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NORTH AMERICAN SPIDERS OF THE GENUS *CTENIUM*

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The genus *Ctenium* is represented in North America by 15 known species, of which six are here described as new, with the male of *eremophilus* Chamberlin described for the first time. One species, *livida* Blackwall, is also known from the Palearctic realm.

The type specimens of *floridensis*, *banksi*, and *longipalpus* are deposited in the American Museum of Natural History; of *borealis* and *crosbyi* in the collection of Cornell University; and of *similis* in the Museum of Comparative Zoölogy. For the privilege of studying these specimens and much other material in their care thanks are due Dr. W. J. Gertsch, Dr. H. Dietrich, and Miss E. B. Bryant of those institutions, respectively. I wish to thank Mr. Wilton Ivie of the University of Utah, Dr. T. B. Kurata of the Royal Ontario Museum, Dr. A. M. Chickering of Albion College, Dr. W. M. Barrows of the Ohio State University, and Dr. E. A. Chapin of the United States National Museum for the loan of other specimens for study. The illustrations were all prepared by my wife.

CTENIUM MENGE

Ctenium MENGE, 1871, Preussiche Spinnen (Schrift. Naturf. Gesellsch. Danzig, vol. 2), p. 292. GENOTYPE: *Erigone pinguis* Westring (= *livida* Blackwall).

Robertus O. P.-CAMBRIDGE, 1879, Spiders of Dorset, p. 103. GENOTYPE: *R. astutus* O. P.-Cambridge (= *neglectus* O. P.-Cambridge).

Pedanostethus SIMON,[2] 1884, Arachnides de France, vol. 5, p. 195. GENOTYPE: *Neriene livida* Blackwall.

Garritus CHAMBERLIN AND IVIE, 1933, Bull. Univ. Utah, vol. 23, no. 4, biol. ser., vol. 2, no. 2, p. 9. GENOTYPE: *G. vigerens* Chamberlin and Ivie.

Theridiid spiders of the subfamily Asageninae, of small or moderate size; ranging from 1.69 mm. in the males of *eremophilus* to 4.5 mm. in the females of *vigerens*. Carapace oval, longer than broad, widest at coxae II, not much narrowed at the clypeus, and moderately flat, being highest midway between eyes and thoracic furrow, which is a shallow oval pit. Cephalic groove and radial furrows not strongly marked. Pars cephalica higher and narrower in females than males. Anterior row of eyes straight or very slightly recurved; posterior row virtually straight and slightly longer than the anterior. Anterior median eyes smallest, regularly circular, slightly darker than the others which are pearly white, often irregular in shape, and subequal in size or with the anterior laterals slightly the largest. Eyes in both rows subequidistant, the median ocular area wider behind than in front (sometimes only very slightly so) and wider than long. Lateral eyes contiguous on low tubercles. Height of clypeus varying from just a little less than the length of median ocular area to just a little more than this length.

Chelicerae robust, much longer than the height of the clypeus, vertical, a little geniculate at base (only slightly so in some species, but very much so in *vigerens*) and with distal truncature almost transverse. Fang furrow with three teeth on the promargin (in some cases apparently only two), and with two minute denticles on the retromargin. Of the promarginal teeth the ectalmost may be situated rather far removed from the other two, either quite close to the base of the fang or up on the front of the paturon (as in *vigerens*). The middle tooth is generally the largest of the three

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[2] Simon proposed *Pedanostethus* to replace Menge's name *Ctenium* which he considered preoccupied in Lepidoptera. But Lepeletier in 1825 had used not *Ctenium* but *Ctenia*, so that according to Article 36 of the Rules of Zoological Nomenclature the former is not invalid.

and the ental tooth smallest. This latter may appear reduced to a cusp at the base of the middle tooth, or may be absent entirely. The dentition in males is similar to that in females, but the chelicerae are not quite so robust. In some species the apical portion just above the fang is compressed or constricted. Fangs stout, with tips overlapping. Labium wider than long, subtriangular, rounded apically, or slightly emarginate; extending to about half the length of the endites. Endites long, widened distally, with outer surfaces more or less straight and inner surfaces slightly inclined around the front of the labium. Endites provided with several setiferous granules, which are larger laterally (and greatly enlarged in *vigerens*).

Sternum subtriangular, almost as wide as long, truncate in front, widest between coxae I and II, ending behind in a blunt, rounded point slightly separating coxae IV. Legs rather robust, relative lengths 1423, or 4123, covered with fine long hairs but completely devoid of spines. With the usual three claws on each tarsus and a comb of serrated bristles under tarsus IV. All legs with tarsus shorter than metatarsus. Tibiae with several trichobothria; metatarsi with one or two. Palp of female with a denticulate claw.

Abdomen oval, moderately flattened, widest about the middle, and with one-fifth to one-fourth its length overlapping the cephalothorax. Spinnerets subterminal, not visible from above, the anterior pair slightly thicker and longer than the posterior. Colulus very large and conspicuous.

Males are provided with a stridulating apparatus consisting of an *area stridulans*, or "file" of several transverse striae on the posterior portion of the carapace, and a "pick" of eight or 10 strong setae arising from a lunate plate above the pedicel on the front of the abdomen.

In general appearance the species resemble one another closely. The carapace is yellowish brown to chestnut or reddish brown, with occasional melanistic specimens showing irregular gray blotches here and there. Except for a few bristles near the thoracic furrow and around the eyes the carapace is glabrous. The legs are brown or orange, somewhat lighter on the femora than on the more distal segments. The abdomen is usually gray, but varies from a grayish tan to black, and is covered with a sparse even pubescence. The four dorsal muscle impressions are conspicuous, and in addition there is usually an irregular scattering of light spots over the dorsum. The venter is gray.

Species differentiation is based almost entirely upon genitalia characteristics. In the male the pedipalp is long, with the femur longer than the patella and tibia together. The tibia is always longer than the patella, is narrow at the base but widened distally where it is produced on the ectal side to form a flat lobe with rounded edge covering the base of the palpal organ. Close to the edge of this tibial lobe arises a row of seven to 10 long hairs which extend distally one-half to three-fourths the length of the palpal organ. In figure 7 these are shown as they appear from the side, but for the sake of clarity they are omitted from the other drawings of the palpi, only the basal articulating sockets being drawn in. Along the ectal border of the cymbium is a notch or cleft between the cymbium proper and a narrow triangular lamella. This lamella, characteristic of the genus, is drawn out to a point and turned toward the palpal organ. The lamella usually arises rather near the distal end of the cymbium, but in some species from farther proximad. Its relative size, point of origin, amount of space between it and the cymbium proper, the width of the cymbium compared with the length, and the length of the latter as compared with the length of the tibia and patella together are all good characters useful for species differentiation. In making comparisons of length the greatest length of the tibia, including the lobe, is used.

The palpal organ itself presents a heavily sclerotized median apophysis lying on the prolatero-ventral side. Its shape and size are characteristic for each species, and in the drawings supplied of the lateral aspect of the palpi this structure is shaded while the other parts are left in outline. There is usually a sclerotized terminal apophysis variously developed, and associated with it a transparent membranous process which

extends toward and usually overlies at least part of the cymbial lamella.

In females the epigyna do not all conform to one general type. In most species there is an anterior median lobe attached in front and free behind. The openings lie on either side of the "stem" attaching the lobe in front, but are usually quite difficult to see. In some species there is a flap-like posterior lobe as well, usually provided with a heavily sclerotized lip.

Ctenium may be distinguished from the related genus *Enoplognatha* in having the labium longer, the endites more inclined over the labium in front, the carapace relatively higher, the legs stouter, the sternum not so prolonged between the posterior coxae, and the chelicerae more robust and not exhibiting so much sexual dimorphism.

Very little is known of the habits of these spiders other than that they live in moss, and under stones or boards on the ground. They have been found mature at all seasons and are usually collected by sifting forest floor litter. Wiehle (1937, "Theridiidae," *in* "Spinnentiere Deutschlands") reports having witnessed the mating of *livida* in April. A mating web had been spun high up among grass stems. Blackwall (1864, "Spiders of Great Britain and Ireland," p. 252), for the same species, describes the cocooning as follows: "The female in July spins several globular cocoons of white silk of a slight texture, attaching them to some depression in the stone selected for her retreat; the largest of these cocoons measures 1/7th inch in diameter and comprises about 30 spherical eggs of a pale yellowish-white color, not agglutinate together."

The species most commonly represented in study collections is *riparius*, and because of the great superficial resemblance to it of *banksi*, *laticeps*, and *longipalpus* most specimens of these less well-known species had been mistakenly identified as *riparius* in these collections.

