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NEW MICRYPHANTIDAE AND DICTYNIDAE WITH NOTES ON OTHER SPIDERS

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This paper, the second of the series, represents a continuation of my studies on American spiders, primarily from the New England region. The types of the new species here described are deposited in the collection of the American Museum of Natural History. For kind advice, access to the collections in their care, and the loan of specimens, thanks are due Dr. W. J. Gertsch of the American Museum, and Miss E. B. Bryant of the Museum of Comparative Zoölogy. I am also indebted to Mr. Wilton Ivie for sending material for comparison, and to my wife, who prepared all the illustrations.

Agelenidae

Wadotes tennesseensis Gertsch

Figure 21

Wadotes tennesseensis GERTSCH, 1936, Amer Mus. Novitates, no. 852, p. 14, fig. 27, ♀ ♂.

Coelotes hybridus BISHOP AND CROSBY, 1926, Jour. Elisha Mitchell Sci. Soc., vol. 41, p. 199 (in part), pl. 25, fig. 49, ♀ (not *hybridus* Emerton).

Bishop and Crosby undoubtedly confused *hybridus* (Emerton) with this species as both are found in the same region. They refer to the subspatulate scape of the epigynum as "narrower at the base than in the middle," a character that fits this species but not *hybridus*. In the latter the scape is broadly triangular, widest at the base (compare figs. 20 and 21). Moreover, specimens of *hybridus* from New England, Georgia, North Carolina, and Tennessee seen by me all average between 11 and 14 mm. in length, while they refer to some specimens as small as 7 mm. These small ones must be *tennesseensis*, a paratype of which I found to be 8.1 mm. long.

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Dictynidae

Dictyna hentzi, new species

Figures 4–6

Dictyna muraria EMERTON, 1888, Trans. Connecticut Acad. Sci., vol. 7, p. 445 (in part); EMERTON, 1902, Common spiders, p. 210 (in part), fig. 486, ♂.

MALE: Total length, 2.3 mm. Carapace, 0.97 mm. long, 0.72 mm. wide.

Carapace and sternum dark brown with a dense whitish pubescence. Chelicerae dark brown. Abdomen creamy gray with a dark gray median longitudinal band at the anterior end followed by several indistinct chevrons. Venter dark gray in center, lighter toward sides. Legs yellowish brown with indistinct light gray annulations.

Structure typical, with head much elevated. Chelicerae concave in front and bowed as usual, with a conspicuous basal process or mastidion. Labium wider than long (15/12), sternum longer than wide (38/32) truncated behind, separating coxae IV by about their length.

Palpal tibia not much widened distally, twice as long as patella and bearing near its base a short apophysis with two closely set teeth. Palpal organ as figured with the conductor twisted at its distal end.

FEMALE: Total length, 2.8 mm. Carapace, 1.07 mm. long, 0.87 mm. wide.

In color and structure essentially like male.

Epigynum as figured with a median septum separating the two openings. The anterior rims of the openings are very weakly sclerotized.

TYPE LOCALITY: Male holotype and female allotype taken at Cheshire, Connecticut, June 2, 1935 (H. L. Johnson). Male and female paratypes were collected

in copula, South Meriden, Connecticut, May 30, 1935 (H. L. Johnson), and I have specimens from several other localities in Connecticut. Male paratype taken at Ramsey, New Jersey, June 5, 1938 (B. J. Kaston).

This species has been confused with *muraria* Emerton (which itself has long been thought to be a synonym of *sublata* Hentz). In general appearance it is quite like *muraria* and varies quite as much too, so that the six drawings of abdominal patterns supplied by Emerton can also apply to this species. The carapace is, however, somewhat darker. It averages somewhat smaller in size, females ranging from 2.1 to 2.8 mm. and males from 2 to 2.3 mm. (as compared with 2.9 to 4.4 mm. and 2.4 to 3.8 mm., respectively, for *muraria*). In males the basal process on the chelicera is much more conspicuous than in *muraria*. Moreover, the palp has the tibia narrower and the distal end of the conductor shorter and thinner. In the epigynum the median septum is wider, and the anterior rims of the openings are less sclerotized.

Dictyna muraria Emerton

Figures 1–3

Dictyna muraria EMERTON, 1888, Trans. Connecticut Acad. Sci., vol. 7, p. 445 (in part), pl. 9, figs. 1–1g, ♀ ♂; EMERTON, 1902, Common spiders, p. 210 (in part, not fig. 486).

Dictyna sublata BANKS, 1891, Ent. News, vol. 2, p. 85; COMSTOCK, 1912, Spider book, p. 281, figs. 263–266 (not *sublata* Hentz).

Dictyna vigilans GERTSCH AND IVIE, 1936, Amer. Mus. Novitates, no. 858, p. 8, fig. 26, ♂.

This species and the preceding one, *hentzi*, had been confused by Emerton. Both occur in the same situations and same regions, but I have found this one far less common in Connecticut. At the Museum of Comparative Zoölogy is a male from Hagerstown, Maryland, that is referable to *muraria*, but I have seen none from farther south. Following Banks, most workers have been synonymizing *muraria* under *sublata* Hentz, but, as Chamberlin and Ivie have shown, it is far more likely that *sublata* is really what has been described as *volupis* by Keyserling and by Emerton, and been called *foliacea* by most later workers. At any rate, Dr. A. F. Archer, who did extensive collecting in Alabama for several years, was never able to find anything that could be considered Emerton's *muraria*.

The structural differences between *muraria* and *hentzi* are discussed under the latter, above.

Dictyna sublata (Hentz)

Figures 7–9

Theridion sublatum HENTZ, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 276, pl. 9, fig. 10, ♀.

Dictyna volupis KEYSERLING, 1881, Verhandl. zool.-Bot. Gesellsch. Wien, vol. 31, p. 285, pl. 11, fig. 10, ♀; EMERTON, 1888, Trans. Connecticut Acad. Sci., vol. 7, p. 488, pl. 9, figs. 8–8c, ♀ ♂.

