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Descriptions of American Spiders of the Family Symphytognathidae

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The present paper is concerned with a series of minute spiders forming part of the great superfamily Argiopoidea. Some have been given family status as the Symphytognathidae, whereas others have most often been kept within the family Theridiidae as the subfamily Mysmeninae. The group lies in a twilight zone between families and presents such diluted morphological characters that placement and relationship become uncertain. There are few features that discretely separate them from the Argiopidae, on the one hand, or the Theridiidae, on the other.

Simon placed some of these spiders in the Argiopidae and noted on several occasions their similarity to the Theridiosomatinae. In volume 6 of "Les arachnides de France" he placed his Mysmeneae in a supplement to the Theridiidae, but obviously as an expedient solution, as he was prompted to state the following: "*ces petites araignées manquent en effet de plusieurs des caractères des Theridiidae et pourraient être à la rigueur considérées comme des Theridiosomateae très amoindris, ce que est surtout frappant pour la nouveau genre Trogloneta.*" It seems quite reasonable to include the Mysmeninae in the family Symphytognathidae, even though that serves merely to make the enlarged family of even less explicit definition.

The symphytognathids stand next to the Theridiosomatinae of the family Argiopidae and were probably derived from orb-weaver stock

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that gave rise to both groups. Even the spinning habits of these spiders have served to confound us, as many of them do not spin orb webs. If one accepts the above phylogeny, it is necessary to assume that both the Mysmeninae and the Micropholcommatinae have given up the orb web for an irregular snare. Marples described the web of *Mysmena* (*Tamasesia*) as a set of "threads radiating in all directions from a point and connected by a tangle of sticky threads." The Micropholcommatinae are said to spin small irregular webs similar to those of the Theridiidae. At least some members of the Anapisinae are known to, and others are presumed to spin small orb webs. A similar, presumably analogous rejection of the orb web is to be seen in the theridiosomatine genus *Wendilgarda*, the web of which is described by Simon in "L'histoire naturelle des araignées" as "*un petit réseau très élémentaire, composé de quelques fils rayonnants peu réguliers, n'offrant que très vaguement les linéaments d'une toile orbiculaire.*" The atypical orb web of *Theridiosoma*, with its radii in three or four sectors and the whole drawn into conical form when used as a snare, may well represent basically the type of web spun by the precursors of the Symphytognathidae. It is also interesting to record that the egg sacs of *Maymena bruneti* are suspended on long filaments as are those of most theridiosomatines.

The minute Tasmanian spider on which the family name Symphytognathidae was based lacks book lungs, and the respiratory function is taken over by tracheal tubes. Furthermore, the female lacks pedipalps. Quite a number of genera are now known from tropical centers of the world. It has been generally presumed that all of these spiders are lungless, and this condition is being verified for an increasing number of genera and species of the subfamilies Anapisinae and Micropholcommatinae.

The discovery by Marples (1955, Jour. Linnean Soc. London, vol. 42, p. 476) that *Mysmena* (*Tamasesia*) *rotunda* was lungless gives additional evidence for including this group with the typical symphytognathids. Levi (1956, Amer. Mus. Novitates, no. 1801, p. 3) has now shown that the American *Mysmena incredula* is also lungless but that *Mysmena guttata* may well represent an intermedite step. Typical book lungs are found in *Maymena mayana* and presumably in some other genera of the Mysmeninae.

It is becoming more and more apparent, as was indicated by Levi, that lunglessness is not the giant step so often implied in our systematic arrangements. The fundamental homology in spiders between the book lungs, or feather tracheae, and the tubular tracheae is undoubted.

Transition to the tracheate condition may sometimes be a recent development and may not always warrant even generic distinction. Such an instance is that of *Risdonius*, which has typical book lungs but which is doubtfully excluded from the apneumone genus *Chasmocephalon*.

The present study is meant merely as a supplement to recent papers by R. Forster and H. Levi, mentioned in the generic and specific bibliographies, which deal, respectively, with the family Symphytognathidae and the genus *Mysmena*.

During a visit in 1938 to the Muséum National d'Histoire Naturelle in Paris, Dr. Herbert Levi prepared drawings of many of the species of Eugene Simon. He has generously suggested that his illustrations of three species assigned to the Mysmeninae be included in my paper. I am grateful for his cooperation and for numerous suggestions and favors during the preparation of this paper. To Dr. Max Vachon of the Muséum National d'Histoire Naturelle in Paris I am indebted for making available for study examples of *Trogloneta granulum* Simon.

The holotypes of the several species described as new are in the collection of the American Museum of Natural History.

FAMILY SYMPHYTOGNATHIDAE

SUBFAMILY ANAPISINAE

This subfamily comprises small to minute spiders, most of which are apneumone, but book lungs are present in *Risdonius*. Pedipalps are lacking in females of most of the genera, but they may be present in reduced size (*Anapisona*) or in normal dimensions (*Iardinus*). The metatarsi of the legs are usually very much shorter than the tarsi. Some of these spiders are known to spin tiny orb webs.

About 13 genera are known, mostly from tropical centers of the world.

GENUS *CHASMOCEPHALON* O. PICKARD-CAMBRIDGE

CHASMOCEPHALON O. P.-CAMBRIDGE, 1889, Proc. Zool. Soc. London, p. 45.
SIMON, 1895, Histoire naturelle des araignées, vol. 1, p. 928.

Carapace slightly longer than broad, with the pars cephalica very high, convex, the cervical groove often a deep cleft. Eyes usually eight (rarely only six), all subequal in size except the anterior median which are smaller, in *shantzi* very small and close together, widely separated from the large lateral eyes. First eye row moderately to strongly procurved. Posterior eye row slightly to moderately recurved, the median eyes close together, farther from the subequal lateral eyes.

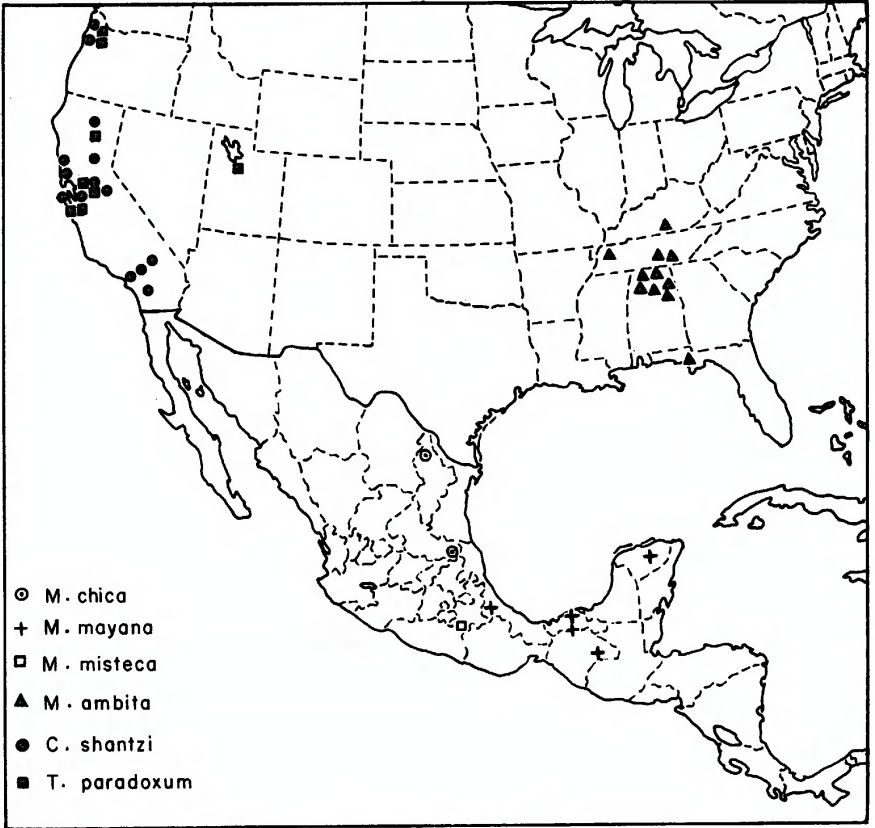


FIG. 1. Distributions of various symphytognathids.

Clypeus vertical, very high, usually exceeding two diameters of the lateral eye in females and about four diameters in the male (*shantzi*). Sternum longer than broad, broadly rounded behind, the hind coxae widely separated. Chelicerae free, the upper margin of the furrow with stout teeth. First leg longer and stouter than the second and very much exceeding in length the third and fourth legs. Metatarsi short, only about half of the length of the tarsi. Pedipalp of female aborted. Male palpus often with patellar and tibial spurs. Abdomen of female coriaceous and that of male with a scutum covering the entire dorsum. Colulus of medium size. Book lungs and posterior spiracles lacking.

TYPE SPECIES: *Chasmocephalon neglectum* O. Pickard-Cambridge.

This genus is well known from the Australian region and also from South Africa. The species described below is the first representative of this typically eight-eyed symphytognathid genus from North America.

These minute spiders spin tiny orb webs and live in ground detritus. The palpus of the female is missing, as in other members of the group. *Chasmocephalon* differs from *Risdonius*, a genus of Tasmanian symphytognathids, only in the respiratory system which has tracheal tubes instead of book lungs.

It is with great pleasure that I name the following interesting and important species for the late Homer F. Shantz of Santa Barbara, California, in recognition of his great contributions to western biology.

The respiratory system of *Chasmocephalon shantzi* was described and illustrated by R. R. Forster in 1958 (Amer. Mus. Novitates, no. 1885, p. 3, fig. 27). He found that the posterior tracheae were absent and that the numerous tracheae from the anterior spiracles are seemingly limited to the abdomen.

***Chasmocephalon shantzi*, new species**

Figures 2-8

DIAGNOSIS: This is the first American representative of a genus typical of the Australian and South African regions. The head of the male is strongly elevated, and the anterior median eyes are small and close together. The male palpus features a spiraled embolus and a long thin spur at the base of the patella. It is readily separated from the known species by morphological, and especially genitalic, details.

FEMALE: Total length, 1.23 mm.; carapace, 0.55 mm. long, 0.45 mm. wide; abdomen, 0.93 mm. long, 0.9 mm. wide.

Dorsal and lateral views of female as shown in figures 2 and 4. Carapace dark brown, the pars cephalica lighter, the eye tubercles black. Chelicerae, labium, and maxillae brown, the sternum reddish brown, the legs yellowish brown except for inconspicuous black rings on apices of the distal segments. Abdomen gray but with a lighter pattern above as shown in figure 4, the sides blackish, the venter with reddish brown basal scutum and narrow ring around spinnerets.

Carapace slightly longer than broad, the convex pars cephalica coarsely roughened, the smoother pars cephalica strongly elevated, highest behind the eyes, sharply sloping to the posterior declivity, the median groove obsolete, the head grooves deep. Clypeus nearly vertical, high, equal to two and one-half diameters of the lateral eye. Frontal view of carapace and eyes as shown in figure 3. First eye row strongly procurved, the small median eyes sitting above a line along the upper edges of the lateral eyes. Anterior median eyes nearly contiguous, two full diameters from the lateral eyes which are three times as large. Posterior eye row recurved, the large median eyes close to-

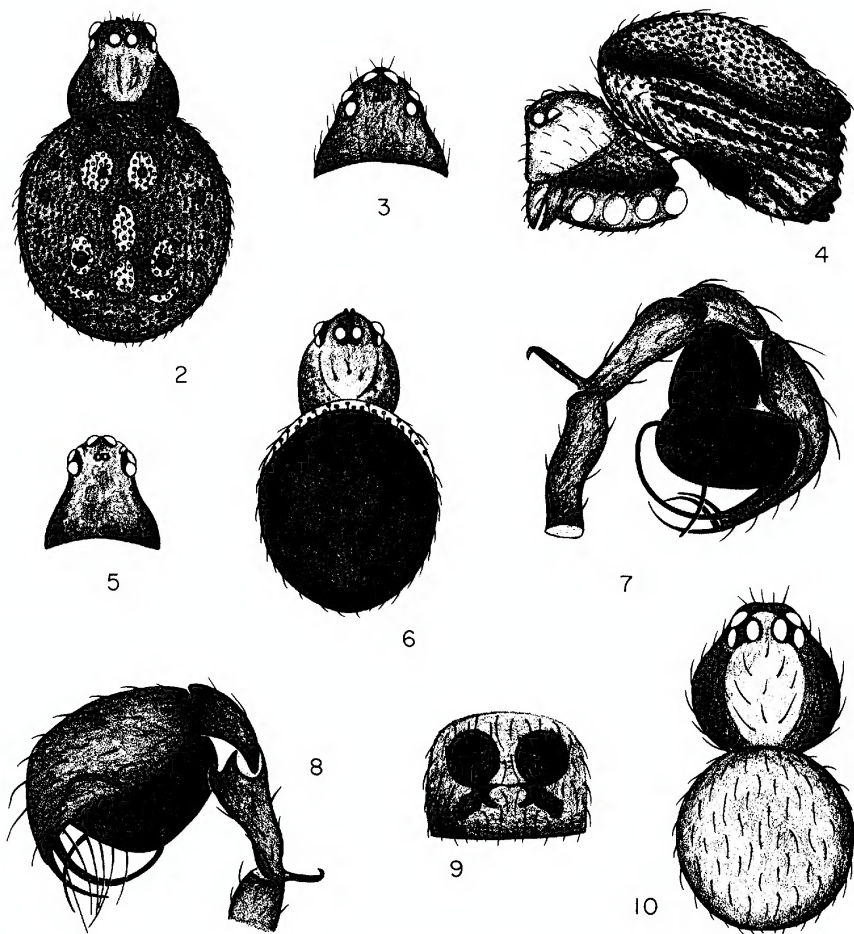


FIG. 2-8. *Chasmocephalon shantzi*, new species. 2. Carapace and abdomen of female, dorsal view. 3. Head of female, frontal view. 4. Cephalothorax and abdomen of female, lateral view. 5. Head of male, frontal view. 6. Carapace and abdomen of male, dorsal view. 7. Left male palpus, prolatral view. 8. Left male palpus, retrolateral view.

