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STUDIES IN THE ORBWEAVING SPIDERS (ARGIOPIDAE). 3

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INTRODUCTION

This paper is concerned entirely with the members of the subfamily Theridiosomatinae, and is the third of a series with the above title (see Amer. Mus. Novitates, no. 1487 and no. 1502, 1951). The material on which the present study is based belongs largely to the collection in the American Museum of Natural History. Some material, especially that from the southern United States, is in the collection of the author housed in the Alabama Museum of Natural History, University, Alabama. All the types and most of the paratypes are deposited in the American Museum of Natural History. The author again acknowledges his great indebtedness to the Department of Insects and Spiders of this institution and to the Council of the Scientific Staff for the grant enabling this study to be completed. Especial thanks are due to Dr. Willis J. Gertsch for counsel and encouragement given freely towards the completion of this study.

The present paper treats the Nearctic and Neotropical fauna of the Theridiosomatinae. Several new species are described, all but one Neotropical, and one new genus and species is reported from Alabama. In spite of quite ample material, there are some Neotropical species not seen by the author. In certain instances described species, because of their location in widely scattered and distant collections, could not be studied at first hand. The Antillean Theridiosomatinae have been studied by Miss E. B. Bryant and Dr. A. Petrunkevitch who have given reasonable or

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adequate treatment of the known species. This paper can pretend only to review the Theridiosomatinae, and to cover newly recognized species as well as to present locality records of all known North American ones and of a great many from Central and South America. The drawings were all prepared by the author from first-hand material or in a few cases adapted from published figures.

SYSTEMATIC SECTION

Some recent authors have recognized the Theridiosomatinae as constituting a distinct family, the Theridiosomatidae, in its own right. If this policy were sound, we would be forced in order to attain consistency in our practices to recognize as families even more subfamilies of the Argiopidae than most workers have been willing to admit to that status. At the present time the Tetragnathinae are also regarded by some as a distinct family, but, this being the case, it would be perfectly proper to elevate the Nephilinae, Cyatholipinae, and the Metinae to the family level. A study of world spiders indicated that the distinctions between the subfamilies do not belong to the familial level but rather are striking peculiarities of a superficial nature. The family Argiopidae is one of the largest of spider families and is extraordinarily diverse in habits, size, external appearance, and adaptation. This family is unsurpassed among spider families in the versatility of its members and is reminiscent of the Carabidae among Coleoptera in this respect. The most basic diagnostic features pertaining to the subfamilies as well as to families lie in the genitalia and in appendage characters. The distinctions found between subfamilies are of small degree, tending to overlap or to be intermediate at both ends of the included subfamilies but are not of the degree or discontinuous, dissociated type found in the sexual anatomy of distinct families. The contrast between the extremes of the most primitive and the most derivative subfamilies of the Argiopidae is indeed so striking as to constitute familial differences and would be valid, were it not for the existence of intermediate types and intermediate subfamilies linking the whole constituency completely. The Argiopidae have the distinction of possessing the most derivative members of the Argiopiodea and at the same time some of the most primitive members of this superfamily in existence among all families today. The Nephilinae at the very base of the orbweavers are

reminiscent in size and appearance of Upper Paleozoic argiopoid spiders (Archaeometidae) recently studied by Petrunkevitch (1949, Trans. Connecticut Acad. Arts Sci., vol. 37, pp. 278-279, pl. 49, fig. 159, pl. 80, fig. 260).

The Theridiosomatinae possess in common with all Argiopidae the presence of the paracymbium on the male palpus, which does not in any of its parts come in close relation with the apical face of the tibia. Moreover, the tegulum of the genital bulb of the palpus greatly overbalances the subtegulum. The dissimilar eyes cannot at present be shown as consistent in this subfamily, and there is no family distinction about the fourth tarsal brush. This structure occurs sporadically in other Argiopidae, for example *Micrathena* and allied genera of the araneine Gasteracanthidi, and in one subfamily of the Linyphiidae (to be sure, in a peculiar arrangement). This structure is to be regarded as an inheritance from early argiopoid ancestors, passed on to the derived families, but retained seemingly only where useful. Only in the Nicodaminae of the Theridiidae does the fourth tarsus have the brush, elsewhere in this particular family the structure being modified as a comb of serrate bristles. The Theridiosomatinae actually constitute a side branch, and not being members of the main trunk are not to be regarded as forerunners of more derivative types of orbweavers. On the phylogenetic tree they are almost at the same level as the Argiopinae but strikingly diverge from them in many characteristics. Besides the theridiosomatines there are two other side branches that constitute evolutionary dead ends. Before the side branches are considered, it should be stated that the direct line of evolutionary descent, the main trunk of this family, is: Nephilinae, Metinae, Argiopinae, Araneinae. These are already fully characterized in my first paper (1951, Amer. Mus. Novitates, no. 1497, pp. 2-3). The following section contains the characterization of the side-branch families and their affinities.

CYATHOLIPINAE: Median apophysis of male palpus wanting. Genital bulb simple, of the same type as in the Deinopidae and Uloboridae, a flattened mound; embolus circumscribing the margin; attachment of bulb to cymbium universal. Paracymbium tapering, suberect below and beyond an angular projection of the cymbium, separated therefrom by a sinus. Epigynum simple and primitive. Spination weak or lacking on legs of both sexes as well as on apical position of tibia of male palpus.

These tropical spiders are very small or minute. They have peculiarities in eye arrangement, at least in some cases, and the abdomen may be rather modified. The legs vary from stout in some females to slender in males. In certain cases the web is known to be unusual in pattern. The Cyatholipinae appear to be directly derived from the Nephilinae, from which they differ in size, habits, and retrogressive features of the genitalia. The bulb of the male palpus resembles the type found in the Uloboroidea, which certainly stand apart from the primitive members of the Argiopoidea only in such features as the presence of the cribellum and calamistrum.

TETRAGNATHINAE: Median apophysis absent from the male palpus. Apex of cymbium substituting as a retaining structure for the embolus and conductor. Genital bulb rather simple; attachment subbasal. Tegulum massive and bulbous. Subtegulum very reduced. Paracymbium suberect, long, flexible. Apical patellar spine, if present, single. Epigynum largely lacking external structures.

This well-known subfamily (regarded as a family by an increasing number of students) comprises spiders ranging from minute size to noticeable size and bizarre build. The members are actually modified Metinae, branching off from ancestors resembling the present-day tribe Aziliini which often lacks apophyses on the cymbium or on the paracymbium of the male palpus.

THERIDIOSOMATINAE: Median apophysis of male palpus present, various in type, but always broad based on prone and projecting. Genital bulb slightly complicated and with a few simple apophyses; attachment to cymbium subbasal, extensive. Tegulum relatively large or enormous. Paracymbium small, simple, suberect. Epigynum varying from a simple opening (as in some Theridiidae) to a well-developed plate.

Here we have a side branch, the main subject of this study, comprising spiders that are very small or minute, and of secretive habits, living in obscure habitats or deliberately disguising their presence (*Colphepeira*). The males of all genera to which this sex can be assigned have relatively huge genitalia. The legs may be slender, but in most genera they are short and stout. Like the Argiopinae these spiders appear to be derived from the Metinae, but are one step more derivative than the latter in structures. In many instances they have retained the fourth

tarsal brush now almost vanished from the Metinae.

This subfamily is divisible into three tribes, Totuini, Theridiosomatini, Epeirotypini. These are characterized below, and all world genera belonging to each are listed.

