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(Araneae, Clubionidae)
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ABSTRACT

The *tranquillus* and *speciosus* groups of *Trachelas*, and the 20 species from North and Central America placed in them, are diagnosed and described. In both groups the male embolus is a separate sclerite and the internal female genitalia have anteriorly folded lateral ducts. As defined, the *tranquillus* group includes those species in which the male embolus has a coiled base and the internal female genitalia have large, regularly coiled median ducts, whereas the *speciosus* group contains those species whose males lack a coiled embolar base and whose females have small, irregularly coiled median ducts. Keys to the species, illustrations and scanning electron micrographs of somatic and genitalic characters, locality lists, maps, and notes on natural history are provided. The affinities of the genus and its species groups, the associations of these spiders with man, the relative abundance of teratological specimens, difficulties in matching sexes, problems in nomenclature, and the use of leg cusps as a taxonomic character are discussed. Seven new species are described: *depressus* from southern Mexico, *organatus* from Arizona and western Mexico, *spicus* from Chiapas, *sinuosus* from Georgia and Florida, *fuscus* from Durango and Nuevo León, *latus* from southern Mexico and Guatemala, and *hamatus* from Veracruz. The female of *spirifer* F. O. P.-Cambridge and the male of *huachucanus* Gertsch are described for the first time. Four specific names are newly synonymized: *utahanus* Chamberlin and Ivie and *arizonatus* Gertsch, both with *mexicanus* Banks; *laticeps* Bryant with *similis* F. O. P.-Cambridge; and *morosus* Banks with *transversus* F. O. P.-Cambridge.

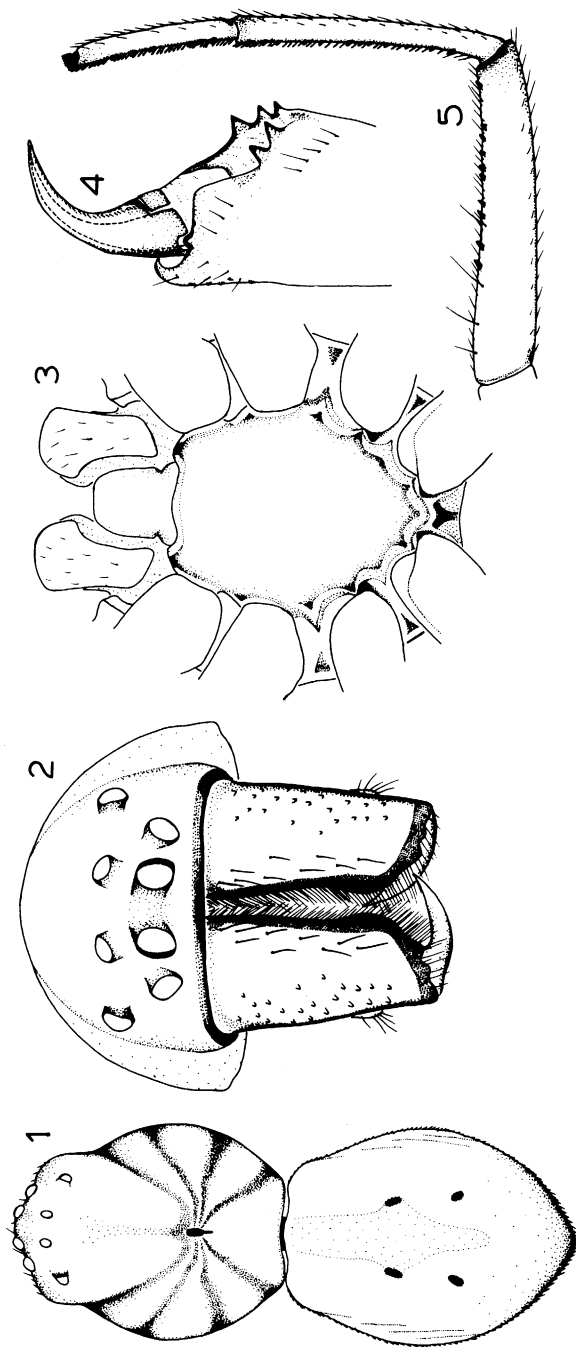
INTRODUCTION

This paper is the first in a proposed series on the tracheline genera of the spider family Clubionidae. These genera have been placed in the Corinninae but differ greatly from *Corinna* and its relatives. They form a distinct, monophyletic group that may deserve subfamilial status. Clubionids belonging to these genera may be easily recognized by the total absence of leg spines and the presence, at least in males, of a ventral series of small black cusps on the last three segments of the anterior legs (figs. 5, 42, 43).

The genus *Trachelas*, as it now stands, is large and widespread in distribution. Its species characteristically have a bright red carapace which contrasts strikingly with a pale white abdomen. There is, however, considerable diversity in the genitalia, the shape of the endites, the cheliceral dentition, and the distribution of trichobothria. Although the genus could be easily fragmented on the basis of these characters, a preliminary study of the South American trachelines has shown that the differences between other genera in this group are much greater than those between the various *Trachelas* species. It therefore seems best to retain the large genus and to divide it into a number of distinct species groups.

Four such species groups occur in North and Central America and the West Indies. Two of these, the *tranquillus* and *speciosus* groups, are sister groups and may be distinguished from the others by genitalic characters: the embolus of the male palp is a separate sclerite rather than merely the pointed tip of the tegulum, and the internal female genitalia have folded lateral ducts, coiled median ducts, and paired spermathecae. The *tranquillus* group is the most common in the United States, and is found as far south as Panama, although not in the West Indies. A few South American species may also be referable to this group but little material is available. Species belonging to the *tranquillus* group may be recognized by the coiled base of the male embolus (fig. 6) and the large, regularly coiled median ducts of the internal female genitalia (fig. 9). The *speciosus* group occurs only from the southern United States south to Costa Rica; in this group, the embolus lacks a coiled base (fig. 48) and the median ducts are small and irregularly coiled (fig. 51).

Several species in the *tranquillus* group are of interest because of their close association with man. The four species common in the United States (*tranquillus*, *volutus*, *mexicanus*, and *pacificus*) have all been collected in buildings. Presumably because of its frequent occurrence in that habitat, *tranquillus*, an eastern species, is occasionally transported by man to areas far beyond its normal range. The senior author col-



FIGS. 1-5. *Trachelas tranquillus* (Hentz). 1. Body, dorsal view. 2. Carapace and chelicerae, anterior view. 3. Sternum and mouthparts, ventral view. 4. Chelicera, posterior view. 5. Leg I, lateral view.

lected an adult male on the grounds of the American Museum's Southwestern Research Station near Portal, Arizona, where it had obviously been inadvertently introduced from the east by travelling biologists. Another male was taken at Richfield, Utah, by W. J. Gertsch.

Again because of their abundance in houses, *tranquillus*, *mexicanus*, and *pacificus* have all been known to bite human beings. A female *tranquillus* bit a Rochester, New York, woman on the palm of the hand, causing severe pain and tenderness. Another *tranquillus* female caused local lesions and systemic symptoms in a New Jersey victim. A male *mexicanus* bit a New Mexico woman on her finger when she put on a glove which had been stored under a sink and in which the spider had made its retreat; only slight swelling was reported. A female *pacificus* is said to have caused an ulcer (presumably a skin ulcer) in a California victim. All this information, including the descriptions of symptoms, was obtained from data accompanying specimens in the American Museum. Uetz (1973) also reported a case of envenomation by a female *tranquillus* in Delaware.

Species of *Trachelas* are also of interest because of the relatively high incidence of teratological specimens. One mature male of *spirifer* bore on the dorsum of its abdomen a complete carapace, pedicel, and shriveled abdomen. Dr. B. J. Kaston has suggested (*in litt.*) that the dorsal portion of the last exuvium became attached, for some reason, to the abdomen. This apparently happened before the new cuticle hardened, as the dorsal abdominal scutum normally found in *Trachelas* males is not developed underneath the second carapace. In addition to this striking case, other anomalies were observed. One male *huachuacanus* had only six eyes; the anterior medians were missing. Further, in males of several species one or both palpi were sometimes malformed (usually beyond recognition) and incapable of functioning normally. These abnormal specimens are all from Mexico and Central America; none have been detected from the United States.

The most difficult taxonomic problem encountered in this group was that of correctly matching the males and females of the many Mexican and Central American species represented in collections by only a handful of specimens. In many cases the two sexes have never

been collected together and can be matched only by comparative morphology and geography. We have pointed out instances where we believe earlier workers erred in this regard, but remain conscious that future collecting may reveal similar errors in our own work.

The name *Clubiona tranquilla* Hentz has been applied to two different species of *Trachelas*. Most workers, following Banks (1891) and Kaston (1948, 1953), use the name *tranquillus* for the species common in the northeastern United States, but Chamberlin and Ivie (1935, 1944) and Kaston (1972) use it for *similis*, a southeastern species belonging to the *speciosus* group. The latter usage is based on two mistakes: these authors believed the type locality of *tranquillus* to be in Alabama and thought that only *similis* occurs there. Although Hentz (1847, p. 451) mentioned a pair he collected in Alabama (under the heading "*Observations*"), the type localities of his species are taken from the state or states he usually listed under the heading "*Habitat*." In this case he merely stated "*Habitat*. Common in the United States," and thus the type locality is "the United States." This is significant because Hentz also collected in Massachusetts, and clearly believed his northern *Trachelas* to be conspecific with his Alabama specimens. The situation is complicated by the fact that both species actually occur in Alabama (see the locality listings and maps for *tranquillus* and *similis*). The Hentz types, pinned dry in the Boston Society of Natural History (now the Boston Museum of Science), were eaten by beetles. Even with the aid of some of Hentz's original colored illustrations, which were donated to the American Museum by Mr. Hal F. Hentz in 1970, and which are much better than the published black and white figures, it is impossible for us to determine which species Hentz had. In order to maintain the usage of the name traditional since Banks (1891), both for the species and for the species group of which it is the earliest described member, we have designated below a neotype from a northeastern locality where only one species occurs. Our colleagues Drs. W. J. Gertsch, B. J. Kaston, and H. W. Levi have been consulted and have agreed with this designation.

An attempt was made to determine whether the leg cusps provide characters of value on the

specific level. Preliminary investigation revealed that the pattern of cusp distribution on each leg segment was rather uniform; the tibiae generally bear a single curving row of cusps, the metatarsi and tarsi two parallel rows. As the number of cusps on a segment, however, was found to vary considerably, Ms. Marcia Annenberg made counts, under our direction, of the number of cusps on the available males of two species, *tranquillus* and *volutus*. Counts were made for each of the six leg segments (tibiae, metatarsi, and tarsi of legs I and II) on which cusps occur. A study of the data revealed that neither the range (generally within a span of five to 15 cusps) nor the clustering (normal bell-shaped curves) of these figures was of diagnostic value. As there are significant differences in cusp number among species groups, a limited amount of data on cusp counts has been included in the descriptions.

For the descriptions, an attempt was made to measure 10 specimens and provide 10 cusp counts for both sexes of each species. Unless a smaller number is given, all means, standard deviations and cusp counts refer to this size sample. As most of these species are virtually identical in somatic characters, a detailed description is given for each group as a whole and the species descriptions are restricted to genitalic details, cusp counts, measurements and those somatic characters in which the species differ from their basic group pattern.

The following individuals lent material from their personal or institutional collections: Drs. J. E. Carico, C. D. Dondale (Canadian National Collections), W. J. Gertsch, B. J. Kaston, H. W. Levi (Museum of Comparative Zoology, Harvard University), W. B. Peck, R. J. Sauer (Michigan State University), R. X. Schick (California Academy of Sciences), H. K. Wallace, and H. V. Weems (Florida State Collection of Arthropods). We are especially grateful to Mr. Fred R. Wanless of the British Museum (Natural History) and to Dr. M. Grasshoff of the Natur-Museum und Forschungs-Institut Senckenberg for the loan of types from those collections. Drs. Gertsch and Levi read a draft of portions of this paper; their suggestions are greatly appreciated. Mr. Robert J. Koestler of the American Museum provided the necessary technical expertise with the scanning electron microscope, a Model S-4 manufactured by Cambridge Scientific Instruments, Ltd., and

purchased through a grant from the National Science Foundation.

THE *TRANQUILLUS* GROUP

Diagnosis. The *tranquillus* group is closely related to the *speciosus* group. The species of these groups share the following characters: the embolus is a separate sclerite; the lateral ducts of the internal female genitalia are anteriorly folded so that one loop lies directly dorsal to the other; the chelicerae have only two retromarginal teeth; and the endites are not prolonged laterally. Species belonging to the *tranquillus* group, however, differ from those of the *speciosus* group in that (1) the shaft and tip of the embolus rest on at least one basal coil, not directly on the tegulum; (2) the median ducts are large and have only a few regular coils, not many irregular ones; and (3) they lack a conspicuous fringe of long trichobothria on the proximal leg segments.

Description. Total length 4 to 10 mm. Carapace oval in dorsal view, widest at coxae II, with ocular area abruptly narrowed, dark reddish brown anteriorly, lighter posteriorly, tuberculate, with translucent border recurved anteriorly along posterior margin. Cephalic area gradually elevated; thoracic groove longitudinal (fig. 1). From front, anterior eye row procurved, posterior row recurved. All eyes circular, subequal in size; those of anterior row separated by their diameter, those of posterior row separated by twice their diameter. Median ocular quadrangle wider in back than in front, wider than long. Clypeal height equal to anterior median eye diameter (fig. 2). Chelicerae reddish brown, bowed apart with wide median concavity in males, with two retromarginal and three promarginal teeth (fig. 4). Endites dark orange, expanded anteriorly, deeply depressed opposite labium, with anteromedial serrulae. Labium dark orange with broad tip and pronounced posterolateral corners. Sternum dark orange, strongly rebordered, not prolonged between coxae IV, finely tuberculate, with deep emarginations opposite coxae (fig. 3). Leg formula 1423, leg I enlarged, dark orange; others normal, light orange with distal segments darkest. All legs devoid of spines, with light scopulae of feathery setae under tarsi and metatarsi (fig. 42); patellae divided retrolaterally. Metatarsi and tarsi with few trichobothria; femora, patellae, and tib-

iae without trichobothria. Tibiae, metatarsi, and tarsi I and II with black cusps ventrally (figs. 5, 42, 43). Tarsi with two dentate claws and claw tufts. Abdomen pale white with dark cardiac mark and four dorsal muscle impressions. Male with light orange dorsal scutum covering most of dorsum. Venter of abdomen with four longitudinal rows of circular sclerotizations. Six spinnerets, medians tiny; no colulus. Female palp with claw. Male palp with simple retrolateral tibial apophysis, bulbous tegulum with discernible curving duct, conductor visible only in expanded palps, and distinct embolus with at least one basal coil (figs. 6, 7). Epigynum with pair of large circular openings leading to long, coiled, externally visible ducts (fig. 8). Internal female genitalia consisting of folded lateral ducts, large, regularly coiled median ducts and two spermathecae (fig. 9).

Key. The following key should work well for males; females are more difficult to separate, although Chamberlin and Ivie (1935, p. 41) overstated that problem when they said, "it is doubtful whether the species can be distinguished from that sex alone." Many characters are provided by the internal genitalia (ignored by Chamberlin and Ivie), although the differences are easier to illustrate than to describe. Further, the species in this group are largely parapatric, making geography a valuable tool in identification.

