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REVISION OF THE ATTIDAE OF NORTH AMERICA

GEORGE W. PECKHAM AND ELIZABETH G. PECKHAM

INTRODUCTION.

The modifications of form and color among the males of the Attidae give them an interest that cannot be found in any other family of spiders. Considering the tiny scale upon which they are built this ornamentation is amazingly elaborate. Their delicate little bodies, marked with patterns of infinite variety, are sometimes colored with vivid contrasts of crimson, black and white, or they may be clothed in rainbow-hued scales. Their heads are crested, their legs are hung with pendent scales or plumed with feathery fringes. To explain all this beauty, which comes, as a rule, only to the males, and to them only at maturity, two theories are offered. Mr. Wallace would say that it results from the correlation of high vitality with intensity of color and a tendency to abnormal developments of the integument; but to one who has seen the attitudes taken by the males when, decked in their finery, they compete in display and engage in feats of arms for the favor of the females, the conviction comes that the key to the problem lies in the relation between the beauty of the male and the attentive eyes of his mate.

That female selection is the explanation must seem unreasonable, and even absurd, to those who, like Plateau and Forel, have established to their own satisfaction that the eye of the spider is unable to receive a distinct image, but its adherents have recently received encouragement from the admirable studies on the structure of the eyes of Attidae and other hunting spiders, made by Alexander Petrunkevitch. The method of this obser-

ver was, after preparing the eye, to determine the number of rods covered by an object of given size at various distances. He concludes that the four pairs of eyes receive four pairs of different sized images; that the images on the anterior middle eyes, which are much the richest in rods, are by far the most perfect, those on the anterior laterals next, on the posterior side eyes next, and on the middle side eyes least; that probably vision is slightly distorted for all things that lie outside the axis of the eye, but that the spider may, nevertheless, form a true idea of objects, first because the distortion in each eye of a pair is corrected by the opposite eye of the same pair, and second because the retina is not a plane, but is of a very complicated form, differing in different eyes and for different species.

He finds that *Phidippus tripunctatus* coming within 30 c. m. of another spider, would receive a sharp image, covering a sufficient number of rods to ensure recognition of species and sex. This confirms our observations, in which we found that Attidae recognized each other easily at a distance of twelve inches. To make sure that sight was the sense involved in this recognition we several times covered the eyes of the males with paraffin, after which they seemed unconscious of the presence of the females. We also took pale-colored females which were being ardently courted by the males and painted them bright blue, after which they to a great extent lost their charm, being entirely neglected for a time, although some of the males afterwards became reconciled to the change in their appearance and again danced before them. These experiments, however, dealt with abnormal conditions, and we consider them much less important than the fact, which we constantly observed, that the females, whose presence in front always threw the males into a fever of excitement, could approach them closely without being noticed so long as they were behind and out of sight—or at least in sight only of the relatively imperfect eyes of the third pair.

It seems plain, then, that the males and females must see each other before their interest is aroused. In the case of the female this interest is manifested only in the mating season.

It being settled that the females can see the males it becomes

important to know whether they show any interest in the display. Here we have plenty of evidence. As among insects, the males are usually much more numerous than the females, and from our studies we think it highly improbable that a female ever mates with the first male that comes along. She rejects the advances of one after another; she flies and is pursued; she watches with great attention, the display of many males, turning her head from side to side as they move back and forth before her; she becomes so charmed as even to respond with motions of her own body. If we may judge by her attitude she is observant of every posture that the male makes, and appreciative of his every claim to beauty.

It is true that we could not detect superiority in the males that were chosen, but this could hardly be expected. The belief that there is such choice is forced upon us by innumerable manifestations of the fact that whenever there is a striking modification in the appearance of the male at the mating season this particular part is brought into view during the display which accompanies courtship.

In one species, *Maevia vittata*, with its two distinct male forms, we have direct evidence of selection of one color rather than the other by the female, for *niger*, the black variety with the cockade, always carries off the palm. In the display of the other male, which looks much like the female, and may therefore be supposed to be the original type, the spider, while still at a distance from her, takes a most theatrical pose, lifting his cephalothorax and first legs high in the air, and dropping his abdomen until the point touches the ground. As he approaches her more closely he changes his position, lying flat with the first legs outstretched in a way that is seen in no other species.

In *niger* the first position is taken and kept throughout the display. When the spider comes close to the female he remains fixed and motionless, with head raised and abdomen dropped. This male is not exactly beautiful but he is undeniably striking with his jet-black body, white legs, and triple tuft on the head. The under surface of this abdomen has metallic reflections which are shown to great advantage by the erect position. A black

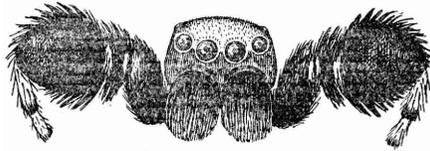
abdomen with metallic luster appears in another species, *P. picata*, but here it is on the upper, not the under, surface. If the female is not interested in these matters it is an odd chance that in this case the position is reversed, the abdomen being held vertically upward during courtship.

On the vitality theory the intense color and the peculiar growths and appendages should be distributed over the body in relation only to anatomical structure and should appear behind as often as in front, on the legs of the fourth pair as often as on those of the first. If, then, we find that the male is especially beautified in those parts that are brought plainly into view when he meets the female we shall have reason to believe that there is some latent meaning in their distribution. As a matter of fact the ornaments of the male in the Attidae run along certain lines. Leaving the genera in which the two sexes are alike and beginning with those that are least modified we can trace a gradual increase in the amount of sexual color. *Zygoballus* and *Dendryphantes* have snowy bands or silvery scales on head and clypeus, and their falces are frequently burnished and elongated. In their display they often fling the palpi out horizontally, or fold them under, so that they do not obstruct the view of these parts. *P. picata*, in addition to his metallic abdomen, has steely blue iridescence on the upper surface of the first leg, which is enlarged and flattened. In his display he holds his front feet firmly on the ground so as to bring the shining upper surface to the front, lifts his abdomen, and thus placed sways from side to side.

We now come to *Icius* and *Anoka*. In these graceful spiders the white legs are delicately lined or spotted with black or are fringed and tufted; the front eyes have colored rings around them, or piquant tufts, like eyebrows, above, and they are often clothed in rosy and golden scales. The display of the male exhibits these charms and is enhanced by whirling dances and waving plumes. In *Phidippus* we find the ornamentation taking new and striking forms on head, face, clypeus and falces, and becoming very elaborate on the first legs where there are single fringes, double fringes of contrasting color overlapping

each other, tufts and even curls. Some males have iridescent plates under the femora which can be seen only when the legs are raised vertically upward.

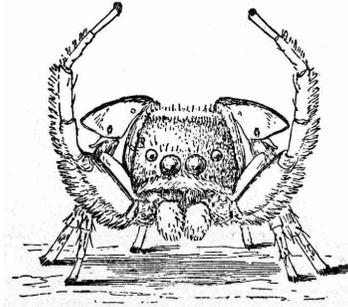
Not yet have we exhausted the ingenuity of nature in adorning this family, for in *Pellenes* the ornamentation becomes still more fanciful and extraordinary. The forms with which we are already familiar are repeated and exaggerated as in the face of *tarsalis*, the palpus of *americanus*, and the pedicillate fringes of *brunneus* and *clypeatus*. In *oregonense* the tibia is as wide as long, and, as in *picata*, one side is iridescent. In this case, however, the color is on the inner, not the upper surface, and when the spider makes his display he does not, like *picata*, call attention to the front face, but bowing his legs, presents to view the side of the joint.



P. oregonense, displaying iridescent side of enlarged tibia.

So far everything has been lavished upon the front legs. In this rush of decoration all has been crowded on to the pair that the female cannot help seeing when the male stands before her, but in *Pellenes* other possibilities have been developed and it has been shown that after one pair of legs has been diverted from its normal use of supporting the body, those remaining can be so disposed as to display excrescences upon the third pair. Pale apophyses dotted with black, on the patella, spine-like processes on the femur, enlargement of both patella and femur in the same leg appear, along with the habit of hunching the third legs over the back so that these ornaments may be in full view. Our *viridipes* found it an arduous task to balance himself on only half the usual number of feet and no *Pellenes* that we have seen trying to look his best under these conditions seemed to

find it easy, since the third legs, only the tips of which must touch the ground, were continually slipping down and being jerked back into position.

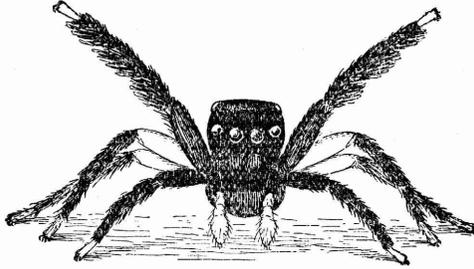


P. viridipes displaying fringe on first leg and enlargement on patella of third.

One might think that the exacting taste of the female spider had now reached the limit of its power. So we believed, and it was in the hope of accumulating instances of the same kind, not of discovering anything new, that, with Mr. Emerton for a companion, we went some years ago, to the Pacific Coast. At Sisson we found some males of *Euophrys monadnock* and were at once struck by the fact that the sexual color appeared not only on the femur of the third leg but on that of the fourth as well, both being orange-colored. Could it be that the spider was able to take a position which would display the ornaments of three pairs of legs at the same time?