TOTUINI, NEW TRIBE

Males unknown. Legs of females slender and relatively long, apparently almost devoid of spines, except for a few scattered ones. Epigynum a well-developed plate.

The single known genus is Neotropical:

Totua KEYSERLING, 1891, Die Spinnen Amerikas, vol. 3 (Brasilianische Spinnen), p. 261, pl. 8, fig. 158; *T. gracilipes* Keyserling of Brazil.

TRIBE THERIDIOSOMATINI SIMON, 1895

Form of abdomen regular. Median apophysis of male palpus splinter-like or plate-like. An apical patellar spine or seta on palpus. This tribe is more restricted here than in the sense of Simon.

The included genera, genotypes, and known distributions are as follows:

Helwidia THORELL, 1890, Ann. Mus. Civ. Genova, vol. 28, p. 279; *H. scabricula* Thorell; Australasia. *Andasta* SIMON, 1893, Histoire naturelle des araignées, ed. 2, vol. 1, p. 918; *A. semiargentea* Simon; Ceylon and Moluccas. *Theridiosoma* O. P. CAMBRIDGE, 1879, Ann. Mag. Nat. Hist., ser. 5, vol. 4, p. 193; *T. gemmosum* (L. Koch); Ethiopian, Oriental, Macromalaysian, Neotropical, Holarctic. *Wendilgarda* KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, p. 130; *W. mexicana* Keyserling; Neotropical, Oriental. *Allototua* BRYANT, 1945, Bull. Mus. Comp. Zool., vol. 95, pp. 410–411; *A. guttata* Bryant; Antillean. *Ogulnius* O. P. CAMBRIDGE, 1882, Proc. Zool. Soc. London, p. 432; *O. obtectus* O. P. Cambridge; Neotropical, Oriental. *Parogulnius*, new genus of this paper; *P. hypsigaster* Archer, new species; southern Nearctic.

EPEIROTYPINI, NEW TRIBE

Abdomen having appendages of various types. Median apophysis of male palpus bifid, claw-like. No apical patellar spine on male palpus.

Three genera belong in this new tribe:

Phricotelus SIMON, 1895, Histoire naturelle des araignées, ed. 2, vol. 1, p. 919; *P. stelliger* Simon; Oriental. *Epeirotypus* O. P. CAMBRIDGE, 1894, Biologia Centrali-Americana, Arachnida, vol. 1, p. 136; *E. breviceps* O. P.

Cambridge. *Colphepeira* ARCHER, 1941, Alabama Mus. Nat. Hist., Mus. Paper 18, p. 12; *C. catawba* (Banks); southern Nearctic.

ANOMALOUS GENERA

Billima SIMON, 1908, in Michaelsen, W., Die Fauna Südwest-Australiens, vol. 1, no. 12, Araneae, p. 430; *B. attrita* Simon; Australia.

This genus was placed by Petrunkevitch in his "Systema naturae" in the subfamily Argiopinae. Roewer in the "Katalog der Araneae" placed it in the Theridiosomatinae. Only the female of this genus is known, and it would require a male specimen to resolve this question. This illustrates the problems that arise in trying properly to place incompletely known genera, especially those of primitive antarctic series that are probably transitional between the two subfamilies in question.

Tecmessa O. P. CAMBRIDGE, 1882, Proc. Zool. Soc. London, p. 434.

This genus has been associated with the Theridiosomatinae and with the Gasteracanthidi, close to *Xylethrus*. It does not belong with the Argiopidae. None of its structures can properly be said to resemble those of the Theridiosomatinae. The hard corneous abdomen and the ring around the spinnerets have doubtless persuaded some that it is one of the Gasteracanthidi of the Araneinae (called Gasteracanthinae by many authors). The fact is that *Tecmessa* has suffered the same fate of taxonomic misplacement accorded to some species of *Ulesanis*, a theridiid belonging to the tribe Phoroncidiini. The members of this tribe, to which *Tecmessa* clearly belongs, all share with the Gasteracanthidi the hard sigillate abdomen and with some of them the corneous ring around the spinnerets. In this regard these remarkable Theridiidae are convergent with the Argiopidae in question but are in their own right proper members of their own family.

Theridiosoma O. P. CAMBRIDGE, 1879

Median apophysis of the male palpus a prone, projecting strip; endal margin resting on incised margin of tegulum; ectal termination a subacute, acute, or bifid point. Radix an elevated wall above which arises the narrow, tubular, or hair-like embolus; embolus ensheathed for part of its length, its tip drooping over or diverging from the blade-like conductor, the tip of which varies from subacute to truncated. Cymbium not spinose. No

secondary sexual modifications of the legs of the male; tibia I relatively large and stout. Epigynum a plate, varying in form and thickness, completely covering in ventral view the vulvar openings; vulvae with or without internal, diverticulous, chitinized structures, one for each; main atriole opening sometimes partly obscured by a projecting shelf. Carapace very short and wide, more or less pilose. Sternum truncated behind and between coxae IV. Eyes dissimilar in color; PME a bit smaller than AME. Abdomen very rounded and high, sometimes projecting a little over posterior region of carapace but not over cephalon proper. Sexes alike in size. Legs dissimilar.

***Theridiosoma gemmosum* (L. Koch)**

Figures 1, 2, 3

Theridium gemmosum L. KOCH, 1877, Abhandl. Naturhist. Gesellsch. Nürnberg, vol. 6, p. 138.

Theridiosoma gemmosum WIEHLE, 1931, in Dahl, F., Die Tierwelt Deutschlands, Teil 23, Araneidae, pp. 131-135, figs. 210-218.

The figures are based on a male from the Simon collection, labeled France. The tip of the median apophysis is curved upward and subapically incised. The epigynum, not figured, comprises, when viewed from the rear, a low vault like that of *T. argentatum* (Keyserling), but neither the tip nor the lateral wings are enlarged as is the case in the latter species. Indeed there is no justification for uniting the European species with *T. radiosum* (McCook) or any North American species. The genitalia are readily distinguished in all cases and for both sexes.

***Theridiosoma radiosum* (McCook)**

Figures 4, 5, 6, 11, 12

Epeira radiosa MCCOOK, 1881, Proc. Acad. Nat. Sci. Philadelphia, p. 163.

Microepeira radiosa EMERTON, 1884, Trans. Connecticut Acad. Arts Sci., vol. 6, p. 320, pl. 34, fig. 7, pl. 38, figs. 1-4.

Theridiosoma radiosa KEYSERLING, 1893, Die Spinnen Amerikas, Epeiridae, pt. 2, p. 312, pl. 16, fig. 230. McCOOK, 1893, American spiders, vol. 3, p. 257, pl. 37, figs. 8-9.

Theridiosoma gemmosum KASTON, 1948, Connecticut State Geol. Nat. Hist. Surv., bull. no. 70, pp. 262-263, pl. 40, figs. 831-833.

The median apophysis of the male palpus of this species is shown in figure 6. The epigynum is illustrated in figures 11 and 12. The external appearance and stature of *radiosum* are practic-

ally identical with those of *T. argentatum* (Keyserling) and the European species, *T. gemmosum* (L. Koch). The distinguishing features are to be found in the genitalia which are very striking. The synonymy cited above shows that this species has been confused with the European one. Moreover, it has been the practice to regard this species as identical with *argentatum* which, although the two broadly overlap in range, is principally a species of the southern part of the United States. Detailed records given below for this species are therefore of interest and importance.