KEY TO SPECIES OF THE *TRANQUILLUS* GROUP IN NORTH AND CENTRAL AMERICA

1. Males 2
Females 10
2. Tip of embolus a long, thin spike (figs. 34, 38) 3
Tip of embolus not a long, thin spike 4
3. Base of embolus with one coil (fig. 34); Arizona, Sonora, and Baja California (map 3) *organatus*
Base of embolus with two coils (fig. 38); Chiapas (map 3) *spicatus*
4. Tip of embolus blunt, bent retrolaterally (figs. 6, 10, 44) 5
Tip of embolus sharp or not bent retrolaterally 6
5. Base of embolus with one coil (figs. 6, 44); eastern United States (map 1) *tranquillus*
Base of embolus with two coils (fig. 10); southern Mexico (map 1) *depressus*
6. Base of embolus with only one coil (fig. 30); El Salvador, Costa Rica, and Panama (map 2) *cambridgei*
Base of embolus with at least one and one-half coils 7
7. Base of embolus with one and one-half coils (figs. 22, 26, 47) 8
Base of embolus with two full coils (figs. 14, 18, 45) 9
8. Shaft of embolus narrow, tip of embolus gently curved (figs. 22, 47); United States and Mexico (map 1) *pacificus*
Shaft of embolus wide, tip of embolus acutely curved (fig. 26); Guatemala and Honduras (map 2) *spirifer*
9. Tip of embolus short, twisted (figs. 14, 45); southeastern United States and eastern Mexico (map 3) *volutus*
Tip of embolus long, pronglike (figs. 18, 46); southwestern United States and Western Mexico (map 2) *mexicanus*
10. Venter of abdomen with dark longitudinal band; genitalia as in figures 32, 33; El Salvador, Costa Rica, and Panama (map 2) *cambridgei*
Venter of abdomen without dark longitudinal band 11
11. Spermathecae arising from lateral ducts by long stalks (figs. 9, 37) 12
Spermathecae arising from lateral ducts by short stalks 13
12. Median ducts relatively uniform in width (fig. 9); eastern United States (map 1) *tranquillus*
Median ducts much wider at their insertion than elsewhere (fig. 37); Arizona, Sonora, and Baja California (map 3) *organatus*
13. Part of median duct running alongside and parallel to inner edge of lateral duct (figs. 13, 17, 21) 14
No part of median duct running alongside lateral duct (figs. 25, 29) 16
14. Viewed externally, anterior loops of median ducts rounded (fig. 16); southeastern United States and eastern Mexico (map 3) *volutus*
Viewed externally, anterior loops of median ducts transverse (figs. 12, 20) 15
15. Median ducts relatively uniform in width (fig. 21); southwestern United States and western Mexico (map 2) *mexicanus*
Median ducts much wider at their insertion than elsewhere (fig. 13); southern Mexico (map 1) *depressus*
16. Viewed externally, median ducts without anterolateral peaks (fig. 28); Guatemala

and Honduras (map 2) *spirifer*
Viewed externally, median ducts usually with
anterolateral peaks (fig. 24); United States
and Mexico (map 1) *pacificus*

Trachelas tranquillus (Hentz)

Figures 1-9, 42-44; Map 1

Clubiona tranquilla Hentz, 1847, p. 465, pl. 30, fig. 1 (female holotype from "the United States," in the Boston Society of Natural History, destroyed; male neotype here designated from Greenport, Long Island, Suffolk County, New York [September 1957; R. Latham], deposited in the American Museum of Natural History).

Trachelas ruber Keyserling, 1887, p. 439, pl. 6, fig. 14 (four female syntypes from Cambridge, Middlesex County, Massachusetts, in the Museum of Comparative Zoology, examined). Emerton, 1889, p. 184, pl. 5, fig. 13. Simon, 1897, p. 179, figs 175, 176. Emerton, 1902, p. 19, fig. 66. Kaston, 1972, p. 220. (First synonymized by Banks, 1891, p. 84.)

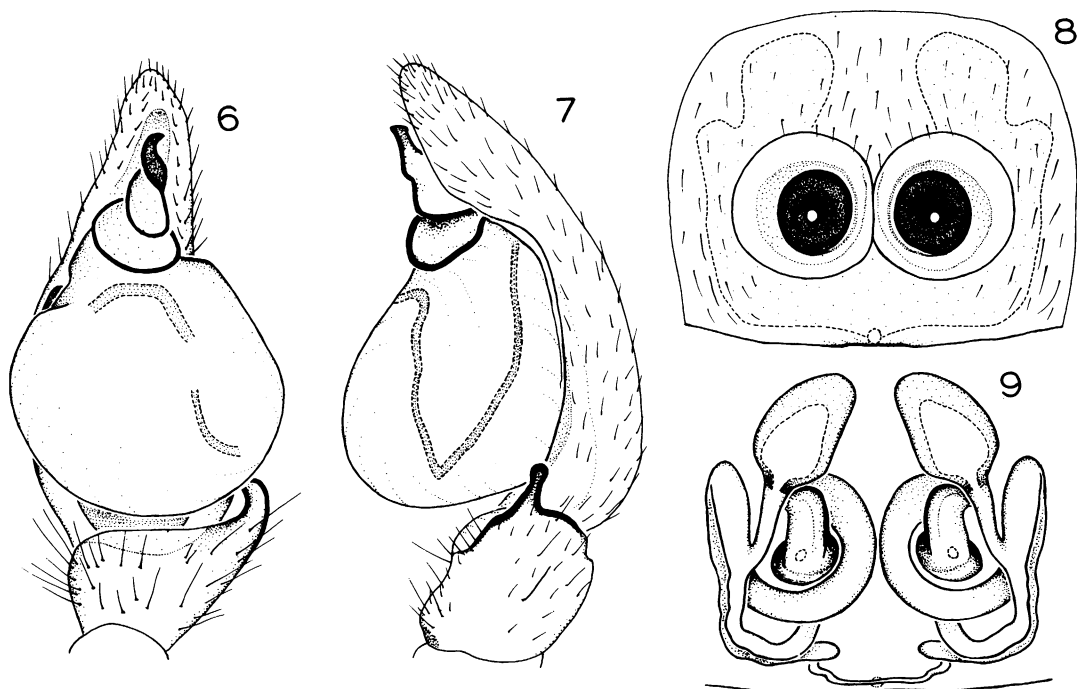
Trachelas tranquilla: Banks, 1891, p. 84. Petrun-

kevitch, 1911, p. 524. Comstock, 1912, p. 581, figs. 91, 659, 660.

Trachelas tranquillus: Marx, 1892, p. 155. Chickering, 1939, p. 82, figs. 87-90. Kaston, 1948, p. 381, figs. 1350-1353, 1360; 1953, p. 83. Roewer, 1954, p. 590. Bonnet, 1959, p. 4671.

Diagnosis. *Trachelas tranquillus* is a distinctive species closely related to *depressus* but easily recognized by genitalic characters. The palp is closest to that of *depressus*, but the base of the embolus has only one coil (fig. 6). The epigynum is closest to that of *organatus*; in both the spermathecae arise from the lateral ducts by long stalks. In *tranquillus*, however, the median ducts are relatively uniform in width throughout their length (fig. 9).

Male. Total length 5.54 ± 0.55 mm. Carapace 2.69 ± 0.22 mm. long, 2.22 ± 0.18 mm. wide. Femur I 2.44 ± 0.20 mm. long. Palp with greatly expanded and rounded tegulum. Embolus with one basal coil, wide shaft, and retrolaterally bent tip (figs. 6, 44). Retrolateral tibial apophysis narrow



FIGS. 6-9. *Trachelas tranquillus* (Hentz). 6. Palp, ventral view. 7. Palp, retrolateral view. 8. Epigynum, ventral view. 9. Internal female genitalia, dorsal view.

(fig. 7). Leg cusps: tibia I 0-10, II 4-9; metatarsus I 9-25, II 9-15; tarsus I 6-15, II 5-10.

Female. Total length 7.69 ± 0.84 mm. Carapace 3.24 ± 0.22 mm. long, 2.72 ± 0.17 mm. wide. Femur I 2.86 ± 0.27 mm. long. Epigynum with two large dark openings. Lateral ducts (but not median ducts) visible externally (fig. 8). Spermathecae arising from long stalks, usually with dark marginal and light internal divisions. Median ducts with one large coil (fig. 9). Leg cusps: tibia I 0-6, II 0-2; metatarsus I 13-22, II 5-10; tarsus I 10-18, II 2-11.

Localities. **United States:** *Alabama:* Madison Co.: Monte; Mays Gulf. *Arizona:* Cochise Co.: Southwestern Research Station. *Arkansas:* Washington Co.: Fayetteville. *Connecticut:* New Haven Co.: Mount Carmel; New Haven; North Haven; South Meriden. *Georgia:* Clarke Co.: Athens. *Illinois:* Adams Co.: La Prairie. Cook Co.: Nightingale Farm. *Indiana:* Putnam Co.: Greencastle. *Iowa:* Johnson Co.: Swisher. Linn Co.: Cedar Rapids. Woodbury Co.: Sioux City. *Kansas:* Douglas Co.: Lawrence. Gray Co.: Manhattan Co.: Riley. *Maryland:* Montgomery Co.: Bethesda; Kensington; Takoma Park. *Massachusetts:* Hampshire Co.: Amherst. Middlesex Co.: Cambridge; Holliston; Reading; Waverly. Norfolk Co.: Brookline; Cohasset; Milton; Walpole. Suffolk Co.: Allston. *Michigan:* Barry Co.: Yankee Springs Game Area. Berrien Co.: Watervliet. Calhoun Co.: Albion. Eaton Co.: Olivet. Gratiot Co.: Ingham Co.: E. Lansing; Okemos. Kalamazoo Co.: Gull Lake. Midland Co.: Monroe Co.: Saginaw Co.: Washtenaw Co.: Ann Arbor. Wayne Co.: Detroit; Redford. *Minnesota:* Wabasha Co.: Lake Pepin. *Missouri:* Greene Co.: Springfield. Johnson Co.: Warrensburg. Newton Co.: Newtonia. Phelps Co.: Rolla. Saint Louis Co.: Valley Park. *New Hampshire:* Carroll Co.: Intervale. *New Jersey:* Bergen Co.: Englewood; Ramsey. Camden Co.: Camden. Hunterdon Co.: Lambertville. Mercer Co.: Princeton. Monmouth Co.: Red Bank. Morris Co.: Morristown. *New York:* Dutchess Co.: Poughkeepsie. Essex Co.: Newcomb. Jefferson Co.: Woodville. Kings Co.: Brooklyn. Monroe Co.: Irondequoit; North Greece; Rochester. Naussau Co.: Rockville Center; Sea Cliff. Oneida Co.: Utica. Onondaga Co.: Jamesville; Pompey. Queens Co.: Flushing. Suffolk Co.: Calverton; Cold Spring Harbor; Greenport; Orient;

Southampton; Southold. Tompkins Co.: Ithaca. Westchester Co.: Harmon. *North Carolina:* Craven Co.: Durham Co.: Duke Forest. Haywood Co.: Canton. Yancey Co.: Mt. Mitchell. *Ohio:* Champaign Co.: Urbana. Knox Co.: Gambier. Trumbull Co.: Warren. *Oklahoma:* Beckham Co.: Sayre. *Pennsylvania:* Adams Co.: Gettysburg. Allegheny Co.: Pittsburg. Bucks Co.: Jamison. *Tennessee:* Sullivan Co.: Bristol. *Utah:* Sevier Co.: Richfield. *Virginia:* Albermarle Co.: Warren. Fairfax Co.: Falls Church; Springfield. Grayson Co.: Galax. Montgomery Co.: Blacksburg. Norfolk Co.: Portsmouth. *West Virginia:* Ohio Co.: Wheeling. *Wisconsin:* Dane Co.: Madison. *Canada:* *Ontario:* Ancaster; Belleville; London.

Distribution. Eastern United States and Canada from southern New England west to Minnesota and Iowa, south to Oklahoma, Alabama, and Georgia (map 1). The two records from Arizona and Utah have not been included on the map as it is felt that they represent introductions into areas outside the actual species range. This distribution is somewhat unusual for northeastern spiders; most species associated with the eastern deciduous forests extend farther to the south and not so far to the west as does *tranquillus*. The southern limit of this species apparently coincides with the northern limit of *volutus*.

Natural History. Mature males have been taken from mid-June through early November, mature females in all months except February and March. Specimens have been collected commonly in houses and less frequently by sweeping in mixed pine and hardwood forests, by beating under boards, on apple trees, in retreats in rolled leaves, and in Malaise traps.

***Trachelas depressus*, new species**

Figures 10-13; Map 1

Types. Male holotype from Quiroga, Michoacán, Mexico (August 8, 1953; P. and C. Vaurie), and female paratype from 7 miles south of Chilpancingo, Guerrero, Mexico (July 29, 1956; W. Gertsch, V. Roth), deposited in the American Museum of Natural History.

Etymology. The specific name is from the Latin *deprimo* (press down) and refers to the deeply depressed epigynal openings.

Diagnosis. *Trachelas depressus* is most closely

related to *tranquillus* but may be distinguished by the two basal coils of the embolus (fig. 10) and the spermathecae arising from the lateral ducts by short stalks (fig. 13). Further, the two species are widely separated geographically (map 1).

Male. Total length 5.87 mm. Carapace 2.92 mm. long, 2.34 mm. wide. Femur I 2.30 mm. long (holotype). Palp with rounded tegulum; only ventral portion of duct visible. Embolus with two basal coils, long shaft, and retrolaterally bent tip (fig. 10). Retrolateral tibial apophysis squared at tip (fig. 11). Leg cusps: tibia I 16 or 17, II 0-8; metatarsus I 22-24, II 0-18; tarsus I 10-16, II 0-9 (one of holotype's second legs apparently regenerated and thus bearing no cusps).

Female. Total length 6.77-8.06 mm. Carapace 2.46-3.10 mm. long, 2.16-2.52 mm. wide. Femur I 1.94-2.38 mm. long (six specimens). Epigynum with deeply depressed openings (fig. 12). Median ducts much wider at their insertion than elsewhere. Spermathecae expanded anteriorly (fig. 13). Leg cusps: tibia I 0-8, II 0 or 1;

metatarsus I 1-23, II 1-11; tarsus I 5-19, II 3-9.

Localities. Mexico: *Guerrero*: Chilpancingo. *Michoacán*: Apatzingán; Quiroga. *Morelos*: Cuernavaca; Oaxtepec; Tepoztlán. *Oaxaca*: Oaxaca.

Distribution. Southern Mexico (map 1).

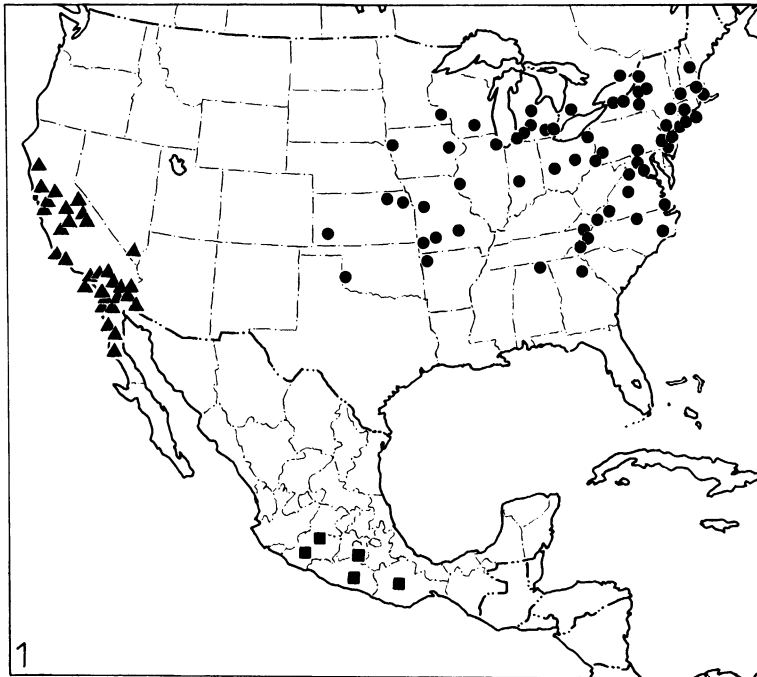
Natural History. The holotype male was collected on August 8; mature females have been taken from late June through mid-September. Nothing is known of the habits of this species.

Trachelas volutus Gertsch

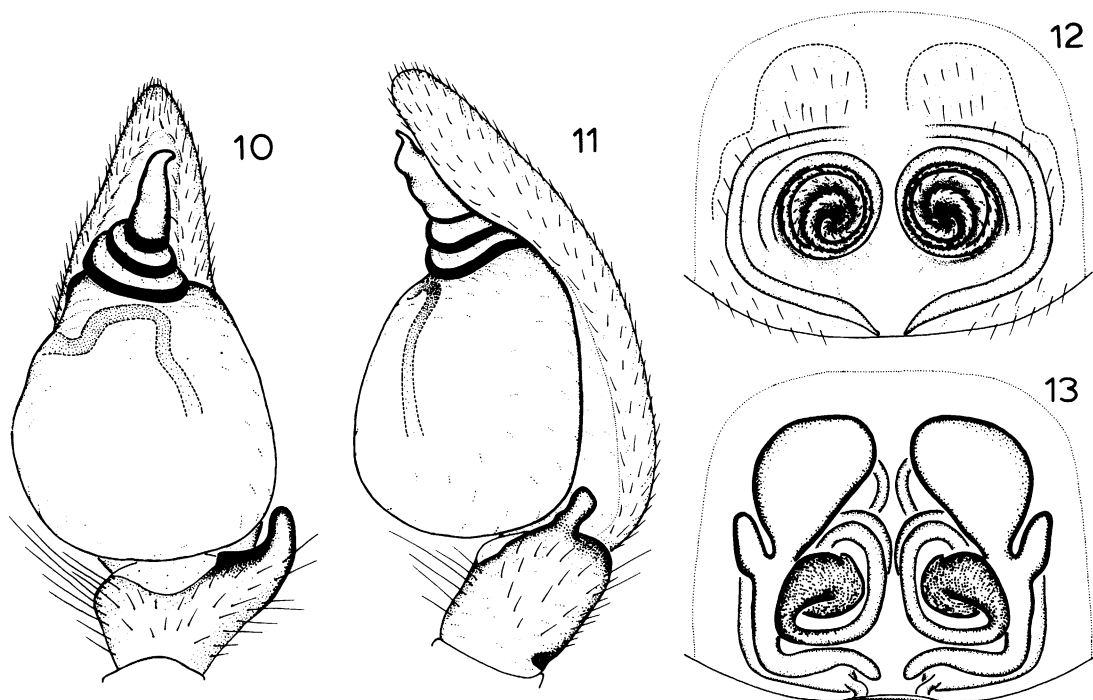
Figures 14-17, 45; Map 3

Trachelas volutus Gertsch, 1935, p. 13, figs. 27, 28 (male holotype and female allotype from Edinburg, Hidalgo County, Texas, in the American Museum of Natural History, examined). Chamberlin and Ivie, 1935, p. 41, figs. 139, 140. Roewer, 1954, p. 589. Bonnet, 1959, p. 4672.