Dictyna sublata CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, no. 9, biol. ser., vol. 8, no. 5, p. 122.

Dictyna foliacea of most authors.

Banks, in 1910, listed *volupis* as a synonym of *foliacea* (Hentz), and as he was followed in this by Petrunkevitch and later authors this common species came to be known generally by that name. I think it will be agreed that Chamberlin and Ivie are correct in considering *volupis* as a synonym of *sublata* (Hentz), and that *foliacea* (Hentz) is an entirely different species.

This species is intermediate in size between *muraria* and *hentzi* and has genitalia of the same type. Figures of the palp and epigynum are supplied here for comparison.

Dictyna foliacea (Hentz)

Theridion foliaceum HENTZ, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 277, pl. 9, fig. 14, ♀.

Dictyna frondea EMERTON, 1888, Trans. Connecticut Acad. Sci., vol. 7, p. 449, pl. 9, figs. 9–9a, ♀ ♂.

Not *Dictyna foliacea* of most authors.

That *frondea* is a synonym of *foliacea* Hentz was first suggested by Banks in 1891. While Emerton figured a specimen with a narrow median light band on the abdomen I have seen much variation, both in intensity and width of this band, some specimens showing it as wide as that figured by Hentz.

Dictyna roscida (Hentz)

Theridion roscidum HENTZ, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 277, pl. 6, figs. 15, 16, ♀ ♂.

Dictyna rubra EMERTON, 1888, Trans. Connecticut Acad. Sci., vol. 7, p. 448, pl. 9, fig. 7, ♀ ♂.
Dictyna florens IVIE AND BARROWS, 1935, Bull. Univ. Utah, vol. 26, no. 6, biol. ser., vol. 3, no. 2, p. 4, figs. 1–5, ♀ ♂.

Comparison of Emerton's type male with material I have from New England, and material from the American Museum labeled *florens* led me to the conclusion some time ago that *florens* was a synonym of *rubra*. Recently I examined specimens from Georgia determined by Ivie as *roscida*. I am unable to separate this latter species from the others on structural differences; the genitalia of all three agree.

Ivie considered that *roscida* and *florens* vary "mainly in color markings" but even Emerton had called attention to the variation. Most New England individuals that are mature show little yellow on the abdomen, while the southern specimens are more strikingly marked. Yet I have Connecticut specimens in the penultimate instar which show large areas of yellow. In a pair I have from Tuscaloosa, Alabama (where Hentz did much of his collecting), the female has almost the entire dorsum yellow, while the male has the yellow restricted to small spots as in Hentz's figures of both sexes.

Dictyna sylvania Chamberlin and Ivie is very closely related to this species.

Dictyna decaprini, new species

Figure 10

FEMALE: Total length, 1.55 mm. Carapace, 0.65 mm. long, 0.492 mm. wide. Abdomen, 0.97 mm. long, 0.58 mm. wide.

Carapace brownish yellow with irregular gray streaks and a fine black marginal line either side. Sternum grayish yellow, darker along borders. Legs like sternum, somewhat lighter on ventral than dorsal surfaces. Abdomen evenly gray, darker above without markings.

Structure typical. Sternum longer than wide (26/23), truncate behind so that coxae IV are separated by their length. Maxillary lobes inclined over labium which is wider than long (10/7).

Epigynum distinctive, as figured.

TYPE LOCALITY: Holotype female, taken at Branford, Connecticut, July 2, 1937 (B. J. Kaston). Named in honor of my friend Alphonso deCaprio, who has collected many interesting Connecticut spiders.

SCOTOLATHYS SIMON

SIMON, 1884, Bull. Soc. Zool. France, vol. 9, p. 321. GENOTYPE: *S. simplex* Simon.

Although this genus was erected for a spider which has only six eyes, Simon later included *heterophthalma* Kulczynski, in which the anterior medians are present, though barely perceptible, very minute, and lying close to the sides of the laterals in the area of black pigment surrounding the latter. One American species, *pallidus* (Marx) (presumably also *alba* Chamberlin and Ivie), is similar to *simplex*, in that the anterior median eyes have never been detected, while in a second, *maculatus* (Banks), the situation is comparable to *heterophthalma*. On the basis of the presence of these tiny eyes Bryant (1943) resurrected *Dictyolathys* Banks. I have examined several specimens of *maculatus* and find that the minute anterior medians, while barely perceptible in some individuals, cannot be made out in others. This same type of variation among individuals is exactly what was reported by Gertsch and Mulaik in the description of their *delicatulus*.

In my opinion we have here a phenomenon which is encountered in other lucifugous spiders. As is generally well known, many spiders that are endogean, troglophilic, or troglobiotic not only tend to be lighter in color than their epigean relatives but show a tendency for the eyes to be reduced in size and in number, the anterior medians being affected first. This has been particularly well demonstrated by A. R. Jackson and by L. Fage in several species of the European *Porrhomma* and is discussed in some detail in Berland's (1932) "Les arachnides," and Bristowe's (1939) "Comity of spiders." In *P. egeria* Simon, endogean specimens may have all eight eyes, while troglophilic individuals sometimes lack the anterior medians. Moreover, as is pointed out in a discussion below, some species of *Nesticus* have all eight eyes, others have them re-

duced in size, still others have the number reduced to six, and finally, all eyes are lacking in the troglobiotic species *lusitanicus* Fage.

Bryant states that in *maculatus* the posterior lateral eyes are larger than the medians and than the anterior laterals, a character of *Dictyolathys*, while in *Scotolathys* the anterior laterals should be largest. However, I have found the differences minute, less than a single unit of the micrometer when using the highest power of the binocular microscope, and am of the opinion that these can be considered as only of, at most, specific rather than generic importance. In fact, all the species are so near *Lathys* in this respect, in which the eyes, except for the tiny anterior medians, are subequal in size, and so much like *Lathys* in details of genitalia structure, that it may become impossible ultimately to maintain *Scotolathys* separate from that genus.

