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The Spider Genus *Loxosceles* in North America, Central America, and the West Indies

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The six-eyed spiders of the genus *Loxosceles* have a wide range in the temperate and tropical zones of the entire world. They are quite active nocturnal types that live under cover, beneath stones, boards, or other ground objects, in holes in the ground, under the bark of trees, or in crevices in the walls of buildings. Many live in caves, when these are available, and respond with pallid coloration and occasional reduction of the size of their eyes, as compared with their kin from less dark situations. Living specimens are usually seen as grayish, tawny, or brown, because of the thin but close covering of body hairs, but they become yellow, orange, or reddish in preservative. Although the two-clawed condition of their tarsi would seem to suggest a more vagrant habit, the loxoscelids are weavers of quite large and irregular webs which line their retreats. This web has been described as white, flocculent, and adhesive and bears some resemblance to those spun by the cribellate spiders. Simon suggested that the colulus, which is developed to a very large, pointed finger, may play a role in the web spinning similar to that of the cribellum.

More than 20 years ago, in 1934, Machiavello presented convincing evidence that the bite of *Loxosceles laeta* in Chile was capable of causing a cutaneous necrosis of considerable gravity in man. The hema-

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toxic symptoms were similar to those already well known for the necrotic bites of some wolf spiders, principally *Lycosa raptoria* of southern Brazil. In both instances the accidental bites are suffered most often when the victims are in bed or putting on clothing in the morning. The loxoscelids move about freely in the dark and then may hide in clothing or bed covering. Bites are most frequently centered on the arms or legs of the victims.

Loxosceles laeta infests the poorly constructed houses of the "Central Zone" of Chile and other parts of South America and also ranges northward into Central America to Guatemala. More than 70 bites were reported within a few years in Chile by Machiavello, who presented a general summary of the medical and biological aspects of the problem in 1937 (Rev. Chilena Hist. Nat., yr. 41, pp. 11-19).

The severe cutaneous arachnidism of *Loxosceles laeta* has now been well established by experiments on laboratory animals. The hematoxins in the venom destroy the cells in the vicinity of the wound, causing a black gangrenous spot (*mancha gangrenosa*) from which comes extensive sloughing of the skin and exposure of underlying tissue. In man the lesions vary in size from a small spot to large patches up to 30 cm. in diameter. The scarification, ulceration, and eventual healing of the wounds sometimes require a hundred days.

The same type of venomous bite has now been demonstrated for the North American *Loxosceles reclusa* in Missouri and other mid-western states by Dr. Curtis W. Wingo and his associates at the University of Missouri. In a recent article in Science (July 12, 1957, vol. 126, p. 73) the case against our smaller *reclusa* was essentially proved by convincing circumstantial evidence, and experiments are being conducted to make the evidence conclusive. The clinical picture of the bite agrees closely with that of *laeta*.

The present study is based largely on the collections of the American Museum of Natural History, where the types of all the new species and a large part of the recorded specimens are deposited. At this time I would like to acknowledge with thanks the cooperation of the following individuals in providing important material for study: Dr. Ralph V. Chamberlin, University of Utah, Salt Lake City, Utah; Dr. Henry Dietrich, Cornell University, Ithaca, New York; Mr. Wilton Ivie, Furlong, Pennsylvania; Dr. Herbert Levi, Museum of Comparative Zoölogy, Cambridge, Massachusetts; Dr. Curtis Wingo, University of Missouri, Columbia, Missouri; and Dr. Ralph E. Crabill, United States National Museum, Washington, D. C.

FAMILY SCYTODIDAE
SUBFAMILY LOXOSCELINAE

Loxoscelinae SIMON, 1893, *Histoire naturelle des araignées*, vol. 1, p. 271.
Loxoscelidae GERTSCH, 1949, *American spiders*, pp. 234, 266.

Ecribellate spiders of the suborder Araneomorphae. Respiratory system consisting of a pair of book lungs at base of the abdomen and tracheal tubes opening externally through a single transverse orifice just in front of the spinnerets. Colulus a conspicuous, apically pointed finger half as long as the inferior spinnerets, clothed with setae. Spinnerets of medium size, six in number, set close together, the inferior and superior pairs long, bisegmented, the apical segment being a small cone, and the median pair small and one-segmented. Chelicerae without boss, tied together on the inner side for about half of their length with a white membrane; the inner margin with a transparent or whitish membrane apically thickened and darkened in tooth form. Outer side of the chelicera with a stridulating file of coarse grooves. Femur of pedipalp with a single, short, black, stridulating pin near the base on the prolateral side. Labium longer than broad, relatively flexible and free, the membranous suture joining it to the sternum distinct; maxillae long, convergent in front around the labium. Eyes six, in three diads, the anterior median eyes lost; the anterior lateral and the median eyes forming a strongly recurved row. Tarsal claws two in number, set with a single series of several long teeth more numerous on the front legs; several serrated bristles present on each tarsus which bears a small onychium. Female pedipalp without a claw. Legs and body clothed with fine subprocumbent hairs and rows of heavier setae of which some on the legs are relatively robust. Female copulatory organ of the haplogyne type, the seminal receptacles opening directly into the vagina. Male palpus a simple bulb, without a hematodocha, bearing the embolus as a thin spine and lacking conductor or accessory elements.

TYPE OF FAMILY: The genus *Loxosceles*.

The genus *Loxosceles* is usually given subfamily rank in the family Scytodidae, and I use that rank in this paper. A second genus, *Loxoscella* Strand, based on the species *pallidecolorata* from Abyssinia, is of uncertain position largely because of the incomplete information offered by the describer.

MALE AND FEMALE GENITALIA

The male palpi of *Loxosceles* are moderately elongated appendages of quite stereotyped design which exhibit differences in the proportions

of the segments and the shape of the bulb. A single small stridulating pin is present on the prolateral side of the tibia at the base and is used to scrape the file of fine ridges on the outer face of the chelicera. The femur is a long cylinder varying from four to eight times as long as broad. The small patella rarely exceeds the femur in breadth and is only a third of its length or less. The tibia varies widely in length and girth and may be thin and elongated more than three times its length or greatly inflated to a bulbous segment only slightly longer than broad. The tarsus is typically much shorter than the tibia. In the *reclusa* group its development is lateral to form a rounded lobe, but in the *rufescens* group the development is longitudinal, in some species to a degree that it is essentially as long and robust as the tibia. All the segments are liberally covered with procumbent hairs and fine to coarse setae.

The insertion of the bulb to the tarsus is ventral in position. The simple bulb is suboval in shape and is gradually narrowed apically to form a thin embolus, which shows few structural distinctions except for length and curvature. In *rufipes* the embolus is three times as long as the bulb, but in most species it is very much shorter. No conductor of the embolus or accessory processes are present on the bulb.

The genital organs of the female are hidden beneath the integument as in other haplogyne spiders. There are no external positioning ridges or grooves present as in the genera *Scytodes* and *Drymusa*. Maturity is usually apparent by heavier sclerotization of the lips of the genital groove, by darker coloration of this area, and by the presence of heavier setae, particularly along the groove. The principal details of the genitalia are shown in figures 16, 17, 19. When the lips of the genital groove (fig. 16) are pressed open, the position of the seminal receptacles often is easily discerned. These are two in number (see fig. 19) and lie more or less widely separated from each other in a shallow, transverse, vulval cavity. In most species the seminal receptacles are discretely separated, often being widely spaced, but in a few the basal separation is indistinct. The details of the seminal receptacles are easily investigated if the piece in front of the genital groove is snipped off and mounted on a slide. A cleared permanent mount is available in a few minutes with the use of polyvinyl alcohol. It is also possible to leave the piece attached to the specimen and carefully tease away the soft tissue to expose the receptacles.

The internal female genitalia have been scarcely at all exploited for taxonomic purposes in the haplogyne spiders. In the Diguettidae and Plectreuridae they contribute little to the diagnosis of species. In the

genus *Loxosceles* they are an important aid in the identification of the females, which are otherwise difficult of placement in the terms of the typical characters used in taxonomy. At the same time, in this genus they are subject to very considerable variation. This is evident from the study of the figures given for *arizonica* (figs. 84–87, 90). To the variation of the basic pattern are added adventitious lobes, in some specimens of great variety. It is usually necessary to investigate a series of females to be sure just what is the basic pattern, but some species seem to be far more stable than others. As an adjunct to other taxonomic features, the internal genitalia prove quite useful in the differentiation of species.

GENUS *LOXOSCELES* HEINECKEN AND LOWE

Loxosceles HEINECKEN AND LOWE, 1832 (1835), in Lowe, Zool. Jour., p. 321. SIMON, 1895, Histoire naturelle des araignées, vol. 1, fasc. 4, p. 272. COMSTOCK, "1912" [1913], The spider book, p. 304. ROEWER, 1954, Katalog der Araneae, vol. 1, p. 319 (*Loxoscelis*). BONNET, 1956, Bibliographia araneorum, vol. 2, pt. 2, p. 2572.

Omosites WALCKENAER, 1883, Ann. Soc. Ent. France, vol. 2, p. 438.

Characters of the genus as indicated for the family. General morphology of a typical species as illustrated in figures 4–6, 9, 10. Carapace somewhat longer than broad, rather low and depressed, the cephalic sutures shallow grooves and the median groove a deep linear depression. Clypeus sloping convexly, quite wide, equaling two or three diameters of the median eye. Eyes subequal in size, the group occupying most of the width of the head which equals about one-third of the width of the carapace. Legs long and thin, set with many rows of black hairs and somewhat heavier setae. Legs proportionately longer and thinner in the males but without special modifications.

TYPE OF THE GENUS: *Loxosceles rufescens* Dufour.

The present paper is concerned largely with the systematics of the genus *Loxosceles* for all of continental North America and the adjacent West Indies. In this area occurs a relatively rich fauna of 18 species, of which several are described as new. The nomenclature for the known species has long been in a confused state. For many years authors used the specific name *rufipes* for a variety of distinct species from both North and South America. Simon erroneously applied the name to one or more species of the *reclusa* group, which scarcely reaches Central America. It now seems reasonably certain that the Central American species assigned to *rufipes* by F. P. Cambridge in the "Biologia Centrali-Americana" truly represents it.

The name *Loxosceles rufescens* has similarly been used for a number

of distinct species. Simon reported this ubiquitous spider from many parts of the Old World and also from North and South America. Whereas this distribution record is essentially correct, the very inadequate descriptions of *rufescens* prompted the use of the name for several distinct species. Petrunkevitch gave a very full description of a species from Puerto Rico under the name *rufescens*, and other authors, even some from Europe, have accepted this description as a comparison standard, even though it belongs to a quite distinct species group.

After a review of the situation in 1940, Gertsch and Mulaik suggested that *rufescens* did not occur in North America. Since that time adequate material has come to hand to show that this species occurs sparingly in the eastern and Gulf coast areas of the United States. Although regarded as a cosmopolitan spider, its range is quite discontinuous. It continues to be introduced into seaport areas on ship products but becomes established only in areas of suitable climate. The original home of *Loxosceles rufescens* was probably southern Europe and northern Africa where occur the closely related *distincta* and two or three other species. About a dozen more of the same complex occur in tropical and southern Africa. *Loxosceles* is very strongly represented in South America, to which region 16 species are so far credited. All of these and three from Central America belong to the *rufescens* group.

The genus *Loxosceles* can be divided into two natural groups on the basis of characters of the male palpus. Unfortunately, no features of the females so far noted make their assignment to one or the other group possible.

Tarsus of the male palpus, as viewed from above, about as long as or longer than broad, rounded, suboval or elongated, not prolaterally developed; species from Central and South America, and the cosmopolitan *rufescens**rufescens* group
 Tarsus of the male palpus broader than long and broadly lobed on the prolateral side; species from North America, Mexico, and the West Indies*reclusa* group

THE *reclusa* GROUP

The 14 species comprising the *reclusa* group are all closely allied in general appearance and palpal features. The lateral development of the palpal tarsus of the male, which is distinctly broader than long and produced prolaterally into a conspicuous rounded lobe, readily identifies the group. The various species differ somewhat in size, color pattern, eye relations, and leg proportions, but the considerable variability in most of these characters minimizes their usefulness. Some differences in eye size and their position are present, but they are relatively hard

to define and are to some extent variable within the species. The leg lengths and proportions are very useful for separation of species of restricted areas, but they are subject to great variation within each species. The measurements given are most often for average specimens of each species. The features of the male palpi and the pattern of the seminal receptacles provide the principal basis for separation of the species, and even these must be used with caution.

The distribution of the *reclusa* group is most interesting. It makes up the natural fauna of the southern United States, Mexico, and the major West Indian islands. It scarcely reaches Central America, for which we have only a single record, a female assigned tentatively to *Loxosceles boneti* from El Salvador. The species of this series come from the following principal subregions:

WEST INDIES: *Cubana* from Cuba and probably the Bahama Islands; *caribbaea* from Jamaica, Hispaniola, and Puerto Rico.

CENTRAL AND SOUTHERN MEXICO: *Boneti*, *zapoteca*, *misteca*, and *nahuana* from the eastern part; *colima* from the western part; *tehuana* from the Tehuantepec region; *yucatanana* from Yucatan, frequently found in caves; and *bolivari* from caves in Nuevo Leon and San Luis Potosi.

SOUTHERN UNITED STATES AND ADJACENT MEXICO: *Reclusa* from Tennessee to Kansas and Oklahoma, southward to the border; *devia* from southern Texas and adjacent Tamaulipas; *arizonica* and *unicolor* from the arid southwestern states and adjacent Mexico.

Loxosceles reclusa Gertsch and Mulaik

Figures 1, 4-6, 9, 10, 21-23, 91-93

Loxosceles reclusus GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 317.

Loxosceles rufescens BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 5 (catalogue). PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 118 (catalogue; part). COMSTOCK, "1912" [1913], The spider book, p. 305, figs. 291-293; 1940, *op. cit.*, rev. ed., p. 316, figs. 291-293. BANKS AND NEWPORT, 1932, Publ. Univ. Oklahoma Biol. Surv., vol. 4, no. 1, p. 14. EWING, 1933, Natl. Geogr. Mag., vol. 64, p. 187, pl. 6, fig. 1. JONES, 1936, Field and Lab., vol. 4, p. 69.

Loxosceles rufipes JONES, 1936, Field and Lab., vol. 4, p. 69.

Adult females vary from about 7 mm. to 12 mm. and average about 9 mm. in total length. Males have about the same size range as females, but the average length is near 8 mm.

Dorsal view of a well-marked female as shown in figure 4. Integument of the carapace pale yellowish to quite dark orange or reddish brown, usually lightest in immature or subadult specimens, marked with darker pattern as follows: in darker specimens the head largely

dusky brown, more reddish on the clypeus, a conspicuous oval dusky patch just in front of the median groove, which is united to the forward head portion by a series of longitudinal dusky stripes; margins of the carapace with three dusky patches on each side; dusky pattern often faint or seemingly missing in young and pale adult specimens. Carapace clothed uniformly with a more or less dense covering of procumbent dark hairs, and with suberect black setae largely limited to the head, where they occur in about eight longitudinal rows from near the median groove to the clypeal margin. Sternum yellowish, labium, maxillae, and chelicerae darker reddish brown, all clothed with numerous erect black setae and a few small covering hairs.