Diagnosis. *Trachelas volutus* is closely related to *mexicanus*; both have an embolus with two basal coils and a spiraled tip, and median ducts that run alongside the inner margin of the lateral



MAP 1. Circles, *Trachelas tranquillus*. Triangles, *T. pacificus*. Squares, *T. depressus*.



FIGS. 10-13. *Trachelas depressus*, new species. 10. Palp, ventral view. 11. Palp, retrolateral view. 12. Epigynum, ventral view. 13. Internal female genitalia, dorsal view.

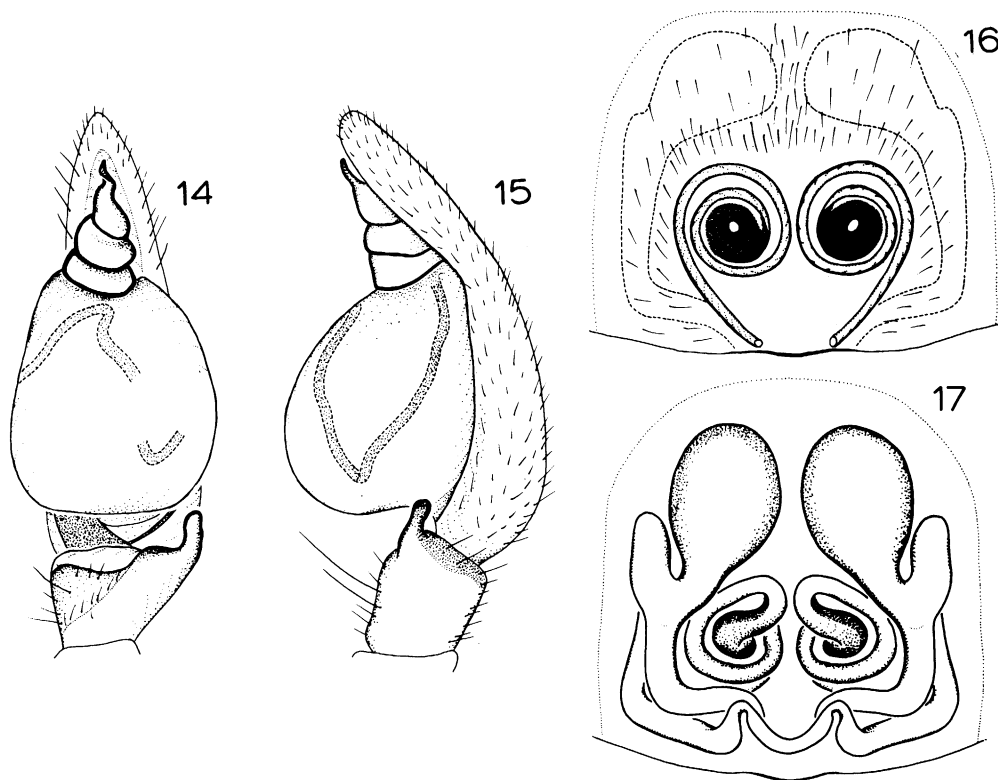
ducts. *Trachelas volutus*, however, has a shorter embolus tip (figs. 14, 45) and viewed externally, the anterior median ducts are rounded (fig. 16).

Male. Total length 5.46 ± 0.68 mm. Carapace 2.55 ± 0.32 mm. long, 2.10 ± 0.25 mm. wide. Femur I 2.10 ± 0.23 mm. long. Anterior median eyes slightly larger than others. Posterior median eyes closer to each other than to posterior laterals. Dorsum of abdomen light gray. Palp evenly rounded. Embolus with two basal coils, sinuous shaft, and spiraled tip (figs. 14, 45). Retrolateral tibial apophysis erect (fig. 15). Leg cusps: tibia I 8-15, II 0-9; metatarsus I 14-20, II 1-17; tarsus I 9-18, II 0-8.

Female. Total length 6.69 ± 0.58 mm. Carapace 2.82 ± 0.27 mm. long, 2.34 ± 0.11 mm. wide. Femur I 2.21 ± 0.14 mm. long. Eyes and abdomen as in male. Epigynum with anterior loops of median ducts rounded (fig. 16). Spermathecae separated by the width of a median duct (fig. 17). Leg cusps: tibia I 6-13, II 0-3; metatarsus I 10-22, II 6-13; tarsus I 14-20, II 0-10.

Localities. **United States:** *Florida:* Dade Co.: Homestead; Opa-Locka. *Levy Co. Georgia:* Burke Co.: Sardis. *Louisiana:* Orleans Par.: New Orleans. Webster Par.: Springhill. West Baton Rouge Par. *Texas:* Bastrop Co.: Bastrop State Park. Bell Co.: Bartlett. Bexar Co.: San Antonio. Brooks Co.: Falfurias. Brown Co.: Brownwood. Cameron Co.: Harlingen; Palm Grove; Rio Hondo. Dallas Co.: Dallas. Harris Co.: Houston. Hidalgo Co.: Donna; Edinburg; Hidalgo; Mission; Pharr. Kerr Co.: Raven Ranch. Kleberg Co.: Kingsville. LaSalle Co.: Cotulla. Llano Co.: Llano. Nueces Co.: Corpus Christi; Orange Grove; Robstown. San Patricio Co.: Nueces River. Starr Co.: Rio Grande City. Travis Co.: Austin. **Mexico:** *Coahuila:* Saltillo. *Hidalgo:* Huachinango; Jacala; Taxquilla; Zimapán. *Nuevo León:* Linares; 76 mi. N Monterrey; Sabinas Hidalgo. *San Luis Potosí:* Tamazunchale; Valles. *Tamaulipas:* Jaumave; Mante; San José; Victoria; Villagran. *Veracruz:* Papantla.

Distribution. Southeastern United States and



FIGS. 14-17. *Trachelas volutus* Gertsch. 14. Palp, ventral view. 15. Palp, retrolateral view. 16. Epigynum, ventral view. 17. Internal female genitalia, dorsal view.

eastern Mexico from Florida to Hidalgo (map 3). The western limit of this species apparently coincides with the eastern limit of *mexicanus*.

Natural History. Mature males and females have been taken year round. Specimens have been collected in buildings, open fields, avocado groves, and from an abandoned nest of the vespid wasp *Polistes annularis* (Linnaeus).

Discussion. The male embolus has two forms; in one, the tip is acutely pointed (fig. 14); in the other, it is blunt (fig. 45). This variation seems to be individual rather than geographic. It is possible that the larger blunt tip is found only in virgin males and that part of the tip breaks off during mating, creating the acutely pointed form. Embolar caps that break off during mating have been documented in other families by Levi (1970) and others.

Trachelas mexicanus Banks

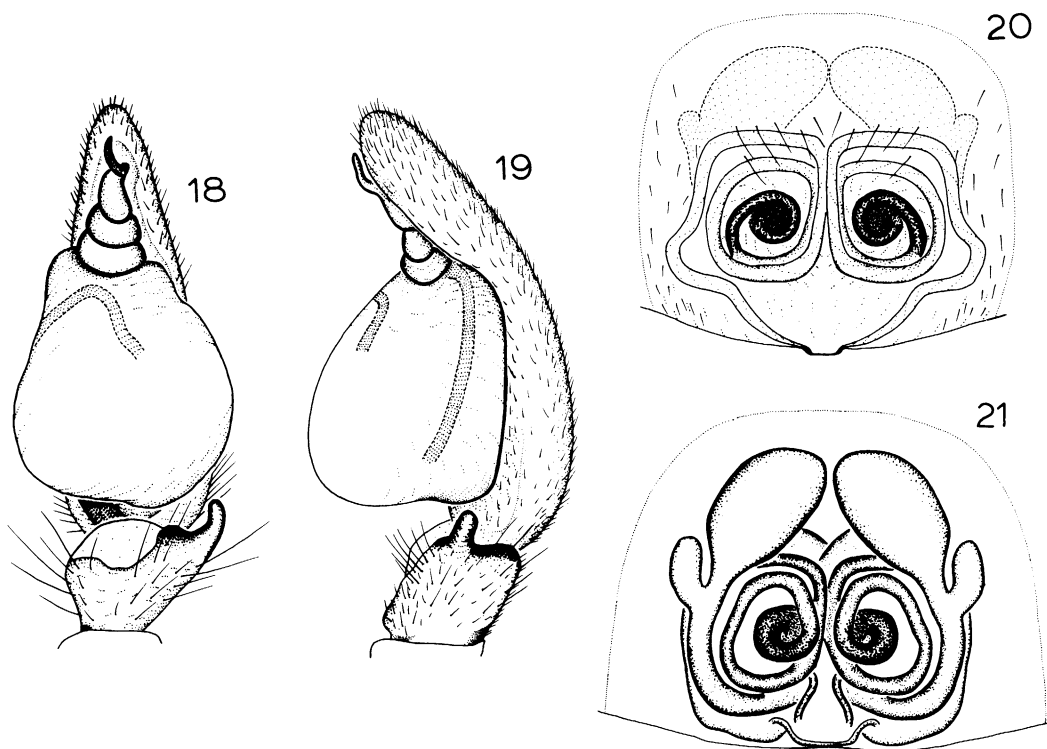
Figures 18-21, 46; Map 2

Trachelas mexicana Banks, 1898, p. 225, fig. 27 (female holotype from Tepic, Nayarit, Mexico, in the California Academy of Sciences, destroyed).

Trachelas mexicanus: F.O.P.-Cambridge, 1899, p. 76. Roewer, 1954, p. 588. Bonnet, 1959, p. 4668.

Trachelas utahanus Chamberlin and Ivie, 1935, p. 41, figs. 133-135 (male holotype and female allotype from St. George, Washington County, Utah, formerly in the University of Utah, lost). Roewer, 1954, p. 590. Bonnet, 1959, p. 4672. NEW SYNONYMY.

Trachelas arizonatus Gertsch, 1942, p. 9, figs. 24, 25 (male holotype and female allotype from Scottsdale, Maricopa County, Arizona, in the American Museum of Natural History, ex-



FIGS. 18-21. *Trachelas mexicanus* Banks. 18. Palp, ventral view. 19. Palp, retrolateral view. 20. Epigynum, ventral view. 21. Internal female genitalia, dorsal view.

amed). Roewer, 1954, p. 589. NEW SYNONYMY.

Diagnosis. *Trachelas mexicanus* is closely related to *volutus*, but may be distinguished by the long embolus tip (figs. 18, 46) and the transverse anterior loops of the median ducts (fig. 20). Maps 2 and 3 show the close geographical relationships of these two species.

Male. Total length 6.03 ± 0.73 mm. Carapace 2.74 ± 0.31 mm. long, 2.38 ± 0.19 mm. wide. Femur I 2.44 ± 0.19 mm. long. Posterior median eyes separated by three times their diameter from posterior laterals. Dorsum of abdomen light gray laterally and posteriorly. Palp expanded basally. Embolus with two basal coils, curved shaft, and long, recurved tip (figs. 18, 46). Retrolateral tibial apophysis short (fig. 19). Leg cusps: tibia I 4-12, II 2-7; metatarsus I 17-24, II 13-22; tarsus I 8-15, II 2-10.

Female. Total length 6.69 ± 0.64 mm. Carapace 2.93 ± 0.28 mm. long, 2.42 ± 0.22 mm. wide. Femur I 2.37 ± 0.21 mm. long. Eyes and abdomen as in male. Epigynum with anterior loops of median ducts transverse (fig. 20). Spermathecae approximate anteriorly (fig. 21). Leg cusps: tibia I 2-14, II 0 or 1; metatarsus I 14-24, II 3-15; tarsus I 10-17, II 2-8.

Localities. **United States:** *Arizona:* Cochise Co.: Douglas; Portal; Huachuca Mountains. Coconino Co.: Mormon Lake; Oak Creek Canyon. Gila Co.: Payson. Graham Co.: Graham Mountains. Maricopa Co.: Mesa; Phoenix; Scottsdale; Tempe. Pima Co.: Baboquivari Mountains; Santa Catalina Mountains; Sierrita Mountains; Tucson. Santa Cruz Co.: Nogales. Yavapai Co.: Prescott; Yarnell. *Colorado:* Mesa Co.: Grand Junction. *New Mexico:* Eddy Co.: Carlsbad Caverns. Bernalillo Co.: Albuquerque. *Texas:* Brewster Co.: Big Bend National Park. Presidio Co.: Chinati Mountains.

Val Verde Co.: Del Rio. *Utah*: Emery Co.: Woodside. Salt Lake Co.: Salt Lake City. Washington Co.: St. George; Zion National Park. *Mexico*: *Chihuahua*: Catarinas; Delicias; Parral. *Durango*: El Salto; San Juan del Rio. *Jalisco*: Lake Chapala; Lake Sayula; Puerto Vallarta; San Luis de Soyotlan. *Nayarit*: Acaponeta; Compostela; Jalisco; Jesús María; Tepic. *Sinaloa*: Teacapán. *Sonora*: Álamos; Hermosillo; Minas Nuevas; Sonoyta.

Distribution. Utah and Colorado south through Arizona, New Mexico, and Texas to Jalisco (map 2). This species apparently replaces *volutus* in the southwestern United States and northwestern Mexico.

Natural History. Mature males have been taken in all months except November, January, and February; mature females year round. Specimens have been collected in houses, on rock outcroppings, at elevations ranging from 1500 to 6000 feet, and in the Music Room at Carlsbad Caverns.

Discussion. The shape of the tip of the male embolus varies somewhat through the range of this species. Some males from Utah have the embolus tip twisted prolaterally to a greater degree than usual; one of these was described as *utahanus* by Chamberlin and Ivie. Many males from Mexico, including specimens from the type locality of *mexicanus*, have the embolus tip slightly longer than in most northern specimens. The illustrations presented here (and those published by Gertsch for *arizonatus*) show the usual form of the embolus tip. Banks's illustration of the female epigynum of *mexicanus* was inadequate for recognition by Chamberlin and Ivie or by Gertsch. It was only by the examination of numerous topotypical specimens from Tepic and other localities in Nayarit that the conspecificity of Banks's species with both *arizonatus* and *utahanus*, and the resulting synonymies, were confirmed.

Trachelas pacificus Chamberlin and Ivie

Figures 22-25, 47; Map 1

Trachelas pacificus Chamberlin and Ivie, 1935, p. 41, figs. 136-138 (male holotype and female allotype from Santa Monica, Los Angeles County, California, formerly in the University

of Utah, lost). Roewer, 1954, p. 590. Bonnet, 1959, p. 4669.

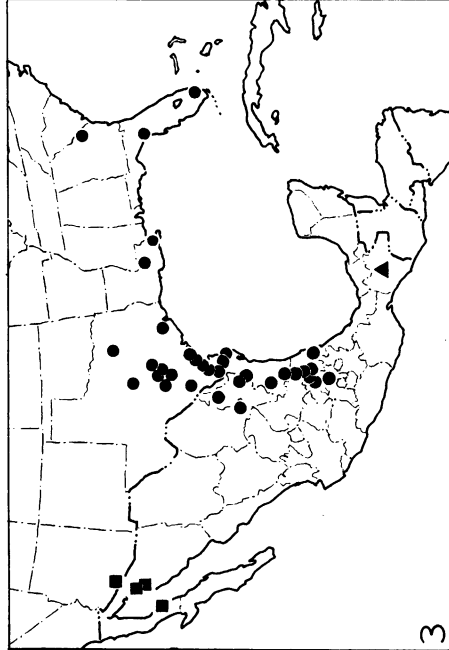
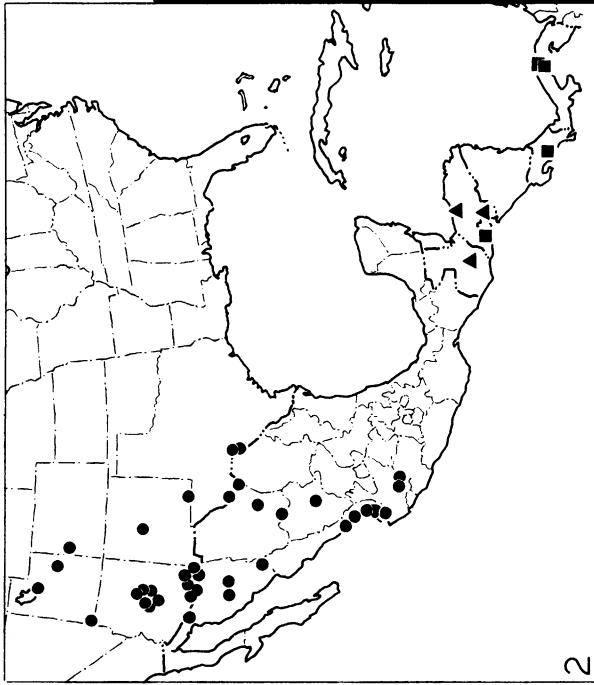
Trachelas speciosus (misidentification): Chamberlin, 1924, p. 668, fig. 112 (in part).

