TRANSACTIONS OF THE
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Supplement to the New England Spiders

BY

J. H. EMERTON

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YALE UNIVERSITY

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III.—Supplement to the New England Spiders

by J. H. Emerton.

From 1882 to 1892 the writer published in the Transactions of the Connecticut Academy a series of papers containing descriptions and figures of New England Spiders known to him at that time. The present paper contains additional notes, descriptions, and figures of 48 of these species, partial descriptions, figures and references to descriptions of 38 species described by other persons since 1882, and descriptions and figures of 35 apparently new species.

The portion of New England explored is still chiefly eastern Massachusetts and New Hampshire as far north as the White Mountains. In Maine there have been collections on the coast at Portland and Monhegan, and in the north at Bangor and around Moosehead Lake. Explorations in Canada show the extension northward and westward of many Maine and White Mountain species, as *Theridium zelotypum* to Manitoba, and *Epeira patagiata* and *angulata* to the Pacific coast, and *Epeira carbonaria* and *Lycosa greenlandica* in the Rocky Mountains and Labrador. In the south there have been large collections in Connecticut at Simsbury near Hartford, and at New Haven on the coast, and in Rhode Island near Providence.

The distribution of several species has been made clear by collections on Long Island, N. Y., which is the northern limit of *Oxyopes salticus*, *Pellenes cæcatus*, and *Epeira verrucosa*, and where the following species are found in abundance, that extend northward only as far as Connecticut; *Lycosa scutulata, Acrosoma rugosa* and *Argyrodes cancellatus*. In the western part of Massachusetts, Connecticut, and Vermont but little has been done, but small collections in the Adirondacks and the observations of Mr. Banks around Ithaca, N. Y., show only slight differences from the spider fauna of New England.

The writer has depended chiefly on his own collections, but gives his thanks to G. W. Peckham, Nathan Banks and Miss E. B. Bryant for the use of their specimens and constant help of all kinds.

For references to publications of New England Spiders, the reader is referred to Miss Bryant's list of New England Spiders lately published by the Boston Society of Natural History.

Among the *Epeiridæ, Zilla atrica* is the only additional species found since the publication of New England Epeiridæ in 1884, but the males of the following species are described: *E. corticaria E. Nordmanni, E. juniperi, E. thaddeus.*

The separation of the *Theridida* and *Linyphiadæ* as two distinct families seems to me an improvement, and I have adopted it in this paper, but not the union of the *Linyphiadæ* and *Epeiridæ* into one family, which obscures the marked differences between these two groups. Between certain genera of these families the family differences are hard to define, but the same is true of the differences between genera of the *Therididæ* and *Linyphiadæ.*

The *Linyphiadæ* are divided naturally into two subfamilies—*Linyphieæ* and *Erigoneæ*, the former containing the larger long-legged forms, and the latter the smaller forms with short legs and short spines. The genus *Micronetа* in the *Linyphieæ* resembles in its form the *Erigoneæ*, and its species are hard to distinguish from those of *Tmeticus.* The most typical species are *viaria, cornupalpis* and *discolor. Micronetа* (Bathyphantes) *bihamatus* belongs to this genus rather than *Bathyphantes.* Two new species are described and new specimens have been examined of all the old species except *crassimanus, furcata, longibulbus* and *olivacea.*

In the *Linyphieæ* the principal additions are *Linyphia maculata,* which has been found sparingly in many different localities and described by Banks as *L. conferta Hentz,* and *Tapinopa bilineata Banks,* which has been found singly in several localities.

In the *Erigoneæ* more than in any other group, new species are frequently found, and our descriptions are often made from one or a few individuals. They live for the most part near the ground, hidden in moss and leaves, only small quantities of which can be closely examined, and so little is known about their species and distribution. In their classification they offer many difficulties. Their small size makes their comparison inconvenient, and their uniformity in form and color makes it hard to define their differences. The only characters easy to see and describe are those of the adult males—the organs on the ends of the palpi and the modifications of the head. In consequence of these difficulties, the published classifications consist of a number of ill-defined genera, which have been formed from time to time, as new species were discovered, and the relations of which among themselves have never been satisfactorily explained. In the New England Theridiidæ I used a classification based upon the genera of Menge in the Spiders of Prussia, and in the present paper follow substantially the same, be-

cause it seems to me to show as well as any other the natural relations of the species which I have been studying.

At the beginning of the series come two species which I have described in N. E. Theridiidae under the name of *Pholcomma* at the end of the *Theridiidæ*. *P. hirsuta* belongs to a genus near *Pholcomma*, which Simon in Hist. Nat. Araignées has named *Ancyllorhanis*. It has small mandibles and the pointed maxillæ and the simple male palpi of the *Theridiidæ*. *P. rostrata* belongs to quite a different genus, which Simon has called *Histagonia*, and I have adopted without having seen *H. descrticola*, the type species Another species of the same genus is the *Exechophysis palustris Banks*. *Histagonia* seems to me most nearly related to *Diplocephalus* rather than to *Pholcomma*. The mandibles and maxillæ are like the *Erigoneæ* rather than the *Theridiidæ*, and the modifications of the head and complicated form of the tibia of the male palpi resemble those of *Diplocephalus*. The tarsal hook is present, though small, as it is in *Diplocephalus*.

The new genus *Cascola* with two species *herbicola* and *alticeps* resembles in form and habits *Ceratinella*, but does not have hard pieces on the back and at the base of the abdomen, nor any of the orange color of *Ceratinella*. The male palpi are simple in both species, with a peculiar club-shaped process of the palpal organ directed toward the inner side.

Ceratinella consists of small round spiders, orange-colored or orange brown, with a hard plate on the back of the abdomen in one sex or both. The palpi of the males vary in length, but are all on the same plan, with the palpal organ furnished with a long slender tube turned backward from the distal end of the tarsus toward the base. I consider this genus to include the European *C. brevis* and the American species which Simon separates as the genus *Ceraticelus*, the principal difference being in the sinuous claw of the mandible of *C. brevis*. *Ceratinopsis* consists also of small and brightly colored spiders with usually distinct black markings on the head and sometimes on the palpi and feet. The palpi resemble those of *Ceratinella*, with large and more variable tibiæ. There are no hard plates on the abdomen.

Cornicularia includes species resembling *Ceratinopsis*, but with usually more elongated cephalothorax, and in the males a horn on the front of the head between the upper and lower middle eyes. The male palpi have the tibia enlarged and extended over the back of the tarsus in a long flat process, partly divided into two branches. I include those species which have a double horn on the head,

which Simon refers to *Prosopotheca*, and also, as suggested by Simon, *Spiropalpus spiralis* which, though its male has no horns, resembles this genus.

Grammonata includes, besides the three species before described, *Erigonoplus gigas Banks*, which has lately been found in Massachusetts. All the species resemble *Amaurobius* in form and markings, having an indistinct pattern of light spots on the abdomen. In the males the head is a little elevated behind the eyes, and in *pictilis* and *gigas* there is a conspicuous hump. The males of *gigas* have the first metatarsus white and much thicker than the other joints. The male palpi resemble those of *Ceratinella*, having a long tube turned abruptly backward from the end of the tarsus. In *pictilis* the tube is very long and coiled in a double spiral.

Diplocephalus Bertkau, 1883, is *Lophomma* Em. of N. E. Theridiidae, in which the males have two humps on the head, each carrying one pair of the middle eyes. The male palpi have the tibia very large, covering the back of the tarsus nearly its whole length.

Lophocarenum consists of those spiders, the males of which, except *rugosum*, have holes in the head behind the eyes, and the middle of the head elevated, sometimes into large humps. The male palpi have the patella longer than the tibia, and the latter usually longer than wide, with small hooks and processes of various shapes. Where the enlargement of the head of the male is extreme, the female has a slight elevation of the head as in *montiferum* and *alpinum*. The unusually large size of the front lateral eyes in *quadricristatum* occurs in a less degree in the female.

There is no better example of the difficulty of classifying the *Erigoneæ* than the attempt of Simon to distribute the American species of this genus, without seeing the spiders themselves, among eight different genera. For *florens* he makes a new genus *Hypselistes*, while *decemoculatum*, the females of which cannot be distinguished from those of *florens*, is placed in *Neriene*, which corresponds in part to my *Tmeticus*. *L. pallidum* and *L. longitubus*, which resemble each other as closely as any other two species, are placed one in *Typhocrastes* and the other in *Pocadicnemis*. *L. scopuliferum* is placed in *Minyriolus*, *L. quadricristatum* in *Panamomops*, *L. longitarsus* in *Lophomma*, *L.* rostratum in *Trachelocamptus* and *L. decemoculatum*, *montiferum* and *spiniferum* in *Neriene*. I see no reason to follow any of these changes; they only obscure the relations of the spiders.

Tmeticus is still a heterogeneous group. The more typical species,

such as *probatus* and *trilobatus*, approach *Erigone* by their wide maxillæ and long palpi and the tibia widened toward the tarsus, and the males have a strong single spine on the front of the mandibles. *Maximus, tibialis* and *brumeus* resemble each other in size and proportions, but differ in their mandibles and palpi. The other species have little in common except their general size and color, arrangement of eyes and form of mandibles and maxillæ.

Erigone now includes four species; *longipalpis, dentigera, autumnalis* and the new *brevidentatus* with wide maxillæ, large mandibles and long male palpi with widened tibia, and a spur directed downward on the patella.

In the *Therididæ* there are but few additions. *Theridium kentuckyense* has been found in a few places. The male of *T. zelotypum* is described and the species found to be common in Maine and New Hampshire. *Latrodectus mactans* has been found in several localities, but is nowhere common. The new *Enoplognatha rugosa* has been found rarely but in localities far apart. The same is true of the new *Pedanostethus pumilus*, and *P. spiniferus*.

In the *Agalenidæ, Hahnia brunnea* is described from a single specimen, but there is a second one in the collection of Mr. Banks. *Cryphœca montana* appears to be common in northern New Hampshire, and from description is very near the *C. peckhamii* Simon of the Pacific coast.

The larger *Clubionas* have been better defined and new figures are given of the epigynum of several species. The two new species are one from a single specimen *C. spiralis* and the other *C. prematura* a common species from the summit of Mt. Washington, the female of which has long been known as a variety of *C. ornata* Em.

The North American *Lycosidæ* and *Pisauridæ* have been described and their classification much improved by T. H. Montgomery in Proceedings of Philadelphia Acad., 1902–3 and 4. *Lycosa rehucens* Montg. is a common species in New England. *Dolomedes idoneus* Montg. and *D. fontanus Em.* have both been described as *D. tenebrosus* Hentz, which agrees equally well with either. The new *D. vernalis* appears to be common in Maine and New Hampshire. *Pirata* remains a difficult group and each author has his own species. *P. minuta* is the most distinct, *montana* and *insularis* have been again identified and three new species are described. In N. E. Lycosidae 1885 I have described under the name of *L. nidifex* what I now consider as two species named by Marx in the Am. Naturalist, 1881. *L. nidifex* and *L. Pikei*. *Nidifex* is the inland species which ordinarily makes a ring or turret at the mouth of its burrow; *Pikei*

is the seashore and sand dune species described by Scudder as *L. arenicola* in Psyche 1877. *L. avara* Keys, *L. baltimoriana* Keys, and *Pardosa littoralis* Banks been have found in New England and new figures and descriptions of them are given.

Since the publication of N. E. Attidae in 1891 the number of species of that family known in New England has been largely increased, but nearly all the species have been described from other parts of the country and appear to have very wide distribution. Some of the most common species are so variable and their differences so hard to define that they are still very imperfectly known, especially in *Phidippus* and *Dendryphantes*. The *Icius* which I described as a dark variety of *elegans* now appears to be a distinct species, *Icius similis*, Bks.

Dendryphantes flavipes Pkm. has been found in small numbers through Maine and New Hampshire. The male is fairly distinct from that of *capitatus* but I cannot distinguish the females. A new species *D. Jeffersoni* is described from very few specimens found on the Mt. Washington range at an elevation of 5,000 feet living in the moss and lichens.

List of New Species.

Enoplognatha rugosa.
Pedanostethus pumilus.
„ *spiniferus.*
Ceratinopsis auriculatus.
„ *alternatus.*
Caseola herbicola.
„ *alticeps.*
Lophocarenum cuneatum.
„ *abruptum.*
„ *minutum.*
„ *rugosum.*
Erigone brevidentatus.
Linyphia maculata.
Bathyphantes calcaratus.
Micronета denticulata.
„ *serrata.*
Lycosa crassipalpis.
Pardosa diffusa.
Pirata arenicola.
„ *maculata.*
„ *sylvestris.*
Dolomedes vernalis.
Amaurobius borealis.
Micaria laticeps.
„ *quinquenotata.*
Castaneira lineata.
Drassus hiemalis.
„ *bicornis.*
Clubiona spiralis.
„ *prematura.*
Apostenus acutus.
Cryphœca montana.
Hahnia brunnea.
Phidippus Whitmani.
Dendryphantes Jeffersoni.

List of described species found in New England since 1882–1892.

Latrodectus mactans.
Theridium kentuckyense Keys.
Pedanostethus riparius Keys.
Ceratinella formosa Banks.
Grammonota gigas Banks.
Histagonia (Exechophysis) palustris Banks.
Lophocarenum (Dismodicus) alpinum Banks.
„ *(Dicyphus) trilobatus Banks.*
Tmeticus flavcolus Banks.
„ *debilis Banks.*
Tapinopa bilineata Banks.
Zilla atrica Koch.
Pachygnatha tristriata Keys.
Lycosa avara Keys.
Lycosa baltimoreana Keys.
„ *Pikei Marx.*
„ *rehicens Montgomery.*
Pardosa littoralis Banks.
Dolomedes idoneus Montgomery.
Dolomedes urinator (Hentz) Montgomery.
Ecobius (Thalamia) parietalis (Hentz).
Scotolathys (neophanes) pallidus Marx.
Orchestina saltitans Banks.
Micaria gentilis Banks.
Prosthesima rufula Banks.
Gnaphosa parvula Banks.
Cicurina pallida Keys.
Phidippus insignarius Koch.
Dendryphantes flavipes Pkm.
Icius similis Banks.
Hyctia Pikei Pkm.
Mavia tibialis Koch.
Pellenes (attus) viridipes Hentz.
„ *(attus) roseus Hentz.*
„ *agilis Banks.*
„ *borealis Banks.*
Homalattus cyaneus Pkm.
Peckhamia (Synemosyna) scorpionea Hentz.

Theridium differens, Em. Trans. Conn. Acad. 1892. (Plate I, figure 7.)

The epigynum of this species is wrongly described and figured in N. E. Theridiidae. The openings are really on the outer side, as they are in *Theridium spirale*, and differ only in being a little smaller and farther apart. See fig. 7.

Theridium zelotypum, Em. Trans. Conn. Acad. 1892. (Plate I, figure 5.)

This species has been found in the White Mountains and all over Maine, as far north as Moosehead Lake, but not south of Portland, Me., and westward as far as Winnipeg, Manitoba. At Monhegan, Me., July 1, 1901 adult males were abundant in webs with the females under spruce branches. The males are as large as the females, and have the abdomen similarly marked. The cephalothorax, legs and palpi are bright orange color, and the legs only slightly darker at the ends of the joints. The dark middle stripe of the cephalothorax is usually shorter than in the female, and does not extend forward to the eyes. The male palpus resembles that of *murarium* with all the appendages more elongated, Pl. 1, fig. 5. At pairing time the webs do not contain the characteristic tents covered with spruce leaves and scales; these are made later and in the last of July and first of August are found in nearly all the webs, hiding the females and eggs. The females remain in the nests with the young as late as September.

Theridium kentuckyense, Keys. Spinnen Amerikas, 1884. (Plate I, figures 6, 6a.)

The same size and general form as *differens* and *murarium*. The colors are less bright than in those species and more like *T. tepidariorum*. The legs are pale, with light yellowbrown, wide rings at the ends of the joints, and less distinctly in the middle. The cephalothorax is brown, darker at the sides, and lightest between the eyes and the dorsal groove, without any stripes. The sternum is brown, without markings, and the coxæ and base of the femora pale.

The markings of the abdomen are distinct at the anterior end and also over the spinnerets, while in the middle they consist of small and indistinct spots in irregular transverse rows extending down the sides. At the anterior end is a bright white spot with a larger black spot on each side sharply defined toward the middle line, and irregular and indistinct at the sides. At the hinder end over the spinnerets is a white spot with short black stripes at the sides. On each side of the abdomen is a short, dark, vertical stripe that in some individuals is deep black.

In the male the markings of the abdomen unite into a more distinct middle light stripe, bordered by two dark ones, but the white spots at the ends are distinct as in the female.

The epigynum is small and rounded behind with two openings twice their diameter apart. The skin is so transparent that the tubes of the epigynum are seen through it and obscure the openings.

At the end of the palpal organ is a long thin appendage, widened and twisted at the end, partly enclosing and supporting the tube. Pl. 1, fig. 6a.

Found at New Haven, Conn., Jaffrey, N. H., and by Dr. Fox at Hollis, N. H.

Latrodoctus mactans, Fabr.
Thoridion verecundum, Hentz.

This is the largest and most conspicuous species of the family. The abdomen is round, sometimes a centimeter in diameter, and the whole body is deep black except a bright red spot under the abdomen and one or a row of red spots on the upper side. In alcohol the spots fade to white or yellow. In young individuals there is a white line around the front of the abdomen and three rows of spots partly white and partly red along the back, and the legs are brown in the middle of the joints and black at the ends. The adult males are marked much like the young with the lateral spots elongated and with a red line in the middle of each. The males are much smaller than the females, some of them only three or four millimeters long but with long legs. The lateral eyes, which in most Theridiidae are close together, are in *Latrodectus* as far apart as they are from the middle eyes. The epigynum is of the usual Theridion pattern with a single, wide, oval opening partly divided on the front edge. The palpal organ has a very large and long tube coiled in two flat turns across the end of the bulb. In alcohol this tube often becomes displaced and coils around the bulb in any direction.

The nest is usually near the ground under a stone or in a hole in the sod. The web extends among surrounding objects sometimes for a foot from the nest in all directions. It consists mainly of large irregular meshes, but includes usually a distinct flat or curved sheet of smaller meshes like the webs of *Steatoda* or *Pholcus*. The cocoons are half on inch in diameter brownish white in color.

This species is found all over the country as far west as the Rocky Mountains and north to southern New Hampshire. In the South it is common, but in New England occurs only occasionally in scattered localities.

Enoplognatha rugosa, new. (Plate I, figures 8 to 8c.)

Two males sifted from leaves in a swamp in the Blue Hills, May 6, 1905, are about half as large as *marmorata*, measuring 3.5 mm. in length. The cephalothorax is flat and the head wide and low as it is in *marmorata*, but the legs are longer and more slender. The sternum is widest in front, and less indented around the coxæ than in *marmorata*. The mandibles are more slender than in *marmorata*, and the claw is slender and nearly as long as the basal joint. The process on the under side is near the middle, and has a single pointed tip and below it two small teeth, Pl. I, fig. 8c. The legs and mandibles are slightly roughened by little elevations at the bases of the hairs, which are shorter and fewer than in *marmorata*. There are similar elevations on the middle of the cephalothorax and around the edges of maxillæ and sternum. The palpi resemble those of *marmorata*. The color in the specimens examined is pale and less yellow than in *marmorata*, in alcohol inclining to red as in *Steatoda triangulosa*. The abdomen has an indistinct pattern consisting of a broken middle line and two rows of spots.

The female found May 30, 1906, under leaves at Three-mile Island, Lake Winnipesaukee, N. H., resembles the males in color and markings and in size. The abdomen is larger, and the legs and mandibles short as in females of related species. The head, sternum and mouth parts are less roughened, but have longer hairs than in the male. The epigynum has a transverse narrow opening behind, covered by a short brown plate.

Pedanostethus riparius, Keysl. Spinnen Amerikas, Theridiidae, 1886. (Plate I, figures 1 to 1 d.)

This species described by Keyserling from Lake Superior, is one of the most common spiders under leaves all over New England.

The length is about 4 mm., the sexes differing little in size. The cephalothorax and abdomen are about equal in length. The cephalothorax is wide in front; about two-thirds as wide as it is at the widest part, and the rows of eyes are almost straight, the upper row only slightly longer than the lower. The palpi of the female are as long as the cephalothorax, and those of the male longer. The maxillæ have the ends straight and nearly parallel, as in *Enoplognatha marmorata*, not oblique as in *Steatoda borealis*. The sternum is as wide as long, widest between the first and second legs and slightly pointed behind. The colors are dull brown and gray, without any markings. The cephalothorax is smooth and shining and darkened a little toward the head. The legs are brown like the cephalothorax, darkened toward the tips and covered with fine hairs. The abdomen is gray, generally lighter than the cephalothorax, and covered with dark gray hairs. The epigynum has a characteristic pear-shaped piece in front, Pl. 1, fig. 1c, but in some individuals this piece is oblong, Pl. 1, fig. 1d.