Integument of the appendages pale to dusky yellow in subadult specimens, with the apical segments darker, and dusky orange to dark reddish brown in adults; front legs darker in adults, particularly the males. Legs clothed evenly with fine grayish hairs and more or less heavily provided with rows of fine erect blackish setae.

Integument of the abdomen whitish to yellow, clothed evenly with procumbent dusky hairs and set thickly with suberect black setae.

Structure of a typical female as shown in figures 4, 6, 9, and 10. Carapace somewhat longer than broad, narrowed in front, broadly rounded on the sides, and truncated behind. Head at the lateral eyes about half as wide as the carapace width, narrowly subtriangular in outline, and the median suture a shallow groove. Carapace low and evenly convex, equal in height to little more than one-fourth of the width, and of about equal elevation throughout as seen in the profile view (fig. 9). Clypeus broad, convexly sloping forward to the chelicerae, equal in height to about two full diameters of the median eye. Eyes subequal in size, in three diads, the median pair placed just forward of a line along the front edges of the anterior lateral eyes. Anterior lateral eye separated from the median eyes by the full diameter. Eyes of each diad subcontiguous, on low connate tubercles. Sternum slightly longer than broad (9/8), rounded on the sides, bluntly pointed behind where the posterior coxae are separated by less than their width. Labium longer than broad, the length being one-third more than the basal width, somewhat narrowed and rounded apically. Maxillae about three times as long as their basal width, convergent in front of the labium. Chelicerae (fig. 10) joined at the base on the inside for about half of their length by a white, somewhat flexible membrane. Upper margin of chelicera armed with a white lamina which is darkened to tooth form apically and which presents a rounded apical lobe partially covering the claws of the fangs. Lower margin completely unarmed.

Abdomen elongate oval in dorsal view, about equal in height to the width. Position of the lungs and single spiracle as shown in figure 6. Colulus a conspicuous conical finger half as long as the basal segment of the anterior spinneret.

Female genital organ as illustrated in figures 91-93. Seminal receptacles separated by about half of their basal width, presenting a long finger on the inner side and shorter one on the outer side.

FEMALE FROM AUSTIN, TEXAS: Carapace, 4 mm. long, 3.32 mm. wide.

	I	II	III	IV
Femur	4.70 mm.	5.25 mm.	4.35 mm.	5.00 mm.
Patella	1.25	1.30	1.20	1.25
Tibia	4.80	5.25	3.95	4.55
Metatarsus	4.75	5.30	4.50	5.20
Tarsus	1.20	1.20	1.00	1.20
Total	16.70 mm.	18.30 mm.	15.00 mm.	17.20 mm.

Leg formula, 2413. First leg, 4.42 times the length of the carapace. First femur only a little longer than the carapace.

MALE FROM AUSTIN, TEXAS: Carapace, 3.35 mm. long, 2.9 mm. wide.

	I	II	III	IV
Femur	5.30 mm.	6.30 mm.	4.85 mm.	5.15 mm.
Patella	1.25	1.20	1.15	1.15
Tibia	5.85	7.40	4.50	5.05
Metatarsus	6.15	8.20	5.65	6.25
Tarsus	1.30	1.30	1.10	1.25
Total	19.85 mm.	24.40 mm.	17.25 mm.	18.85 mm.

Leg formula, 2143. First leg much longer than in the female, 5.9 times the length of the carapace. First femur longer than the carapace in the ratio of 5/3.

Male palpus as illustrated in figures 21-23. Measurements of male palpus: femur, 1.60 mm.; patella, 0.64 mm.; tibia, 1.00 mm.; and tarsus, 0.55 mm.; total length, 3.79 mm. Tibia nearly twice as long as broad as seen from above and as deep as wide as seen from the side. Tarsus broadly lobed prolaterally as seen from above. Bulb of medium size, with the long thin embolus nearly twice as long as the bulbal portion.

TYPE LOCALITY: Austin, Texas; male holotype in the American Museum of Natural History.

DISTRIBUTION: Southeastern and central United States from Tennessee and Alabama westward to Kansas, Oklahoma, and Texas (see fig. 1).

SELECTED LOCALITIES: *Tennessee:* Reelfoot Lake Biological Station, Obion County, July–August (M. V. Parker), male and female. *Alabama:* Decatur (A. F. Archer), female. *Louisiana:* Shreveport (J. J. Lenley), male. DeRidder, 1943 (E. L. Bell, Jr.), female. *Mississippi:* Lucedale, April, 1930 (H. Dietrich), male. *Texas:* Llano, October 1, 1950 (W. J. Gertsch), males and females. Dallas, March 22, 1941 (S. Jones), males and females from under bark and from inside houses.

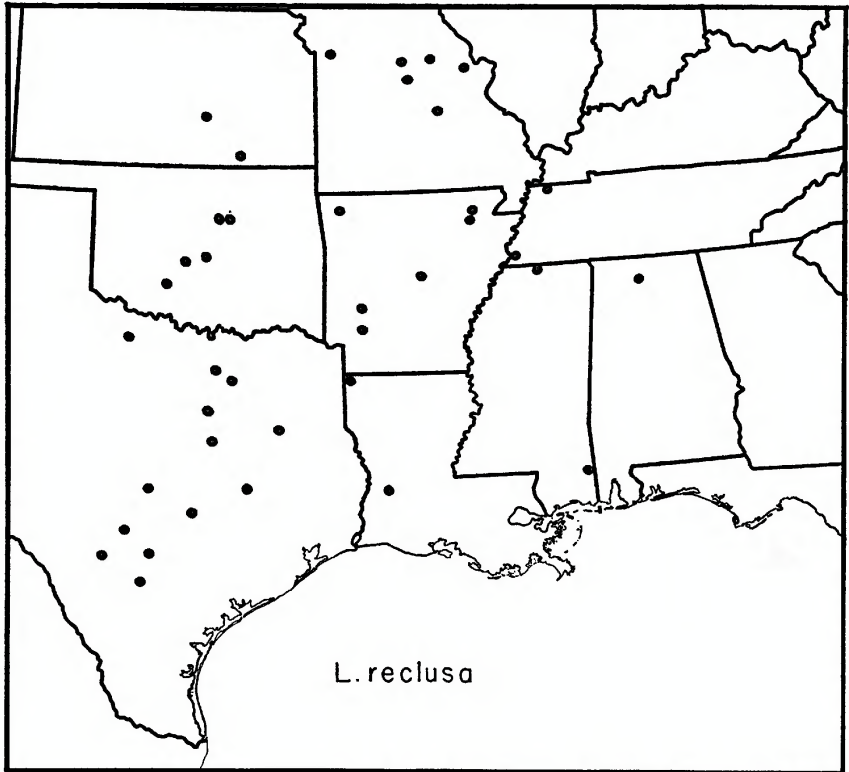


FIG. 1. Distribution of *Loxosceles reclusa* Gertsch and Mulaik.

Missouri: Columbia, August, 1956 (C. Wingo, F. Young), males and females. Rolla, October, 1949 (H. E. Frizzell), male and female. *Kansas:* Halstead (P. Lawson), male. *Arkansas:* Imboden, 1935 (Byron C. Marshall), males and females. Cove Creek Valley, Boston Mountains (M. Hite), many mature males and females during most of the months of the year. *Oklahoma:* Chickasha, June, 1944 (L. Hook), males and females.

Loxosceles devia Gertsch and Mulaik

Figures 2, 7, 8, 12-14, 16-20, 24-26

Loxosceles devius GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 316.

Adult females vary from 6 mm. to 10 mm. and average about 7.5 mm. in length. Males may be smaller, down to 5 mm., but they attain the greatest size of the females and average about the same.

Coloration and structure essentially as in *reclusa* and other species. Carapace paler than in *reclusa*, with the typical dorsal pattern of that species usually mostly lacking, with the duskiness usually present on the head or reduced in pale specimens to a Y-shaped figure marking the margins of the head and the median groove. Structure essentially identical with that of *reclusa* except for differences in leg lengths and proportions and in the details of the genitalia. Carapace of a male as shown in figures 8 and 18. Eye relations as in figure 12, the lateral eyes separated by the full diameter from the median. Details of the spinnerets as in figure 7.

Female genital organ as illustrated in figures 13, 14, 17, 19, and 20. Seminal receptacles widely separated by the full basal width or even more and presenting a long, curved finger directed towards the mid-line.

FEMALE FROM EDINBURG, TEXAS: Carapace, 4.15 mm. long.

	I	II	III	IV
Femur	5.50 mm.	6.00 mm.	5.20 mm.	5.65 mm.
Patella	1.30	1.35	1.30	1.35
Tibia	5.80	6.35	4.60	5.50
Metatarsus	5.55	6.25	5.35	6.40
Tarsus	1.25	1.30	1.15	1.25
Total	19.40 mm.	21.25 mm.	17.60 mm.	20.15 mm.

Leg formula, 2413. First leg 4.7 times as long as the carapace. First femur only one-fourth longer than the carapace.

MALE FROM EDINBURG, TEXAS: Carapace, 2.75 mm.

	I	II	III	IV
Femur	4.15 mm.	4.50 mm.	3.80 mm.	4.00 mm.
Patella	0.95	1.00	0.90	0.95
Tibia	4.35	4.75	3.35	3.80
Metatarsus	4.05	5.00	3.95	4.60
Tarsus	1.10	1.15	1.00	1.15
Total	14.60 mm.	16.40 mm.	13.00 mm.	14.50 mm.

Leg formula, 2143. First leg 5.3 times the length of the carapace. First femur one and one-half times the length of the carapace.

Male palpus as illustrated in figures 24–26, similar in general appearance to that of *reclusa*. Measurements of male palpus: femur, 1.30 mm.; patella, 0.50 mm.; tibia, 0.90 mm.; and tarsus, 0.36 mm.; total length, 3.06 mm. Tibia nearly twice as long as broad (5/9) as seen from above and as deep as the width as seen from the side. Tarsus broader than long, with a broad prolateral lobe as viewed from above. Bulb of median size but the embolus shorter than in *reclusa*.

TYPE LOCALITY: Edinburg, Texas; male holotype in the American Museum of Natural History.

DISTRIBUTION: Southern Texas and adjacent states of eastern Mexico (see fig. 2).

SELECTED RECORDS: *Texas*: Gertsch and Mulaik report this species from about 20 localities. *Tamaulipas*: Ten miles south of Reynosa, November 6, 1951 (W. S. Creighton), one female. San Pedro, May, 1936 (S. Mulaik), female. San Fernando, March 28, 1937 (L. I. Davis), female.

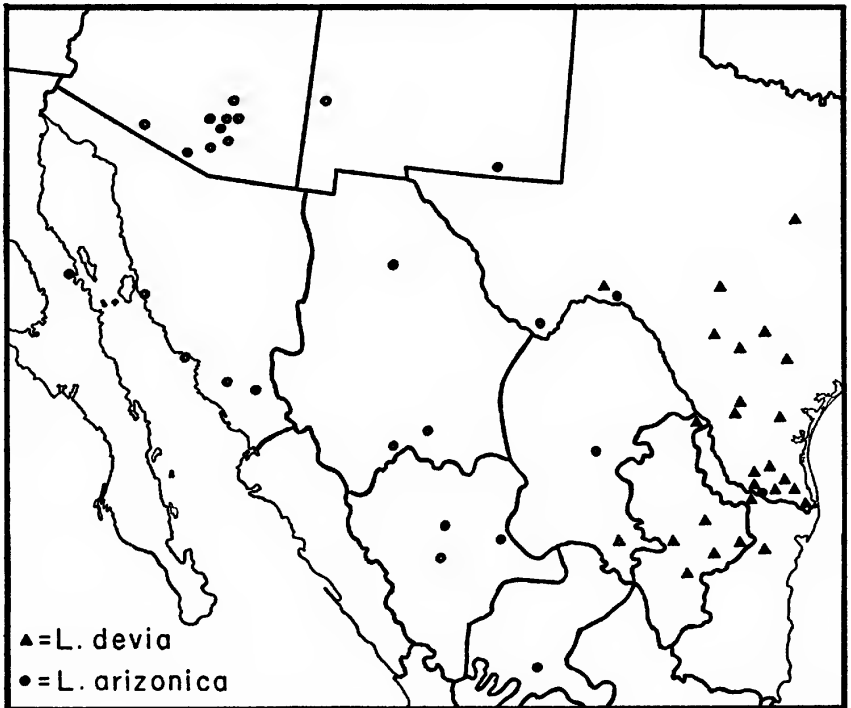


FIG. 2. Distribution of *Loxosceles devia* Gertsch and Mulaik and *L. arizonica* Gertsch and Mulaik.

Nuevo Leon: Herras, November 27, 1935 (A. M. and L. I. Davis), females, males. Montemorelos, May 23, 1952 (W. J. Gertsch), females, immature. Linares, May 22, 1952 (W. J. Gertsch), male. Twenty-eight miles north of Monterrey, July 7, 1936 (L. I. Davis), males, females. China, November 28, 1937 (L. I. Davis), female. Forty-two miles north of Monterrey, July 7, 1936 (L. I. Davis), female, immature. Lerdo, July 4, 1936 (L. I. Davis), immature.

Loxosceles arizonica Gertsch and Mulaik

Figures 2, 27-29, 84-87, 90

Loxosceles arizonicus GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 317.

Adult females vary from 6 mm. to 10 mm. and average about 8 mm. in length. Males are only slightly smaller.

Coloration and structure in close agreement with those of *devia*. Specimens from arid regions often quite pale. Dorsal pattern of the carapace usually obsolete or faintly apparent. Structure typical, differing from that of related species chiefly in the leg proportions and genitalia.

Female genital organ is illustrated in figures 84-87 and 90. Seminal receptacles nearly contiguous at their inner edges and presenting a short stout finger, subject to considerable variation, from the middle of the receptacle.

FEMALE FROM TUCSON, ARIZONA: Carapace, 3.5 mm. long.

	I	II	III	IV
Femur	4.15 mm.	4.35 mm.	4.00 mm.	4.50 mm.
Patella	1.15	1.15	1.15	1.15
Tibia	4.00	4.20	3.30	4.20
Metatarsus	4.00	4.30	3.95	5.00
Tarsus	1.20	1.25	1.00	1.20
Total	14.50 mm.	15.25 mm.	13.40 mm.	16.05 mm.

Leg formula, 4213. First leg four times as long as the carapace. First femur slightly longer than the carapace.

MALE FROM TUCSON, ARIZONA: Carapace, 2.95 mm. long.

	I	II	III	IV
Femur	4.70 mm.	5.20 mm.	4.40 mm.	4.95 mm.
Patella	1.00	1.10	1.00	1.00
Tibia	5.00	5.35	3.80	4.50
Metatarsus	4.80	5.30	4.65	5.50
Tarsus	1.30	1.30	1.10	1.30
Total	16.80 mm.	18.25 mm.	14.95 mm.	17.25 mm.