FIG. 9, 10. *Iardinus albulus*, new species. 9. Epigynum. 10. Carapace and abdomen of female, dorsal view.

gether, about three-fourths of their diameter from the subequal lateral eyes which are contiguous with the subequal anterior lateral eyes. Median quadrangle slightly broader than long (16/15), narrowed in front (16/8), the front eyes one-third as large. Chelicera weak, the upper margin with three large teeth, one on the inner side and two

close together nearer the base, the lower margin seemingly unarmed but set with several long, feathered bristles. Sternum longer than broad (0.36 mm./0.30 mm.), coarsely rugose, broadly rounded behind and separating the coxae by nearly twice their length. Labium broader than long, about two-thirds as high as the moderately converging endites.

Leg formula, 1243, the first two pairs longer and more robust. First leg: femur, 0.50 mm.; patella, 0.20 mm.; tibia, 0.37 mm.; metatarsus, 0.35 mm.; and tarsus, 0.20 mm. Tibia and patella of fourth leg, 0.44 mm. Legs without true spines, sparsely set with subprocumbent hairs and a few erect bristles. First femur with a short, pointed tooth beneath near apex and behind a double row of five cusps each set with a short hair. Second femur like first but with fewer cusps. A prominent erect seta present at distal end of patella on all legs. Two or three long setae on the tibiae near the base. Female palpi not present.

Abdomen broadly oval, coriaceous, the dorsum covered with numerous sclerotized tiny brown rings, each the setting for a short seta, the venter with narrow sclerotized scutum around spinnerets and a much broader one encircling the pedicel.

No external epigynum visible. A small atriobursal orifice lies beneath the lip of the genital groove on each side and leads into a thin tube which forms an apical coil.

MALE: Total length, 1.05 mm.; carapace, 0.50 mm. long, 0.45 mm. wide; abdomen, 0.80 mm. long, 0.75 mm. wide.

Dorsal view of male as shown in figure 6. Coloration essentially as in the female, but the abdomen of the male is mostly reddish brown. Structure quite close to that of the female but differing as follows: Clypeus higher, equal to about four diameters of the lateral eye. Carapace nearly as high as long, the head strongly elevated, rounded and produced forward over the clypeus. Frontal view of carapace and eyes as shown in figure 5. Eyes as in female but posterior row more strongly recurved. Legs as in the female, with similar teeth beneath the anterior femora and set with setae in the same portions. First leg: femur, 0.5 mm.; patella, 0.2 mm.; tibia, 0.36 mm.; metatarsus, 0.22 mm.; and tarsus, 0.38 mm. Tibia and patella of fourth leg, 0.47 mm.

Abdomen coriaceous as in female and far overhanging the carapace, the dorsum flattened and covered entirely with a reddish brown scutum, the sides deeply grooved, the venter with scutae as in the female.

Palpus as shown in figures 7 and 8.

TYPE LOCALITY: Male holotype and female allotype from the Hastings Natural History Reservation, Monterey County, California, taken March 13, 1936, from nest of wood-rat house by Jean M. Linsdale.

DISTRIBUTION: Widely distributed but quite rare from southern California to central Oregon, as shown on the map (fig. 1).

It seems improbable that this species has been introduced from some Australian locality. The wide range in the Sierra Nevada Mountains and the Coast Ranges suggests that we have here a true endemic.

KNOWN RECORDS: *California:* Cleveland National Forest, near Henshaw Reservoir, San Diego County, July 30, 1956 (V. Roth and W. J. Gertsch), one male; Los Angeles, August 5, 1931 (W. Ivie), one female; Glendale, November 4, 1950 (E. I. Schlinger), one female; Montrose, December 31, 1932 (W. Ivie), two males, four females; Castro Valley, Alameda County, March 24, 1941 (W. M. Pearce), one female; San Francisco, July 10, 1904 (E. I. Schlinger), one female; 2 miles west of San Andreas, Calaveras County, March 25, 1958 (L. M. Smith and R. O. Schuster), one male, two females; 2 miles northeast of Jackson, Amador County, April 16, 1957 (L. M. Smith and R. O. Schuster), one female; 10 miles south of Santa Rosa, Sonoma County, March 22, 1957 (L. M. Smith and R. O. Schuster), one male; Mt. St. Helena, May 30, 1949 (E. I. Schlinger), one female; Chicago Park, Nevada County, July 26, 1950 (A. E. Cott and S. F. Bailey), one female; Burney Falls, Shasta County, June 18, 1954 (R. Schuster), four females. *Oregon:* Corvallis, October 15, 1949 (V. Roth), one female; Peavine Ridge, near McMinnville, November–December, 1946 (K. M. Fender), two females.

GENUS *IARDINUS* SIMON

Iardinus SIMON, 1899, Ann. Soc. Ent. Belgique, vol. 43, p. 87. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 394. BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 2277.

Anapistula FORSTER, 1958, Amer. Mus. Novitates, no. 1885, p. 12 (part).

TYPE SPECIES: *Iardinus weyersi* Simon.

Simon based his genus *Iardinus* on a small, six-eyed spider from Sumatra which has the two triads of contiguous eyes widely separated at each side of the head. The metatarsi are shorter than the acuminate tarsi. As Simon did not mention the pedipalps, they are presumed to be present and of normal dimensions.

A species from British Guiana sharing the above features but with the triads of eyes closer together is placed in the genus with some reservation. Until males of both species are available, the exact generic placement remains doubtful. A six-eyed Mexican species based on a single damaged male is transferred from the genus *Anapistula*, where it was placed by Forster, to the present genus.

The genus *Anapistula* is thus again restricted to minute four-eyed

spiders with the diads of eyes widely separated. Only a few females are known, and they lack pedipalps as in the typical symphytognathids.

Iardinus boneti Forster

Anapistula boneti FORSTER, 1958, Amer. Mus. Novitates, no. 1885, p. 13, figs. 15-16, 18-19, 21.

TYPE LOCALITY: Atoyac, Veracruz, Mexico, male holotype in the American Museum of Natural History.

Iardinus albulus, new species

Figures 9, 10

DIAGNOSIS: The eyes are much larger than those of *Iardinus weyersi*, and the triads are set close together on the much narrower carapace. This is a much larger species than the four-eyed *Anapistula secreta* (0.95 mm. as compared with about 0.5 mm.) and has well-developed pedipalps. The male of *Iardinus boneti* has the posterior eyes equally spaced, the clypeus very high, and is of intermediate size, being 0.69 mm. in total length.

FEMALE: Total length, 0.95 mm.; carapace, 0.42 mm. long, 0.42 mm. wide; abdomen, 0.52 mm. long, 0.55 mm. wide.

Cephalothorax and appendage yellow, the eyes of the triads narrowly ringed with black. Abdomen dull yellowish, with faint bluish markings visible through the integument.

Structure typical, in good agreement with that of *boneti* and presenting six eyes as in that species. Three subequal eyes of each side close together as shown in figure 10. Anterior median eyes lost, but the large posterior median eyes form with the anterior lateral eyes a procurved row as seen from in front. Posterior eye row quite strongly recurved, the median eyes separated by the radius, nearer the equal lateral eyes. Clypeus equal in height to the full diameter of an anterior lateral eye. Sternum smooth, widely truncated behind, where the posterior coxae are separated by twice their diameter. Labium nearly three times as broad as long, fused to the sternum. Chelicerae fused together at base.

Epigynum (fig. 9) with atriobursal orifices beneath the caudal edge of the dorsal plate and presenting a posterior bursa copulatrix and large round seminal receptacle just in front.

TYPE LOCALITY: Female holotype from Kartabo, British Guiana, 1924 (W. M. Beebe).

SUBFAMILY MYSMENINAE

This subfamily comprises small to minute symphytognathids which

are apneumone or have typical book lungs. Pedipalps are present and of normal size in the females. The metatarsi of the legs exceed in length or are about equal in length to the tarsi. The hind tarsi lack a comb. Some of these spiders are known to spin small, irregular webs. A female of *Maymena* (*Nesticus*) *mayana* Chamberlin and Ivie was reported to have been taken from an orb web, but this may be an error.

This subfamily presents features which bridge, at least to some extent, the typical theridiids and theridiosomatids, on the one hand, with the Anapisiinae.

The following genera are at present assigned to the Mysmeninae: *Mysmena* Simon, *Mysmenopsis* Simon, *Lucarachne* Bryant, *Maymena* Gertsch, *Cepheia* Simon, *Synaphris* Simon, and *Trogloneta* Simon. Only the five American genera, all of which are closely allied, are reviewed in the present paper.

GENUS TROGLONETA SIMON

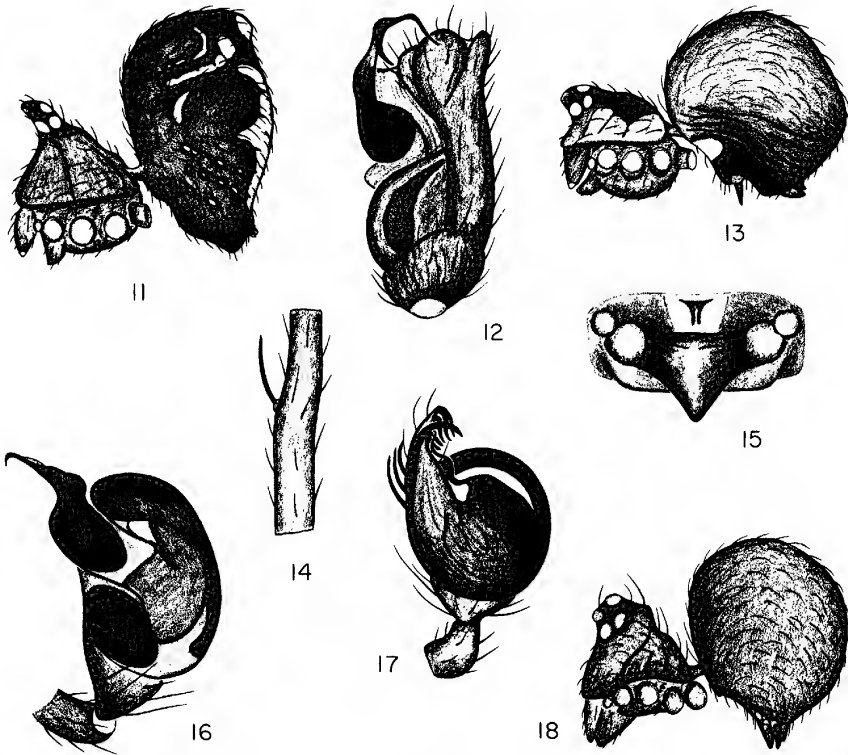
Trogloneta SIMON, 1922, Ann. Soc. Ent. France, p. 200 (*Troglonata*); 1926, Les arachnides de France, vol. 6, pt. 2, p. 313.

Parogulnius ARCHER, 1953, Amer. Mus. Novitates, no. 1622, p. 20.