Nesticidae

NESTICUS THORELL

THORELL, 1869, Nova Acta Reg. Soc. Sci. Upsaliensis, ser. 3, vol. 7, p. 88. GENOTYPE: *Aranea cellulana* Olivier.

Ivesia PETRUNKEVITCH, 1925, Ann. Ent. Soc. Amer., vol. 18, p. 320. GENOTYE: *I. tennesseensis* Petrunkevitch.

Petrunkevitch compared his *Ivesia* to his genus *Theridionexus*, "from which it may be differentiated by the presence of only six eyes (anterior median eyes wanting) and by the wider separation of the posterior median eyes." However, he later (1928) admitted *Theridionexus* to be a synonym of *Nesticus*, and I am of the opinion that a study of Kratochvíl's thorough revision of the group will convince one that *Ivesia* is a synonym too. As is shown by Kratochvíl (1933), the loss of two or more eyes has occurred in several species in this group; in fact, within the same species there may be subanophthalmic individuals with the anterior medians sometimes missing, and the remaining eyes smaller (so that, as in *tennesseensis*, they are consequently more widely spaced). Further, there are some species that are completely anophthalmic, but the structure of the other parts of the body and in particular of the male palpus with its relatively immense paracymbium leaves no room for doubt as to the genus to which belong the species concerned. On the basis of the genitalia Petrunkevitch's species most closely resembles *N. speluncarum*, of which the subspecies *speluncarum* Pavesi likewise has the anterior median eyes sometimes lacking. Through the courtesy of Professor Ives I had the opportunity of examining specimens identified as *tennesseensis* and found among them a male with the anterior median eyes present.

Due to the same composite of characters which led Thorell to establish *Nesticus* as a new genus (in the family Theridiidae, *sensu lato*), there is still a difference of opinion as to the family in which the genus should be placed. This group of spiders has been considered by Simon, and following him Petrunkevitch, Comstock, and Berland, as a part of the Tetragnathinae. In 1928 Petrunkevitch moved it to the Theridiidae, where it is left by Bristowe (1939), and in 1939 to the Linyphiidae, while by Dahl (1913), Reimoser (1919), and Roewer (1929) it was placed in the Micryphantidae. In 1926 Dahl set it apart as a separate family, and that there is justification for this was suggested as far back as 1910 by Petrunkevitch himself, and has been shown by Gerhardt (1927) from the point of view of sexual biology, and by Kratochvíl (1933) from the point of view of morphology.

Theridiidae

Coleosoma flavipes O. P.-Cambridge

Coleosoma flavipes O. P.-CAMBRIDGE, 1895, Biologia Centrali Americana, vol. 1, p. 154, pl. 19, fig. 12, ♂; BRYANT, 1944, Psyche, vol. 51, p. 52, figs. 1, 4, 7, 9, ♀ ♂.

Achaea index CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, no. 9, biol. ser., vol. 8, no. 5, p. 36, figs. 87, 105, ♀ ♂.

Theridion differens Emerton

Figure 14

Theridium differens EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 9, pl. 1, figs. 1–1b, ♀ ♂ (not figs. 1c or 1d); EMERTON, 1909, *ibid.*, vol. 14, p. 180, pl. 1, fig. 7, ♀.

Theridion spirale MUMA, "1943" [1944], Common spiders of Maryland, pl. 13, fig. 4, ♀.

This species and the two following, *murarium* and *spirale*, resemble one another very much in size and abdominal pattern and can be distinguished with certainty only by means of the genitalia. This is fairly easy with males, but there has been confusion in telling the females apart. New drawings of the epigyna, made from type specimens in each case, are included in the present paper. It can be seen that the openings are more than twice their diameter apart in *murarium*, and less than this in the other two. In *differens* the openings are more than a diameter apart and sunk below the surface of the plate so that there is a broad ridge between them, while in *spirale* they are less than a diameter apart and not sunk below the surface of the plate.

Theridion spirale Emerton

Figure 13

Theridium spirale EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 10, pl. 1, figs. 2–2d, ♀ ♂.

Theridion differens MUMA, "1943" [1944], Common spiders of Maryland, pl. 13, fig. 2, ♀.

For characters distinguishing this species from *murarium* and *differens* see under the latter, above.

Theridion murarium Emerton

Figure 15

Theridium murarium EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 11, pl. 1, figs. 5–5b, ♀ ♂.

For characters distinguishing this species from *spirale* and *differens* see under the latter, above.

Theridion albidum Banks

Figures 16, 17

Theridium albidum BANKS, 1895, Jour. New York Ent. Soc., vol. 3, p. 84, ♀ ♂.

Theridion frondeum MUMA, "1943" [1944], Common spiders of Maryland, pl. 13, fig. 3, ♀.

This species and the next species, *frondeum* Hentz, resemble each other closely, and in both the abdominal pattern varies. But in this species most individuals are like the lightest of *frondeum*, with at most only a few black dots. To be distinguished with certainty recourse must be had to the genitalia, and figures from Banks' types are supplied here. In *frondeum* the median apophysis of the palpal organ is rather deeply cleft, the distal ramus is fairly thin and is more or less paralleled by the proximal ramus, while in *albidum* the two rami are divergent and the distal one is quite thick. The epigynum of *frondeum* has its posterior border thickened, darkly pigmented, and raised slightly behind the crescent-shaped opening (which is usually dark as in fig. 18). In *albidum* the posterior border is not so broad and thick, and there is a dark dumbbell-shaped structure, sometimes divided into two at the middle, behind the opening (which is generally light as in fig. 16).

