72 mm, tarsus 0.47 mm; total length 3.61 mm. Tibia and patella of fourth leg

1.6 mm long. First tibia with 2-1-2-0 weak ventral spines; first metatarsus with pair of ventral spines beyond base; posterior legs with numerous spines on most surfaces. Abdomen longer than broad, without dorsal sclerite, covered evenly with fine hairs. Spinnerets in close-set group; front pair moderately separated; posterior pair with small conical apical segment.

Epigynum as shown in Fig. 84.

Male from Cenote de Sihunchén.—Total length 3.2 mm. Carapace 1.5 mm long, 1.1 mm wide. Abdomen 1.5 mm long, 0.9 mm wide.

Coloration and structure like those of female except as noted. First leg: femur 1.1 mm, patella 0.52 mm, tibia 0.91 mm, metatarsus 0.74 mm, tarsus 0.55 mm; total length 3.82. Tibia and patella of fourth leg 1.5 mm long.

Right male palpus (Figs. 83-84) small with features difficult to evaluate; cymbium with band of scopular hairs above in distal half; embolus originating on prolateral side, coiled to apical position as thin inconspicuous spine; tibial apophysis thin apically narrowed spine on dorsum.

Type data.—Female holotype from Cenote Hunto Chac (Cueva del Pozo), Yucatán, 12 April 1973, J. Reddell.

Distribution.—Yucatán and Campeche.

Records.—*Yucatán*: Cenote de Sihunchén, Sihunchén, 23 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick, two males, female. Cenote (Cueva) de Hochtún, Hochtún, 16 March 1973, J. Reddell, S. Murphy, M. McKenzie, M. Butterwick, one immature. Grutas de Tzab-Nah, 2 km S Tecoh, 23 April 1973, J. Reddell, D. McKenzie, female. Tixcoco, 12 August 1973, J. Reddell, female. Chichén Itzá, 8 August 1973, J. Reddell, female.

Campeche: 5 km SSW Ich-Ek, 27 July 1973, J. Reddell, J. M. Rowland, female.

Corinna saga F. Pickard-Cambridge

Corinna saga F. Pickard-Cambridge, 1899, pp. 65, 72.

Records.—*Yucatán*: Grutas de Tzab-Nah, 2 km S Tecoh, 22 April 1973, J. Reddell, two immature. Cenote Amil, 6 km S Abalá, 28 March 1973, J. Reddell, two immature. Cueva (Actún) Xpukil, 3 km W Calcehtok, 18-19 March 1973, J. Reddell, D. and M. McKenzie, S. Murphy, M. Butterwick, one immature from entrance sink. Oxkintok, 3 August 1973, J. Reddell, male. Ruinas de Mayapán, 14 August 1973, J. Reddell, four females.

Family Salticidae

Corythalia sp.

Records.—*Yucatán*: Cueva (Actún) Xpukil, 3 August 1973, J. Reddell, male, female; 18-19 March 1973, J. Reddell, S. Murphy, D. and M. McKenzie, M. Butterwick, immature female from entrance sink.

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