Carapace about as broad as long, rounded and moderately elevated in the female but strikingly modified to a subconical turret in the male, the apex of which bears the eyes. Anterior median eyes dark, the others pearly white. Clypeus very high in the male, sloping forward, equaling four or five diameters of an anterior lateral eye, but only half as high in the female. Front eye row moderately to strongly procurved, the eyes close together, the median eyes smaller, only half of the size of the lateral eyes in *paradoxum*. Posterior eye row moderately recurved, the median eyes well separated, subcontiguous with the lateral eyes. Legs of moderate length, the front pairs not much enlarged, about equal in length to the fourth pair. First metatarsus of the male with a thin clasping spine. Female pedipalp without tarsal claw. Male palpus lacking median or other apophysis on the bulb and without a paracymbium on the tarsus. Colulus a tiny conical process set with two tiny setae. Openings of the epigynum below the lip of the genital groove.

TYPE SPECIES: Of *Trogloneta*, *T. granulum* Simon; of *Parogulnius*, *P. hypsigaster* Archer.

This curious genus is most closely related to *Mysmena* but is readily separated by the differences in the eye relations. The front eye row is procurved, and the median eyes are smaller than the lateral eyes in both sexes. The median ocular quadrangle is narrowed in front, and the front eyes are smaller.



FIGS. 11-16. *Trogloneta paradoxum*, new species. 11. Cephalothorax and abdomen of male, lateral view. 12. Left male palpus, subventral view. 13. Cephalothorax and abdomen of female, lateral view. 14. First right metatarsus of male, dorsal view. 15. Epigynum. 16. Left male palpus, retrolateral view.

FIGS. 17, 18. *Mysmena calypso*, new species. 17. Left male palpus, subventral view. 18. Cephalothorax and abdomen of male, lateral view.

The genus *Trogloneta* was established in 1922 by Simon for a minute spider from caves in France. *Trogloneta granulum* Simon spins a very large snare with broad and irregular lines among the stalactites. Two American species seem to fall well within the limits of this genus. One of these is *Trogloneta hypsigaster*, a tiny spider from Alabama for which Archer proposed the name *Parogulnius* because of its resemblance to *Ogulnius* of the argiopid subfamily Theridiosomatinae. Only the female is known. A second species from California differs in the greater degree of sexual dimorphism shown by the male. The complete lack of a paracymbium on the male palpus excludes the genus from the Theridiosomatinae.

Trogloneta hypsigaster Archer

Parogulnius hypsigaster ARCHER, 1953, Amer. Mus. Novitates, no. 1622, p. 21, figs. 39-42.

TYPE LOCALITY: Tuscaloosa, Alabama, female holotype in the American Museum of Natural History, taken from a swamp on March 25, 1948, by A. F. Archer.

***Trogloneta paradoxum*, new species**

Figures 11-16

DIAGNOSIS: This species is readily separated from *hypsigaster* by the epigynum, which presents a transverse lobe with a short caudal angle instead of a greatly elongated, finger-like scape.

FEMALE: Total length, 1 mm.; carapace, 0.43 mm. long, 0.4 mm. wide; abdomen, 0.7 mm. long, 0.63 mm. wide.

Carapace dusky yellowish brown, with a narrow black seam, with two large blackish patches on each side behind the eye group from which dusky lines radiate, the eyes enclosing a blackish area. Sternum, labium, and maxillae blackish, the coxae pale but with dusky spots. Legs pale yellowish, marked with contrasting black rings. Abdomen mottled, blackish on dorsum, sides, and venter but the caudal face mostly white or pale yellow.

Carapace clothed with a few inconspicuous hairs, about as wide as long, cordiform in outline as seen from above, the median groove obsolete. Lateral aspect of female as shown in figure 13. As seen from the side carapace half as high as the width, convex, highest in front, the eyes situated on a rounded tubercle of moderate height, the head at this point equal to half of the width of the carapace. Clypeus subvertical, high, equal to two and one-half times the diameter of an anterior lateral eye. First eye row as seen from in front strongly procurved, a line along the upper edge of the lateral eyes cutting the lower edges of the dark median eyes, which are separated by the radius and about as far from the lateral eyes which are twice as large. Posterior eye row moderately recurved, the median eyes separated by the diameter, one-fourth as far from the subequal lateral eyes. Eye rows equal in width, the lateral eyes of each side subcontiguous, the front eye slightly larger. Sternum convex, as wide as long (0.30 mm.), broadly truncated in front, truncated between the posterior coxae which are separated by their length.

Legs of moderate length, sparsely clothed with pale hairs and a few bristles, all the coxae with a conspicuous apical bristle. First leg: femur, 0.47 mm.; patella, 0.17 mm.; tibia, 0.3 mm.; metatarsus, 0.3 mm.;

and tarsus, 0.2 mm. Tibia and patella of fourth leg, 0.46 mm. long. Third legs shortest, the others subequal in length.

Abdomen much higher than long, rounded in front and overhanging the carapace, produced into a blunt cone above and similarly pointed below, the spinnerets located at the apex.

Epigynum as shown in figure 15.

MALE: Total length, 0.95 mm.; carapace, 0.40 mm. long, 0.40 mm. wide; abdomen, 0.55 mm. long, 0.55 mm. wide.

Coloration as in the female. Structure similar except for the modified carapace. Lateral aspect of male as shown in figure 11. As seen from the side, carapace subtriangular, strongly elevated, as high as broad, the eyes occupying the pinnacle of the cone. Clypeus inclined forward, very high, equal to five diameters of an anterior lateral eye. Eye relations essentially as in the female, but the lateral eyes of the posterior row lie on the sides of the pinnacle. Median ocular quadrangle as broad as long, narrowed in front, the front eyes half as large.

Legs as in female, but the front pair with a thin clasping spine on inner side near apex of metatarsus (fig. 14). First leg: femur, 0.43 mm.; patella, 0.17 mm.; tibia, 0.3 mm.; metatarsus, 0.27 mm.; and tarsus, 0.25 mm. Tibia and patella of fourth leg, 0.43 mm.

Palpus as shown in figures 12 and 16.

TYPE LOCALITY: Male holotype, female allotype, male and female paratypes from Castro Valley, Alameda County, March 9, 1941 (W. M. Pearce).

DISTRIBUTION: Utah, Oregon, and California. (See fig. 1).

KNOWN RECORDS: *Oregon*: Oak Creek, Yamhill County, May 10, 1936 (J. C. Chamberlin), one female; Corvallis, May 1, 1949 (V. Roth), two males, two females. *California*: Pebble Beach, March 25, 1957 (A. M. Nadler), one male; Corral Hollow, Contra Costa County, March 10, 1958 (L. M. Smith and R. O. Schuster), one immature; Burney Falls, Shasta County, June 18, 1954 (R. O. Schuster), one female; Hastings Natural History Reservation, Monterey County, January 24, 1946 (J. M. Linsdale), one female. *Utah*: Timpanogos Park, American Fork Canyon, June 13, 1941, five females, two males, two juvenile females.

This species, which lives in ground detritus, has been sifted from soil under oak trees, from fir needles, and from the midden of a *Neotoma*.

GENUS *MYSMENA* SIMON

Mysmena SIMON, 1894, Histoire naturelle des araignées, vol. 1, p. 588. LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 3 (part; not *M. cymbia* and *ixlitla*). BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 3024.

Microdipoena BANKS, 1895, Jour. New York Ent. Soc., vol. 3, p. 84.

Calodipoena GERTSCH AND DAVIS, 1936, Amer. Mus. Novitates, no. 881, p. 8.

Tamasesia MARPLES, 1955, Jour. Linnean Soc. London, vol. 42, p. 476.

Minute spiders of the subfamily Mysmeninae, varying in total length from 0.5 mm. to 1.3 mm. Carapace about as long as broad, of moderate elevation in the female, strikingly elevated in males to subtriangular form as seen in side view. Front eye row moderately to strongly procurved as viewed from in front, the median eyes well separated, touching or narrowly separated from the lateral eyes. Eyes of front row subequal in size in females, but the median eyes slightly to considerably exceeding the lateral eyes in males. Posterior eye row essentially straight, the eyes typically subequal in size and subequidistantly spaced. Median ocular quadrangle wider than long and narrowed behind. Front legs longest, but the femora not obviously thickened. Clasping spine present on first metatarsus and, in some specimens, first tibia of male. Tibia of male palpus not especially enlarged or modified.

TYPE SPECIES: Of *Mysmena*, *Theridion leucoplagiatum* Simon; of *Microdipoena*, *Microdipoena guttata* Banks; of *Calodipoena*, *Calodipoena incredula* Gertsch and Davis; and of *Tamasesia*, *Tamasesia rotunda* Marples.

The genus *Mysmena* is in this paper restricted to the several minute spiders considered by Levi in his revision of the American fauna. The species *Mysmena cymbia* Levi and *M. ixlitla* Levi are excluded from the genus and tentatively assigned to Simon's genus *Mysmenopsis*.

The present consideration of *Mysmena* has been confined to study of the specimens assigned to *Mysmena incredula* by Levi, who rejected his first conclusion that a series of species was represented and held all the complex together under the single name. Five distinct species seem to be represented. One of these, *Mysmena calypso*, new species, from Trinidad, is not closely related to the others as indicated by the distinctive palpus. The remaining four species form a closely allied series, with similar details of color pattern, body morphology, and genitalic design.

The four species of the *incredula* group are all minute spiders, with a quite similar color pattern of whitish spots on the dusky abdomen. In some examples the pale spotting is completely masked with blackish color. The abdomen is modified from a broadly rounded form to an extremely caudate condition, but the variation within each species does not intergrade to the next one. From the distribution pattern of each species insofar as at present known, it seems certain that *incredula*, *caribbaea*, and *stathamae* will be found to be sympatric in distribution.

The new species *Mysmena colima* from southwestern Mexico presents the unusual feature of possessing a thread-like primary embolus running around the middle of the bulb and, in addition, a quite similar terminal spine that may be a second embolus. In the other species of the series this second embolus is matched only by internal tubular structures which have not become independent external spines, nor have they been broken off as suggested by Levi. This great morphological gap in palpal features between *colima* and the remaining species precludes any possibility that they could be the same species.

The epigyna of the species of the *incredula* group are quite similar in design and feature a fleshy, subtriangular lobe which is produced caudally into a thin, finger-like scape of variable length. The lobe is subject to much variation and in a single species may vary from a broad triangle to a quite thin "finger." Similarly, the scape may be of variable length. The internal receptacles of the epigynum are similar in gross features but show shape differences that may prove diagnostic for each species. From preliminary studies, made especially difficult because of the minute size of the structures, it seems clear that the bursa copulatrix is a thin-walled tube and that a tubular projection from the relatively large brown receptacle may represent the fertilization duct.

Mysmena incredula Gertsch and Davis

Figures 19–23, 28, 29

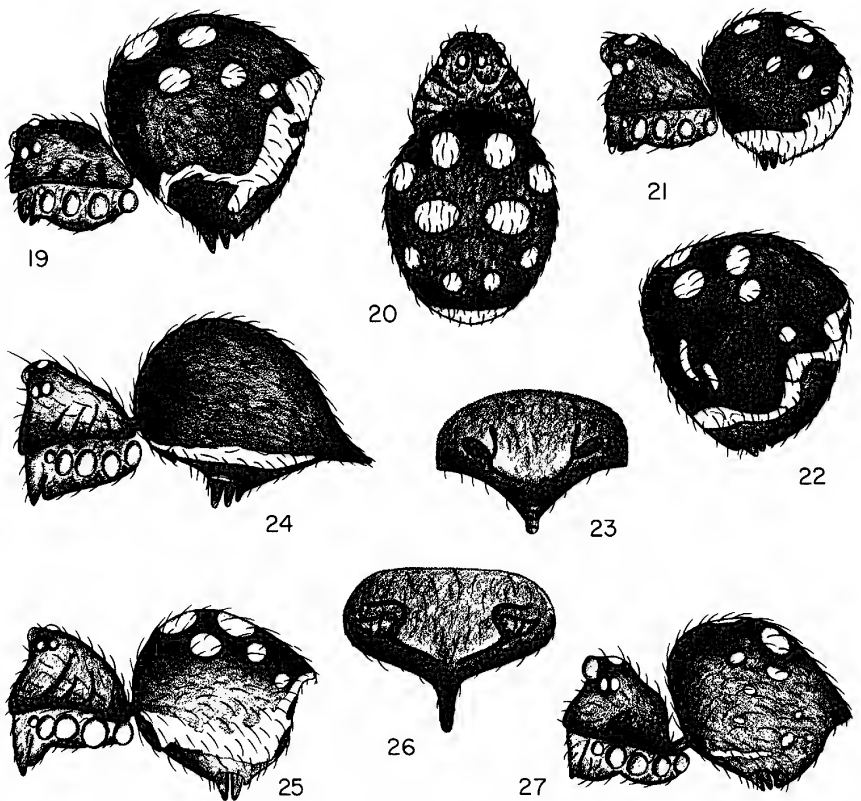
Calodipoena incredula GERTSCH AND DAVIS, 1936, Amer. Mus. Novitates, no. 881, p. 8, figs. 32, 33. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 417. BONNET, 1956, Bibliographia araneorum, vol. 2, pt. 2, p. 937.