Theridion frondeum Hentz

Figures 18, 19

Theridion frondeum HENTZ, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 275, pl. 9, fig. 7, ♀; EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 15, pl. 3, figs. 1–1h, ♀ ♂.

For characters distinguishing this from the very similar but less well known *albidum*, see under that species, above.

Theridion blandum Hentz

Figures 11, 12

Theridion blandum HENTZ, 1850, Jour. Boston Soc. Nat. Hist., vol. 6, p. 278, pl. 9, fig. 20, ♀ (not *Theridion blandum* Simon).

Theridion intervallatum EMERTON, 1915, Trans. Connecticut Acad. Sci., vol. 20, p. 136, pl. 1, figs. 1–1b, ♂.

Emerton's type male from Intervale, New Hampshire, July 18, 1913 (E. B. Bryant), and another male collected by Emerton on Nantucket Island, Massachusetts, June 20, 1929, both exactly match females, presumably *blandum*, from Falls Church, Virginia, and Memphis, Tennessee. Both the palpus and the epigynum are simple, the latter being essentially a concave plate.

Linyphiidae

Lepthyphantes zebra (Emerton)

Bathyphantes zebra EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 69, pl. 22, figs. 2–2a, ♀ ♂.

Bathyphantes decorata BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 44, pl. 2, fig. 41, ♀ ♂.

Lepthyphantes zebra ZORSCH, 1937, Amer. Midland Nat., vol. 18, p. 887, pl. 5, figs. 67–72, ♀ ♂.

Of the species described by Banks (1892) under *Bathyphantes*, several were later considered by him as synonyms of *zebra*. Examination of the type specimens of *B. decorata* convinces me that it likewise belongs here.

Bathyphantes pallida (Banks)

Diplostyla nigrina EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 65, pl. 20, fig. 2–2d, ♀ ♂ (not *Linyphia nigrinus* Westring).

Diplostyla pallida BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 43, pl. 2, fig. 29, ♀ ♂ (not *Bathyphantes pallidus* Banks, 1892).

Bathyphantes pallidus CHAMBERLIN AND IVIE, 1943, Bull. Univ. Utah, vol. 33, no. 10, biol. ser., vol. 7, no. 6, p. 22.

Bathyphantes nigrinus MUMA "1943" [1944], Common spiders of Maryland, p. 74, pl. 3, fig. 7, ♀ ♂.

For many years most American authors have wrongly followed Emerton in assuming that this spider was the same as the European *nigrina*. Chamberlin and Ivie pointed out the error and resurrected the next available name. This is *pallida*, for, as Banks stated in the 1916 revision of his 1892 paper, what he had then called *Diplostyla pallida* was merely a pale individual of what Emerton had previously described under the impression it was *nigrina*.

This species is not to be confused with the succeeding one, which Banks had described as *Bathyphantes pallida*.

Meioneta angulata (Emerton)

Bathyphantes angulata EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 71, pl. 22, fig. 5, ♂.

Bathyphantes pallida BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 45, pl. 5, fig. 42, ♀ (not *Diplostyla pallida* Banks, 1892).

The type females of this species, described under *pallida* (not to be confused with the preceding species), agree with females taken with males known to be *angulata* and resemble the males closely.

Tennesseellum formicum (Emerton)

Figure 25

Bathyphantes formica EMERTON, 1882, Trans. Connecticut Acad. Sci., vol. 6, p. 71, pl. 22, figs. 7–7b, ♂.

Prosopotheca transversa CROSBY, 1905, Proc. Acad. Nat. Sci. Philadelphia, p. 333, pl. 29, fig. 5, juv. ♀.

Tennesseellum minutum PETRUNKEVITCH, 1925, Jour. New York Ent. Soc., vol. 33, p. 173, pl. 8, fig. 5, ♀.

Meioneta formica CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, no. 9, biol. ser., vol. 8, no. 5, p. 85.

In 1928 Petrunkevitch erected a new subfamily, Tennesseellinae, for his *T. minutum*, basing it on the position of the spiracle. Crosby and Bishop (1931) pointed out that his species was a synonym of Emerton's *formica*, and that *Prosopotheca transversa* Crosby was based on an immature[1] female of the same species. They further stated, "That this species needs a subfamily or even a separate genus for its reception is extremely doubtful. The fact that the spiracular sulcus is some distance in front of the spinnerets is evidently the result of a modification toward becoming an ant mimic. In other respects it is closely related to other species of the group. The position of the spiracular sulcus is of specific value only in *Hahnia* and of generic significance only in the Anyphaeninae (Anyphaena and Gayenna)."

I believe most workers will agree that erection of at least a new genus is justifiable in this case, just as the position of the spiracular sulcus is used to differentiate genera in what we now consider the families Hahniidae and Anyphaenidae. However, that the forward position of the sulcus is not the result of a modification toward becoming an ant mimic is evident from the fact that the hahniids, anyphaenids, and others with a forwardly placed spiracle are not ant mimics. Conversely ant mimics in the genera *Micaria*, *Phrurolithus*, *Peckhamia*, and others, have the spiracle in the usual position.