Before the day was over several females had been taken and the test was made. On being introduced into the box the little male took in the situation in the flash of an eye and fell instantly into position. The palpi, jet black with yellow ends, hung down in front; the first legs, black with pale tips, and fringed with long, thick, purplish scales, were thrown diagonally upward; the body was raised high on the tarsi of the second and third pairs, the third being lifted so that the colored femora would be seen over the second, while the legs of the fourth pair were dropped and held at just the angle that brought the femora into view between those of the second and those of the third pair. In

this difficult attitude the spider began to move. There was none of the awkwardness shown by *Pellenes* in trying to keep the third leg in position; indeed, there was no muscular action visible as he glided smoothly back and forth, while the female, turning from side to side, kept him constantly in sight. The ready pencil of Mr. Emerton caught him in the act, and the figure speaks more effectively than words can do for the theory of sexual selection.



E. monadnock, displaying ornamental fringe on first leg and color on third and fourth.

Selection of any kind has no lack of material to work on among the Attidae, where variation may almost be called the rule, not the exception. In *P. americana*, for example, described by Keyserling, by Mr. Banks, and by ourselves, nearly every example shows a new coloration for the hairs on the legs and palpi as well as of the falces, clypeus and crest; and of the male of *oregonense*, so common at Sisson in its delicate fawn colored garb which scarcely differs from that of the female, we have one example (from Oregon) with its entire body, cephalothorax, abdomen, clypeus, falces and legs clothed in bright iridescent red.

Several interesting phenomena remain unaccounted for. In the genus *Pellenes* are two closely related species the females of which are indistinguishable, *borealis* in the north and *coronatus* in the south. In *borealis*, when adult, the clypeus is black; in *coronatus* it is bright red. In the moults just before maturity the clypeus is bright red in *borealis* and dark in *coronatus*. One might hazard the conjecture that these spiders are the de-

scendents of one parent species, and that the danger attending conspicuous color has effaced the red in *borealis*; but it is difficult to see, not only why the color was not equally dangerous to the young spider, but even how it could have been acquired before maturity. The condition is one of those exceptions to a general rule which cannot be explained without fuller knowledge. Other exceptions are found in *I. elegans*, where the female, although colored differently, is quite as brilliant as the male, and in *Bellota*, where the legs of the females are enlarged and brightly colored.

It is true that great vitality is found going along with the secondary sexual modifications, but it is also true that in many species of Attidae there is even greater activity with no special modification, while in the whole family of the Lycosidae (running spiders) a high degree of body activity is found without structural or color modification. With these facts before us it is difficult to correlate the color development with abundant energy, but even if we should grant, for the moment, that superior vitality accounts for color and modification we should still have unexplained the evident relation between the interest of the female and the display of peculiar decoration in the male. It is plain that something has guided the style of courtship in each species. For merely carrying off an overflow of energy one set of muscles would do as well as another, but the male is animated by something that makes him bring his best points to the attention of the female, and this is not in an occasional instance, but so constantly and without exception that it is possible, on finding a male with some new appendage, to prophesy as to the posture that he will assume.

Mr. Wallace, in discussing the sexual ornaments of birds, says that "the males, in their rivalry with each other, would see what plumes were most effective and each would endeavor to excel his enemy as far as a voluntary exertion would enable him to." This assertion that the males consciously vie with each other in displaying their beauty implies that the females are influenced by it, for surely if the males can see which plumes are "effective" the females can see the same thing; and if the

plumes are "effective" the effect must be to make a female choose one male rather than another because of them. Among the variations that appear, whatever she does not see is of no use to the male in winning her, and is dropped out; whatever is visible and exciting to her is perpetuated and the choice of the most striking male, from a number of wooers, by the female, has resulted in progressive development of highly colored and modified species. Mr. Wallace's hypothesis may explain the impulse to display, but the only theory that explains the form that the display takes is that of female selection.

We have made a careful study of the types in the Cambridge collection which were described in 1885 by Keyserling. In most of the identifications we agree with Mr. Banks and Mr. Emerton. Our results are as follows: *Phidippus purpuratus* and *albomaculatus* are the male and female of the same species, which should be called *purpuratus* K.; *pulcherrimus* is a good species which has since been found by Mr. Banks; *ruber* is a synonym of *McCookii* P.; *gracilis* is a synonym of our *Putnamii* and *bicolor* of our *Johnsonii*; *clarus* is a good species and includes *rufus* P., *rufus* B., and *multiformis* E.; *Icius elegans* is a *Sadala*, probably from Mexico; *Icius nigromaculatus* is a good species, belonging to *Dendryphantes*; *I. albovittatus* equals *D. militaris* H.; *I. crassiventer* equals *D. capitatus* H.; *I. vittatus* equals *Wala palmarum* H.; *Ephippus americanus* is a good species of which *speciosa* B. is a synonym. It belongs to *Pellenes*. *Ergane taeniata* is probably the young of *Stoides auratus* H.; *Cyrba pulex* equals *Habrocestum pulex* H. as Keyserling himself states, and *Saitis xnotata* is the female of the same species; *Pellenes nigriceps* is a small variety of our *Pellenes splendens*; *Menemerus cruciferus* equals *Stoides auratus* H. *Homolattus septentrionalis* equals *Agassa cyanea* H.; *Wala albovittata* equals *Wala palmarum* H.; *Agobardus anormalis* seems to be a good species but probably does not belong to North America.

The spiders from Florida described by Dr. Albert Tullgren in 1898, under the names *Phidippus clarconensis*, *P. oaklandensis* and *P. bilineatus*, are probably synonyms of species already known, but they are so uncertain that we do not include them.

This is true also of three species in the Halle collection from Peoria, Ill., described by Dr. Giebel.

We have omitted from the generic synonymy all reference to our paper on Genera of Attidae since this was merely a collection of generic descriptions which are referred to under the dates of their first publication.

The only purpose of the keys is to save time, and a species or genus that has been found by their use should always be identified by the specific or generic description before it is accepted.

A few of the drawings were made by Mr. Kapo Morito but most of them are by Mr. Emerton, who has also placed at our disposal the drawings made for his paper on New England Attidae. We have made use of figures published in our earlier papers, especially those of 1888 which were made by Mr. William M. Wheeler. Two figures have been reproduced from a paper by Mr. Banks and one has been copied from Mr. Cambridge.

Leaving out of consideration the Lyssomanae (Attidae with eyes in four rows) we first divide the Attid genera of the United States into ant-like, and not ant-like spiders, and then subdivide each of these classes into Simon's three groups of Pluridentati, Unidentati and Fissidentati, according to the dentition of the lower margin of the falx. This we do merely as a matter of practical convenience, the fact that it sometimes separates closely allied genera adding to its usefulness as a means of identification.

KEY TO ANT-LIKE SPIDERS.

1	Lower margin of falx with several teeth. Front middle eyes three times as large as lateral eyes.	<i>Synemosyna formica</i>
	Lower margin of falx with compound tooth.	2
	Lower margin of falx with single tooth.	3
2	Tube of palpus long, slightly curved. Two tibial apophyses on palpus. Tibia I with one pair and one spine farther back. Eye-region occupying 2/3 of cephalothorax.	<i>Peckhamia scorpiona</i>
	Tube of palpus spiral, heavy at origin and tapering at end. Eye-region occupying 1/2 of cephalothorax.	<i>Peckhamia picata</i>
	Tube of palpus spiral, heaviest in the middle, equally slender at origin and at end, where it bends abruptly. Eye-region occupying 1/2 of cephalothorax.	<i>Peckhamia americana</i>
3	Cephalic part on higher plane than thoracic. Tibia and tarsus of palpus strikingly enlarged in both sexes.	<i>Myrmarachne albocinctus</i>
	Cephalic and thoracic parts on same plane.	4
4	First leg with tibia much enlarged.	<i>Bellota</i> 5
	First leg with femur somewhat enlarged, but otherwise slender (from Texas, near Mexico).	<i>Paradamoetus formicina</i>
5	Tibia I longer than femur and plainly longer than wide, with a ridge of stiff hairs, spiny, and truncated at their ends.	<i>Bellota Wheelerii</i>
	Tibia I not longer than femur, and about as wide as long, with a fringe of soft hairs.	<i>Bellota micans</i>

SYNEMOSYNA HENTZ. 1845.

Type, *S. FORMICA* H.

1845. *SYNEMOSYNA* H. (*FORMICA*), Jour. Bost. Soc. Nat. Hist., V.
 1846. *JANUS* C. K. (*GIBBEROSUS*), Die Arachniden, XIII, p. 21.
 1875. *SYNEMOSYNA* H. (*FORMICA*), Occ. Pap. Bost. Soc. Nat. Hist., II, p. 73.
 1883. *SYNEMOSYNA* P., Descr. New or little known Attidae of U. S., p. 30.
 1888. *SYNEMOSYNA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 93.
 1891. *SYNEMOSYNA* E., Trans. Conn. Acad. Vol. VIII, p. 30.
 1892. *SYNEMOSYNA* P., Occ. Pap. Nat. Hist. Soc. Wis., Vol. II, pt. 1, p. 76.
 1901. *SYNEMOSYNA* E. S., Hist. Nat. des Aran., 2nd Ed., II, p. 512.
 1905. *SYNEMOSYNA* B., Am. Nat., XXXIX, p. 320.

Cephalothorax rather low, twice as long as wide, rounded and narrower behind. There is a deep constriction near the middle of the thoracic part and also in the middle of the abdomen. Quadrangle of eyes but little wider than long, a little wider behind than in front, occupying one-third of the cephalothorax. Anterior eyes in a curved row, middle eyes touching and very large, two and one-half to three times as large as the lateral, which are a little separated from them. Second row a little nearer the first than the third row. Dorsal eyes a little larger than the lateral. Lip about as wide as long. Falces with several teeth on lower border.