Key to Species of *Ctenium*

1. Chelicerae very heavy and powerful (figs. 9 and 10), with a prominent large tooth above the base of the fang. Epigynum (fig. 55) with a transverse lip, in front of which are the receptacles and behind which is a narrow fossa. Cymbium much shorter than patella plus tibia and with four distal stout setae (fig. 31) ..... *vigerens*

   Chelicerae not so powerful; with ectal tooth smaller than the middle one and closer to the promargin of the fang furrow. Cymbium longer than patella plus tibia (or hardly shorter) and with two or three distal stout setae, or none. Epigynum not as above 2

2. Females 3

   Males[1] 16

3. Epigynum as long as, or longer than, the venter between it and the spinnerets, and with an unpigmented backwardly directed process (fig. 57) ..... *spiniferus*

   Epigynum much shorter and without a backwardly directed process 4

4. Epigynum with a more or less conspicuous anterior median lobe 6

   Epigynum without a conspicuous anterior median lobe 5

5. Epigynum with a posterior pigmented plate on which converge a pair of tubules from the anteriorly placed receptacles (fig. 58) ..... *livida*

   Epigynum with a large anterior median fossa and a pair of lateral prominences (fig. 56) ..... *fusca*

6. Epigynum with a more or less well-developed, flap-like posterior lip .. 8

   Epigynum without such a posterior lip 7

7. Epigynum with the receptacles at the anterior border. Median lobe quite small (fig. 54) ..... *eremophilus*

   Epigynum with the receptacles farther back from the anterior end. Median lobe quite large and almost circular (fig. 52) ..... *crosbyi*

8. Median lobe attached in front by a narrow "stem" 11

   Median lobe broadly attached 9

9. Median lobe much longer than wide (fig. 49) ..... *banksi*

   Median lobe wider than long 10

10. Posterior lip of epigynum heavily

[1] Males of *crosbyi*, *floridensis*, and *similis* are unknown.

sclerotized as a transparent flap projecting slightly beyond epigastric furrow (fig. 53)..... *pumilus*

Posterior lip a much larger flap, but not so heavily sclerotized and not projecting beyond epigastric furrow (fig. 51)..... *frontata*

11. Median lobe large, as long as that part of the epigynum posterior to it, or almost so.....12

Median lobe much smaller than above 13

12. Posterior lip evenly procurved (fig. 47) ..... *longipalpus*

Posterior lip undulating (fig. 48)..... ..... *floridensis*

13. Epigynum with a large flap projecting backward two-fifths the length of the entire epigynum (fig. 50). Median lobe at least as wide as long. Receptacles small and close to the anterior edge..... *borealis*

Flap of epigynum projecting backward only a small amount. Median lobe including "stem" longer than wide. Receptacles as large as median lobe and some distance from anterior edge of epigynum.....14

14. Median lobe of epigynum almost circular to broadly oval in shape, with a distinct long "stem." Receptacles about as large as median lobe. Epigynum with a posterior heavily sclerotized lip which is either evenly procurved (as in fig. 46) or somewhat undulate..... *laticeps*

Median lobe pear-shaped or slightly angular. Receptacles larger than the median lobe.....15

15. Median lobe almost as wide as long. Receptacles far forward (fig. 44)... ..... *riparius*

Median lobe much longer than wide. Receptacles farther back and entire epigynum (fig. 45) wider than in *riparius*..... *similis*

16. Cymbium of palp with two or three stout setae at or near apex.....17

Cymbium devoid of stout apical setae 21

17. Cymbium with an attenuated slender distal extension and with the stout setae arising some distance from its tip. A wide space between lamella and cymbium proper (fig. 36). Terminal apophysis slender (fig. 35) ..... *frontata*

Cymbium not attenuated. Stout setae at apex. Space between lamella and cymbium proper very narrow.....18

18. Cymbium with three stout apical setae. Median apophysis of moderate size with proximal ramus very short..... *banksi*

Cymbium with only two stout setae. Median apophysis larger.....19

19. Terminal apophysis not much wider at base than distally, where it ends in three short blunt lobes (fig. 14). Median apophysis with a transverse proximal ramus..... *laticeps*

Terminal apophysis much wider at base than distally where it is drawn out as two fine points. Median apophysis with proximal ramus more longitudinal 20

20. Cymbium relatively long and narrow (fig. 21), the patella and tibia together only seven-eighths its length. Median apophysis with well-developed long proximal ramus. Terminal apophysis gently curved distally (fig. 20)..... *longipalpus*

Cymbium shorter and wider (fig. 13), no longer than the patella and tibia together. Median apophysis with much shorter proximal ramus. Terminal apophysis abruptly bent distally (fig. 11)..... *riparius*

21. Median apophysis very large, with a long thin proximal ramus that extends abruptly ventrad for some distance (fig. 24)..... *spiniferus*

Median apophysis with a much shorter proximal ramus.....22

22. Tibia and patella together slightly (25/22) longer than cymbium. (Proximal ramus of median apophysis a narrow curved hook, fig. 27)..... *eremophilus*

Cymbium not shorter than tibia plus patella.....23

23. Median apophysis without a proximal ramus. Terminal apophysis very short. Palpal organ without a dis-

tal membranous process (fig. 17). ..... *livida*

Median apophysis with a proximal ramus. A distal membranous process present near lamella.....24

24. Terminal apophysis represented by a broad transparent lobe extending across apex of bulb (fig. 38). Tibia and patella together the same length as cymbium..... *fusca*

Terminal apophysis a stout process. Tibia and patella together not quite so long as cymbium.....25

25. Median apophysis with the proximal ramus simple (fig. 33). Terminal apophysis evenly curved distally (fig. 32)..... *pumilus*

Median apophysis large and with the proximal ramus itself subdivided (fig. 42). Terminal apophysis abruptly bent at apex (fig. 41).... ..... *borealis*

Ctenium banksi, new species

Figures 1–8, 49

Pedanostethus riparius EMERTON, 1909, Trans. Connecticut Acad. Sci., vol. 14, p. 182 (in part), pl. 1, fig. 1d, ♀ (not ♂); COMSTOCK, 1912, Spider book, p. 365 (in part), fig. 372b, ♀ (not *riparius* Keyserling).

Pedanostethus palustris BANKS, 1916, Proc. Acad. Nat. Sci. Philadelphia, p. 77 (in part), pl. 11, fig. 25, ♀ (not ♂).

Robertus palustris CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040 (in part, not ♀).

Robertus riparius COMSTOCK, 1940, Spider book, rev. ed., p. 380 (in part), fig. 372b, ♀.

LEG	FEMUR	PATELLA + TIBIA	METATARSUS	TARSUS	TOTAL
I	1.27	1.60	.90	.61	4.38 mm.
II	1.04	1.27	.73	.55	3.59 mm.
III	.87	1.01	.61	.52	3.01 mm.
IV	1.30	1.45	.84	.61	4.20 mm.

MALE: Total length, 3 mm. Carapace, 1.57 mm. long, 1.16 mm. wide. Abdomen, 1.67 mm. long, 1.34 mm. wide.

Carapace glabrous, orange, somewhat darker on the head and with eyes ringed with black. Chelicerae, maxillae, and sternum slightly darker than carapace. Legs yellow to orange, lightest on femora, darkest distally. Abdomen gray above and below, with the four dorsal muscle impressions conspicuous, with a sprinkling of very small white spots irregularly arranged, and covered with a sparse pubescence.

Carapace widest at coxae II, highest between the eyes and the thoracic groove, which is a shallow oval pit. Cephalic groove and radial furrows only faintly indicated. Anterior eye row with medians smaller than laterals, a diameter apart and about the same distance from the laterals. Posterior row longer than anterior (34/30), the eyes subequal and subequidistant, about a diameter apart. Lateral eyes of both rows contiguous. Median ocular area wider behind than in front, about as long as wide. Clypeus almost vertical, its height slightly greater than the length of the median ocular area.

Chelicerae vertical, slightly geniculate, almost three times as high as the clypeus. Near the distal end just above the fang the chelicerae are compressed a little so as to form a slight keel. Promargin of fang furrow with three teeth, of which the middle one is largest; retromargin with two minute denticles. Labium much wider than long (18/12). Endites swollen distally, a little inclined over labium which is about half their length, and is provided with a few setiferous granules. Sternum almost as wide as long (52/60), widest between coxae I and II, subtriangular, ending behind in a short rounded point separating coxae IV by about one-third their length.

Legs 1423, devoid of spines, but covered with long fine hairs.

Tibial index of leg I = 10.8; of leg IV = 12.9.

Abdomen with its anterior fifth overhanging the cephalothorax. Spinnerets subterminal, not visible from above, the anteriors longest and thickest. Colulus large and conspicuous.

Pedipalp with patella and tibia together about two-thirds the length of femur and seven-eighths as long as cymbium. Along

the distal edge of the tibial lobe is a row of long hairs, and the cymbium is provided with three stout apical setae. Palpal organ with the terminal apophysis subtriangular, broad basally, ending in two fine points turned toward the transparent membranous process. Median apophysis of moderate size, with a proximal short thick spur.

FEMALE: Total length, 3.5 mm. Carapace, 1.6 mm. long, 1.24 mm. wide. Abdomen, 2.09 mm. long, 1.54 mm. wide.

Similar to male in general appearance and structure. However, the cephalic furrow is more marked, the head is higher, and the chelicerae are stouter, more geniculate and not compressed distally. Legs somewhat stouter with tibial index of leg I = 12.1; of leg IV = 13.2.

Epigynum with a U-shaped anterior median lobe, with minute openings on either side of its anterior attachment. A pair of receptacles, each a little larger than the median lobe, lie to the sides and behind it. Posterior border of epigynum developed into a thick, sclerotized, procurved lip.

TYPE LOCALITY: Male holotype from Ottawa, Ontario, June 21, 1939. Female allotype from Rowayton, Connecticut, April 14, 1945, collected by C. J. Goodnight.