Petrunkevitch (1933) prefers to consider his *minutum* as distinct from Crosby's *transversa* on the basis of several points. The chief discrepancies are the published eye relations. But it is obviously impos-

[1] It was not uncommon for immature individuals, especially females in the penultimate instar, to be described in error as adult. Often the structure of the epigynum can be faintly discerned through the cuticle. On the basis of his added experience and later collecting, which undoubtedly included males, Crosby realized his error and published (with Bishop) this correction.

sible with such minute spiders to measure accurately the size and spacing of the eyes. Even with the highest power of a binocular microscope, an eye, or the space between two eyes, may not quite span two units of the micrometer so that the personal factor, besides variation among specimens, must be taken into consideration. Thus if Crosby states that the anterior eyes are equidistant, and Petrunkevitch that the anterior medians are separated by a radius and are slightly more than a radius from the laterals one can hardly call that much discrepancy! The anterior row is stated by Petrunkevitch to be slightly recurved and by Crosby to be procurved. But Petrunkevitch also stated that, "Viewed from in front anterior row is very slightly curved downward." It follows therefore that the "recurved" applies to how it looked to him from above, for if from in front it is curved downward then, following Comstock (1912, pp. 97–98), the row is procurved as stated by Crosby, and as I myself have observed in material of both sexes (under *formica*) at the Museum of Comparative Zoölogy. Another discrepancy lies in the fact that Petrunkevitch reports only a single promarginal tooth on the chelicerae, while Crosby's specimens (and those seen by me) have three teeth. However, instances are known among other species where individuals differ in this respect, so it may not be impossible here. Naturally, too, there remains the discrepancy about the position of the spiracle. As Crosby did not mention it, the assumption is that it is in the usual place just in front of the spinnerets, while Petrunkevitch correctly described it as considerably in front of the spinnerets. From measurements on seven males and 10 females that I have seen it can be stated that the spiracle varies from once and a half to nearly twice as far from the epigastric furrow as from the base of the spinnerets.

That Crosby did not at first correctly describe the position of the spiracle was merely an oversight, just as had occurred when Emerton described his *formica*, and also when Petrunkevitch described his *Diplocephalus crumbi*, which is a synonym of *Mimognatha foxi* (McCook) (fig. 27). In 1933 Petrunkevitch considered that there were but three "isolated genera" with respect to the forward position of the spiracle. However, to these must be added representatives from still others. Specimens of *Diplostyla brevis* Emerton (fig. 26), *Scytodes thoracica* (Latreille) (fig. 22), *S. longipes* Lucas (fig. 23), and *S. fusca* Walckenaer (fig. 24), examined by me, all show the forwardly placed spiracle. The spiracular sulcus is fairly distinct in all of these except *S. thoracica* but can be easily seen in specimens of the latter freshly placed in alcohol, before the air in the tracheae converging to the spiracle has been replaced by fluid.

Micryphantidae

Ceratinopsis atolma Chamberlin

Figure 29

Ceratinopsis atolmus CHAMBERLIN, 1925, Proc. California Acad. Sci., ser. 4, vol. 14, p. 110, figs. 11–12, ♂.

Ceratinopsis tarsalis EMERTON, 1924, Psyche, vol. 31, p. 141 (in part), fig. 2b, ♀ (not fig. 2a, ♂).

Ceratinopsis atolma BISHOP AND CROSBY, 1930, Jour. New York Ent. Soc., vol. 38, p. 17, figs. 5–7, ♂.

The epigynum of this species has been confused by Bishop and Crosby with that of *nigripalpis* Emerton. The figure supplied (as *tarsalis*) by Emerton is quite accurate and shows the transverse posterior portion of the inverted T-shaped median lobe to be much thicker than the corresponding part in *nigripalpis*. The epigynum of the latter is more nearly like that of *nigriceps* Emerton (compare figs. 28 and 30). *C. georgiana* and *C. swanea*, both recently described by Chamberlin and Ivie, also have the epigynum of this same type and closely resemble *atolma*.

Cornicularia pinocchio, new species

Figures 31–36

MALE: Total length, 1.5 mm. The carapace, chelicerae, labium, endites, and sternum are evenly brown, the legs yellow and the abdomen pale grayish yellow.

The carapace is high in front and produced between the posterior median eyes to form a long thin horn. This horn is con-

stricted just beyond its origin, then extends forward and downward as figured. Its distal end is armed with numerous very small bristles. From about the middle of its dorsal surface arise a single appressed spine, and from the ventral surface near the tip a pair of fine spines which extend horizontally almost reaching the clypeus. Height of clypeus about three times diameter of an anterior median eye. Median eyes of both rows about same size and slightly smaller than laterals which are subequal and contiguous. Posterior medians about a diameter apart, slightly farther from the laterals. Median ocular area slightly wider behind than in front, longer than wide. Sternum subtriangular, almost as broad as long (30/35), narrowed to a smooth rounded point extending between the posterior coxae which are separated by their length. Legs with fine hairs but no spines.

Palpus of the usual type. Patella twice the length of tibia, with the long pointed tibial apophysis bearing a short black tooth near its base.

TYPE LOCALITY: Holotype male collected at Mt. Carmel, Connecticut, April 19, 1935 (B. J. Kaston).

From all other known species this one can be distinguished by its very long cephalic horn.

Ceraticelus bryantae, new species

Figures 37–40

MALE: Total length, 1.7 mm. Carapace bright orange, darker up forward, and black on the forward projecting lobe and around the eyes. Chelicerae, maxillae, and sternum orange as also the abdominal scuta. Legs and soft integument of abdomen yellow, spinnerets black.

The carapace is high in front where it is extended to form the cephalic lobe, the clypeus slanting backward toward the chelicerae and six times the diameter of an anterior median eye. The anterior median eyes are borne virtually at the summit of the lobe, are much closer to each other than to the laterals, which almost touch the posterior laterals. Posterior median eyes slightly nearer each other than the laterals, median ocular area longer than wide and wider behind than in front. Sternum broad, truncate behind between the posterior coxae which are separated by their length. Abdomen with a scutum covering about two-thirds of the dorsum, provided with fine punctae. The epigastric region is evenly covered with a scutum, and the inframammillary scutum is restricted to the ventral side. Legs with fine hairs but devoid of spines.

Palpus as figured. Tibia longer than patella in ratio of 12:5.

FEMALE: Total length, 1.9 mm. General appearance, color, and structure, essentially as in the male. The carapace is less produced into a cephalic lobe, with the clypeus therefore less slanting and lower, only three times the diameter of an anterior median eye. The dorsal scutum is lacking, and the epigastric scutum is divided into plates over the book lungs, around the epigynum and encircling the pedicel. The epigynum has a middle lobe wide behind, narrowed in front where it extends between the tubules.