Mysmena incredula LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 5 (part: figs. 4, 5, 8–10, 16, 18, 19).

DIAGNOSIS: This tiny species has the suboval abdomen broadly rounded behind in typical specimens from southern Texas, and only occasional examples present a small caudal tubercle. In specimens from the West Indies a small to quite prominent caudal angle is usually present. The male palpus is smaller and thinner than in the other species of the group. The thin embolus lies in a median position on the bulb, and no secondary embolus is developed.

MALE FROM CAMERON COUNTY, TEXAS: Total length, 0.6 mm.; carapace, 0.3 mm. long, 0.3 mm. wide; abdomen, 0.35 mm. long, 0.3 mm. wide. Males vary from 0.5 mm. to 0.8 mm. in length.

Carapace dusky brown to blackish, the sides with brownish streaks, and the dorsum often with a median dark band enclosing the eye group and running back to the whitish posterior declivity. Legs yel-



FIGS. 19-23. *Mysmena incredula* Gertsch and Davis. 19. Cephalothorax and abdomen of female from Bimini, lateral view. 20. Carapace and abdomen of female from Texas, dorsal view. 21. Cephalothorax and abdomen of male from Texas, lateral view. 22. Abdomen of female from Texas, lateral view. 23. Epigynum.

FIG. 24. *Mysmena caribbaea*, new species, cephalothorax and abdomen of male, lateral view.

FIGS. 25, 26. *Mysmena colima*, new species. 25. Cephalothorax and abdomen of male, lateral view. 26. Epigynum.

FIG. 27. *Mysmena stathamae*, new species, cephalothorax and abdomen of male, lateral view.

lowish, with distinct dark rings. Sternum yellowish, with four dusky spots at the corners. Abdomen dusky to blackish, the dorsum with about eight or 10 white spots as shown in figure 21, the sides with numerous small whitish spots, the venter with a pale band which passes up to a point high on the caudal edge of the abdomen.

Lateral aspect of the carapace and abdomen as shown in figure 21. Carapace elevated in front, with the eye group somewhat overhanging the clypeus, which is equal in height to two full diameters of the anterior median eye. Front eye row procurved, the median eyes separated from each other by the full diameter, subcontiguous with the clearly smaller lateral eyes. Posterior eye row lightly procurved, the median eyes separated by about their radius, as far from the smaller lateral eyes. Median ocular quadrangle broader than long (25/17), narrowed behind in the same ratio, the eyes about equal in size. Abdomen broadly rounded behind.

First leg: femur, 0.23 mm.; patella, 0.1 mm.; tibia, 1.75 mm.; metatarsus, 0.14 mm.; and tarsus, 0.16 mm. First metatarsus with a weak clasping spine in distal half on the prolateral surface.

Male palpus as shown in figures 28 and 29.

FEMALE FROM CAMERON COUNTY, TEXAS: Total length, 0.8 mm.; carapace, 0.3 mm. long, 0.28 mm. wide; abdomen, 0.55 mm. long, 0.4 mm. wide. Females vary from 0.7 mm. to 1 mm. in length.

Coloration in good agreement with that of the male. Dorsal view of the carapace and abdomen as shown in figure 20. Lateral view of the abdomen showing the small caudal hump, as in figure 22. Lateral view of a female from Bimini, Bahama Islands, showing the caudal tubercle, as in figure 19. Carapace less elevated than that of the male and the eyes subequal in size.

Epigynum (fig. 23) presenting a subtriangular, fleshy lobe which is produced caudally into a tiny, finger-like scape, beneath which lie the two rather small seminal receptacles.

TYPE LOCALITY: Cameron County, Texas, male holotype in the American Museum of Natural History.

DISTRIBUTION: Texas; south Florida and adjacent West Indian islands.

KNOWN RECORDS: *Texas*: Southmost Native Palm Grove, March 26, 1936, male and females; February 30, 1934 (S. Mulaik); May 30, 1939 (S. Mulaik), male. Four miles east of Santa Maria, September, 1936 (L. I. Davis), male. Big Tree-Vine Association, Cameron County, September, 1936 (L. I. Davis), male and female. Cameron County, May, 1936 (L. I. Davis), male holotype, paratypes. Edinburg, May 1, 1936 (S. Mulaik), male. *Florida*: Royal Palm State Park, February 26, 1936, male. *Bahama Islands*: South Bimini, May, 1931 (W. J. Gertsch and M. A. Cazier), male, females; March 22-28, 1953 (A. M. Nadler), males, females. *Cuba*: Near Havana, females.

***Mysmena colima*, new species**

Figures 25, 26, 32-34

Mysmena incredula LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 5 (part: figs. 6, 11-14, 17).

DIAGNOSIS: This very distinctive species resembles *incredula* in size and appearance, but the abdomen is provided with a more prominent caudal projection set quite high up on the abdomen. The unusual features of the male palpus readily distinguish the species. The greatly inflated bulb is flattened at the apex and bears a thin spine which forms a loop and comes to rest in a small tutaculum at the base of the cymbial tip. This may be merely a distal process of the bulb of which there is an analogous one in *Mysmena calypso*. On the other hand, this process may actually be a second embolus, a most unusual feature for the group. The primary embolus is a thin, thread-like spine that encircles the bulb in the apical half, makes a full spiral, and, when in resting position, lies in a shallow groove at the tip of the cymbium.

MALE: Total length, 0.7 mm.; carapace, 0.29 mm. long, 0.26 mm. wide; abdomen, 0.4 mm. long, 0.3 mm. wide.

Carapace dusky brown, the caudal declivity paler, the sides with radiating brown streaks. Legs dull yellowish brown, with distinct brown rings. Abdomen brownish, with a series of small white spots and a lateral whitish stripe as shown in the illustration.

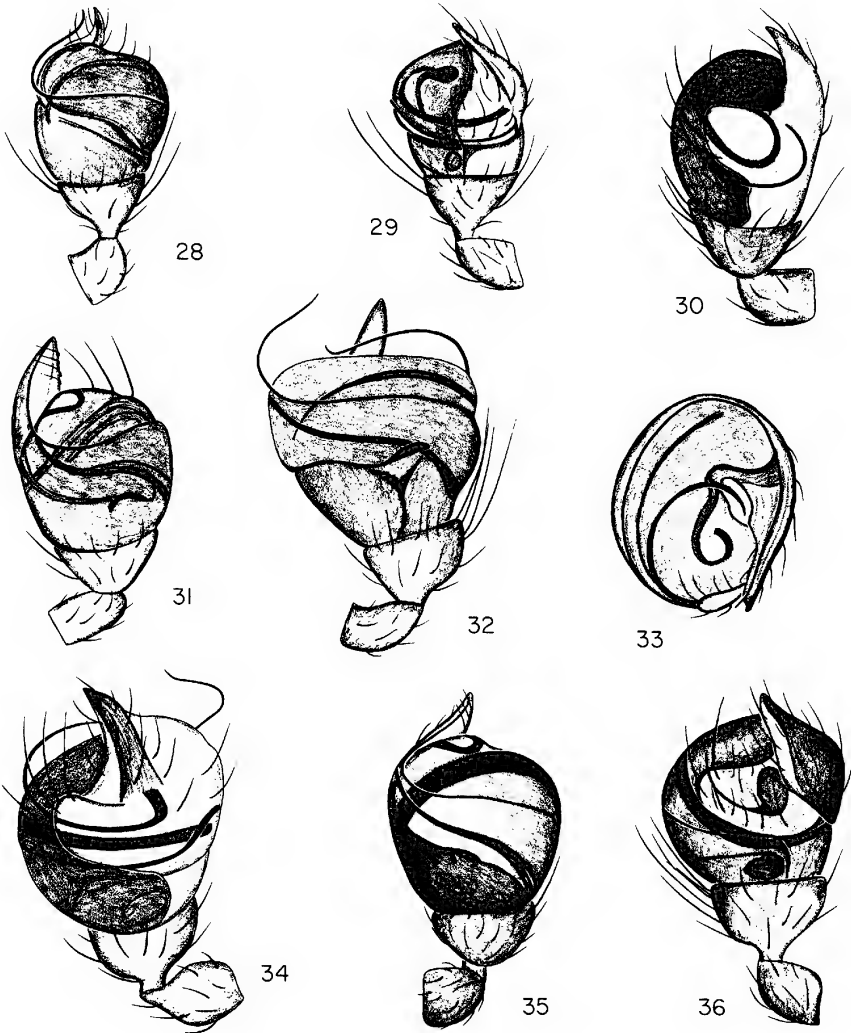
Lateral view of cephalothorax and abdomen as shown in figure 25. Head elevated, the eyes on a rounded eminence produced over the sloping clypeus, which is equal to two and one-half diameters of an anterior median eye. Front eye row strongly procurved, the clearly larger median eyes nearly touching the lateral eyes and separated from each other by one and one-third diameters. Posterior eye row gently recurved, the suboval median eyes separated by not fully the narrow diameter, about as far from the smaller lateral eyes. Median ocular quadrangle broader than long (25/18), narrowed behind in the same ratio. Abdomen somewhat longer than broad, with a distinct caudal tubercle as illustrated.

First leg: femur, 0.3 mm.; patella, 0.14 mm.; tibia, 0.24 mm.; metatarsus, 0.14 mm.; and tarsus, 0.17 mm. First metatarsus with a distinct clasping spine at middle on the prolateral surface.

Male palpus as illustrated in figures 32, 33, and 34.

FEMALE: Total length, 0.8 mm.; carapace, 0.30 mm. long, 0.25 mm. wide; abdomen, 0.6 mm. long, 0.4 mm. wide.

Coloration and structure similar to those of the male. Head lower, and all the eyes subequal in size.



FIGS. 28, 29. *Mysmena incredula* Gertsch and Davis. 28. Left male palpus, retrolateral view. 29. Left male palpus, prolateral view.

FIGS. 30, 31. *Mysmena caribbaea*, new species. 30. Left male palpus, prolateral view. 31. Left male palpus, retrolateral view.

FIGS. 32-34. *Mysmena colima*, new species. 32. Left male palpus, retrolateral view. 33. Left male palpus, apical view. 34. Left male palpus, prolateral view.

FIGS. 35, 36. *Mysmena stathamae*, new species. 35. Left male palpus, retrolateral view. 36. Left male palpus, prolateral view.

Epigynum variable in development of the caudal scape, with the seminal receptacles larger than those of *incredula*, as shown in figure 26.

TYPE LOCALITY: Male holotype and paratypes from Miramar, Manzanillo, Colima, Mexico, January 15, 1943 (F. Bonet).

OTHER LOCALITIES: *Colima:* Potrero Grande, January 15, 1943 (F. Bonet), immature female; Cuyutlan, January 11, 1943 (F. Bonet), female, immatures; Armeria, January 19, 1943 (F. Bonet), immatures.

Mysmena stathamae, new species

Figures 27, 35–36, 44

Mysmena incredula LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 5 (part; locality records only).

DIAGNOSIS: This species is immediately separable from *Mysmena colima*, which it resembles closely in body form, by the absence of a secondary embolus at the apex of the palpus. It is also related to *caribbaea*, but the caudal tubercle is less developed and set higher on the abdomen. The bulb of the male palpus is considerably inflated, and the long embolus encircles the bulb near its middle. The anterior median eyes of the male are especially large, considerably exceeding the lateral eyes in diameter.

MALE: Total length, 0.64 mm.; carapace, 0.3 mm. long, 0.26 mm. wide; abdomen, 0.4 mm. long, 0.34 mm. wide.

Lateral view of carapace and abdomen as shown in figure 27. Coloration and structure in essential agreement with those of *incredula* and *colima* except as follows: Anterior eye row procurved to the extent that a line along the upper edges of the lateral eyes passes through the centers of the median eyes, which are separated by about four-fifths of their diameter and touch the much smaller lateral eyes. Clypeus not fully twice as high as the diameter of the large anterior median eye. Carapace short, the head portion strongly elevated, the caudal portion depressed so that the four coxae seem to lie behind the limits of the carapace. Posterior eye row essentially straight, the suboval median eyes separated by not fully the short diameter and about as far from the slightly smaller lateral eyes. Median ocular quadrangle broader than long ($3/2$) and narrowed behind by about the same ratio, the front eyes somewhat larger.