DISTRIBUTION: ONTARIO: Arnprior, September, 1934 (Macnamara). NEW HAMPSHIRE: Fitzwilliam, May 24–30, 1907 (E. B. Bryant). VERMONT: Jamaica, July 11, 1913 (R. V. Chamberlin). MASSACHUSETTS: Monponsett, June 12, 1912 (J. H. Emerton); Topsfield, May 16, 1914 (J. H. Emerton); Blue Hills, November 5, 1914 (J. H. Emerton); Clarendon Hills, November 10, 1904, and September 27, 1905 (J. H. Emerton); Brookline, November 22, 1904 (J. H. Emerton). NEW YORK: Ithaca, May 22 (N. Banks); Peru, October 22, 1934; McLean, May 30, 1910, and May 30, 1921; May 29, 1926 (R. V. Chamberlin); Owasco Lake; Flushing, November 15, 1918; Howland's Island, November 14, 1916; Nigger Pond, Oswego County, September 3, 1926; North Pond, Oswego County, July 27, 1935 (C. R. Crosby); Maratanza Lake, May 24, 1920; Raquette Lake, June 11, 1927; Cayuta Lake, September 2, 1935 (C. R. Crosby); Suffern, May 26, 1924; Old Forge. NEW JERSEY: Lakehurst, May 1, 1912 (J. H. Emerton). MARYLAND: Branchville, October 22, 1941, and March 12, 1942 (M. H. Muma). MICHIGAN: Winnipeg Lake, October 15, 1932 (A. M. Chickering). WISCONSIN: St. Croix Falls, February 20, 1899; Kimball, July 2, 1910 (R. V. Chamberlin).

SPECIMENS EXAMINED: Males: 12, with lengths ranging from 2.81 to 3.3 mm. Females: 45, ranging from 3.02 to 4.15 mm. This species is very similar to *laticeps*, *riparius*, and *longipalpus*, though the latter is somewhat smaller. Judging by the structure of the epigynum, *floridensis*, *similis*, and *crosbyi* (of which the males are unknown) also appear to belong to this group.

Ctenium borealis, new species

Figures 41–43, 50

MALE: Total length, 2.4 mm. Structure and general appearance typical as described for *banksi*, new species, but the chelicerae are not compressed near the fang. Pedipalp with patella and tibia together over three-fifths the length of femur and almost as long (33/36) as the cymbium. The latter is quite wide and not provided with any stout distal setae. The median apophysis is enormously enlarged and developed into a pointed distal ramus, and a proximal ramus which is itself subdivided, as shown in figure 42. The terminal apophysis is stout and ends in a sharply bent thick hook which lies over a transparent membranous process.

FEMALE: Total length, 2.94 mm. Structure and general appearance as in male. The epigynum has a very wide anterior median lobe and small receptacles close to the anterior edge. The most characteristic feature of the epigynum is the fact that the posterior two-fifths is developed as a thick flap projecting from the surface of the abdomen proper.

TYPE LOCALITY: Male holotype and female allotype from Arnprior, Ontario, May 1935 (Macnamara). Male and female paratypes were taken with the holotype and allotype.

DISTRIBUTION: MAINE: Presque Isle, August 26, 1925. NEW YORK: Michigan Mills, September 1, 1926; Moores, September 26, 1936 (C. R. Crosby); West Kilns, June 28, 1931; Saranac Lake, September 6, 1931 (C. R. Crosby). MICHIGAN: Marquette, July 27, 1932 (A. M. Chickering).

SPECIMENS EXAMINED: Males: 4, with lengths ranging from 2.15 to 2.4 mm. Females: 9, ranging from 2.5 to 3.15 mm. In some females the median lobe of the epi-

gynum is more nearly circular than is shown in figure 50.

Ctenium crosbyi, new species

Figure 52

FEMALE: Total length, 3.3 mm. Structure and general appearance typical as described for *banksi*, new species, but with the chelicerae somewhat less robust and less geniculate. The epigynum is of the same general type as in *banksi*, *laticeps*, *riparius*, etc., but the median lobe is relatively larger and almost circular. On either side of the lobe are what appear to be quite small receptacles, and a posterior lip is not well developed.

TYPE LOCALITY: Female holotype from Raquette Lake, New York, June 11, 1927. One female paratype from Ampersand Brook, Franklin County, New York, July 19, 1931 (Crosby and Hammer). This latter specimen is only 2.7 mm. long.

Ctenium eremophilus (Chamberlin)

Figures 26–28, 54

Robertus eremophilus CHAMBERLIN, *in* Chamberlin and Gertsch, 1928, Proc. Biol. Soc. Washington, vol. 41, p. 180, ♀.

MALE: For the seven specimens examined, the total length ranged from 1.68 to 2.15 mm. Structure and general appearance typical as described for *banksi*, new species, except that the chelicerae are weaker than usual for the genus, not compressed near the fang, and the promargin of the fang furrow is provided apparently with only two teeth, the small one nearest the tip of the fang having disappeared. As in *frontata* the anterior surface of the chelicerae is covered with numerous fine rugosities. Pedipalp with patella and tibia together five-sixths as long as the femur and slightly longer (25/22) than the cymbium. The latter is about half as wide as long and is without any stout setae at the apex. The median apophysis is of moderate size with a hooked proximal ramus. The terminal apophysis is somewhat as in *borealis*, but is more slender and less abruptly curved at the apex.

FEMALE: The type specimen is a gravid individual 3.5 mm. long, but 11 other specimens ranged from 1.9 to 2.42 mm. in length. Structure and general appearance typical, and as in the male there are but two promarginal teeth on the chelicerae. The epigynum has a very short median lobe, and a pair of anteriorly placed receptacles.

TYPE LOCALITY: Female holotype (in the collection of the University of Utah) from Devil's Canyon, San Juan County, Utah, April 18, 1928, collected by W. J. Gertsch. A paratype female was taken with the type.

DISTRIBUTION: NEW YORK: Ithaca, July (N. Banks); December (C. R. Crosby); June 22, 1927 (P. Needham); McLean, May 26, 1934 (H. Dietrich); Montauk Point, May 24, 1924. OHIO: Gambier, August, 1907; Rock Creek, May 20, 1945 (J. C. Pallister). ILLINOIS: near Chicago, June; Salts, August 15, 1926 (Smith). MICHIGAN: Albion, December 5, 1932, and May 1933 (A. M. Chickering). UTAH: Verdure, May 10, 1933 (W. Ivie).

Ctenium floridensis, new species

Figure 48

FEMALE: Total length, 3.5 mm. Structure and general appearance typical as described for *banksi*, new species. However, the head is somewhat higher, and as in *vigerens* the endites are somewhat swollen distally. The ectal tooth on the promargin of the cheliceral fang furrow is somewhat removed from the other two, but it is not so enlarged as in *vigerens*. The epigynum has the same general structure as in *longipalpus*, *laticeps*, *riparius*, etc., but the median lobe is relatively much larger than in the latter two species and the shape of the posterior lip easily separates it from the former.

TYPE LOCALITY: Female holotype from Blountstown, Florida, April 17, 1938, collected by W. J. Gertsch.

Ctenium frontata (Banks)

Figures 35–37, 51

Microneta frontata BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 48, pl. 5, fig. 51, ♀; BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 35; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 257.

Pedanostethus pumilus BANKS, 1916, Proc. Acad. Nat. Sci. Philadelphia, p. 77 (not *pumilus* Emerton).

Pedanostethus terrestris EMERTON, 1914, Jour. New York Ent. Soc., vol. 22, p. 262, pl. 8, fig.

2–2a, ♂; BARROWS, 1918, Ohio Jour. Sci., vol. 18, p. 304; EMERTON, 1919, Trans. Roy. Canadian Inst., vol. 12, p. 313.

Robertus terrestris CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040.

MALE: For the 23 specimens examined, the total length ranged from 1.74 to 2.48 mm. Structure and general appearance typical as described for *banksi*, new species, but the chelicerae are not compressed near the fang. Moreover, as in *eremophilus*, the chelicerae are not so robust as is usual for the genus, and the anterior surface is dotted with many small rugosities. There are the usual three promarginal teeth. Pedipalp with patella and tibia together about two-thirds as long as the femur and four-fifths as long as the cymbium. The shape of the cymbium is quite characteristic; it is provided with a distal prolongation which is curved, spiral fashion, ventrally and toward the retrolateral side. The lamella is stout and there is a considerable space between it and the cymbium proper. There are two stout setae fairly close to the lamella, much farther from the apex of the cymbium than in any of the other species. These setae are longer than in the other species, and the more distal one is quite a bit stouter than the more proximal. The median apophysis is quite small, with a very short proximal ramus. The terminal apophysis is long and slender with its two distal spurs overlying a very conspicuous membranous process.

FEMALE: For the 47 specimens examined, the total length ranged from 2.14 to 3.08 mm. Structure and general appearance as in the male. The epigynum has a very broad anterior median lobe behind a raised lip, a pair of very conspicuous receptacles converging posteriorly, and a posterior border formed by a thick curved lip raised from the surface of the abdomen proper.

TYPE LOCALITY: Female type of *frontata* collected at Ithaca, New York (N. Banks). Male type of *terrestris* collected at Ithaca, New York, May 18, 1911 (J. H. Emerton). Both types are at the Museum of Comparative Zoölogy.

DISTRIBUTION: CONNECTICUT: New Haven, December 15, 1882 (J. H. Emerton); Kent, August 4, 1908 (J. H. Emerton); Norwalk, July 2, 1933 (W. Ivie); Rowayton, July, 1945 (C. J. Goodnight). NEW YORK: Cornwall, May 30, 1913 (J. H. Emerton). NEW JERSEY: Berkeley Heights. PENNSYLVANIA: President, July 3, 1922; Conyngham. MARYLAND: College Park, November 5, 1931 (C. R. Crosby); College Park, December 10, 1941, and February 22, 1942 (M. H. Muma); Berwyn, October 8 and 22, 1944 (M. H. Muma); "D. C. Lake," August 29, 1942 (M. H. Muma). NORTH CAROLINA: Mingus Creek, February 1, 1943 (W. M. Barrows); Newfound Gap, August 31, 1930 (P. J. Darlington). TENNESSEE: Blount County, September, 1931; Erwin, July 8, 1933 (W. Ivie); Little Pigeon Creek, July 9, 1933 (W. Ivie). OHIO: Cantwell Cliffs, Hocking County, May 30, 1932 (C. R. Crosby); Rockbridge, August 13, 1932 (W. M. Barrows). This species has also been listed from Manitoba by Emerton (1919).