Diagnosis. *Trachelas pacificus* is closely related to *spirifer*. The embolus has one and one-half basal coils in both species and the female genitalia have the same general appearance. In *pacificus*, however, the shaft of the embolus is narrow and only gently curved (figs. 22, 47) and viewed externally, the median ducts usually have pronounced anterolateral peaks (fig. 24).

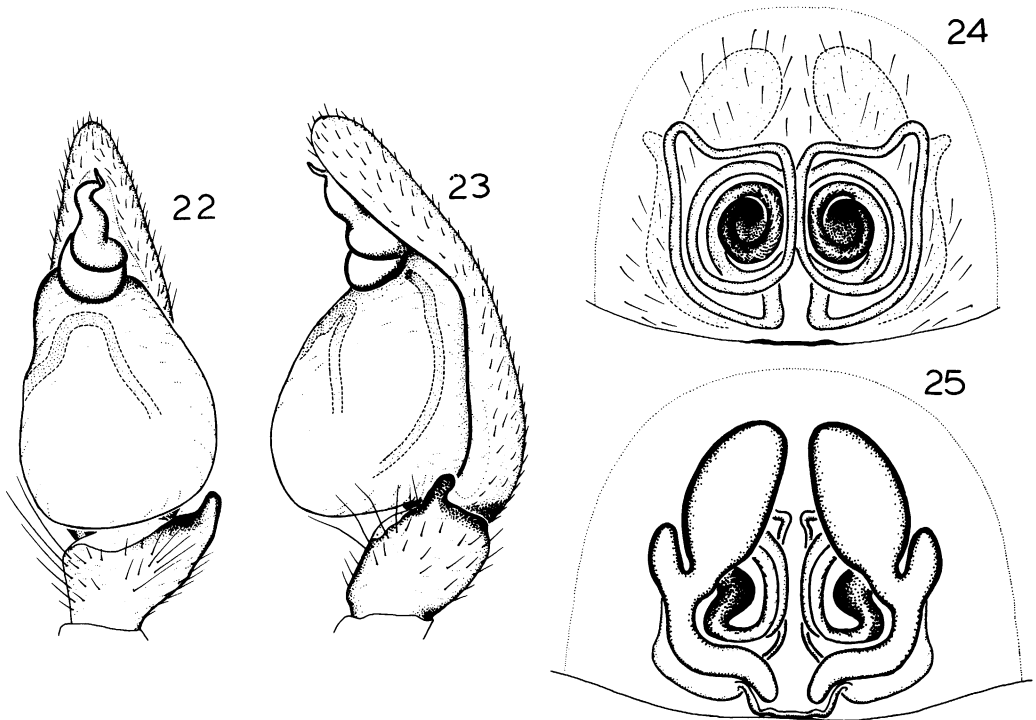
Male. Total length 5.98 ± 0.59 mm. Carapace 2.88 ± 0.25 mm. long, 2.35 ± 0.19 mm. wide. Femur I 2.38 ± 0.21 mm. long. Abdomen light gray dorsally. Palp expanded basally. Embolus with one and one-half basal coils, narrow sinuous shaft, and recurved tip (figs. 22, 47). Retrolateral tibial apophysis short, rounded (fig. 23). Leg cusps: tibia I 5-12, II 0-6; metatarsus I 19-31, II 8-24; tarsus I 0-21, II 5-10.

Female. Total length 6.86 ± 0.82 mm. Carapace 2.92 ± 0.28 mm. long, 2.38 ± 0.23 mm. wide. Femur I 2.44 ± 0.21 mm. long. Abdomen as in male. Median ducts usually with anterolateral peaks (fig. 24). Spermathecae elongate, widely separated (fig. 25). Leg cusps: tibia I 0-9, II 0; metatarsus I 8-25, II 0-8; tarsus I 9-18, II 0-9.

Localities. **United States:** *Arizona*: Yuma Co.: Gila Valley. *California*: Alameda Co.: Alvarado; Niles. Fresno Co.: Coalinga. Imperial Co.: Bard; Calexico; Calipatria; Seeley. Lake Co.: Lakeport. Los Angeles Co.: Beverly Glen Canyon; Big Tujunga Canyon; Burbank; Claremont; El Segundo; Glendale; Gold Canyon; Little Tujunga Canyon; Long Beach; Los Angeles; Pasadena; Pomona; San Fernando; San Gabriel Mountains; San Pedro; Santa Catalina Island; Santa Monica; Santa Monica Mountains; Soledad Camp Ground; Sunland; Westwood. Merced Co.: Merced. Mono Co.: Yosemite National Park. Napa Co.: Samuel Springs. Orange Co.: Anaheim; Fullerton; Irvine; Laguna Beach; Newport Beach. Riverside Co.: Blythe; Indio; Magnesia Canyon; Palm Springs; San Jacinto Mountains; Snow Creek Canyon. San Bernardino Co.: Barton Flats; Colton; Fontana; Redlands; Victorville. San Diego Co.: Alpine; Bostonia; Del Mar; Jamacha; La Cresta; Lakeside; La Mesa; National City; Oceanside; San Diego; Santa Ysabel; San Ysidro;



MAPS 2, 3. 2. Circles, *Trachelas mexicanus*. Triangles, *T. spirifer*. Squares, *T. cambridgei*. 3. Circles, *T. volutus*. Triangle, *T. spicus*. Squares, *T. organatus*.



FIGS. 22-25. *Trachelas pacificus* Chamberlin and Ivie. 22. Palp, ventral view. 23. Palp, retrolateral view. 24. Epigynum, ventral view. 25. Internal female genitalia, dorsal view.

Warner Springs. San Mateo Co.: Redwood City. Santa Barbara Co.: Buellton; Santa Barbara. Santa Clara Co.: Palo Alto. Stanislaus Co.: Robert's Ferry. Yolo Co.: Davis. *Nevada*: Clark Co.: Las Vegas. *Mexico*: *Baja California Norte*: Maneadero; Rosario; Rosarito; San Fernando Mission; San José; Santa Maria; Santo Tomás; Tecate.

Distribution. Western North America from California and Nevada south to northern Baja California (map 1).

Natural History. Mature males and females have been taken year round. Specimens have been collected in houses, alfalfa fields, poplar duff, litter in coastal oak woodlands, on citrus trees, under dead willow bark, in a snail shell, and several times at light traps.

Trachelas spirifer F. O. P.-Cambridge
Figures 26-29; Map 2

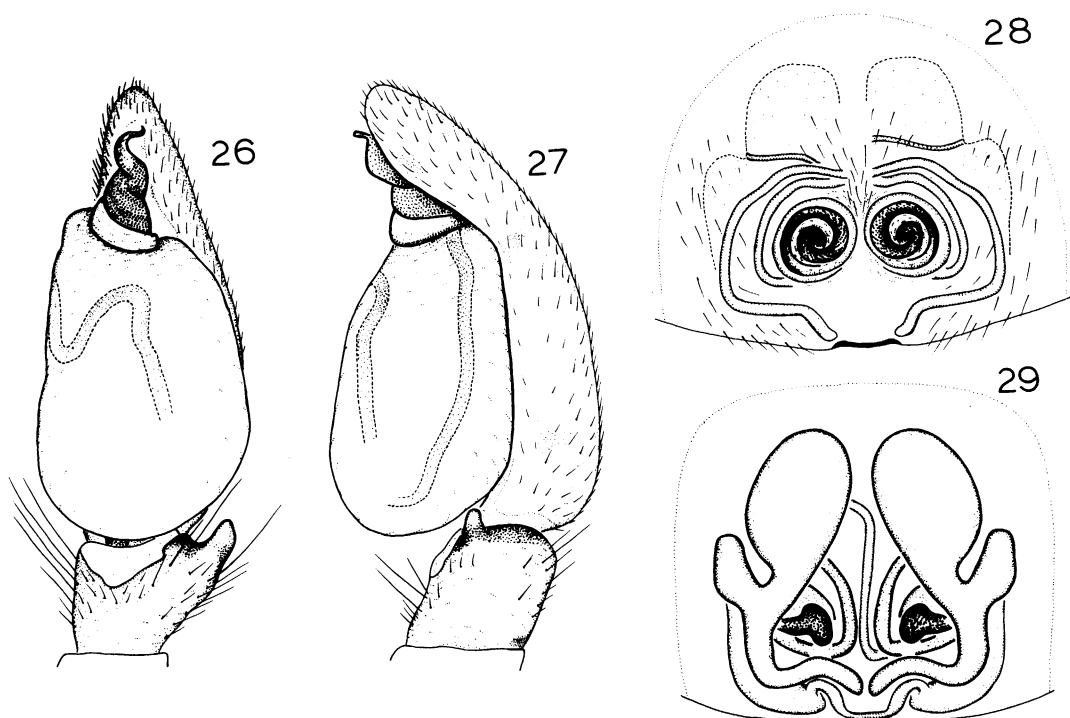
Trachelas spirifer F. O. P.-Cambridge, 1899, p. 78, pl. 6, fig. 4 (male holotype from Guate-

mala, no specific locality, in the British Museum, examined). Roewer, 1954, p. 589. Bonnet, 1959, p. 4671

Diagnosis. *Trachelas spirifer* is closely related to *pacificus* but has the shaft of the embolus wider, the tip of the embolus more acutely curved (fig. 26), and the median ducts lacking anterolateral peaks (fig. 28). Further, the two species are widely separated geographically (maps 1, 2).

Male. Total length 5.51-7.06 mm. Carapace 2.41-3.04 mm. long, 2.02-2.74 mm. wide. Femur I 1.98-2.63 mm. long (six specimens). Palp relatively narrow. Embolus with one and one-half basal coils, thick shaft, and acutely curved tip (fig. 26). Retrolateral tibial apophysis very short (fig. 27). Leg cusps: tibia I 6-11, II 3-8; metatarsus I 18-29, II 14-21; tarsus I 10-23, II 7-12.

Female. Total length 6.19, 8.64 mm. Carapace 2.81, 3.06 mm. long, 2.34, 2.51 mm. wide. Femur I 2.20, 2.23 mm. long (two specimens). Epigynum with visible ducts in concentric spirals



FIGS. 26-29. *Trachelas spirifer* F. O. P.-Cambridge. 26. Palp, ventral view. 27. Palp, retrolateral view. 28. Epigynum, ventral view. 29. Internal female genitalia, dorsal view.

(fig. 28). Median ducts irregular (fig. 29). Leg cusps: tibia I 0-5, II 0; metatarsus I 9-20, II 5-8; tarsus I 8-13, II 3-8.

Localities. Guatemala: San Jerónimo. Honduras: Olanchito; Tegucigalpa.

Distribution. Guatemala and Honduras (map 2).

Natural History. Mature males have been collected in July and November, mature females in May and November. One female was taken at a light trap.

Trachelas cambridgei Kraus
Figures 30-33; Map 2

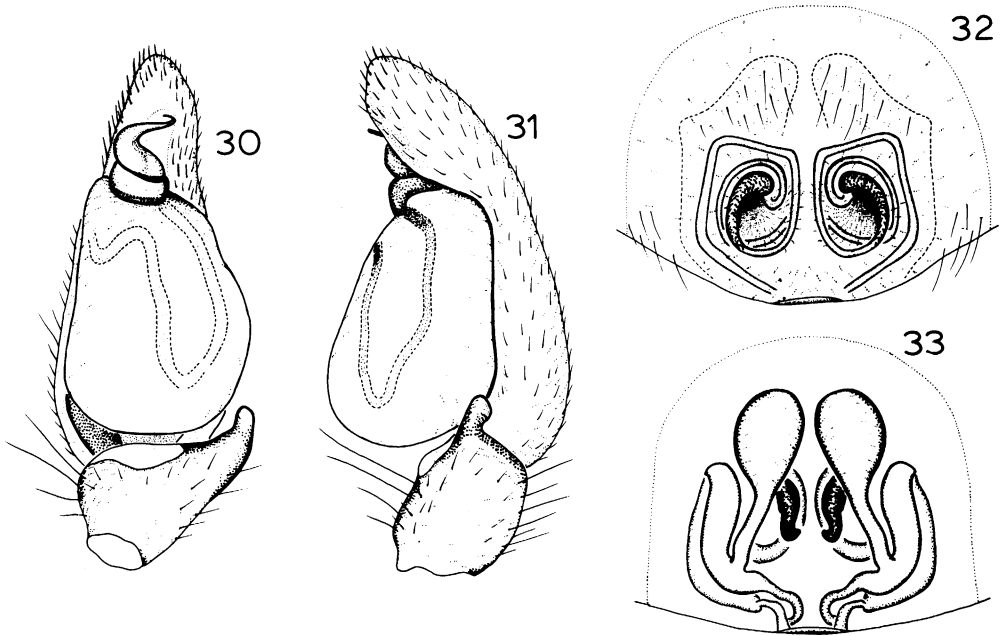
Trachelas cambridgei Kraus, 1955, p. 45, pl. 7, figs. 116, 117 (male holotype from San Vicente, El Salvador, in the Natur-Museum und Forschungs-Institut Senckenberg, examined). Not female paratype (= *spinulatus*).

Diagnosis. *Trachelas cambridgei* is a distinctive species not likely to be confused with any

other. The palp is closest to that of *pacificus* and *spirifer*, but the embolus has only one basal coil (fig. 30). The widely separated epigynal openings, acute angles of the median ducts, and very long stalks between the lateral ducts and the spermathecae are all diagnostic (figs. 32, 33).

Male. Total length 3.71-4.82 mm. Carapace 1.58-2.16 mm. long, 1.40-1.76 mm. wide. Femur I 1.40-1.80 mm. long (eight specimens). Venter of abdomen with a broad median longitudinal dark band. Palp expanded basally. Embolus with one basal coil, long recurved shaft, and recurved tip (fig. 30). Retrolateral tibial apophysis expanded anteriorly (fig. 31). Leg cusps: tibia I 0-6, II 0 or 1; metatarsus I 5-15, II 3-11; tarsus I 4-13, II 0-5.

Female. Total length 4.14-6.41 mm. Carapace 1.80-2.41 mm. long, 1.66-1.98 mm. wide. Femur I 1.55-1.87 mm. long (five specimens). Abdomen as in male. Epigynum with widely separated semicircular openings (fig. 32). Spermathecae arising from lateral ducts by very long stalks (fig.



FIGS. 30-33. *Trachelas cambridgei* Kraus. 30. Palp, ventral view. 31. Palp, retrolateral view. 32. Epigynum, ventral view. 33. Internal female genitalia, dorsal view.

33). Leg cusps: tibia I 0-3, II 0; metatarsus I 10-15, II 0-5; tarsus I 6-12, II 2-8.

Localities. **Costa Rica:** San José. **El Salvador:** San Vicente. **Panama Canal Zone:** Balboa; Madden Dam; Summit.

Distribution. El Salvador, Costa Rica, and Panama (map 2).

Natural History. Mature males and females have been taken from June through August. Nothing is known of the habits of this species.

Discussion. Kraus associated with this species a female (1955, fig. 118) belonging to the *speciosus* group which we consider to be the female of *spinulatus* F. O. P.-Cambridge. Judging only by the illustration (1955, fig. 122) he erroneously identified the real female of *cambridgei* as *bulbosus* F. O. P.-Cambridge.