The spiders in this genus are the most ant-like of all our spiders, and are not easily distinguished from ants, even by a naturalist.

***SYNEMOSYNA FORMICA* H.**

Plate L, figures 1—1c

1845. *SYNEMOSYNA FORMICA* H., Jour. Bost. Soc. Nat. Hist., V.
 1846. *JANUS GIBBEROSUS* C. K., Die Arachniden, XIII, p. 21.
 1875. *SYNEMOSYNA FORMICA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 73.
 1883. *SYNEMOSYNA FORMICA* P., Descr. New or little known Attidae of U. S., p. 30.
 1888. *SYNEMOSYNA FORMICA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 93.
 1891. *SYNEMOSYNA FORMICA* E., Trans. Conn. Acad., VIII, p. 30.
 1892. *SYNEMOSYNA FORMICA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, pt. 1, p. 77.
 1892. *SYNEMOSYNA FORMICA* B., Proc. Acad. Nat. Soc. Phila., p. 80.

Length, ♂ 3.9 mm., ♀ 5.4 mm. Legs in both sexes 4312; equally stout. The middle eyes of the first row are three times as large as the lateral; the other eyes are small. The anterior end of the abdomen has the integument hardened in the middle and has also a hard piece on the under surface, which extends upward on each side so that the edges are visible from above. The posterior end of the abdomen is widened and rounded. The falces are short and vertical in the female, and a little longer, and curved apart in the middle in the male. The color

is black with a white spot just before the anterior constriction, and a white band in the constriction on each side, which is narrower above than below. Abdomen in front of constriction pale rufus; behind constriction black, with a white band which occupies the anterior sides and curves downward under the venter. Legs are all slender; first pair pale, with an external and internal black line on the femur patella and tibia; second pair all pale; third pair pale, except femur which is dark, and a black spot on tibia; fourth pair with femur dark, patella pale at proximal, blackish at distal end; tibia, proximal end, blackish, shading into pale towards outer part; metatarsus and tarsus pale.

This species is found on plants and low bushes and matures in June. The cocoon contains four large eggs, and, to judge from the habits of *Peckhamia picata*, three or four are made during the summer. We have elsewhere called attention to the low fertility of the ant-like spiders (some species of the Attidae lay 180 eggs), and have suggested that if there is an inverse variation in every species between its birth-rate and its powers of maintenance, we must accept the conclusion that these small, weak and defenseless spiders derive an immense advantage from their imitation of ants, their mimetic form enabling them to escape from their enemies.*

PECKHAMIA E. S. 1901.

Type, *SYNEMOSYNA SCORPIONA* Hentz.

- 1845. *SYNEMOSYNA* HENTZ (*PICATA*), Jour. Bost. Soc. Nat. Hist., V.
- 1875. *SYNEMOSYNA* HENTZ (*PICATA*), Occ. Pap. Bost. Soc. Nat. Hist., II, p. 75.
- 1888. *SYNAGELES* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 94, 95.
- 1891. *SYNAGELES* E., Trans. Conn. Acad., VIII, p. 32.
- 1892. *SYNAGELES* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 1, p. 63-65.
- 1901. *PECKHAMIA* SIMON, Hist. Nat. des Aran., 2me Ed., II, p. 496.
- 1903. *PECKHAMIA* SIMON, *ibid*, p. 868.
- 1905. *PECKHAMIA* BANKS, Am. Nat., XXXIX, p. 320.

* Occ. Pap. Nat. Hist. Soc. Wis. Vol. II, No. 2, p. 75.

Cephalothorax rather low and flat (*scorpiona*), or high and convex (*picata*, *americana*). Eye region plainly longer than wide, wider behind than in front or equally wide (*scorpiona*), occupying about $2/3$ or, in *picata* and *americana*, $1/2$ of the cephalothorax. First row of eyes very slightly curved; middle eyes twice, or nearly twice, as large as lateral. Second row much nearer the first than the third. Dorsal eyes large, forming a row as wide (*picata*, *americana*) or not quite as wide (*scorpiona*) as the cephalothorax. Falces vertical, small, with a compound tooth on the lower margin; labium as wide as long (*picata*, *americana*) or wider than long (*scorpiona*). Sternum, oval.

PECKHAMIA AMERICANA P. 1892.

Plate L, figure 4. Plate LI, figure 1.

1891. *SYNAGELES AMERICANA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 1, p. 65.

Length, ♂ 4 mm., ♀ 5 mm. Spines, ♂ ♀, tib. I 3—3; met. I 2—2, tib. II 3—3, met. II 2—2. This spider closely resembles *picata*, but in that species the cephalic part is shorter and the posterior slope is quite different, there being a slight ridge behind the depression from which the thorax falls steeply on the sides and behind. In *americana* the cephalic part occupies a little more than half, the depression is less marked, and the elevated part behind the depression rounds out on the sides and behind instead of falling steeply. *Picata* is a much darker spider than *americana*, which is reddish rather than black.

Color, ♂. The body and legs, except the posterior two thirds of the abdomen and tarsi of the second pair of legs, which are dark, reddish. In some specimens the cephalic part is darker and all the legs approach more nearly the markings seen in *picata*, though the dark purple iridescence on the patella and tibia is never present. In the female there is more red than in *picata* but the differences are not so accentuated. In cases of doubt the epigynum is the only certain criterion.

Prof. Wm. M. Wheeler frequently found *americana* mimicking the ant *Componotus planatus* Roger, and running in files with the ants up and down the trees at Miami, Florida, in May.

From Georgia, Florida, Texas, Arizona, Vera Cruz, Mexico, and Missouri.

PECKHAMIA PICATA H. 1845.

Plate LI, figures 2—2c.

1845. *SYNEMOSYNA PICATA* H., Jour. Bost. Soc. Nat. Hist., V.
 1875. *SYNEMOSYNA PICATA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 75.
 1888. *SYNAGELES PICATA* P., Wis. Acad. Sciences, Arts and Letters VII, N. A. Att., p. 94.
 1891. *SYNAGELES PICATA* E., Trans. Conn. Acad., V, p. 32.
 1892. *SYNAGELES PICATA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 1, p. 64.

Length, ♂ 3.4 mm., ♀ 4.8 mm. Legs, ♂ 4123̄, ♀ 4231̄, first pair stoutest, especially patella and tibia. Spines in both sexes, tib. I 3—3; met. I 2—2, tib. II 3—3, met. II 2—2. The cephalic part is limited by a depression, beyond which the thoracic part is raised into a ridge and then falls steeply; it is prolonged below, to meet the pedicle. The abdomen is constricted near the anterior end, more strongly in the male than in the female.

Color. Eye-region, dark with violet reflections; thoracic part, reddish-brown with two white spots in the depression between the dorsal eyes. Anterior segment of abdomen reddish-brown; posterior segment glistening black, with two white bands which begin at the constriction and curve downward over the sides. Venter dark.

The first legs of the female are twice as thick as the others and the first legs of the male are still stouter. The patella and tibia are flattened in front, especially in the male. This surface in the male is purple and iridescent. Legs ♂, femur, brown; patella and tibia, dark; metatarsus and tarsus, yellow or light brown; second pair, femur, brown, patella and tibia, light; metatarsus and tarsus dark. In some specimens there is a black longitudinal line on the anterior face of patella and tibia. Third pair, femur as in second, other joints light with sometimes the

black line as in the second. Fourth pair brown, occasionally the proximal end of patella is light and also last two joints. Legs, ♀, first pair, brown except last two joints, which are yellow; second pair, femur patella and tibia, light, with the black line, metatarsus and tarsus, dark; third pair, femur brown, patella and tibia as in second, other joints light; fourth pair, brown except patella and tarsus, which are more or less yellow. In alcohol all parts tend to become brown.

The species is one of our best ant mimics, both in form and movements. The females make three cocoons, each containing from three to four eggs. We have described in detail its mating and general habits, in Vol. II, pt. 1 of the Occ. Pap. Nat. Hist. Soc. Wis., pp. 4–7.

Picata matures, in Wisconsin, about the first of July. The females are more common than the males.

***PECKHAMIA SCORPIONA* H. 1845.**

Plate L, figure 3. Plate LI, figure 3.

1845. *SYNEMOSYNA SCORPIONA* H., Jour. Bost. Soc. Nat. Hist., V.

1850. *SYNEMOSYNA NOXIOSA* H., Jour. Bost. Soc. Nat. Hist., VI.

1875. *SYNEMOSYNA SCORPIONA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 74.

1875. *SYNEMOSYNA NOXIOSA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 161.

1888. *SYNAGELES SCORPIONA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 95.

1892. *SYNAGELES SCORPIONA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 1, p. 63.

Mr. Banks thinks that *Salticus fulgineus*, Blk. 1846, is a synonym.

Length, ♂ 2.4 mm., ♀ 3.5 mm. Legs, $\overline{4123}$, first pair shortest, especially in the male. Spines, ♂ and ♀, tib. I 1–1, 1 single spine; met. I 2–2; tib. II 1 single spine; met. II 2–2.

The cephalothorax is flat and low, the thoracic part falling gradually from the dorsal eyes, prolonged below to meet the pedicle.