First leg: femur, 0.3 mm.; patella, 0.13 mm.; tibia, 0.24 mm.; metatarsus, 0.16 mm.; and tarsus, 0.17 mm. First metatarsus with a weak clasping spine in apical half on prolateral side.

Male palpus (figs. 35 and 36) much more robust than that of

incredula and completely lacking an apical embolus.

FEMALE: Total length, 0.85 mm.; carapace, 0.29 mm. long, 0.24 mm. wide; abdomen, 0.6 mm. long, 0.5 mm. wide.

Coloration and structure essentially like those of *incredula* and *colima*. Abdomen in some specimens dusky to blackish, without trace of paler spotting. Eyes of first row subequal in size.

Epigynum as illustrated in figure 44. A female presumed to be from the island of Jamaica has the scape a long, thin filament.

TYPE LOCALITY: Male holotype from Barro Colorado Island, Canal Zone, Panama (J. Zetek), from Berlese sample.

DISTRIBUTION: Southern Mexico to Panama; Jamaica.

Known Records: *Chiapas*: Finca Monte Libana, Acosingo Valley, July 1-7, 1950 (C. and M. Goodnight; L. Stannard), female and immature. Palenque Ruins, July 12-14, 1949 (C. J. Goodnight), female from soil, female from sweeping. *Veracruz*: El Potrero, November 12, 1941 (F. Bonet), female. Atoyac, November 12, 1941 (F. Bonet), female. *Guerrero*: Rio Blanco, Colotlipa, January 18, 1941 (F. Bonet), immature. Sixty miles north of Acapulco, June 18, 1936 (A. M. and L. I. Davis), immature. *Panama*: Barro Colorado Island, Canal Zone, July 21, 1933 (S. J. Hook), male. *Jamaica*: One female with uncertain locality data.

Mysmena caribbaea, new species

Figures 24, 30, 31

Mysmena incredula LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 5 (part; Jamaica and Trinidad records only).

DIAGNOSIS: This species is readily distinguished from *stathamae* by the form of the abdomen, as shown in the illustration. The bulb of the male palpus is less inflated, the thin embolus somewhat shorter, and the exposed tip of the cymbium more prominent.

MALE: Total length, 0.85 mm.; carapace, 0.35 mm. long, 0.33 mm. wide; abdomen, 0.56 mm. long, 0.36 mm. wide.

Carapace dusky brown, paler on the posterior declivity, with blackish streaks on the sides. Sternum dusky brown, with a pale, dentate, median stripe. Legs dull yellowish brown, with distinct brown rings. Abdomen blackish except for a pale side stripe on each side above the spinnerets.

Lateral view of carapace and abdomen as illustrated in figure 24. Carapace of moderate elevation, the head prominent, the eyes forming a broad group two-thirds as wide as the carapace at the second eye row. Front eye row moderately procurved, the median eyes separated

by their full diameter, slightly but distinctly separated from the slightly smaller lateral eyes. Clypeus equal in height to two diameters of an anterior median eye. Posterior eye row essentially straight, the oval median eyes separated by about their short diameter, as far from the smaller lateral eyes. Median ocular quadrangle broader than long (22/15), narrowed behind by about the same ratio, the eyes subequal in size. Abdomen suboval, but the caudal end drawn out to a long tail, the tip of which is about on a line with the venters of the abdomen and the sternum.

First leg: femur, 0.4 mm.; patella, 0.15 mm.; tibia, 0.3 mm.; metatarsus, 0.2 mm.; and tarsus, 0.24 mm. First metatarsus with a weak clasping spine in distal half on the prolateral surface.

Male palpus as shown in figures 30 and 31. Bulb of median size, with a single thin embolus which encircles the bulb in the apical third. Apex of bulb without an accessory spine or second embolus.

FEMALE: Total length, 0.9 mm.; carapace, 0.33 mm. long, 0.28 mm. wide; abdomen, 0.6 mm. long, 0.4 mm. wide.

Coloration almost exactly like that of the male. Carapace proportionately longer and the head low. Posterior eye row gently recurved. Caudal tubercle of the abdomen a little higher up on the abdomen. First leg: femur, 0.3 mm.; patella, 0.15 mm.; tibia, 0.22 mm.; metatarsus, 0.17 mm.; and tarsus, 0.2 mm.

TYPE LOCALITY: Male holotype from Hardwar Gap, Jamaica, April 4, 1935 (Roswell Miller).

OTHER LOCALITY: *Trinidad*: St. Augustine, November 16, 1943 (Strickland), female allotype.

Mysmena guttata Banks

Microdipoena guttata BANKS, 1895, Jour. New York Ent. Soc., vol. 3, p. 85.

Mysmena guttata LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 8.

NEW RECORDS: *Florida*: Two to 5 miles south of Florida City, April 1, 1957 (R. Forster and W. J. Gertsch), male and female from underneath ground trash. *Jamaica*: Kinloss, March 29, 1955 (A. M. Nadler), one female beaten from vegetation.

Mysmena calypso, new species

Figures 17, 18

Mysmena incredula LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 5 (part; *Trinidad* record only).

DIAGNOSIS: This minute spider shows little resemblance to *incredula* or any other known species. The carapace is subtriangular in lateral

outline and is higher than that of *incredula* and its relatives. The abdomen lacks any trace of a caudal angle or tail. The very thick embolus forming a broad peripheral loop is not matched in any other species.

MALE: Total length, 0.5 mm.; carapace, 0.22 mm. long, 0.22 mm. wide; abdomen, 0.32 mm. long, 0.3 mm. wide.

Carapace dull yellowish, with dusky shadings on the sides, the eyes narrowly ringed with black. Appendages dull yellowish. Abdomen gray.

Carapace and abdomen shown in side view in figure 18. Carapace strongly elevated, subtriangular in lateral view. Front eye row procurved, the median eyes contiguous with and set nearly above the subequal lateral eyes and separated widely by two and one-half diameters. Clypeus equal in height to three diameters of an anterior median eye. Posterior eye row moderately recurved, the median eyes separated by one-third of their diameter, about as far from the somewhat smaller lateral eyes. Median ocular quadrangle much broader than long (18/8), greatly narrowed behind (18/12), the posterior eyes somewhat larger. Abdomen suboval in side view, without trace of caudal angle or tail.

First leg: femur, 0.24 mm.; patella, 0.1 mm.; tibia, 0.16 mm.; metatarsus, 0.15 mm.; tarsus, 0.15 mm. First metatarsus with a weak clasping spine in distal half on the prolateral side.

Male palpus as illustrated in figure 17. Embolus a thick spine which encircles the bulb and comes to rest in a groove at the tip of the cymbium. Distal end of bulb produced into a short, coiled spine.

TYPE LOCALITY: Male holotype from St. Augustine, Trinidad, February 23, 1944 (Strickland).

GENUS *MYSMENOPSIS* SIMON

Mysmenopsis SIMON, 1897, Proc. Zool. Soc. London, p. 865; 1903, Histoire naturelle des araignées, vol. 2, p. 991. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 184; 1928, Trans. Connecticut Acad. Arts Sci., vol. 29, p. 116. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 394. BONNET, 1957, Bibliotheca araneorum, vol. 2, pt. 3, p. 3025.

Mysmena LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 3 (part: *Mysmena ixlitla* and *M. cymbia* only).

Small spiders of the subfamily Mysmeninae, varying from about 1 mm. to 1.8 mm. in total length. Carapace about as broad as long, of moderate elevation in both males and females. Front eye row straight to moderately procurved, the median eyes well separated,

touching or narrowly separated from the lateral eyes. Eyes of front row subequal in size, but the median eyes slightly to considerably larger than the lateral eyes according to the species. Posterior eye row essentially straight, the eyes subequal in size, the median eyes well separated, much nearer the lateral eyes. Median ocular quadrangle wider than long and narrowed behind. Front legs longest, and the femora somewhat stouter than the others. Clasping spines present on first tibia and first metatarsus of the male. Tibia of male palpus typically enlarged to bulbous form.

TYPE SPECIES: *Mysmenopsis femoralis* Simon.

The genus *Mysmenopsis* was based by Simon on two small species from the island of St. Vincent in the British West Indies. The eyes of the first row lie in an essentially straight row, with the larger median eyes well separated and nearly touching the lateral eyes. The posterior median eyes are well separated and situated nearer the lateral eyes. Two species described by Levi, *Mysmena cymbia* and *M. ixlitla*, are tentatively placed in *Mysmenopsis*, and a third species is based on part of the series previously assigned to *ixlitla*.

Mysmenopsis femoralis Simon

Figures 37-39

Mysmenopsis femoralis SIMON, 1897, Proc. Zool. Soc. London, p. 865; 1903, Histoire naturelle des araignées, vol. 2, p. 991. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 184; 1928, Trans. Connecticut Acad. Arts Sci., vol. 29, p. 116. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 394. BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 3025.

DIAGNOSIS: This is a dusky to blackish species which has a pale pattern on the abdomen as follows: two widely separated, sinuous, white bands which run back to the posterior declivity and are crossed in front by three or four transverse white lines; a confused area of black and white spotting above the spinnerets. The eye rows are both essentially straight. The dark median eyes are well separated but contiguous with the smaller lateral eyes. The medium-sized posterior eyes are well separated, but the median eyes are somewhat farther apart. The first femur bears a stout spur on the lower side. Only the female is known.

FEMALE: Total length, 1.5 mm.

First right femur as seen from the outside shown in figure 39.

Epigynum a dusky, caudally rounded lobe (fig. 37) beneath which lie two widely separated receptacles (fig. 38).

TYPE LOCALITY: St. Vincent, British West Indies, female type in

the Muséum d'Histoire Naturelle in Paris.

I have not studied examples of this or the following species. The illustrations have been made available for this paper by Dr. Herbert Levi, who prepared them during a recent trip to the Paris Museum. The diagnoses have been extracted from the descriptions of Eugene Simon.

Mysmenopsis funebris Simon

Figures 40-43

Mysmenopsis funebris SIMON, 1897, Proc. Zool. Soc. London, p. 865; 1903, Histoire naturelle des araignées, vol. 2, p. 991. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 184; 1928, Trans. Connecticut Acad. Arts Sci., vol. 29, p. 116. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 394. BONNET, 1957, Bibliographia araneorum, vol. 2, pt. 3, p. 3025.

DIAGNOSIS: This species resembles the previous one in structure and appearance, but the whitish pattern on the abdomen is less regular. The small eyes of the posterior row are widely separated. The first femur lacks a ventral spur in the female. The male has a much higher carapace and features a palpus in which the tibia and tarsus are greatly inflated, as shown in the figures.

FEMALE: Total length, 1.2 mm.

Epigynum a fleshy lobe which is widely emarginated behind (fig. 41) and beneath which lie two very large, widely separated receptacles (fig. 40).

MALE: Palpus as shown in figures 42 and 43.

TYPE LOCALITY: St. Vincent, British West Indies, female and male types in the Muséum d'Histoire Naturelle in Paris.

Mysmenopsis cymbia Levi

Mysmena cymbia LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 11, figs. 38-47.

TYPE LOCALITY: Perrine, Dade County, Florida, male holotype in the American Museum of Natural History.

KNOWN RECORDS: *Florida*: Perrine, November 25, 1952 (A. M. Nadler), male holotype. Leesburg, March 1-11, 1954 (M. Statham), female and immature.

Mysmenopsis ixlitla Levi

Figure 45

Mysmena ixlitla LEVI, 1956, Amer. Mus. Novitates, no. 1801, p. 9, figs. 31, 33-37 (part; not fig. 32).

TYPE LOCALITY: Ixlitla, San Luis Potosi, Mexico, male holotype in the American Museum of Natural History.

KNOWN RECORD: *San Luis Potosi:* Ixlitla, December 2, 1939 (A. M. and L. I. Davis), two males, two females.

***Mysmenopsis mexcala*, new species**

Figure 46

Mysmena ixlitla LEVI, 1946, Amer. Mus. Novitates, no. 1801, p. 9 (part: fig. 32 only).