The male palpi are stout and three-fourths as long as the rest of the spider. The tibia and patella are both short and together equal in length to the tarsus. The tibia is a little narrowed at the base and widened at the end around the base of the tarsus on the outer side. The tarsus is narrow, only partly covering the palpal organ. Near the tip it has a notch on the upper side, and two curved stiff hairs, Pl. I, fig. 1a.

Pedanostethus pumilus, new. (Plate 1, figures 2, 2a.)

In the maple swamp at Clarendon Hills, south of Boston, three males have been found of this small species. It is 2.5 mm. long, colored like very light individuals of *riparius*, and resembling it in every respect except in the palpi. These are proportionally shorter than in *riparius*, being not much longer than the cephalothorax. The tibia is more contracted at the base than in *riparius*, and the tarsus is shorter, rounder and thicker. The notch near the tip is wider and there are no special hairs. The female is the same size and color as the male. The epigynum is short like that of *riparius* but has the front piece wider than long instead of pear shaped fig. 2a.

One male also found near the Carter notch, White Mountains, Aug., 1906, and another at Three-mile Island, Lake Winnipesaukee.

Pedanostethus spiniferus, new. (Plate I, figures 3, 3a.)

The male is 2.5 mm. long, and pale like *pumilus*, and resembles it except that the lateral eyes of the upper row are a little farther back. The palpi have the tibia shaped much as in *riparius*, not

as narrow at the base as in *P. pumilus*. The tarsus is oval and less pointed than in *riparius*, with the notch smaller and not as near the tip. At the base of the palpal organ is a long hook turning out at right angle to the tarsus, Pl. 1, fig. 13. The female is of the same size as the male. The epigynum is elongated, a third as long as the abdomen. At the front end close behind the fourth coxæ is a small, dark colored, sharp point directed forward a little behind which the round spermathecæ show through the skin, and behind these two parallel dark lines extend backward and meet at the base of a short, pale, blunt appendage directed backward.

This species is found under leaves in company with *riparius* and *pumilus*. Clarendon Hills and Waltham, Mass.

Argyrodes cancellatus. (Plate 1, figures 10 to 10c.)
Theridion cancellatum, Hentz.
Lasæola cancellata, Emerton, N. E. Theridiidae. Trans. Conn. Acad. 1882.
Argyrodes larvatus, Keyserling. Spinnen Amerikas.

This species, found in Connecticut, is abundant on Long Island and farther south. It is sometimes found in webs of its own and often in webs of larger spiders, especially in those of *Epeira strix*. The colors are light gray and brown, with silvery spots on the abdomen, and when it is motionless with the feet drawn up, it is hard to distinguish from a piece of leaf or bark dropped by accident into the web.

The female is 2.5 mm. long, with the cephalothorax 1 mm. long. The head is higher, and more vertical in front than in *trigonum* and the front middle eyes project slightly on the front of the head. The lower part of the head is rounded and extends forward a little beyond the mandibles. The abdomen is as high as wide, rounded above and narrowed toward the spinnerets, which are in the middle of the under side. At the end of the abdomen is a double tubercle with the lower half largest, and on each side of the abdomen a little farther forward another tubercle. The epigynum has a wide oval opening, partly covered and divided by a projection of the front edge.

The male is 3 mm. long and the cephalothorax 1.5 mm. The lower part of the front of the head extends forward and downward in front of the mandibles in a nose-shaped process, above which there is a round pit on each side of the head. The abdomen is smaller and narrower than that of the female, and covered above with silvery spots mixed with gray and black. The male palpi are

shorter and have the tarsus larger and rounder than in *trigonum*, Pl. I, fig. 10e. The descriptions and figures are from specimens taken at Cold Spring Harbor on the north side of Long Island, N. Y.

Ceratinella formosa, Banks. Ithaca, 1892. (Plate II, figures 5 to 5d.)

This species was found by Miss E. B. Bryant at Long Island in Portland Harbor, Me., Sept. 11, 1904. It was in great numbers on the stones on the beach and flying by threads in the air. In size and color it resembles *C. læta.* The males have the whole upper surface of the abdomen hard, while the females have only a hard spot across the anterior end. The cephalothorax and abdomen are both longer and less rounded than in *læta*, and the sternum is narrower behind, measuring between the fourth legs one-third its length, while the sternum of *læta* measures half its length. The epigynum has a triangular opening somewhat like that of *læta.* The male palpus resembles that of *C. brunnea*; the process of the tibia is long and hooked, and the tube of the palpal organ is simple, with no tooth at the bend. This species lives among the small stones above high water on the beach, and runs much faster than the other Ceratinellas. Found at Gloucester, Mass. on beaches and one specimen in the Carter notch, White Mountains, N. H.

Ceratinopsis auriculatus, new. (Plate II, figures 9, 9a, 9b.)

1.5 mm. long and much like *C. laticeps.* The colors are yellow and orange like the other species, with a little black on the head and ends of the palpi. The upper middle eyes are more than their diameter apart, and the lateral eyes are farther from them than they are from each other. Each pair of lateral eyes is raised on a little horn turned forward and projecting in a point beyond the eyes. The tibia of the male palpus projects upward and hooks forward. Seen from above it has three indistinct teeth in place of the two long ones of *C. laticeps.*

One male from Three-mile Island, Lake Winnipesaukee, N. H., May 29, 1906, Miss E. B. Bryant; one from Fitzwilliam, July 1907.

Ceratinopsis alternatus, new. (Plate II, figures 6, 6a.)

In general appearance this resembles the female *C. interpres.* The length is 2.5 mm. and the color is light orange brown with black between the eyes, but no other markings. The arrangement of the eyes is the same as in *interpres*, but the head is not quite as high and the back not as straight. The sternum is convex and large, and as wide as long, extending between the fourth coxæ as wide as the coxæ are long.

The epigynum is simple, with a middle lobe a little longer than wide.

The male palpi have the patella long and widened at the end, with a large tooth on the under sider. The tibia is very short and has a tooth on the upper side as long as that on the patella but more slender. The palpal organ has a slender pointed process at the end, and a short and flat basal hook, Pl. II, fig. 6.

Three-mile Island and Jaffrey, N. H., Mt. Tom, Mass., Simsbury, Conn., Balsam, North Carolina.

Caseola, new genus.

General appearance like *Ceratinella,* but without any hard plate on the abdomen. The cephalothorax is as wide as long, in the male *alticeps,* elevated in front. The two rows of eyes are of equal length the upper middle pair as far from the front middle pair as they are from each other. The abdomen is oval, not much larger than the cephalothorax and covered with scattered hairs. The legs are short and differ little in length. The mandibles have three very small teeth on the inner side of the claw groove and two or three larger ones on the front. The maxillæ are longer than wide and a little pointed at the inner corners. The sternum is as wide as long, widest between the first and second legs and extends backward between the fourth legs, where it is as wide as the coxæ. The male palpi have the patella and tibia both short and the palpal organ simple with a slender curved tube, at the base of which is a flat process widened and oval at the end directed outward.

Caseola herbicola, new. (Plate II, figures 1 to 1d.)

1.5 mm. long and resembling *Ceratinella,* but without any hard spots on the abdomen, which is covered with scattered stiff hairs. The color is pale and whitish, without the orange which is usual in *Ceratinella.* The cephalothorax is darkened a little toward the head, and in the male is browner than in the female. The cephalothorax is nearly as wide as long, very little narrowed or raised toward the head in either sex. There is nothing peculiar in the arrangement of the eyes. The front middle pair are as usual smallest and about two-thirds the diameter of the upper middle eyes, with which they make a quadrangle slightly higher than wide. The front row of eyes is almost as long as the upper row, with the lateral eyes a little raised above the head. The mandibles have four or five very small teeth each side of the claw. The sternum

is as wide as long, and extends backward between the fourth coxæ, as wide as the coxæ themselves. The epigynum has a wide transparent lobe in the middle, at each side of which the brown spermathecæ show through the skin, and from which two dark bands curve in half circles toward the middle.

The male palpi are simple with a slender tube curving forward toward a small terminal process with two teeth. Near the base of the tube there is a small dark tooth, and under it, directed toward the inner side, is a pale club-shaped process. The tarsal hook is very small and hard to see. The tibia is widened at the end with no processes or branches, except a slight raised and straight edge on the upper side.

The females have been found in small numbers at several places near Boston under leaves in early spring. Adult males and several females were swept from low plants on Mt. Holyoke, Mass., on June 20th.

Caseola alticops, new. (Plate II, figures 2 to 2c.)

1.5 mm. long with the general appearance of *Lophocarenum* rather than *Ceratinella.* The males only are known, and they have the head narrow and elevated, somewhat as in *Ceratinopsis interpres.* The eyes are all on the elevation and so are closer together than in *herbicola.* The front middle eyes are only a little smaller than the upper middle pair. The cephalothorax is nearly as wide as long. The abdomen is oval and covered with scattered hairs, which are finer and more numerous than in *herbicola.*

The male palpi have the tibia widened up and down with a tooth on the outer side. The palpal organ is simple, having on the inner side a club-shaped appendage like *herbicola.* The tube ends between two processes at the tip of the organ, one flat and transparent, and the other short and fine, with a peculiar curve at the end. The tarsal hook is very small and easily concealed.

One from Three-mile Island in May, dark colored, and one from Waltham, Mass. in November, which is pale.

Grammonota gigas. (Plate II, figures 8 to 8b.)

Erigonoplus gigas, Banks. Canadian Entomologist, 1896.

Two males of this species were found under a board at Ipswich Bluff, Plum Island, Mass. by Miss Mary T. Palmer, June, 1906. They are 2.5 mm. long and resemble in size and color *G. pictilis.* There are markings on the back of the abdomen as in *pictilis,* but the front half is stained with yellow over the other markings. The

front legs have the metatarsus white and twice as thick as the other joints. The end of the tibia is also slightly thickened. The two middle pairs of eyes are nearly as far apart as the lateral pairs, and the head is slightly elevated between them, and covered with hairs directed backward and upward as in the other species. Behind the eyes is a large hump rising abruptly in front and divided into five lobes. The male palpi resemble closely those of *G. inornata.* The tibia has, on the upper side, a large, simple hook turned forward, and the tube of the palpal organ is short and stiff and turned backward at the tip. This was first found by Banks at Ithaca, N. Y. and described by him in 1896.

Another male was found at Fitzwilliam, N. H., July, 1807, in the rhododendron woods.

Histagonia palustris,

Exechophysis palustris, Banks. Ent. Soc., Wash., 1905. (Plate II, figures 4 to 4f.)

This is another species resembling the *Pholcomma rostrata* described in 1882. It is a little over 1 mm. long, short and rounded like *rostrata,* with the abdomen of the male hard on the back and covered with scattered stiff hairs. The head is elevated and extends forward below the eyes in a blunt protuberance, covered on the end with stiff hairs directed upward and backward.

The male palpi have the tube of the palpal organ coiled once around the end of the bulb. The tibia is flattened and, seen from the side, as wide as long, with a recurved black spine on the distal corner, and a smaller black spine near the basal end, the edge between the two spines irregular and cut into several notches. Seen from above with the palpi in their usual position, the tibia is wedge-shaped with the point directed forward. On the outer side of the tibia near the upper edge are two long hairs, which appear to correspond to the two hairs on the tibia of rostrata.

Three-mile Island, Lake Winnipesaukee, N. H., May 25, 1905. Sifted from leaves. Ithaca, N. Y., N. Banks.

Lophocarenum cuneatum, new. (Plate III, figures 6 to 6c.)

2 mm. long, the cephalothorax dark brown, the abdomen as dark but grayer in color, and the legs distinctly lighter, pale when freshly molted, and light yellow when mature. The cephalothorax is nearly as wide as long, extended in front under the eyes in a blunt point. The head is elevated into a distinct hump, with long oval grooves at the sides, in the front ends of which, close to the

eyes are the lateral pits. The upper middle eyes are on the front and nearly at the top of the hump, the lower middle eyes half way between them and the mandibles. The lateral eyes are wide apart, just outside the lateral grooves, each pair on a slight elevation. The hairs between the eyes are long and pointed outward. The male palpi have the patella nearly twice as long as wide. The tibia is very much widened toward the tarsus and partly covers it on the upper side, where it has a large sickle-shaped hook turned outward. The tarsal hook is flat and broad, with a small notch. The tarsus is short and rounded and the parts of the palpal organ small, with a short tube curved around the end.

A single freshly molted female has the head slightly elevated behind the eyes, and the middle eyes as far from the front pair as they are from each other. The epigynum is very far forward, and has two pointed lobes directed backward and close together with only a narrow groove between them.

Fitzwilliam, N. H. under leaves near the rhododendrons, May 25, 1907.

Lophocarenum abruptum, new. (Plate III, figures 5 to 5c.)

A male a little over 2 mm. long from under leaves on Mt. Holyoke, Mass., June 20. The cephalothorax is depressed in the middle, and the head rises abruptly, carrying the upper middle eyes on the front and upper side. Just above the lateral eyes are wide grooves, with a small round pit a little farther back than the lateral eyes. Between the upper and lower middle eyes are a few fine hairs turned toward the sides. Below the front middle eyes the head projects forward over the mandibles. The tarsus of the male palpus is about half as long as the patella and widened toward the tarsus, and has on the upper side two processes directed forward, the inner one twice as long as the outer and as long as the body of the tibia. The tarsus is rounded and the palpal organ large and thick from above downward. The tube is small and coiled in one turn on the outer side. The colors in this individual are pale, the abdomen darkest.

Lophocarenum quadricristatum. (Plate III, figures 4, 4a.)

This has been found again on the summit of Mt. Washington in August, 1906. The female has in a less degree the same peculiar arrangement of the eyes as the male. The middle pairs are unusually far apart, and the lateral pairs have the front eye one and

a half times as large as the other. The head is a little elevated, highest just behind the upper middle eyes. The epigynum is very simple, showing a straight edge behind, with a wide middle lobe separated only by slight grooves. The sternum in both sexes extends backward between the fourth coxæ, where it is wider than the diameter of the coxæ.

Lophocarenum alpinum, Banks.

Dismodicus alpinus, Banks. Can. Ent., 1896. (Plate III, figures 3 to 3f.)

An adult male and female were found in a thin web under a stone near the summit of Mt. Washington, N. H., and another female and a male not yet molted for the last time under other stones in the same neighborhood. The male is 2 mm. long. The cephalothorax is half longer than wide, narrow in front and extended a little beyond the mandibles. The hump is rounded above and rises between the eyes and the middle of the cephalothorax; it is nearly as wide as the front of the head, and inclines forward a little over the eyes. The front of the hump is covered with short hairs, longest below and turned outward toward each side. On each side of the hump at the level of the eyes is a groove with a round pit at the front end. The eyes are spread over the whole width of the head, the lateral pairs largest, the front middle pair very small and near together. The eyes of the upper row are equal distances apart. The palpi are longer than the cephalothorax. The tibia is shorter than the patella, and extended only a little over the upper side of the tarsus, where it is divided into two teeth, the inner one longest but slender and hooked inward at the end. The palpal organ resembles that of the last species and of *L. montiferum.*

A young male almost ready for the final moult, shows a small hump behind the eyes and a slight extension of the front of the head. The palpi are much enlarged, and show the form of the male tibia and palpal organ indistinctly through the skin.

In the female which is about the same size as the male, the front of the head is not extended forward, but there is a slight hump one-fourth as high as that of the male, in the same place between the eyes and the middle of the cephalothorax. The epigynum has a wide middle lobe curved on the edge and shows through the skin the spermathecæ and two irregularly coiled tubes at the sides of the middle lobe.

Lophocarenum trilobatum. (Plate III, figures 1, 1a.)
Dicyphus trilobatus, Banks. Canadian Entomologist, 1896.

One male only from the maple swamp at Clarendon Hills, about the same size as *L. montiferum*, with a hump as high as that species, but differently shaped. The cephalothorax is not quite as wide as long, and a little narrower in front. The eyes are grouped together as in most species, the hinder middle pair a little farther apart than they are from the lateral and the lateral pairs almost horizontal. The hump is half as wide as the cephalothorax and nearly of the same height. It is rounded behind and in front divided into three lobes, the middle one extending forward nearly to the eyes. The palpi are longer than the cephalothorax, the tibia a little shorter than the patella, but elongated over the tarsus on the upper side, so that it appears longer. This process of the tibia is divided into two teeth, the outer one longer and larger than the inner. The palpal organ has some resemblance to that of *montiferum*, with a small tarsal hook and the tube curled once around the end.

Lophocarenum minutum, new. (Plate III, figures 8, 8a, 8b.)

1 mm. long and light yellow brown. The cephalothorax is one-fourth longer than wide and rounded in front. The head is only slightly elevated, and the lateral grooves are behind the eyes, with the pits showing from above through the skin one-third the length of the cephalothorax from the front. The sternum is as broad as long, extending backward between the fourth legs, where it is as wide as one of the coxæ. The palpi have the patella and tibia both short, about as wide as long. The tibia is a little widened toward the tarsus and has on the upper and outer side a short, fine and slightly curved tooth. The tarsal hook is long and slender, and in my specimens turns outward so that it shows from above. The palpal organ is small and simple, and there is a short and blunt black process that extends beyond the end of the tarsus. The tarsus is slightly angular on the outer side. The female has the head slightly lower, with the upper and lower middle eyes closer together. The epigynum resembles that of several other species of the genus having a distinct middle lobe, widened at the end in front of which are two openings.

Fitzwilliam, N. H. under leaves near the rhododendrons, May 25, 1907.

Lophocarenum rugosum, new. (Plate II, figures 3 to 3g.)

2 mm. long. The cephalothorax is oval, widest across the middle and highest behind the eyes. The surface is slightly roughened all

over. The sternum is also rough. It extends backward between the fourth legs, where it is wider than the coxæ. It extends also between the first and second, and between the second and third legs. The maxillæ are wider than long, and the mandibles stout, with four teeth on the front of the claw, and three small and one large one on the inner side. The eyes spread across the whole front of the head. The front row is straight, with the middle pair smallest, and the middle quadrangle is higher than wide. The abdomen is round and a little pointed at the spinnerets as in Erigone. The abdomen is covered with short and fine scattered hairs. The coxæ are long, extending beyond the border of cephalothorax, so that all are visible from above, and the legs are long and stout and covered with coarse hairs.

The epigynum is very far forward and has a light colored middle lobe, longer than wide, at the sides of which the spermathecæ show through the skin.

The palpal organs are very simple; the tube and two short appendages showing only at the distal end. The tarsal hook is small and the tarsus short and round. The tibia is widened a little across the middle, and has a flat extension with a straight edge against the upper side of the tarsus.

The relations of this species are doubtful as the male does not have the grooves and pits in the sides of the head which are characteristic of the males of most species of this genus. In other respects, however, its resemblance is close to *L. latum* and *L. crenatum* and still more to an undescribed species from Long Island, N. Y., for which the females are easily mistaken. The sternum in all of these is wide and convex and roughened all over the surface. The extension between the legs occurs in the same way in *L. crenatum*. The form of the epigynum is the same in all four species. The resemblance of the male palpi is equally close, all the species having the tarsus nearly of the same shape and the parts of the palpal organ small and with only slight variations among the species.

Grafton, Mass. Three-mile Island, Lake Winnipesaukee, N. H. under leaves.

Tmeticus longisetosus, Emerton. Trans. Conn. Acad. 1892. (Plate IV, figure 9.)

This species has been found again in March, 1907, under leaves in Allston, near Boston. The male and female are of the same size and much alike. They are pale in color, the legs and cephalo-

thorax light yellow tinged, when fresh, with light red on the head and mandibles. There is a row of four or five hairs directed forward on the middle line of the head. The abdomen is covered above and below with scattered hairs about their length apart. The mandibles of the male have a strong tooth in front. The sternum extends backward between the fourth coxæ and is truncated at the hinder end, where it is about half as wide as the fourth coxa. The epigynum appears very simple externally, showing two small spermathecæ through the skin, over which the short scattered hairs are arranged in two clusters. The male palpi have been sufficiently figured in N. E. Theridiidæ.