TYPE LOCALITY: Male holotype and female allotype taken by sifting forest floor litter at Tolles, Connecticut, September 20, 1936 (B. J. Kaston). A male and several female paratypes taken with the types.

From the structure of the palpus as well as of the head this species may be placed close to *pygmaeus* (Emerton) in the *emertoni* group of Crosby and Bishop. From *pygmaeus* it differs in not having the cymbium angular, and in details of the palpal organ, as well as in having a much shorter patella. In females the presence of a dorsal scutum in *pygmaeus* distinguishes the two.

Pelecopsis bishopi, new species

Figures 41–44

MALE: Total length, 1.8 mm. Carapace chestnut brown with irregular gray reticulations. Chelicerae, maxillae, and legs yellowish brown, unmarked. Sternum chestnut brown bordered with black. Abdomen dark chestnut brown on scuta, soft integument dark gray with small brown punctae.

The carapace is high in front with the cephalic lobe descending gradually behind

but more steeply in front. Seen from above the lobe is marked with a longitudinal fissure which partly divides it in two. There is a posterior median eye on each half, these eyes separated by almost two diameters. The anterior median eyes are separated by a radius and are more than a diameter from the laterals which are contiguous with, and subequal to, the posterior laterals. Median ocular area much longer than broad, wider behind than in front. The clypeus is high, about four times the diameter of an anterior median eye. Each cephalic pit lies at the anterior end of a shallow groove, behind and above the posterior lateral eye of that side. Sternum slightly wider than long (33/30), truncate behind between posterior coxae which are separated by their length. Labium much broader than long. Legs with fine hairs but without spines. Abdomen broadly oval, moderately high, with virtually the entire dorsum covered by a scutum. Epigastric scutum not well developed; divided into a plate around the pedicel, and one over each book lung, with only a small extension of the lateral angles beyond the epigastric furrow. Inframammillary scutum restricted to venter.

Palpus as figured. The tibia is hardly longer than the patella and bears an apophysis with a rounded apex, slightly hooked. The tail piece of the embolic division is short, and the embolus is spirally curled.

FEMALE: Total length, 2 mm. Agreeing with the male in general appearance and structure. The pars cephalica is somewhat raised above the pars thoracica, but there is no distinct cephalic lobe. The clypeus is only three times the diameter of an anterior median eye, and posterior eyes are equidistant and subequal in size.

The dorsal scutum is not so large as in the male, leaving more of the posterior abdominal declivity uncovered, and the punctae on the soft integument are larger and more conspicuous than in the male.

TYPE LOCALITY: Male holotype from West Ossipee, New Hampshire, July 25, 1936 (S. Mulaik), and female allotype from Haddam, Connecticut, May 5, 1935 (B. J. Kaston). Two female paratypes from Voluntown, Connecticut, June 30, 1935 (B. J. Kaston).

This species resembles *sculptum* Emerton, known from British Columbia and Washington. In the male the cephalic lobe is not so high, and the embolus is more closely curled; in the female the middle lobe of the epigynum is more triangular than in that species, and the dorsal scutum is larger.

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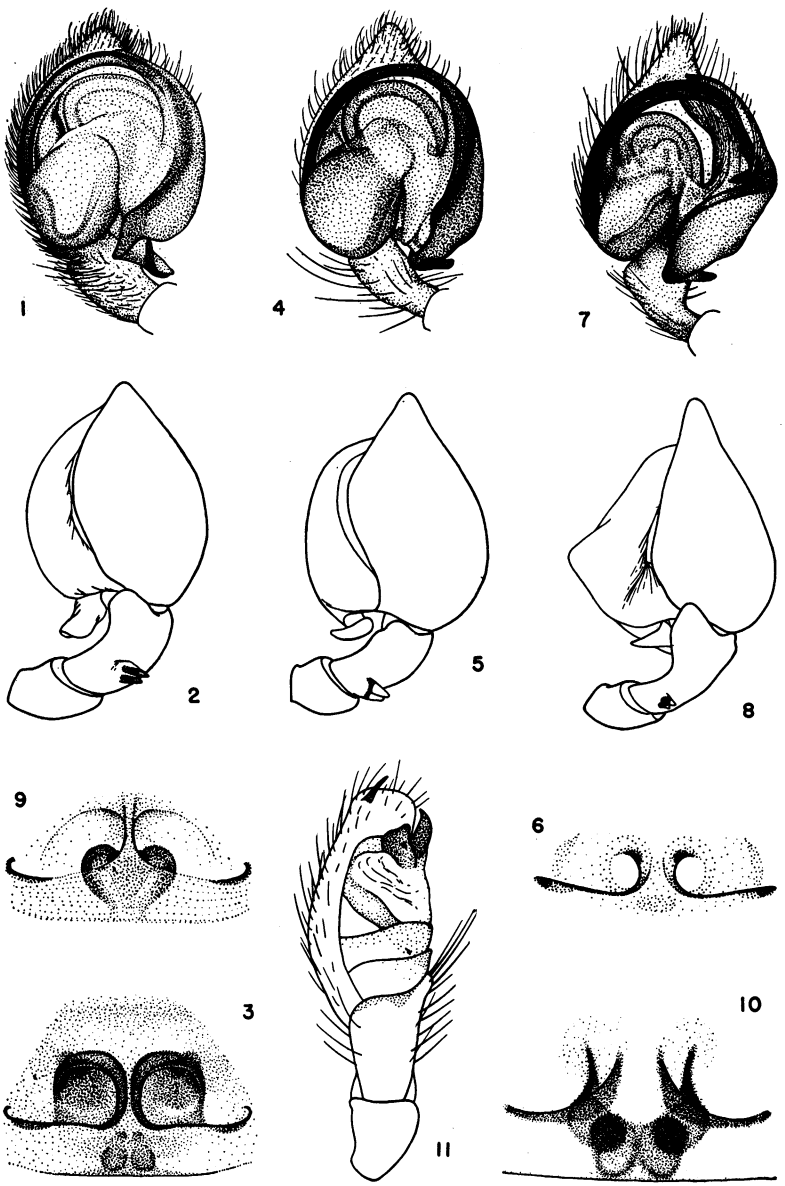