DIAGNOSIS: This is a smaller, paler species than *Mysmenopsis ixlitla* and is readily distinguished by the following features: The legs are much shorter, the first tibia and patella only equaling the length of the carapace, and the clasping spines are weakly developed. The tibia of the male palpus is clearly broader than long and bears only four stiff setae on the retrolateral lobe. The cymbium is distinctive in form, is shorter, and has a transparent fold on the retrolateral side and a poorly developed tutaculum near the apex on the prolateral side. In the resting position the coiled embolus has eight full turns, instead of six as in *ixlitla*. An illustration of the left palpus of *ixlitla* is included for comparison (fig. 45).

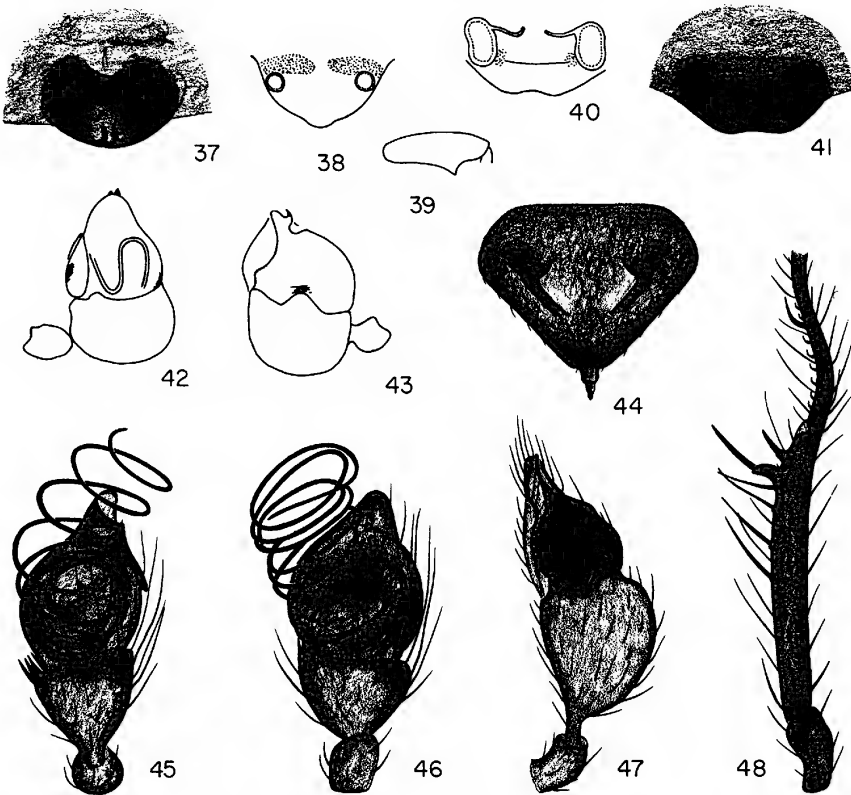
MALE: Total length, 1.1 mm.; carapace, 0.46 mm. long, 0.42 mm. wide; abdomen, 0.7 mm. long, 0.7 mm. wide.

Carapace and appendages quite uniform dull yellow, the carapace varied with a narrow marginal dusky seam, a few dusky lines and shadings above, and the eyes enclosing a blackish area. Sternum with faint radiating dark lines, dusky along the margins. Abdomen dusky yellow, the dorsum with a faint pattern of paler transverse spots, of which one large pair lies just behind the base and is followed by narrower ones.

Anterior eye row slightly procurved, the dark median eyes separated by nearly the full diameter, almost touching the much smaller lateral eyes. Posterior eye row straight, the oval median eyes separated by the narrow diameter, half as far from the smaller lateral eyes. Median ocular quadrangle slightly wider than long, broader in front, the eyes subequal in size. Clypeus equal in height to two and one-half diameters of the anterior median eye.

Front leg: femur, 0.4 mm.; patella, 0.16 mm.; tibia, 0.32 mm.; metatarsus, 0.25 mm.; and tarsus, 0.29 mm. Tibia and patella of fourth leg, 0.45 mm. long. First leg with a thin clasping spine in apical third of tibia on the prolateral surface and a similar one at middle of the metatarsus.

Male palpus as illustrated in figure 46, presenting in subdorsal view



FIGS. 37-39. *Mysmenopsis femoralis* Simon. 37. Epigynum. 38. Epigynum, internal view. 39. First femur of female, lateral view.

FIGS. 40-43. *Mysmenopsis funebris* Simon. 40. Epigynum, internal view. 41. Epigynum. 42. Male palpus, retrolateral view. 43. Male palpus, prolateral view.

FIG. 44. *Mysmena stathamae*, new species, epigynum.

FIG. 45. *Mysmenopsis ixlitla* Levi, left male palpus, subdorsal view.

FIG. 46. *Mysmenopsis mexcala*, new species, left male palpus, subdorsal view.

FIGS. 47, 48. *Lucarachne beebei*, new species. 47. Left male palpus, subdorsal view. 48. Tibia and metatarsus of first leg of male, dorsal view.

a broader than long tibia armed on the retrolateral side with four stiff setae set on a rounded lobe, a coiled embolus with eight loops, and a transparent tutaculum arising from the front edge of the cymbium.

TYPE LOCALITY: Male holotype from Mexcala, Guerrero, Mexico, July 2, 1941 (L. I. Davis).

GENUS *LUCARACHNE* BRYANT

Lucarachne BRYANT, 1940, Bull. Mus. Comp. Zoöl., vol. 86, p. 349.

Small spiders of the subfamily Mysmeninae, varying from about 1.8 mm. to 2.5 mm. in total length. Carapace longer than broad, the head portion moderately elevated and narrowed, and the close-set eyes forming a group about half of the width of the carapace at the second eye row. Front eye row moderately procurved, the median eyes widely separated and nearly touching the lateral eyes. Anterior median eyes clearly larger than the lateral eyes in both sexes. Posterior eye row straight to distinctly recurved, the median eyes widely separated and much nearer the subequal lateral eyes. Median ocular quadrangle a little wider than long and slightly narrowed behind. First pair of legs longest, stoutest, the femora somewhat thickened. A stout clasping spine present at apex of first tibia and a smaller one near end of the first metatarsus of the male. Tibia of male palpus incrassated to a size greater than the tarsus and its parts.

TYPE SPECIES: *Lucarachne tibialis* Bryant.

Raymond R. Forster (1958, Amer. Mus. Novitates, no. 1885, p. 3) reports that *Lucarachne palpalis* Krauss is an apneumone spider with a respiratory system similar to that of the genus *Anapisona*.

This genus is closely related to *Mysmenopsis*, from which it differs in the longer carapace and narrower head. The great development of the clasping spine of the first tibia and the voluminous tibia of the palpus make recognition of the males easy. A new species from Trinidad brings the number of known species to four.

Lucarachne tibialis Bryant

Lucarachne tibialis BRYANT, 1940, Bull. Mus. Comp. Zoöl., vol. 86, p. 350, figs. 116-120, 123.

TYPE LOCALITY: Pico Turquino, Oriente, Cuba, male holotype in the Museum of Comparative Zoölogy.

KNOWN RECORDS: Cuba: Pico Turquino, 1500 feet, June 25, 1936 (P. Darlington), two males, two females.

Lucarachne cidrelicola Simon

Theridion cidrelicola SIMON, 1894, Histoire naturelle des araignées, vol. 1, p. 536, figs. 547, 552 (part; not female, fig. 553); 1895, Ann. Soc. Ent. France, vol. 64, p. 139 (part; not female). PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 28, p. 193. BRYANT, 1940, Bull. Mus. Comp. Zoöl., vol. 86, p. 351.

DIAGNOSIS: This very distinctive species, first noted by Bryant as a close relative of *Lucarachne tibialis*, was placed in the genus on the

basis of the characters of the first leg of the male. The first tibia bears on the inner side a series of long, slender spines terminated apically by a strong spine set on a stout base. Similarly the metatarsus has a series of smaller spines, of which the apical one is enlarged. The male palpus is remarkable for the large size of the tibia which is broad, cylindrical, and truncated at apex. The tibia carries at apex a very small tarsus and a simple terminal bulb prolonged into a short point. Simon's male was 2.3 mm. long. The name should date from 1894, when Simon described and illustrated this species in his "Histoire naturelle des araignées," and I hereby restrict the name to the male by designating it as lectotype.

TYPE LOCALITY: Colonia Tovar, Venezuela, male lectotype in the Museum d'Histoire Naturelle in Paris.

Dr. Herbert Levi has informed me that the female placed by Simon with his male of *Theridion cidrelicola* belongs in the genus *Achaearanea*.

Lucarachne beebei, new species

Figures 47, 48

DIAGNOSIS: This is the fourth known species of this genus and is readily distinguished from the others by the presence of a robust, sessile spine in front of the principal spine of the first tibia.

MALE: Total length, 1.4 mm.; carapace, 0.73 mm. long, 0.7 mm. wide; abdomen, 0.75 mm. long, 0.7 mm. wide.

Carapace quite uniform dusky brown, with faint blackish shadings, the eyes narrowly ringed with black. Chelicerae, labium, maxillae, and sternum dusky brown, the last with an indistinct pattern of black lines. Legs dusky yellowish, with faint dusky rings most noticeable on the posterior pairs. Abdomen blackish, the dorsum with a series of milky white lines that outline a large caudal dark patch and two smaller ones in front.

Carapace quite smooth, clothed with a few weak hairs, nearly as broad as long, the front considerably narrowed. First eye row as seen from in front slightly procurved, the large median eyes separated by about three-fourths of the diameter, nearly touching the lateral eyes which are about two-thirds of the diameter of the median eyes. Posterior eye row moderately recurved, the large oval median eyes separated by half of the long diameter, a little farther from the smaller lateral eyes. Median ocular quadrangle broader than long (26/23), wider in front (26/20), the front eyes slightly larger in size. Clypeus subvertical, equal in height to two full diameters of the anterior

median eyes. Sternum slightly longer than broad (0.45 mm./0.41 mm.), broadly truncated in front, more narrowly truncated behind where the posterior coxae are separated by their length. Abdomen elevated, taller than the length.

Legs thin and quite long, set with spine and bristles. First leg: femur, 1.1 mm.; patella, 0.3 mm.; tibia, 0.9 mm.; metatarsus, 0.5 mm.; and tarsus, 0.5 mm. Tibia and patella of fourth leg, 0.8 mm. long. First leg much longer than the others, the tibia and metatarsus armed with spines and setae, as shown in figure 48. The long apical spine on the tibia set on a basal tubercle and with a distinct, stout, sessile spine in front of it. Each patella with a long bristle and adjacent to it at the base of the tibia a similar bristle.

Male palpus as shown in figure 47.

TYPE LOCALITY: Male holotype and paratype from Piarco, Trinidad, November 27, 1954 (A. M. Nadler).

Lucarachne palpalis Kraus

Lucarachne palpalis KRAUS, 1955, Abhandl. Senckenbergischen Naturf. Gesell., no. 493, p. 30, pl. 5, figs. 79-85. FORSTER, 1958, Amer. Mus. Novitates, no. 1885, p. 3.

TYPE LOCALITY: Copan, Honduras, male holotype in the Senckenberg Museum, Frankfurt, Germany.

KNOWN RECORDS: *Honduras*: Copan, September 9, 1951 (H. M. Peters), four males, seven females. *Chiapas*: Tapachula, August, 1909 (A. Petrunkevitch), males and females. *Veracruz*: La Buena Ventura, near Santa Rosa, Isthmus of Tehuantepec, July, 1909 (A. Petrunkevitch), males and females.

Dr. H. M. Peters, who collected the specimens described as *Lucarachne palpalis* by Kraus, found this species in the webs of *Ischnothele*, one of the sheet-web spinners of the family Dipluridae. The spiders were seen to move about in all parts of the web, and numerous females carrying egg sacs were noticed. His conclusion that *palpalis* may well be a commensal type and habitually live in the webs of other spiders is quite plausible.

MAYMENA, NEW GENUS

A genus of the subfamily Mysmeninae.

Carapace slightly longer than broad, moderately elevated, highest in the ocular region or just behind it. Anterior median eyes dark, the others pearly white. Clypeus high, subvertical or moderately inclined, equaling about three diameters of an anterior median eye. Front eye

row straight to slightly procurved, the eyes well separated and subequal in size or the median eyes slightly larger. Posterior eye row straight to moderately procurved, the eyes well separated but the median eyes slightly closer together. Median ocular quadrangle slightly to distinctly wider in front than behind. Eyes smaller and more widely spaced in cave-inhabiting species. Legs of moderate length, the formula 1243, the first two pairs longer and stouter, especially their femora. First metatarsus of male with an apical clasping spine in some species. Female pedipalp thin and without tarsal claw. Male palpus lacking apophyses on the bulb, with thin or broad embolus, and without a paracymbium on the tarsus. Colulus a distinct conical lobe set with tiny setae. Openings of the epigynum below the lip of the genital groove. Seminal receptacles two in number, each with tubular bursa copulatrix and short fertilization tube. Book lungs present and tracheal tubes arising from spiracle located immediately in front of spinnerets.