***Trachelas organatus*, new species**

Figures 34-37; Map 3

Types. Male holotype and female paratype from Quitobaquito, Organ Pipe Cactus National Monument, Pima County, Arizona (June 10-13, 1952; M. Cazier, W. Gertsch, R. Schrammel), de-

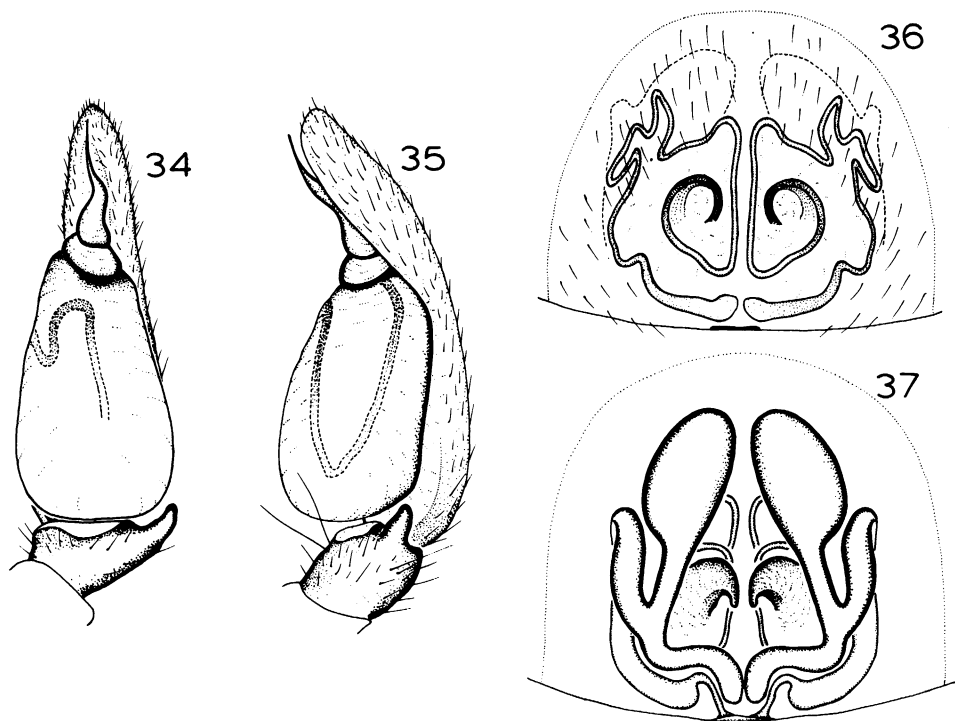
posited in the American Museum of Natural History.

Etymology. The specific name refers to the type locality.

Diagnosis. *Trachelas organatus* is closely related to *spicus*. Both have a long, spikelike embolus tip, although the former has only one basal coil and a much narrower tegulum (fig. 34). The anterolateral loopings of the median ducts are diagnostic (fig. 36).

Male. Total length 4.48, 4.90 mm. Carapace 2.11, 2.50 mm. long, 1.71, 2.09 mm. wide. Femur I 1.76, 1.98 mm. long (two specimens). Abdomen light gray dorsally. Palp relatively narrow. Embolus with one basal coil, curving shaft, and long, thin tip (fig. 34). Retrolateral tibial apophysis triangular (fig. 35). Leg cusps: tibia I 7-16, II 6-8; metatarsus I 16-20, II 12-16; tarsus I 10-17, II 1-5.

Female. Total length 5.74-7.74 mm. Carapace 2.61-3.02 mm. long, 2.05-2.41 mm. wide. Femur I 2.00-2.30 mm. long (four specimens). Abdomen as in male. Epigynum with conspicuous bridge between openings; visible ducts with anterolateral loopings (fig. 36). Median ducts much



FIGS. 34-37. *Trachelas organatus*, new species. 34. Palp, ventral view. 35. Palp, retrolateral view. 36. Epigynum, ventral view. 37. Internal female genitalia, dorsal view.

wider at their insertion than elsewhere (fig. 37). Leg cusps: tibia I 0-10, II 0; metatarsus I 14-22, II 3-7; tarsus I 8-17, II 0-7.

Localities. **United States:** Arizona: Pima Co.: Quitobaquito. **Mexico:** Baja California Norte: Ángeles Bay. **Sonora:** Desemboque; Esterode Sargente.

Distribution. Arizona, Sonora, and Baja California (map 3).

Natural History. Mature males have been taken in June and August, mature females in May and June. Nothing is known of the habits of this species.

***Trachelas spicus*, new species**
Figures 38, 39; Map 3

Type. Male holotype from 5 miles north of San Cristóbal, latitude 16° 45' N, longitude 92° 41' W, Chiapas, Mexico (August 24, 1966; Jean and Wilton Ivie), deposited in the American Museum of Natural History.

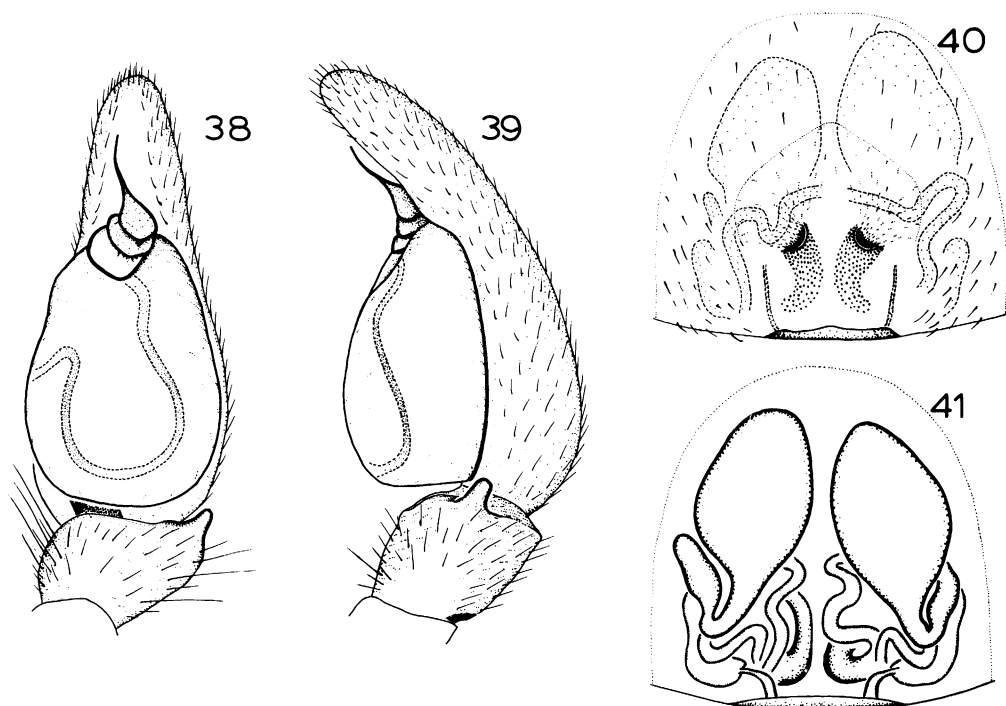
Etymology. The specific name is from the Latin *spica* (point) and refers to the shape of the embolus.

Diagnosis. *Trachelas spicus* is closely related to *organatus*, but may be readily distinguished by the presence of two basal embolar coils (fig. 38). Further, the two species are widely separated geographically (map 3).

Male. Total length 6.26, 6.41 mm. Carapace 3.18, 3.20 mm. long, 2.46, 2.48 mm. wide. Femur I 2.38, 2.41 mm. long (two specimens). Dorsum of abdomen light gray with light chevrons posteriorly. Venter of abdomen with dark gray triangular spot anterior to spinnerets. Palp slightly expanded basally. Embolus with two basal coils, rounded shaft, and long, thin tip (fig. 38). Retrolateral tibial apophysis short, broad (fig. 39). Leg cusps: tibia I 0, II 0; metatarsus I 7-11, II 4-7; tarsus I 3-7, II 0-3.

Female. Unknown

Localities and Distribution. Known only from the type locality in Chiapas, Mexico (map 3).



FIGS. 38, 39. *Trachelas spicus*, new species. 38. Palp, ventral view. 39. Palp, retrolateral view.

FIGS. 40, 41. *Trachelas fuscus*, new species. 40. Epigynum, ventral view. 41. Internal female genitalia, dorsal view.

Natural History. The two males were collected in a pine-oak forest.

openings semicircular (fig. 50). Median ducts small, irregularly coiled (fig. 51).

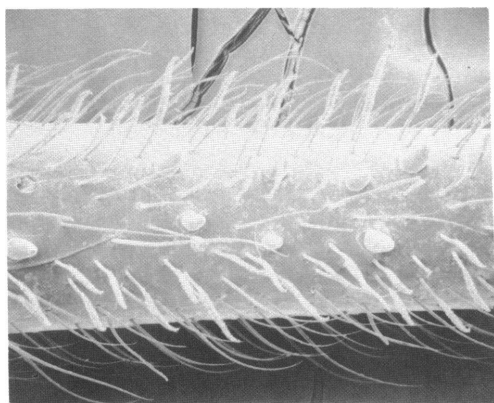
THE *SPECIOSUS* GROUP

Diagnosis. Characters common to both the *speciosus* and *tranquillus* groups have been listed above. Species belonging to the *speciosus* group may be distinguished by the following characters: (1) the embolus lies directly on the tegulum, not on a basal coil; (2) the median ducts are small and irregularly coiled; and (3) the legs are coated with a conspicuous fringe of long trichobothria.

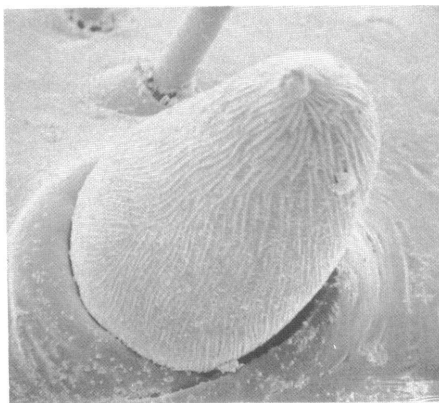
Description. As in the *tranquillus* group except for the following: Anterior eyes separated by less than their diameter. Clypeal height less than anterior median eye diameter. Chelicerae geniculate, with sinuous lateral margins. Legs with numerous long trichobothria. Colulus represented by hairs. Embolus without basal coils, resting directly on tegulum (fig. 48). Epigynal

KEY TO SPECIES OF THE *SPECIOSUS* GROUP IN NORTH AND CENTRAL AMERICA

1. Abdomen dark gray 2
Abdomen pale white 3
2. Male with semicircular embolus (fig. 64); spermathecae elongate (fig. 67); Arizona, New Mexico, and Chihuahua (map 4) *huachucanus*
Male unknown; spermathecae oval (fig. 41); Durango and Nuevo León (map 6) .. *fuscus*
3. Males 4
Females 12
4. Embolus spinelike, gradually increasing in width proximally (figs. 72, 76) 5
Embolus not spinelike, abruptly increasing in width proximally 6
5. Embolus relatively long (fig. 72); Mexico (map 5) *lanceolatus*
Embolus relatively short (fig. 76); Central

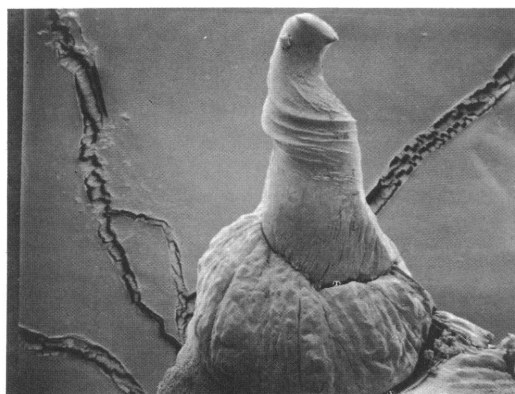


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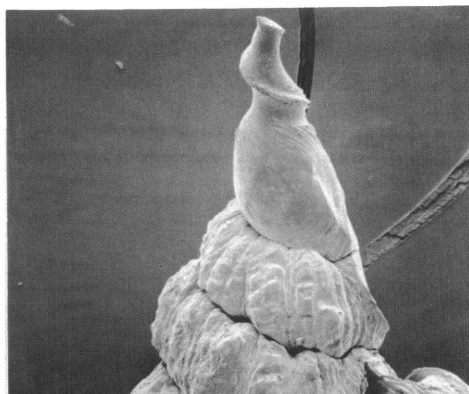


43

FIGS. 42, 43. *Trachelas tranquillus* (Hentz), scanning electron micrographs. 42. Tarsus I, ventral view, magnification 190X, showing typical leg setae, fringed setae of leg scopula, and leg cusps; socket of missing leg cusp visible in upper left. 43. Leg cusp, magnification 1880X.



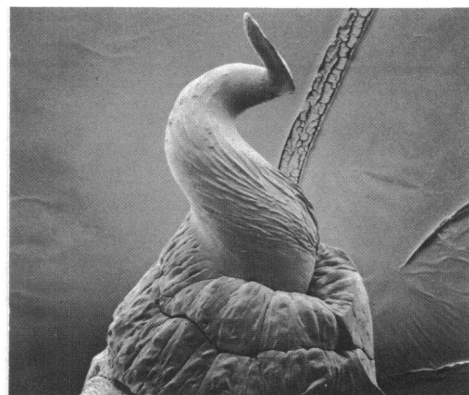
44



45



46



47

FIGS. 44-47. Scanning electron micrographs of male emboli. 44. *Trachelas tranquillus* (Hentz), magnification 200X. 45. *T. volutus* Gertsch, magnification 200X. 46. *T. mexicanus* Banks, magnification 200X. 47. *T. pacificus* Chamberlin and Ivie, magnification 245X.

- America (map 5) *spinulatus*
6. Embolus rectangular (figs. 52, 56) 7
 Embolus rounded 8
7. Embolus as high as wide (fig. 52); widespread
 (map 4) *similis*
 Embolus much wider than high (fig. 56);
 Mexico and Costa Rica (map 6)
 *transversus*
8. Tip of embolus pointing prolaterally or
 distally (figs. 48, 68) 9
 Tip of embolus pointing retrolaterally . . . 10
9. Tip of embolus pointing prolaterally (fig. 68);
 southern Mexico and Guatemala (map 6)
 *bulbosus*
 Tip of embolus pointing distally (fig. 48);
 Baja California (map 4) *speciosus*
10. Tip of embolus long, drawn out to a sharp
 point (fig. 60); Georgia and Florida (map 6)
 *sinuosus*
 Tip of embolus short 11
11. Embolus relatively wide (fig. 80); southern
 Mexico and Guatemala (map 5) *latus*
 Embolus relatively narrow (fig. 84); Veracruz
 (map 5) *hamatus*
12. Stalks of lateral ducts long, reaching at least
 half the length of spermathecae (figs. 51,
 83, 87) 13
 Stalks of lateral ducts short, not reaching half
 the length of spermathecae 15
13. Epigynal openings directed anteriorly (fig.
 52); Baja California (map 4)
 *speciosus*
 Epigynal openings directed laterally (figs. 82,
 86) 14
14. Lateral ducts relatively wide (fig. 87); Vera-
 cruz (map 5) *hamatus*
 Lateral ducts relatively narrow (fig. 83);
 southern Mexico and Guatemala (map 5)
 *latus*
15. Epigynal openings directed anteriorly . . . 16
 Epigynal openings directed laterally or
 posteriorly 18
16. Spermathecae greatly enlarged (fig. 71);
 southern Mexico and Guatemala (map 6)
 *bulbosus*
 Spermathecae not greatly enlarged (figs. 55,
 59) 17
17. Spermathecae approximate (fig. 59); Mexico
 and Central America (map 6). *transversus*
 Spermathecae widely separated (fig. 55);
 widespread (map 4) *similis*
18. Epigynal openings directed laterally (fig. 78);
 Central America (map 5) *spinulatus*
 Epigynal openings directed posteriorly . . 19
19. Spermathecae approximate (fig. 75); Tabasco

(map 5) *lanceolatus*
 Spermathecae widely separated (fig. 63);
 Georgia and Florida (map 6) . . . *sinuosus*

Trachelas speciosus Banks
 Figures 48-51; Map 4

Trachelas speciosa Banks, 1898, p. 225, pl. 14,
 fig. 32 (male and female syntypes from Isla
 Santa Magdalena, Baja California Sur, Mexico,
 in the California Academy of Sciences, de-
 stroyed; two male and three female syntypes
 from El Taste, Baja California Sur, Mexico, in
 the Museum of Comparative Zoology, exam-
 ined).

Trachelas speciosus: Petrunkevitch, 1911, p. 524.
 Chamberlin, 1924, p. 668 (in part, not fig.
 112). Roewer, 1954, p. 588. Bonnet, 1959,
 p. 4670.

Diagnosis. *Trachelas speciosus* is a distinctive
 species easily recognized by genitalic characters.
 The palp resembles that of *latus*, but the tip of
 the embolus is prolonged distally (fig. 48). The
 epigynum resembles that of *bulbosus*, although
 the spermathecae are much smaller in *speciosus*
 (fig. 51).