Leg formula, 2413. First leg 5.7 times as long as the carapace. First femur 1.57 times as long as the carapace.

Male palpus as illustrated in figures 27–29. Measurements of male palpus: femur, 1.25 mm.; patella, 0.6 mm.; tibia, 1.00 mm.; and tarsus, 0.37 mm.; total length, 3.22 mm. Tibia twice as long as the width and the height of the segment. Tarsus broader than long and broadly lobed on the prolateral side. Bulb of average size and the embolus short.

TYPE LOCALITY: Tucson, Arizona; male holotype in the American Museum of Natural History.

DISTRIBUTION: New Mexico, Arizona, and western Texas, southward into adjacent Mexico from Coahuila to Baja California (see fig. 2).

SELECTED RECORDS: *Arizona*: Eight miles north of Roosevelt Dam, April, 1935 (W. Ivie), males and females. Brown Canyon, Baboquivari Mountains, June 9, 1952 (W. J. Gertsch), males and females. *New Mexico*: White City, September 24, 1950 (W. J. Gertsch), male, immature. Iron Creek Forest Cabin, Black Range, September 11, 1952 (B. Malkin), one female. *Texas*: South of Pharr, March, 1936 (S. Mulaik), male. Comstock, May 26, 1952 (W. J. Gertsch), male, female, immature. The Basin, Chisos Mountains, September 28, 1950 (W. J. Gertsch), male, females; May 28, 1952 (W. J. Gertsch), female. *Chihuahua*: Twenty-two miles north of Parral, July 17, 1956 (V. Roth and W. J. Gertsch), male, female, immature. Salaiques, August 5, 1954 (W. J. Gertsch), two females. Cañon Prieto, near Primavera, June 30, 1947 (W. J. Gertsch), two females. *Coahuila*: Saltillo, May 23, 1952 (W. J. Gertsch), female; August 23, 1947 (W. J. Gertsch), male. Twenty miles east of Saltillo, July 18, 1956 (W. J. Gertsch and V. Roth), male, females. Twenty miles southeast of San Pedro, August 21, 1947 (W. J. Gertsch), male, females. Gloria, August 24, 1947 (W. J. Gertsch), females. *Zacatecas*: Ojo Caliente, August 3, 1954 (W. J. Gertsch), male. *Durango*: San Juan del Rio, August 1, 1947 (W. J. Gertsch), females, immature. *Sonora*: Twenty-five kilometers southwest of Navojoa, August 22, 1954 (R. E. Ryckman), female. Guaymas, September 25, 1947 (B. Malkin), two females. Ten miles west of Alamos, July 19, 1954 (W. J. Gertsch), females, immature. Estero de Sargente, 25 kilometers south of Desemboque, August 11, 1953 (B. Malkin), one immature. Desemboque, September 1–10, 1953 (B. Malkin), one male. *Baja California*: Isla Cedros, February 22, 1945 (B. F. Osorio Tafall), immature female. Boca Blanca, May 6, 1944 (B. Osorio), immature female. Angeles Bay, August 25, 1921 (J. C. Chamberlin), female.

Loxosceles unicolor Keyserling

Figures 3, 30-32, 88, 89

Loxosceles unicolor KEYSERLING, 1887, Verhandl. Zool. Bot. Gesell. Wein, vol. 37, p. 474, pl. 6, fig. 46. MARX, 1890, Proc. U. S. Natl. Mus., vol. 12, p. 505 (catalogue). TOWNSEND, 1893, Amer. Nat., vol. 27, pp. 679-680. COMSTOCK, 1903, A classification of North American spiders, p. 15; "1912" [1913], The spider book, p. 305; 1940, *op. cit.*, rev. ed., p. 316. BANKS, 1910, Bull. U. S. Natl. Mus., vol. 72, p. 5 (catalogue); 1916, Proc. Acad. Nat. Sci. Philadelphia, vol. 53, p. 571. GERTSCH AND MULAİK, 1940, Bull. Amer. Mus. Nat. Hist., vol. 77, p. 317.

Loxosceles rufipes PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 118 (part; not *rufipes* Lucas). CHAMBERLIN AND GERTSCH, 1928, Proc. Biol. Soc. Washington, vol. 41, p. 176. CHAMBERLIN AND WOODBURY, 1929, Proc. Biol. Soc. Washington, vol. 42, p. 132. CHAMBERLIN AND IVIE, 1933, Bull. Univ. Utah, biol. ser., vol. 2, no. 2, p. 7.

Loxosceles rufescens CHAMBERLIN, 1924, Proc. California Acad. Sci., ser. 4, vol. 12, p. 589.

Females vary from 6 mm. to 9 mm. and average about 7.5 mm. in length. Males are only slightly smaller.

Coloration essentially as in *devia* and *arizonica*, typically somewhat paler than that of either of these species. Carapace pale to bright yellowish, the head orange or occasionally slightly dusky. Appendages most often clear yellow, with the terminal segments dark orange or, more rarely, reddish. Tibia and tarsus of the female palpus reddish. Specimens from southern Sonora tentatively assigned to this species more strongly marked on the carapace as in *arizonica*, with the head and side margins dusky.

Structure in close agreement with that of *reclusa* and *arizonica*, but the general appearance suggests a slightly more delicate and much longer-legged species.

Female genital organ as illustrated in figures 88-90. Seminal receptacles essentially as in *arizonica*, only slightly separated at base and with a stout finger originating near the center. Aberrant genital organ of a female from Sonora as shown in figure 90.

FEMALE FROM TUCSON, ARIZONA: Carapace, 3.2 mm. long.

	I	II	III	IV
Femur	5.00 mm.	5.25 mm.	4.75 mm.	5.30 mm.
Patella	1.10	1.10	1.10	1.10
Tibia	5.10	5.45	4.40	5.10
Metatarsus	5.25	5.75	5.25	6.35
Tarsus	1.30	1.35	1.15	1.30
Total	17.75 mm.	18.90 mm.	16.65 mm.	19.15 mm.

Leg formula, 4213. First leg 5.5 times as long as the carapace. First femur 1.6 times as long as the carapace.

MALE FROM TUCSON, ARIZONA: Carapace, 2.8 mm. long.

	I	II	III	IV
Femur	5.80 mm.	6.45 mm.	5.45 mm.	5.90 mm.
Patella	1.10	1.10	1.00	1.05
Tibia	6.40	7.20	5.35	5.85
Metatarsus	6.40	7.90	6.70	7.70
Tarsus	1.45	1.55	1.35	1.55
Total	21.15 mm.	24.20 mm.	19.85 mm.	22.05 mm.

Leg formula, 2413. First leg 7.5 times as long as the carapace. First femur slightly more than twice the length of the carapace. Legs proportionately shorter in other specimens.

Male palpus as illustrated in figures 30–32. Measurements of male palpus: femur, 1.50 mm.; patella, 0.55 mm.; tibia, 1.00 mm.; and tarsus, 0.35 mm.; total length, 3.40 mm. Femur about six times as long as broad. Tibia slightly more than twice as long as broad (1 mm./0.42 mm.) and as deep as the width. Tarsus broader than long and broadly lobed on the prolateral side. Bulb of average size and the embolus of medium length, quite similar to that of *arizonica*.

TYPE LOCALITY: Presumed locality, Punta de Aguas, New Mexico; male and immature cotypes, of which the male is herein designated the lectotype, in the United States National Museum.

DISTRIBUTION: Western United States from New Mexico and Utah to California, southward into adjacent Mexico at least to southern Sonora and Baja California, eastward into New Mexico and Texas (see fig. 3).

SELECTED RECORDS: *Utah*: Zion National Park, May, 1924 (A. M. Woodbury), immature. *Arizona*: Virgin Narrows, Littlefield, April, 1932 (W. Ivie), males and females. *California*: Santa Barbara, 1951 (H. L. Shantz), female. Hammel Station, May 27, 1941 (W. M. Pearce), immature. *New Mexico*: Punta de Aguas, male lectotype. This locality has not been located and has not been spotted on the map. *Texas*: Del Rio, male and immature (not mapped). *Sonora*: Guaymas, September 25, 1947 (B. Malkin), male and females. Desemboque, September 1, 1953 (B. Malkin), male. Ten miles west of Alamos, July 19, 1954 (W. J. Gertsch), females. *Sinaloa*: Six miles south of Culiacan, July 22, 1954 (W. J. Gertsch), immature. *Baja California*: Chamberlin lists 14 localities under the name *rufescens*.

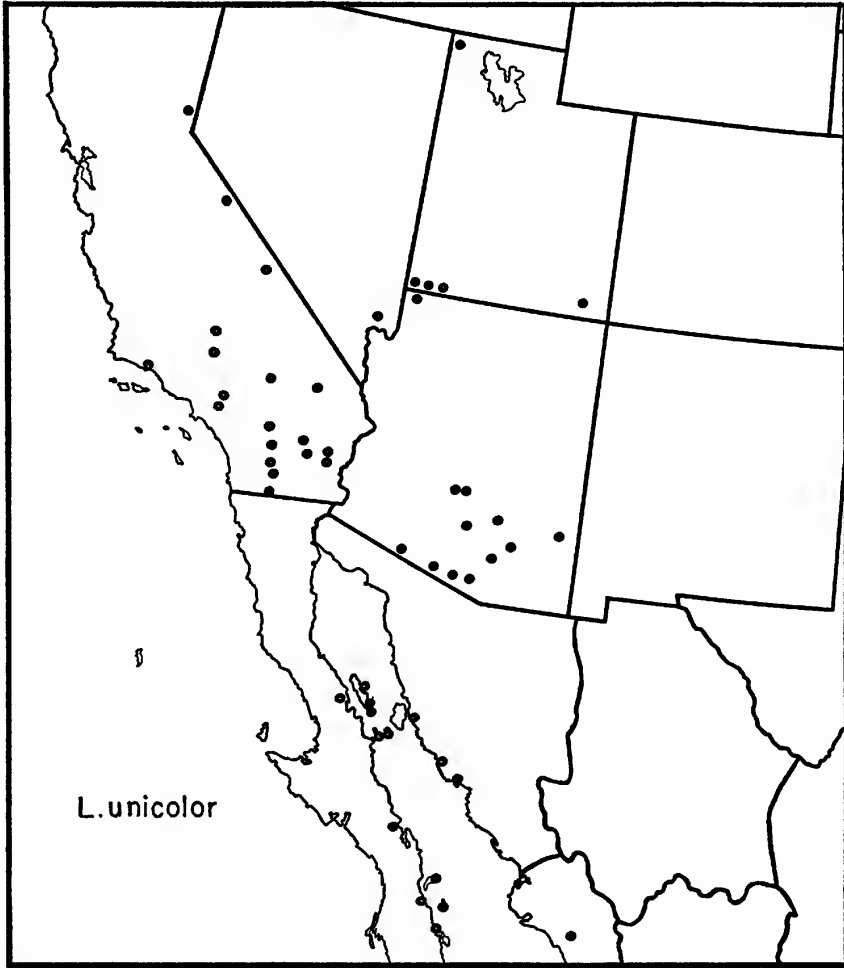


FIG. 3. Distribution of *Loxosceles unicolor* Keyserling.

Loxosceles caribbaea, new species

Figures 15, 54-56, 78, 79

Loxosceles rufescens PETRUNKEVICH, 1929, Trans. Connecticut Acad. Arts Sci., vol. 30, pp. 108-113, figs. 92-96.

Drymusa nubila LUTZ, 1915, Ann. New York Acad. Sci., vol. 26, p. 80.

Adult females vary from 6 mm. to 12 mm. and average about 8 mm. in total length. Males are somewhat smaller.

Dorsal view of a female as shown in figure 15. Coloration variable as usual, the range being from pale yellowish in immature specimens to orange or reddish brown in adults. Pattern variable, but in well-marked

specimens the carapace is orange-brown, with an indistinct marginal pale stripe of spots, a lateral dentate stripe, and a pair of pale spots at the position of the median groove.

Structure in quite close agreement with that of *reclusa*. Median eyes distinctly separated from each other and lying their full diameter from the subequal lateral eyes. Clypeus equal in height to two full diameters of the oval median eyes.

Female genital organ as illustrated in figures 78 and 79. Seminal receptacles quite uniform in shape in the several specimens examined, presenting two short fingers, of which the inner one is heavier.

FEMALE FROM COROZAL, PUERTO RICO: Carapace, 3.8 mm. long, 3.3 mm. wide.

	I	II	III	IV
Femur	7.00 mm.	7.60 mm.	6.15 mm.	6.25 mm.
Patella	1.35	1.40	1.30	1.25
Tibia	7.45	8.25	5.25	5.80
Metatarsus	7.25	8.60	6.50	7.40
Tarsus	1.50	1.50	1.20	1.30
Total	24.55 mm.	27.35 mm.	20.40 mm.	22.00 mm.

Leg formula, 2143. First leg 6.2 times as long as the carapace. First leg nearly twice as long as the carapace.

MALE FROM COROZAL, PUERTO RICO: Carapace, 3.6 mm.

	I	II	III	IV
Femur	8.60 mm.	10.15 mm.	7.50 mm.	7.50 mm.
Patella	1.60	1.60	1.50	1.50
Tibia	9.60	11.80	6.80	6.80
Metatarsus	9.65	12.50	8.60	9.30
Tarsus	1.65	1.70	1.25	1.45
Total	31.10 mm.	37.75 mm.	25.65 mm.	26.55 mm.

Leg formula, 2143. First leg 8.6 times as long as the carapace. First femur more than twice the length of the carapace.

Male palpus as illustrated in figures 54-56, similar in appearance to that of *reclusa* but the tibia less robust. Tibia twice as long as broad as seen from above and as deep as the breadth. Tarsus broadly lobed on the prolateral side, much broader than long. Bulb of medium size and the embolus rather short and curved forward.

TYPE LOCALITY: Corozal, Puerto Rico; male holotype.

DISTRIBUTION: West Indies, as indicated below.

KNOWN RECORDS: *Dominican Republic*: Near La Romana, July 31, 1935 (W. G. Hassler), female. Rio Chavon, near La Romana, July 30,

1935 (W. G. Hassler), female. Ciudad Trujillo, 1916 (K. P. Schmidt), female. *Jamaica*: Providence Cave, Montego Bay, March 5, 1911, male. *Puerto Rico*: Corozal, July 2, 1915, male and female paratypes; January 31, 1931 (A. S. Mills), female and two immatures from a cave. Quebradillos, June 23, 1915, immature. *Mona Island*: February 21-25, 1914, immature.

Loxosceles cubana, new species

Figures 51-53, 81

Loxosceles rufipes var. *rufescens* FRANGANILLO, 1935, Rev. Belen, p. 76; 1936, Los arácnidos de Cuba hasta 1936, Havana, p. 43.

Loxosceles rufescens BRYANT, 1940, Bull. Mus. Comp. Zoöl., vol. 86, no. 7, p. 287.