TYPE OF GENUS: *Maymena mayana* Chamberlin and Ivie.

Maymena mayana Chamberlin and Ivie

Figures 49-51, 60-64

Nesticus mayanus CHAMBERLIN AND IVIE, 1938, Publ. Carnegie Inst. Washington, no. 491, p. 134, figs. 12-13. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 512.

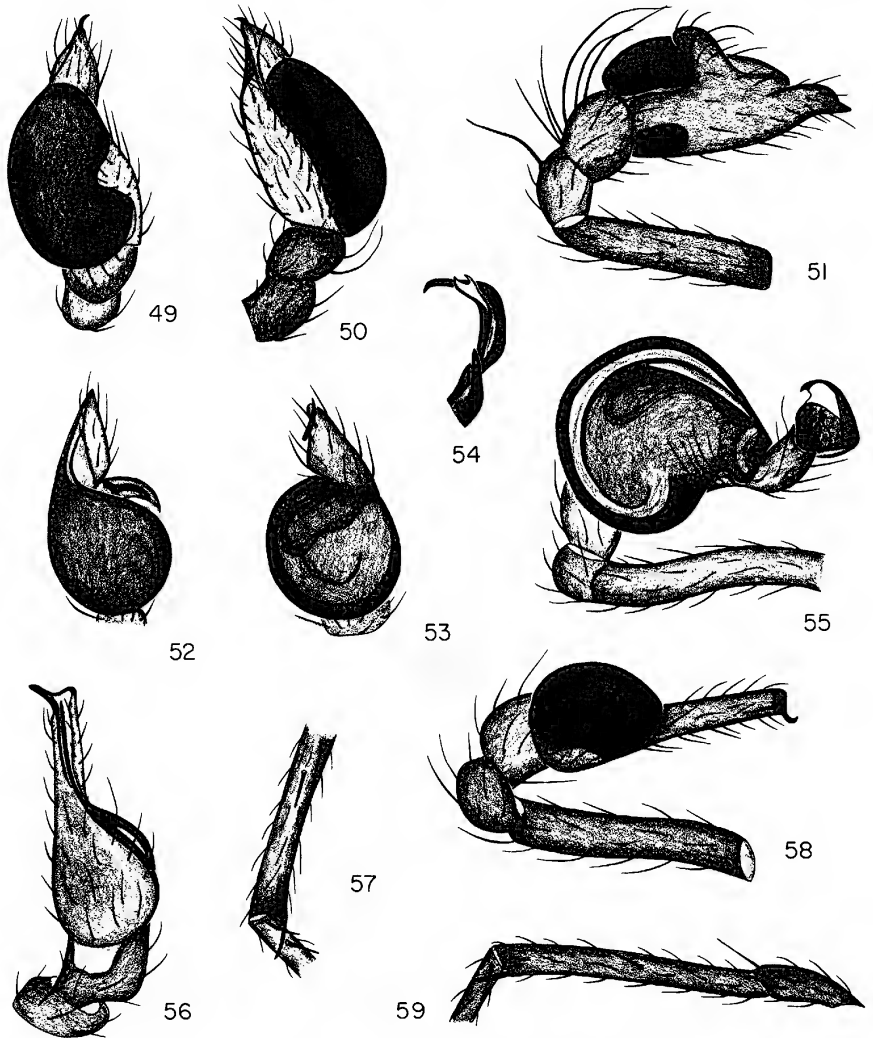
DIAGNOSIS: This is a medium-sized species seemingly restricted to southern Mexico and frequently found in caves. The epigynum features a subtriangular lobe of variable length, which ends in a small, rounded scape and beneath which the seminal receptacles are seen to be close together on the midline. The male palpus is small, with the cymbium and bulb suboval in shape, and the embolus a very thin spine.

FEMALE FROM GRUTA DE ATOYAC, ATOYAC, VERACRUZ: Total length, 2.5 mm.; carapace, 1.05 mm. long, 0.95 mm. wide; abdomen, 1.7 mm. long, 1.9 mm. wide. Several females varied from 1.7 to 3.5 mm. in length.

Cephalothorax and legs pale yellow to orange, more rarely orange-brown, clothed sparsely with fine black hairs and a few spines. Eyes narrowly ringed with black. Abdomen dull yellowish to orange brown, the dorsum showing a pattern of indistinct dusky reticulation and with a pale median stripe from base back to the middle.

Lateral aspect of female as shown in figure 62.

Carapace quite smooth, clothed with a few thin hairs, slightly longer than broad, narrowed in front where the width at the second eye row



FIGS. 49-51. *Maymena mayana* Chamberlin and Ivie. 49. Left male palpus, dorsal view. 50. Left male palpus, retrolateral view. 51. Left male palpus, prolateral view.

FIGS. 52, 53. *Maymena calcarata* Simon. 52. Left male palpus, prolateral view. 53. Left male palpus, retrolateral view.

FIGS. 54, 55. *Maymena ambita* Barrows. 54. Left male palpus, tip of embolus. 55. Left male palpus, prolateral view.

FIGS. 56-58. *Maymena chica*, new species. 56. Left male palpus, retrolateral view. 57. Part of right first tibia, prolateral view. 58. Left male palpus, prolateral view.

FIG. 59. *Maymena ambita* Barrows, first right tibia, prolateral view.

equals half of the greatest width. As seen from the side the carapace is of moderate height, highest between the second coxae, and slopes forward over the eyes and at a steeper angle down the posterior declivity. Median groove of carapace obsolete. Dorsal view of eyes as shown in figure 63. Front eye row straight or slightly procurved as seen from in front, the dark median eyes separated by about three-fourths of the diameter, slightly nearer the slightly smaller lateral eyes. Posterior eye row distinctly procurved, the oval median eyes separated by the narrow diameter, farther from the slightly smaller lateral eyes. Clypeus vertical, equal in height to three diameters of an anterior median eye. Median ocular quadrangle about as long as broad, narrowed behind, the eyes subequal in greatest diameter. Eyes variable in size and spacing, considerably reduced in size in some cave specimens. Eyes larger and closer together in specimens from outside caves (fig. 64) and posterior eye row straight. Sternum as broad as long, broadly truncated in front, bluntly pointed between the posterior coxae which are separated by the width.

Legs quite long and thin, set with fine hairs, heavier bristles, and a few true spines. Leg formula, 1243, the first two pairs longer than the posterior ones and with their femora stouter. First leg: femur, 1.5 mm.; patella, 0.6 mm.; tibia, 1.25 mm.; metatarsus, 1 mm.; and tarsus, 0.9 mm. Tibia and patella of fourth leg, 1.25 mm. long. All legs with a few true spines, those on the prolatral surfaces of the front pairs rather robust.

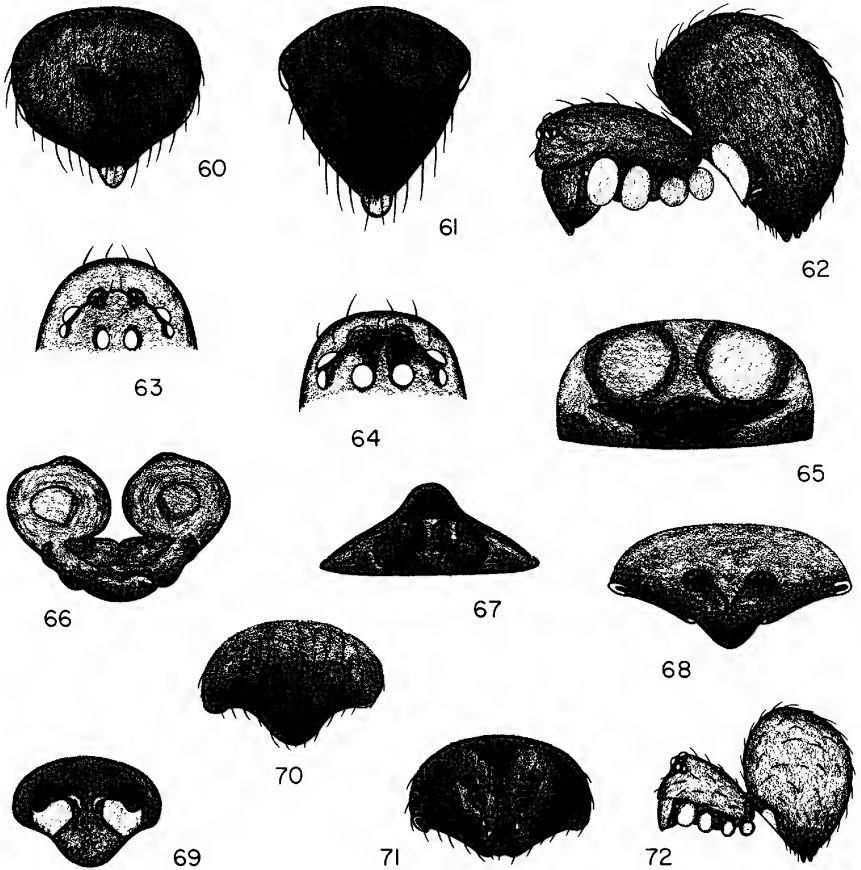
Abdomen voluminous, overhanging the carapace in front, higher than long in lateral view.

Epigynum (figs. 60 and 61) a more or less elongated, subtriangular lobe which ends behind as a small rounded scape, below which are the atrio-bursal orifices. Variation in length of lobe and position of the respiratory orifices considerable, as shown in the figures. Seminal receptacles small and close together.

MALE FROM GRUTA DE ATOYAC, ATOYAC, VERACRUZ: Total length, 1.9 mm.; carapace, 1 mm. long, 0.9 mm. wide; abdomen, 0.9 mm. long, 1 mm. wide.

Structure and coloration in close agreement with those of the female except for the longer and thinner legs. First leg: femur, 1.7 mm.; patella, 0.55 mm.; tibia, 1.5 mm.; metatarsus, 1.1 mm.; and tarsus, 1 mm. Tibia and patella of fourth leg, 1.2 mm. long. First tibia without trace of apical clasping spine present in *chica* and *ambita*.

Male palpus as illustrated in figures 49, 50, and 51. Bulb lying on dorsal surface, suboval in form, without apophyses. Embolus originat-



FIGS. 60-64. *Maymena mayana* Chamberlin and Ivie. 60. Epigynum of female from Cueva de Bolonchen. 61. Epigynum of female from Gruta de Atoyac. 62. Cephalothorax and abdomen of female, lateral view. 63. Eyes of female from Gruta de Atoyac. 64. Eyes of female from Las Ruinas de Palenque.

FIGS. 65-67. *Maymena bruneti*, new species. 65. Epigynum. 66. Epigynum, internal view. 67. Epigynum, caudal view.

FIG. 68. *Maymena misteca*, new species, epigynum.

FIGS. 69, 70. *Maymena chica*, new species. 69. Epigynum, internal view. 70. Epigynum.

FIGS. 71, 72. *Maymena ambita* Barrows. 71. Epigynum. 72. Cephalothorax and abdomen of male, lateral view.

ing at caudal end of bulb, a thin spine that margins the bulb and comes to rest on the triangular apex of the cymbium. In prolateral view the cymbium is seen to give rise to a lateral lobe and ends in a short spur.

TYPE LOCALITY: Hoctun Cave, Hoctun, Yucatan, female holotype in the collection of the University of Utah.

DISTRIBUTION: Southern Mexico from Veracruz to Yucatan and Chiapas. Frequent in caves but also found in dark situations outside. (See fig. 1.)

KNOWN RECORDS: *Yucatan:* Cueva de Bolonchen, Chichen-Itza, July, 1948 (C. Goodnight), six females, immature; Oxolodt Cave, Kana, July 8, female paratype from "orb web." *Tabasco:* La Gruta de Cocona, Teapa, August 1, 1948 (C. and M. Goodnight), eight females, immature; Teapa, July 27, 1954 (R. Ryckman), one female. *Chiapas:* Las Ruinas de Palenque, July, 1948 (C. and M. Goodnight), one female. *Veracruz:* Gruta de Atoyac, Atoyac, April 30, 1944 (J. Alvarez and C. Tellez), four females; same data, November 13, 1941 (J. Bonet), male, females, immature; same data, July 19, 1953 (C. J. Goodnight), four females, immature.