Ctenium fusca (Emerton)

Figures 38–40, 56

Steatoda fusca EMERTON, 1894, Trans. Connecticut Acad. Sci., vol. 9, p. 407, pl. 2, fig. 1–1b, ♀♂; BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 21; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 188.

Pedanostethus fuscus EMERTON, 1911, Trans. Connecticut Acad. Sci., vol. 16, p. 387, pl. 1, fig. 3, ♀♂; EMERTON, 1919, Trans. Roy. Canadian Inst., vol. 12, p. 312.

Robertus fuscus CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040; CHICKERING, 1935, Papers Michigan Acad. Sci., vol. 20, p. 584.

MALE: For the 12 specimens examined, the total length ranged from 2.48 to 2.75 mm. Structure and general appearance typical as described for *banksi*, new species, but the chelicerae are not compressed near the fang. Pedipalp with patella and tibia together two-thirds as long as the femur and as long as the cymbium. The latter is devoid of stout apical setae, and is fairly wide. It is not quite so wide as in *borealis* and *pumilus*, and the space between the lamella and cymbium proper is less than in *pumilus* but more than in *borealis*. The median apophysis is strongly developed with the distal ramus smoothly rounded apically, and the proximal ramus produced and lying transversely across the bulb. The terminal apophysis is a flat semitransparent structure whose tip overlies a whitish membranous process near the lamella.

FEMALE: For the 38 specimens examined, the total length ranged from 2.48 to

3.75 mm. Structure and general appearance typical as in the male. The epigynum is quite different from any of the other species in the genus. There is a large central fossa in the anterior half, and on either side is a raised area, the two latter connected behind by a transverse ridge.

TYPE LOCALITY: Male and female cotypes from Laggan, Alberta, collected by Thomas E. Bean and now at the Museum of Comparative Zoölogy.

DISTRIBUTION: LABRADOR: Paradise River, July 16, 1928 (C. L. Austing). MAINE: Fort Fairfield, July 19, 1914 (J. H. Emerton); Presque Isle, August 26, 1925; Lubec, July 30, 1913 (J. H. Emerton). NEW HAMPSHIRE: Mt. Washington, June 10, 1877, and August 1, 1910 (J. H. Emerton); August 18, 1925; Carter Notch, August 10, 1906 (J. H. Emerton). VERMONT: Grout, July, 1913 (R. V. Chamberlin); Ascutney, May 25, 1913 (J. H. Emerton). CONNECTICUT: Rainbow, August 9, 1939 (A. DeCaprio). ONTARIO: Menaki, July 30, 1917 (J. H. Emerton). NEW YORK: Mt. Marcy, July 1918 (J. H. Emerton), August 27, 1930 (C. R. Crosby); Mt. Whiteface, August 22, 1916; Mt. McIntyre, July 24, 1925; Highfalls, Essex County, August 30, 1921; Wawbeek, October 23, 1934; Avalanche Lake, July 24, 1925. MICHIGAN: Marquette, July 23, 1932 (A. M. Chickering). MINNESOTA: Itasca Park, May 28–30, 1932 (W. J. Gertsch). WYOMING: Yellowstone Park, August 14, 1927 (R. V. Chamberlin), August 11, 1940 (W. Ivie).

Ctenium laticeps (Keyserling)

Figures 14–16, 46

Theridion laticeps KEYSERLING, 1884, Spinnen Amerikas, Theridiidae, vol. 1, p. 96, pl. 5, fig. 63–63b, ♀; MARX, 1890, Proc. U. S. Natl. Mus., vol. 12, p. 519.

Pedanostethus laticeps BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 22; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 184; WORLEY AND PICKWELL, 1931, Univ. Nebraska Studies, vol. 27, p. 28; FOX, 1940, Proc. Biol. Soc. Washington, vol. 53, p. 41.

Microneta palustris BANKS, 1892, Proc. Acad. Nat. Sci. Philadelphia, p. 47, pl. 2, fig. 47, ♂.

Pedanostethus palustris BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 22; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 185; BANKS, 1916, Proc. Acad. Nat. Sci. Philadelphia, p. 77, pl. 11, fig. 16, ♂ (not ♀, fig. 25).

Robertus palustris CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040 (in part).

Pedanostethus riparius BANKS, 1907, Indiana Dept. Geol. Nat. Hist. Res., 31st Ann. Rept., p. 739 (not *riparius* Keyserling).

MALE: For the 18 specimens examined, the total length ranged from 2.89 to 3.35 mm. Structure and general appearance typical as described for *banksi*, new species, with the chelicerae compressed near the fang. Pedipalp with patella and tibia together three-fifths as long as femur and seven-eighths the length of cymbium. The cymbium is quite elongate and has two stout apical setae. The median apophysis has a rather short distal ramus and a very broad proximal ramus that extends transversely beyond the border of the cymbium. The terminal apophysis is gently curved and ends in three short blunt lobes which overlie the distal transparent membranous process.

FEMALE: For the 42 specimens examined, the total length varied from 3.09 to 4.15 mm. Structure and general appearance as in male. Epigynum of the same general type as in *riparius* and *similis*, but with the anterior median lobe a broad oval (to almost spherical) and with a relatively long stem. The sclerotized lip along the posterior border is undulate in some specimens and evenly curved in others.

TYPE LOCALITY: Female type of *laticeps* from Fort Bridger, Wyoming, now in the United States National Museum. Male type of *palustris* collected at Ithaca, New York, by N. Banks, now in the Museum of Comparative Zoölogy.

DISTRIBUTION: CONNECTICUT: South Meriden, March 31, 1935 (H. L. Johnson). NEW YORK: Ithaca, May 22 and 23 (N. Banks), December 29, 1912; Montauk Point, June 25, 1927, and July 30, 1933 (C. R. Crosby). PENNSYLVANIA: Shillington, August 6, 1936 (L. Hook). MARYLAND: College Park, April 22, 1942 (M. H. Muma). VIRGINIA: Falls Church (N. Banks); Chain Bridge, May 23; Radford, July 6, 1934. NORTH CAROLINA: Roan Mountain, July 5, 1903 (J. H. Emerton), July 13 (N. Banks); Black Mountain (N. Banks). TENNESSEE: Klingman's Dome, June 25, 1936 (W. M. Barrows); Erwin, July 8, 1933 (W. Ivie). OHIO: Salineville; Columbus, September 22, 1917 (W. M. Barrows). INDIANA: Knox County, May 26. ILLINOIS: Peoria, July 9. IOWA: Ames. NEBRASKA: near Falls City, June 7, 1933 (W. Ivie).

Ctenium livida (Blackwall)

Figures 17–19, 58

Neriene livida BLACKWALL, 1836, London and Edinburgh Phil. Mag., vol. 8, p. 468, ♀ ♂.[1]

[1] Although the descriptions and figures supplied here are based upon European specimens, I have included (except for the citation to the original description) only those references pertaining to North American records.

Pedanostethus lividus KEYSERLING, 1886, Spinnen Amerikas, Theridiidae, vol. 2, p. 126, pl. 15, fig. 206–206a, ♀; MARX, 1890, Proc. U. S. Natl. Mus., vol. 12, p. 531; SIMON, 1894, Histoire naturelle araignées, vol. 1, p. 579; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 184.

MALE: For the six specimens examined, the total length ranged from 2.55 to 3.2 mm. Structure and general appearance typical as described for *banksi*, new species, with the chelicerae compressed distally as in that species. Pedipalp with the patella and tibia together slightly over half as long as the femur and three-fourths as long as the cymbium. The latter is devoid of stout distal setae and has the lamella drawn out to a very long fine point lying in a concavity of the cymbium proper. The median apophysis is of moderate size, rounded apically, broadened at its base, and lacking a proximal ramus. The terminal apophysis is short, and a distal membranous process seems to be lacking.

FEMALE: For the eight specimens examined, the total length ranged from 2.9 to 3.8 mm. Structure and general appearance as in male. The epigynum has a pair of anteriorly placed receptacles from which extend tubules converging to meet behind at the center of a darkly pigmented, shallowly concave plate (fig. 58).

TYPE LOCALITY: Llanrwst, Wales.

DISTRIBUTION: ALASKA: Ft. Yukon (Marx Collection at the United States National Museum). Reported also from Sitka by Keyserling (1886). (Widely distributed throughout the Palearctic region.)

Ctenium longipalpus, new species

Figures 20–22, 47

MALE: Total length, 2.35 mm. Structure and general appearance typical as described for *banksi*, new species, with the chelicerae compressed near fang. Pedipalp with patella and tibia together three-fourths as long as femur and seven-eighths as long as the cymbium. The latter is long and narrow, and provided with two stout distal setae. The median apophysis is well developed with the proximal ramus long and twisted slightly to extend out beyond the border of the cymbium. The terminal apophysis is subtriangular, with a very broad base and with its distal end drawn out to two fine points overlying a large membranous process.