Tmeticus flaveolus, Banks. Proc. Acad. Nat. Sci. Phila., 1892. (Plate IV, figures 8, 8a, 8b.)

This species resembles *T. longisetosus* in size and color. It is 1.5 mm, long. When fresh the cephalothorax is light orange color and the rest of the body pale. The sternum extends backward beyond the fourth coxæ, where it is as wide as one of the coxae. The mandibles of the male have a small spine on the front near the end. The epigynum is much like that of *longisetosus*, with a transverse slit with the spermathecæ showing through the skin. The male palpus resembles that of *longisetosus*, but the tibia and tarsus are both slightly shorter. The tibia is widened at the end as it is in *longitarsus*, with several projections and shallow curves on the edge. The tarsus has two large spines near the base, one much thicker than the other and both about half as long as the corresponding spines in *longisetosus*.

Coffin's beach, Gloucester, Mass., in straw on the shore. Hanover, N. H. and Ithaca, N. Y. in Mr. Banks' collection.

Tmeticus debilis, Banks. Proc. Acad. Nat. Sci. Phila., 1902. (Plate IV, figures 3, 3a, 3b.)

2 mm. long, and pale yellow, brown and gray, with some individuals almost white. The group of eyes is rather narrow, not more than half the width of the thorax. The sternum is widest at the second legs, and extends between the fourth coxæ in a narrow piece not more than half the diameter of one of the coxæ. The male palpi are large and the palpal organs of a very distinct form. The tibia is small, but widened at the end, where it is about twice as wide as at the base. The tarsus is long and oval, with a smooth strip without hairs near the outer edge. The tarsal hook is slender and has a short rounded process near the base on the outer side.

All the appendages of the palpal organ are long and slender. The tube itself starts at the base under the tarsal hook and extends more than half around the tarsus, and is supported through nearly its whole length by a stouter process with a long hook at the end, usually dark-colored and having a short tooth near its base on the inner side of its curve. At the base of this stout process is another about half as long; which is soft and white and ends in a blunt point near the tip of the tube.

Hammond's Pond woods, Brookline, Carlisle Pines.

Tmeticus corticarius, new. (Plate VI, figures 4, 4a, 4b.)

This species had only been found singly in Cambridge and in New Haven, Conn., until trees around Boston and Providence were banded with cloths to trap the Gypsy moth caterpillars in 1905. It then appeared in considerable numbers under these cloths in both places from July until October.

The length is 2.5 mm., the males and females being of the same size, the males having only slightly longer legs and smaller abdomen. The color is dull gray, the legs and cephalothorax yellowish, and the abdomen almost black. The front of the head is narrow and rounded, and the eyes not far apart. The epigynum is three-lobed, the outer lobes forming part of a semicircular plate a third as wide as the abdomen. The male palpus has the tibia very short and extended upward and downward. The upper process is very conspicuous when the palpus is seen from the side. It is half as long as the tarsus, and curves slightly forward so as to fit the tarsus if both are brought together.

Tmeticus brunneus, Em. Trans. Conn. Acad. 1882. (Plate IV, figures 7, 7a, 7b.)

This has been found again on Mt. Washington by Mrs. Slosson, and is in Mr. Banks's collection. It is closely related to *T. tarsalis* and *T. maximus,* especially the latter; the upper projection of the tibia, however, is distinctly more pointed and larger than in *maximus,* and the tarsal hook is longer. The epigynum is also longer and projects more from the surface of the abdomen than in *maximus.*

Erigone brevidentatus, new. (Plate II, figures 10b, 10c.)

A small species not much over 1 mm. in length. The colors are the usual brown and gray, rather pale in all three specimens. The cephalothorax is only a little elevated behind the eyes, and there are no spines around the edge. The mandibles have one long

spine on the inner side and seven on the outer side, the longest one being opposite the one on the inner side. The male palpi have the patella and tibia of nearly the same length. The usual tooth on the under side of the patella is very small and short.

Mt. Holyoke, sifted from leaves June 20, 1906; Fitzwilliam, N. H., July 20, 1907.

Linyphia maculata, new.

Linyphia conferta (Hentz) Banks, 1892. (Plate IV, figures 10 to, 10 g.)

This species is related to *clathrata* and *mandibulata.* The abdomen is high behind as in those species, and sometimes extends backward beyond the spinnerets. The cephalothorax of the female is somewhat shorter and the legs longer than in *clathrata* and *mandibulata.* The hinder middle eyes are farther apart than they are from the lateral eyes. The front middle eyes are small and less than their diameter apart.

The cephalothorax and legs are light orange yellow, the cephalothorax a little darker, and the eyes are surrounded by black. The abdomen is pale in front and marked with several dark spots, the front ones in pairs, which toward the hinder end are sometimes almost black. Around the sides of the abdomen are gray spots and a row of irregular opaque white spots. In the male all the colors are darker, and the abdomen sometimes almost black. The sternum and under side of the abdomen are brown without any markings.

The epigynum is widened toward the hinder end, Pl. IV, fig. 109. The palpi of the males have the tarsi and palpal organs black, the palpal organs large and complicated and resembling those of *L. marginata.*

At the time of publication of the N. E. Theridiidæ I had seen only the young of this species at New Haven, Conn. In 1883 an adult male was found at the same place, and one near Boston in 1890. More lately they have been found to be common near Boston, at Ipswich, in the Blue Hills, and at Sharon, living in webs near the ground like *L. mandibulata* but preferring more shady situations under the trees and bushes along paths through the woods rather than open meadows. The webs are large and nearly flat, but the part on which the spider usually stands is sometimes a little raised by tighter threads from above.

Tapinopa bilineata, Banks. Journal New York Entomological Soc., 1893, p. 128. (Plate XII, figures 8 to 8 f.)

This species has been found twice, at Woods Hole in 1883, and at Clarendon Hills, south of Boston, in 1904, under leaves in winter in a maple swamp, both specimens females. The male was found in 1906 at Portland, Me.

The length is 5 mm. and the length of the cephalothorax 2.5 mm. The cephalothorax is one half longer than wide, and the projecting middle eyes and the black bands narrowing toward the front make it appear longer and more pointed at the head than in the nearly related species. The middle eyes of the front row are as large as those of the upper row, which is unusual in this family, and the four middle eyes form a quadrangle longer than wide and nearly as wide in front as behind. The front middle eyes project forward over the mandibles. The mandibles are wide in front, with long claws and have seven teeth in front, the middle one-half the diameter of the mandible in length. On the under side of the mandibles are five or six shorter teeth, Pl. XII, fig. 8 d.

The abdomen is shaped as in *Linyphia phrygiana* and *Bathyphantes nebulosa*, high in front and low and pointed behind.

The colors are translucent, white and black or dark gray, all becoming yellow in alcohol. The cephalothorax has two wide black bands at the side that cover more than half its surface, leaving a middle light band narrowing behind and toward the front. The dark bands do not quite extend to the sides of the head or much below the eyes in front. The back of the abdomen is marked with a series of pairs of dark spots, in one specimen united on the posterior half, so that half of the back is entirely black. The legs have wide dark bands around the ends and middle of the longer joints. The sternum is gray, darkest at the sides and the coxæ are gray at the outer ends.

The epigynum is curved downward in a half circle and widened at the end, Pl. XII, fig. 8 f. At the base it is as wide as long, with an opening at each side and a thin partition in the middle, Pl. XII, fig. 8 e.

The markings are more distinct, and darker than in the European *longidens*, of which there are specimens from Germany sent by A. Menge of Danzig in the Museum of Zoology at Cambridge.

The male resembles the female, except that the legs are longer, and the top of the head above the eyes more hairy. The male palpus resembles that of *T. longidens*: the tarsus has a long tooth near the base on the upper and inner side which is curved backward, but is not divided at the end into two teeth as it is in *longidens*.

Bathyphantes calcaratus, new. (Plate IV, figures 13, 13a.)

This species has been found at Portland, Maine, Moosehead Lake, and the lower part of Mt. Washington. The largest measures 3 mm. long. All the specimens are distinctly marked with gray, the darker one resembling *Drapetisca socialis.* The legs are long and slender, the femur darker toward the tip, and the tibia and metatarsus dark at the end and in the middle. The cephalothorax has a dark spot in the middle, wide in front and tapering to a line behind. The abdomen is white and gray, the markings of the front half united into a middle stripe with broken edges and two narrow lateral stripes. On the hinder half the markings are in pairs, slightly connected in the middle. The male palpi are as long as the cephalothorax. The patella and tibia are both short, but the tarsus is elongated with a short and sharp spur at the base. The tarsal hook is very large, recurved and widened at the end, where it has a short point above, and a longer one below, as shown in the figure. The tarsal hook resembles that of *Micronеta crassimanus,* a larger and shorter legged spider.

Micronеta persoluta. (Plate IV, figures 11, 11a.)

The old figures in N. E. Therididæ do not give a correct idea of the form of the tarsal hook, though they do show its characteristic sinuous lower edge. The tarsal hook is turned outward and thickened at the end, where it has several blunt irregular teeth as shown in the figure. It has been found at several new localities and seems to be a common species.

Micronеta denticulata, new. (Plate IV, figure 14.)

This species resembles closely *M. persoluta* in size and color, and is found in company with it, but is easily distinguished by the palpi, Pl. IV, fig. 14. The tarsal hook is nearly horseshoe shaped and has a thick edge on which are six or moreprominent teeth, those near the base partly united. The parts of the palpal organ are longer and more separate than in *persoluta.* The mandibles are without a prominent tooth on the front.

Micronеta latidens, Emerton. Trans. Conn. Acad., 1892. (Plate IV, figures 12 to 12c.)

The male of this species was described in 1882 from New Haven, Connecticut. Since that time both sexes have been found at several places and in large numbers. It is 2 mm. to 2.5 mm. in length, the females being usually a little smaller than the males. The

general color is gray, paler on the legs, and there is great difference in the depth of color in different individuals. In alcohol the wetting of the hairs makes them paler and more translucent, and they soon become yellow. The abdomen is marked with four longitudinal lighter lines partly broken into spots. There are no markings on the cephalothorax, except a little black around the eyes.

The epigynum is not folded, but extends backward half way to the spinnerets, curved slightly inward toward the body and outward again at the tip, Pl. IV, fig. 12d.

The male palpi have the tibial hook large and wide, turning outward with three teeth on the thickened edge. The base of the tarsus has a slight horn, shorter than in *viaria*. The end of the palpal organ has two small black processes, one twice as long as the other, Pl. IV, fig. 12a, which show from below when the palpi are held in the usual position.

Micronetа serrata. (Plate IV, figures 15, 15a, 15b.)

One male from a fence in Boston, Nov. 20, 1900, during the autumn flight. Length 1.5 mm. The cephalothorax is a third longer than wide, and narrowed toward the front. The eyes cover the whole front of the head and are large for the size of the spider. The front middle eyes are only slightly smaller and closer than the upper middle pair. The cephalothorax is highest in the middle where it is more than half as high as wide. The sternum is large and convex, widest in front, and ending in a blunt point between the fourth coxæ.

The male palpi are very peculiar. The patella is as long as wide; the tibia is twice as long as the patella and a little widened at the end, with a thin projection on the outer upper corner, extending forward and turned a little inward. There is a little ridge on the back of the tarsus parallel to this process. The tarsus has a slight spur at the base. The tarsal hook is slender as in several small *Bathyphantes*. The middle appendage of the palpal organ is larger than in *Micronetа viaria* and has on the outer side a line of short black spines, Pl. IV, fig. 15a.

Epeira angulata, Clerck.
E. silvatica, Em. N. E. Epeiridæ. Trans. Conn. Acad., 1884.
E. solitaria. N. E. Epeiridæ. Trans. Conn. Acad., 1884.
E. nigra. Canadian Spiders. Trans. Conn. Acad., 1894.

Comparison of several specimens from western Canada leads me to think that *silvatica, solitaria* and *nigra* are all varieties of *angu-*

lata. In New England this species continues to be rare, but in the Rocky Mountains and in Oregon and California it is common on fences and outside of houses. On the piazza of hotels through the Canadian Rocky Mountains, the males vary in size from that of *solitaria* with the cephalothorax 5 mm. in length, to the smallest *silvatica* only 3.5 mm. The length of the first femur varies in these specimens from 5.5 to 4 mm. Four males from the hotel at Glacier varied among themselves nearly as much. The palpi of the larger specimens resemble *solitaria* and *nigra*, with the tube curved upward at the base and strongly curved toward the end, while in smaller, light-colored individuals, the tube is less curved, lies closer to the bulb and tapers more regularly toward the point, as in the smaller *silvatica*. The shape of the second tibia is the same in all the varieties, the spines being somewhat longer and stouter in larger individuals.

The females vary but little, except in color, most of the western specimens being darker than those from New England. The shape of the epigynum is very uniform, with the finger very long and slender.

In August, 1906, Mrs. Annie Trumbull Slosson found a male on the hotel at the summit of Mt. Washington that resembles very closely the original *E. solitaria* from Massachusetts.

Epeira corticaria, Em. New Engl. Epeiridæ, 1884. (Plate V, figures 3, 3a.)

Mature males and females are found on the lower part of Mt. Washington, N. H., in the early part of August. The females have the finger of the epigynum broken off or shrivelled. The males are marked and colored like the females, except that in the males the dark stripes at the sides of the cephalothorax are wider, and the dark rings of the legs more distinct. The second tibiæ are slightly thickened and curved, and five spines on the upper side and two on the inner side are thickened and dark-colored. There are no spines on the coxæ.

Epeira Nordmanni, Thorell.

A male from The Glen at the base of Mt. Washington, N. H. is 9 mm. long, the cephalothorax 5 mm. The dark stripes at the sides of the cephalothorax are wider and more definite than in the female. The markings of the abdomen are like those of the female, but are less distinct. The second tibiæ are slightly thickened and

curved, and the spines on the upper and inner sides stout and dark-colored. There are no spines on the coxæ.

Epeira thaddeus, Hentz. (Plate V, figures 2, 2a.)

The males I have seen, from Sharon and Waltham, Mass., are a little smaller than females from the same places. The front leg is much elongated, the patella and tibia together being as long as the spider from eyes to spinnerets. The usual little process on the anterior end of the first coxa is lengthened into a spine directed forward about half the diameter of the coxa in length. The second leg is slightly thicker than the first; the tibia is a little curved, and the four spines on the inner side are stouter but not shorter than the others on this joint. The color is pale, without any bright orange on the legs or dark brown around the abdomen common in females. The first and second legs have brown rings at the ends of the joints, while the third and fourth have the dark ends of the joints less strongly marked than in females. The cephalothorax is pale, with a pale gray stripe in the middle. The abdomen does not have the brown band around the sides which is so characteristic of females, and on the back it is marked with pairs of bright yellow spots, the two anterior pairs larger than the others, somewhat as in *E. globosa.* Some females have similar markings on the back of the abdomen.

Epeira juniperi, Em. (Plate V, figures 1, 1a.)

Two males swept from bushes at Ponemah, N. H., were slightly greenish on the abdomen, which is striped with white at the sides and across the front. The rest of the body was pale and yellowish. The ends of the tibiæ of first and second legs were light orange, covering nearly half the joint, but not forming a definite ring. The cephalothorax is nearly as wide as long and 2 mm. in length. The legs are long and slender, the tibia and patella of the first pair measuring 3 mm. The spines of the legs are dark colored and very long, especially on the tibial joints; those on the first tibiæ being half as long as the whole tibia. There are no modifications of the second tibia.

Epeira labyrinthea, Hentz.

Hentz, in his description of this species, says that a tube, similar to that of Agalena, leads from the web to the nest. I have never seen such a tube; but often there are several threads, as in *Zilla atrica,* leading from the center of the round web to the nest, and

the center is drawn tight by them, giving the appearance of a funnel-shaped opening to a tube. There is, however, no hole in the center of the web, and the cluster of threads may be flat or slightly depressed in the form of a gutter.

Zilla montana. (Plate V, figure 4b.)

This is a common house spider at Deer Island and at northern end of Moosehead Lake, Maine, making its nests like *Z. atrica* under the edges of clapboards. In North Carolina it lives on houses and in bushes at the summit of Roan Mountain, and in houses and barns at the base of the mountain, near the railroad.

Zilla atrica, Koch.

Eucharia atrica, Koch. 1845. (Plate V, figures 4 to 4d.)

In size and color this resembles the other species. The markings of the back of the abdomen resemble closely those of *x-notata*, but the middle of the back is usually lighter, and the two diverging dark marks near the anterior end are longer and narrower than in *x-notata*. The cephalothorax has a more distinct dark middle stripe than in the other species. In the males the palpi (fig. 4a) are twice as long as the cephalothorax, and about twice as long as those of *x-notata*. The front legs of the male are, however, one-eighth shorter than those of *x-notata*, the front tibia and patella measuring a little less than twice the length of the cephalothorax. The form of the epigynum is shown in fig. 4b in comparison with those of *x-notata* and *montana*.

The webs are like those of other species with a large central spiral from which a strong thread extends to the nest. A large segment opposite this thread is usually left open, but is often partly or entirely closed. Adults are found from August until winter.

First noticed by McCook at Annisquam, Mass., about 1885, and now found abundantly at Ipswich, Gloucester, Salem, and Lynn, where it lives in hedges and on the outside of houses, making tubular nests open at both ends under the edges of the clapboards. At Ipswich, I first noticed them on a new cottage near the shore far from any other house, in 1900. At that time there were none of them on other cottages in the neighborhood or on the old farmhouse at Lakeman's beach. In 1904 they were on all the neighboring houses and barns and in the liliac bushes around them.

Tetragnatha vermiformis, Em. N. E. Epeiridae.

Positions of male and female while pairing. Fresh Pond marshes

Cambride, Mass. Sept. 3. 1901, 8 a. m. in irregular net on marsh-grass (Pl. V, fig. 5.) Position of mandibles while pairing (fig. 5a.).

Pachygnatha tristriata, Keysl. 1882. (Plate V, figures 6 to 6d.)

This species is not the same as *brevis*. The size is about the same as *brevis*, but both the cephalothorax and abdomen are slightly longer and narrower. The cephalothorax has three stripes in both species, but the abdomen of *tristriata* has the dorsal marking with straight black edges instead of scolloped as in *brevis*. The four middle eyes are raised above the head with the upper pair higher than the top of the cephalothorax, while in *brevis* the eyes are lower than the highest part of the cephalothorax. The cluster of middle eyes is as far above the mandibles as it is high. In *autumnalis* the upper middle eyes are larger than the others and farther apart, and the cluster of middle eyes is much higher than it is distant from the mandibles. In males the differences are more distinct than in females. The male palpi of *tristriata* have the tarsus and palpal organ longer and more slender than in *brevis*, the bulb is narrower, and the tube and narrow end of the tarsus are twice as long as they are in *brevis*. The tarsal hook of *tristriata* is straighter and more slender than in *brevis*.

Orono, Me., Salem, and Gloucester, Mass.

Lycosa avara, Keys. Zool. bot. Ges. Wien, 1876.

L. rufiventris, Banks. (Plate VII, figures 2, 2a.)

This spider resembles very closely *L. pratensis*. The light stripe on the cephalothorax widens behind the eyes, and has a middle dark line and a broken dark line each side of it as in *pratensis*. The front row of eyes, which in *pratensis* is straight, has in *avara* the lateral eyes a little lower than the middle pair. The eyes of the second row are a little larger than in *pratensis*, so that it appears slightly longer than the first row, while in *pratensis* it is slightly shorter; the difference is, however, too small to measure and cannot be seen in all specimens of *pratensis*. The two specimens of *avara* examined vary in size as does *pratensis*. The most distinctive character of *avara* is the form of the epigynum as shown in fig. 2. At first sight it shows a pair of round holes, and it is only by rubbing away the hairs that the shape of the middle lobe can be seen. This is anchor-shaped with the pointed ends curved around so that they point directly forward. There is a slight projection in the middle. At the front end the middle lobe widens, and its edges are continuous with the anterior borders of the two large holes.

Two females were found by Miss E. B. Bryant, one in Allston, Mass., and the other at Long Island, Portland, Maine.

Lycosa frondicola, Em. N. E. Lycosidæ.

L. nigroventris, Em. is the male of this species.

This species and *L. Kochii* are often found in the same localities. They both mature late in autumn and carry their cocoons of eggs in May. *Frondicola* is darker brown and less mottled than *Kochii*. The middle stripe of the cephalothorax is straight in *frondicola* and notched at the sides in *Kochii*. The young of *frondicola* are more mottled on the legs than the adult and resemble the young of *L. cinerea*. The *L. nigroventris* described in N. E. Spiders is an unusually large male *frondicola*. The male is usually two thirds the size of the female with the under side darker. The legs are lighter and the markings on back of abdomen more distinct.