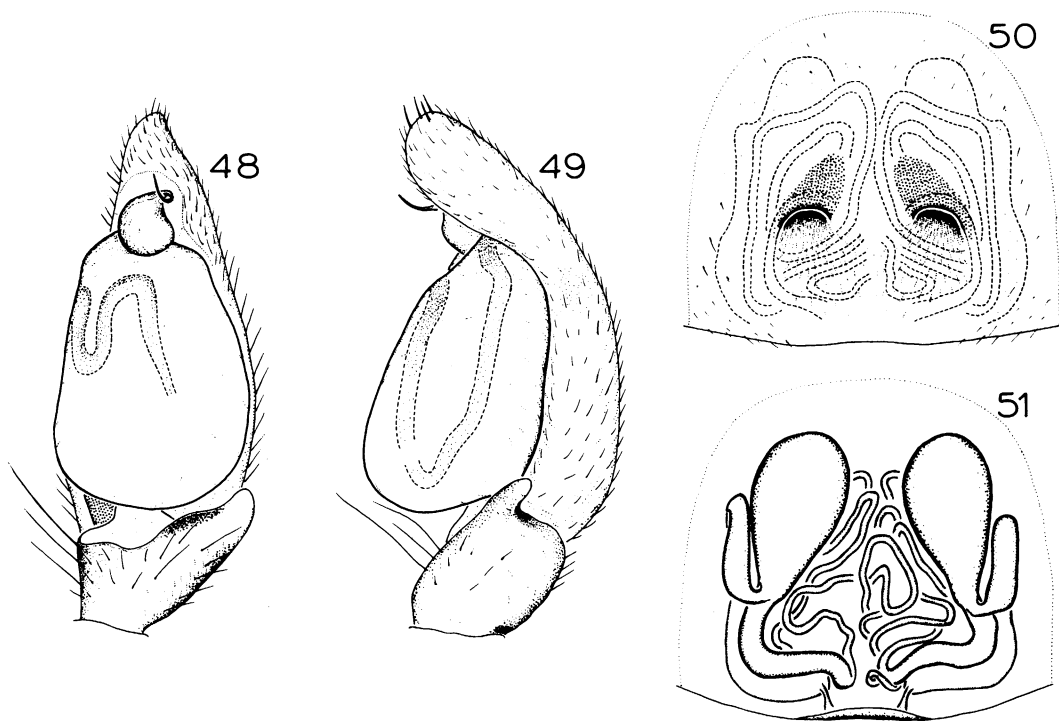
Male. Total length 5.36-6.55 mm. Carapace
 2.56-3.02 mm. long, 2.02-2.41 mm. wide. Femur
 I 2.16-2.45 mm. long (six specimens). Palp with
 rounded tegulum and wide duct. Embolus wide,
 almost circular, with distally prolonged, recurved
 tip (fig. 48). Retrolateral tibial apophysis
 rounded (fig. 49). Leg cusps: tibia I 4-12, II 3-7;
 metatarsus I 20-31, II 14-21; tarsus I 10-17,
 II 7-12.

Female. Total length 6.72±0.63 mm. Carapace
 2.79±0.20 mm. long, 2.36±0.18 mm. wide.
 Femur I 2.28±0.17 mm. long. Epigynum with
 openings directed anteriorly (fig. 50). Median
 and lateral ducts elongate (fig. 51). Leg cusps:
 tibia I 2-7, II 0 or 1; metatarsus I 16-30, II 6-16;
 tarsus I 13-17, II 5-11.

Localities. **Mexico:** *Baja California Norte:*
 Bahía de las Ánimas; Isla Cedros; Millers Landing;
 Rancho Ignacito. *Baja California Sur:* Bahía Tór-
 tola; El Taste; La Paz; Mezquital; San José del
 Cabo; Todos Santos.

Distribution. Baja California (map 4).

Natural History. Mature males have been
 taken in January, February, and June; mature
 females in January, June, and December. Speci-



FIGS. 48-51. *Trachelas speciosus* Banks. 48. Palp, ventral view. 49. Palp, retrolateral view. 50. Epigynum, ventral view. 51. Internal female genitalia, dorsal view.

mens have been collected under rocks in a shaded dry stream bed, on dunes, and by beating dead leaves of *Yucca valida* (Liliaceae).

Trachelas similis F. O. P.-Cambridge
Figures 52-55; Map 4

Trachelas similis F. O. P.-Cambridge, 1889, p. 80, pl. 6, fig. 10 (female holotype from Orizaba, Veracruz, Mexico, in the British Museum, examined). Banks, 1909, p. 198. Roewer, 1954, p. 588. Bonnet, 1959, p. 4670.

Trachelas laticeps Bryant, 1933, p. 191, pl. 3, fig. 24 (female holotype from Powelton, Florida, in the Museum of Comparative Zoology, examined). Bryant, 1945, p. 210, pl. 1, fig. 13. Roewer, 1954, p. 588. Bonnet, 1959, p. 4668. **NEW SYNONYMY.**

Trachelas tranquillus (misidentification): Chamberlin and Ivie, 1944, p. 189. Kaston, 1972, p. 220.

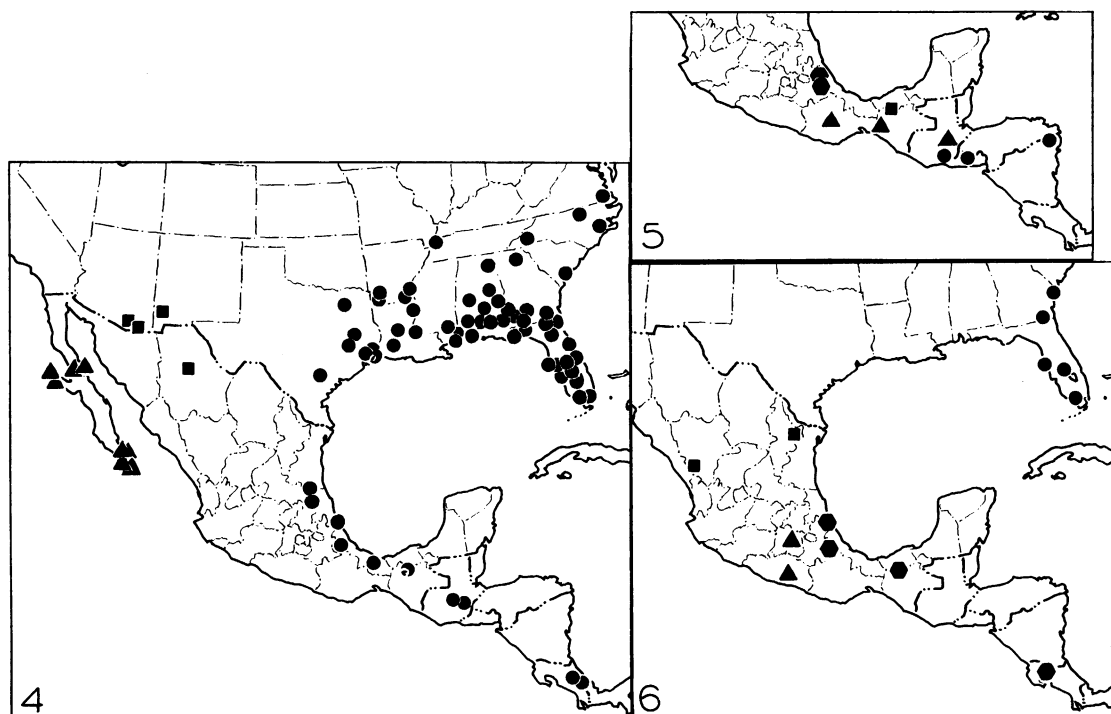
Diagnosis. *Trachelas similis* is closely related to *transversus* but may be distinguished from it

by the squared embolus (fig. 52) and the sinuous, widely separated spermathecae (fig. 55).

Male. Total length 5.43 ± 0.59 mm. Carapace 2.54 ± 0.34 mm. long, 2.09 ± 0.32 mm. wide. Femur I 2.13 ± 0.31 mm. long. Palp narrowed ventrally, with wide ducts. Embolus large, square, with retrolateral prong partially concealed by tip of cymbium (fig. 52). Retrolateral tibial apophysis long, pronglike (fig. 53). Leg cusps: tibia I 10-23, II 5-11; metatarsus I 17-27, II 10-24; tarsus I 8-19, II 2-14.

Female. Total length 6.51 ± 0.71 mm. Carapace 2.67 ± 0.25 mm. long, 2.30 ± 0.20 mm. wide. Femur I 2.26 ± 0.19 mm. long. Epigynum with two semicircular depressions and anteromedial openings (fig. 54). Spermathecae sinuous, widely separated; lateral ducts rounded (fig. 55). Leg cusps: tibia I 11-22, II 0-8; metatarsus I 14-23, II 5-15; tarsus I 10-22, II 6-14.

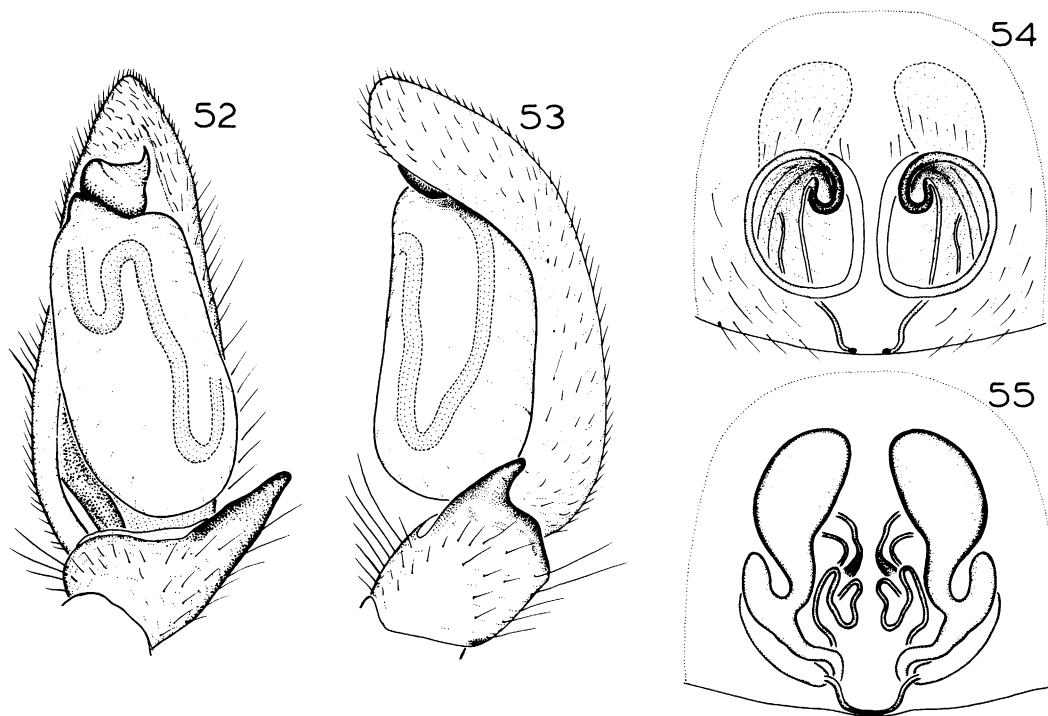
Localities. United States: Alabama: Baldwin Co.: Jackson Oak; Lagoon. Clarke Co.: Grove Hill. Conecuh Co.: Sepulga River. Coosa Co.:



MAPS 4-6. 4. Circles, *Trachelasma similis*. Triangles, *T. speciosus*. Squares, *T. huachucanus*. 5. Circles, *T. spinulatus*. Triangles, *T. latus*. Square, *T. lanceolatus*. Hexagons, *T. hamatus*. 6. Circles, *T. sinuosus*. Triangles, *T. bulbosus*. Squares, *T. fuscus*. Hexagons, *T. transversus*.

Hatchet Creek. Covington Co.: Andalusia. De Kalb Co.: Desoto State Park. Hale Co.: Harrison; Moundville. Houston Co.: Dothan. Lee Co.: Che-wacla Creek State Park. Lowndes Co.: Fort Deposit. *Arkansas*: Ashley Co. Desha Co. Hempstead Co.: Hope. Lafayette Co. *Florida*: Alachua Co.: Gainesville; Micanopy. Brevard Co.: Malabar. Collier Co.: Everglades; Naples. Columbia Co.: O'Leno State Park. Dade Co.: Homestead; Kendall. DeSoto Co.: Arcadia. Duval Co.: Ortega. Gadsden Co.: Quincy. Hendry Co.: Clewiston. Highlands Co.: Sebring. Hillsborough Co.: Hillsborough State Park; Knights. Jackson Co.: Marianna. Jefferson Co. Lake Co.: Leesburg; Umatilla. Lee Co.: Fort Myers. Leon Co.: Tallahassee. Liberty Co.: Bristol. Manatee Co.: Palmetto. Marion Co.: Lake Wier. Nassau Co. Orange Co.: Apopka; Orlando. Pinellas Co.: Largo. Polk Co.: Winter Haven. Sarasota Co.: Englewood. Seminole Co.: Oveido. Volusia Co.: De Land Springs; Edgewater. *Georgia*: Baker Co.

Hall Co.: Gainesville. Stewart Co.: Frog Bottom Creek. Thomas Co.: Thomasville. Ware Co.: Hubbell. Worth Co. *Louisiana*: Grant Par.: Kisatchie National Forest. Jefferson Davis Par.: Jennings. Madison Par.: Tallulah. *Mississippi*: Forrest Co.: Hattiesburg. George Co.: Lucedale. Jackson Co.: Ocean Springs. Wilkinson Co.: Centreville. *North Carolina*: Buncombe Co.: Black Mountain. Durham Co.: Duke Forest. Jones Co.: Maysville. *South Carolina*: Colleton Co.: Canadys. *Tennessee*: Lake Co.: Tiptonville. *Texas*: Brazos Co. Dallas Co.: White Rock Lake. Gonzales Co.: Luling. Hardin Co.: Saratoga. Houston Co.: Ratcliff. Jefferson Co.: Beaumont. Liberty Co.: Dayton; Liberty. *Virginia*: Nansemond Co.: Dismal Swamp. *Mexico*: *Chihuahua*: San Rafael. *San Luis Potosí*: Tamazunchale; Valles. *Tabasco*: Teapa. *Veracruz*: Acayucan; Fortín de los Flores; La Buena Ventura; Orizaba; Tecolutla. *Guatemala*: Cobán; Panzós. *Costa Rica*: Tejar de Car-tago; Turrialba.



FIGS. 52-55. *Trachelas similis* F. O. P.-Cambridge. 52. Palp, ventral view. 53. Palp, retrolateral view. 54. Epigynum, ventral view. 55. Internal female genitalia, dorsal view.

Distribution. Southeastern United States south to Costa Rica (map 4). The record from Chihuahua is not mapped as there are several San Rafael's in that state and it is not known from which the specimen came.

Natural History. Mature males and females have been taken year round. Specimens have been collected in tubular retreats in rolled leaves, on camellias, avocados, cherry laurel, citrus, and Spanish moss, in a mature flood-plain forest, in litter, and by beating shrubs.

Discussion. Specimens from southern Veracruz and farther south sometimes have a broad dark median band on the abdominal venter that is not found on northern specimens. In addition, southern females often have more elongate spermathecae than do their northern counterparts. As the four males available from Veracruz, Tabasco, and Guatemala show no palpal differentiation, we have not described the southern population as a separate form. The holotype of *similis* from Veracruz is a typical northern female, al-

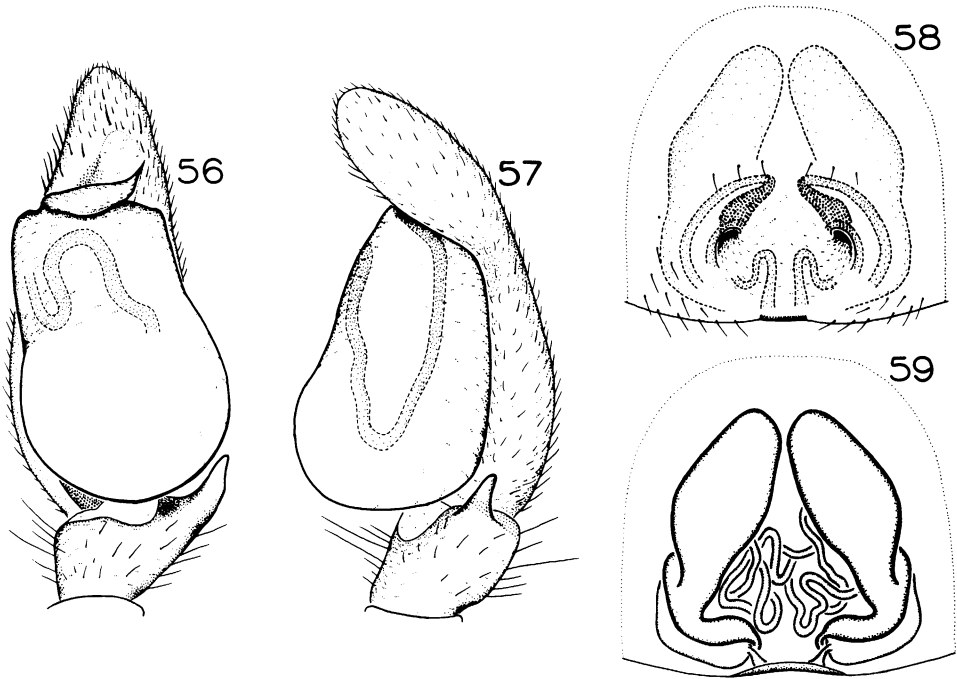
though Cambridge's illustration was too poor to allow Bryant or later workers to recognize its conspecificity with *laticeps* without examining the type itself.

Trachelas transversus F. O. P.-Cambridge
Figures 56-59; Map 6

Trachelas transversus F. O. P.-Cambridge, 1899, p. 77, pl. 6, figs. 1, 2 (male lectotype here designated from Teapa, Tabasco, Mexico, in the British Museum, examined). Roewer, 1954, p. 589. Bonnet, 1959, p. 4671.