FEMALE: Total length, 2.8 mm. Structure and general appearance similar to male. Epigynum with a very large, broadly attached, spoon-shaped anterior median lobe. At the posterior border of the epigynum there is a thick raised lip which makes this species easy to distinguish from *floridensis*, in which the anterior median lobe is also quite large.

TYPE LOCALITY: Male holotype from Ramsey, New Jersey, June 3, 1934, collected by W. J. Gertsch. Female allotype from the same locality, December 1, 1912, collected by J. H. Emerton. A paratype female was collected with the allotype.

DISTRIBUTION: NEW HAMPSHIRE: Gilmantown, June 12–18, 1925 (E. B. Bryant). MASSACHUSETTS: Monponsett, June 12, 1913 (J. H. Emerton); Holliston, June 10, 1923 (J. H. Emerton and N. Banks); Clarendon Hills, September 27, 1905. CONNECTICUT: Norwalk, May 27–30, 1933 (W. J. Gertsch) and July 2, 1933 (W. Ivie); Killingworth, January, 1938 (B. J. Kaston). ONTARIO: Mer Bleu near Ottawa, July 10, 1941 (H. H. T. Nesbit). NEW YORK: McLean, May 29, 1926 (R. V. Chamberlin); Nigger Pond, Oswego County, September 3, 1926. NEW JERSEY: Ramsey. MICHIGAN: Albion, October 8, 1932 (A. M. Chickering).

SPECIMENS EXAMINED: Males: 10, with the total length ranging from 2.35 to 2.61 mm. Females: 9, ranging from 2.2 to 3.15 mm. This species is quite similar to *laticeps*, *riparius*, and *banksi*, but is smaller in size.

Ctenium pumilus (Emerton)

Figures 32–34, 53

Pedanostethus pumilus EMERTON, 1909, Trans. Connecticut Acad. Sci., vol. 14, p. 183, pl. 1, fig. 2–2a, ♀ ♂; EMERTON, 1911, *ibid.*, vol. 16, pl. 1, fig. 3a, ♂; BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 22; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 185; EMERTON, 1913, Appalachia, vol. 12, p. 155; ELLIOTT, 1930, Ohio Jour. Sci., vol. 30, p. 5; ELLIOTT, 1932, Proc. Indiana Acad. Sci., vol. 41, p. 424.

Robertus pumilus CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040.

MALE: For the 15 specimens examined, the total length ranged from 1.74 to 2.14 mm. Structure and general appearance typical as described for *banksi*, new species, with the chelicerae compressed distally as in that species. Pedipalp with patella and

tibia together seven-tenths the length of the femur and almost (25/28) as long as the cymbium, which is without stout setae distally. The cymbium is rather wide, as in *borealis*, the greatest width being more than half the length, but there is a much greater space between the lamella and the cymbium proper. The median apophysis is of moderate size; the terminal apophysis is stout basally and terminates in a gently rounded point overlying the transparent membranous process.

FEMALE: For the 71 specimens examined, the total length ranged from 1.74 to 2.41 mm. Structure and general appearance typical. The epigynum shows a wide U-shaped anterior median lobe and a broad sclerotized posterior flap.

TYPE LOCALITY: Three male cotypes from Clarendon Hills, Massachusetts, November 3, 1904. Female cotype from Three Mile Island, Lake Winnipesaukee, New Hampshire, May 25, 1905, all collected by J. H. Emerton, and now deposited in the Museum of Comparative Zoölogy.

DISTRIBUTION: MAINE: Hollis, June 12, 1908 (J. H. Emerton). NEW HAMPSHIRE: North Woodstock, June 4, 1908 (J. H. Emerton), and September, 1911 (W. H. Fox); Three Mile Island, December, 1906 (J. H. Emerton); Franconia Notch, August 21, 1925. MASSACHUSETTS: Huntington, September 30, 1909; Northfield, December 30, 1905 (J. H. Emerton); Williamstown, July 30, 1908 (J. H. Emerton). CONNECTICUT: New Haven, December 15, 1882 (J. H. Emerton); Salisbury, September 4, 1939 (B. J. Kaston). NEW YORK: Ithaca, July 15, 1909 (E. B. Bryant); Danemora, October 19, 1935; Bolton, June 8, 1933 (C. R. Crosby and H. Dietrich); McLean, July 1904, and May 16, 1925; Bergen, November 1, 1928 (H. Dietrich); Peru, October 22, 1934; Trout Pond, Essex County, October 20, 1934; Potter Swamp, July 16, 1926; North Pond, Oswego County, July 27, 1935 (C. R. Crosby); Cadyville, June 9, 1933 (C. R. Crosby). PENNSYLVANIA: Edinboro, July 5, 1927 (Palmer). This species has also been reported from Indiana by Elliott (1932).

Ctenium riparius (Keyserling)

Figures 11–13, 44

Pedanosthetus [sic] *riparius* KEYSERLING, 1886, Spinnen Amerikas, Theridiidae, vol. 2, p. 265, pl. 21, fig. 313, ♀.

Pedanostethus riparius MARX, 1890, Proc. U. S. Natl. Mus., vol. 12, p. 531; BRYANT, 1908, Occas. Papers Boston Soc. Nat. Hist., vol. 7, no. 9, p. 18; EMERTON, 1909, Trans. Connecticut Acad. Sci., vol. 14, p. 182 (in part), pl. 1, fig. 1–1c, ♀ ♂ (not fig. 1d); EMERTON, 1911, *ibid.*, vol. 16, pl. 1, fig. 3b, ♂; BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 22; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 185; COMSTOCK, 1912, Spider book, p. 365 (in part), figs. 372a, 373, ♀ ♂ (not fig. 372b); EMERTON, 1913, Appalachia, vol. 12, p. 155; BARROWS, 1918, Ohio Jour. Sci., vol. 18, p. 304; EMERTON, 1919, Trans. Roy. Canadian Inst., vol. 12, p. 313; WORLEY AND PICKWELL, 1931, Univ. Nebraska Studies, vol. 27, p. 28; ELLIOTT, 1932, Proc. Indiana Acad. Sci., vol. 4, p. 424; KURATA, 1937, Canadian Field Nat., vol. 51, p. 114; KURATA, 1939, *ibid.*, vol. 53, p. 81; KURATA, 1943, *ibid.*, vol. 57, p. 10; TRUMAN, 1942, Proc. Pennsylvania Acad. Sci., vol. 16, p. 27.

Robertus riparius CROSBY AND BISHOP, 1926, Jour. Elisha Mitchell Sci. Soc., vol. 41, p. 180; CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040; KASTON, 1938, Bull. Connecticut Geol. Nat. Hist. Surv., no. 60, p. 186; BRIMLEY, 1938, Insects of North Carolina, p. 473; COMSTOCK, 1940, Spider book, rev. ed., p. 380 (in part), figs. 372a, 373, ♀ ♂ (not fig. 372b).

Not *Pedanostethus riparius* Banks, 1907, Indiana Dept. Geol. Nat. Hist. Res., 31st Ann. Rept., p. 739.

MALE: For the 79 specimens examined, the total length ranged from 2.54 to 3.68 mm. Structure and general appearance typical as described for *banksi*, new species, with the chelicerae compressed distally. Pedipalp with patella and tibia together almost two-thirds as long as femur and about same length as cymbium, which is provided with two stout apical setae. Palpus very much as in *longipalpus* but with cymbium shorter and with median apophysis having a much shorter proximal ramus. The terminal apophysis is more abruptly bent at the apex and has two finely drawn out points overlying a distal membranous process.

FEMALE: For the 181 specimens examined, the total length ranged from 2.75 to 4.1 mm. Structure and general appearance as in male. Epigynum with a pear-shaped anterior median lobe, smaller than in the other species, and with the entire epigynum narrower than in *similis*.

TYPE LOCALITY: Eagle Harbor, Michigan (Marx Collection at the United States National Museum).

DISTRIBUTION: MAINE: Moosehead Lake, August 7, 1904 (J. H. Emerton); Presque Isle, August 26, 1925. NEW HAMPSHIRE: Intervale, August 1, 1910 (E. B. Bryant); Moosilauke, July 8, 1912 (E. B. Bryant); Mt. Washington,