Fig. 1. *Dictyna muraria* Emerton, palpus, ventral aspect.
Fig. 2. Idem, palpus, lateral aspect.
Fig. 3. Idem, epigynum.
Fig. 4. *Dictyna hentzi*, new species, palpus, ventral aspect.
Fig. 5. Idem, palpus, lateral aspect.
Fig. 6. Idem, epigynum.
Fig. 7. *Dictyna sublata* (Hentz), palpus, ventral aspect.
Fig. 8. Idem, palpus, lateral aspect.
Fig. 9. Idem, epigynum.
Fig. 10. *Dictyna decaprini*, new species, epigynum.
Fig. 11. *Theridion blandum* Hentz, palpus.

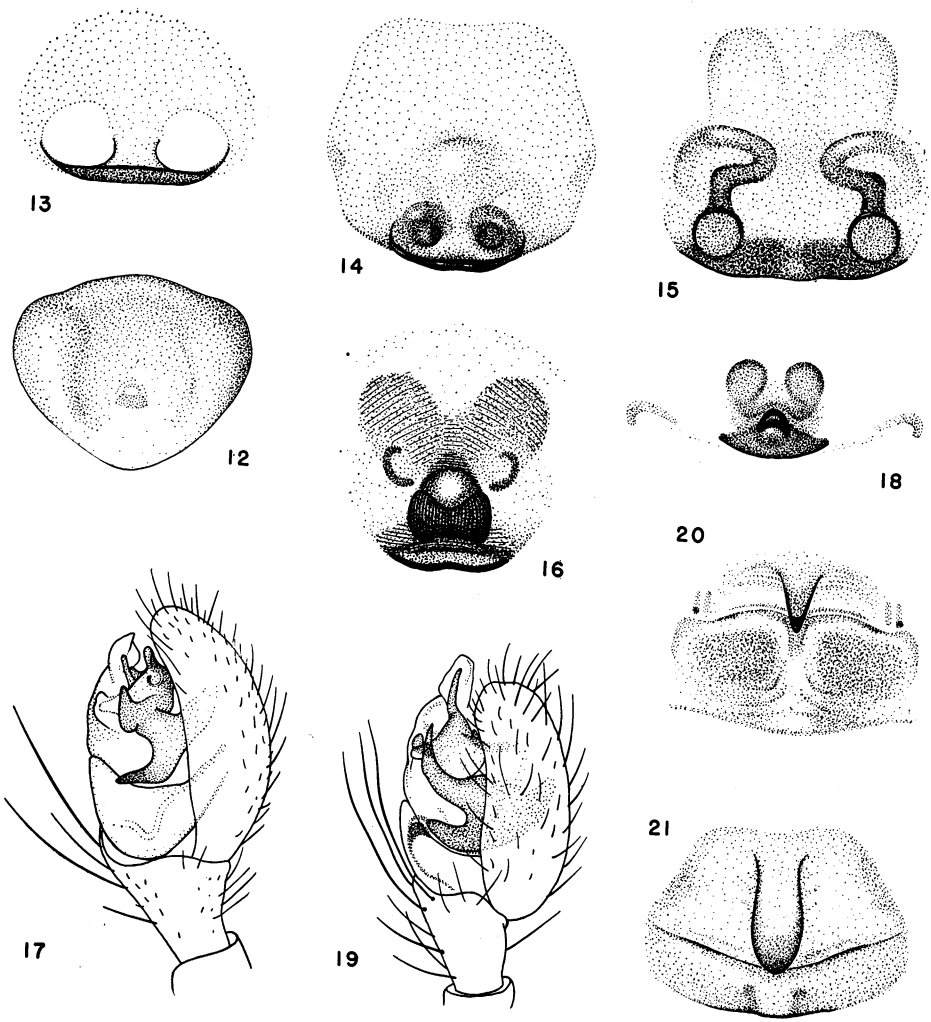
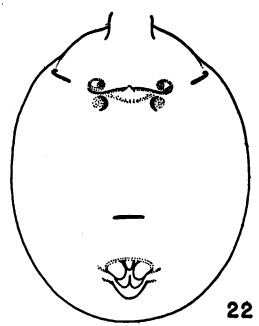
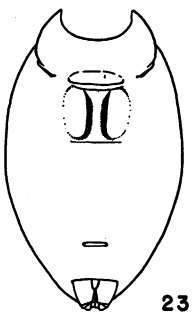
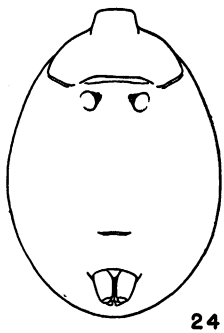
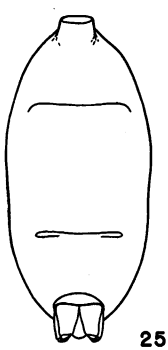


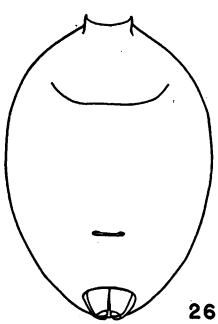
Fig. 12. *Theridion blandum* Hentz, epigynum.
Fig. 13. *Theridion spirale* Emerton, epigynum. Type specimen.
Fig. 14. *Theridion differens* Emerton, epigynum. Type specimen.
Fig. 15. *Theridion murarium* Emerton, epigynum. Type specimen.
Fig. 16. *Theridion albidum* Banks, epigynum. Type specimen.
Fig. 17. Idem, palpus. Type specimen.
Fig. 18. *Theridion frondeum* Hentz, epigynum.
Fig. 19. Idem, palpus.
Fig. 20. *Wadotes hybridus* (Emerton), epigynum.
Fig. 21. *Wadotes tennesseensis* Gertsch, epigynum. Paratype specimen.