The cephalothorax is brown, darkest above the front eyes, with the side eyes on black spots. Under alcohol the front third of the abdomen is brown with two white lines, sometimes connected by longitudinal bars; there is a light ring around the constriction, and back of this the color is dark. A variety from Arizona, of which we have a single male, has the abdomen black with a round pure white spot on each side, in the constriction. The legs are yellow, with dark longitudinal lines (more or less broken) in front and behind, excepting the first pair in the male, which has the femur, patella and tibia enlarged and darkened. The black-abdomened variety has the first leg of a uniform reddish-brown color, except that the metatarsus is darker on the outside and lighter within, and the tarsus light; the second leg is dark with a pale tarsus; the third is light with a dark longitudinal line in front; the fourth is brown with a pale tarsus and two dark longitudinal lines. From below, the coxae and trochanters of the first pair are reddish, the second and third coxae and all the other trochanters are white, and the fourth coxae are black.

Mr. Emerton has this species from Cambridge, Mass., Elizabeth City, N. C., and Charleston, S. C.; Mr. Banks, from Long Island, N. Y., Louisiana and Arizona, and Hentz had it from North Carolina and Alabama. In our collection are examples from New York, Ohio, Arizona, Texas and California.

***MYRMARACHNE ALBOCINCTUS* C. K. 1846.**

Plate L, figures 2–2c.

1846. *SALTICUS ALBOCINCTUS* C. K., ♂ ♀, Die Arachniden, XIII, p. 36.
 1888. *SALTICUS EPHIPPIATUS* P., ♂ ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 96.
 1891. *SALTICUS EPHIPPIATUS* E., (not *ephippiatus* H.) ♂ ♀, Trans. Conn. Acad., VIII, N. E. Attidae, p. 31.
 1892. *SALTICUS EPHIPPIATUS* P., ♂ ♀, Occ. Pap. Nat. Hist. Soc. Wis., II, p. 18.
 1899. *SALTICUS ALBOCINCTUS* B., Proc. Ent. Soc. Washington, IV, 3, p. 190.

Not *Synemosyna ephippiata* Hentz 1845.

Length, ♂ ♀ 5–7 mm. Legs, ♂ ♀ 4132, equally stout.

Cephalothorax rather high; thoracic part on a lower plane than cephalic, with a slight constriction in front of the middle. Sides nearly parallel, contracting a little behind. Quadrangle of eyes very slightly wider than long, a little wider behind than in front, occupying two-fifths of the cephalothorax. Anterior eyes in a straight row, all somewhat separated from each other, the lateral about one-half as large as the middle. Second row about half-way between first and third rows. Third row not quite so wide as cephalothorax at that place. Falces (♂) wider than first row of eyes, more than three times as long as face, nearly horizontal, diverging; fang as long as falx; (♀) much weaker and shorter, slightly inclined forward, fang short. On the lower margin of the falx is a single tooth. Lip about as wide as long. Coxae I separated by more than the width of the lip. Sternum long and narrow. Abdomen constricted in front of middle. Legs all slender with three pairs of spines under the tibiae, and two pairs under the metatarsi, of the first and second pairs.

The cephalothorax is yellowish-brown with an indistinct light mark across the middle. The abdomen has, at the constriction, a white band, which slopes backward along the sides and nearly to the spinnerets. In front of the constriction it is brown, and behind it, black. We have seen only specimens in alcohol. Mr. Emerton, who is familiar with it in life, says that in color and general appearance, it resembles orange-brown ants, the colors being various shades of orange-brown, some individuals very dark, others pale. The legs are yellow with the tarsi of the first pair dark, and the first or second with a more or less distinct dark line in front. The palpi are darker than the legs, and, in both sexes, have the tibia and tarsus very much thickened, and covered with stiff hairs on the under side.

Mr. Emerton has this species from Massachusetts and Connecticut, and Mr. Banks from New York, Louisiana and Florida. Koch reports it from Pennsylvania, and in our collection are examples from New York, Missouri, Mississippi and Texas.

The single tooth on the lower margin of the falx brings *albo-*

cinctus into the group of Unidentati, but we place it in *Myrmarachne* (Pluridentati) as it differs from that genus only in having not so narrow a sternum.

BELLOTA P. 1892.

Type, *CHIROTHECIA FORMICINA* Tacz.

1879. *CHIROTHECIA* TACZ, (*FORMICINA*), Bull. Soc. Imp. Des Nat. de Moscow, LIII, 4, p. 367.

1892. *BELLOTA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 1, p. 67.

Cephalothorax low and flat, with sides nearly vertical and nearly parallel in *formicina* and *Wheelerii*, but not in *micans*, widening a little behind the dorsal eyes. Front row of eyes straight, middle at least twice as large as lateral. Second row half-way between the others, or nearer first. Eye-region $1/4$ wider than long, plainly wider behind than in front, occupying less than $2/5$ of the cephalothorax. Sternum long, oval. Coxae I sometimes almost touching (*formicina*), sometimes well separated. Labium longer than wide, or about as wide as long (*formicina*). First leg much enlarged in both sexes. Falces vertical, with a single tooth on the lower margin.

BELLOTA MICANS, n. sp.

Plate LI, figure 6.

♀, Length 3.5 mm. Legs 4132, first pair much the stoutest. Spines, tib. I 3—3, tib. II 2 serially below, met. I and II 2—2.

A small, pale, ant-like species, without constrictions. The front eyes are close together in a straight row, the middle being more than twice as large as the lateral. The eyes of the second row are very small, and are half way between the first and the third. The falces are small and vertical. The coxae are partly visible from above. The first leg has the femur and tibia much enlarged. There is a moderately long pedicel.

The cephalothorax, legs and palpi are clear, light, yellowish-

brown, with a thin covering of short white hairs. Under alcohol the abdomen is almost colorless except in the posterior third, which is dark, and has two large, round black spots. When our somewhat damaged specimen is dry, this posterior third is seen to be covered with brilliant iridescent scales, patches of which also occur on the anterior part and on the legs. The tibia of the first leg has, underneath, a short fringe of soft, dark hairs, and just above this, on the outer and inner sides, are three very short spines.

We have a single female from southern Texas, near Mexico.

***BELLOTA WHEELERII*, n. sp.**

Plate LI, figure 7

♀, Length 4 mm. Legs 4132, first pair enlarged. Spines, tib. I 3—3, tib. II 3 serially below, met. I and II 2—2.

A small ant-like species, without constrictions. The front eyes are close together in a straight row, the middle being more than twice as large as the lateral. The second row is half-way between the first and the third. The falces are vertical and rather stout for the size of the spider. The coxae are visible from above. The first leg has the femur and tibia much enlarged. There is a long pedicle.

The spider is brown with a thin covering of white hairs. The color is darkest on the cephalic plate and palest on the abdomen. There is a white line around the clypeus and the lower margin of the cephalothorax. One specimen has a black central longitudinal streak on the anterior third of the abdomen. The palpi are pale, the falces brown. In the first leg the coxa and trochanter are pale and the other joints brown, with short, white hairs. Underneath the tibia there is a ridge of stiff [spiney](#) dark hairs, which are truncated at the ends, and just above this, on the inner and outer sides, three short stout spines. The other legs have the femur and tibia dark brown, the patella a little lighter, and the metatarsus and tarsus pale. The coxa is pale in the second and fourth legs and dark in the third.

We have two females from the southern part of Texas, near the Mexican border.

Under alcohol this species resembles *B. micans*, since the bright color of the latter appears only after drying. In both, the tibia of the first leg is enlarged, but the character of the fringe is different, and while in *Wheelerii* this joint is longer than the femur, and is plainly longer than wide, in *micans* it is not longer than the femur, and is about as wide as long.

This species is named for Prof. Wm. Morton Wheeler.

***PARADAMOETAS FORMICINA* P. 1885**

Plate XLIX, figure 10. Plate LI, figure 2b.

1885. *PARADAMOETAS FORMICINA* P., Proc. Nat. Hist. Soc. Wis., p. 79.

1892. *PARADAMOETAS FORMICINA* P., Occ. Pap. Nat. Hist. Soc. Wis. II, 1, p. 74.

1900. *PARADAMOETAS FORMICINA* F. O. P. C., Biol. Cent. Am., Arachn., II, p. 177.

Length, ♂ ♀ 4.5 mm to 5 mm. Legs, ♂ ♀ 4132̄, first pair a little the stoutest, especially the femora. Spines, tib. I 3–3, tib. II 1–1 and 2 behind, serially, met. I and II 2–2.

In the female the cephalothorax has a small semi-circular region behind the dorsal eyes which falls but little below the plane of the cephalic part, and from this there is an abrupt slope to the lower border. In the male the distinction between the two inclinations is not so clearly defined, the effect being a gradual slope from the dorsal eyes. Falces, ♂, usually horizontal and three times as long as face, sometimes nearly vertical and only twice as long as the face, rounded on the outer side, straight within, having a long tooth on the distal lower edge and three teeth on the upper edge, transversely rugose above; ♀, vertical, but little longer than the face. Sternum oval, projecting between the anterior coxae, which are separated by the width of the labium. Labium a little longer than wide.

The ground color of the body is black, the cephalothorax being covered with slightly iridescent white scales which have

rosy reflections, and the abdomen with greenish-golden scales. The legs and palpi are light brown, all the legs having two longitudinal lines of white hairs, throughout their length. Between these, on the first leg, is a dark line. The falces and mouth parts are reddish-brown, the coxae pale, and the sternum and venter black.

The appearance of this species is not especially ant-like. We have it from Guatemala and southern Texas, near the Mexican border. Cambridge reports it from Panama.

KEY TO SPIDERS NOT ANT-LIKE IN FORM.