LOCALITIES: *Ontario*: Female, Island 1024, Lake Temagami, August 15–25, 1946 (W. Ivie and T. Kurata). *Maine*: Females, Mt. Desert Island, June 25, 1945 (William Procter). *Massachusetts*: Females, Woods Hole, July 20, 1901 (H. Britcher). *Connecticut*: Males, female, Norwalk, May 30, 1933 (W. J. Gertsch); female, Norwalk, July 4, 1935 (W. J. Gertsch). *New York*: Females, Cold Spring Harbor, August 1, 1902, June 25, 1903 (H. Britcher); and male and females, June, 1932 (W. J. Gertsch). *Pennsylvania*: Females, Wissahickon Creek, Philadelphia, June 21, 1940 (A. F. Archer). *North Carolina*: Females, egg sacs, elevation 2600–3000 feet, Ridgecrest, Buncombe County, June 22–26, 1951 (A. F. Archer); females, elevation 2500 feet, Andrews Geyser near Old Fort, McDowell County, June 26, 1951 (A. F. Archer).

***Theridiosoma argentatum* Keyserling**

Figures 7, 8, 9, 13

Theridiosoma argentata KEYSERLING, 1884, Die Spinnen Amerikas, Theridiidae, vol. 1, p. 218, pl. 10, fig. 132.

Theridiosoma argentatum SIMON, 1903, Histoire naturelle des araignées, ed. 2, vol. 2, p. 1007.

Theridiosoma radiosum ARCHER, 1940, Alabama Mus. Nat. Hist., Mus. Paper 14, pp. 11–13, 17–18.

This species was described from an immature male and cited as follows: "Georgia. In der Sammlung des Herrn E. Simon." There is no doubt about the species referred to here. Georgia occurs in the heart of the territory of the southern species, for there is no overlap between it and *radiosum* until the mountainous sections of North Carolina are reached. *T. argentatum* occurs much farther north than the point of overlap, as the locality records given below will show. This southern species

differs markedly in genitalic features from all others. The median apophysis of the male palpus is shown in figures 8 and 9; the epigynum, in figure 13.

LOCALITIES: *New Jersey*: Males, Ramsey, Bergen County, June 1–10, 1944; females, July 1944 (W. J. Gertsch); July 11, 1948 (W. Ivie); egg sacs, July 13, 1935 (W. J. Gertsch). *Tennessee*: Male, females, Great Smoky Mountains, July 8, 1933 (W. J. Gertsch); male, New Found Gap, June 19, 1941 (C. and M. Goodnight); female, trail to Alum Cave, Smoky Mountain National Park, June 21, 1941 (C. and M. Goodnight). *North Carolina*: Male, females, egg sacs, elevation about 3700 feet, Dry Falls, Cullasaja Gorge, Macon County, June 18, 1950 (Mableann and A. F. Archer). *Alabama*: Males, females, Bankhead National Forest, June, 1940; male, females, Clear Creek, Trenton, Jackson County, June, 1940; males, females, Cheaha State Park, foot of Mt. Cheaha, June, 1940; males, females, Hatchet Creek, Coosa County, June, 1940; male, female, Monte Sano, Madison County, June, 1939 (A. F. Archer); male, Trinity Mountain, Morgan County, May 24, 1941 (M. Hanson and A. F. Archer). *Florida*: Female, Big Tree near Longwood, March 23, 1935 (W. J. Gertsch).

***Theridiosoma savannum* Chamberlin and Ivie**

Figures 10, 14

Theridiosoma argentatum ARCHER, 1940, Alabama Mus. Nat. Hist., Mus. Paper 14, p. 18, pl. 1, fig. 4; 1941, Alabama Mus. Nat. Hist., Mus. Paper 18, p. 10, pl. 1, fig. 1.

Theridiosoma savannum CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, no. 9, pp. 114–115, figs. 91, 92.

Theridiosoma nelsoni BRYANT, 1945, Psyche, vol. 52, pp. 184–185, fig. 4.

Median apophysis of male palpus shown in figure 10; epigynum, in figure 14.

This species is quite unlike the previous ones in appearance, for the general ground color of the abdomen is brighter, even pink in life. These spiders are very diminutive, the females not even attaining a total length of 1.5 mm., while *argentatum* and *radiusum* are about 2.5 in length, within 0.6 mm. of the size of some of the tropical American species. However, there are in the tropics a few small, rather brilliant species, resembling *T. savannum*.

LOCALITIES: *Florida*: Male, St. John's River, near Geneva,

April 11, 1938 (W. J. Gertsch); males, female, Highland Hammock near Sebring, March 24, 1938 (W. J. Gertsch); male, females, Royal Palm State Park, Dade County, December 27–28, 1940 (A. F. Archer). *Mississippi*: Male, females, climax forest ravines, Camp Shelby, Forrest County, winter and spring, 1946 (A. F. Archer); female, Pass Christian, August 12, 1938 (L. I. Davis). *Alabama*: Female, immatures, Hog Creek, Baldwin County, December 7, 1940 (A. F. Archer); male, Big Creek, Houston County, August 31, 1940 (A. F. Archer); male, females, Fort Dale Cemetery, Butler County, May 24, 1940 (A. F. Archer); male, 5 miles southeast of Wetumpka, Elmore County, April 27, 1947 (A. F. Archer); female, woods east of Opelika, Lee County, July 9, 1940 (A. F. Archer); female, immature male, Hatchet Creek, Coosa County, June, 1940.

***Theridiosoma davis*, new species**

Figure 15

FEMALE: Total length, 1.8 mm. Carapace 0.6 mm. long, 0.7 mm. wide. Abdomen 1.2 mm. long, 1.2 mm. wide.

Coloration of carapace and appendages much as in *T. argentatum* (Keyserling). Abdomen less silvery than in that species; dorsum yellowish with an anterior wash of light gray, and anterior pair of muscle scars black within the zone of the wash; posterior portion light gray, transverse wash present; venter pale isabelline, interrupted by an anterior dark patch, a procurved patch in front of the epigynum, and a reticulated band behind the spinnerets.

TYPE LOCALITY: Female holotype from Tamazunchale, San Luis Potosi, Mexico, July 6–7, 1941 (L. I. Davis), in the American Museum of Natural History.

OTHER LOCALITIES: *Mexico*: Female paratype, Arroyo, Calabazas, 23 miles south of Valles, December 2, 1939 (A. M. and L. I. Davis); immature female, Banos de Sulfre near Teapa, Chiapas, August 1, 1948 (C. and M. Goodnight); female paratype, El Real, July 3, 1950, (C. and M. Goodnight and L. J. Stannard).

***Theridiosoma nechodomae* Petrunkevitch**

Figures 17, 18

Theridiosoma nechodomae PETRUNKEVITCH, 1930, Trans. Connecticut Acad. Arts Sci., vol. 30, p. 301–305, figs. 168–186.

Epigynum as shown in figure 17. The tip of the embolus and the conductor are shown in figure 18. The conductor is peculiar in having a truncated tip. The body size of this species is small for the genus, the total length of the female being 1.7 mm. Both in size and in the epigynum this species resembles *T. davisi*.

LOCALITY: *Jamaica*: Female, Hardware Gap, 4000 feet elevation, April 4, 1935 (Roswell Miller).

***Theridiosoma globosum* (O. P. Cambridge)**

Figure 16

Andrasta globosum O. P. CAMBRIDGE, 1896, *Biologia Centrali-Americana*, Arachnida, vol. 1, p. 192, pl. 24, figs. 5-6.