Trachelas morosus Banks, 1909, p. 197, pl. 5, fig. 15 (male holotype from Agua Caliente, Costa Rica, in the Museum of Comparative Zoology, examined). Roewer, 1954, p. 588. Bonnet, 1959, p. 4669. NEW SYNONYMY.

Diagnosis. *Trachelas transversus* is closely related to *similis* but may be easily distinguished by the greatly elongated embolus (fig. 56) and the recurved terminal loop of the median ducts (fig. 58).



FIGS. 56-59. *Trachelas transversus* F. O. P.-Cambridge. 56. Palp, ventral view. 57. Palp, retrolateral view. 58. Epigynum, ventral view. 59. Internal female genitalia, dorsal view.

Male. Total length 5.08-5.90 mm. Carapace 2.34-2.81 mm. long, 1.92-2.27 mm. wide. Femur I 1.87-2.30 mm. long (four specimens). Palp rounded proximally. Embolus greatly elongated, sharply pointed retrolaterally (fig. 56). Retrolateral tibial apophysis triangular (fig. 57). Leg cusps: tibia I 8-14, II 4-6; metatarsus I 17-21, II 13-17; tarsus I 14-18, II 6-10.

Female. Total length 4.93, 5.29 mm. Carapace 1.98, 2.20 mm. long, 1.80, 1.91 mm. wide. Femur I 1.76, 1.80 mm. long (two specimens). Terminal loops of median ducts recurved, visible externally (fig. 58). Spermathecae elongate (fig. 59). Leg cusps: tibia I 3-6, II 0; metatarsus I 10-16, II 2-4; tarsus I 9-12, II 3-5.

Localities. **Mexico:** *Tabasco:* Teapa. *Veracruz:* Fortín de los Flores; Potrero. **Costa Rica:** Agua Caliente.

Distribution. Mexico and Costa Rica (map 6).

Natural History. Mature males have been taken in April and June.

Discussion. Of the two male and two female syntypes of *transversus*, only three actually be-

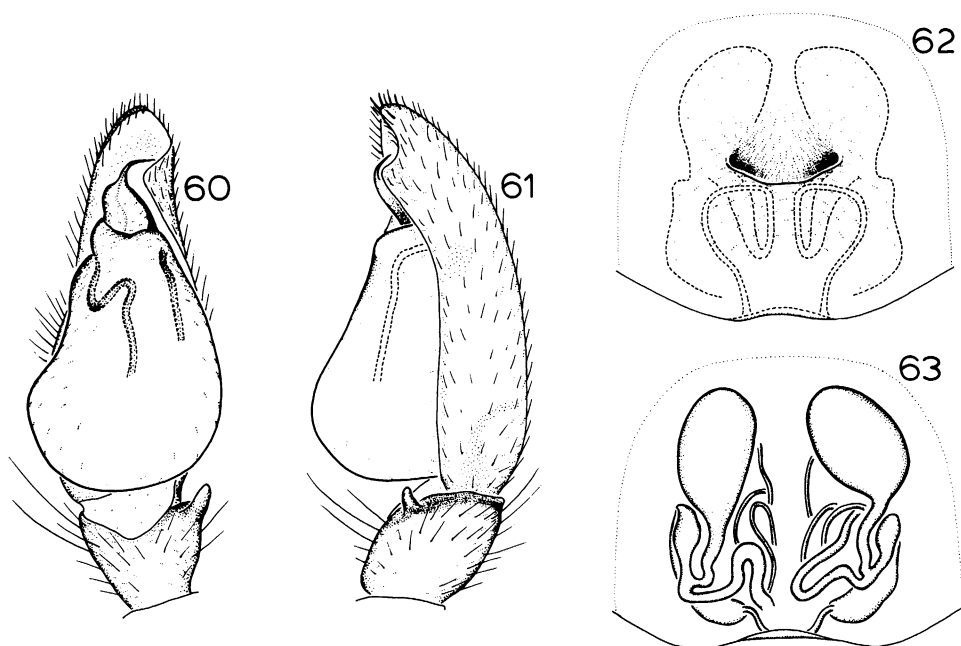
long to this species; the fourth is a male *similis*. Thus the male correctly assigned to *transversus* is here designated as the lectotype; it agrees with the original illustrations. The male holotype of *morosus* is conspecific with the lectotype of *transversus*; the palpi of both are virtually identical, and Banks should have recognized his specimen as a *transversus* from the adequate illustrations provided by Cambridge.

***Trachelas sinuosus*, new species**

Figures 60-63; Map 6

Types. Male holotype from the north shore of Tybee Island, latitude 32° 1' N, longitude 80° 53' W, Chatham County, Georgia (December 5, 1962; Wilton Ivie), deposited in the American Museum of Natural History. Female paratype from 3 miles west and 2 miles north of Monroe Station, Collier County, Florida (March 20, 1952; P. Porter), deposited in the Museum of Comparative Zoology.

Etymology. The specific name is from the



FIGS. 60-63. *Trachelas sinuosus*, new species. 60. Palp, ventral view. 61. Palp, retrolateral view. 62. Epigynum, ventral view. 63. Internal female genitalia, dorsal view.

Latin *sinuosus* (full of curves) and refers to the shape of the embolus.

Diagnosis. *Trachelas sinuosus* is a distinctive species unlikely to be confused with any other. The peculiarly narrowed tip of the embolus (fig. 60) and the unique pocket-like epigynal opening (fig. 62) are diagnostic.

Male. Total length 4.25-5.40 mm. Carapace 1.80-2.36 mm. long, 1.44-1.94 mm. wide. Femur I 1.62-2.05 mm. long (four specimens). Palp rounded proximally. Embolus with distal third greatly narrowed, curving (fig. 60). Retrolateral tibial apophysis thin (fig. 61). Leg cusps: tibia I 4-13, II 0-8; metatarsus I 16-27, II 8-24; tarsus I 11-18, II 2-14.

Female. Total length 5.98, 6.26 mm. Carapace 2.40, 2.45 mm. long, 1.91, 1.98 mm. wide. Femur I 2.02, 2.05 mm. long (two specimens). Epigynum with single median pocket-like opening (fig. 62). Spermathecae arising from lateral ducts by long stalks (fig. 63). Leg cusps: tibia I 2-7, II 0; metatarsus I 19-24, II 9-14; tarsus I 13-16, II 7-10.

Localities. **United States:** *Florida:* Collier

Co.: Monroe Station. Highlands Co.: Archbold Biological Station, Lake Placid. Pinellas Co.: Dunedin. *Georgia:* Charlton Co.: Billy's Island, Okefinokee Swamp. Chatham Co.: Tybee Island.

Distribution. Southern Georgia and Florida (map 6).

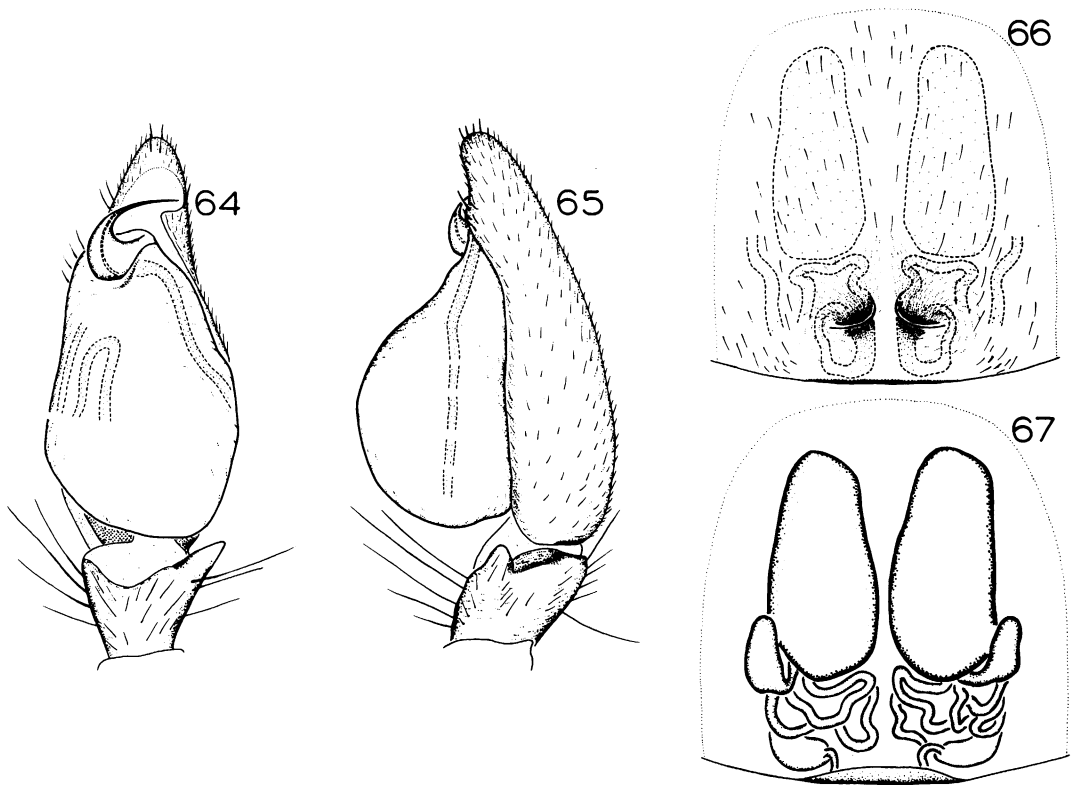
Natural History. Mature males have been taken in January, February, June, and December; mature females in March.

Discussion. Females of this species often have the epigynal opening blocked with an amorphous secretion similar to that described in the Theridiidae by Braun (1956).

Trachelas huachucanus Gertsch
Figures 64-67; Map 4

Trachelas huachucanus Gertsch, 1942, p. 8, fig. 26 (female holotype from the Huachuca Mountains, Cochise County, Arizona, in the American Museum of Natural History, examined). Roewer, 1954, p. 589.

Diagnosis. *Trachelas huachucanus* is closely related to *fuscus*. Males of *fuscus* are unknown,



FIGS. 64-67. *Trachelas huachucanus* Gertsch. 64. Palp, ventral view. 65. Palp, retrolateral view. 66. Epigynum, ventral view. 67. Internal female genitalia, dorsal view.

but those of *huachucanus* have a distinctive semi-circular embolus (fig. 64). Females of *huachucanus* have more elongate spermathecae (fig. 67) than do those of *fuscus*.

Male. Total length 5.36-6.48 mm. Carapace 2.66-3.04 mm. long, 2.34-2.52 mm. wide. Femur I 2.63-2.88 mm. long (five specimens). Dorsum of abdomen dark gray with light brown muscle impressions. Palpal patella with a retrolateral apophysis. Embolus long, semicircular (fig. 64). Retrolateral tibial apophysis triangular (fig. 65). Leg cusps: tibia I 1-9, II 0-7; metatarsus I 21-34, II 16-26; tarsus I 10-16, II 6-8.

Female. Total length 6.95-8.75 mm. Carapace 2.77-3.35 mm. long, 2.38-2.84 mm. wide. Femur I 2.64-2.99 mm. long (eight specimens). Abdomen as in male. Epigynum with posteromedian openings (fig. 66). Spermathecae elongate (fig. 67). Leg cusps: tibia I 0-5, II 0; metatarsus I 19-38, II 17-27; tarsus I 9-18, II 6-10.

Localities. United States: *Arizona:* Cochise Co.: Carr Canyon, Garden Canyon, Montezuma Pass, Huachuca Mountains. Santa Cruz Co.: Madera Canyon, Santa Rita Mountains. *New Mexico:* Grant Co.: Cherry Creek Camp, 13 mi. N Silver City. **Mexico:** *Chihuahua:* Cañon Prieta, near Primavera.

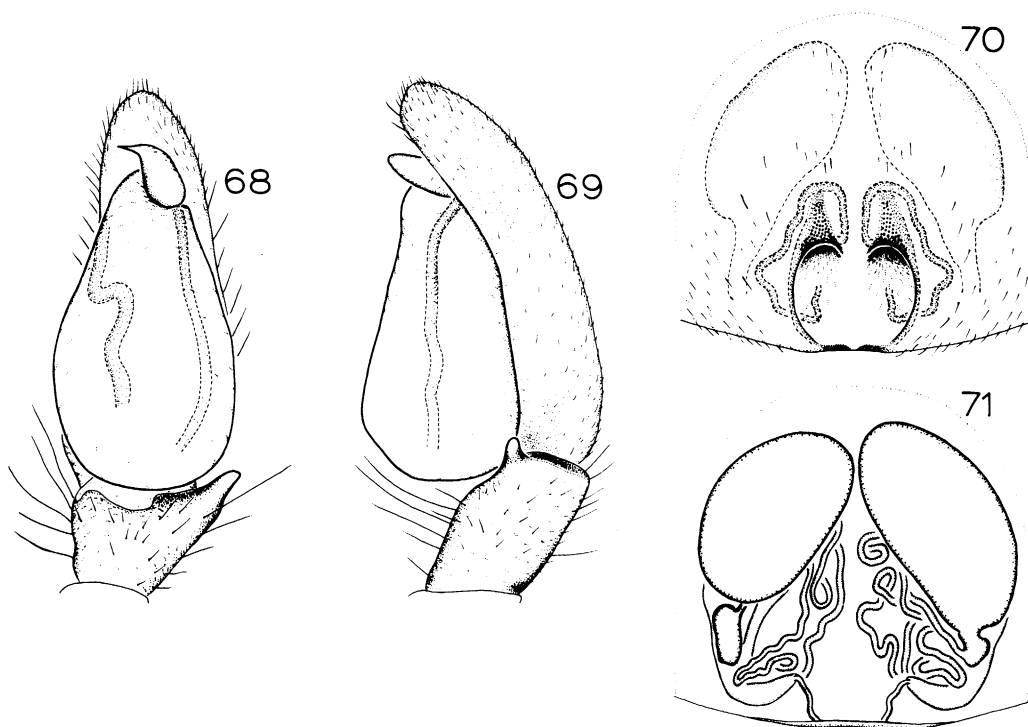
Distribution. Arizona, New Mexico, and Chihuahua (map 4).

Natural History. Mature males have been taken in June and July, mature females from late June through early September. Specimens have been collected at altitudes ranging from 5000 to 8000 feet.

Trachelas fuscus, new species

Figures 40, 41; Map 6

Type. Female holotype from 10 miles east of El Salto, Durango, Mexico (August 8, 1947; W. J.



FIGS. 68-71. *Trachelas bulbosus* F. O. P.-Cambridge. 68. Palp, ventral view. 69. Palp, retrolateral view. 70. Epigynum, ventral view. 71. Internal female genitalia, dorsal view.

Gertsch), deposited in the American Museum of Natural History.

Etymology. The specific name is from the Latin *fuscus* (dark) and refers to the abdominal coloration.

Diagnosis. *Trachelas fuscus* is very closely related to *huachucanus*. Males of *fuscus* are unknown; females may be distinguished from those of *huachucanus* by their oval, rather than elongate, spermathecae (fig. 41).

Male. Unknown.

Female. Total length 6.48-8.06 mm. Carapace 2.63-3.10 mm. long, 2.16-2.63 mm. wide. Femur I 2.23-2.66 mm. long (four specimens). Dorsum of abdomen dark gray. Epigynum with tubelike openings (fig. 40). Spermathecae oval (fig. 41). Leg cusps: tibia I 0, II 0; metatarsus I 11-19, II 6-9; tarsus I 6-14, II 2-9.

Localities: **Mexico:** **Durango:** El Salto. **Nuevo León:** 38 mi. S China.

Distribution. Durango and Nuevo León (map 6).

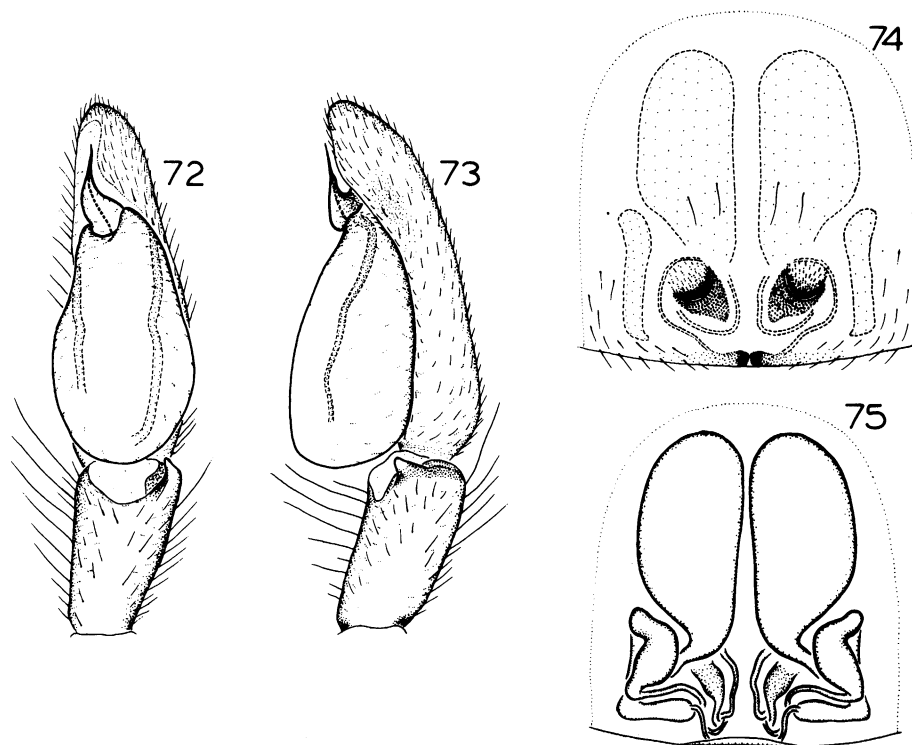
Natural History. Mature females have been taken in July and August.