June 10, 1877 (J. H. Emerton); Randolph, July 1, 1926 (J. H. Emerton), and September 10–14, 1939[1] (E. L. Bell). VERMONT: Stowe, July 22, 1902 (E. B. Bryant); Grout, July 1913 (R. V. Chamberlin). MASSACHUSETTS: Magnolia, April 19, 1906 (E. B. Bryant); Waltham, April 23, 1904 (E. B. Bryant), and November 9, 1906 (E. B. Bryant); Cohasset, June 17, 1904 (E. B. Bryant); Gloucester, November 3, 1908 (E. B. Bryant); Carlisle Pines, October 1, 1904 (J. H. Emerton), and October 26, 1907 (E. B. Bryant); Clarendon Hills, November 10, 1904 (J. H. Emerton), and September 27, 1905 (E. B. Bryant); Monponsett, June 12, 1912 (J. H. Emerton); Cambridge, April, 1906; Sudbury, October 1, 1905 (J. H. Emerton); Brookline, October 17, 1904 (J. H. Emerton); Mt. Wachusett, October 28, 1932. CONNECTICUT: New Haven, December 15, 1882 (J. H. Emerton); Watertown, April 28, 1935 (B. J. Kaston); Sherman, April 7, 1935 (B. J. Kaston); Tolles, September 26, 1936 (B. J. Kaston); Killingworth, January, 1938 (B. J. Kaston); Salisbury, September 4, 1939 (B. J. Kaston). QUEBEC: North entrance Gaspé National Park, August 8, 1940 (L. I. Davis); Pinnacle, July 22, 1913 (R. V. Chamberlin); Ellis Bay, Anticosti Island, 1919 (Brooks). ONTARIO: Port Credit, October 12, 24, 1942, and May 5, 1943 (S. Harrod); Arnprior, May, 1935 (Macnamara); Lake Openengo, July 14, 1943, Mazinau Lake, July, 1943 (Harrington); Turkey Point, June 11, 1933; Temayami, July 23, September 1, 1938; Toronto, October 2, 1938; Kingston, August 29, 1937 (T. B. Kurata); Deny River, August 11, 1937 (T. B. Kurata); Mer Bleu, June 4, 1931 (T. B. Kurata); Menaki, July 23, 1931 (T. B. Kurata); Elmhurst, August 13, 1928 (T. B. Kurata); Carnavan, May 18, 1941. NEW YORK: Ithaca, May 23 (N. Banks), December 29, 1912, November 19, 1925, October 17, 1934; Jamesville, October, 1900 (H. W. Britcher); Keene Valley, May 26, 1916 (H. Notman); Wilmington Notch, August 21, 1916 (J. H. Emerton); Michigan Mills, September 1, 1926; Indian Lake, October 19, 1934; Adirondack Lodge, July 24, 1925; Brant Lake, October 19, 1934; Speculator, October 19, 1934; Taughannock Falls, May 11, 1930; Mt. Marcy, August 25, 1930 (C. R. Crosby); Sea Cliff (N. Banks); Cold Spring Harbor, April 10, 1905 (E. B. Bryant). NEW JERSEY: Schooley Mountain, May 23, 1910; Newfoundland, May 29, 1910; Ramsey, June 12, 1912; Sussex County, June 19, 1945 (C. and M. Goodnight). PENNSYLVANIA: Conyngham. NORTH CAROLINA: Black Mountain. TENNESSEE: Klingman's Dome, June 25, 1936 (W. M. Barrows). MICHIGAN: Powers, July 4, 1910 (R. V. Chamberlin); Montmorency County, December 22, 1942 (J. W. Leonard); Thumb Lake, September 19, 1932 (A. M. Chickering); Mosherville, September 30, 1939 (A. M. Chickering); Marquette, July 2, 1932 (A. M. Chickering); Werner Lake, August 13, 1927 (A. M. Chickering). MINNESOTA: Lake Minnetonka, June 22, 1926 (F. C. Fletcher). SOUTH DAKOTA: Hill City (Marx Collection). WYOMING: Yellowstone Park, August 14, 1927 (R. V. Chamberlin). This species has also been recorded from Ohio by Barrows (1918), from Nebraska by Worley and Pickwell (1931), and from Indiana by Elliott (1932).

[1] Including a male that is completely without eyes!

Ctenium similis, new species

Figure 45

FEMALE: Total length, 3.35 mm. Structure and general appearance typical as described for *banksi*, new species. The epigynum most nearly resembles *riparius*, but besides having the anterior median lobe longer and differently shaped the receptacles are farther back and the entire epigynum is wider than in that species, as can be seen by a comparison of figures 44 and 45.

TYPE LOCALITY: Female holotype from Ithaca, New York (Nathan Banks Collection).

Ctenium spiniferus (Emerton)

Figures 23–25, 57

Pedanostethus spiniferus EMERTON, 1909, Trans. Connecticut Acad. Sci., vol. 14, p. 183, pl. 1, fig. 3–3b, ♀ ♂; EMERTON, 1911, *ibid.*, vol. 16, pl. 1, fig. 3c, ♂; BANKS, 1910, Bull. U. S. Natl. Mus., no. 72, p. 22; PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 185.

Robertus spiniferus CROSBY AND BISHOP, 1928, Cornell Univ. Agr. Exp. Sta. Mem., no. 101, p. 1040.

MALE: For the seven specimens examined, the total length ranged from 2 to 2.14 mm. Structure and general appearance typical as described for *banksi*, new species, but as in *eremophilus* the promargin of the fang furrow apparently has only two teeth and the chelicerae are not compressed distally. Pedipalp with patella and tibia together two-thirds as long as the femur and seven-eighths as long as the cymbium. The tibia alone is quite short, shorter than in most species. The cymbium is quite broad and is not provided with any stout distal setae. The lamella is small, and there is very little space between it and the cymbium proper. The most characteristic feature of the palpal organ is the extreme development of the median apophysis. The distal ramus is relatively narrow, but the proximal ramus forms a very

long ventrally directed hook, broad at its base (fig. 23). The terminal apophysis is comparatively small, as in *eremophilus*, and ends in a sharp point turned toward the distal membranous process.

FEMALE: For the 13 specimens examined, the total length ranged from 1.95 to 2.68 mm. Structure and general appearance as in male, with apparently only two promarginal teeth on the chelicerae. The epigynum is relatively quite long in this species, being as long as that part of the venter between it and the spinnerets, or longer. There is a dark median anterior area, a pair of receptacles behind this, and a pair of tubules extending from the receptacles to the posterior border. A bluntly pointed unpigmented process extends behind this.

TYPE LOCALITY: Male cotype from Clarendon Hills, Massachusetts, November 3, 1904; female cotype from Waltham, Massachusetts, April 1, 1908, both collected by J. H. Emerton, and now deposited in the Museum of Comparative Zoölogy.

DISTRIBUTION: NEW HAMPSHIRE: Three Mile Island, Lake Winnipesaukee, May 15, 1916 (J. H. Emerton). MASSACHUSETTS: Holliston, March 25, 1924 (J. H. Emerton); Allston, November 9, 1905 (E. B. Bryant); Waltham, November 9, 1906 (E. B. Bryant). CONNECTICUT: Harwinton, July 16, 1938 (B. J. Kaston). MICHIGAN: Bath Mills, May 11, 1933 (A. M. Chickering); Albion, January 20, 1933 (A. M. Chickering). IOWA: Ames, fall of 1932 (H. B. Mills). NEBRASKA: near Nebraska City, June 7, 1933 (W. Ivie); "Nebraska" (Marx Collection at the United States National Museum). This species has also been listed from New York by Crosby and Bishop (1928).

Ctenium vigerens (Chamberlin and Ivie)

Figures 9, 10, 29–31, 55

Garritus vigerens CHAMBERLIN AND IVIE, 1933, Bull. Univ. Utah, vol. 23, no. 4, biol. ser. vol. 2, no. 2, p. 9, pl. 2, figs. 10–20, ♀ ♂.

MALE: For the nine specimens examined, the total length ranged from 2.75 to 3.63 mm. Structure and general appearance typical as described for *banksi*, new species, except for the marked development of the mouthparts (figs. 9 and 10). The chelicerae are strongly geniculate and quite robust, not compressed distally. Of the three promarginal teeth the ectalmost is the largest and is much higher up and nearer the base of the fang than in the other species. The endites are more swollen apically than in the other species, and the setiferous granules are more conspicuous. Pedipalp with patella and tibia together eight-tenths as long as the femur and considerably longer (45/35) than the cymbium. The tibia alone is quite long, being six-sevenths the length of the cymbium. The latter is provided apically with four very stout setae. Along the edge of the cymbium just proximal to the base of the lamella is a row of five conspicuous, closely set hairs. The lamella arises rather far from the tip of the cymbium and is abruptly turned toward the palpal organ. The median apophysis is of moderate size and has a rather heavy proximal ramus. The terminal apophysis is only weakly developed, but the distal membranous transparent process is quite large and conspicuous.

FEMALE: For the 38 specimens examined, the total length ranged from 2.88 to 4.5 mm. Structure and general appearance as in the male, with the chelicerae and endites swollen. The epigynum shows a pair of receptacles anterior to a raised lip, posterior to which is a shallow fossa.

TYPE LOCALITY: A male and two female cotypes from the Raft River Mountains, Utah, September, 1932, collected by W. Ivie (deposited in the collection of the University of Utah).

DISTRIBUTION[1]: ALASKA: Admiralty Island, June, 1933 (Sheppard). BRITISH COLUMBIA: Vernon, August 1931; Kelowna, September, 1931; Terrace, March, 1933 (Hippisley), March, 1937 (W. E. Clark); Prince Rupert, June 22, 1936 (C. R. Crosby); Lake Cameron, Vancouver Island, September 13, 1935 (Chamberlin and Ivie). WASHINGTON: Mt. Ranier Park, July 5–6, 1938 (W. Ivie), July 10–12, 1942 (B. Malkin); Olympia; Bay Center, August 1, 1931 (Kincaid); Easton, August 10, 1929 (R. V. Chamberlin); Snoqualmie Pass, September 16, 1935 (Chamberlin and Ivie). OREGON: Waldport, June 11, 1936 (C. R. Crosby); Ashland, September 9, 1935 (Chamberlin and Ivie); Three Rocks, May 31, 1942 (J. C. Chamberlin); Scott Lake, Lane County, August 17, 1941 (B. Malkin). CALIFORNIA: San Francisco, December 20, 1919 (H. Dietrich); Weed, September 8, 1935 (Chamberlin and Ivie). IDAHO: Coeur d'Alene, August 11, 1929 (R. V. Chamberlin);

[1] In a personal communication to the author Ivie stated that the listing of Wisconsin at the time of the original description was an error.

Lost Lake, August 20, 1936, and July 27, 1939 (W. Ivie); Mesa, July 2, 1943 (W. Ivie). MONTANA: Hellgate River, August 13, 1929 (R. V. Chamberlin). UTAH: Verdure, May 10, 1933 (W. Ivie); Salt Lake City, September, 1932, and September 16, 1942 (W. Ivie); Raft River Mountains, September 6, 1932 (E. G. Berry).