FEMALE: Total length, 7.5 mm. Carapace, 3.35 mm. long, 3 mm. wide. Abdomen, 4.5 mm. long, 2.5 mm. wide.

Coloration and structure in close agreement with those of *caribbaea*. Anterior median eyes broadly oval, separated from the lateral eyes by slightly more than the full diameter.

Female genitalia as illustrated in figure 81. Seminal receptacles shallow, nearly contiguous at their bases, each presenting two fingers, of which the inner one is longer and enlarged at end.

	I	II	III	IV
Femur	5.35 mm.	5.70 mm.	4.30 mm.	5.00 mm.
Patella	1.20	1.20	1.20	1.20
Tibia	5.40	6.00	4.20	4.70
Metatarsus	5.00	5.10	4.80	5.70
Tarsus	1.20	1.15	1.10	1.30
Total	18.15 mm.	19.15 mm.	15.60 mm.	17.90 mm.

Leg formula, 2143. First leg five and one-half times as long as the carapace. First femur 1.6 times the length of the carapace.

MALE: Total length, 7.1 mm. Carapace, 3.3 mm. long, 3 mm. wide. Abdomen, 4.3 mm. long, 2 mm. wide.

Coloration and structure in close agreement with those of the female, except for the longer legs.

	I	II	III	IV
Femur	5.85 mm.	6.50 mm.	5.20 mm.	5.40 mm.
Patella	1.30	1.25	1.15	1.10
Tibia	5.10	7.35	4.70	5.20
Metatarsus	5.40	7.25	5.75	6.30
Tarsus	1.25	1.20	1.15	1.20
Total	18.90 mm.	23.55 mm.	17.95 mm.	19.20 mm.

Leg formula, 2413. First leg 5.7 times as long as the carapace. First femur not fully twice as long as the carapace.

Male palpus as illustrated in figures 51–53. Femur five times as long as broad (1.6 mm./0.3 mm.) at the base. Tibia about twice as long as broad (0.95 mm./0.43 mm.) and only a trifle deeper. Tarsus much broader than long and broadly lobed on the prolateral side. Bulb of medium size and the slightly curved embolus a little longer than the basal portion.

TYPE LOCALITY: Candela, Cuba; male holotype.

DISTRIBUTION: Cuba.

KNOWN RECORDS: *Cuba*: Candela (P. Bermudez), female allotype and two paratypes. University Hill, Havana, November 6, 1915, female paratypes. Soledad, July 30, 1931 (L. G. Worley), female paratype and immature from under rocks in a quarry. Vilches Cave, Soledad, August 14, 1931 (L. G. Worley and N. Banks), female paratypes. *Bahama Islands*: Long Island, July 19, 1936, immature specimen, probably this species.

Loxosceles yucatanana Chamberlin and Ivie

Figures 33–35, 94

Loxosceles yucatanana CHAMBERLIN AND IVIE, 1938, Publ. Carnegie Inst. Washington, no. 491, p. 126. ROEWER, 1954, Katalog der Araneae, vol. 1, p. 321.

FEMALE: Total length, 8.7 mm. Carapace, 3.7 mm. long, 3 mm. wide. Abdomen, 5.5 mm. long, 3.5 mm. wide.

Carapace yellow to bright orange, with faint paler markings suggestive of the pattern of *caribbaea*. Legs pale yellow in cave specimens but bright orange to reddish in specimens from the outside. Abdomen gray, with the usual covering of black hairs. Structure in close agreement with that of *reclusa* and related species. Median eyes oval, slightly separated, lying their full diameter from the anterior lateral eye and two full diameters from the clypeal margin. Eyes somewhat smaller in cave specimens and the legs slightly longer and thinner.

	I	II	III	IV
Femur	5.50 mm.	5.80 mm.	5.00 mm.	5.50 mm.
Patella	1.25	1.30	1.25	1.20
Tibia	5.50	5.85	4.75	5.30
Metatarsus	5.15	5.50	4.80	5.75
Tarsus	1.35	1.35	1.15	1.35
Total	18.75 mm.	19.80 mm.	16.95 mm.	19.10 mm.

Leg formula, 2413. First leg five times as long as the carapace. First femur one and one-half times as long as the carapace.

Carapace of female allotype from Xtoloc Cenote Cave, Chichen Itza, 3.35 mm. Second leg: femur, 5.80 mm.; patella, 1.15 mm.; tibia, 5.85 mm.; metatarsus, 5.75 mm.; and tarsus, 1.4 mm.; total length, 19.95 mm.

Female genital organ as illustrated in figure 94. Seminal receptacles very widely separated by two or more times the basal width, presenting two thin fingers, of which the inner one is clubbed apically.

MALE: Total length, 6.7 mm. Carapace, 3.2 mm. long, 2.7 mm. wide. Abdomen, 4.2 mm. long, 2.3 mm. wide.

Coloration and structure in close agreement with those of the female.

	I	II	III	IV
Femur	6.70 mm.	7.50 mm.	6.20 mm.	6.50 mm.
Patella	1.20	1.20	1.20	1.15
Tibia	7.50	8.40	5.70	6.50
Metatarsus	7.30	8.50	7.00	7.80
Tarsus	1.65	1.65	1.30	1.60
Total	24.35 mm.	27.25 mm.	23.40 mm.	23.55 mm.

Leg formula, 2143. First leg eight times as long as the carapace. First femur about twice as long as the carapace. In the holotype the first leg is seven times as long as the carapace.

Male palpus as illustrated in figures 33-35. Femur thin and quite long, five and one-half times as long as broad at base (1.4 mm./0.25 mm.). Tibia slightly more than twice as long as broad (0.9 mm./0.4 mm.) and only slightly deeper (0.43 mm.) as seen from the side. Tarsus broader than long and broadly lobed on the prolateral side. Bulb of medium size and the thin embolus not much longer than the bulbal part.

TYPE LOCALITY: Xtoloc Cenote Cave, Yucatan, Mexico; male holotype taken June 16, by A. S. Pearse, in the American Museum of Natural History.

DISTRIBUTION: Yucatan. Chamberlin and Ivie record this species from 10 Yucatan caves.

NEW RECORDS: *Yucatan*: Fifty-five kilometers southeast of Merida, November 27, 1947 (H. M. Wagner), female and immature male. Dry Cenote, Chichen Itza, July 10, 1948 (C. and M. Goodnight), immature. Chichen Itza, May, 1904, (L. J. Cole), two females.

Loxosceles bolivari, new species

Figures 42-44, 77

FEMALE: Total length, 8 mm. Carapace, 3.7 mm. long, 3.15 mm. wide. Abdomen, 5 mm. long, 2.5 mm. wide.

Carapace quite clear yellow, the head only slightly darker and the sides of the carapace with faint dusky patches. Legs yellow, the covering of pale hairs of moderate density. Chelicerae and tibia and tarsus of palpus reddish. Abdomen pale yellow, with inconspicuous gray hairs. Structure typical, essentially as in *reclusa*, but the legs much longer and thinner. Eyes rather small, the median eyes separated by their full diameter from the anterior lateral eye.

	I	II	III	IV
Femur	6.00 mm.	7.00 mm.	5.30 mm.	5.50 mm.
Patella	1.25	1.30	1.20	1.20
Tibia	6.50	6.90	5.15	5.70
Metatarsus	6.20	7.50	5.75	6.70
Tarsus	1.60	1.60	1.35	1.50
Total	21.55 mm.	24.30 mm.	18.75 mm.	20.60 mm.

Leg formula, 2143. First leg 5.8 times as long as the carapace. First femur about 1.7 times as long as the carapace.

Female genital organ as illustrated in figure 77. Seminal receptacles moderately separated by one-third of their basal width, presenting a sinuous finger and a deep indentation on the outer side.

MALE: Total length, 5.6 mm. Carapace, 2.6 mm. long, 2.35 mm. wide. Abdomen, 1.9 mm. long, 3.5 mm. wide.

Carapace and abdomen light yellow, the carapace with a faint, Y-shaped, dusky figure outlining the cephalic and median grooves. Eye tubercles black. Legs concolorous but the apical segments orange to light brown. Clothing of hairs largely rubbed off but seemingly rather sparse.

	I	II	III	IV
Femur	5.50 mm.	6.50 mm.	5.25 mm.	5.45 mm.
Patella	1.05	1.10	0.95	0.95
Tibia	6.50	7.50	5.10	5.70
Metatarsus	6.10	7.65	5.80	6.70
Tarsus	1.35	1.35	1.25	1.60
Total	20.50 mm.	24.10 mm.	18.35 mm.	20.40 mm.

Leg formula, 2413. First leg eight times as long as the carapace. First femur almost twice as long as the carapace.

Male palpus as illustrated in figures 42-44. Femur of moderate

length, four times as long as broad. Tibia about one and one-half times as long as the breadth (0.8 mm./0.5 mm.), and as deep as wide. Tarsus broader than long and broadly lobed on the prolateral side. Bulb of medium size, being clearly wider than the depth of the tarsus, and the embolus of average length, one and one-half times the length of the bulb.

TYPE LOCALITY: Cueva Garcia, Nuevo Leon, Mexico; male holotype taken September 19, 1942 (C. Bolivar).

DISTRIBUTION: KNOWN only from caves in northeastern Mexico.

OTHER LOCALITY: *San Luis Potosi*: Cueva de los Sabinos, April 3, 1942 (C. Bolivar), female allotype and immature.

It is with great pleasure that I name this interesting species for my colleague Dr. C. Bolivar Pieltain of the Instituto Politecnico Nacional in Mexico City.

Loxosceles boneti, new species

Figures 39-41, 74-76

FEMALE: Total length, 8.6 mm. Carapace, 3.6 mm. long, 2.8 mm. wide. Abdomen, 5 mm. long, 3.5 mm. wide.

Coloration in quite close agreement with that of *reclusa*. Carapace yellow in base color, the head largely orange-brown in front and with a dusky brown patch in front of the median groove, the sides with a broad, dentate, brown, marginal band. Structure essentially as in *reclusa* except as follows: eyes closer together, the anterior lateral eye not being fully the diameter from the median eye; legs proportionately longer.

	I	II	III	IV
Femur	5.10 mm.	5.20 mm.	4.75 mm.	5.10 mm.
Patella	1.30	1.35	1.20	1.20
Tibia	5.00	5.30	4.00	4.60
Metatarsus	5.10	5.60	4.70	5.60
Tarsus	1.50	1.45	1.20	1.30
Total	18.00 mm.	18.90 mm.	15.85 mm.	17.80 mm.

Leg formula, 2143. First leg five times as long as the carapace. First femur about one and one-half times the length of the carapace.

Female genital organ as illustrated in figures 74-76.

MALE: Total length, 8.3 mm. Carapace, 3.6 mm. long, 3 mm. wide. Abdomen, 4.7 mm. long, 2.7 mm. wide.

Coloration and structure in close agreement with those of the female. Lateral eyes of each side separated from the anterior median eyes by

two-thirds of the diameter of the latter. Legs proportionately longer than those of the female.

	I	II	III	IV
Femur	6.35 mm.	6.75 mm.	5.75 mm.	6.15 mm.
Patella	1.30	1.30	1.25	1.25
Tibia	7.00	7.35	5.35	6.00
Metatarsus	7.00	8.00	6.50	7.30
Tarsus	1.60	1.50	1.25	1.45
Total	23.25 mm.	24.90 mm.	20.10 mm.	22.15 mm.

Leg formula, 2143. First leg 6.4 times as long as the carapace. First femur 1.7 times the length of the carapace.

Male palpus as illustrated in figures 39-41. Femur of moderate length, five times as long as broad as viewed from above. Tibia about one and one-half times as long as broad (0.85 mm./0.5 mm.), in lateral view slightly deeper (0.56 mm.) than the breadth. Tarsus broader than long, broadly lobed on the prolateral side. Bulb of medium size and the curved embolus quite short, not much longer than the bulbal portion as seen from the side.

TYPE LOCALITY: Acapulco, Guerrero, Mexico; male holotype taken June 17, 1938 (L. Irby Davis).

KNOWN RECORDS: *Puebla*: Twelve miles north of Acatlan, July 3, 1947 (L. I. and A. M. Davis), immature. *Guerrero*: Mexcala, July 2, 1941 (L. I. Davis), immature. Ayotzinapa, January 21, 1948, one female. Pie de la Cuesta, 6 miles west of Acapulco, June 29, 1941 (L. I. Davis), immature. Acapulco, December 26, 1940 (R. H. Crandall), female allotype. *Morelos*: Largo de Tegues, June-July, 1944 (H. Wagner), female, immature. Oaxtepec, May 17, 1942 (C. Bolivar), immature. Cuernavaca, July 27, 1956 (V. Roth and W. J. Gertsch), female. Acatlipa, August 10, 1946 (C. Goodnight), immature. Teomixla, August 16, 1942 (H. Wagner), female. *El Salvador*: San Salvador, January-March, 1954 (J. R. Boursot), female, probably this species.

The present species is dedicated with pleasure to Dr. Frederico Bonet of the Escuela Nacional de Ciencias Biologicas in Mexico City.

Loxosceles colima, new species

Figures 11, 48-50, 96

FEMALE: Total length, 11 mm. Carapace, 4.75 mm. long, 4 mm. wide. Abdomen, 6.7 mm. long, 4 mm. wide.

Dorsal view of female as shown in figure 11. Coloration typically

much darker than in *reclusa* and *boneti*, but quite pale specimens occur with the more numerous darker ones. Carapace with broad, dentate, dusky brown side bands, the cephalon also concolorous but with a reddish cast in front of the eyes, and the pale dorsal patches dull yellowish to orange. Labium, maxillae, and chelicerae bright reddish brown. Sternum, coxae, and legs dusky yellowish brown. Abdomen gray to nearly black, much of the color impression due to the thick covering of black hairs. Clothing of the carapace and appendages black hairs and suberect setae.

Structure typical, differing little from that of *reclusa* and other species. Median eye separated from the lateral eye by the full diameter of the former. Clypeus equal in height to only slightly more than two full diameters.

	I	II	III	IV
Femur	6.50 mm.	6.80 mm.	6.10 mm.	6.60 mm.
Patella	1.55	1.55	1.50	1.50
Tibia	6.70	7.00	5.00	6.10
Metatarsus	6.50	7.00	6.25	7.20
Tarsus	1.60	1.60	1.35	1.50
Total	22.85 mm.	23.95 mm.	20.20 mm.	22.90 mm.

Leg formula, 2413. First leg 4.8 times as long as the carapace. First femur one and one-third times as long as the carapace.

Female genital organ as shown in figure 96. Seminal receptacles moderately separated at base and presenting a finger longer than the basal width of the receptacle.

MALE: Total length, 9.5 mm. Carapace, 4.5 mm. long, 3.7 mm. wide. Abdomen, 5.5 mm. long, 3 mm. wide.

Coloration and structure in close agreement with those of the female except for the proportionately longer legs.