Lycosa carolinensis, Hentz.

Mr. W. L. W. Field of Milton, Mass., has watched for many seasons a large number of these spiders in a pasture on a gravelly hillside, where they make holes six or eight inches deep, sometimes straight and sometimes curved irregularly, to avoid large stones. Sometimes the mouth of the hole is funnel-shaped, spreading to twice the diameter of the lower part of the tube. The males appear only in the late summer, and the fertilized females winter in the tubes which are closed partly by the wheather, and lay their eggs in the last of May or June. In the summer the half-grown spiders are sometimes found without holes, and they have been known to abandon their holes and make new ones.

Lycosa baltimoriana, Keys. Zool. bot. Ges. Wien, 1876. (Plate VII, figures 1, 1 a, 1 b.)

This is a large and distinctly marked species, the female 15 mm. long, the cephalothorax 8 mm. long, and 5.5 mm. wide. The eye area is small, occupying one-third the width of the head and one-sixth the length of the cephalothorax. The front and second rows of eyes are of the same length. The legs are of moderate length, as in *carolinensis* and *tigrina*. The general color is gray like *carolinensis* with black markings. The cephalothorax has indistinct dark radiating lines. The back of the abdomen has a dark spot following the shape of the heart, and behind it two or three irregular triangular spots, and along the sides are other irregular markings. On the under side of the abdomen is a square black

spot extending from the lung openings back nearly to the spinnerets. The sternum is black. The legs are marked with broken dark rings.

The epigynum is narrow in front with two small openings; it is widened in the middle and has a small T-shaped end behind, Pl. VII, fig. 1b.

The male palpus is much like that of *L. nidicola* fig. 1e, which is from a specimen from Providence, R. I. belonging to Mr. Banks.

From Woods Hole, Mass., and Simsbury, Conn.

Lycosa Pikei, Marx. American Naturalist, 1881.

L. nidifex, Em. N. E. Lycosidae.

L. arenicola, Scudder. Psyche, Vol. II, 1877, name preoccupied by Cambridge in Spiders of Dorset. (Plate VII, figures 3d, 3e.)

The burrows of this species do not usually have a tube of straw or other rubbish around the mouth. The edge of the tube is thickly covered with silk, which extends out sometimes an inch around it on the surface of the sand. In digging, the surface of the sand is first covered thinly with silk. A ball of sand held together by the silk is then gathered up and carried to the mouth of the burrow in the mandibles; there, without the spider coming out of the hole, it is placed on the ends of the front legs, and thrown as far away as possible. In full grown spiders this is about two inches, and the balls of sand may sometimes be seen in a circle of this radius around the hole. When looking for prey, the spider sits with the cephalothorax and front of the abdomen out of the hole and the feet turned under the body as if dead. A step on the sand within ten feet will alarm them and they disappear down the burrow, but by creeping slowly without jarring the ground or throwing a shadow over the hole, one may get within two feet of the spider without disturbing it. The spider will notice an insect moving six or eight inches away and will rush out and catch one at that distance, returning quickly with it to the burrow. The adult males live part of the time in holes like females, and lie out at the top and wait for insects in the same way, but in August and September they are often found wandering. A male confined over night and then turned loose near the burrow of a female at once looked into it, reaching down its whole body except the tip of the abdomen and the fourth legs. It quickly came out, followed to the mouth of the burrow by the female who at once went down again, and returning in a few seconds, seated herself in the usual position over the edge of the hole. The male then approached slowly with the front of

the body raised, alternately reaching forward the front legs and jerking them quickly back until almost near enough to touch the female. She then came toward him and struck at him weakly with her front legs, but he turned them aside, jumped on her back and tried to place his palpus under her. She then attacked him in earnest and drove him away, afterward going down in her burrow and remaining there, and the male soon wandered away.

Young an eighth of an inch in length are found in small burrows of their own from June to August, and in holes with adult females as late as Aug. 10.

Lycosa nidifex, Marx. American Naturalist, 1881. (Plate VII, figures 3 to 3e.)

In N. E. Lycosidae I have confounded this species with *L. pikei*, under the name of *nidifex*.

This inland species differs distinctly from *Pikei* and approaches *L. missouriensis* Banks of the South and West. The epigynum and palpal organs of these three species are so much alike that they cannot be used to distinguish them. In *nidifex* the black color of the under side of the first leg does not extend inward beyond the patella, and the coxæ are all light-colored, while in *Pikei* the whole of the first leg, including the coxa, is black, and in some individuals the whole of the second leg. In *nidifex* the whole upper surface of the body is a nearly uniform gray color with indistinct stripes on the abdomen, while in *Pikei* the color of both upper and under sides is darkest at the head, and gradually lighter backward with a distinct pattern on the abdomen. In *nidifex* the pads on the *tibia* and *metatarsus* are composed of shorter hairs, so that these legs look but two thirds as thick as they do in *Pikei*.

L. nidifex usually makes a turret at the opening of its burrow, sometimes only a slight ring, but often a tube of sticks or grass rising more than its diameter above the surface of the ground. Like *Pikei* the spider sits at the mouth of its burrow with the feet turned under and the head high enough to see the surrounding country. The burrows are often not more than eight or ten inches deep, sometimes curved to avoid stones. The turrets are most conspicuous in October and November, after the surrounding grass has withered. The burrows remain open all winter, the immature spiders lying partly torpid at the bottom. Freshly matured males and females are found in May.

Lycosa punctulata, Hentz. (Plate VII, figures 4, 4a.)

The legs of both sexes are shorter than in *scutulata.* In the male the first and second legs are not as much elongated as in *scutulata,* and the first legs are not darker than the others. The stripe on the abdomen is straight in both sexes, without light spots along the edges as in *scutulata.* The under side of the abdomen has irregular black spots which are wanting in *scutulata.* The palpal organs are shaped much as in *scutulata,* but the tarsi and all the joints of the palpi are a little shorter and stouter than in that species.

Framingham, Mass., Sept. 29, 1906.

Lycosa relucens, Montgomery. Proc. Phil. Acad. Nat. Sci., 1902. (Plate VI, figures 1, 1a, 1b.)

This species matures early in the season and is common around Boston in April in open woods. Its general color is that of dried leaves, and it resembles small individuals of *L. frondicola.* The length is 8 mm., the cephalothorax 4 mm. or a little less. The cephalothorax has a straight white middle stripe, the width of the middle eyes extending from them backward and slightly narrowed behind. There is a narrower white stripe near the edge each side, sometimes broken and indistinct in females, and straighter and more distinct in males. The legs are pale yellowish brown, with the femora faintly marked with gray rings that are sometimes absent, especially in males. The abdomen is indistinctly marked with pairs of gray spots and oblique lines. The epigynum has the common T-shape as wide as long, and a single arched opening in front, Fig. 1b. The male palpus has the tibia thickened so that it is nearly as wide as the tarsus. The tube of the palpal organ is abruptly curved forward, and a thin supporting appendage lies along the side of the tarsal cavity without extending beyond its edge. At the base of the tube is a large thick appendage extending forward, Fig. 1a.

New Haven, Conn., Mass., Lake Champlain, Vt.

Lycosa crassipalpis, new (Plate VI, figures 3, 3a.)

Three small males from Ipswich, Mass., and one from Portland, Me., are only 6 mm. long and the cephalothorax 3 mm. The male palpi have the tibia thickened as in *relucens,* but the tarsus and palpal organ are proportionally smaller and not wider than the tibia. The legs are pale without any gray rings on the femora. The lateral white lines on the cephalothorax are well defined and removed more than their width from the edge as they are in *biline-*

ata. The sternum has a light middle line for half its length, which shows indistinctly in the darker specimens.

Lycosa bilineata.

Pardosa bilineata, Em. N. E. Lycosidæ.

Lycosa ocreata, pulchra, Montgomery. Proc. Phil. Acad. Nat. Sci., 1902. (Plate VI, figures 4, 4a, 4b.)

The female of this species was described in N. E. Lycosidæ, from New Haven, Conn., without the male being known. This was later found at Cold Spring Harbor on Long Island. The female resembles in color and markings *Pardosa pallida* more than it does its nearest relative, *Lycosa ocreata.* It is 6 mm. long, with the cephalothorax 3.5 mm. The colors are light yellow and brown, with gray hairs on the legs and abdomen. The cephalothorax has three pale stripes, the middle one as wide as second row of eyes, the lateral half as wide and a little above the edge. The legs are pale yellow without any markings except faint traces of rings on the femora. The markings on the abdomen are like those of *ocreata*: a dark pointed stripe in the middle bordered by light stripes, outside of which are rows of dark spots. The colors of the male are the same except the tibia and end of the metatarsus of the first leg, which are deep black and surrounded by stiff black hairs, Fig. 4a. The epigynum is much like that of *relucens,* T-shaped, and as wide as long. The male palpi have the tibia slightly enlarged, but not as much as in *relucens* or *ocreata.* The palpal organ is like that of *relucens,* with the appendage supporting the end of the tube longer, so that it projects out over the edge of the tarsus, and the large thick terminal appendage is wanting.

Pardosa littoralis, Banks. (Plate VI, figures 5, 5a, 5b.)

This species described by Banks from Long Island, N. Y., where it is common, has now been found at Ipswich and Plum Island, Mass. The females are 7 mm. long, with the cephalothorax 3 mm. It is not as slender as *pallida* and *nigropalpis,* but has the proportions of *glacialis,* the young of which it much resembles, Fig. 5.

The color is pale yellow with gray markings. The legs are yellow without markings. The cephalothorax has a narrow black line each side and two wide dark stripes leaving a light stripe on each side and a less defined one in the middle. The abdomen has a middle light stripe with indented edges, and the sides are marked with light mixed with gray. In the male all the dark markings are darker than in the female.

The epigynum resembles that of *nigropalpis* but is shorter and stouter, Fig. 5b.

The male palpus also resembles that of *nigropalpis*, Fig. 5a, which I have figured from a Long Island specimen belonging to Mr. Banks.

Pardosa diffusa, new. (Plate VI, figures 6, 6a, 6b.)

Two males from Ipswich and Hyde Park, Mass. are distinguished from the ordinary male *nigropalpis*, even when running on the ground, by the darker color of the cephalothorax. The middle light band is narrow, and hardly shows in front of the dorsal groove. The light bands at the sides are very narrow and close to the edge. The legs are marked on the femora with broken rings darker and closer together from behind forward, the first femora being almost black. In the palpal organs the basal process is shorter and does not have the long curved hook which crosses the tube in *nigropalpis*, Fig. 6a. No mature females have been found in company with this, but females found in August without males in Massachusetts and Maine are supposed to belong to the same species.

The epigynum differs plainly from that of *nigropalpis* and *albopatella*. The anterior pit is rounder and wider, and the transverse posterior end is much wider than in the other species. The females differ in markings from *nigropalpis* and *albopatella* in the same way as the males.

Males from Ipswich, Hyde Park, and Sharon, Mass.

Females from Medford, Mass., Northern Maine, and Long Island, N. Y.

Pirata insularis, Em. N. E. Lycosidae (Plate VI, fig. 7).

A new figure is given of the markings of this species from a specimen from Danvers, Mass.

Pirata arenicola, new. (Plate VI, figures 9 to 9c.)

Female 6 mm. and male 4 mm. long. In the female the lateral light stripes are wide and extend over the edge of the cephalothorax, but in the male the edge of the cephalothorax is marked with a broken dark band. The legs are pale and faintly ringed with gray. On the under side the female is entirely pale, and the male has three gray lines on the abdomen.

The epigynum has two oblique lobes behind slightly pointed on the inner ends.

The male palpi have the tarsi shorter than in *P. sylvestris* more as in *piraticus*. The appendages of the palpal organ are all small,

the terminal process as usual divided into two branches, the outer straight and opaque, the inner thin and transparent and turned across the tarsus.

Ipswich, Mass., June 6, 1903.

Pirata maculatus, new. (Plate VI, figures 10, 10a, 10b.)

6 mm. long, the same size and much like *P. montanus.* The markings are the same as in *montanus,* but the dark portions are much darker, and the rings on the legs more distinct than in any other species. The dark markings of the under side are also more prominent than usual; there is a distinct light middle stripe on the sternum, and a light area in the middle of the abdomen, bordered at the sides with black and partly divided by a middle dark stripe, narrow in front and widened behind. The hinder part of the epigynum is divided into two lobes, slightly pointed in the middle, and showing no opening on the outer side.

Moosehead Lake, Me., Aug. 7. Females with eggs.

Pirata sylvestris, new. (Plate VI, figures 8 to 8c.)

Female 8 mm. long; male 5 mm. long. In the female the usual three light marks behind the eyes are very narrow, but the light marks at the sides are wide and extend to the edge of the cephalothorax. In the male the edges of the cephalothorax are dark and the lateral light markings narrow. The abdomen has the usual gray color with a light middle stripe in the anterior half, and four pairs of bright white spots covered with white hairs and indistinct white lines on the sides and along the sides of the middle stripe. The sternum is pale without stripes. The under side of the abdomen is in some individuals pale, while in others there are traces of three dark stripes. The legs are pale without rings. The epigynum has the usual two lobes behind bluntly pointed on the inner corners where they are partly covered by a middle bunch of fine white hairs. In some light colored females the spermathecæ show through the skin near the outer corners of the lobes.

The tarsus of the male palpus is slender. The palpal organ has the usual two small appendages in the middle, one slender and the other a short and stout tooth. The terminal process is long and curved in quarter of a circle, with the transparent inner branch showing beyond the outer which is thicker and darker.

Dolomedes sexpunctatus, Hentz. (Plate VII, figures 6, 6a, 6b.)

A male from Wellesley, Mass. has the cephalothorax 5 mm. long and the same in width. The hind leg 23 mm. The spider had been put in alcohol very soon after moulting and the legs and palpi are probably not fully extended. The markings are like those of the female and the colors like a young and pale female preserved in the same way.

The male palpus has a long process on the outside of the tibia nearly as long as the joint itself. It is thin and flat, widened and rounded at the end, and has a small tooth on the under side near the base. The end of the tibia is shrunken and should no doubt be wider at the end than at the base, as it is in a Tennessee specimen apparently of the same species. The palpal organ is like that of *D. fontanus.*

A nest of this species was found at Amherst, Mass., Sept. 5, 1905 on golden rod two feet above the ground. The nest was about three inches in diameter, and the young spiders, early in the morning, were gathered in the lower part of it. The female was on the plants a short distance below the nest.

Dolomedes fontanus, Em. New Eng. Lycosidæ.

The male of this species was described and figured in New England Lycosidæ in 1885. The female was described in the same paper under the name of *D. tenebrosus.*

Marx in a note in his catalogue of N. American Spiders in 1890 gave his opinion that these were male and female of the same species, which a study of more specimens has shown to be correct.

The female has the cephalothorax 9 mm. long and 8 mm. wide, and the abdomen varies from 10 mm. to 15 mm. The eyes of the front row are small and the middle pair only slightly larger than the lateral, while in *idoneus* the middle pair are twice as large. The epigynum, which is correctly figured in N. E. Lycosidæ, has a narrow middle lobe bluntly pointed behind. The color in alcohol inclines to be olive, while in *idoneus* it is reddish brown. The marginal white stripes on the cephalothorax in life connect together in front of the head. The light middle stripe, which is distinct on the cephalothorax of *fontanus,* is less so in *idoneus.* The sternum of *fontanus* has a distinct light middle stripe which is absent or very indistinct in *idoneus.*

The male is smaller than the female, with the legs more slender but as long as those of the female. The cephalothorax is as wide as long, measuring 7 mm. The first and fourth legs are of the same

length, 36 mm. The palpi are 9 mm. long with the tibia straight and with a forked process in the middle of the outer side. The tarsus and palpal organ have been correctly figured in N. E. Lycosidæ.

This species seems to be common as far south as the mountains of North Carolina. On Lake Champlain, Vt, and Lake Winnipesaukee, N. H., it matures about July 1, when it is common along the shore under loose stones and the floats of boat landings. It runs on the surface of the water and on the bottom, carrying a large amount of air adhering to its hairs. It remains under only a short time, coming quickly to the shore as soon as it has escaped pursuit.

Dolomedes idoneus, Montgomery. Proc. Phila. Acad. Nat. Sci., Nov. 1902. (Plate VII, figure 8.)

The female of this species is of the same size as *fontanus* and has similar markings, but the color in alcohol is reddish brown instead of olive gray, which is usual in *fontanus*. The shape of the head is the same as in *fontanus*, and the arrangement of the eyes is the same, the only difference being in the size of the front middle eyes, which in this species are twice as large as the laterals of the same row. The shape of the epigynum is characteristic of this species, even when half grown. The middle lobe is round and swells out beyond the surface of the abdomen, and there is a distinct opening on each side between it and the lateral lobes.

The male has not been described.

Females have been found at Lake Champlain, Vt., and at Simsbury and New Haven, Conn.

Dolomedes urinator, Hentz. Montgomery, Proc. Acad. Nat. Sci., Philadelphia, 1904.

The male spider described by me in 1885 as the male of *D. tenebrosus* appears to be *urinator* or *lanceolatus*, Hentz. I have not found females but have one from Pennsylvania sent me by Mr. Montgomery.

An immature male from Milton, Mass., resembles closely the drawing of *D. lanceolatus* by Hentz. It has the tuft of stiff hairs on the femur of the fourth leg, like the mature males that I have described.

Dolomedes vernalis, new. (Plate VII, figures 7 to 7d.)

Males from Falmouth, Me., and Three Mile Island, Lake Winnipesaukee, N. H. Cephalothorax 3 to 4 mm. in length and a little less in width. Fourth and first legs 16 to 18 mm. The colors are

pale yellow and gray. The cephalothorax is dark in the middle and light at the sides, with light gray spots over the coxæ. The dark middle area extends forward between the eyes to the front edge of the head, dividing into two below the eyes. The mandibles are striped on the front with black. The abdomen is light at the sides, and the middle dark marks are united into a broad stripe with irregularly indented edges. The legs are marked with broken dark rings, the femur and the tibia having parts of four rings each. The sternum is dark around the edges, and the whole under side of the abdomen is gray, darkest at the sides, with two indistinct light lines converging toward the spinnerets. The tibia of the male palpus is as short as the patella. The process of the tibia is as long as the diameter of the joint. It is flat and widened at the end, hollowed in at the middle, and with the corners sharp, and sometimes two little teeth in the hollow. The palpal organ resembles that of the other species.

A female just moulted, from Three Mile Island, Lake Winnipesaukee, N. H., May 25, 1905. Cephalothorax 6.5 mm. and abdomen the same length; fourth and first legs 24 mm. Colors and markings like those of male. The epigynum resembles that of *D. idoneus* with the middle portion not as prominent, and the pockets at the sides more open.

At Three Mile Island, between May 20 and 27, 1905, one female and several males made their last moult. They were under stones and loose boards lying on the ground near the shore.

Oxyopes scalaris (Hentz) Em.

This species was found again at Durham, N. H., in June 1904. It resembles closely a species found commonly on the Pacific Coast from British Columbia to California.

Œcobius parietalis.

Thalamia parietalis, Hentz. Journal Boston Soc. Nat. Hist. (Plate VIII, figures 1 to 1e.)

2.5 mm. long, pale and translucent, with black spots on the head and legs and around the sides of cephalothorax and abdomen. The cephalothorax is as wide as long, and almost circular. The eyes are on the top of the head in two nearly straight rows, the front row shorter than the upper, and the front middle eyes farther apart than they are from the lateral eyes. The upper middle eyes are not round but irregularly oval, largest from front to back. The head extends forward a little beyond the eyes, and under this

projection are the mandibles which are very small. The maxillæ are inclined toward each other, over the short and rounded labium. The sternum is as wide as long. The abdomen is oval, as wide as the cephalothorax, and one-half longer. It is marked with irregular opaque white spots, a black line around the front end and several pairs of black spots, Fig 1. The shape of the end of the abdomen and the arrangement of the spinnerest are very peculiar in this genus. At the end of the abdomen behind the anus is an oval appendage surrounded by a single row of curved hairs of the same thickness throughout their length, and rounded at the end. The hinder pair of the spinnerets are their length apart, and extend backward so as to be seen for nearly their whole length from above. The spinning tubes extend along the under side. The cribellum is slightly divided by a notch in the middle. The calamistrum consists of two parallel rows of ten or twelve sligthly curved hairs, extending half the length of the fourth metatarsus. The legs are all about the same length, and the feet have three claws. The epigynum has a double tube directed backward and resting in a shallow groove on the under side of the abdomen. The male has the legs longer and the abdomen smaller, but otherwise resembles the female. The male palpus has very short patella and tibia, and the tarsus is wide and oval, and the palpal organ thick and furnished with a cluster of short appendages near the base.