Maymena chica, new species

Figures 56-58, 69, 70

DIAGNOSIS: The great elongation of the cymbium of the male palpus readily distinguishes this species from others. The female epigynum presents a broadly rounded lobe, beneath which are the widely separated atriobursal orifices.

FEMALE: Total length, 1.8 mm.; carapace, 0.9 mm. long, 0.75 mm. wide; abdomen, 1 mm. long, 0.9 mm. wide. Other females vary from 1.5 to 2 mm. in length.

Coloration and structure in close agreement with those of *Maymena mayana*. Anterior median eyes slightly larger than the lateral eyes. Posterior eye row straight or weakly procurved, the round median eyes separated by the full diameter, distinctly farther from the subequal lateral eyes. Median ocular quadrangle wider than long and narrowed behind in about the same ratio, the posterior eyes slightly smaller.

First leg: femur, 1.3 mm.; patella, 0.47 mm.; tibia, 1.05 mm.; metatarsus, 0.75 mm.; and tarsus, 0.55 mm. Tibia and patella of fourth leg, 0.93 mm. long.

Epigynum (figs. 69 and 70) presenting a broadly rounded lobe, below which the atriobursal orifices lie widely separated on each side. Seminal receptacles reniform and separated by their length.

MALE: Total length, 1.2 mm.; carapace, 0.7 mm. long, 0.6 mm. wide; abdomen, 0.55 mm. long, 0.6 mm. wide.

Coloration essentially like that of the female, but the abdomen is

marked with a dusky pattern of spots and narrow caudal chevrons. Structure like that of the female except as follows: Eyes proportionately larger and closer together, the anterior median eyes being two-thirds of the diameter apart, much nearer the smaller lateral eyes. Posterior eye row straight, the median eyes large, suboval, separated by the narrow diameter, farther from the smaller lateral eyes. Median ocular quadrangle broader than long (12/10), narrowed behind by about the same ratio, the eyes subequal in longest diameter.

First leg: femur, 1 mm.; patella, 0.35 mm.; tibia, 0.75 mm.; metatarsus, 0.57 mm.; and tarsus, 0.46 mm. Tibia and patella of fourth leg, 0.6 mm. long. First tibia with an enlarged, black, clasping spine at apex below on the prolateral side, nearly touching two stout spines at base of the metatarsus on the prolateral surface (fig. 57).

Male palpus as illustrated in figures 56 and 58. Cymbium much longer than broad, drawn out apically into a thin trough, and presenting at distal end a gently curved spur. Bulb suboval, with a rather thin embolus which arises at the base and follows the bulbal margin to lie in ventral position in the tutacular groove of the cymbium.

TYPE LOCALITY: Male holotype and paratype from Tamazunchale, San Luis Potosi, Mexico, taken July 20, 1956, by W. J. Gertsch and V. Roth, from under stones along shaded stream bank.

DISTRIBUTION: Mexican states of San Luis Potosi and Nuevo Leon. (See fig. 1.)

OTHER RECORD: *Nuevo Leon:* Gruta del Palmito, Bustamente, September 15, 1942 (C. Bolivar and M. Santullano), females.

***Maymena misteca*, new species**

Figure 68

DIAGNOSIS: This small species is so far known only from a cave in Guerrero, Mexico. It resembles *Maymena mayana* in appearance and has the quite small eyes arranged in the same fashion (the posterior row being clearly procurved), but is distinctive in genitalic features. The epigynum consists of a small, rounded, covering lobe which is widely separated from the lateral spiracles. In the features of the internal epigynum *misteca* quite closely resembles *chica*, but the differences are readily apparent in the illustrations.

FEMALE: Total length, 2.3 mm.; carapace, 1.05 mm. long, 0.9 mm. wide; abdomen, 1.5 mm. long, 1.5 mm. wide.

Coloration and structure in close agreement with those of *Mysmena mayana*. Eyes very similar in size and arrangement, the posterior row being distinctly procurved. Posterior median eyes suboval, separated

by their short diameter, nearly twice as far from smaller lateral eyes.

First leg: femur, 1.7 mm.; patella, 0.5 mm.; tibia, 1.4 mm.; metatarsus, 1.1 mm.; and tarsus, 0.7 mm. Tibia and patella of fourth leg, 1.2 mm. long. Legs proportionately a little longer than those of *mayana*.

Epigynum (fig. 68) a small rounded lobe, well separated from the lateral respiratory orifices, beneath which lie suboval seminal receptacles separated by their length.

TYPE LOCALITY: Female holotype and paratypes from Gruta de Acuitlapan, Guerrero, Mexico, November 7, 1943 (C. Bolivar Pieltain and colleagues). (See fig. 1.)

Maymena bruneti, new species

Figures 65-67

DIAGNOSIS: This species is immediately differentiated from the others by the distinctive epigynum, which presents a rounded tubercle on a transverse ridge instead of a triangular, caudally directed lobe.

FEMALE: Total length, 2.6 mm.; carapace, 1.2 mm. long, 1.1 mm. wide; abdomen, 1.7 mm. long, 1.6 mm. wide.

Cephalothorax and appendages dusky yellowish to bright orange, the eyes narrowly ringed with black. Abdomen grayish, darkest behind and on the venter.

Structure similar to that of *mayana* except as follows: Anterior median eyes larger than the lateral in the ratio 14/10, separated by the radius, obviously farther from the lateral eyes. Posterior eye row straight, the quite round median eyes separated by the full diameter, slightly farther from the lateral eyes. Median ocular quadrangle a square, the front eyes a little larger.

First leg: femur, 1.5 mm.; patella, 0.5 mm.; tibia, 1.15 mm.; metatarsus, 0.8 mm.; and tarsus, 0.65 mm. Tibia and patella of fourth leg, 1.25 mm. long.

Epigynum (figs. 65, 66, and 67) presenting a transverse ridge in front of genital furrow, which is swollen at middle to form a tubercle. The atriobursal orifice lies below the lip of the transverse plate and leads into a large, round, thin-walled bursa copulatrix, which communicates directly with a small, brown receptacle.

TYPE LOCALITY: Female holotype and three paratypes from East Lopinot Cave, in Lopinot Valley, Trinidad (P. C. J. Brunet).

OTHER LOCALITY: *Trinidad*: Cave No. 1, El Cerro de Aripo, 2200 feet (P. C. J. Brunet), female paratype from limestone wall in quarter light.

The holotype lot came from a dark cave. One of the females was found with a cluster of four hexagonal egg sacs, each about 7 mm. long and suspended by a long thread about 20 mm. long.

Maymena calcarata Simon

Figures 52, 53

Dipoena calcarata SIMON, 1897, Proc. Zool. Soc. London, p. 863. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 28, p. 173. ROEWER, 1942, Katalog der Araneae, vol. 1, p. 423. BONNET, 1956, Bibliographia araneorum, vol. 2, pt. 2, p. 504.

DIAGNOSIS: This species is referred to the genus *Maymena* on the basis of features of the male palpus which suggest a close relationship to *Maymena ambita*. The front eyes lie in a procurved row, the median being large and prominent, widely separated but contiguous with the lateral eyes. The posterior eye row is straight, and the large median eyes are farther apart than their distance to the lateral eyes. The front legs are much longer than the others, have the front femora long and stout, the tibia armed at apex on the inner side with a curved clasping spine, and the metatarsus with a straight spine near the base. The abdomen is short, much higher than long, and has the apex with two obtuse angles, behind which the caudal declivity is precipitous.

MALE: Total length, 1.8 mm.

Palpus as shown in figures 52 and 53. Bulb large, ovate, without apophyses and with a thick embolus encircling the periphery, which forms an apical coil hidden by the twisted cymbium.

TYPE LOCALITY: St. Vincent, British West Indies, male type in the Muséum d'Histoire Naturelle in Paris.

I have had access only to the description of this species which is included at the suggestion of Dr. Herbert Levi. The drawings included here were prepared from sketches made by Dr. Levi during his visit to the Paris Museum. The species seems quite certainly to belong to *Maymena* in spite of minor discrepancies in Simon's description of the eye relations.

Maymena ambita Barrows

Figures 54, 55, 59, 71, 72

Theridium ambitum BARROWS, 1940, Ohio Jour. Sci., vol. 40, p. 132, figs. 5, 5a. LEVI, 1957, Bull. Amer. Mus. Nat. Hist., vol. 112, p. 20.

DIAGNOSIS: This species occurs in the southeastern United States far outside the ranges of other species of *Maymena*, where it lives

in caves and in other dark habitats. The palpus of the male is the most distinctive of the entire series, being of large size and having a very broad embolus sheathed apically by the twisted cymbium. The female epigynum presents on each side a bilobed seminal receptacle.

FEMALE: Total length, 2 mm.; carapace, 0.95 mm. long, 0.8 mm. wide; abdomen, 1.2 mm. long, 1.1 mm. wide.

Coloration and structure in quite close agreement with those of *mayana*. Posterior row of eyes essentially straight, the oval to round median eyes separated by the diameter, clearly farther from the smaller lateral eyes. Eyes of anterior row equal in size and subequidistantly spaced. Median ocular quadrangle as broad as long, only slightly narrowed behind, the eyes subequal in size.

First leg: femur, 1.4 mm.; patella, 0.5 mm.; tibia, 1.2 mm.; metatarsus, 0.8 mm.; and tarsus, 0.6 mm. Tibia and patella of fourth leg, 1 mm. long.

Epigynum as illustrated in figure 71, presenting an emarginated caudal lobe, below which are small rounded projections. Seminal receptacle of each side bilobed.

MALE FROM DE SOTO STATE PARK, ALABAMA: Total length, 1.4 mm.; carapace, 0.77 mm. long, 0.7 mm. wide; abdomen, 0.8 mm. long, 0.8 mm. wide.

Coloration essentially like that of *mayana* and other species.

Lateral view of male as shown in figure 72. Carapace more strongly elevated than in other species, the head projecting upward in conical form. Clypeus equal in height to three and one-half diameters of the dark anterior median eye. Eyes larger and closer together than usual. Front row slightly procurved, the median eyes separated by two-thirds of the diameter, nearer the subequal lateral eyes. Posterior eye row slightly recurved, the broadly oval median eyes separated by not fully the short diameter, the long diameter from the smaller lateral eyes. Median ocular quadrangle as broad as long, slightly narrower behind, the eyes subequal in size.

First leg: femur, 1.05 mm.; patella, 0.35 mm.; tibia, 0.85 mm.; metatarsus, 0.56 mm.; and tarsus, 0.46 mm. Tibia and patella of fourth leg, 0.7 mm. long. Legs shorter than those of *mayana* and other species. First tibia provided at distal end on the prolateral side with a stout clasping spine set on a small spur, which nearly touches a small sessile spine on the metatarsus (fig. 59).

Male palpus as shown in figures 54 and 55. Bulb greatly enlarged, suboval, with a very heavy embolus originating at middle on the ventral side, which margins the bulb and is produced apically into

a twisted spur. Cymbium of similar form and forming apically a twisted tutacular fold to sheath the embolus.

TYPE LOCALITY: Laurel Falls Trail, Great Smoky Mountains National Park, Tennessee, June 15, 1939 (W. M. Barrows), male type taken while sifting in pine needles, in the collection of Ohio State University.

DISTRIBUTION: Southeastern United States as indicated below. (See fig. 1.)

KNOWN RECORDS: *Tennessee:* East of Walnut Log, Obion County, August 19, 1940 (M. V. Parker), male; Cumberland Caverns, 8 miles southeast of McMinnville, Warren County, on webs near Onyx Curtain entrance, May 12, 1936 (T. C. Barr), female. *Alabama:* Aladdin Cave, Sharp's Cave, Madison County, December 1, 1939 (A. F. Archer), one male, females; same data, June 24, 1936 (W. Jones), two females; Lime Point Cave, Marshall County, January 15, 1939 (W. B. Jones), one female; Shades Mountain, 43 miles west of Acton, March 4, 1940 (A. F. Archer), one female; Warrenton Cave, Marshall County, December 29, 1938 (W. B. Jones), one female; De Soto State Park, De Kalb County, October 7, 1950 (A. F. Archer), one male; Jacks Cave, near New Market, Madison County, December 26, 1941 (W. B. Jones), one penultimate male; Rock House Cave, Marshall County, June 23, 1942 (W. B. Jones), one female. *Kentucky:* Natural Tunnel, 1 mile north of Meshack, Monroe County, August 3, 1957 (L. Hubricht), one penultimate male.