	I	II	III	IV
Femur	7.70 mm.	8.60 mm.	7.00 mm.	7.50 mm.
Patella	1.65	1.65	1.50	1.50
Tibia	8.65	10.00	6.35	7.25
Metatarsus	8.85	11.30	8.15	8.25
Tarsus	1.80	1.75	1.45	1.65
Total	28.65 mm.	33.30 mm.	24.45 mm.	26.15 mm.

Leg formula, 2143. First leg 6.3 times as long as the carapace. First femur 1.7 times as long as the carapace.

Male palpus as illustrated in figures 48–50. Femur of moderate length, five times as long as the apical width. Tibia slightly more than twice as long as broad (1.14 mm./0.6 mm.), and only slightly deeper (0.66 mm.). Tarsus broader than long and broadly lobed on the pro-lateral side. Bulb of medium size and the embolus only slightly longer than the bulbal portion.

TYPE LOCALITY: Ten miles south of Colima, Colima, Mexico; male holotype, female allotype, and male and female paratypes taken July 31, 1954 (W. J. Gertsch).

DISTRIBUTION: Western Mexico from Nayarit to Colima.

KNOWN RECORDS: *Colima*: Seven miles south of Colima, August 2, 1956 (W. J. Gertsch, V. Roth), male, females, and immature paratypes. Five miles north of Colima, August 3, 1956 (W. J. Gertsch, V. Roth), female paratype. Twenty-five miles east of Mazamitla, August 2, 1956 (W. J. Gertsch, V. Roth), male and female paratypes. Cueva de la Finca, Coquimatlan, January 20, 1943 (F. Bonet), male and female paratypes. *Jalisco*: West side of Lake Sayula, August 3, 1956 (W. J. Gertsch, V. Roth), female and immature. Ocotlan (L. H. Weld), male and immature. *Nayarit*: Acaponeta, November 20, 1939 (C. M. Bogert, H. E. Vokes), female and immature. Jesus Maria, July 1–15, 1955 (Borys Malkin), immature. Twenty miles south of Tepic, August 4, 1956 (W. J. Gertsch, V. Roth), immature.

Loxosceles tehuana, new species

Figures 45–57, 97

FEMALE: Total length, 9.6 mm. Carapace, 4.6 mm. long, 3.6 mm. wide. Abdomen, 5.2 mm. long, 4 mm. wide.

Coloration essentially as in *caribbaea* (see fig. 15). Carapace bright orange to reddish, darkest in front, the dusky pattern only faintly indicated. Femora of legs orange-brown, but the distal segments of the legs are paler. Structure typical but the eyes somewhat more separated, the median being nearly one and one-half diameters from the anterior lateral eyes. Legs robust, of moderate length.

	I	II	III	IV
Femur	5.25 mm.	5.60 mm.	5.00 mm.	5.50 mm.
Patella	1.45	1.50	1.50	1.50
Tibia	5.50	5.75	4.20	5.35
Metatarsus	5.50	5.75	5.25	6.50
Tarsus	1.25	1.25	1.15	1.25
Total	18.95 mm.	19.85 mm.	17.10 mm.	20.10 mm.

Leg formula, 4213. First femur only slightly exceeding the carapace in length. First leg four times as long as the carapace.

Female genital organ as illustrated in figure 97.

MALE: Total length, 8 mm. Carapace, 4.2 mm. long, 3.35 mm. wide. Abdomen, 4 mm. long, 2.2 mm. wide.

Carapace bright red in front, orange behind, with faint indications of a darker pattern as in the female. First femur with a bright reddish patch on prolateral surface covering basal half of the segment and a similar patch on retrolateral side. Clypeus and sides of the head with numerous granulations, each set with a seta. Eyes rather small, the anterior lateral eyes separated by fully one and one-half diameters from the median eyes. Legs rather short, with the femora thicker than usual. Tarsal claws of first leg atrophied.

	I	II	III	IV
Femur	5.70 mm.	6.50 mm.	5.60 mm.	5.90 mm.
Patella	1.50	1.50	1.35	1.35
Tibia	6.10	6.70	5.10	6.00
Metatarsus	6.35	7.20	6.20	7.50
Tarsus	1.50	1.50	1.30	1.50
Total	21.15 mm.	23.40 mm.	19.55 mm.	22.25 mm.

Leg formula, 2413. First leg five times as long as the carapace. First femur somewhat longer than the carapace (57/42).

Male palpus as illustrated in figures 45-47, all the segments stout or incrassated. Femur short (2.1 mm. long, 0.55 mm. wide at base), about four times as long as broad. Tibia greatly incrassated, 1.3 mm. long, 0.85 mm. wide as view from above and nearly as deep as the width. Tarsus relatively small, much broader than long, lobed on the prolateral side. Bulb of average size and the embolus a very long, slightly curved spine twice as long as the bulb.

TYPE LOCALITY: Tehuantepec, Chiapas, Mexico; male holotype taken December 22, 1947 (T. MacDougall).

OTHER RECORD: *Oaxaca*: San Geronimo, July, 1909 (A. Petrunkevitch), female allotype.

Loxosceles misteca, new species

Figures 63-65

MALE: Total length, 7 mm. Carapace, 3.25 mm. long, 3 mm. wide. Abdomen, 4 mm. long, 2.6 mm. wide.

Coloration and structure essentially as in *zapoteca* except as follows: clypeus narrower, its height equaling only two diameters of the median

eye; lateral eye separated from the median by the diameter of the latter; legs proportionately shorter.

	I	II	III	IV
Femur	5.00 mm.	6.70 mm.	5.40 mm.	5.85 mm.
Patella	1.25	1.25	1.15	1.15
Tibia	7.30	8.25	5.35	5.80
Metatarsus	6.50	7.50	5.85	6.50
Tarsus	1.50	1.55	1.20	1.35
Total	21.55 mm.	25.25 mm.	18.95 mm.	20.65 mm.

Leg formula, 2143. First leg 6.6 times as long as the carapace. First femur one and one-half times as long as the carapace.

Male palpus as illustrated in figures 63-65. Femur of moderate length, five times as long as broad as viewed from above. Tibia slightly more than twice as long as broad (1.15 mm./0.46 mm.), only a little deeper (0.5 mm.) as seen from the side. Tarsus four-fifths as long as broad, broadly lobed on the prolateral side. Bulb of medium size; embolus a flat blade abruptly narrowed to a fine spine apically, longer than the bulbal part.

TYPE LOCALITY: Taxco, Guerrero, Mexico; male holotype taken in the fall of 1946 (Leo Isaacs).

OTHER RECORDS: *Guerrero*: Taxco, April, 1946 (Leo Isaacs), one sub-adult female; June 5, 1943 (F. H. Pough), immature male and female.

Loxosceles zapoteca, new species

Figures 36-38

FEMALE: Total length, 10 mm. Carapace, 4 mm. long, 3.3 mm. wide. Abdomen, 6.6 mm. long, 3.3 mm. wide.

Coloration essentially as in *reclusa* and *boneti*. Pattern on carapace much as in these species but often only faintly indicated. Structure essentially as in *reclusa* except as follows: clypeus broadly rounded and equaling nearly three diameters in some females, somewhat less in others; anterior lateral eyes separated from the median by the full diameter of the latter; legs quite long and thin.

	I	II	III	IV
Femur	6.00 mm.	7.10 mm.	5.70 mm.	6.50 mm.
Patella	1.35	1.40	1.25	1.30
Tibia	6.35	7.00	5.15	6.25
Metatarsus	6.40	7.20	6.00	7.60
Tarsus	1.50	1.60	1.30	1.50
Total	21.60 mm.	24.30 mm.	19.40 mm.	23.15 mm.

Leg formula, 2413. First leg nearly five and one-half times as long as the carapace. First femur one and one-half times as long as the carapace.

Female genital organ as illustrated in figure 95. Seminal receptacles widely separated by about their basal width, presenting a thin finger on the inner side inclined towards the midline.

MALE: Total length, 7.7 mm. Carapace, 3.7 mm. long, 3.1 mm. wide. Abdomen, 4.6 mm. long, 2.3 mm. wide.

Coloration and structure in close agreement with those of the female. Clypeal height equal to about two and one-half diameters of the median eye. Legs proportionately longer and thinner than in the female.

	I	II	III	IV
Femur	7.70 mm.	8.75 mm.	7.10 mm.	7.35 mm.
Patella	1.40	1.50	1.35	1.50
Tibia	9.00	10.10	6.80	7.65
Metatarsus	8.50	11.80	8.25	9.70
Tarsus	1.75	1.85	1.50	1.70
Total	28.35 mm.	34.00 mm.	25.00 mm.	27.90 mm.

Leg formula, 2143. First leg 7.7 times the length of the carapace. First femur slightly exceeding twice the length of the carapace.

Male palpus as illustrated in figures 36-38. Femur of moderate length, about six times as long as broad as viewed from above. Tibia slightly more than twice as long as broad (1 mm./0.46 mm.) and of the same depth as the width. Tarsus broader than long (0.5 mm./0.4 mm.), broadly lobed on the prolateral side. Bulb of medium size and the curved embolus short, about the same size as the bulbal portion as seen from the side.

TYPE LOCALITY: Thirty-eight miles south of Iguala, Guerrero, Mexico; July 29, 1956, male holotype, female allotype, and paratypes of both sexes taken July 29, 1956 (V. Roth and W. J. Gertsch).

KNOWN RECORDS: *Guerrero*: Cocula, February 6, 1945 (C. Bolivar, D. Pelaez), two females. Iguala, June 19, 1936 (A. M. and L. I. Davis), immature. *Puebla*: Acatlan, September 24-27, 1946 (H. Wagner), female paratype.

Loxosceles nahuana, new species

Figure 80

FEMALE: Total length, 9.5 mm. Carapace, 3.5 mm. long, 2.8 mm. wide. Abdomen, 6.5 mm. long, 4 mm. wide.

Carapace yellow to orange, the head darker orange but the sides without contrasting pattern. Structure typical, essentially as in *devia* except as follows: eyes rather small, the median eyes separated by one and one-half diameters from the lateral eyes; clypeus rather high, equaling nearly three full diameters of the median eye; legs thin and of moderate length.

	I	II	III	IV
Femur	4.35 mm.	4.60 mm.	4.00 mm.	4.60 mm.
Patella	1.20	1.25	1.10	1.15
Tibia	4.75	5.10	3.80	4.40
Metatarsus	4.60	5.10	4.75	5.00
Tarsus	1.10	1.10	1.00	1.20
Total	16.00 mm.	17.15 mm.	14.65 mm.	16.35 mm.

Leg formula, 2413. First leg 4.5 times as long as the carapace. First femur slightly longer than the carapace.

Female genitalia as illustrated in figure 80. Seminal receptacles moderately separated at base, each presenting a sinuous finger which originates near the middle of the receptacle.

TYPE LOCALITY: Five miles south of Zimapan, Hidalgo, Mexico; female holotype and immature paratypes taken July 20, 1956 (V. Roth and W. J. Gertsch).

OTHER RECORDS: *Hidalgo*: Five miles north of Zimapan, November 21, 1956 (E. S. Ross), female paratype. *Distrito Federal*: Mexico, January 6-15, 1945 (H. Wagner), female paratype.

THE *rufescens* GROUP

Except for the longitudinal development of the palpal tarsus of the male, which is most often as long as or longer than its breadth and lacks a broad lateral lobe, the *rufescens* group is similar in size and appearance to the species related to *reclusa*. Of the four species found within the geographic limits of this paper, one is the cosmopolitan *Loxosceles rufescens*. Another is the quite venomous *laeta*, probably the largest American species, which is widely distributed from Brazil and Chile to Central America. No species of this species group is known to occur in North America, Mexico, or the major islands of the West Indies. The range of the *rufescens* group includes Central and South America in the New World. All the known species from the Mediterranean region and tropical and south Africa also belong to it.

The males of this group from North and Central America are readily separated by the following key:

1. Palpus stout; femur somewhat more than four times longer than the breadth; tibia not twice as long as broad (0.95 mm./0.57 mm.); embolus about equal in length to the bulb.....*rufescens* Dufour
Palpus more slender; femur seven or eight times as long as broad; tibia more than twice as long as broad; embolus far exceeding the bulb in length 2
2. Embolus three times as long as the bulb.....*rufipes* Lucas
Embolus at most twice as long as the bulb..... 3
3. Embolus sinuous, twice as long as the bulb (fig. 59).....
.....*panama*, new species
Embolus evenly curved, shorter (fig. 61).....*laeta* Nicolet

The females of the *rufescens* group are readily differentiated by features of the epigyna and other details as follows:

1. Legs five times as long as the carapace; first femur distinctly longer than the carapace (see measurements)..... 2
Legs four times as long as the carapace; first femur only slightly longer than the carapace..... 3
2. Seminal receptacles thin, apically enlarged fingers (fig. 72).....
.....*laeta* Nicolet
Seminal receptacles short, widely separated pouches (fig. 83).....
.....*panama*, new species
3. Seminal receptacles large, subcontiguous pouches (fig. 73).....
.....*rufescens* Dufour
Seminal receptacles widely separated, each with two principal branches (fig. 82).....*rufipes* Lucas

Loxosceles rufescens Dufour

Figures 60-62, 73

Scytodes rufescens DUFOUR, 1820, Ann. Gen. Sci. Phys., vol. 5, p. 203, pl. 76, fig. 5.

Loxosceles rufescens MARX, 1890, Proc. U. S. Natl. Mus., vol. 12, p. 505 (catalogue). BANKS, 1904, Proc. Acad. Nat. Sci. Philadelphia, vol. 56, p. 122. REIMOSER, 1913, Ann. Naturhist. Hofmus., Vienna, vol. 27, p. 505. SIMON, 1914, Les arachnides de France, vol. 1, pp. 75-76, fig. 126. BONNET, 1954, Bibliographia araneorum, vol. 2, pt. 3, p. 2575. ROEWER, 1956, Katalog der Araneae, vol. 1, p. 319 (*Loxoscelis*).

Loxosceles marylandica MUMA, 1944, Amer. Mus. Novitates, no. 1257, p. 2, fig. 1.

FEMALE FROM ALTO DOURO, PORTUGAL: Total length, 7.5 mm. Carapace, 3.2 mm. long, 2.7 mm. wide. Abdomen 4.5 mm. long, 3 mm. wide.

General appearance as in *reclusa* and related species. Carapace bright to dull orange-brown, often quite clear but sometimes showing lateral dusky patches on the thorax and dusky longitudinal lines on the darker cephalon. Legs clear yellow to dusky orange, clothed with

the usual rows of black hairs and setae. Abdomen gray to yellow, more or less heavily clothed with black hairs.

Structure essentially as in *reclusa* except as follows: eyes rather small, the median eyes oval subcontiguous, separated from the anterior lateral eyes by one and one-fourth their diameter; clypeus equal in height to nearly three full diameters of the median eye.

	I	II	III	IV
Femur	4.35 mm.	4.70 mm.	4.00 mm.	4.60 mm.
Patella	1.00	1.00	0.90	1.00
Tibia	4.50	4.80	3.60	4.20
Metatarsus	4.50	5.10	4.30	5.05
Tarsus	1.15	1.25	1.10	1.20
Total	15.50 mm.	16.85 mm.	13.90 mm.	16.05 mm.