This *Œcobius* lives in houses and on walls and fences. It makes a flat web one to two inches long and half as wide, fastened at several points around the edges, leaving open spaces through which the spider can run in and out. The spider stands on the wall behind and not on the web.

It has been known since the time of Hentz in the Southern States, but has lately been found in a house in Roxbury, a suburb of Boston, where it seems to be well established around window frames and behind furniture.

Scotolathys pallidus (Marx) Simon.

Neophanes pallidus, Marx. Proc. Ent. Soc. Wash., 1891. (Plate VIII, figures 2 to 2d.)

1.5 mm. to 2 mm. long and pale and translucent without any markings. The cephalothorax is shaped like that of *amaurobius.* The abdomen is slightly larger and wider than the cephalothorax and a little wider behind than in front. The eyes are six in number, large for the size of the spider, all about the same size and arranged in two groups. The cribellum is small, about as wide as one of

the anterior spinnerets. The calamistrum consists of seven or eight pairs of hairs about the diameter of the leg in length, Fig. 2c. The coxæ of the fourth legs are more than their diameter apart, and the end of the sternum extends backward beyond them in a blunt point, Fig. 2d. The epigynum shows externally two round spermathecæ, each crossed by an opaque spot, and in some specimens spiral tubes can be seen connecting with them. The male palpi resemble those of *Dictyna*. The tube of the palpal organ coils around the edge of the tarsus, where it is supported by a wide thin appendage; it curves around the base of the tarsus to the upper end, where it is twisted and rests against a blunt process of the tibia.

These little spiders live under leaves and are found by sifting in company with various Erigoneæ. They have been fond in various places around New Haven Connecticut and at Three mile Island, Lake Winnipesaukee, and Fitzwilliam, N. H.

Amaurobius borealis, new. (Plate VIII, figures 3 to 3d.)

Female 5 mm. and male 4 mm. long. The cephalothorax and legs are yellow brown, the legs darker toward the tips and the cephalothorax darker around the edges, but little toward the head. The abdomen is reddish brown with an indistinct pattern. The cribellum is small, not wider than the length of the first spinnerets and is indistinctly divided in the middle. It is on a slight elevation just back of the spiracle. The calamistrum occupies half the length of the metatarsus. The epigynum has a wide middle lobe, covered at the ends by the lateral lobes. The male palpus has the patella as wide as long, with one stout spine projecting over the tibia. The tibia is curved and has the usual complications shown in the figures.

Fitzwilliam, N. H., abundant near the Rhododendrons. Portland, Me., under leaves on the ground. Mature in May; females with eggs in July.

Orchestina saltitans, Banks. Ent. News, 1894, p. 300. (Plate I, figures 4, 4a, 4b.)

Cellar of Boston Soc. Nat. Hist. building, March 6, 1889. Found by Banks in house at Sea Cliff, Long Island, N. Y.

Micaria laticeps, new. (Plate X, figures 4 to 4c.)

One male of this species was found under a stone at New Haven, Conn. The length is 3 mm. The cephalothorax is a little higher than in the other species, and the head nearly as wide as the widest part of the thorax. The eyes of the upper row are at equal dis-

tances apart, and the whole group of eyes wide in proportion to the width of the head. The abdomen is oval and slightly indented in the middle. The colors are all dark, and were not noticed when the specimen was fresh. The cephalothorax is of the usual brown, and the legs the same color with the ends of the first and second pairs lighter. The abdomen seems to have been lighter in front of the depression, but there are no distinct markings to be seen in its present condition. The male palpi have no process on the tibia. The palpal organ is prominent as in *quinquenotata.*

Micaria quinquenotata, new. (Plate X, figures 1 to 1e.)

This species lives in sandy places, sometimes in company with *longipes,* which it resembles in color and habits. It is smaller than *longipes,* measuring 4 mm. in length, the cephalothorax between 1½ and 2 mm. in length. The cephalothorax is shorter and the head narrower than in *longipes* and the lateral eyes are nearer the middle pairs, Fig. 1a. The sternum and the legs are slightly shorter than in *longipes.*

The legs and cephalothorax are light orange brown, with scattered shining hairs of the same color. The abdomen is covered with iridescent scales, yellow in front, and darker toward the hinder end. The colors vary in different individuals and some are greenish gray as in *longipes.* There are two pairs of white spots on the abdomen, one pair in the middle and another at the front end, and just behind the front pair is a middle white spot of about the same size, Fig. 1.

The epigynum differs little from that of *longipes,* but is usually less regular in shape. The male palpi also are like those of *longipes* with a similar process on the tibia, Fig. 1a.

This species is common on the sand dunes at Ipswich, Mass., among the roots of sand grass. It matures about the first of June, when both sexes are active, running about on the sand from one bunch of grass to another, or hiding under any loose object lying on the ground. The cocoons which are found early in June are white and thin, and contain about eight eggs.

In pairing the male holds the female by the first and second legs around the thorax between her third and fourth, reaches his head under her and inserts the palpus of the same side as the clasping legs, Fig. 1.

Micaria gentilis, Banks. Canadian Entomologist, 1896. (Plate X, figures 3 to 3d.)

Mature males and females have been found from the middle of May to the first of July at Portland, Me., and at Monhegan, Me.

The cephalothorax is shaped as in *quinquenotata*, a little narrowed in front and not much elongated. In some individuals the cephalothorax is unusually narrowed behind, so that the widest part is in front of the middle. The cephalothorax is a little less than 2 mm. long. The abdomen is oval without any constriction in the middle, sometimes in females twice as long as it is wide, in males not much longer than the cephalothorax.

The color of the cephalothorax varies from light brown to black, covered with light shining hairs not very close together. The first and second legs have the femora dark like the cephalothorax, and the other joints light yellow. The third and fourth legs are brown, the femora darker. The sternum is dark brown and the front coxæ are the same color; the other coxæ are partly light colored; the fourth pair almost entirely light yellow. The abdomen is covered with dark green iridescent scales, with a narrow white band across the middle, and in some individuals another transverse white band near the front end, but this is oftener broken into two short white streaks at the side.

The epigynum has a large opening in front, covered by a wide rim with a dark colored edge, Fig. 3d.

The male palpi have no process on the tibia. The palpal organ is flatter than it is in *longipes* and *quinquenotata*, but has a hook in the middle as in those species.

Castaneira lineata, new. (Plate X, figures 5, 5a, 5b.)

This small species has the general appearance of a *Micaria*. It measures 6 mm. in length, the cephalothorax nearly 3 mm. The cephalothorax is twice as long as wide, widest in the middle and narrower behind than in front. It is slightly indented at the sides between the second and third, and between the third and fourth legs, Fig. 5. The head is three-fourths as wide as the thorax, wider than in the other species, and the eyes are farther apart. The upper eyes are equidistant and cover three-fifths of the width of the head. The sternum is narrowed and pointed behind, more than it is in the other species. The abdomen is a little longer than the cephalothorax, widest behind and a little constricted in the middle. The pedicel is as long as wide and can be seen from above between cephalothorax and abdomen.

The color of the cephalothorax is dull orange as in *Micaria longipes*. The femora are marked with two longitudinal dark stripes as in *M. longipes* and *C. bivittata*. The other joints of the legs are orange

yellow, except the ends of the fourth legs, which are somewhat darker.

The abdomen is lighter in front and has two white spots at the sides, nearly meeting in the middle.

The epigynum resembles that of *C. pinnata* with two small holes wide apart.

One female from low bushes in Sharon, Mass., July 7, 1902.

Prosthesima rufula, Banks. Phil. Acad. 1892. (Plate IX, figures 6 to 6h.)

7 to 8 mm. long; cephalothorax 3 mm. A little smaller than *P. atra* and more slender. The cephalothorax is narrower across the middle and less pointed in front, and the legs are more slender and the front pair less distinctly larger than the others. The sternum is narrower than in *P. atra.*

The color is light reddish brown without markings, the abdomen paler than the rest.

The epigynum varies in shape, the edge in front varying from nearly straight to the shapes shown in the figures.

The male palpus has a process on the outer side of the tibia, that lies along the edge of the tarsus for about a third its length and is slightly twisted at the tip. The tube of the palpal organ is on the outer side and extends nearly straight the whole length of the tarsus.

New Haven, Conn., and Cold Spring Harbor, L. I. N. Y.

Pœcilochroa montana, Em. N. E. Drassidæ, etc., Trans. Conn. Acad. 1890. (Plate IX, figures 4, 4a, 4b.)

The female of this species was described in 1890 from the White Mountains, but only lately the male has been found on the Blue Hills near Boston. The individual is probably a small one and measures only 5 mm. in length. The cephalothorax is shorter and rounder than in *variegata,* and the legs proportionally a little longer. The difference in shape of the cephalothorax in these two species is shown in the sternum, which in *montana* is distinctly wider than in *variegata,* Fig. 4a. The color is less brilliant than in *variegata,* the orange of the latter species being absent. The cephalothorax is dark brown, covered with white hairs. The femora and basal joints of all the legs are dark brown or black and the other joints light yellow. The abdomen is black with a narrow white band across the middle, a wider white band across the front end, with a little black showing in front of it, and a white band at the hinder

end over the spinnerets. The male palpi resemble those of *variegata,* but have the process of the tarsus a little stouter and more curved at the tip.

Gnaphosa parvula, Banks. Proc. Am. Ent. Soc., 1896. (Plate IX, figures 3, 3a, 3b.)

This species is a little smaller than *brumalis,* the largest female measuring 8 mm. long, and the cephalothorax 3.5 mm. The color is the same rusty black as in the other two species. The lateral eyes of the upper row are placed as in *brumalis,* not as far from the middle eyes as in *conspersa.* The epigynum resembles that of *conspersa* more than *brumalis,* Fig. 3. The male palpi have the process of the tibia half as long as the tarsus, with the tip sharply pointed and a little curved, Fig. 3a. The palpal organ resembles that of *brumalis,* but the tube does not have a tooth at its base as in *brumalis,* Fig. 3b.

Ipswich, Mass. mature male and females, May 20. Described by Banks from Hanover, N. H.

Drassus hiemalis, new. (Plate IX, figures 1 to 1d.)

This species is a little smaller than *robustus.* The cephalothorax is 3 mm. long and a little narrower at the head than in *robustus,* and the lateral eyes are a trifle nearer together than in that species. The abdomen is a little more elongated than in *robustus,* and the epigynum farther back.

The epigynum is shaped somewhat as in *robustus,* but the lateral ridges are much thinner and lower, and in front of them is a transverse depression with a hard and dark colored rim, Fig. 1d. The colors are the same as in *robustus,* but lighter than most specimens of the latter species.

The males are the same size as the females. The male palpus has a process on the upper side of the tibia which is nearly straight, not curved as in *robustus,* and extends over the tarsus one-third its length. The palpal organ has several hard brown processes that cover the surface and nearly conceal the end of the tube.

From Blue Hill and from Hammonds Pond, Brookline, under leaves in winter. Three Mile Island, May 25, adult males and females.

Drassus bicornis, new. (Plate IX, figures 2, 2a, 2b.)

Slightly smaller than *D. hiemalis.* The cephalothorax 2.5 mm. long, but form and color are the same, and there is nothing to distinguish these two species except the epigynum and palpi. The

epigynum has a large oval opening divided at the posterior end into two. The hard brown part around the hole extends forward on each side like a pair of horns turning toward each other at the ends.

The male palpi have a long process on the upper side of the tibia that extends over the tarsus for a third of its length. It is narrowed in the middle and obliquely truncated at the end. The palpal organ is hard and brown, smooth around the base, and divided at the end into a complicated group of processes, Pl. IX, fig. 2a.

Three Mile Island, Lake Winnipesaukee, N. H.

Clubiona spiralis. (Plate X, figures 10, 10a, 10b, 10c.)

6 mm. long, fourth leg, 9 mm. Larger than *C. rubra* and longer legged, but resembling it in the short mandibles and the arrangement of the eyes with the upper middle pair farther apart than they are from the lateral eyes. The male palpi have a general resemblance to those of *rubra*, but the double lateral process is differently shaped, round at the base and with the tip sharp and curved upward. The tarsus and palpal organ are more elongated than in *rubra*, and the large black process more slender. The only specimen found is pale, even to the mandibles.

Magnolia, Mass.

Two females, one from Ipswich, Mass. and one from the Blue Hills appear to belong to this species. They are the same size and color and have the same eye arrangement, with the legs shorter and stouter, as usual in females of this genus. The epigynum is shown in Fig. 10c. It has a partly divided transverse opening turned forward.

Clubiona præmatura, new. (Plate X, figures 7, 7a, 7b.)

In N. E. Spiders of the Family Drassidæ, etc. this species is confounded with *C. ornata* (Americana Bks.), on account of the distinct dorsal markings of the female which until recently was the only sex known. It is a little smaller than *ornata*, the cephalothorax of the female being 2.2 mm. long, and the abdomen from 4 mm. when filled with eggs, to 3 mm. after the eggs have been laid. The color is pale, with the cephalothorax slightly darkened on the head and mandibles. The abdomen has a pattern similar to that of *ornata*, but less distinct. The arrangement of the eyes is similar to that of *ornata*, the upper middle pair being only slightly farther apart than they are from the lateral eyes. The shape of the border of

the epigynum is constant and characteristic. It does not extend backward in a point as in *ornata* and *rubra*, but is transverse with a deep notch in the middle, Fig. 7b.

The male has the cephalothorax narrower in front than the female, and the palpi short, with little resemblance to those of *ornata*. The tibia is widened into a large process on the outer side, without any sharp teeth. The tube of the palpal organ is short and turned backward, and the other appendages are short and blunt, Fig. 7.

This species is very abundant under stones all over the top of the Mt. Washington range. The females make thin silk nests and lay their eggs about the first of July, by which time the males are scarce.

Agrœca pratensis, Em. Trans. Conn. Acad., 1890.

Females with epigynum like *A. repens* Em. Trans. Conn. Acad., 1894, have been fond in several New England localities at the same time with males of *pratensis* which makes it probable that *pratensis* and *repens* are one species with two forms of epigynum.

Anyphæna rubra, Em. N. E. Drassidæ. Trans. Conn. Acad., 1890. (Plate IX, figures 8 to 8c.)

The males of this species as well as the adult females are rarely found, because they mature very early in the season. A young male that had wintered under leaves was taken in Franklin Park, Boston, April 17, and moulted April 22.

The males differ but little from the females in size and color, but as usual are a little more slender and have longer legs and longer and straighter mandibles. The male palpi have a long process on the outer side of the tarsus, curved outward and slightly notched at the end, and in some individuals sharply pointed. The palpal organ swells out from the tarsus at the base. The tube begins on the inner side and curves around the base of the palpal organ and along the outer side of the tarsus nearly to the tip, Fig. 8.

Apostenus acutus, new. (Plate IX, figures 7 to 7c.)

Immature males 4 mm. long. An adult male, which is dried and shrunken is of the same size. The cephalothorax is oval and much narrowed in front, so that the head is only one-third as wide as the widest part of the thorax. The eyes are low and arranged as in *Agrœca pratensis*, except that the front middle pair are much smaller. The front row is slightly curved upward, the middle eyes less than

half as large as the lateral. The upper row is more curved; the eyes all about equal in size, and the same distances apart. The lateral eyes of the two rows are near each other, but do not touch. The legs are long, with long spines, the fourth pair longest. The tibiæ of the first and second legs are thickened and have on the under side two pairs of long spines under the metatarsi. The sternum is almost circular with a slight point behind between the fourth coxæ.

The colors are translucent white and dark gray, like *Phrurolithus alarius*, but usually darker. The cephalothorax is light in the middle, with black edges and radiating dark lines. The abdomen is dark, with a series of pairs of light spots down the back. On the under side the sternum and coxæ are light and the abdomen spotted irregularly with dark gray. The male palpi in an individual that has been dried have the tibia and patella of about the same length. The tibia has a stout process on the outer side that turns inward against the base of the tarsus. The tarsus is oval, and the palpal organ long and thick. The tube seems to start near the outer end and curve around toward the inner side.

Adults were found at New Haven, Conn., May 1, and young males at Cold Spring Harbor, April 10.

Cœlotes calcaratus, Keys. Zool. bot. Ges. Wien, 1887.
Cœlotes longitarsus, Em. Trans. Conn. Acad., 1890.

On Plate VII, Vol. VIII, fig. 2a is not the epigynum of this species but that of *Cicurina arcuata*. A correct figure of the epigynum of *C. calcaratus* is given in Common Spiders of the U. S. by J. H. Emerton 1902, page 104, fig. 242.

Cicurina arcuata, pallida and **brevis.** (Plate VIII, figures 6 and 7e.)

The three species of *Cicurina* live under dead leaves on the ground at all seasons, all three being sometimes found in the same locality. *C. arcuata* Keys. = *complicata* Em. is the largest and most deeply colored, with the abdomen covered with gray oblique marks. *C. pallida* is of the same shape and a little smaller, without markings. It is less common than the other two. *C. brevis* = *Tegenaria brevis* Em. = *C. creber* Banks, is smaller than the others and pale, with two rows of gray spots on the abdomen. The cephalothorax of the male is rounder and the head narrower than in the female, and more so than in the males of other species. All the species have very complicated palpal organs and a large appendage of the tibia of the palpus which lies against the tarsus and is not easily

distinguished from parts of the palpal organ. In *P. arcuata* this appendage is as long as the palpal organ and nearly as wide. In *C. brevis* it is narrow but longer than the rest of the tibia. This appendage was not noticed in my description of *Teg. brevis* but is correctly described by Banks under *C. creber* in the Spiders of Ithica. In *C. pallida*, although it is larger than *brevis*, the palpal organ is smaller, and the appendage of the tibia reaches only to its base.

Cicurina arcuata, Keys. Zool. bot. ges. Wien, 1887.

Cicurina complicata, Em. Trans. Conn. Acad., 1890.

In New England Agalenidæ &c. Trans. Conn. Acad., 1890, Pl. VII, fig. 2a is the epigynum of this species, not of *Coelotes longitarsus.*

Cicurina pallida, Keys. Zool. Botan. Ges. Wien, 1887. (Plate VIII, figures 7 to 7c.)

5 mm. long and pale and without markings. The cephalothorax is 2.5 mm. in length and 1.5 mm. wide, the head only a little narrower in the male than in the female. The epigynum is smaller than that of *C. brevis* and the parts seen through the skin rounder. The tarsi of the male palpus are as long as those of *brevis*, but more pointed and the palpal organ is smaller and more simple, though resembling in its general structure that of *brevis*. The process of the tibia which is so long and conspicuous in *complicata* and in *brevis*, is in *pallida* but little longer than the rest of the tibia, Pl. VIII, fig. 7.

Found under leaves at Sharon and Northfield, Mass., in company with *brevis* and *complicata.*

Cryphoeca montana, new. (Plate VIII, figures 4 to 4i.)

Cryphoeca peckhamii, Simon, from Washington territory, resembles this species.

Males 4 mm. long, females 3 mm. General appearance like a small *Coelotes* or *Amaurobius*. The cephalothorax is narrowed in front of the first legs and at that point is as high as wide, curving downward toward the eyes. The eyes cover half the width of the front of the head, both rows arched upward. The upper row is largest, the eyes of equal size, and equal distances apart. In the lower row the middle eyes are half the size of the lateral. The lateral eyes of both rows touch each other. The sternum extends in a long blunt point between the coxæ of the fourth legs. The legs are of moderate length, the fourth longest in females, and the first in males. The first and second legs have two spines on the

outer side of the tibia, and four on the inner side, and three pairs of spines on the metatarsus. In females these spines are long, more than half the length of the tibia; in males they are short like the spines of the other legs. The abdomen is oval, not much longer than wide, resembling in shape as well as in markings that of *Amaurobius sylvestris*. The lower spinnerets are wide apart, and there is a wide opening to the tracheæ between and in front. The edge of the tracheal opening is thickened and colored on the inner side so that it resembles a small cribellum.

The colors are translucent white and gray. The legs are marked with broken dark rings at the ends and middle of the joints. The cephalothorax has a narrow black edge and broken radiating dark marks like *Cœlotes medicinalis*. The abdomen is marked with a series of oblique light spots in pairs like *Amaurobius*. On the under side the abdomen is light in the middle; the coxæ are light, and the sternum is light in the middle and dark at the sides. The light color turns yellow by long keeping in alcohol.