Chamberlin and Ivie erected their genus *Garritus* on the basis of the enlarged chelicerae and endites in *vigerens*. But an intermediate condition is seen in *floridensis*, and it will probably be agreed that a new genus is not justified.

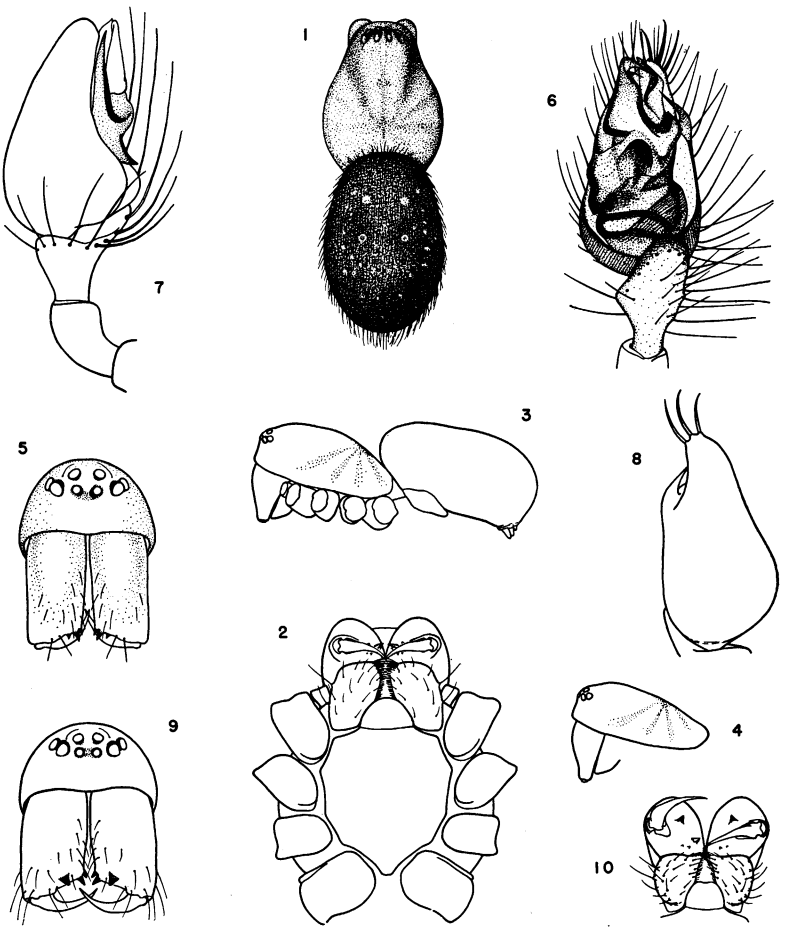

Fig. 1. *Ctenium banksi*, new species, dorsal aspect of female.
Fig. 2. Idem, ventral aspect of cephalothorax.
Fig. 3. Idem, lateral aspect of body.
Fig. 4. Idem, lateral aspect of cephalothorax of male.
Fig. 5. Idem, face of female.
Fig. 6. Idem, palpus, ventral aspect.
Fig. 7. Idem, palpus, lateral aspect.
Fig. 8. Idem, palpus, dorsal aspect.
Fig. 9. *Ctenium vigerens* (Chamberlin and Ivie), face of female.
Fig. 10. Idem, ventral aspect of mouthparts.

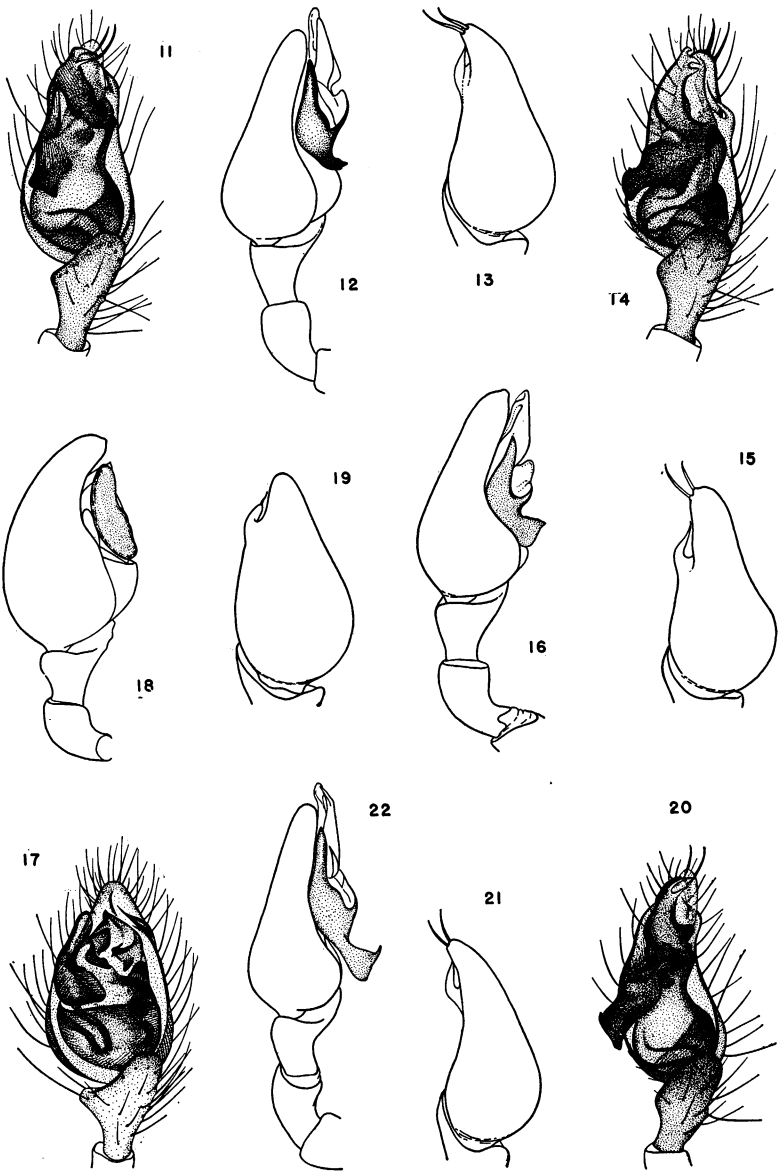

Fig. 11. *Ctenium riparius* (Keyserling), palpus, ventral aspect.
Fig. 12. Idem, palpus, lateral aspect.
Fig. 13. Idem, palpus, dorsal aspect.
Fig. 14. *Ctenium laticeps* (Keyserling), palpus, ventral aspect.
Fig. 15. Idem, palpus, dorsal aspect.
Fig. 16. Idem, palpus, lateral aspect.
Fig. 17. *Ctenium livida* (Blackwall), palpus, ventral aspect.
Fig. 18. Idem, palpus, lateral aspect.
Fig. 19. Idem, palpus, dorsal aspect.
Fig. 20. *Ctenium longipalpus*, new species, palpus, ventral aspect.
Fig. 21. Idem, palpus, dorsal aspect.
Fig. 22. Idem, palpus, lateral aspect.