Trachelas bulbosus F. O. P.-Cambridge
Figures 68-71; Map 6

Trachelas bulbosus F. O. P.-Cambridge, 1899, p. 78, pl. 6, figs. 5, 6 (male holotype from Omiltemi, Guerrero, Mexico, and female allotype from Guatemala, no specific locality, in the British Museum, examined). Roewer, 1954, p. 587. Bonnet, 1959, p. 4667.

Diagnosis. *Trachelas bulbosus* is a distinctive species not likely to be confused with any other. Both the unique prolaterally curved embolus (fig. 68) and the exceptionally large spermathecae (fig. 71) are diagnostic.

Male. Total length 5.98, 6.98 mm. Carapace 2.66, 3.02 mm. long, 2.30, 2.52 mm. wide. Femur I 2.45, 2.59 mm. long (two specimens). Palp rounded proximally. Embolus curving prolaterally (fig. 68). Retrolateral tibial apophysis short



FIGS. 72-75. *Trachelas lanceolatus* F. O. P.-Cambridge. 72. Palp, ventral view. 73. Palp, retrolateral view. 74. Epigynum, ventral view. 75. Internal female genitalia, dorsal view.

(fig. 69). Leg cusps: tibia I 4-7, II 4-7; metatarsus I 24-26, II 15-29; tarsus I 15-17, II 10-15.

Female. Total length 6.84-8.39 mm. Carapace 3.24-3.60 mm. long, 2.70-3.02 mm. wide. Femur I 2.66-2.92 mm. long (three specimens). Epigynum with anterolateral openings (fig. 70). Spermathecae large (fig. 71). Leg cusps: tibia I 1-7, II 0; metatarsus I 17-22, II 9-16; tarsus I 11-16, II 7-14.

Localities. **Mexico:** *Distrito Federal:* Santa Rosa. *Guerrero:* Omiltemi. **Guatemala.**

Distribution. Southern Mexico and Guatemala (map 6).

Natural History. A mature male was taken in September, mature females from September through November.

Trachelas lanceolatus F. O. P.-Cambridge
Figures 72-75; Map 5

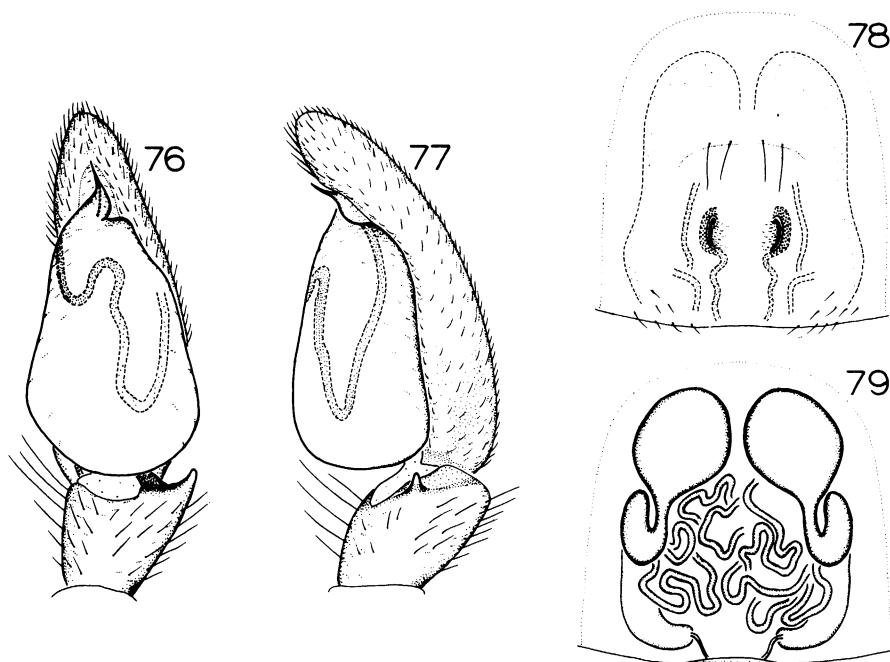
Trachelas lanceolatus F. O. P.-Cambridge, 1899,
p. 76, pl. 5, figs. 20, 21 (male and female

syntypes from Teapa, Tabasco, Mexico, in the British Museum, examined). Roewer, 1954, p. 588. Bonnet, 1959, p. 4668.

Diagnosis. *Trachelas lanceolatus* is most closely related to *spinulatus* but may be distinguished from that species by the longer embolus of the male (fig. 72) and the longer spermathecae of the female (fig. 75). The epigynum also shows some similarities to that of *hamatus*, but lacks the greatly widened lateral ducts of that species.

Male. Total length 8.64 mm. Carapace 4.10 mm. long, 3.20 mm. wide. Femur I 3.74 mm. long (syntype). Palp narrowed distally. Embolus long, curving (fig. 72). Retrolateral tibial apophysis recumbent (fig. 73). Leg cusps: tibia I 31-34, II 16-21; metatarsus I 25-28, II 20-26; tarsus I 11-16, II 9-11.

Female. Total length 9.65 mm. Carapace 4.46 mm. long, 3.80 mm. wide. Femur I 3.96 mm. long (syntype). Epigynum with openings directed posteromedially (fig. 74). Spermathecae elongate



FIGS. 76-79. *Trachelas spinulatus* F. O. P.-Cambridge. 76. Palp, ventral view. 77. Palp, retrolateral view. 78. Epigynum, ventral view. 79. Internal female genitalia, dorsal view.

(fig. 75). Leg cusps: tibia I 38-44, II 23-25; metatarsus I 30-37, II 23-30; tarsus I 20-22, II 14 or 15.

Localities and Distribution. Known only from the type locality in Tabasco, Mexico (map 5).

Natural History. Nothing is known of the habits of this species.

Trachelas spinulatus F. O. P.-Cambridge

Figures 76-79; Map 5

Trachelas spinulatus F. O. P.-Cambridge, 1899, p. 78, pl. 6, fig. 3 (two male syntypes from Guatemala, no specific locality, in the British Museum, examined). Roewer, 1954, p. 588. Bonnet, 1959, p. 4671.

Trachelas cambridgei (misidentification): Kraus, 1955, p. 45, fig. 118.

Diagnosis. *Trachelas spinulatus* is most closely related to *lanceolatus* but may be distinguished by the shorter embolus (fig. 76) and rounded spermathecae (fig. 79). The epigynum also shows some similarities to that of *latus*, but

lacks the extremely long lateral ducts found in that species.

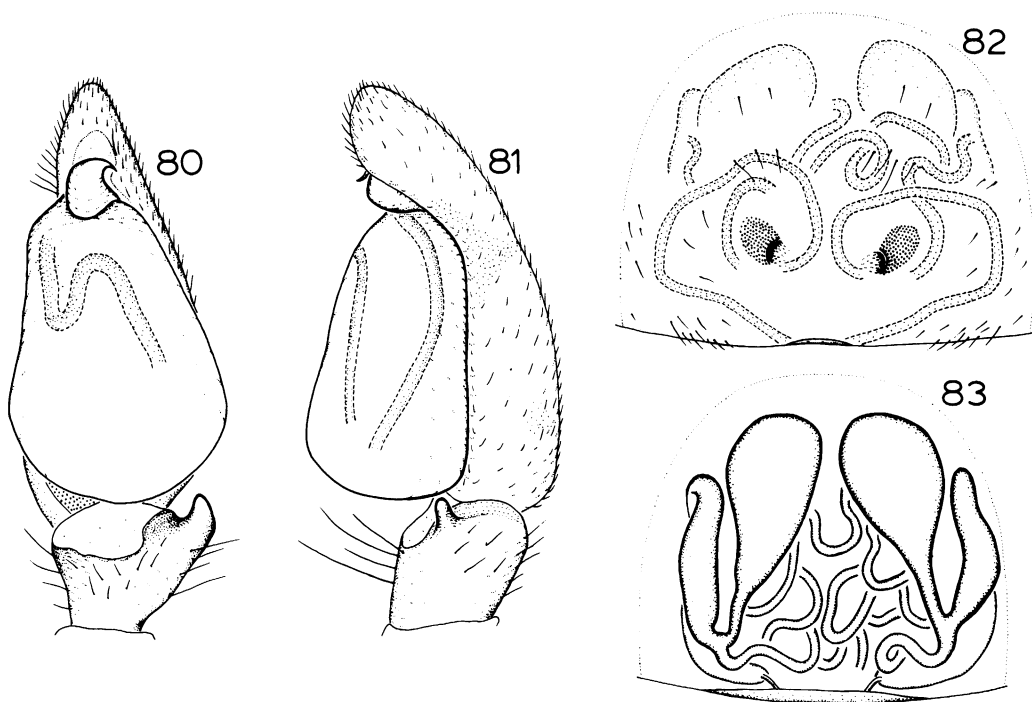
Male. Total length 5.36, 5.47 mm. Carapace 2.48, 2.56 mm. long, 2.02, 2.16 mm. wide. Femur I 2.02, 2.16 mm. long (syntypes). Palp rounded proximally. Embolus short, almost continuous with tegulum (fig. 76). Retrolateral tibial apophysis short, narrow (fig. 77). Leg cusps: tibia I 12-16, II 8-12; metatarsus I 20-22, II 16-23; tarsus I 11-16, II 9.

Female. Total length 6.05-7.99 mm. Carapace 2.38-3.20 mm. long, 2.09-2.66 mm. wide. Femur I 1.94-2.81 mm. long (five specimens). Epigynum with small semicircular openings (fig. 78). Spermathecae small, rounded (fig. 79). Leg cusps: tibia I 6-15, II 0-3; metatarsus I 14-23, II 9-19; tarsus I 9-19, II 6-13.

Localities. **El Salvador:** Candelaira; Wald. **Guatemala:** Tumahu; Variedades. **Nicaragua:** Masawas, Huaspuc River.

Distribution. Central America (map 5).

Natural History. Mature females have been taken from late April through late September.



FIGS. 80-83. *Trachelas latus*, new species. 80. Palp, ventral view. 81. Palp, retrolateral view. 82. Epigynum, ventral view. 83. Internal female genitalia, dorsal view.

One female was collected at an altitude of 3000 feet.

***Trachelas latus*, new species**
 Figures 80-83; Map 5

Types. Male holotype from El Catrin, latitude 17° 21' N, longitude 96° 57' W, Oaxaca, Mexico (September 3, 1964; Jean and Wilton Ivie), and female paratype from Cerro del Armadillo, Oaxaca, Mexico (January 7, 1948; T. MacDougall), deposited in the American Museum of Natural History.

Etymology. The specific name is from the Latin *latus* (wide) and refers to the shape of the embolus.

Diagnosis. *Trachelas latus* is most closely related to *hamatus* but may be easily distinguished by the very broad embolus (fig. 80) and the exceptionally long lateral ducts (fig. 83). The epigynum also shows some similarities to that of *spinulatus*, but the spermathecae are more elongate than in that species.

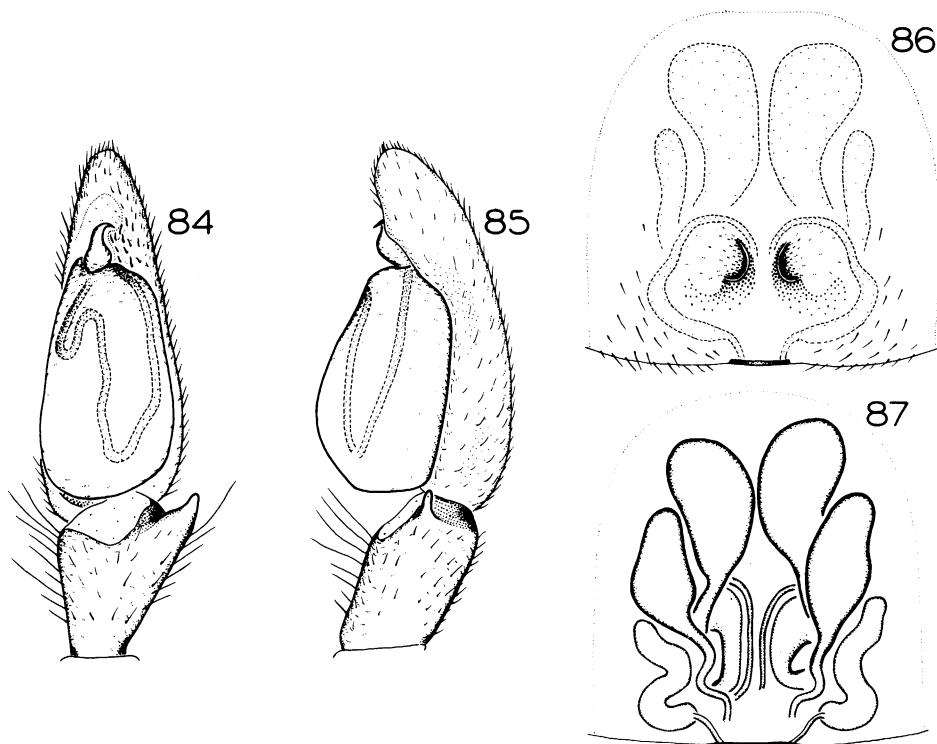
Male. Total length 5.00, 5.54 mm. Carapace 2.46, 2.63 mm. long, 1.94, 1.98 mm. wide. Femur I 2.02, 2.05 mm. long (two specimens). Palp rounded proximally. Embolus broad, with tip pointing proximally (fig. 80). Retrolateral tibial apophysis erect (fig. 81). Leg cusps: tibia I 5-16, II 3-11; metatarsus I 22-27, II 13-16; tarsus I 12-18, II 6-12.

Female. Total length 5.36-7.42 mm. Carapace 2.46-2.81 mm. long, 2.05-2.41 mm. wide. Femur I 1.91-2.30 mm. long (three specimens). Epigynum with small, widely separated openings (fig. 82). Lateral ducts greatly elongated (fig. 83). Leg cusps: tibia I 1-14, II 0; metatarsus I 16-22, II 1-12; tarsus I 13-15, II 4-8.

Localities. **Mexico:** Chiapas: Cintalapa; Río de los Flores. **Oaxaca:** Cerro del Armadillo; El Catrin. **Guatemala:** Estanzuela.

Distribution. Southern Mexico and Guatemala (map 5).

Natural History. Mature males have been taken in September, mature females in September and January.



FIGS. 84-87. *Trachelas hamatus*, new species. 84. Palp, ventral view. 85. Palp, retrolateral view. 86. Epigynum, ventral view. 87. Internal female genitalia, dorsal view.

***Trachelas hamatus*, new species**

Figures 84-87; Map 5

Types. Male holotype from Tequila, Veracruz, Mexico (August 7, 1967; J. Reddell), deposited in the American Museum of Natural History. Female paratype from 7 miles southeast of Las Vigas, Veracruz, Mexico (December 18, 1948; H. B. Leech), deposited in the California Academy of Sciences.

Etymology. The specific name is from the Latin *hamatus* (hooked) and refers to the shape of the embolus.

Diagnosis. *Trachelas hamatus* is most closely related to *latus* but may be distinguished by the much narrower embolus (fig. 84) and the much wider lateral ducts (fig. 87). The epigynum also shows some similarities to that of *lanceolatus*, but the spermathecae are smaller than in that species.

Male. Total length 5.76 mm. Carapace 2.52 mm. long, 2.12 mm. wide. Femur I 2.23 mm. long (holotype). Palp narrowed ventrally. Embolus hooklike (fig. 84). Retrolateral tibial apophysis thin, erect (fig. 85). Leg cusps: tibia I 13-15, II 7 or 8; metatarsus I 18-20, II 17-24; tarsus I 11 or 12, II 6-10.

Female. Total length 7.60 mm. Carapace 3.38 mm. long, 2.81 mm. wide. Femur I 3.10 mm. long (paratype). Epigynum with anteromedial openings (fig. 86). Lateral ducts greatly widened (fig. 87). Leg cusps (left leg I and right leg II missing): tibia I 14, II 4; metatarsus I 18, II 19; tarsus I 12, II 17.

Localities and Distribution. Known only from the type specimens from Veracruz, Mexico (map 5).

Natural History. Nothing is known of the habits of this species.

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