Unidentati (lower margin of falx with a single tooth or without a tooth). *Admestina*, *Agassa*, *Corythalia*, *Chalcoscirtus*, *Dendryphantes*, *Escambia*, *Euophrys*, *Habrocestum*, *Hycitia*, *Icius*, *Marchena*, *Marpissa*, *Metacyrba*, *Menemerus*, *Neon*, *Pellenes*, *Phidippus*, *Pseudicius*, *Parnaenus*, *Plexippus*, *Phlegra*, *Salticus*, *Sassacus*, *Sidusa*, *Sittacus*, *Stoides*, *Talavera*, *Thiodina* (in part), *Wala*.

Fissidentati (lower part of falx with a compound tooth). *Agobardus*, *Icius*, *Maevia*, *Onondaga*, *Poultonella*, *Thiodina* (in part), *Zygoballus*.

Pluridentati (lower margin of falx with several teeth). *Ballus*, *Thiodina* (in part).

UNIDENTATI.

1	Spines under tibia I 4–4; cephalic part occupying only about 1/3 of cephalothorax.	<i>Hycitia</i>
	Spines under tibia I less than 4–4.	2
2	Falx without any tooth on lower margin (<i>Euophrys</i> , <i>Sittacus</i> except <i>S. claremontii</i> , <i>Chalcoscirtus montanus</i>).	3
	Falx with one tooth below.	4
3	Two serial spines under tibia I; spider black; length 2–2.5 mm.	<i>Chalcoscirtus</i>
	Spines under tibia I 2–2.	<i>Sittacus</i>
	Spines under tibia I 3–3.	<i>Euophrys</i> *

* Under this head is included the male of *E. monadnock*, although the spines are so difficult to see that they are uncertain. The spider is easily identified by the red femora.

	Spines under tibia I 2—2 or more.	13
4	Less than two pairs of spines under tibia I, sometimes one pair and one or two serially behind (<i>Admestina</i> , <i>Agassa</i> , <i>Salticus</i> , <i>Icius similis</i> , <i>Habrocestum pulex</i> , <i>Marchena minuta</i> ♀, <i>Marchena sissonii</i> , <i>Pseudicius monticolus</i> , <i>Pseudicius piraticus</i>).	5
5	Four spines under tibia I, one pair and two, serially, behind; legs 4312.	<i>Habrocestum pulex</i>
	Less than four spines under tibia I.	6
6	No spines on tibia I.	7
	Tibia I with at least one spine.	8
7	Cephalic part occupying only 1/3 of cephalothorax; tibia I enlarged; legs 4132.	<i>Admestina</i>
	Cephalic part occupying a little more than 1/3 of cephalothorax; tibia I not enlarged. Abdomen either entirely covered with iridescent scales or marked with transverse or oblique white bands.	<i>Salticus</i>
8	Tibia I with one anterior lateral spine only.	9
	Tibia I with at least one spine below.	10
9	Abdomen with narrow white longitudinal band on each side of middle.	<i>Marchena sissonii</i>
	Abdomen with wide central longitudinal band.	<i>Pseudicius piraticus</i>
10	Cephalic part plainly longer than thoracic; one spine or rarely two under tibia I.	<i>Agassa</i>
	Cephalic part plainly shorter than thoracic; three spines under tibia I.	11
11	Legs white with dark longitudinal lines.	<i>Icius similis</i>
	Legs brown or yellowish-brown, more or less ringed, not lineate.	12
12	Fourth leg longest, third next.	<i>Marchena minuta</i> ♀
	First leg longest, fourth next.	<i>Pseudicius monticolus</i>
13	Two pairs of spines under tibia I, rarely with one anterior lateral (includes <i>Metacyrba</i> , <i>Sassacus Papenhoei</i> , <i>Habrocestum acerbum</i> , part of <i>Icius similis</i> and part of <i>Pellenes</i>).	14
	More than four spines under tibia I.	18
14	Third leg longest.	17
	Fourth leg longer than third.	15
15	Eye-region occupying 1/2 cephalothorax, plainly wider behind. Fem. I much enlarged.	<i>Sassacus Papenhoei</i>
	Eye-region occupying less than 1/2 cephalothorax.	16
16	Eye-region with sides nearly parallel. Femur patella and tibia of first leg much enlarged.	<i>Metacyrba</i>
	Eye-region wider behind. Fem. I slightly enlarged.	<i>Icius similis</i>
17	Abdomen very wide and short, marked with a white basal band above a black band, two round white spots on middle, and, further back and more widely separated, two smaller white spots. ♂ 2.5 mm., ♀ 4.5 mm.	<i>Habrocestum acerbum</i>
	Size larger, and form and marking of abdomen different from the above.	part of <i>Pellenes</i>

18	Eye-region wider in front than behind. Spines under tib. I 3–3. Male with tibia of palpus longer than tarsus. Epigynum with two large contiguous nearly circular cavities, in the inner basal part of each of which is a rounded elevation. Arizona, New York.	<i>Sidusa</i>
	Three anterior and three posterior lateral spines on tibiae and two anterior and two posterior laterals on metatarsi of first and second legs, besides 3–3 on tibiae and 2–2 on metatarsi below.	19
	No such development of lateral spines.	20
19	Sternum long, truncated. Male with first three legs, especially third, heavily fringed. Abdomen with bright red spot. Tibial apophysis of palpus long, slender, half as long as tarsus.	<i>Corythalia</i>
	Sternum nearly round, truncated. Male with first and second legs, especially second, heavily fringed. Abdomen yellow. Tibial apophysis of male palpus rather stout, less than one-third of tarsus.	<i>Escambia</i>
20	Eye-region wider in front than behind, and fourth leg longer than third. Body dark colored with three longitudinal light bands from eyes to end of abdomen. Length 9–12 mm.	<i>Plexippus Paykulli</i>
	Spiders without the above characteristics, or with these characteristics differently combined.	21
21	Spiders large and hairy, at least 8 mm. Cephalothorax heavy, low and flat; eye-region occupying but little more than 1/3 of cephalothorax and equally wide in front and behind; sternum much longer than wide, narrowed in front.	<i>Marpissa</i>
	Spiders without the above characteristics, or with these characteristics differently combined.	22
22	Cephalothorax high, heavy and convex; eye-region wider behind than in front; eyes small in relation to size of spiders; large species, rarely under 7 mm. First legs heavy and very hairy, often fringed; falcis often iridescent; often with a group of stout bristles near lateral eyes. First and fourth legs longer than second and third.	23
	Cephalothorax not heavy, first leg not especially hairy; size rarely over 6 mm.	24
23	Cephalothorax widest in eye-region or just behind dorsal eyes.	<i>Parnaenus</i>
	Cephalothorax widest in middle of thoracic part.	<i>Phidippus</i>
24	Third leg as long as or longer than the fourth (includes <i>Marchena minuta</i> ♀, <i>Pellenes</i> , <i>Stoides auratus</i> ♂, <i>Talavera</i> and <i>Habrocestum morosum</i>).	25
	Fourth leg longer than third.	28
25	Eye-region wider in front than behind.	26
	Eye-region parallel or wider behind.	27
26	Minute spiders about 2 mm long. Cephalic part nearly as long as thoracic.	<i>Talavera</i>
	Length 5–6 mm. Cephalic part plainly shorter than thoracic.	<i>Habrocestum morosum</i>

	Cephalothorax low and flat; cephalic part occupying scarcely more than 1/3 of cephalothorax.	<i>Marchena minuta</i> ♂
27	Cephalothorax high and convex; cephalic part occupying 2/5 of cephalothorax.	<i>Pellenes</i> and <i>Stoides auratus</i> ♂
	The male of <i>S. auratus</i> can be distinguished from <i>Pellenes</i> only by the form of the palpus.	
28	Eye-region occupying less than 1/2 cephalothorax.	30
	Eye-region occupying at least 1/2 cephalothorax.	29
29	Length 6 mm. General color green, iridescent. Dorsal eyes about as large as lateral eyes of first row. First leg with tibia much enlarged and fringed.	<i>Sassacus barbipes</i>
	Small spiders, 3 mm. General color gray. Dorsal eyes nearly as large as middle eyes of first row. First leg not enlarged.	<i>Neon</i>
30	Eye-region occupying plainly more than 1/3 of cephalothorax.	31
	Eye-region occupying inly about 1/3 of cephalothorax; length 8 mm. Legs short. Two longitudinal white bands on cephalothorax and three on abdomen.	<i>Phlegra</i>
31	First leg with femur patella and tibia much enlarged. Body not iridescent.	32
	First leg not very much the stoutest.	33
32	Abdominal marking, four pairs of quadrate dark spots. Tibia of second leg with only two spines, one at each end below.	<i>Pseudicius siticulosus</i>
	Abdominal marking two broken longitudinal white bands converging in front and behind. Tibia of second leg with a pair of spines at distal end and one spine further back below, and one anterior lateral.	<i>Menemerus vittatus</i>
33	Posterior three pairs of legs white, translucent, without marks.	<i>Wala</i>
	Posterior three pairs of legs not uniform white.	34
34	Cephalothorax not very high nor convex, rather elongated. Sides of whole body nearly parallel; abdomen usually rounded and slender. Legs with a tendency to lineate markings, first and fourth pairs rather long and tapering. No wide white bands (only marginal bands) on sides of cephalothorax.	<i>Icius*</i>
	Cephalothorax rather high and convex, not elongated. Sides of abdomen not rounded not parallel.	35
35	First leg longer than third.	36
	Third leg longer than first.	<i>Stoides auratus</i> ♀
36	Fourth leg plainly longer than first. Abdomen marked with the broad angular band characteristic of <i>Sittacus</i> .	<i>Sittacus claremontii</i> ♀
	Fourth leg not much, if at all, longer than first. Abdomen often marked with chevrons, but not with the peculiar band of <i>Sittacus</i> .	<i>Dendryphantes</i>

* Two species of *Icius* are not elongated. These are *exornatus* and *sexmaculatus*: the former has the whole body covered with green and golden scales and in the latter the abdomen is marked with six peculiarly arranged spots.