Theridiosoma globosum O. P. CAMBRIDGE, 1902, *Biologia Centrali-Americana*, Arachnida, vol. 2, p. 414.

Epigynum as illustrated in figure 16.

This species possesses moderate stature as the genus *Theridiosoma* goes. Measured females average a total length of about 2.5 mm. Cambridge's male type has a total length of 2.5 mm. according to the original text.

LOCALITIES: *Mexico*: Female (very dark), Lacandone Forest, 40 kilometers northeast of Ocoingo, Chiapas, March 4, 1945 (T. C. Schneirla); female, Ruins of Palenque, Chiapas, July, 1948 (C. Goodnight); female, Tonala, Chiapas, July, 1904 (A. Petrunkevitch); female, Banos de Sulfre, Teapa, August 1, 1948 (C. and M. Goodnight); females and immature, Tamazunchale, San Luis Potosi, July 5-7, 1941 (L. I. Davis).

***Theridiosoma goodnightorum*, new species**

Figure 19

FEMALE: Total length in the damaged specimen, about 1.9 mm. Carapace, 0.9 mm. long, 0.6 mm. wide. Abdomen, 1.0 mm. long, 1.5 mm. wide.

Carapace dusky over ivory yellow; cephalon black. Legs ivory yellow interrupted by an olivaceous annulation, one each on the femora and patellae, and olivaceous on the prolateral surface of each tibia. Anterior face of abdomen nearly black interrupted by numerous spots, some of them connected with one another by transverse lines; margin marked by a gray apical crescent spotted with white; posterior face and caudal region very dark brown interrupted by silvery dots; lateral regions washed with dusky.

TYPE LOCALITY: Female holotype from Monte Libano, 20 kilometers east of El Real, Chiapas, Mexico, July 4-5, 1950 (C. and M. Goodnight and L. J. Stannard).

***Theridiosoma sylvicola* Hingston**

Figure 25

Theridiosoma sylvicola HINGSTON, 1932, A naturalist in the Guiana Forest, London, p. 376.

Epigynum as shown in figure 25.

Total length of the type specimen, a female, given as 3.0 mm. The carapace is brownish yellow. The pubescent dorsum of the abdomen is isabelline, and the venter is pale yellow. This species appears to be rare, and the male, as in some other South American species presently to be listed, is unknown.

LOCALITY: *British Guiana*: Female, Kaieteur, August 3, 6, 1911 (F. E. Lutz).

***Theridiosoma splendidum* (Taczanowski)**

Figure 20

Theridium splendidum TACZANOWSKI, 1873, Horae Soc. Ent. Rossicae, vol. 10, p. 5.

Theridiosoma splendidum KEYSERLING, 1884, Die Spinnen Amerikas, Theridiidae, vol. 1, pp. 221-222, pl. 10, fig. 134. SIMON, 1895, Historie naturelle des araignées, ed. 2, vol. 1, p. 918. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 395.

This species very closely resembles the previous one in appearance. The epigynum shown in figure 20 is less bold and prominent than that of *T. sylvicola* Hingston. The total length of the female type is 2.5 mm. The caudal end of the abdomen projects, a feature unusual in *Theridiosoma*.

LOCALITY: *Brazil*: Female, upper Rio Mapuera, February 2, 1938 (W. G. Hassler).

***Theridiosoma nigrum* (Keyserling)**

Figure 21

Wendilgarda nigra KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, pp. 266-267, pl. 21, fig. 314.

Theridiosoma nigrum PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 394.

The epigynum as shown in figure 21. The female type is stated as having a total length of 2.3 mm. In appearance and stature *T. nigrum* is very similar to some of the North American and Mexican species already considered above.

LOCALITY: *Brazil*: Females, Teresopolis, state of Rio de Janeiro, 900–1000 meters elevation, January 7–9, 1945 (H. Sick).

***Theridiosoma obscurum* Keyserling**

Theridiosoma obscurum KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, p. 133, pl. 15, fig. 211; Brazil.

This and the remaining species of *Theridiosoma* are listed with original or other important citations with each. These are unrepresented in the American Museum collection. All these species are given here in order to complete the list of known members of the genus from the Western Hemisphere. *T. obscurum* has a total length of 3.1 mm., and its epigynum is a strong, transverse plate.

***Theridiosoma albonotatum* Petrunkevitch**

Theridiosoma albonotatum PETRUNKEVITCH, 1930, Trans. Connecticut Acad. Arts Sci., vol. 30, pp. 305–307, figs. 177–179; Puerto Rico.

In this species the epigynal plate is remarkable in that it has a subacute, backwardly projecting caudal tip. In stature this species is as diminutive as the North American *T. savannum* Chamberlin and Ivie.

***Theridiosoma fauna* Simon**

Theridiosoma fauna SIMON, 1896, Ann. Soc. Ent. France, vol. 65, p. 483, pl. 13, figs. 2–3, 7–8; 1895, Histoire naturelle des araignées, ed. 2, vol. 1, p. 914; Venezuela.

***Theridiosoma concolor* Keyserling**

Theridiosoma concolor KEYSERLING, 1884, Die Spinnen Amerikas, Theridiidae, vol. 1, p. 219, pl. 10, fig. 133; Amazon region.

This very light-colored species is extremely large for *Theridiosoma*. The total length of the female type is given as 4.0 mm. The epigynum is of the vaulted type, of very regular contours, and with a pair of closely approximated chitinous structures seen from behind.

***Theridiosoma argenteolunulatum* Simon**

Theridiosoma argenteolunulatum SIMON, 1896, Ann. Soc. Ent. France, vol. 65, p. 484, pl. 13, figs. 9–11; Venezuela, Antilles.

In stature this species is quite large. The epigynum is very much the same in type as that of *T. savannum* Chamberlin and Ivie, but the internal chitinous bodies are crescent shaped, unlike those of the latter.

WENDILGARDA KEYSERLING, 1886

Median apophysis a plate wider than high to higher than wide; endal margin almost straight to concave; ectal margin very convex. Radix a high, rounded plate. Embolus narrow or thread-like, either resting above the margin of the radix or actually in close contact with it. Conductor a mere protuberance, sometimes with an apophysis which may be formed of brushy plates. Cymbium spinose. Spinose legs of male not modified for secondary sexual characters, but tibia I markedly stout. Epigynum a rather simple, often undifferentiated plate, incised medially or a pair of lateral incisions on the caudal margin; vulvae each with a small, chitinous, diverticulous structure. Carapace somewhat longer than in *Theridiosoma*. Sternum as usual, but with a small circular pit on each side of the labium. Eyes grouped as in the previous genus, but with PME noticeably smaller than AME. Abdomen, especially that of the female, globose or ovoid, elevated rather than tending to project forward; surface regularly pilose; appearance and texture parallel to that of the abdomen in some primitive genera of Theridiidae. Males equal to or somewhat smaller than females. Legs dissimilar.

***Wendilgarda mexicana* Keyserling**

Figures 22, 31

Wendilgarda mexicana KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, pp. 130–131, pl. 15, fig. 208. SIMON, 1895, Histoire naturelle des araignées, ed. 2, vol. 1, p. 918. O. P. CAMBRIDGE, Biologia Centrali-Americana, Arachnida, vol. 2, p. 415. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 395.

Median apophysis of male palpus as illustrated in figure 31; epigynum, as shown in figure 22.