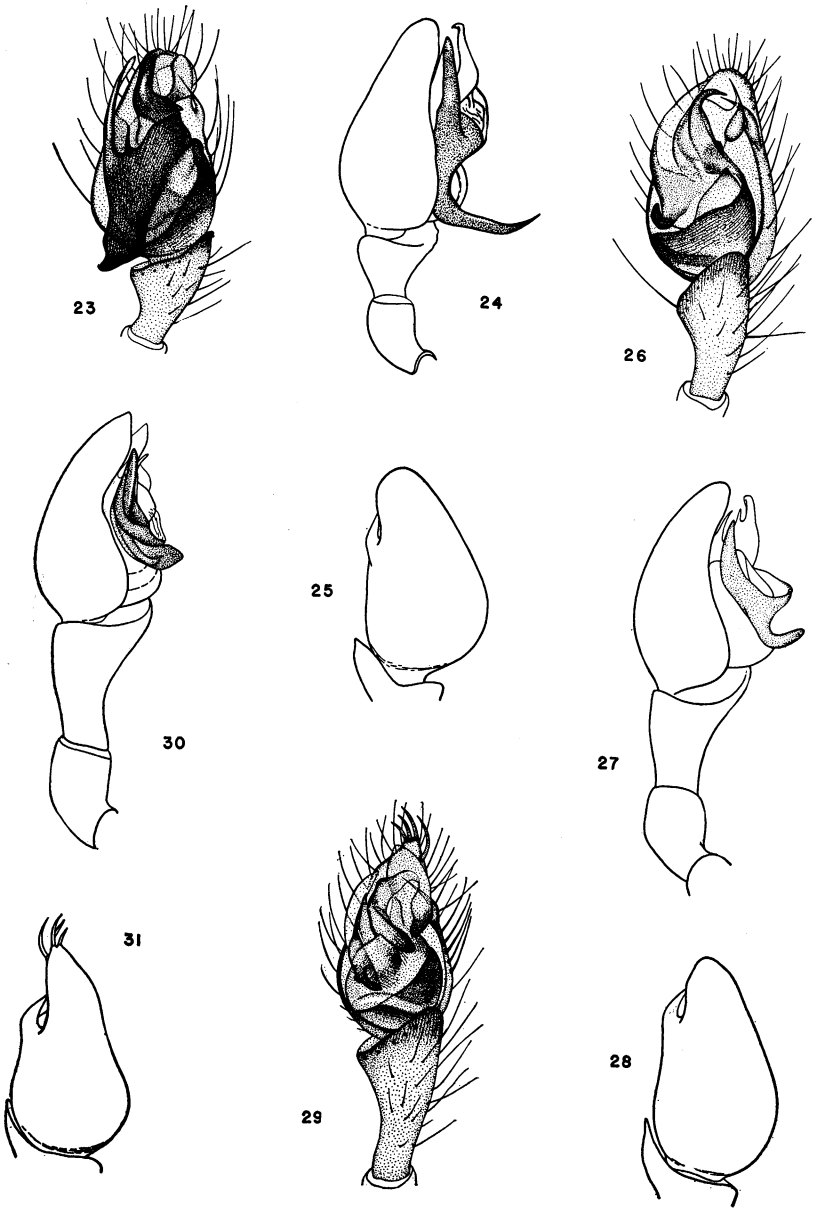

Fig. 23. *Ctenium spiniferus* (Emerton), palpus, ventral aspect.
Fig. 24. Idem, palpus, lateral aspect.
Fig. 25. Idem, palpus, dorsal aspect.
Fig. 26. *Ctenium eremophilus* (Chamberlin), palpus, ventral aspect.
Fig. 27. Idem, palpus, lateral aspect.
Fig. 28. Idem, palpus, dorsal aspect.
Fig. 29. *Ctenium vigerens* (Chamberlin and Ivie), palpus, ventral aspect.
Fig. 30. Idem, palpus, lateral aspect.
Fig. 31. Idem, palpus, dorsal aspect.

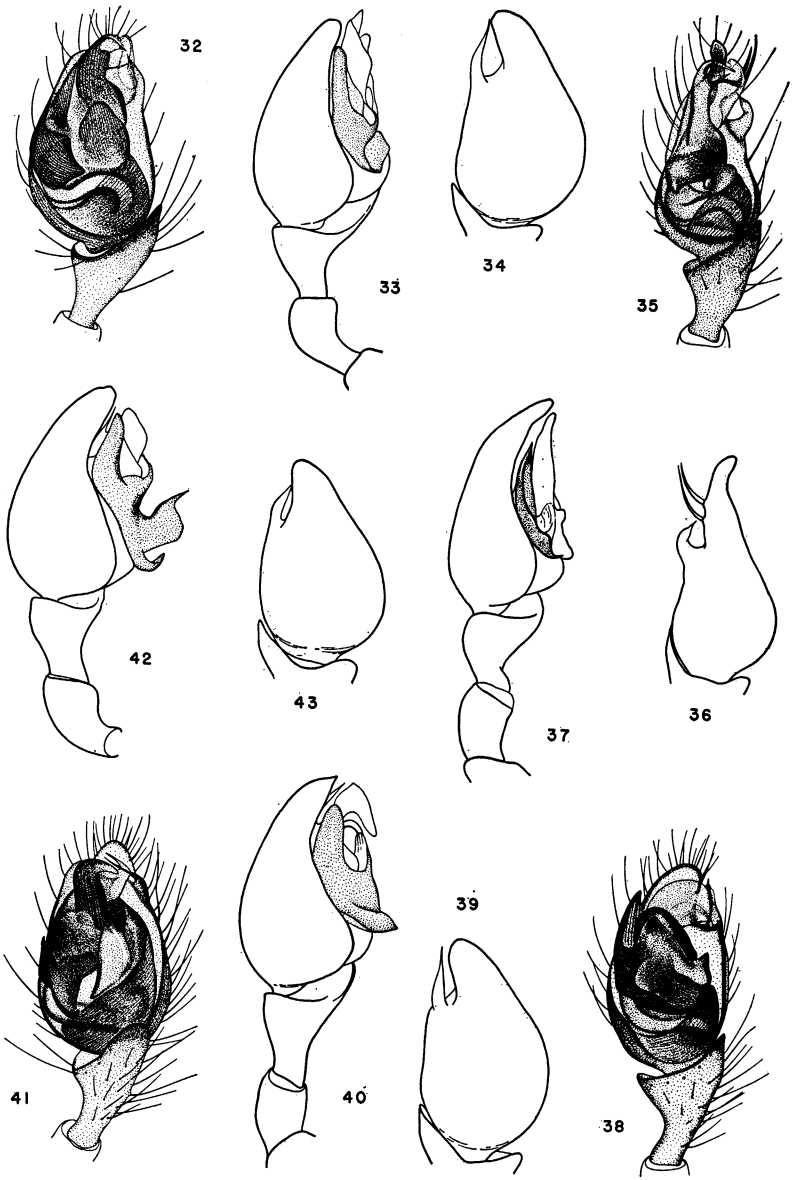

Fig. 32. *Ctenium pumilus* (Emerton), palpus, ventral aspect.
Fig. 33. Idem, palpus, lateral aspect.
Fig. 34. Idem, palpus, dorsal aspect.
Fig. 35. *Ctenium frontata* (Banks), palpus, ventral aspect.
Fig. 36. Idem, palpus, dorsal aspect.
Fig. 37. Idem, palpus, lateral aspect.
Fig. 38. *Ctenium fusca* (Emerton), palpus, ventral aspect.
Fig. 39. Idem, palpus, dorsal aspect.
Fig. 40. Idem, palpus, lateral aspect.
Fig. 41. *Ctenium borealis*, new species, palpus, ventral aspect.
Fig. 42. Idem, palpus, lateral aspect.
Fig. 43. Idem, palpus, dorsal aspect.

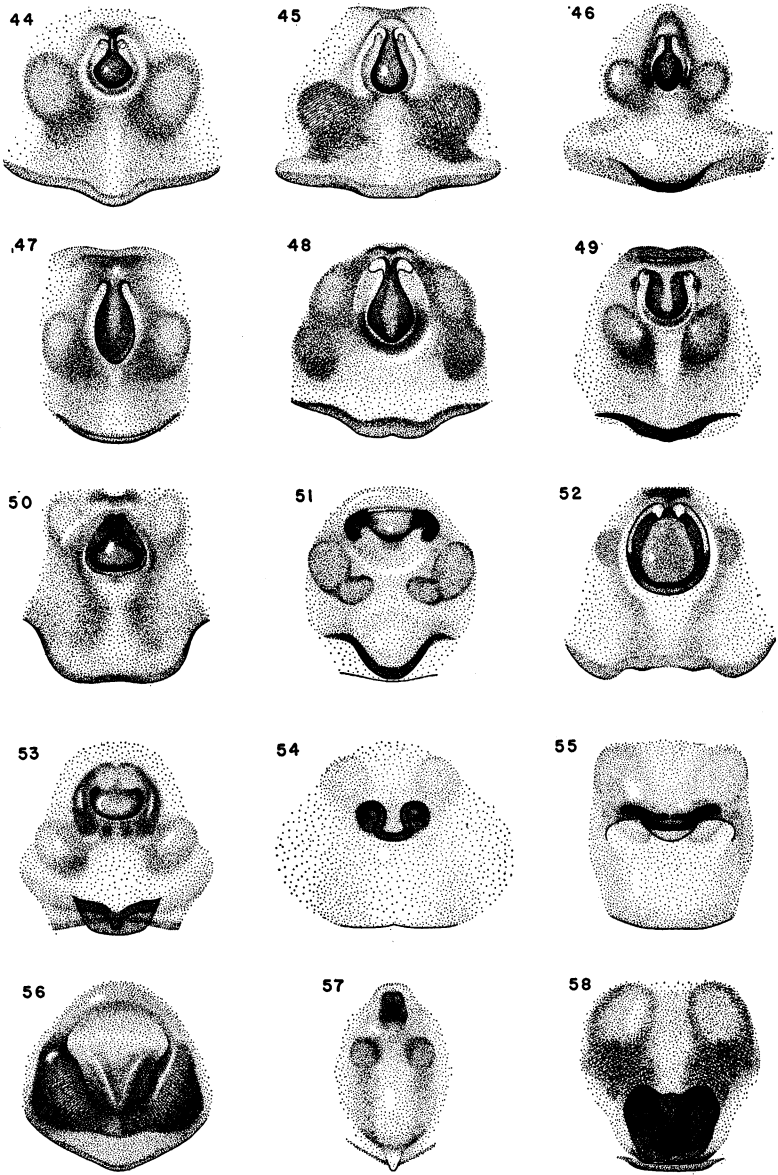

Fig. 44. *Ctenium riparius* (Keyserling), epigynum.
Fig. 45. *Ctenium similis*, new species, epigynum.
Fig. 46. *Ctenium laticeps* (Keyserling), epigynum.
Fig. 47. *Ctenium longipalpus*, new species, epigynum.
Fig. 48. *Ctenium floridensis*, new species, epigynum.
Fig. 49. *Ctenium banksi*, new species, epigynum.
Fig. 50. *Ctenium borealis*, new species, epigynum.
Fig. 51. *Ctenium frontata* (Banks), epigynum.
Fig. 52. *Ctenium crosbyi*, new species, epigynum.
Fig. 53. *Ctenium pumilus* (Emerton), epigynum.
Fig. 54. *Ctenium eremophilus* (Chamberlin), epigynum.
Fig. 55. *Ctenium vigerens* (Chamberlin and Ivie), epigynum.
Fig. 56. *Ctenium fusca* (Emerton), epigynum.
Fig. 57. *Ctenium spiniferus* (Emerton), epigynum.
Fig. 58. *Ctenium livida* (Blackwall), epigynum.