FISSIDENTATI.

1	Cephalic part occupying at least 1/2 of cephalothorax (<i>Agobardus</i> , <i>Zygoballus</i> , <i>Poultonella</i>).	2
	Cephalic part occupying less than 1/2 of cephalothorax (<i>Maevia</i> , <i>Thiodina</i> , <i>Fuentes</i>).	4
2	Cephalothorax very high, and square above. Cephalic part longer than thoracic.	<i>Zygoballus</i>
	Cephalic and thoracic parts equally long.	3
3	Tibia I not enlarged, with three pairs of spines below.	<i>Agobardus</i>
	Tibia I as wide as long, with less than three pairs of spines.	<i>Poultonella</i>
4	Tibia I spined below, but without bulbous hairs.	5
	Tibia I with 2–2 spines and 2–2 bulbous hairs below.	<i>Thiodina</i>
5	Tibia I 4–4 spines below.	6
	Tibia I 3–3 spines below.	<i>Icius Wickhamii</i>
6	Cephalothorax low; first leg thickened. Abdomen with four longitudinal white lines on a dark ground.	<i>Onondaga</i>
	Cephalothorax high; legs slender. Abdomen without white lines.	<i>Maevia</i>

PLURIDENTATI.

Under this head we have but one genus, *Ballus*, and part of *Thiodina*.

PHIDIPPUS C. K. 1846.

Type, *S. VARIEGATUS* LUCAS.

1833. *SALTICUS* (*VARIEGATUS*) Lucas, Ann. Soc. Ent. Fr., II, p. 476.
 1837. *ATTUS*, Walck., Hist. Nat. des Ins. Apt., I, p. 432.
 1844. *ATTUS* H., Jour. Bost. Soc. Nat. Hist., IV.
 1845. *ATTUS* H., Jour. Bost. Soc. Nat. Hist., V.
 1846. *PHIDIPPUS* C. K., Die Arachn., XIII, p. 125.
 1875. *ATTUS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, pp. 50, 51, 58, 59.
 1877. *PHIDIPPUS* Th., Bull. U. S. Geol. Survey, XV, p. 523.
 1883. *ATTUS* P., New or little known Attidae, pp. 1, 6, 13, 15, 16, 18, 22, 23, 31, 33.
 1885. *PHIDIPPUS* Keys., Ver. z. h. Gesell., Wien, VI, pp. 1–11.
 1888. *PHIDIPPUS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A, Att., pp. 11-25.
 1890. *PHIDIPPUS* McC. Am. Spid., II, p. 149.
 1891. *MEGATIMUS* Th., Spindlar Nikobarerna, p. 129.
 1891. *PHIDIPPUS* Em., Trans. Conn. Acad., VIII, N. E. Att., pp. 6-9.
 1892. *PHIDIPPUS* B., Proc. Acad. Nat. Sci. Phila., Jan. 1892, p. 74.

1895. *PHIDIPPUS* B., Can. Ent., p. 96.
 1896. *PHIDIPPUS* P., Occ. Pap. Nat. Hist. Soc. W. S., III, 1, p. 34.
 1896. *PHILAEUS* B., Trans. Am. Ent. Soc. XXIII, p. 73.
 1898. *PHIDIPPUS* B., Ent. News, June 1898, p. 142.
 1899. *PHILAEUS* B., Proc. Ent. Soc. Wash., IV, 3, p. 190.
 1901. *PHIDIPPUS* P., Wis. Acad. Sciences Arts and Letters, XIII, pp. 288-298.
 1901. *PARNAENUS* P., *ibid.*, p. 301 (*griseus*).
 1901. *PHIDIPPUS* P., *ibid.*, pp. 280-287.
 1904. *PHIDIPPUS* B., Jour. N. Y. Ent. Soc., XII, 2, p. 115.
 1905. *PHIDIPPUS* Sch., Industrialist, Vol. 31, 28, p. 6.
 1906. *PHIDIPPUS* B., Proc. Ent. Soc. Wash., VII, 2-3, p. 98.

Spiders above medium size, sometimes very large and hairy.

The cephalothorax is high and massive, wide and rather short. As a rule the sides round out widely both from above below and from in front to the middle point. The widening from above below is usually more pronounced in the males than in the females. The cephalic plate slants forward. The thoracic plate is short and wide. The thorax falls from the dorsal eyes, at first gradually and then more steeply.

The quadrangle of the eyes is one-third wider than long, excepting in a few species, as *arizonensis*, which is one-half, and *opifex*, which is two-thirds wider than long. It occupies about two-fifths of the cephalothorax and is plainly wider behind than in front. The eyes are small in proportion to the size of the spiders. The first row is curved, the middle being less than twice as large as the lateral and a little separated from each other, while the lateral are separated from them by from one-third to two-thirds of their own diameter. The second row is about twice as far from the third as from the first row. The dorsal eyes are as large as the lateral and form a row which is plainly narrower than the cephalothorax at that place.

The patterns on the abdomen in *Phidippus* are all modifications of a normal type, —light basal and side bands and four pairs of white spots above, on two dark longitudinal stripes. These marks may be partly or wholly obliterated. The relative size of the spots is variable, and those of the second pair are often joined to form a central triangle, while the posterior pairs

usually take the form of bars which are often joined at their outer ends, low down on the sides. Sometimes the side bands become continuous with the basal band, thus encircling the dorsum; and another variation is formed by the coalescing of the two dark stripes on the back. The patterns of the cephalothorax, while showing much similarity, do not conform to any type. In species where the adult is uniform in color the earlier moults often show the normal pattern, and we sometimes find in young spiders patterns that belong to adults of other species, but not to those of their own.

In the matter of coloration we have three groups, red spiders marked with black or black and white (in this group the males often have the abdomen uniform red), black spiders with tripunctate white marking, and brown or gray spiders marked with white, the pattern lines in the last group being much more varied than in the others.

The red spiders are difficult to identify and it is worth while to remember that if a *Phidippus* of this color comes from the north, especially from New England, it will almost certainly prove to be one of five species, *clarus* (very common), *McCookii*, *brunneus*, *insignarius*, or *Whitmanii*. From the far west we have *clarus*, *cardinalis*, *coccineus*, *californicus*, *Johnsonii*, *ardens*, *femoratus* and *formosus*, and from the middle and southern states, *clarus*, *insolens*, *cardinalis*, *coloradensis*, *Johnsonii*, *ardens*, *formosus*, *insignarius*, *femoratus* and *Tyrellii*.

When a leg has been lost and replaced by another the substitute does not have the characteristics of the original form.

Species of *Phidippus*.¹

<i>ardens</i> ♂ ♀	<i>McCookii</i> ♂ ♀
<i>arizonensis</i> ♂ ♀	<i>miniatus</i> ♀
<i>audax</i> ♂ ♀	<i>mystaceus</i> ♀
<i>basalis</i> ♀	<i>obscurus</i> ♀
<i>brunneus</i> ♂ ♀	<i>octopunctatus</i> ♂
<i>californicus</i> ♂ and young ♀	<i>opifex</i> ♂ ♀
<i>cardinalis</i> ♂ ♀	<i>otiosus</i> ♂ ♀
<i>carolinensis</i> ♂ ♀	<i>pius</i> ♂ ♀

¹ In the original document, *all* species names in this table were capitalized. This version follows the capitalization of proper names (also terminated with *-ii*) used in the text description for each species.

<i>clarus</i> ♂ ♀	<i>princeps</i> ♀
<i>coccineus</i> ♂ ♀	<i>pruinus</i> ♀
<i>coloradensis</i> ♂ ♀	<i>pulcherrimus</i> ♀
<i>comatus</i> ♀	<i>purpuratus</i> ♂ ♀
<i>farneus</i> ♀	<i>Putnamii</i> ♂
<i>femoratus</i> ♂ ♀	<i>Rauterbergii</i> ♀
<i>formosus</i> ♂ ♀	<i>texanus</i> ♀
<i>Howardii</i> ♂	<i>Tyrrellii</i> ♂ ♀
<i>insignarius</i> ♂ ♀	<i>variegatus</i> ♂ ♀
<i>insolens</i> ♂ ♀	<i>Whitmanii</i> ♂ ♀
<i>Johnsonii</i> ♂ ♀	<i>Workmanii</i> ♀

KEY TO PHIDIPPUS MALES.