This species, the genotype, is remarkable in being definitely larger than other known American species of *Wendilgarda*. The

type female is given as having a total length of 4.4 mm., thus exceeding the largest species of *Theridiosoma* and in fact all known members of the Theridiosomatinae in size.

LOCALITIES: *Mexico*: Male, females, Orilla Rio Armeria, Tecoman, Colima, January 18, 1943 (F. Bonet); male, females, Boca de Pascuales, Colima, January 10, 1943 (F. Bonet); immature, Pujal, San Luis Potosi, entrance of Cueva Chica, March 17, 1940 (W. Bridges); immatures, 31 miles east of Ciudad del Maiz, San Luis Potosi, December 1, 1939 (A. M. and L. I. Davis); females, Cenote Stoloc, Chichen Itza, Yucatan, July 10, 1948 (C. and M. Goodnight); females, Finca Lubeca, north of Huixtla, Chiapas, January 11, 1945 (T. C. Schneirla). *Guatemala*: Female, Tiquisate, 200 feet, June 26-29, 1947 (C. and P. Vaurie).

***Wendilgarda panamica*, new species**

Figure 23

FEMALE: Total length, 1.8 mm. Carapace 0.8 mm. long, 0.7 mm. wide. Abdomen 1.4 mm. long, 1.4 mm. wide.

General color except for abdomen quite uniformly orange all over. A contrastingly pale pile covering the dorsum of the abdomen which is rather pale. Two pairs of dorsal muscle scars conspicuous. General appearance that of *W. theridionina* Simon (*q. v.*), but smaller in stature. Epigynum as shown in figure 23.

TYPE LOCALITY: Female holotype from Barro Colorado Island, Canal Zone, March 19, 1930 (W. J. Gertsch); female paratypes from the same locality, January 4, 1929 (C. H. Curran).

***Wendilgarda galapagensis*, new species**

Figure 26

MALE: Total length, 2.3 mm. Carapace 1.0 mm. long, 0.8 mm. wide. Abdomen 1.1 mm. long, 1.2 mm. wide.

Carapace and legs ivory yellow. Abdomen dark gray all over, and pile conspicuously lighter.

Apical region of palpus as shown in figure 26.

FEMALE: Total length indeterminable. Carapace 1.0 mm. long, 0.7 mm. wide. Abdomen too damaged for measurement.

Coloration of capapace and legs orange, apparently indicating, as is often the case in this subfamily, a ruddy coloration in life.

Epigynum invisible owing to the damaged state of the abdomen.

TYPE LOCALITY: Male holotype and female allotype from Cocos, Galápagos Islands.

***Wendilgarda hassleri*, new species**

Figures 24, 28

MALE: Total length, 1.4 mm. Carapace 0.6 mm. long, 0.7 mm. wide. Abdomen 0.9 mm. long.

Carapace and legs uniformly orange-yellow. Abdomen gray. Apical portion of palpus as illustrated in figure 28.

FEMALE: Total length, 1.7 mm. Carapace 0.7 mm. long, 0.6 mm. wide. Abdomen, 1.2 mm. long, 1.2 mm. wide.

Carapace and legs uniformly orange. Abdomen gray.

Epigynum as shown in figure 24.

TYPE LOCALITY: Male holotype and female allotype from the upper Shudikar River, British Guiana, January 7-8, 1938 (W. G. Hassler).

***Wendilgarda clara* Keyserling**

Figure 27

Wendilgarda clara KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, pp. 132-133, pl. 15, fig. 210; Brazil.

The female type of this species is given as having a total length of 2.5 mm., a size rather usual for both this genus and for *Theridiosoma*. The abdomen is perfectly round, and the two pairs of dorsal muscle scars are very conspicuous. The epigynum, not shown here, is shaped like a round box lid viewed at a slant.

Apical portion of the male palpus as shown in figure 27.

LOCALITY: *British Guiana*: Three males, Rupununi River between Dadanawa and Isherton, November 5, 1937 (W. G. Hassler).

***Wendilgarda theridionina* (Simon)**

Figures 29, 30

Wendilgarda theridionina SIMON, 1895, Histoire naturelle des araignées, ed. 2, vol. 1, p. 919, fig. 986.

Wendilgarda theridionina PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 395; 1930, Trans. Connecticut Acad. Arts Sci., vol. 30, pp. 297-301, figs. 162-167. BRYANT, 1940, Bull. Mus. Comp. Zool., vol. 86, p. 369; 1945, Bull. Mus. Comp. Zool., vol. 95, p. 413.

Median apophysis of male palpus as illustrated in figure 29; epigynum, as illustrated in figure 30.

In this species the carapace and legs are orange, while the abdomen is gray. The female is of medium stature for this genus, having a total length of 2.4 mm., while the male is noticeably smaller, having a total length of about 1.8 mm.

LOCALITIES: *Dominican Republic*: Male, females, forest between Hato Mayor and Sabana de la Mar, July 2, 1935 (W. G. Hassler). *Haiti*: Female, 2000 feet elevation, 2 miles from Aux Cayes, August 28-29, 1935 (W. G. Hassler).

***Wendilgarda mustelina* (Simon)**

Wendilgarda mustelina SIMON, 1897, Proc. Zool. Soc. London, p. 875; St. Vincent.

Wendilgarda mustelina PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 395.

This species has not been seen, and there is no published figure of it. The female type is stated as having a total length of 2.0 mm., while the male type has a total length of 1.8 mm.

***Wendilgarda bicolor* Keyserling**

Wendilgarda bicolor KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, pp. 131-132, pl. 15, fig. 209; Brazil.

The female type of this remaining American species is stated as having a total length of 2.6 mm. The pilose abdomen is oval. The epigynum as figured is remarkable in consisting of a well-developed plate of which the caudal border is incised on each side, just over the vulvae.

OGULNIUS O. P. CAMBRIDGE, 1882

Epigynum a transverse plate, or a lobate extension of the genital fold. Carapace higher than wide; sides sometimes marked with a row of pits; cephalon elevated behind the ocular quadrangle, crested, or having a very low horn (turret). Median eyes about equal in size; lateral eyes separated or subcontiguous. Sternum having a circular pit on each side of the labium; caudal end stopping a bit anterior to the space separating coxae IV. Abdomen seen from above globose, wider than long, or elliptical (longer than wide), dorsoventrally flattened; the anterior portion projecting far over the carapace, sometimes even over-

lapping the cephalic crest. Size minute. Legs short, similar or dissimilar, slender to moderately robust; leg IV sometimes the longest.

This genus bears an interesting relationship both with *Allototua* and with *Parogulnius*. It is unfortunate that in these three genera the males are unknown. Many questions could be answered by a study of the male structures, including the question of inter-generic relationships. *Allototua* appears to be more closely akin to *Ogulnius* than to *Totua*, in spite of the implication of the name, and the author, Miss Bryant, indeed points out the similarity between the two. At any rate *Allototua* is much like *Ogulnius* in size and appearance, differing in the relatively small AME, the uncrested cephalon, and in the lack of an anterior protrusion of the abdomen. The epigynum is an open circular pit.

Ogulnius clarus Keyserling

Figure 44

Ogulnius clarus KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, p. 250, pl. 20, fig. 301.

Epigynum as shown in figure 44.

In this species the crest of the cephalon is a simple elevation crowned with bristles, and there is a protuberance above the anterior median eyes. The total length of the female type is given as 1.1 mm.

LOCALITY: *Brazil*: Female, Teresopolis, 900–1000 meters elevation, state of Rio de Janeiro, March 1946 (H. Sick).