Leg formula, 2413. First leg about five times as long as the carapace. First femur one and one-third times as long as the carapace.

Genital organ of a female from Rome, Italy, as illustrated in figure 73. Seminal receptacles large, longer than broad pouches nearly subcontiguous at their bases.

MALE FROM ROME, ITALY: Total length, 7 mm. Carapace, 3 mm. long, 2.6 mm. wide. Abdomen, 4 mm. long, 2.5 mm. wide.

Coloration and general appearance as in the female. Anterior lateral eye separated from the median eye by the full diameter of the latter. Clypeal height equal to two diameters of the median eye. Legs proportionately longer than in the female.

	I	II	III	IV
Femur	5.40 mm.	6.25 mm.	5.00 mm.	5.30 mm.
Patella	1.05	1.10	1.00	1.00
Tibia	6.20	7.40	5.00	5.50
Metatarsus	6.20	7.60	6.00	7.00
Tarsus	1.30	1.35	1.15	1.40
Total	20.15 mm.	23.70 mm.	18.15 mm.	20.20 mm.

Leg formula 2413. First leg nearly seven times as long as the carapace. First femur nearly twice as long as the carapace.

Palpus of male from Atlanta, Georgia, as illustrated in figures 60-62. Femur rather thin, of average length, slightly more than four times as long as the apical width. Patella globular, a little longer than broad. Tibia inflated, one and one-half times as long as broad (0.95 mm./0.57 mm.) and as deep as the breadth. Tibia suboval, longer than broad

(0.5 mm./0.4 mm.). Bulb enlarged, in lateral view at least as large as the tarsus or somewhat exceeding it, and the curved embolus not much exceeding the bulbal portion in length.

TYPE LOCALITIES: Of *Scytodes rufescens*, near Sagunto, Valencia Province, Spain, original specimens probably lost; of *Loxosceles marylandica*, College Park, Maryland, male holotype in the American Museum of Natural History.

DISTRIBUTION: Said to be cosmopolitan, but of more sporadic occurrence as follows: the Mediterranean region and the islands of the Atlantic, Madagascar, Japan, eastern North America, and probably also Central and South America; introduced into and now established along the east coast and the Gulf states of the United States. The following specimens agree completely with material from Spain, France, Algeria, and Japan.

AMERICAN RECORDS: *Maryland*: College Park, April 9, 1941 (M. Muma), male. *New York*: New York, February 11, 1955 (W. J. Gertsch), one female in American Museum of Natural History building. *Georgia*: Atlanta, November 19, 1945 (P. W. Fattig), male and female. *Florida*: Lemon City (E. J. Brown), immature specimen; also recorded from the state by Banks. *Louisiana*: New Orleans, penultimate male. Shreveport (N. Banks collection), female. Baton Rouge, March 20-23, 1903 (J. H. Comstock), female. Louisiana State College, Baton Rouge (J. H. Comstock), female. Shreveport, July 8, 1954 (J. J. Lenley), male, said to have bitten a man. *Missouri*: St. Louis, August 1, 1940 (W. M. Gordon), male. *Texas*: Houston, August 30, 1957 (A. Yramategui), female.

Loxosceles rufipes Lucas

Figures 66-68, 82

Scytodes rufipes LUCAS, 1834, in Guerin, Mag. Zool., vol. 8, pl. 6 and facing page.

Loxosceles rufipes F. P.-CAMBRIDGE, 1899, *Biologia Centrali-Americana*, Arachnida, Araneida, vol. 2, p. 52, pl. 4, figs. 7-8. SIMON, 1907, *Ann. Ent. Soc. Belgique*, vol. 51, p. 247, fig. 1E (key). PETRUNKEVICH, 1911, *Bull. Amer. Mus. Nat. Hist.*, vol. 29, p. 118 (part). CHAMBERLIN, 1920, *Sci. Bull. Brooklyn Mus.*, vol. 3, no. 2, p. 40 (key). CAPORIACCO, 1938, *Atti Soc. Italiana Sci. Nat.*, vol. 77, p. 260. BONNET, 1954, *Bibliographia araneorum*, vol. 2, pt. 3, p. 2577. ROEWER, 1956, *Katalog der Araneae*, vol. 1, p. 321 (*Loxoscelis*).

It now seems quite certain that the species so well illustrated by F. P.-Cambridge in the "Biologia Centrali-Americana" as *rufipes* is the one described by Lucas, and I have accepted this identification. The only other species known from Guatemala is *Loxosceles laeta* Nicolet, and this is typically larger and paler than the female depicted by Lucas.

Loxosceles rufipes occurs in Central America and probably has a limited South American distribution. The numerous records of *rufipes* from Mexico and the southern United States refer to other species. Keyserling's *unicolor*, long in the synonymy of *rufipes*, belongs in a different group. The records given above are only those that can plausibly be assigned to this species. The other records almost certainly belong elsewhere.

Because of this new appraisal of *rufipes*, it becomes necessary to reconsider the status of such synonyms as *omosita* Walckenaer, 1837, and *bicolor* Holmberg, 1876. This task is probably best done by South American students who are in a position to decide to what species these inadequate descriptions best apply.

FEMALE: Total length, 6.5 mm. Carapace, 2.6 mm. long, 2.3 mm. wide. Abdomen, 3.9 mm. long, 2.5 mm. wide.

Coloration essentially as in *panama*, new species, of which this species is clearly a near relative with shorter legs. Carapace somewhat paler, varying from dusky yellow to orange, the dusky head with six longitudinal blackish lines from the median groove to the eyes, and with dusky lines marking the side limits. Sides of the thorax with confluent dusky patches. Structure close to that of *panama* except for the shorter legs. Median eyes small, broadly oval, separated from the anterior lateral eyes by about one and one-half diameters.

	I	II	III	IV
Femur	3.00 mm.	3.15 mm.	2.70 mm.	3.10 mm.
Patella	0.80	0.85	0.80	0.80
Tibia	2.75	3.00	2.25	2.75
Metatarsus	3.00	3.25	2.75	3.30
Tarsus	1.10	1.00	0.80	1.00
Total	10.65 mm.	11.25 mm.	9.30 mm.	10.95 mm.

Leg formula, 2413. First leg four times as long as the carapace. First femur only slightly longer than the carapace.

Female genitalia as illustrated in figure 82. Seminal receptacles moderately separated, presenting two fingers, of which the outer one is much heavier.

MALE: Total length, 5.2 mm. Carapace, 2.5 mm. long, 2.2 mm. wide. Abdomen, 2.7 mm. long, 1.7 mm. wide.

Coloration paler than in the female, yellowish, with the dusky pattern more faintly indicated. Eyes proportionately larger and nearer to the lateral eyes, being only the full diameter from them. Legs proportionately longer.

	I	II	III	IV
Femur	4.00 mm.	4.25 mm.	3.50 mm.	4.00 mm.
Patella	0.80	0.80	0.80	0.80
Tibia	4.00	4.35	3.05	3.50
Metatarsus	4.40	4.70	4.00	4.70
Tarsus	1.20	1.25	1.00	1.10
Total	14.40 mm.	15.35 mm.	12.35 mm.	14.10 mm.

Leg formula, 2143. First leg 5.8 times as long as the carapace. First femur 1.6 times as long as the carapace.

Male palpus as illustrated in figures 66–68. Femur long and thin, about seven times as long as broad. Patella twice as long as broad (0.7 mm./0.32 mm.) as seen from above, rounded below where it is as deep as the width. Tibia two and one-half times as long as broad (0.95 mm./0.4 mm.), broadly rounded below where it is deeper than the width (0.45 mm.). Tarsus nearly as broad as long (0.31 mm./0.29 mm.), sub-oval. Bulb of medium size, about equal to the tarsus in bulk, with a very long thin embolus about three times as long as the bulbal portion.

TYPE LOCALITY: Guatemala; female type possibly still extant, in which case it may be deposited in the Museum d'Histoire Naturelle in Paris.

DISTRIBUTION: Central America.

RECORDS: *Panama*: Santa Rosa, July, 1945 (C. D. Michener), two males, two females. Panama City, February, 1945 (C. D. Michener), male. Old Panama City, August 10, 1945 (C. D. Michener and E. Fichter), male, two females.

Loxosceles panama, new species

Figures 57–59, 83

Loxosceles rufipes PETRUNKEVITCH, 1925, Trans. Connecticut Acad. Arts Sci., vol. 27, p. 66. BANKS, 1929, Bull. Mus. Comp. Zoöl., vol. 69, p. 56.

FEMALE: Total length, 8.5 mm. Carapace, 3.55 mm. long, 2.85 mm. wide. Abdomen, 5 mm. long, 3.5 mm. wide.

Carapace orange-brown, typically dusky, marked indistinctly with longitudinal dusky lines on the head and faint dusky patches on the side margins. Legs golden yellow to orange, the femora usually dusky. Structure in general agreement with that of *reclusa* and related species but taxonomic relationship much nearer *rufescens* and several South American species. Eyes quite small, broadly oval, the median pair slightly separated, two full diameters from the equal anterior lateral eyes. Clypeus quite wide, equal in height to two full diameters of the median eye.

	I	II	III	IV
Femur	4.80 mm.	5.00 mm.	4.45 mm.	4.85 mm.
Patella	1.17	1.17	1.17	1.17
Tibia	4.80	5.00	3.75	4.50
Metatarsus	4.70	5.00	4.40	5.05
Tarsus	1.25	1.17	1.05	1.17
Total	16.72 mm.	17.34 mm.	14.82 mm.	16.74 mm.

Leg formula, 2413. First leg five times as long as the carapace. First femur one and one-third times the length of the carapace.

Female genital organ as illustrated in figure 83.

MALE: Total length, 6.6 mm. Carapace, 3.1 mm. long, 2.7 mm. wide. Abdomen, 3.5 mm. long, 2.2 mm. wide.

Coloration and structure in close agreement with those of the female. Lateral eye separated from the median eyes by one and one-half diameters. Legs proportionately longer.

	I	II	III	IV
Femur	5.85 mm.	6.35 mm.	5.15 mm.	5.55 mm.
Patella	1.10	1.10	1.10	1.10
Tibia	6.50	7.15	4.90	5.60
Metatarsus	6.85	7.65	6.00	6.85
Tarsus	1.70	1.70	1.25	1.40
Total	22.00 mm.	23.95 mm.	18.40 mm.	20.50 mm.

Leg formula, 2143. First leg seven times as long as the carapace. First femur nearly twice as long as the carapace.

Male palpus as illustrated in figures 57-59. Femur long and thin, seven times as long as broad at apex. Tibia nearly three times as long as broad (1.35 mm./0.49 mm.) and as deep as broad. Tarsus nearly as long as broad (0.2 mm./0.24 mm.), suboval, without lateral extensions. Bulb of medium size, with a long, somewhat sinuous embolus which is twice as long as the bulbal part.

TYPE LOCALITY: Barro Colorado Island, Canal Zone, Panama; male holotype, female allotype, and paratypes, February, 1936 (W. J. Gertsch).

DISTRIBUTION: Central America.

KNOWN RECORDS: *Panama*: Barro Colorado Island, Canal Zone, February 5-10, 1955 (O. Morris), males; February-March, 1936 (W. J. Gertsch), many males and females; (K. W. Cooper), females. Madden Forest, January 18, 1945 (C. D. Michener), female. Chilibrillo Cave, April 8, 1945 (R. Trapido), females, immature. Taboga Island, August 23, 1946 (N. L. H. Krauss), two immatures, probably this species.

Loxosceles laeta Nicolet

Figures 69-72

Scytodes laeta NICOLET, 1849, in Gay, Historia . . . de Chile, vol. 3, p. 349, pl. 2, fig. 3.

Scytodes rufipes NICOLET, 1849, in Gay, Historia . . . de Chile, vol. 3, p. 348, pl. 1, fig. 11.

Scytodes nigella NICOLET, 1849, in Gay, Historia . . . de Chile, vol. 3, p. 350, pl. 2, fig. 4.

Loxosceles laeta SIMON, 1907, Ann. Ent. Soc. Belgique, vol. 51, p. 246. PETRUNKEVICH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 118. CHAMBERLIN, 1920, Bull. Brooklyn Inst. Arts Sci., ser. 2, vol. 3, p. 40. ESCOMEL, 1929, Obras científicas, Lima, vol. 1, p. 377 (reprint). VELLARD, 1936, Le venin des araignées, Paris, p. 269. BONNET, 1954, Bibliographia araneorum, vol. 2, pt. 3, p. 2574. ROEWER, 1956, Katalog der Araneae, vol. 1, p. 320 (*Loxoscelis*).

FEMALE: Total length, 12 mm. Carapace, 5.6 mm. long, 4.5 mm. wide. Abdomen, 7.3 mm. long, 9.5 mm. wide.

Carapace and appendages bright yellow to orange or dark reddish brown. Carapace darkest on the head but most often showing few or no traces of distinctive pattern. Basal segments of legs and the palpi orange but the metatarsi and tarsi usually darker orange or darker reddish brown. Head with small elevated pits from which originate long setae, this granulose condition most evident when the hairs are lost, similar to those found in most other species. Hairs and setae on legs as in *reclusa*, arranged in rows. Abdomen white to gray, covered with black hairs.

Structure essentially as in *reclusa* but more similar to that of *rufipes* and other members of that group. Eyes rather small, the oval median eyes separated from the lateral eyes by one and one-half diameters. Clypeus equal in height to three diameters of the median eye.

	I	II	III	IV
Femur	6.15 mm.	6.50 mm.	6.30 mm.	7.20 mm.
Patella	2.00	2.00	1.85	2.00
Tibia	6.35	6.50	5.25	6.90
Metatarsus	6.20	6.80	6.50	8.10
Tarsus	1.80	1.85	1.75	2.00
Total	22.50 mm.	23.65 mm.	21.65 mm.	26.20 mm.

Leg formula, 4213. First leg four times as long as the carapace. First femur slightly longer than the carapace.

Female genital organ as illustrated in figure 72. Receptacles small, separated by the basal width, presenting a long erect finger enlarged and rounded apically.

MALE: Total length, 9.4 mm. Carapace, 5 mm. long, 4.1 mm. wide. Abdomen, 5 mm. long, 2.7 mm. wide.

Coloration and structure in close agreement with those of the female. Anterior lateral eye only slightly more than the full diameter from the median eye. Clypeus equal in height to about two and one-half diameters of the median eye.

	I	II	III	IV
Femur	7.00 mm.	8.00 mm.	7.10 mm.	8.40 mm.
Patella	1.80	1.80	1.75	1.80
Tibia	7.75	8.25	6.45	7.80
Metatarsus	8.00	9.00	7.70	9.75
Tarsus	2.15	2.25	1.80	2.20
Total	26.70 mm.	29.30 mm.	24.80 mm.	29.95 mm.