1	Abdomen red or marked with red.	2
	Abdomen black, marked with white or covered, above, with silvery hairs.	16
	Abdomen brown, gray, yellow or spotted.	19
2	Cephalothorax red above (<i>cardinalis</i> , <i>Whitmanii</i> , <i>ardens</i> , <i>McCookii</i>).	3
	Cephalothorax black with inconspicuous black, brown or gray hairs (<i>clarus</i> , <i>coloradensis</i> , <i>insolens</i> , <i>californicus</i> , <i>Johnsonii</i> , <i>ardens</i> , <i>formosus</i> , <i>brunneus</i>).	6
	Cephalothorax black and white (<i>Tyrrellii</i> , <i>insignarius</i>).	14
	Cephalothorax red and white (<i>coccineus</i> , <i>femoratus</i>)	15
3	Abdomen red, without black bands.	4
	abdomen red with two black bands.	<i>McCookii</i> (in part)
4	Cephalothorax all red above; abdomen without white spots; fringe on first leg brown or black and white; no white band on palpus.	5
	Cephalothorax with bare black region over front eyes; abdomen sometimes having a pair of white spots at end; fringe on first leg all white; palpus with white band above. A northern species.	<i>Whitmanii</i>
5	First leg fringed with black and white; abdomen without basal band. A southern and western species.	<i>cardinalis</i>
	First leg fringed with brown; abdomen with indistinct light basal band.	<i>McCookii</i> (in part)
6	Abdomen red, or red banded with black.	7
	Abdomen black spotted with red.	<i>insolens</i> (in part)
7	Abdomen banded with black.	8
	Abdomen uniform red.	11
8	Abdomen with one black band; outer corner of maxilla with hooked apophysis.	10
	Abdomen with two black bands.	9

9	Palpus all black; outer corner of maxilla with hooked apophysis.	<i>ardens</i> (in part)
	Palpus white above; outer corner of maxilla with short point.	<i>californicus</i>
10	First leg longer than second by only tarsus and metatarsus; fringe on first leg not very heavy.	<i>clarus</i>
	First leg longer than second by tarsus, metatarsus and part of tibia; fringe on first leg heavy and conspicuous.	<i>coloradensis</i>
11	Palpus with white hairs above.	12
	Palpus without white hairs above.	13
12	Distal end of femur of first leg with bunch of white hairs below.	<i>insolens</i> (in part) and <i>brunneus</i>
	(If found in the north the spider is, almost certainly, <i>brunneus</i> , if in the south, <i>insolens</i> . These two species may be distinguished from each other by the palpi). No distinct bunch of white hairs below femur of first leg.	<i>Johnsonii</i>
13	Cephalothorax with brownish hairs over a black ground; abdomen with scattered white hairs, especially behind; no white hairs above femur of first leg.	<i>ardens</i> (in part)
	Cephalothorax with black hairs over a black ground; abdomen with scattered black hairs; femur of first leg with white hairs above.	<i>formosus</i>
14	Abdomen red marked with black and white; first leg fringed with white.	<i>insignarius</i>
	Abdomen red marked with white only; first leg fringed with black and white.	<i>Tyrrellii</i>
15	Cephalothorax with white band over front eyes and white side bands beginning at lateral eyes of first row; palpus with white band on femur only; falces dark, with streaks of white hairs; femur of first leg with iridescent plate beneath.	<i>femoratus</i>
	Cephalothorax with no white band over front eyes and with white side bands running back from dorsal eyes; palpus with white band throughout length; falces bare, blue; no plate under femur of first leg.	<i>coccineus</i>
16	Cephalothorax dark with a white spot between dorsal eyes, a white bar on each side of head between eyes of second and third rows, and ridges of rusty hairs on cephalic plate. Femur of first leg with crest of hairs above and enlarged plate below.	<i>Putnamii</i> (in part)
	Whole body black, upper surface of cephalothorax and abdomen covered with silvery hairs.	<i>opifex</i>
17	Cephalothorax black, sometimes banded with white; abdomen black with tripunctate white markings.	17
	Cephalothorax banded with white.	18
18	Cephalothorax all black.	<i>audax</i>
	Cephalothorax with wide white bands beginning at dorsal eyes and covering posterior sides.	<i>variegatus</i>
	Cephalothorax with transverse scalloped white band behind dorsal eyes, on thorax.	<i>Howardii</i>

19	Sides of head enlarged to form tubercles; first leg heavily fringed with yellow hairs and ornamented, on upper side of femur, by a long pencil of stiff dark hairs.	<i>arizonensis</i>
	No tubercles nor yellow fringes.	20
20	Small yellow spiders (6–7 mm) with two dark bands dotted with white on abdomen (this species looks like faded specimens of <i>McCookii</i> but the palpus has the tube longer and narrower and there is no rugose part at the end of the bulb).	<i>pius</i>
	Body not yellow.	21
21	Fringe on first leg all brown, found on upper side of femur and below femur patella and tibia.	<i>octopunctatus</i>
	Fringe on first leg not all brown.	22
22	Cephalic plate with ridges of rusty red hairs.	23
	Cephalic plate without ridges of hairs.	24
23	Cephalothorax dark spotted with white; falces with long white hairs covering front faces; femur of first leg with crest of hairs above and enlarged plate below.	<i>Putnamii</i> (in part)
	Cephalothorax with uniform covering of white hairs; falces with white hairs cut squarely off halfway down; femur of first leg with a bunch of hairs at distal end above and a heavy fringe below.	<i>carolinensis</i>
24	Cephalothorax with uniform covering of gray hairs.	<i>purpuratus</i>
	Cephalothorax dark with wide white bands on sides.	<i>otiosus</i>

KEY TO PHIDIPPUS FEMALES.

1	Abdomen red or marked with red.*	2
	Abdomen black marked with white.	18
	Abdomen brown, gray, yellow or spotted.	21
2	Cephalic plate with two black patches between which the color is orange or red; abdomen with seven spots red, edged with black. A large hairy species from Florida and Texas.	<i>mincatus</i> ¹
	Marking unlike that of <i>mineatus</i> . ¹	3
3	Cephalothorax red above (<i>clarus</i> , <i>cardinalis</i> , <i>McCookii</i> , <i>insolens</i> , <i>ardens</i> , <i>Whitmanii</i> , <i>coccineus</i> , <i>femoratus</i>).	4
	Cephalothorax black or dark covered with inconspicuous brown, black or gray hairs (<i>formosus</i> , <i>Johnsonii</i> , <i>coloradensis</i> , <i>ardens</i>).	13
	Cephalothorax dark with white hairs or bands on sides.	16
4	Abdomen marked with black.	5
	Abdomen all red or red marked with white.	9
5	Abdomen with two black bands.	6
	Abdomen with one black band.	8

* Cambridge figures *arizonensis* bright red, but we have classed it with the yellow spiders because he describes it as yellow.

¹This is *miniatus* in the text (p. 426), not *mincatus* or *mineatus*.

6	Abdomen with light basal band.	7
	Abdomen without light basal band. A southern and western species.	<i>cardinalis</i> (in part)
7	Abdomen with indistinct light basal band; black bands on abdomen going only halfway forward. New England, Pennsylvania, Missouri.	<i>McCookii</i> (in part)
	Abdomen with distinct white basal band; black bands on abdomen going nearly to base. From all parts of the United States.	<i>clarus</i>
8	Sides of cephalothorax black; abdominal black band reaching just in front of middle, without central white spot. Middle and southern states.	<i>insolens</i> (in part)
	Sides of cephalothorax covered with white hairs; abdominal black band reaching to near the base, and having a central white spot.	<i>coccineus</i>
9	Abdomen all red.	10
	Abdomen red with white spots. California, New Mexico.	<i>femoratus</i>
10	Cephalic plate all red.	11
	Cephalic plate with bare black region back of first row of eyes. New England, Virginia, Wisconsin.	<i>Whitmanii</i>
11	Abdomen with light basal band.	12
	No basal band on abdomen.	<i>cardinalis</i> (in part)
12	Sides of cephalothorax covered with yellowish-red hairs.	<i>McCookii</i> (in part)
	Sides of cephalothorax black.	<i>insolens</i> (in part)
Both <i>McCookii</i> and <i>insolens</i> sometimes turn yellow if kept for a time in alcohol.		
13	Cephalothorax black with black hairs. Iowa, Kansas, California.	<i>formosus</i>
	Cephalothorax dark, covered with inconspicuous brown or gray hairs.	14
14	Abdomen red, with black band notched on edges with white or red.	15
	Abdomen red, with black band marked by central white spot in front; or abdomen black, spotted with white, and having an irregular red patch on each side; or abdomen black with bands and spots which are white in the upper and red in the lower part.	<i>Johnsonii</i> (in part)
15	Fourth leg about as long as whole body.	<i>coloradensis</i>
	Fourth leg only 3/4 as long as body.	<i>ardens</i>
16	Abdomen with central black band; no square light spot on cephalothorax.	17
	Abdomen with central white band; cephalothorax with square light spot between dorsal eyes. New Mexico.	<i>comatus</i> (in part)