Ogulnius pallisteri, new species

Figures 37, 38

FEMALE: Total length, 1.4 mm. Carapace 0.7 mm. long, 0.6 mm. wide. Abdomen 1.2 mm. long, 1.2 mm. wide.

Epigynum as illustrated in figure 38.

Carapace and legs pale ivory. Caudal margins of anterior eyes bordered with black; anterior margins of PME bordered with black. Abdomen isabelline; dorsum entirely margined with a brown band; venter having a brown band on two sides and behind the spinnerets and a brown patch, isolated, in front of them. Bodily build similar to that of *O. clarus*. A simple elevation on the cephalon behind the ocular quadrangle, but the frontal end of the cephalon less prominent than that of *O. clarus*;

crest of cephalon having a longitudinal, short row of bristles. Anterior margin of abdomen ornamented with scattered bristles, each on a raised point.

TYPE LOCALITY: Female holotype from Bella Vista, Peru, December 11, 1946 (J. C. Pallister).

Ogulnius obscurus Keyserling

Figure 46

Ogulnius obscurus KEYSERLING, 1886, Die Spinnen Amerikas, Theridiidae, vol. 2, pp. 249-250, pl. 20, fig. 300; Brazil.

Epigynum as shown in figure 46.

In this species the cephalic crest is very pronounced. The ocular quadrangle is flattened and retreating. The female type is given as having a total length of 1.1 mm.

LOCALITY: *Peru*: Female, Divisoria, 1700 meters elevation, Huanuco, September 23-October 3, 1946 (F. Woytkowski).

Ogulnius gertschi, new species

Figures 43, 45

FEMALE: Total length, 1.4 mm. Carapace 0.6 mm. long, 0.6 mm. wide. Abdomen 1.2 mm. long, 1.0 mm. wide.

Epigynum as illustrated in figure 43.

General color uniformly pale. This species is in many respects similar to the previous one. The wide caudal margin of the sternum has a pronounced sinus.

TYPE LOCALITY: Female holotype from El Volcan Chiriqui, Republic of Panama, February 26, 1936 (W. J. Gertsch).

Ogulnius obtectus O. P. Cambridge

Ogulnius obtectus O. P. CAMBRIDGE, 1882, Proc. Zool. Soc. London, p. 433, pl. 30, fig. 9; Brazil. SIMON, 1895, Histoire naturelle des araignées, ed. 2, vol. 1, p. 919, fig. 984. PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 383.

This species, the genotype, has a series of pits on either side of the carapace. The PME are very close to the top of the cephalic elevation. The transverse epigynal plate is perforated in the middle, inside the caudal margin. Total length at least 1.0 mm.

Ogulnius infumatus Simon

Ogulnius infumatus SIMON, 1897, Proc. Zool. Soc. London, p. 875; St. Vincent.

The female type of this species is stated as having a total length of 0.5 mm. It is likely that the type specimen was immature. The abdomen is described as being ruddy, with a dusky posterior patch.

Ogulnius latus Bryant

Ogulnius latus BRYANT, 1948, Bull. Mus. Comp. Zool., vol. 100, pp. 394-395, figs. 71, 73; Hispaniola.

The female type is stated as having a total length of 1.0 mm. The abdomen is wider than long. The epigynum is a projecting simple lobe.

Ogulnius fulvus Bryant

Ogulnius fulvus BRYANT, 1945, Bull. Mus. Comp. Zool., vol. 95, p. 412, figs. 46-47; Hispaniola.

The female type of this species is stated as having a total length of 1.4 mm. The cephalon is very elevated and has some bristles on the crest. The abdomen is globose, and the epigynum is a simple, thickened, chitinated fold.

PAROGULNIUS, NEW GENUS

Epigynum having a well-developed scape, concealing the balance of the structures; scape expanded at its base, the apical portion narrow, spatulate. Carapace rather smooth except for setae on the cephalon. Clypeus very high. Eyes dissimilar; AME smaller than PME; lateral eyes scarcely separated from either pair of median eyes, quite large. Cephalon not elevated. Sternum both truncated and weakly incised behind, the caudal end projecting well between coxae IV. Abdomen elevated-globose, the dorsum very high, not overhanging the carapace. The surface only moderately pubescent. Legs short and slender.

This genus is readily distinguishable from *Ogulnius* in the well-developed genitalia, the low cephalon, in the eyes, and in the abdomen which does not overhang the carapace.

GENOTYPE: *Parogulnius hypsigaster*, new species.

Parogulnius hypsigaster, new species

Figures 39, 40, 41, 42

FEMALE: Total length, 0.9 mm. Abdomen 0.6 mm. long, 0.5 mm. wide, 0.7 mm. high.

Epigynum as illustrated in figure 42.

Carapace olive buff. Sternum dull yellow. Legs dull yellow, interrupted with brown. Cephalon having a seta between and behind PME; a seta between PME and PLE. Sternum convex, having widely scattered, short hairs. Crest of abdomen on each side having an erect spine. Legs moderately hirsute and having fine, slender spines, one on the distal end of the femur, the distal end of the patella, a retrolateral one on the distal region of the tibia, at least on leg I. The fourth tarsal brush a little scanty.

TYPE LOCALITY: Female holotype from a swamp, Tuscaloosa, Tuscaloosa County, Alabama, March 25, 1948 (A. F. Archer).

The specimen was found under a board in a hardwood-coniferous swamp. There was no formal web to be seen, but overturning of the board may have disturbed and caused her to drop from it. The spider was grasping between the tarsi an egg sac so large that she seemed to be an appendage of it. The egg sac measured 1.4 mm. by 1.0 mm.

COLPHEPEIRA ARCHER, 1941

Median apophysis of male palpus projecting clavate. Sheath carrying the embolus, apparently forming a terminal apophysis, overhanging, foliaceous, marginally irregular or serrate. Wall or radix surmounted by an anomalous apophysis. Conductor of embolus a fleshy, indented wall. Cymbium not spinose. Leg I of male very long in contrast with the others; spines on legs distal patellar, distal, and prolateral tibial. Epigynum having a well-developed scape, tapering from base to apex but enlarged in the middle; atriole vaults hood-like, slanting over the vulvae. Female cephalon rather high at the ocular quadrangle and again high, expanded, wide behind the lateral eyes. Abdomen expanding from base to caudal portion; posterolateral lobes present; surface having numerous raised points. Sexes dissimilar in stature, the male being the smaller. Leg formula, 1243.

Colphepeira catawba (Banks)

Figures 32, 33, 34

Epeira catawba BANKS, 1911, Proc. Acad. Nat. Sci. Philadelphia, vol. 63, p. 450, pl. 34, fig. 4.