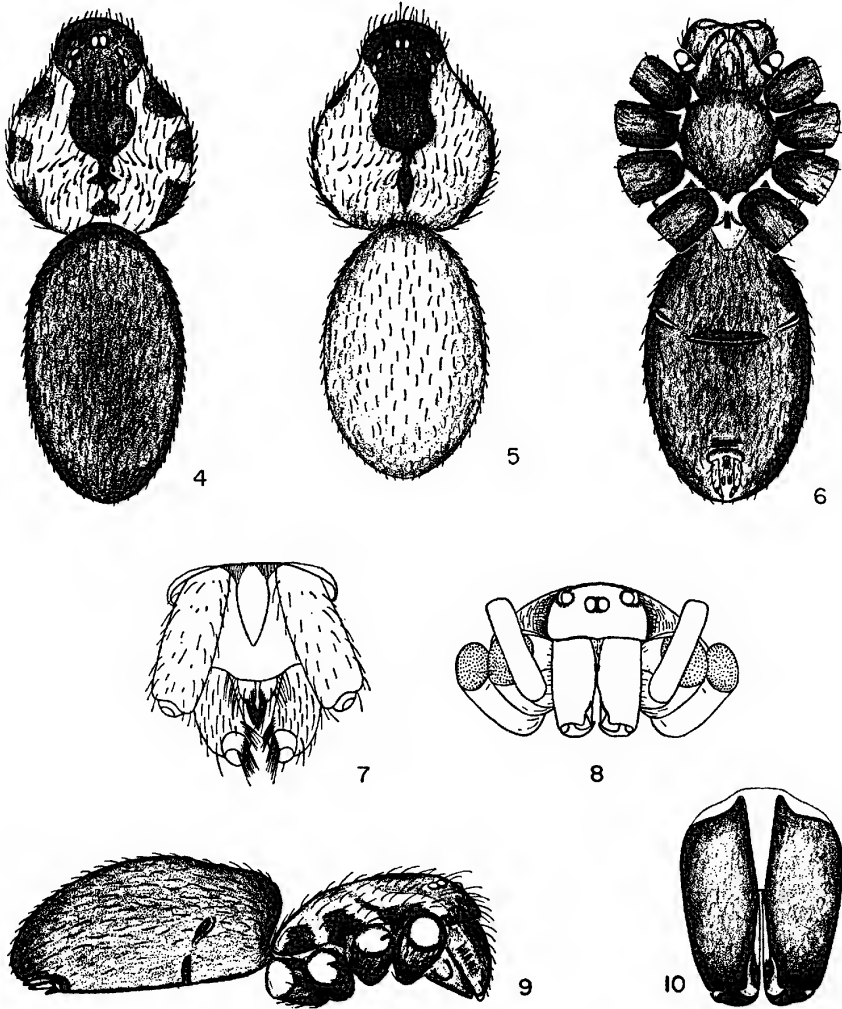
Leg formula, 4213. First leg slightly more than five times the length of the carapace. First femur one and two-fifths as long as the carapace.

Male palpus as illustrated in figures 69-71. Femur quite long and thin, eight times as long as broad at the base (4 mm./0.5 mm.). Patella more than twice as long as broad, thicker than the femur. Tibia about three times as long as broad (2.6 mm./0.8 mm.), about as deep as wide. Tarsus nearly as long as broad, suboval, without lateral enlargement. Bulb of average size, in lateral view about equal to the tarsus, and the thin embolus not fully twice the length of the bulbal part.

TYPE LOCALITIES: Of *Scytodes laeta*, *rufipes*, and *nigella*, Chile, the original material presumed to be lost.

DISTRIBUTION: Widespread in South America, from Chile and Peru eastward into Brazil and Argentina, north into Central America.

CENTRAL AMERICAN RECORDS: *Guatemala*: Guatemala City, June-October, 1948 (Barnum Brown), males and females. San Pedro, Yepocapa, March-June, 1935 (H. Elishewitz), immature. Chichicastenango, August 6-7, 1947 (C. and P. Vaurie), immature. *Spanish Honduras*: Copan, March 20, 1938 (Paul Richard), male, female, and subadult males. Lake Atitlan, March, 1938 (Paul Richard), subadult females.



FIGS. 4-6. *Loxosceles reclusa* Gertsch and Mulaik. 4. Dorsal view of well-marked female. 5. Dorsal view of male. 6. Ventral view of female.

FIGS. 7, 8. *Loxosceles devia* Gertsch and Mulaik. 7. Spinnerets. 8. Frontal view of male.

FIGS. 9, 10. *Loxosceles reclusa* Gertsch and Mulaik. 9. Lateral view of female. 10. Chelicerae, frontal view.

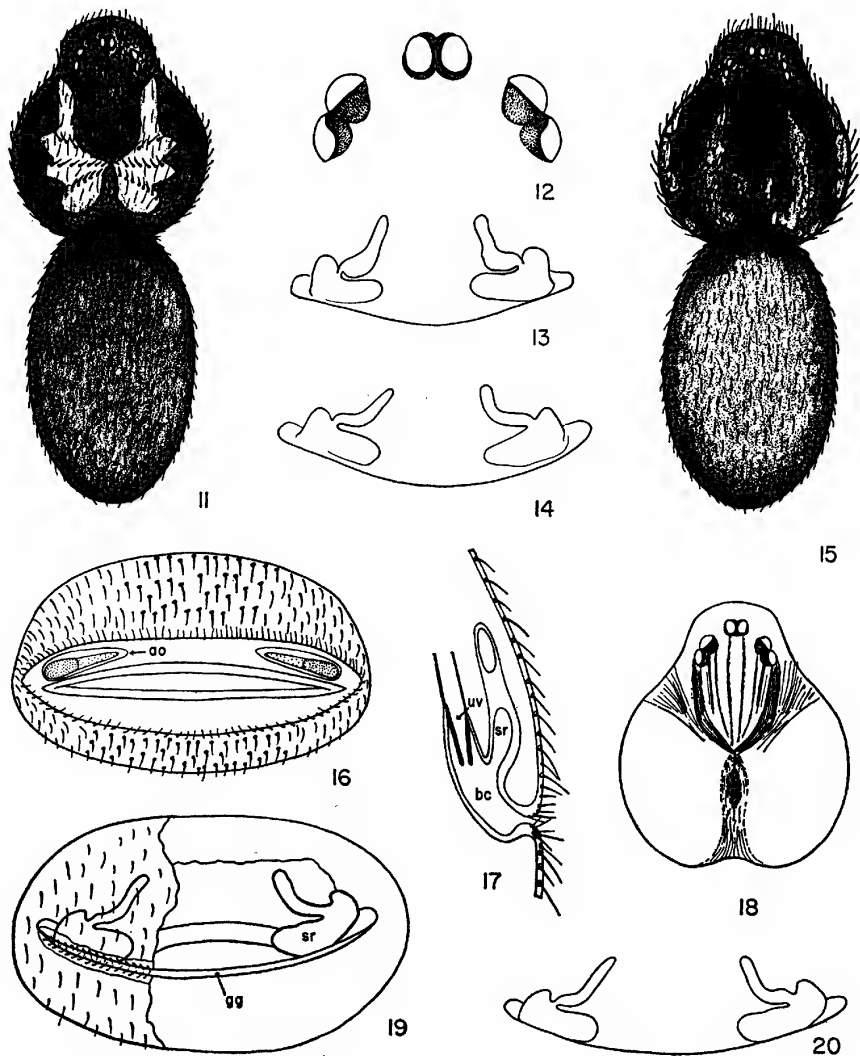


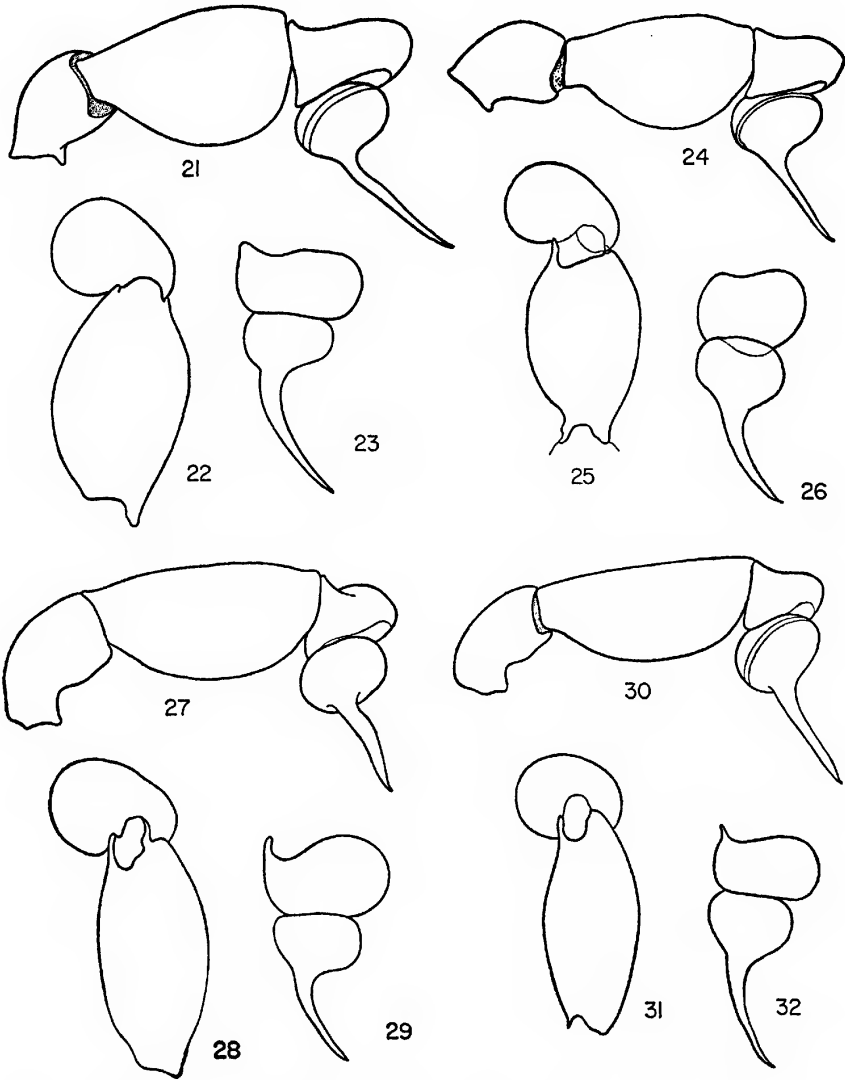
FIG. 11. *Loxosceles colima*, new species, dorsal view of female.

FIGS. 12-14. *Loxosceles devia* Gertsch and Mulaik. 12. Eyes of male. 13, 14. Outlines of seminal receptacles of female genitalia.

FIG. 15. *Loxosceles caribbaea*, new species, dorsal view of female.

FIGS. 16-20. *Loxosceles devia* Gertsch and Mulaik. 16. Genital groove of female, pressed open. 17. Section through genital region. 18. Carapace of male. 19. Partially exposed genitalia to show relationship of parts. 20. Outline of seminal receptacles of female.

Abbreviations: AO, atriobursal orifice; BC, bursa copulatrix; GG, genital groove; SR, seminal receptacle; UV, uterine valve.

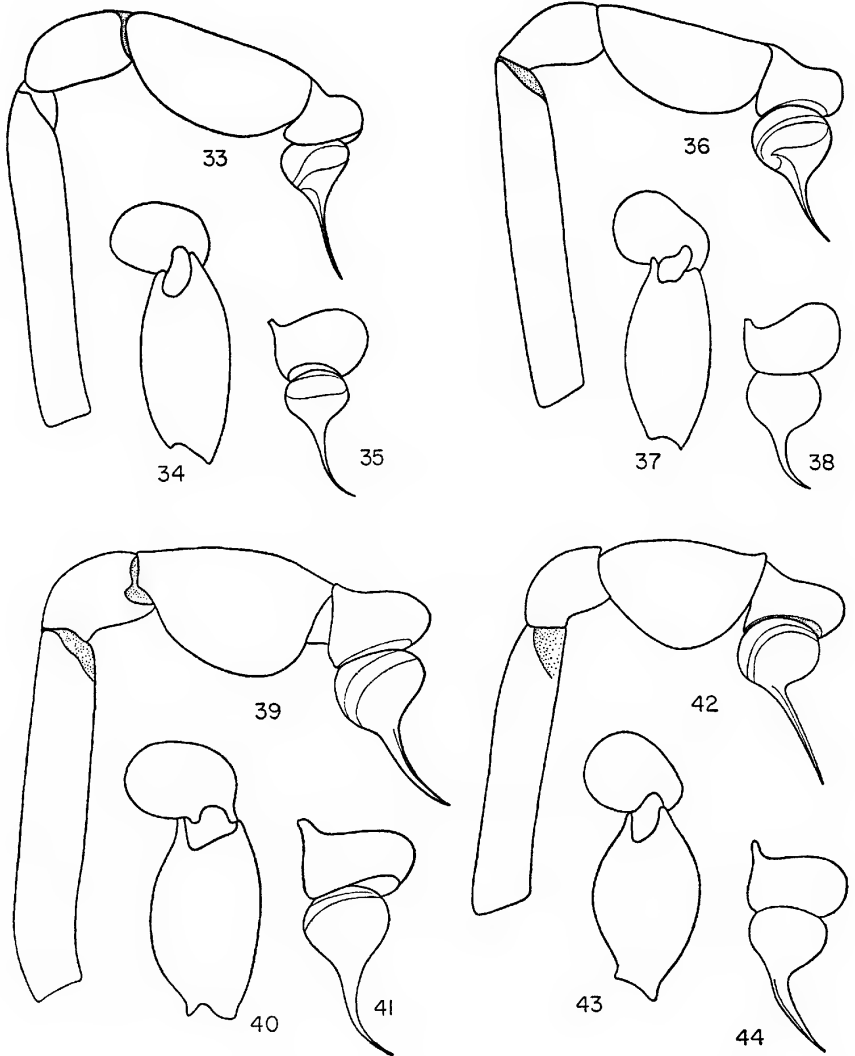


FIGS. 21-23. *Loxosceles reclusa* Gertsch and Mulaik, right male palpus. 21. Retrolateral view of apical segments. 22. Dorsal view of tibia and tarsus. 23. Apical view of tarsus and bulb.

FIGS. 24-26. *Loxosceles devia* Gertsch and Mulaik, right male palpus. 24. Retrolateral view of apical segments. 25. Dorsal view of tibia and tarsus. 26. Apical view of tarsus and bulb.

FIGS. 27-29. *Loxosceles arizonica* Gertsch and Mulaik, right male palpus. 27. Retrolateral view of apical segments. 28. Dorsal view of tibia and tarsus. 29. Apical view of tarsus and bulb.

FIGS. 30-32. *Loxosceles unicolor* Keyserling, right male palpus. 30. Retrolateral view of apical segments. 31. Dorsal view of tibia and tarsus. 32. Apical view of tarsus and bulb.