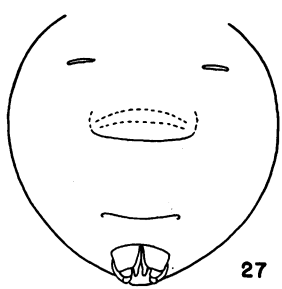












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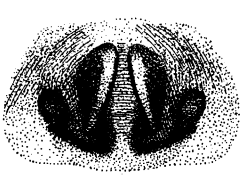

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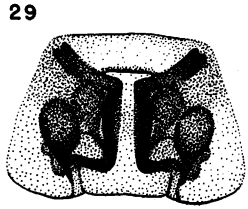

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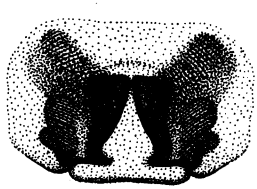

Fig. 22. *Scytodes thoracica* (Latreille), venter of female.
Fig. 23. *Scytodes longipes* Lucas, venter of female.
Fig. 24. *Scytodes fusca* Walckenaer, venter of female.
Fig. 25. *Tennesseellum formicum* (Emerton), venter of male.
Fig. 26. *Diplostyla brevis* Emerton, venter of male.
Fig. 27. *Mimognatha foxi* (McCook), venter of female.
Fig. 28. *Ceratinopsis nigripalpis* Emerton, epigynum.
Fig. 29. *Ceratinopsis atolma* Chamberlin, epigynum.
Fig. 30. *Ceratinopsis nigriceps* Emerton, epigynum.

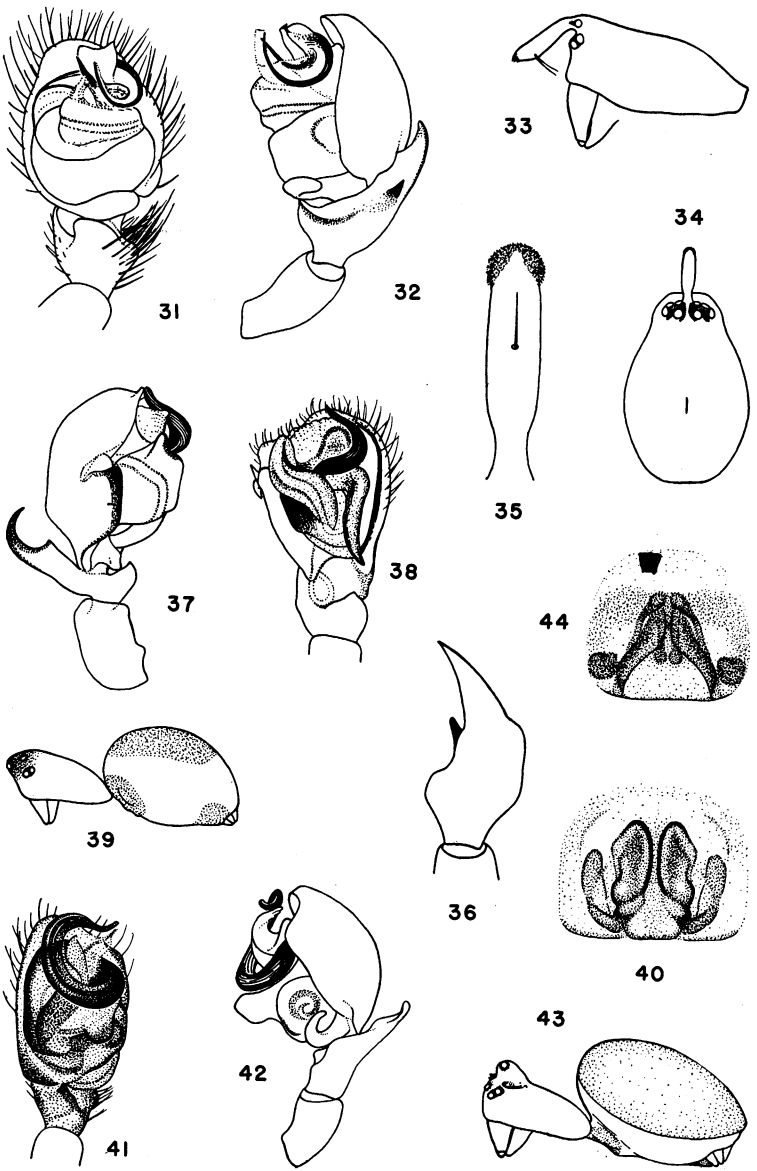

Fig. 31. *Cornicularia pinocchio*, new species, palpus, ventral aspect.
Fig. 32. Idem, palpus, lateral aspect.
Fig. 33. Idem, cephalothorax, from the side.
Fig. 34. Idem, carapace, from above.
Fig. 35. Idem, cephalic horn, from above.
Fig. 36. Idem, palpal tibia from above.
Fig. 37. *Ceraticelus bryantae*, new species, palpus, lateral aspect.
Fig. 38. Idem, palpus, ventral aspect.
Fig. 39. Idem, body of male from the side.
Fig. 40. Idem, epigynum.
Fig. 41. *Pelecopsis bishopi*, new species, palpus, ventral aspect.
Fig. 42. Idem, palpus, lateral aspect.
Fig. 43. Idem, body of male from the side.
Fig. 44. Idem, epigynum.