The male palpi have two processes on the tibia--one on the upper side turned outward and sharp pointed, the other on the outer side about half as long, stout, and directed forward. The palpal organ is large, extending backward beyond the base of the tarsus. The tube begins at the hinder end, extends around the inner side and ends in the groove of a thick process on the outer side.

Adult males and females half-way up Mt. Washington, June 10. Females Stow, Vt., July 29, Miss Bryant. Young males under leaves Jackson, N. H., in February.

Hahnia brunnea, new. (Plate VIII, figure 5.)

A single female from Clarendon Hills maple swamp is 3 mm. long, three-fourths the size of *agilis*. The proportions of the body, the eye arrangement and the shape of the sternum and maxillæ are the same as in *agilis*. The opening of the trachea is midway between the epigynum and spinnerets, not as far forward as in *agilis*. The spinnerets are in a line, with the lateral pair slightly larger than the others as in *agilis*, but the spinnerets are closer together, the middle pair almost touching. The lateral spinnerets are shorter than in *agilis*, being a third the length of the abdomen, while in *agilis* they are half as long as the abdomen. The epigynum is shaped much as in *agilis*, but on each side there is a brown loop under the skin that does not show in *agilis*. The color is light brown, the legs without rings or markings. The cephalo-

thorax is light brown, a little lighter than the abdomen. The abdomen is marked by a middle row of five pairs of oblique light spots, and the front pair of muscular spots is not conspicuous as it is in *agilis*.

Hanover, N. H., C. M. Weed in N. Banks' collection.

Phidippus albomaculatus, Keys. Zool. bot. ges. Wien, 1885.

P. mystaceus, Em. Trans. Conn. Acad., 1891.

P. incertus, Pkm., 1901 from Texas is thought to be the *Attus mystaceus* of Hentz.

Phidippus brunneus, Em. Trans. Conn. Acad., 1891. (Plate XI, figure 1.)

Male a little smaller than the female, and the same general color. The cephalothorax is darker than in the female, and the abdomen covered on the upper side with dull yellow hairs. The legs are darker than those of the female. The mandibles are iridescent green. The male palpal organ is short and wide at the base, and the tube is stout and with a double bend: Pl. XI, fig. 1.

Found at the same time with females at Hyde Park, Mass., May 2, 1903.

Phidippus Whitmani. (Plate XI, figure 5 and Plate XII, figure 1.)

The male of this species is very distinctly marked. It is about 8 mm. in length, larger than most males of *multiformis*, Pl. XII, fig. 1. The cephalothorax and abdomen are red, in some individuals inclining to orange. There is a distinct black band across the front of the head behind the eyes and as wide as the largest eyes. There is a narrow yellow band around the front of the abdomen, and in some individuals two pairs of indistinct yellow spots near the hinder end, but in others the whole back of the abdomen is red without any spots. In alcohol the spots are more distinct, and another pair of spots often shows in front of the others. The legs and palpi are gray with irregular dark and light spots obscured by long hairs. In alcohol the femora are dark and the other joints have dark rings at the end. The palpal organ is long and narrow, the bulb extending backward the whole length of the tibia. Pl. XI, fig. 5. The writer does not know the female.

Sharon, Mass. Three Mile Island, N. H.

Phidippus insignarius, Koch. 1846. (Plate XI, fig. 2 and 2 d.)
The male is described by Peckham as the male of **Phidippus comatus** in Trans. Wisconsin Acad., April, 1901.

Male 8 mm. long; cephalothorax black with two wide white stripes beginning below the lateral eyes in front, and turning upward behind, where they nearly meet under the front of the abdomen. There are two pairs of tufts of long black hairs at the sides of the head. The abdomen is orange red with black and white markings; there is a white stripe around the front, and a scolloped black middle band including a middle orange spot, and two smaller orange spots in front of it. The ornamentation of the face and front legs is striking and complicated. The lateral white stripes extend around under the front eyes as far as the middle pair, but do not meet under them, and below these are long white hairs that cross each other and nearly cover the mandibles, so that their iridescent blue color is concealed. The palpi are white, with a little mixture of brown. The first legs are covered on the under side with long white hairs; the hairs of the coxæ point downward, nearly to the ground; the femur has a row of stiff white hairs as long as its diameter along the outer side, and the other joints have hairs extending more than their diameter each side to the ends of the tarsi. When the first legs are pointed upward, the whole front appears white except the upper part of the head, which is black, extending outward at the sides in four black tufts. When the first legs are down in walking position, the upper side becomes visible in front, and this is covered with black hairs at the sides and, as far back as the patella, with a middle stripe of orange. The second leg is striped in the same way, but not as brightly, and has shorter white hairs.

The female is a little larger than the male, and marked on the back less distinctly in the same way. The cephalothorax is brown with lateral white stripes and tufts of long hairs on the head as in the male. The abdomen is light and dark brown with gray hairs; there is a white stripe around the front end and a square white spot in the middle. The dark middle band is broken into two pairs of black spots in the front half. The epigynum has a small notch in the hinder edge and two anterior openings close together separated only by a narrow ridge.

Dendryphantes Jeffersoni, new. (Plate XI, figures 3 and 3 e.)

Males 4 mm. long. Color brown mixed with white and yellow. The cephalothorax has the usual white stripes at the sides that

connect in front with a large white patch extending backward in the middle nearly as far as the dorsal eyes. The abdomen is marked with a front white band and five or six pairs of white spots extending forward on their inner corners. The legs are ringed with white at the ends of the joints. In alcohol the white disappears and the abdomen appears marked with a series of black spots on a light ground. The first legs are 5.5 mm. long, with the tibia a little thickened. The palpus of the male differs but little from that of *capitatus* and *flavipedes*. The bulb is wide at the base and more nearly square than in *capitatus*. The tube resembles that of *flavipedes* in having a long process parallel to it, but both are curved in a half circle, fig. 3.

Two males were found in the moss near Spalding's Spring on the Mt. Washington range at a height of 5000 ft., July 6, 1904, and a female at the same place, July 4, 1907.

A female found in the same locality several years later is 7 mm. long and dark brown with light gray hairs without any distinct white or yellow marks. In alcohol the abdomen shows indistinctly light marks similar to those at *militaris*. The epigynum has the notch shallow and truncate and the two openings a little farther apart and more angular than in *militaris*.

Dendryphantes flavipedes, Pkm. Trans. Wisc. Acad., 1888. (Pl. XI, figures 4, 4 a.)

The males do not differ from the females as much as in *capitatus* and *militaris*. My specimens are 4 mm. in length. The cephalothorax is light brown as in female *capitatus*, with white longitudinal bands at the sides below the eyes widening behind. The abdomen has the dark middle area broken by three pairs of spots in the front half and three or four light chevrons behind. The dark area is less sharply defined than in the male *capitatus* and connects with several oblique rows of dark spots. The legs are not ringed as in the other species but pale and translucent with longitudinal dark lines on the inner side. One of the the males from Portland, Me., and others from Fitzwilliam, N. H., are light gray, almost as light as *Drassus saccatus* without any distinct markings on the back, but with fine distinct longitudinal black stripes on the legs. The male palpi are a little darker than the legs and the tarsi and the palpal organs resemble those of *D. capitatus*, except that the tip of the palpal organ is double, the tube having a slightly curved process longer than itself parallel with it on the outer side. The process

of the tibia is short and transverse, differing little from the same part in the other species.

Long Island, Portland, Me., Sept. and Crawford Notch, N. H., July 4. Fitzwilliam, N. H. in July.

Eris nervosus, Pkm. Wisconsin Academy, 1888.
Zygoballus terrestris, Emerton. N. E. Attidae, 1891.

Icius similis, Bks. 1895. Colorado.
I. elegans, dark variety, Em. Conn. Acad., 1891.

This species is described in New England Attidae as a variety of *Icius elegans.* The colors are not as brilliant, and it does not have the tufts on the front legs or such large tufts over the eyes. The palpal organs also differ slightly from those of *elegans* as figured in N. E. Attidae.

Icius formicarius, Em. New Eng. Attidae, Trans. Conn. Acad., 1891. (Plate XI, figures 8, 8 a.)

The male of this species has been found by Miss E. B. Bryant, July 3, 1904, at Allston, Mass., near Boston. It resembles the female in form and color, and has no tufts on the head and no peculiar modifications of the front legs. It is 4.5 mm. long. The male palpi resemble those of the other species of *Icius*; the patella and tibia are both very short, the tibia shorter than it is wide, and having a process on the outer side longer than the rest of the tibia. The palpal organ has the same general shape as in *elegans* and *Hartii*, but is a little more elongated, and the tube is a little more slender. In the same neighborhood with this male, a female 6 mm. long was found under a stone with a cocoon of eggs.

Mævia tibialis, Koch. 1848. XIV, p. 78.
Admestina Wheeleri, Pkm. Trans. Wisconsin Acad., 1888. (Plate XI, figures 6, 6 a.)

The female is 4 mm. long, the cephalothorax 1.5 mm. The cephalothorax is one-half longer than wide,—a little the widest across the hinder half and flat on the top. The abdomen is oval,—widest across the middle. The spinnerets are long, the third pair extending their whole length behind the abdomen. The legs are short, the first pair a little thickened, and as long as the cephalothorax. The sternum is one-half longer than wide and pointed at the posterior end; it is narrow in front, but does not extend beyond the first coxæ. The cephalothorax is covered with white hair but in alcohol

appears black. The abdomen is white with a middle gray band broken at the edges by spots and indentations. The legs are white with black spots at the ends of the joints.

The epigynum is large for so small a spider and is at the end of the first third of the abdomen. It has two large spermathecæ that show through the skin, and two small openings in front of them.

Hyctia Pikei, Pkm. Trans. Wisconsin Acad., 1888. (Plate XI, figures 7, 7 c.)

Cephalothorax and abdomen both elongated and narrow, whole length 6 to 8 mm., cephalothorax 2.5 to 3 mm. Abdomen 1.5 to 2 mm. wide; cephalothorax two-thirds as wide as long, a little wider in males than in females. The second, third and fourth legs are short and slender, but the first pair are thickened in both sexes, in the females twice as long as the cephalothorax, and in the males longer. The color is light gray with brown markings. In females the cephalothorax has three light brown longitudinal stripes, two extending the whole length from the lateral eyes and a middle stripe on the hinder half only. The abdomen has three fine stripes or rows of spots, sometimes forming a broken wide middle stripe. In males the whole middle of the abdomen has a wide brown middle band partly divided into triangular spots. Young individuals sometimes have no markings at all and are greenish in color like the sand grass in which they live. When approaching the female the male raises his front legs stiffly upward at an angle of sixty degrees with each other, and lifts the abdomen slightly, walking on the six short legs.

The sternum is half as wide as long and pointed at both ends, and the first and fourth coxæ are close together and may touch each other. The epigynum has a simple oval opening with a thickened edge in front. The male palpi are very short; the patella is as long as wide, and the tarsus is shorter, but with a thick pointed process on the outer side, as long as the rest of the tibia. The tarsus is curved downward and has a ridge along the outer side, the part below which is smooth, with few and short hairs. The bulb of the palpal organ projects at the base in a long blunt point.

Common on sand grass along the sea shore.

Pellenes viridipes, Hentz.

Pellenes Howardi, Pkm. Bull. Wisconsin Nat. Hist. Soc., Oct., 1900.

Attus viridipes, Hentz. Boston Journal Nat. Hist. 1846. (Plate XII, figures 5, 5 a.)

The male is 5 mm. long with the cephalothorax 3 mm. long. The colors are bright and the markings of the back sharply defined. The first legs are light, transparent green, and the other light portions pale fawn color. The green fades entirely in alcohol. The top of the head covering the whole area between the eyes is orange brown, and the dark markings are dark brown, almost black. The pattern can best be seen in the figures. The front legs have a narrow stripe of fawn color on the upper side dividing the green, the other legs and palpi are fawn color, broken along the sides by dark scales, forming parts of rings at the ends of the joints. The three inner spines of the front tibia are dark colored and flattened and two of them are long and spatulate, showing distinctly beyond the hairs. The patella of the third leg is widened and flattened and has a black and white eye spot and a black border under the eye spot, and just over the joint is a spine slightly turned up at the end. When the third legs are drawn up in the usual standing position, the modified patellæ show in front over the head. The face below the eyes is for a short distance dark brown and below this white. The mandibles are also white on the front.

The female is slightly larger than the male, but the cephalothorax smaller. The color is dull orange brown, at first sight uniform, but showing indistinctly the same light and dark pattern as the male.

The males mature about the first of May and the females a little later. The females are usually found under stones and the males moving about in dry paths in the woods in Hyde Park and Sharon, Mass. It has been found at several places across the country as far as California.

Pellenes roseus.

Attus roseus, Hentz. Journal Boston Soc. Nat. Hist. 1846. (Plate XII, figure 4.)

Male 4 mm. long, cephalothorax 2 mm. Neither the first or third legs are modified or ornamented. The cephalothorax and the front of the abdomen are bluish white and covered with fine short scales. The rest of the back of the abdomen is light pink, with a metallic lustre. The legs and palpi are thinly covered with white scales, and the color is modified by dark hairs and the yellow of the skin. The face and mandibles are covered with white scales, the mandibles indistinctly striped with black.

The female is the same size as the male and resembles the female of *splendens*. The cephalothorax is covered with light gray scales mixed with darker hairs. The abdomen is light fawn color and

black. There is a light band each side and one across the front of the abdomen. There is also a light middle band indented at the sides, extending forward from the spinnerets two-thirds the length of the abdomen. The legs are light gray without any markings. On the under side of the abdomen there are three dark lines.

Ipswich, May 20, 1893, in an open field near the shore. Specimens from New York State were found and sent to Mr. Peckham at about the same time.

Pellenes agilis, Banks. Ent. Soc. N. Y. 1892.

Pellenes auratus, Pkm. Bull. Wisc. Nat. Hist. Soc., Oct., 1900. (Plate XII, figures 3, 3 a, 3 b.)

5—6 mm. long, the cephalothorax 3 mm. long. The female is covered with bluish gray hairs, through which can be seen indistinct white markings on the abdomen and dark gray at the ends of the joints of the legs. In alcohol the light gray color disappears, and dingy gray and brown take its place on which the white and dark markings show more distinctly. The male is brightly marked with black and white. The cephalothorax has a pair of white stripes at the sides and another pair just above the lateral eyes extending its whole length, and a white middle stripe from the front middle eyes as far back as the posterior eyes. The abdomen has lateral and middle white stripes connected in front; the lateral stripes are broken in their hinder half into two white spots, and the middle stripe is sometimes broken into spots at the end. The second, third, and fourth legs are irregularly ringed with gray and white, but the first pair are highly ornamented with long black hairs and white spots, Pl. XII, fig. 3a, 3b. The first leg has the femur black with short hairs like the other legs, the patella white with a crest of white hairs above and long black hairs below, the tibia black with a white spot on the upper side near the end, and long black hairs above and below, the metatarsus and tarsus white. The third legs have no peculiar modifications of the patella or tibia. The palpi have the tarsus black and the patella white.

In marsh grass and under sticks and stones along the shore, Ipswich, Mass., Long Island, New York.

Males and females mature about August 1. In dancing before the female, the male holds the front legs out sidewise with the tibia nearly horizontal and the tarsus turned downward, and walking on the other six legs, approaches her by short quick steps without much movement from side to side until near enough to touch her and then quickly retreats.

Pellenes borealis, Banks. 1895.

Habrocestum cristatum, Pkm. Attidae of N. A., 1883. (Plate XII, figures 4 to 4 c.)

The female is 5—6 mm. long, the male 4.5—5 mm. The female is light gray and brown like the sand, while the male is deep black with white markings. The legs of the male have no peculiar modifications either of the first or third pairs. The markings of the female are very indistinct; the cephalothorax is varied with white, sometimes suggesting two white lines from the lateral eyes backward. The abdomen has a white line across the front and two pairs of short lines at the sides. Toward the end there are two middle spots, sometimes connected, and the usual two small white spots just in front of the spinnerets. The male has the cephalothorax black with long black hairs on the front of the head. The abdomen is black and has the same markings as the female, but much whiter and more distinct. The legs are pale, but the color is darkened by black hairs. The face below the eyes is white in the female, and in the adult male is thinly covered with small white scales, but in the young male before the last moult, this part is bright red, so that it may be mistaken for the young of *P. cæcatus,* which lives farther south. See Psyche, Journal of Cambridge Ent. Club, Vol. II, p. 32, April, 1904.

The epigynum has a large oval anterior opening extending backward at the sides almost as far as the posterior opening. The palpal organ is oval and has a stout supporter of the tube extending along the inner side and but little narrowed toward the end.

This spider is very common along sea beaches in the dry grass and rubbish thrown up by the tide. Adults are found most abundantly about the first of May, but some of them mature in the late summer as early as the last of August. The red-faced young males are found in the summer and fall, and in spring as late as June.

Chalcoscirtus montanus.

Icius montanus, Banks. Can. Ent., 1896.

The cephalothorax is 1.2 mm. long, the abdomen of the male about the same length, and that of the female longer. The cephalothorax is two-thirds as wide as long, a little flattened above and with the sides nearly straight and parallel. The posterior eyes are half as far from the front eyes as they are from each other and the middle eyes are slightly nearer the posterior than the front eyes. The color differs in the sexes, the male being much darker than

the female. The male is dark brown, almost black, without any markings, and the abdomen is slightly iridescent. The female has the cephalothorax dark brown and the abdomen light brown with pale herringbone markings like the female *Euophrys*. The legs of the female are pale. The fourth leg is longest in both sexes. The male palpi are short with the patella and tibia of equal length, the patella thicker than the tibia. The tarsus is oval and does not cover the bulb, which is thick at the base and extends backward under the tibia nearly its whole length. At the distal end of the bulb a small oval piece is constricted off and turned to one side, and at the tip of it is the small sharp tube. The epigynum resembles that of *Neon* and *Euophrys*.

Sifted from moss on the upper part of Mt. Washington range. July 4, 1907.

Homalattus cyaneus, Pkm. N. A. Spiders, Trans. Wisconsin Acad. Oct., 1888

Attus cyaneus, Hentz. (Plate XI, figure 9, 9a.)

Female 4 mm. long and 1.5 mm. wide. The part of the cephalothorax showing in front of the abdomen is as wide as long, narrowed a little in front. The posterior eyes are very far back, two-thirds as far from the front of the head as they are from each other. The cephalothorax and abdomen are both flattened, and the front of the abdomen covers the cephalothorax about a quarter of its length. The color is metallic green, the cephalothorax roughened and covered with small scales nearly as wide as long, and the abdomen with small but longer scales.

New Haven, Conn. and Sharon, Mass. under shingle of a barn.

Peckhamia picata.

Synemosyna picata, Hentz. Journal Boston Soc. Nat. Hist. 1846. (Plate XII, figures 7, 7a, 9b.)

This species continues to be rarely found in New England. Adult males and females were found in May, 1906, at Three-Mile Island, Lake Winnipesaukee, N. H., and adult females in July at the same place. They lived on a dry hillside among dead leaves on the ground and were seen walking slowly in and out among the leaves, resembling ants of the same size and color that were wandering over the same neighborhood. The male figured was 4 mm. long. The dancing of the male of this species before the female has been described by Peckham in the Occasional Papers of the Nat. Hist. Soc. of Milwaukee, Vol. 2, 1892.

Peckhamia scorpionia.

Synemosyna scorpionia, Hentz. Boston Journal Nat Hist. 1846. (Plate XII, figures 6, 6 a.)

This little spider was found at New Haven, Conn., in 1883 but was overlooked at the time of publication of the N. E. Attidae. Since then it has been found in considerable numbers at Cold Spring Harbor, Long Island, N. Y., and at Cambridge and Ipswich, Mass., always on fences on which it runs about slowly and irregularly like an ant. When threatened it flattens itself against the wood, holding on so tightly that it is hard to pick it up without injury. The males mature about June 1 and when confined with females dance before them much like *picata*, holding the abdomen up vertically and swinging it toward the advancing side and sometimes turning the feet of that side under the body. The front legs are not turned forward as much as in *picata*.

The females are about 3 mm. long, the males 2 to 2.5 mm. The cephalothorax is twice as long as wide, and widest across the hinder third. The posterior eyes are farther back than the middle of the cephalothorax. The abdomen is oval, slightly widest behind, and both it and the cephalothorax are flattened on the upper side and without any constrictions or indentation.