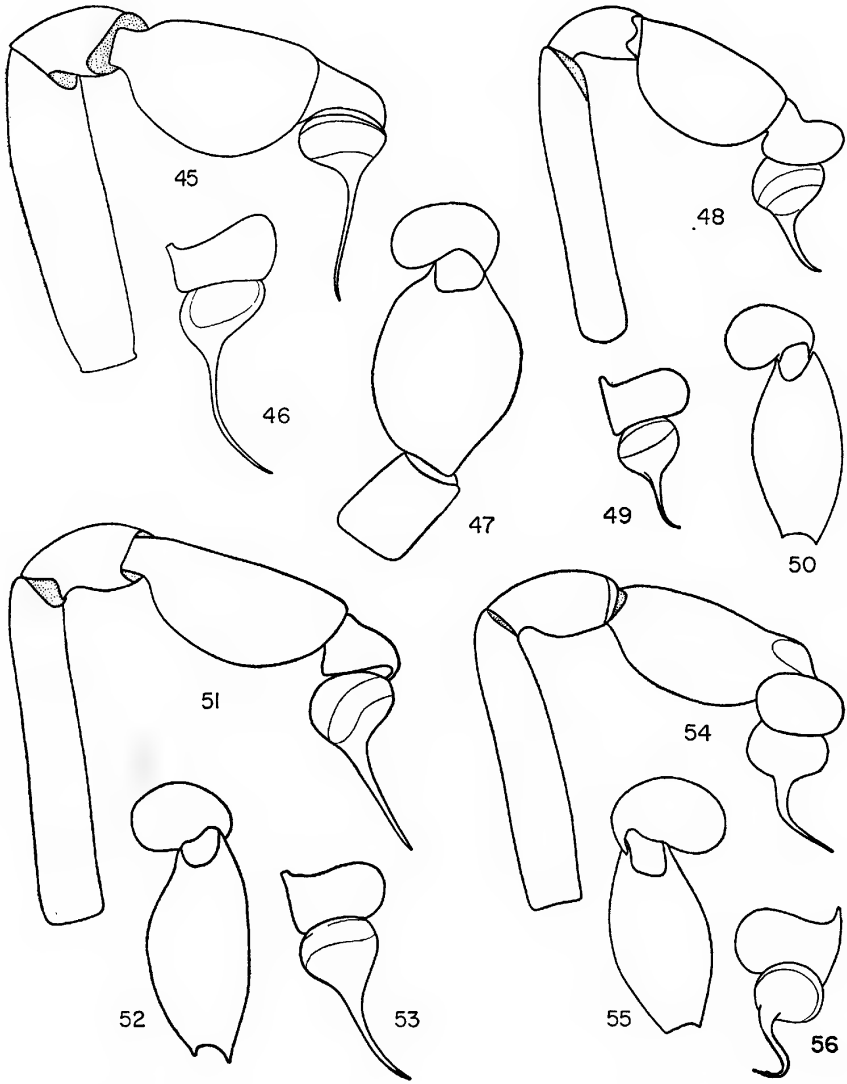


FIGS. 33-35. *Loxosceles yucatana* Chamberlin and Ivie, right male palpus. 33. Retrolateral view. 34. Dorsal view of tibia and tarsus. 35. Apical view of tarsus and bulb.

FIGS. 36-38. *Loxosceles zapoteca*, new species, right male palpus. 36. Retrolateral view. 37. Dorsal view of tibia and tarsus. 38. Apical view of tarsus and bulb.

FIGS. 39-41. *Loxosceles boneti*, new species, right male palpus. 39. Retrolateral view. 40. Dorsal view of tibia and tarsus. 41. Apical view of tarsus and bulb.

FIGS. 42-44. *Loxosceles bolivari*, new species, right male palpus. 42. Retrolateral view. 43. Dorsal view of tibia and tarsus. 44. Apical view of tarsus and bulb.

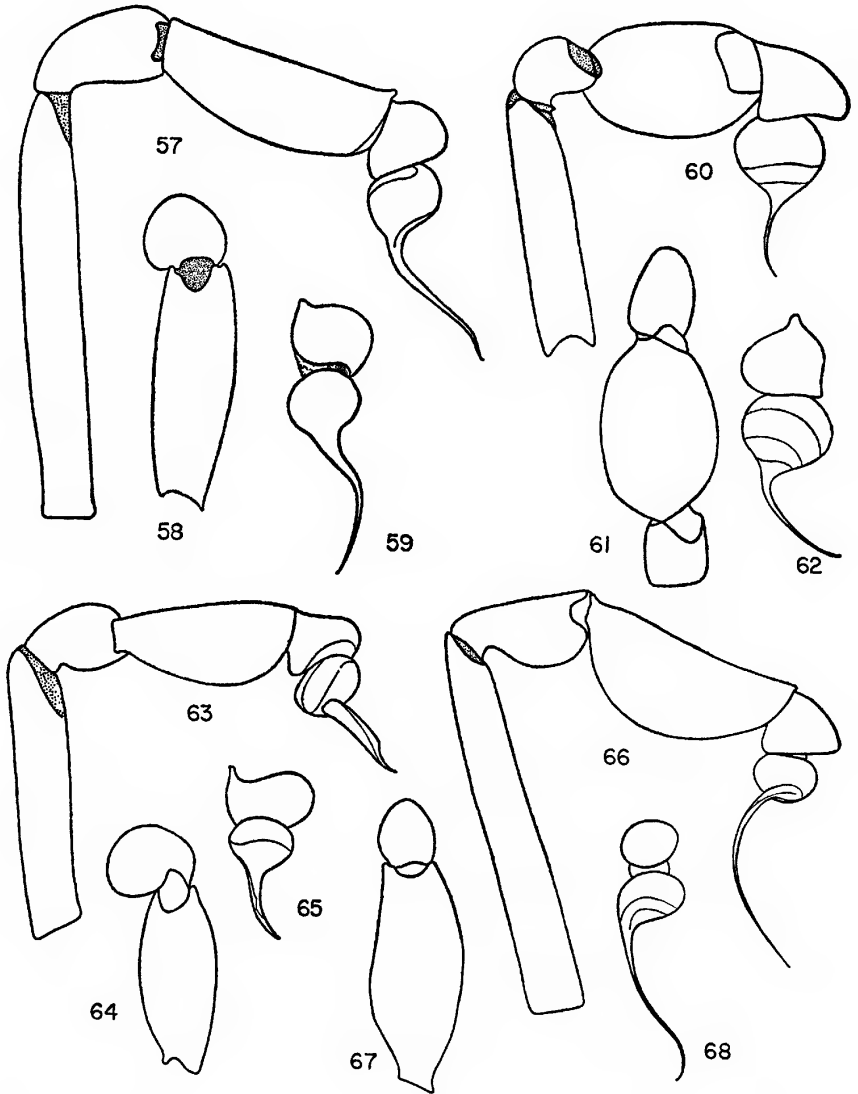


FIGS. 45-47. *Loxosceles tehuana*, new species, right male palpus. 45. Retro-lateral view. 46. Apical view of tarsus and bulb. 47. Dorsal view of patella, tibia, and tarsus.

FIGS. 48-50. *Loxosceles colima*, new species, right male palpus. 48. Retro-lateral view. 49. Apical view of tarsus and bulb. 50. Dorsal view of tibia and tarsus.

FIGS. 51-53. *Loxosceles cubana*, new species, right male palpus. 51. Retro-lateral view. 52. Dorsal view of tibia and tarsus. 53. Apical view of tarsus and bulb.

FIGS. 54-56. *Loxosceles caribbaea*, new species, left male palpus. 54. Pro-lateral view. 55. Dorsal view of tibia and tarsus. 56. Apical view of tarsus and bulb.

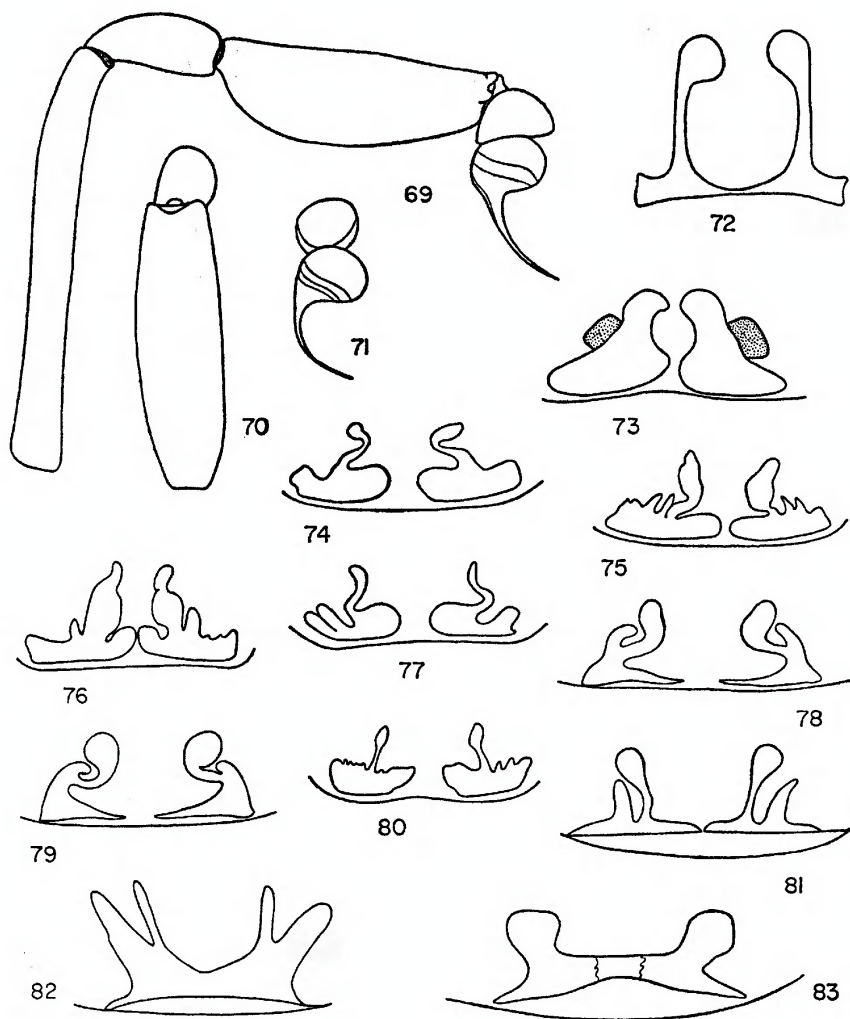


FIGS. 57-59. *Loxosceles panama*, new species, right male palpus. 57. Retro-lateral view. 58. Dorsal view of tibia and tarsus. 59. Apical view of tarsus and bulb.

FIGS. 60-62. *Loxosceles rufescens* Dufour, right male palpus. 60. Retro-lateral view. 61. Dorsal view of patella, tibia, and tarsus. 62. Apical view of tarsus and bulb.

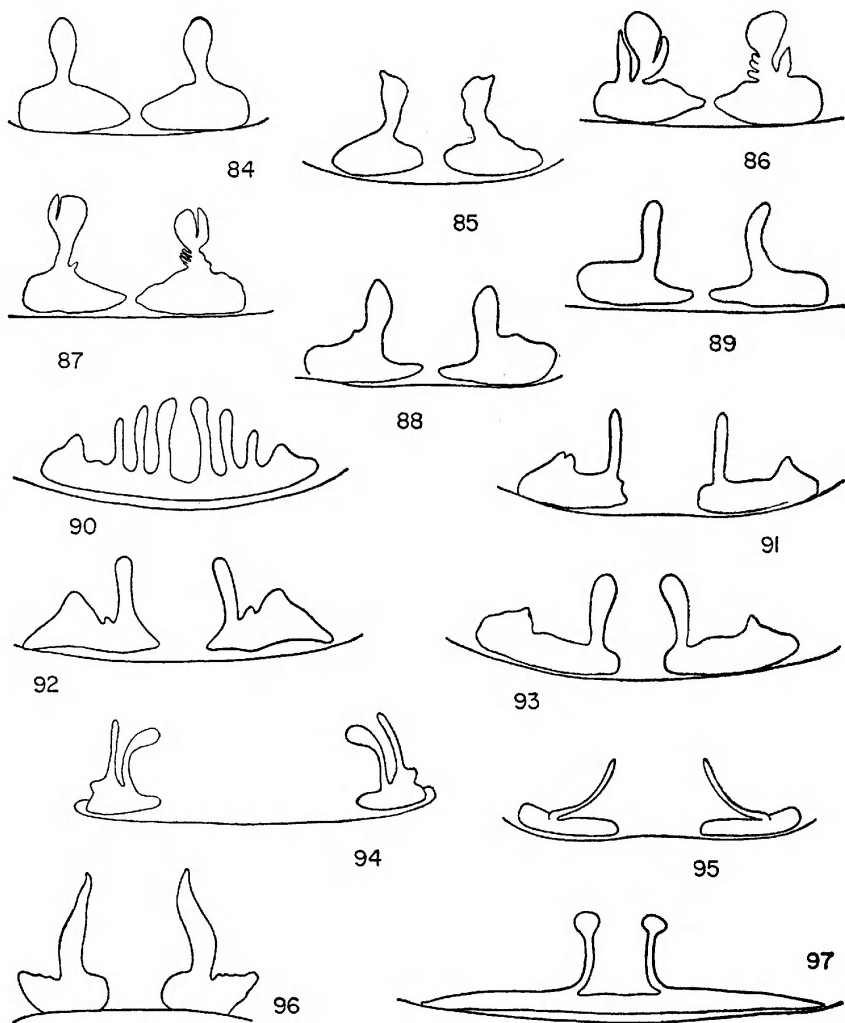
FIGS. 63-65. *Loxosceles misteca*, new species, right male palpus. 63. Retro-lateral view. 64. Dorsal view of tibia and tarsus. 65. Apical view of tarsus and bulb.

FIGS. 66-68. *Loxosceles rufipes* Lucas, right male palpus. 66. Retrolateral view. 67. Dorsal view of tibia and tarsus. 68. Apical view of tarsus and bulb.



FIGS. 69-71. *Loxosceles laeta* Nicolet, right male palpus. 69. Retrolateral view. 70. Dorsal view of tibia and tarsus. 71. Apical view of tarsus and bulb.

FIGS. 72-83. Seminal receptacles of female genitalia. 72. *Loxosceles laeta* Nicolet. 73. *Loxosceles rufescens* Dufour. 74-76. *Loxosceles boneti*, new species. 77. *Loxosceles bolivari*, new species. 78, 79. *Loxosceles caribbaea*, new species. 80. *Loxosceles nahuana*, new species. 81. *Loxosceles cubana*, new species. 82. *Loxosceles rufipes* Lucas. 83. *Loxosceles panama*, new species.



Figs. 84–97. Seminal receptacles of female genitalia. 84–87. *Loxosceles arizonica* Gertsch and Mulaik. 88, 89. *Loxosceles unicolor* Keyserling. 90. *Loxosceles arizonica* Gertsch and Mulaik. 91–93. *Loxosceles reclusa* Gertsch and Mulaik. 94. *Loxosceles yucatanana* Chamberlin and Ivie. 95. *Loxosceles zapoteca*, new species. 96. *Loxosceles colima*, new species. 97. *Loxosceles tehuana*, new species.