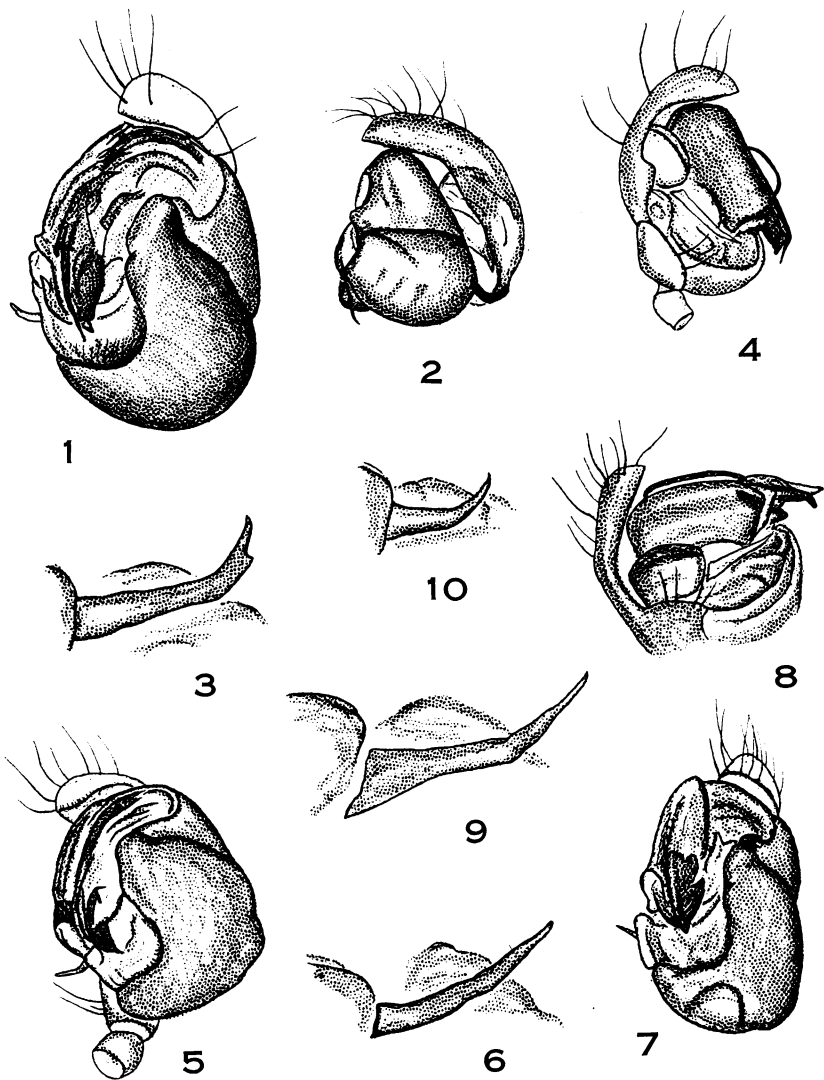
Colphepeira catawba ARCHER, 1941, Alabama Mus. Nat. Hist., Mus. Paper 18, pp. 5, 6, 13-14, pl. 1, figs. 3-4, pl. 2, figs. 1-3.

Median apophysis of male palpus as illustrated in figure 34; epigynum, in figure 33. Total length of the female, 2.3-3.0 mm. Total length of male, 2.3 mm.

This genus has an obvious relationship with *Epeirotypus* O. P. Cambridge, and the discovery of intermediates could easily bridge the gap apparently separating them. The females of *Epeirotypus* have the cephalon elevated above the ocular node, or even sharply crested (see fig. 35). The epigynum entirely lacks the scape, its place being taken by a transverse hood. In the male the median apophysis of the palpus is bifurcated but not projecting (fig. 36). In both genera the legs are relatively short. The web made by this genus is triangular according to an available description, while that of *Colphepeira* is of the regular orb type. In the case of the latter the egg sac consists of a mass of eggs covered with fragments of bark, while in *Epeirotypus* it is described as being a regular ootheca on the end of a stalk. There is no indication of the placement of the egg sac in this case, but in *Colphepeira* it is placed just behind and outside the web next to the tree trunk, and on it the female spider is often found, although not so regularly as is the case of the metine genus *Nicholasia*.

LOCALITIES: *Alabama*: Male, females, Gulf State Park, Baldwin County, August 23, 1940 (A. F. Archer); females, Five Points, Chambers County, September 7, 1951 (A. F. Archer); males, females, immatures, egg sacs, May's Gulf, Cherokee County, August 11, 1948 (A. F. Archer); female, 4 miles north of Jemison, Chilton County, July 17, 1946; females, Thomasville, Clarke County, October 18, 1941 (A. F. Archer); females, Harrison Church, Hale County, October 24, 1941 (A. F. Archer); females, Choctawhatchee River, Houston County, October 20, 1941; females, egg sac, Shade's Mountain, Jefferson County, August 31, 1946 (A. F. Archer); females, egg sacs, Mt. Meigs, Montgomery County, August 28, 1946; females, October, 1941. *Arkansas*: Male, females, Berryville, Carroll County, summer

1941 (O. C. Wilton). *Georgia*: Female, Cusseta, Chattahoochee County, October 23, 1941 (A. F. Archer); male, females, Fort McPherson, Fulton County, June 26, 1943 (A. F. Archer); females, egg sacs, 4 miles northeast of West Point, Troup County, September 7, 1949 (A. F. Archer). *Louisiana*: Females, Kisatchie National Forest, Grant Parish, June 1941 (A. F. Archer). All the above in the Archer Collection. *Mississippi*: Males, females, Camp Shelby, Forrest County, 1945-1946 (A. F. Archer); females, Centreville, Wilkinson County, 1944 (A. F. Archer).

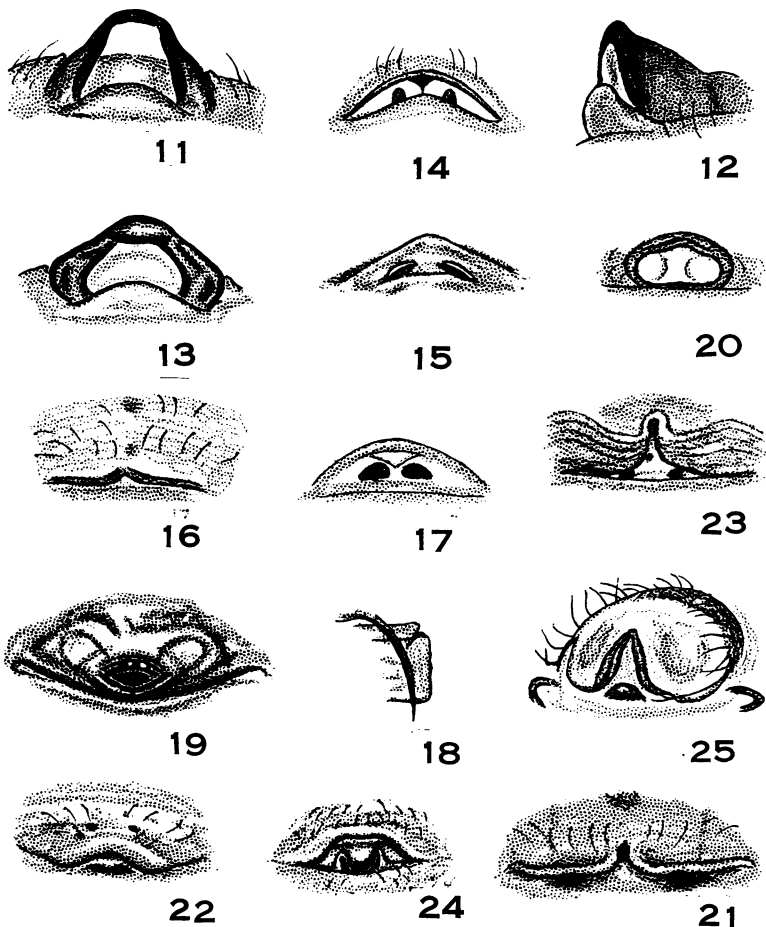


FIGS. 1-3. *Theridiosoma gemmosum* (L. Koch), palpus. 1. Apical view. 2. Ectal view. 3. Median apophysis.