The legs are short and slender and the first pair thickened in both sexes. The color is dull brown and gray with pale markings. On the cephalothorax there is a transverse light spot just behind the eyes. On the abdomen there are two white stripes across the middle and between them two light spots connected with the anterior band. The space between the light bands is slightly paler than the rest of the abdomen. The legs are pale with a dark longitudinal stripe on the front side. The femora are darkened a little in the first, and less in the second and fourth pairs. In the male the first legs have the tibia and patella thickened as well as the femur, but not flattened on the upper side as they are in *picata*.

Myrmarachne albocinctus, Koch.

Salticus albocinctus, Koch. 1846. Vol. XIII p. 36.

Salticus ephippiatus, Em. Trans. Conn. Acad. 1891,

It is doubtful if this is the **Synemosyna ephippiata** of Hentz neither his description nor figure show the thickened palpi.

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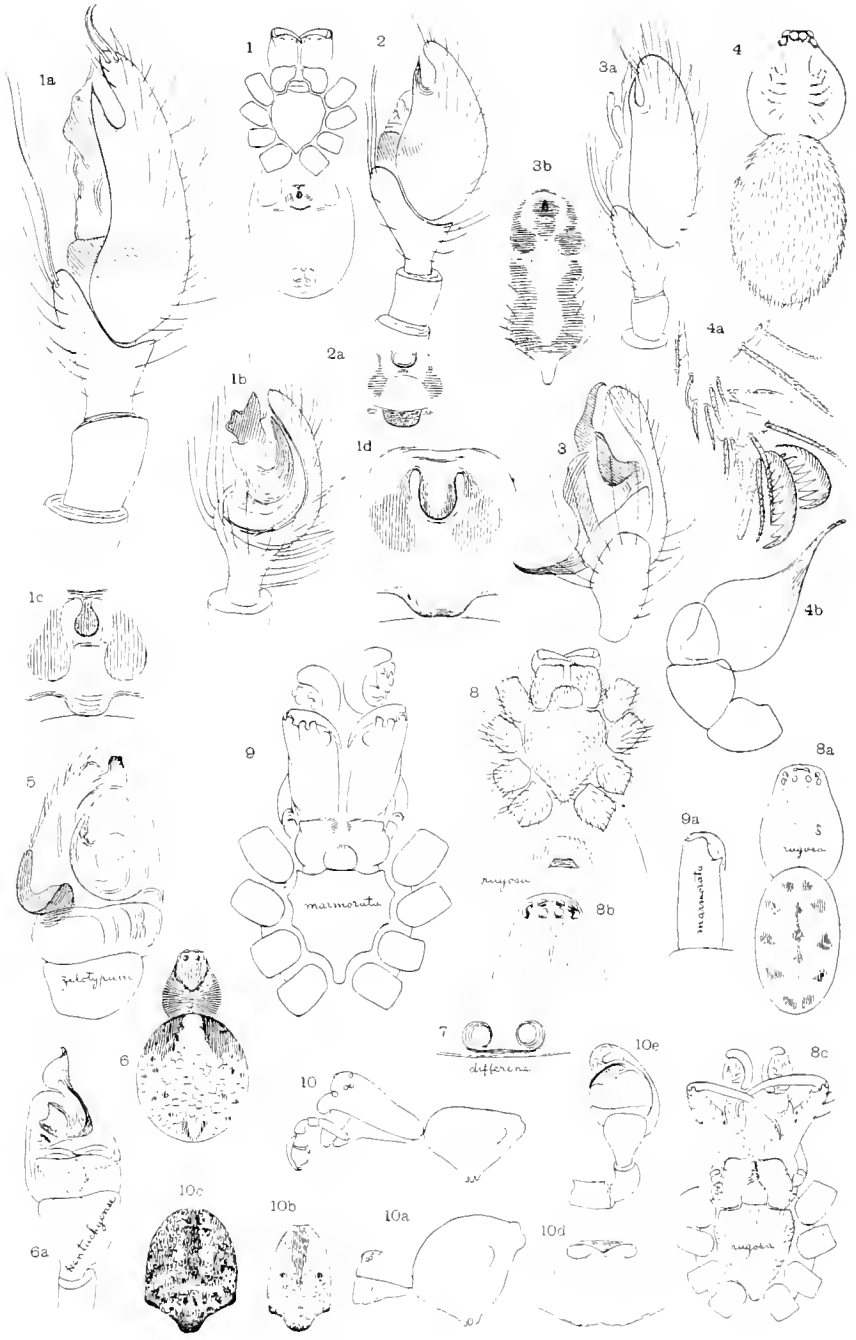

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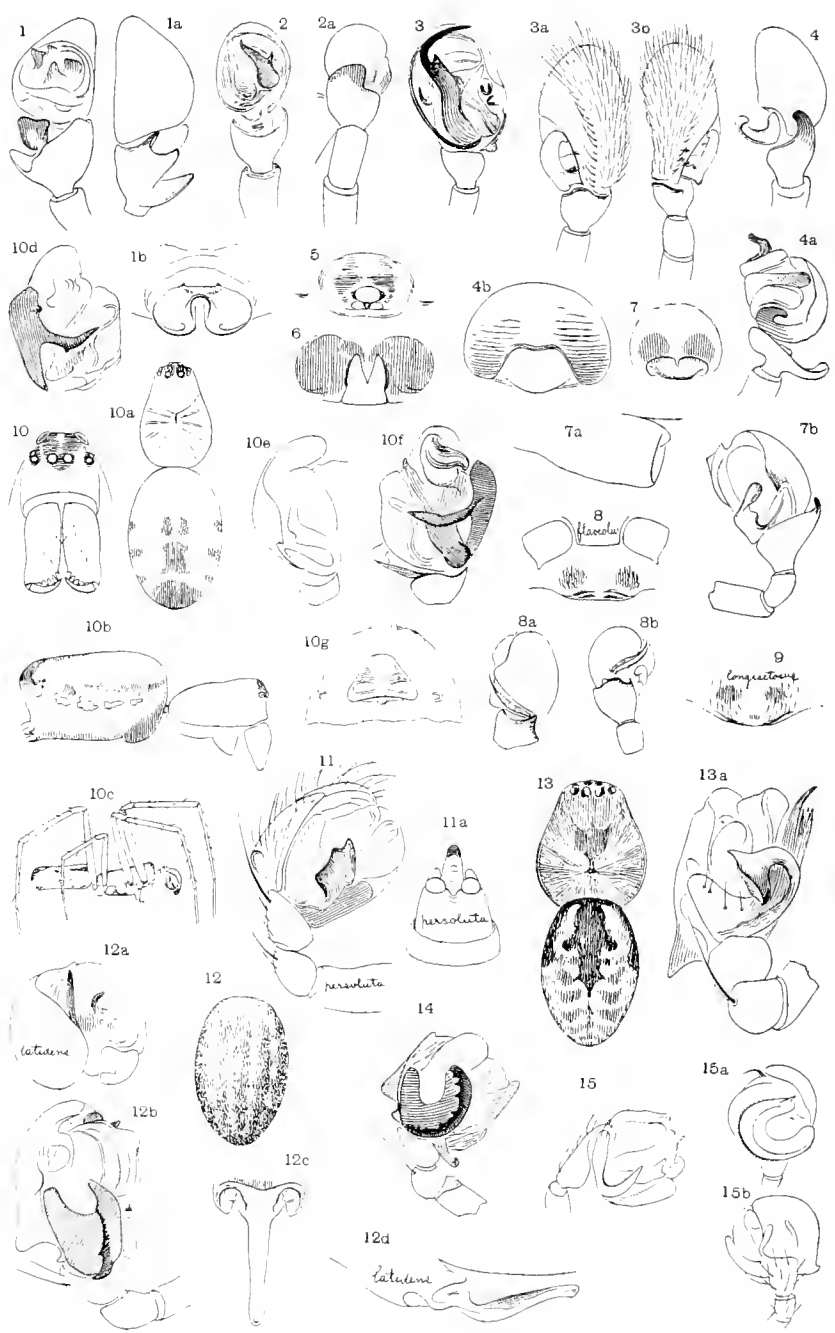

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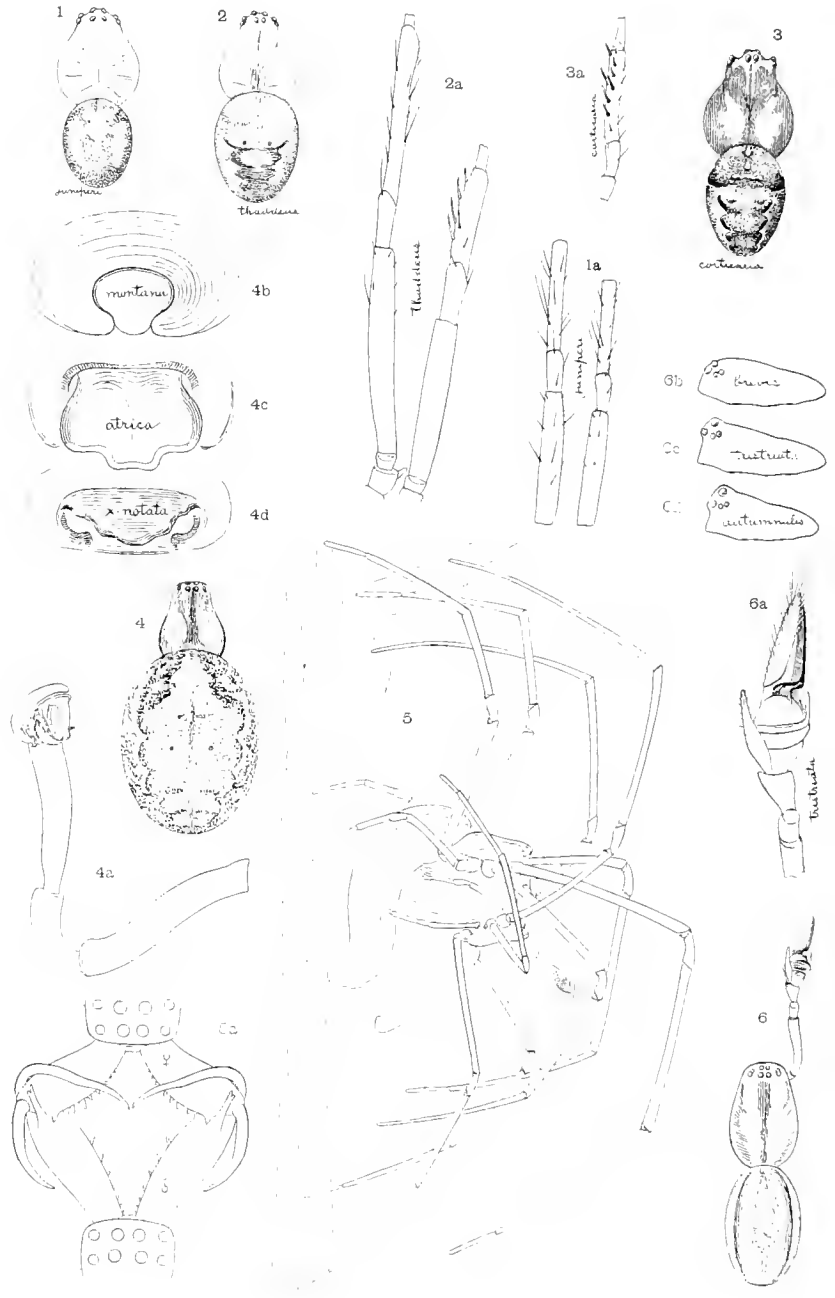

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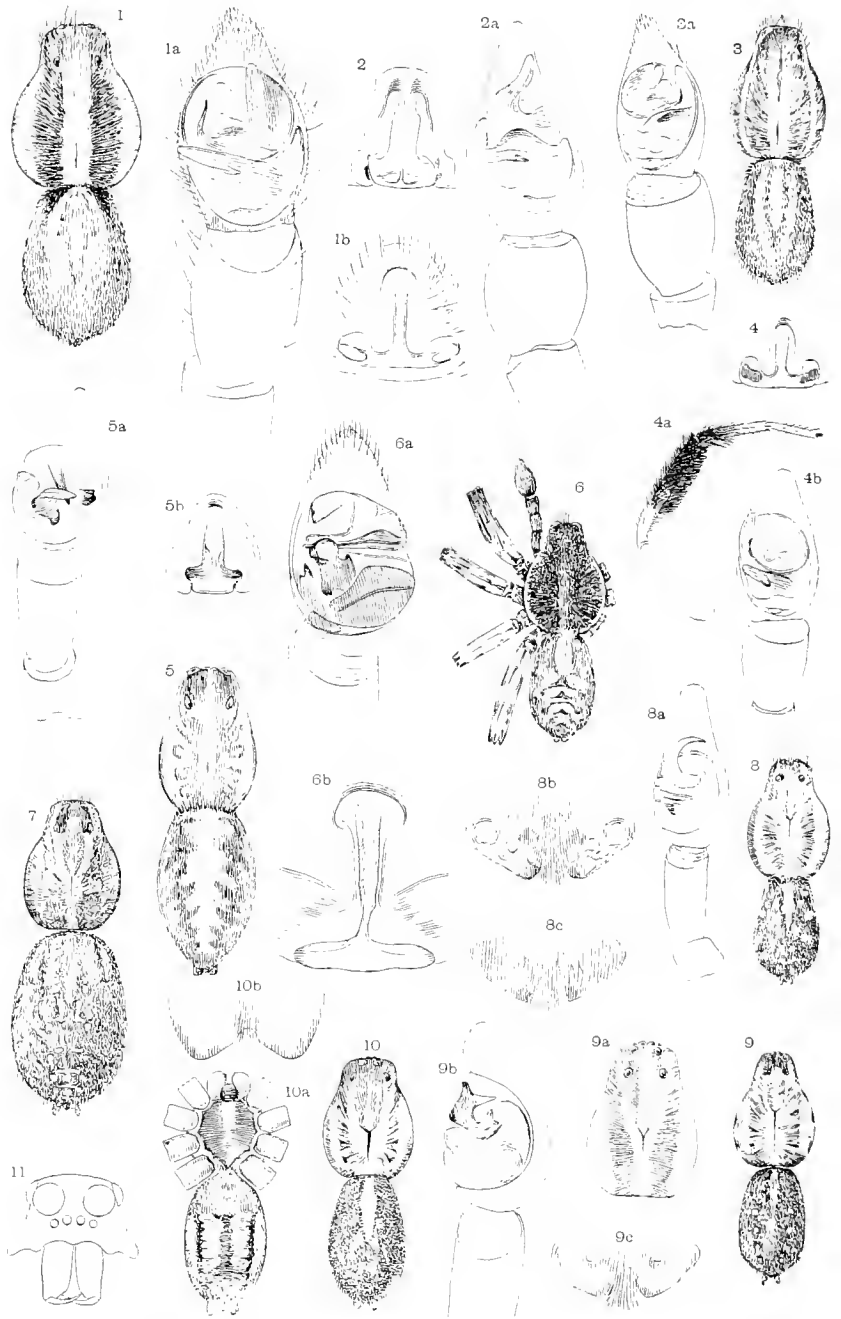

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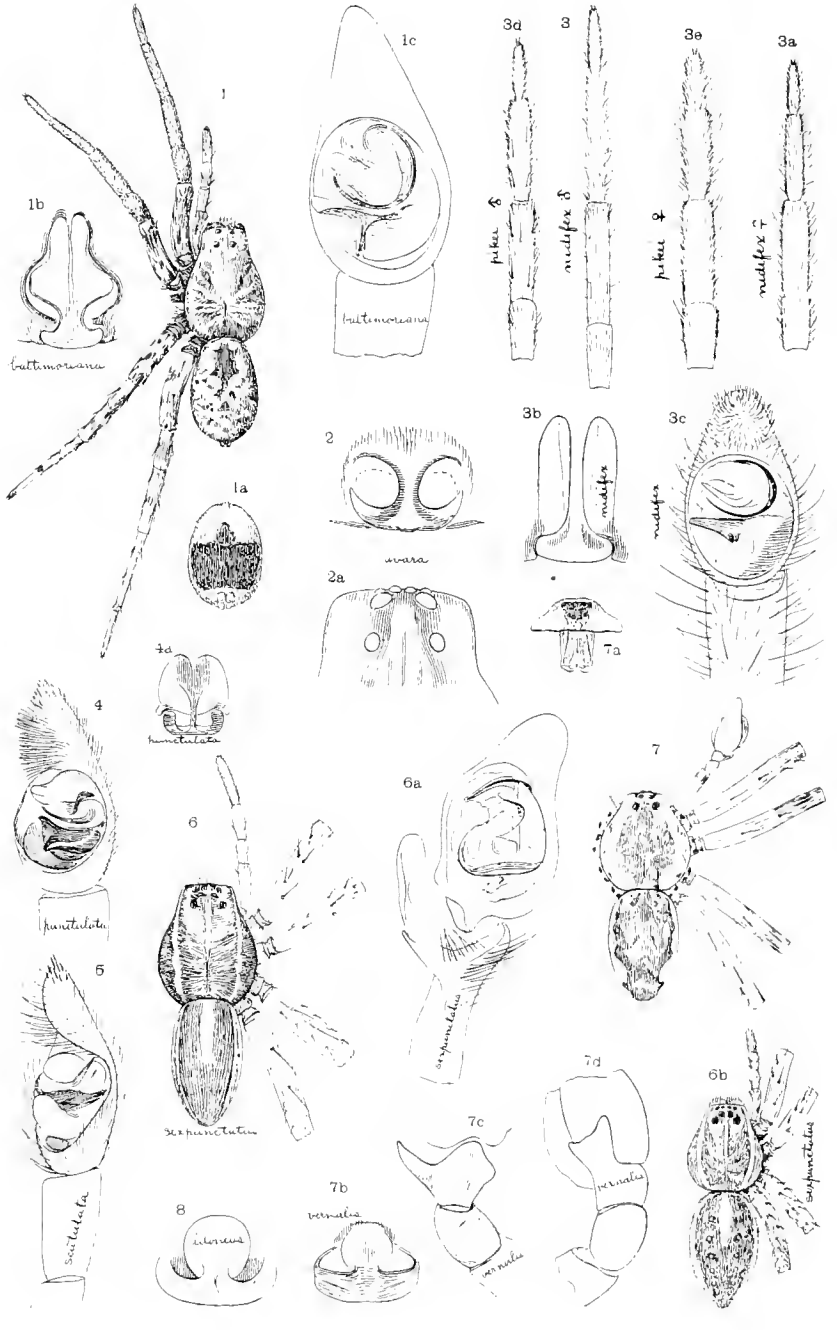


PLATE VIII

Figure 1.—*Œcobius parietalis*. female. 1a under side of abdomen. 1b epigynum. 1c spinnerets and anal tubercle. 1d. calamistrum. 1e male palpus.

Figure 2.—*Scotolathys pallidus*. Male palpus, upper side. 2a male palpus under side. 2b eyes. 2c calamistrum. 2d epigynum.

Figure 3.—*Amaurobius borealis*. Epigynum. 3a, 3b, 3c male palpus. 3d spinnerets.

Figure 4.—*Cryphœca montana* female. 4a spinnerets. 4b epigynum. 4c eyes. 4d sternum. 4e. 4f male palpus. 4g first leg inner side. 4h first leg, outer side. 4i eyes from in front.

Figure 5.—*Halona brunnea*

Figure 6.—*Cicurina brevis*. Cephalothorax of male. 6a. 6b male palpus. 6c epigynum.

Figure 7.—*Cicurina pallida* Cephalothorax of male. 7a. 7b male palpus 7c epigynum.

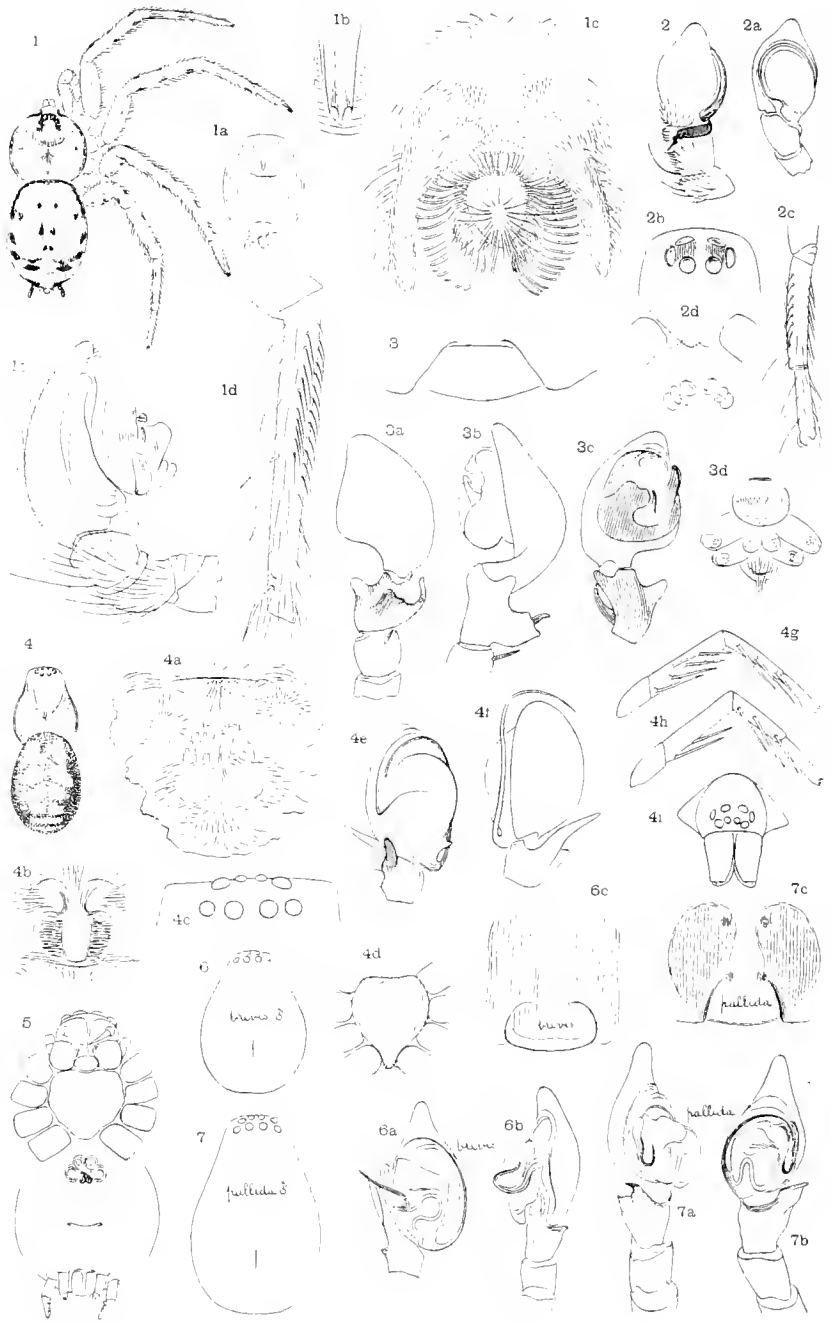


PLATE IX

Figure 1.—*Drassus hemalis*. 1a, 1b male palpus. 1c eyes. 1d epigynum.

Figure 2.—*Drassus bicornis*. 2a male palpus. 2b epigynum.

Figure 3. *Guaphosa parvula*. Epigynum. 3a, 3b male palpus.

Figure 4. —*Poecilochroa montana*. Sternum and maxillæ of male. 4a tibia of male palpus, inner side. 4b male palpus, outer side.

Figure 5. *Poecilochroa variegata*. Sternum and maxillæ of male, to compare with *montana*.

Figure 6. *Prosthesima rufula*. 6, 6a, 6b, 6c variations of epigynum 6d spinnerets. 6e, 6f male palpus. 6g sternum and maxillæ. 6h eyes.

Figure 7. *Apostenus acutus*. 7a eyes. 7b, 7c male palpus

Figure 8. *Amyphana rubra*. male palpus from below. 8a mandible of male. 8b, 8c male palpus.

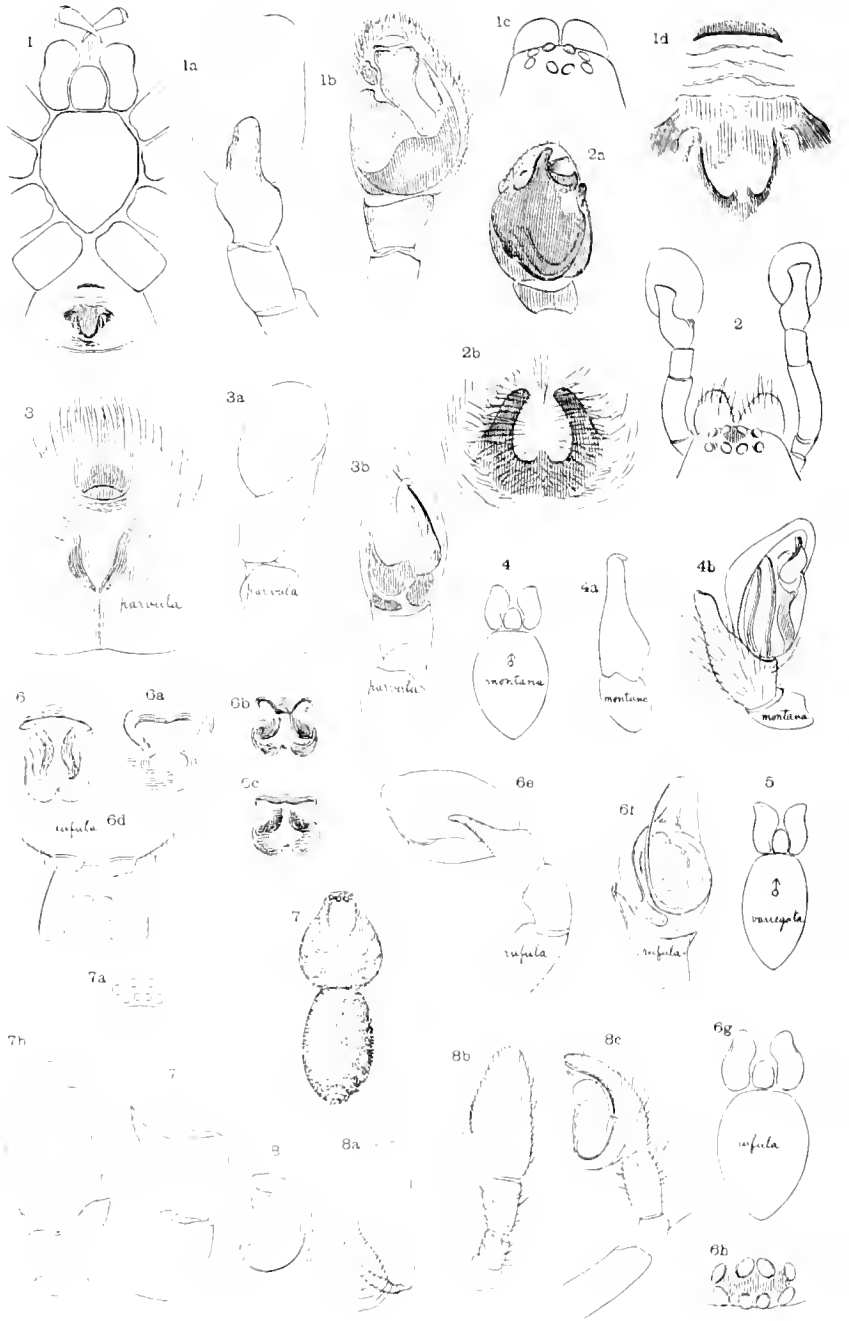


PLATE X

Figure 1.—*Micaria quinquenotata*, male and female pairing. 1a male palpus. 1b cephalothorax of male. 1c same from side. 1d eyes. 1e epigynum.

Figure 2.—*Micaria longipes*. 2, 2a cephalothorax of male, to compare with *quinquenotata*.

Figure 3.—*Micaria gentilis*, female. 3a male. 3b, 3c male palpus. 3d epigynum.

Figure 4.—*Micaria laticeps*. 4a, 4c male palpus. 4b sternum and maxillæ.

Figure 5.—*Castaneira lineata*, sternum and maxillæ of female. 5a epigynum. 5b cephalothorax.

Figure 6.—*Clubiona riparia (ornata)*. 6, 6a, 6b male palpus. 6c epigynum.

Figure 7.—*Clubiona præmatura*. Male palpus, under side. 7a tibia from above, 7b epigynum.

Figure 8.—*Clubiona canadensis*. Male pulpus. 8a epigynum.

Figure 9.—*Clubiona rubra*. Epigynum.

Figure 10.—*Clubiona spiralis*. Male palpus showing tibial hook. 10a same from side. 10b palpal organ from below. 10c epigynum.

Figure 11.—*Clubiona crassipalpis*. Epigynum.

Figure 12.—*Clubiona tibialis*. Epigynum.

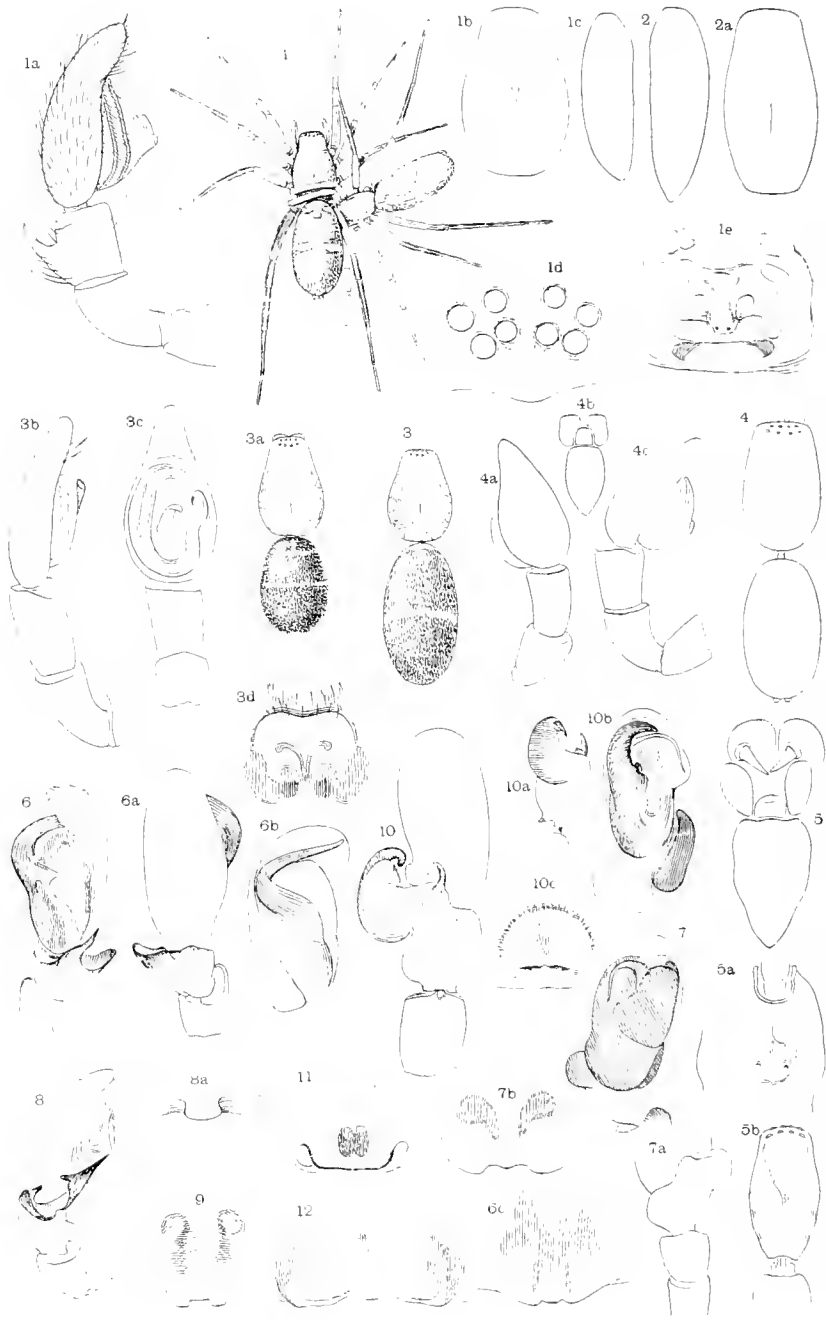


PLATE XI

Figure 1.—*Phidippus brunneus.* Male palpus.

Figure 2.—*Phidippus insignarius,* female. 2a male. 2b male from in front. 2c epigynum. 2d under side of abdomen.

Figure 3.—*Dendryphantes Jeffersoni.* 3a male palpus. 3b end of palpal organ. 3c tibia of male palpus. 3d epigynum. 3e epigynum of *D. militaris.*

Figure 4.—*Dendryphantes flavipedes.* Tibia of male palpus. 4a palpal organ.

Figure 5.—*Phidippus Whitmani.* Male palpus.

Figure 6.—*Marpia (Admestina) Wheeleri.*

Figure 7.—*Hyctia Pikei.* Under side of female. 7a back of female. 7b male approaching female. 7c male palpus.

Figure 8.—*Icius formicarius,* male from the side. 8a male palpus.

Figure 9.—*Homalattus cyaneus.* 9a side of same.

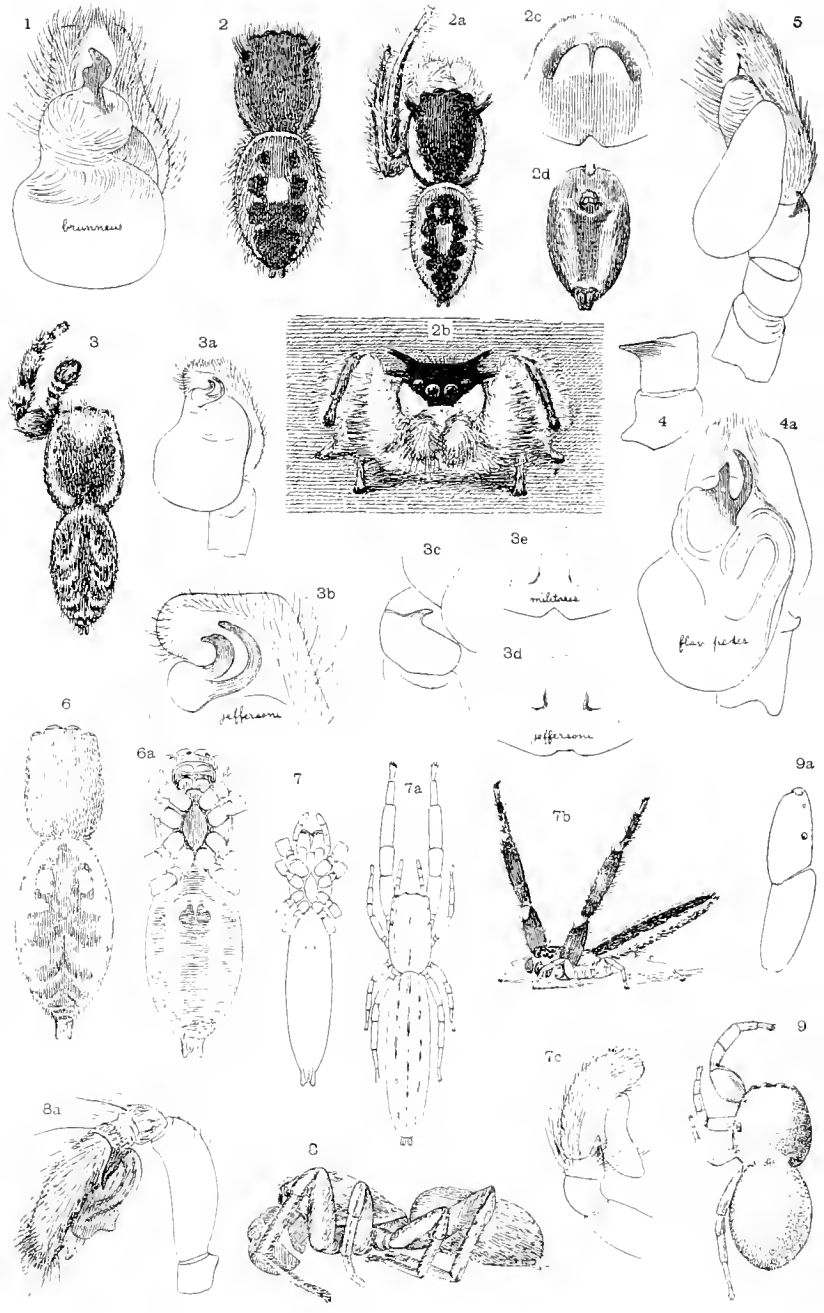


PLATE XII

Figure 1.—*Phidippus Whitmani*, male.

Figure 2.—*Pellenes roseus*, male.

Figure 3.—*Pellenes agilis*, female. 3a male in the position taken when approaching the female. 3b male approaching female, front view.

Figure 4.—*Pellenes borealis*, male. 4a female. 4b male palpus. 4c epigynum.

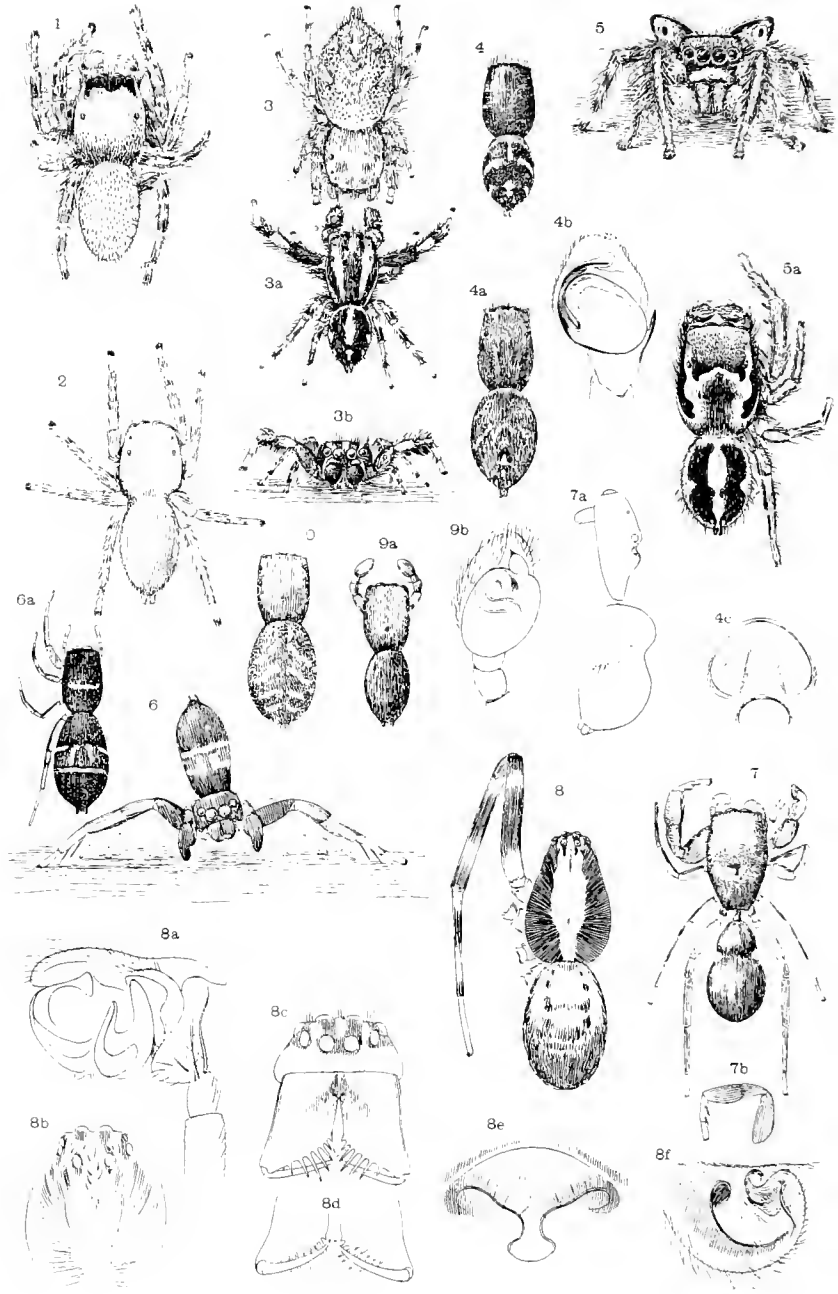
Figure 5.—*Pellenes viridipes*, male from in front. 5a back of male.

Figure 6.—*Peckhamia scorpionia*, male approaching the female. 6a female.

Figure 7.—*Peckhamia picata*, male. 7a side of male. 7b first leg of male, inner side.

Figure 8.—*Tapinopa bilineata*, female. 8a male palpus. 8b head of male. 8c front of head of female. 8d mandibles, inner side. 8e, 8f epigynum.

Figure 9.—*Chalcoscirtus montanus*, female. 9a male. 9b male palpus.

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