FIGS. 4-6. *Theridiosoma radiosum* (McCook), palpus. 4. Endal view. 5. Apical view. 6. Median apophysis.

FIGS. 7-9. *Theridiosoma argentatum* Keyserling, palpus. 7. Apical view. 8, 9. Median apophysis.

FIG. 10. *Theridiosoma savannum* Chamberlin and Ivie, median apophysis of palpus.



FIGS. 11, 12. *Theridiosoma radiosum* (McCook), epigynum. 11. Caudal view. 12. Lateral view.

FIG. 13. *Theridiosoma argentatum* Keyserling, caudal view of epigynum.

FIG. 14. *Theridiosoma savannum* Chamberlin and Ivie, caudal view of epigynum.

FIG. 15. *Theridiosoma davisii*, new species, caudal view of epigynum.

FIG. 16. *Theridiosoma globosum* (O. P. Cambridge), epigynum.

FIGS. 17, 18. *Theridiosoma nechodomae* Petrunkevitch. 17. Caudal view of epigynum. 18. Terminal portions of conductor and embolus of palpus.

FIG. 19. *Theridiosoma goodnightorum*, new species, epigynum.

FIG. 20. *Theridiosoma splendidum* (Taczanowski), caudal view of epigynum.

FIG. 21. *Theridiosoma nigrum* (Keyserling), epigynum.

FIG. 22. *Wendilgarda mexicana* Keyserling, epigynum.

FIG. 23. *Wendilgarda panamica*, new species, epigynum.

FIG. 24. *Wendilgarda hassleri*, new species, epigynum.

FIG. 25. *Theridiosoma sylvicola* Hingston, caudal view of epigynum.

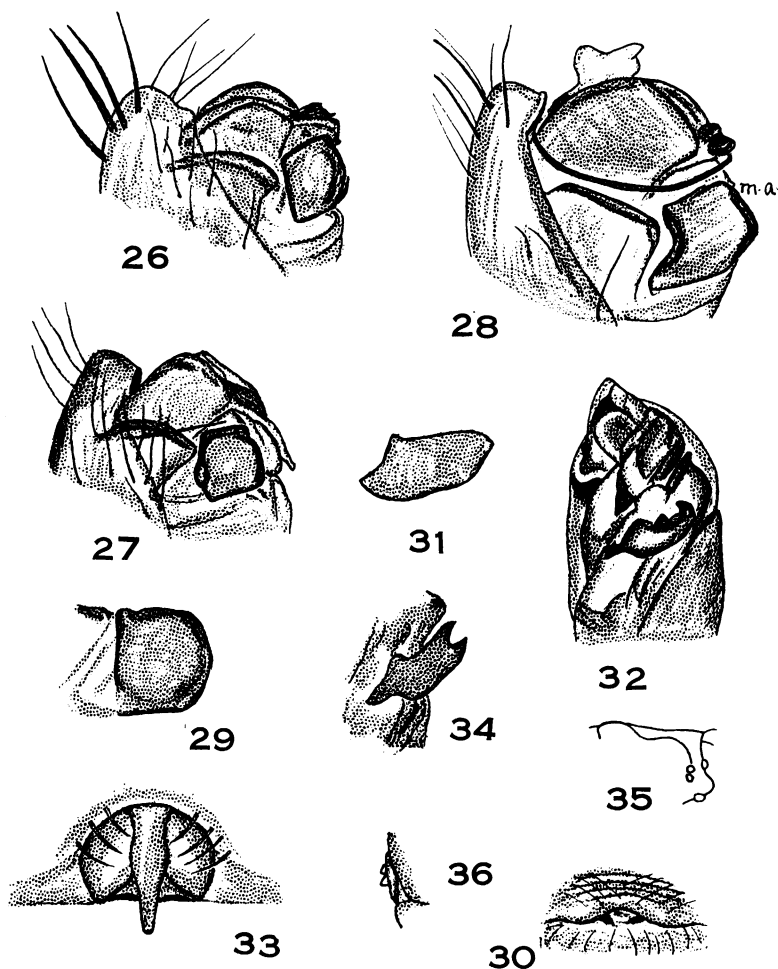


FIG. 26. *Wendilgarda galapagensis*, new species, apical portion of palpus.

FIG. 27. *Wendilgarda clara* Keyserling, apical portion of palpus.

FIG. 28. *Wendilgarda hassleri*, new species, apical portion of palpus.

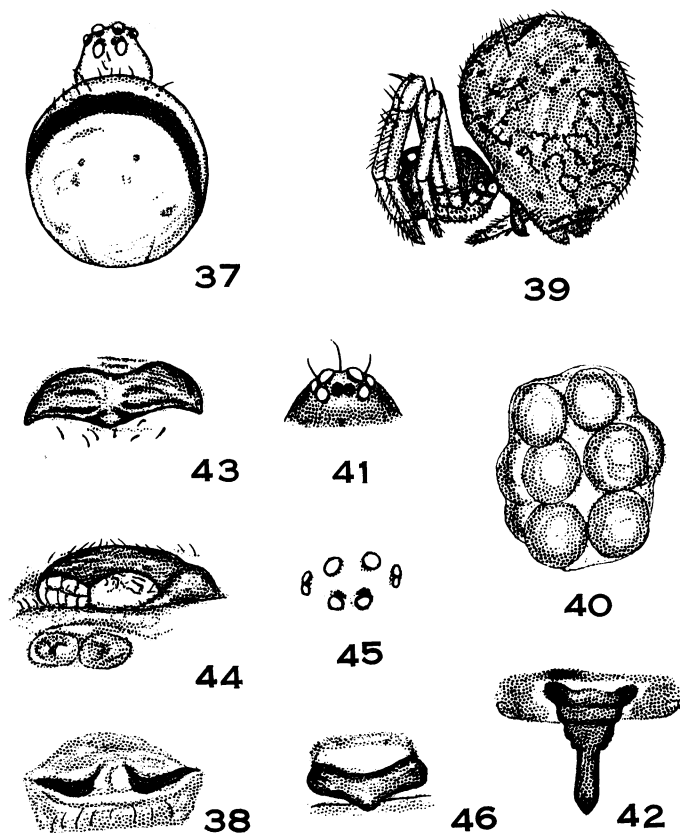
FIGS. 29, 30. *Wendilgarda theridionina* (Simon). 29. Median apophysis of palpus. 30. Epigynum.

FIG. 31. *Wendilgarda mexicana* Keyserling, median apophysis of palpus.

FIG. 32-34. *Colphepeira catawba* (Banks). 32. Ventral view of bulb of palpus. 33. Epigynum. 34. Median apophysis of palpus.

FIG. 35. *Epeirotypus gloriae* Petrunkevitch, lateral view of cephalon (after Petrunkevitch).

FIG. 36. *Epeirotypus brevipes* O. P. Cambridge, median apophysis of palpus in position (after Cambridge).



FIGS. 37, 38. *Ogulnius pallisteri*, new species. 37. Female holotype. 38. Epigynum.

FIGS. 39-42. *Parogulnius hypsigaster*, new species. 39. Female holotype. 40. Egg sac. 41. Frontal view of eyes. 42. Epigynum.

FIG. 43. *Ogulnius gertschi*, new species, epigynum.

FIG. 44. *Ogulnius clarus* Keyserling, caudal view of epigynum.

FIG. 45. *Ogulnius gertschi*, new species, eyes.

FIG. 46. *Ogulnius obscurus* Keyserling, epigynum.