	Sides of cephalothorax with white bands throughout length; abdomen with central black region which encloses, on the front of the dorsum, a large red spot sometimes broken into three smaller spots. Eastern and southern states and Kansas.	<i>insignarius</i>
17	Sides of cephalothorax covered with white hairs; abdomen with dark central band not quite reaching base. Mexico and probably Idaho and Canada.	<i>montivagus</i> (probably <i>Tyrrellii</i>)
	Sides of cephalothorax with white bands behind dorsal eyes; abdomen with dark central band not reaching base. Florida.	<i>pulcherrimus</i>
18	Cephalothorax dark, distinctly marked with white. Large spiders, 11–16 mm.	19
	Cephalothorax not distinctly marked with white. Size usually about 9 mm.	20
19	Cephalothorax black with wide white bands on the sides of the thoracic part. Southern states.	<i>variegatus</i>
	Cephalothorax dark brown or black with white hairs on the sides and a white crescent between the dorsal eyes. Texas.	<i>Rauterbergii</i>
20	Cephalothorax all black; abdomen black with tripunctate white marking and the ordinary white basal and side bands. Eastern, southern and middle states.	<i>audax</i>
	Cephalothorax brown; abdomen black with tripunctate white marking and a scalloped white band which nearly encircles it. Texas.	<i>farneus</i>
21	Spiders yellow or marked with yellow.	22
	Spiders gray, brown or spotted.	25
22	Legs heavily fringed with yellow; abdomen banded with yellow and having a central yellow spot; cephalothorax with wide yellow bands on sides. Arizona, Texas, California, Mexico.	<i>arizonensis</i>
	Whole spider yellow, abdomen marked only by two dark bands dotted with white on posterior half. Kansas.	<i>pius</i>
	Abdomen marked with white or with yellow and white.	23
23	Abdomen black, marked with white and yellow.	24
	Abdomen not black, marked with white.	<i>obscurus</i>
	<i>Obscurus</i> is difficult to place, since no perfect specimens are known, but the ground color is probably yellow, the pattern being in white and consisting of the ordinary basal band, triangle and spots. The venter is yellow with two converging lines of spots which are light colored with dark edges. The size is 13 mm. and it is found in Georgia and Texas.	
	Abdomen yellow in front, without central spot, but marked with four pairs of white spots or bars. Arizona.	<i>basalis</i>
24	Abdomen black except for two irregular yellow patches notched with white on their inner edges, on posterior sides. Sisson, Cal.	<i>Johnsonii</i> (in part)

25	Spider all gray, abdomen sometimes with one or two pairs of white dots. Size 15 mm. California, New Mexico, Colorado.	<i>opifex</i>
	Spider all brown; abdomen sometimes showing two indistinct dark longitudinal bands marked with white dots. Size 9.5 mm. Massachusetts, New York.	<i>brunneus</i>
	Abdomen more or less spotted or banded.	26
26	Abdomen with a whitish basal band and a single pair of white spots. Size 8 mm. Pennsylvania.	<i>princeps</i>
	Abdomen with numerous spots and bands.	27
27	A wide white band crossing clypeus and covering upper sides of cephalothorax, edged below, on sides, with dark brown, the lower sides being covered with tawny hairs; upper surface of cephalothorax white and brown. Texas.	<i>pruinus</i>
	Cephalothorax dark with light bands or spots.	28
	Cephalothorax gray or white.	29
28	Cephalic plate without white spot; cephalothorax nearly encircled by a white band which crosses the clypeus; first leg heavily fringed. Size 10–15 mm. Southern states.	<i>otiosus</i>
	Cephalic plate with a white spot; cephalic part encircled by a white band, which passes around clypeus and crosses behind dorsal eyes. Size 12–14 mm. Habitat unknown.	<i>Workmanii</i>
	A large light spot between dorsal eyes; sides of cephalothorax covered with white hairs. Size 10 mm. New Mexico.	<i>comatus</i> (in part)
	<i>Comatus</i> is properly classified with the red spiders, but since we have one example which has lost this color, through fading, we take it our under the second heading as well.	
29	Cephalothorax gray with transverse row of three white spots on cephalic plate. Texas, North Carolina.	<i>mystaceus</i>
	Cephalic plate without transverse row of white spots. Sides of cephalothorax without white bands.	30
30	Cephalothorax covered with snowy white hairs except for a band of reddish hairs between the eyes of the second row; abdomen light gray with white spots and bands outlined in black; falces with a band of white hairs above. North Carolina, Texas, Kansas.	<i>carolinensis</i>
	Cephalothorax gray; abdomen with metallic band and four pairs white spots. Western, southern and eastern states, common in New England.	<i>purpuratus</i>
	Cephalothorax covered with whitish hairs, more or less tinged with yellow; abdomen with central white band, forked behind. Texas, Kansas.	<i>texanus</i>

PHIDIPPUS AUDAX H. 1844.

Plate XXIX, figs. 2—2b.

1844. *ATTUS AUDAX* H., Jour. Bost. Soc. Nat. Hist., IV.
 1845. *ATTUS TRIPUNCTATUS* H., Jour. Bost. Soc. Nat. Hist., V.
 1846. In C. Koch's Die Arachniden, XIII, *Phidippus purpurifer* p. 127, *rufimanus* P. 132, *mundulus* p. 137, *concinatus* p. 145, and possibly others.
 1875. *ATTUS AUDAX* H. and *ATTUS TRIPUNCTATUS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 50 and p. 58.
 1883. *ATTUS TRIPUNCTATUS* P., New or little known Attidae, p. 33.
 1888. *PHIDIPPUS MORSITANS* P. (not *morsitans* Wlk.), Wis. Acad. Sciences, Arts and Letters, VII, N. A, Att., p. 11.
 1891. *PHIDIPPUS TRIPUNCTATUS* E., Trans. Conn. Acad., VIII, New England Attidae, p. 9.
 1901. *PHIDIPPUS MORSITANS* P., Wis. Acad. Sciences Arts and Letters, XIII, ♂ P. 285, ♀ 287.

We formerly supposed that *morsitans* Wlk. And *variegatus* C. K. were identical with *audax* H.

Length, ♂ 7—13 mm., ♀ 8—15 mm. Legs, ♂ 14 $\overline{23}$, ♀ 41 $\overline{23}$, first pair fringed and enlarged in the male.

Large hairy black spiders. In both sexes the cephalothorax is black, the abdomen is also black with many long white hairs, a white basal band, and a large more or less triangular white spot near the middle; behind are two more pairs of white bars; in front and also lower down and further back are two more pairs of indistinct white spots or dots; some specimens have traces of oblique side stripes. In the middle of the back behind the large white spot, is a metallic band. The white spots and bars are formed of white scales. The falcies are iridescent green, all the under parts are black, except two indistinct light lines under the abdomen. In young spiders the markings on the abdomen are often orange-colored instead of white. The male palpus has a white band. The legs are dark, nearly black at the distal ends of the joints. There are fringes most marked on the first pair, on the legs, the distal end of the femur, the patella, the proximal ends of the metatarsus and tarsus having white hairs

and the other parts black. This species varies greatly in size. In large males from Texas the first legs are relatively longer than in the smaller forms from the north. Both *Howardii* and *variegatus* have white bands on the cephalothorax; *audax* is entirely black.

Females in the Britcher collection had cocoons containing 90–166 eggs. *Audax* is widely distributed, but up to this time has not been reported from the Pacific coast. We have it from the southern states, Mr. Emerton from the eastern, and Mr. Banks as far west as Colorado.

***PHIDIPPUS VARIEGATUS* LUCAS 1833.**

Plate XXIX, fig. 1.

1833. *SALTICUS VARIEGATUS* Lucas ♂, Ann. Soc. Ent. Fr., II, p. 476.

1837. *ATTUS MORSITANS* Walck. ♀, Hist. Nat. des Insectes Aptères, I, p. 432.

1846. *PHIDIPPUS VARIEGATUS* C. K. ♂ and *Phidippus lunulatus* C. K. ♂, XIII, p. 125, P. 133.

1898. *PHIDIPPUS VARIEGATUS* B., Ent. News, June 1898, p. 142.

1901. *PHIDIPPUS VARIEGATUS* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, pp. 285.

Not *morsitans* P. 1888.

Length, ♂ ♀ 11–15 mm. Legs, ♂ 1423, ♀ 4123, first pair robust, heavily fringed. This is a big heavy black spider, the sides of the cephalothorax with two wide white bands which do not meet behind, and which reach forward only to the dorsal eyes. The abdomen has a white band around the front and sides, a large triangular spot in the middle and two pairs of bars further back. Down the middle, behind the white spot, are metallic scales. The palpus has white scales above on femur and patella, and the legs are fringed with black and white as in *audax* and *Howardii*, from both of which it is distinguished by the white bands on the cephalothorax. The male and female are alike.

This species is reported by Lucas and Koch from New Orleans, La., and Carolina, and by Walckenaer from Georgia and Carolina. We have it from Louisiana, Texas and Mexico.

PHIDIPPUS HOWARDII P. 1896.

Plate XXIX, fig. 3.

1896. *PHIDIPPUS HOWARDII* P. ♂, Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 34.1901. *PHIDIPPUS HOWARDII* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 285.♂, Length 7–9 mm. Legs 14 $\overline{23}$, first pair enlarged and fringed.

This species is close to *Phidippus audax* but has the cephalothorax longer in proportion to the width, and is more lightly and gracefully built. The white band on the cephalothorax distinguishes it.

The whole body is black. Across the cephalothorax just behind the ocular region, is a wide zig-zag white band which curves down on each side so as to nearly surround the dorsal eye, and ends in a little bunch of white hairs. The cephalic plate is covered with yellowish hairs mixed with metallic scales. On the middle of the abdomen is a large triangular white spot and farther back are two pairs of oblique white bars, the outer ends of which are sometimes connected by several white dots. There are the usual white basal and side bands, and on each side of the middle is a scalloped band of metallic scales. There are also metallic scales in the middle line, in front of and behind the central white spot. The palpus is dark red, with black hairs on the sides and a white band above as far as the end of the tibia. The legs are black, or rufous barred with black; the femur of the first has black hair above and below with some white hairs at the end, the patella has a thick white fringe, the tibia a stiff brush of black, and the metatarsus has white hairs at the bases and black at the end. The falces are iridescent blue.

Since we described *Howardii* from a single male in 1896 we have received two more perfect specimens from Reynosa, Mexico, and one from Columbia, Missouri. The black male *variegatus*, from the same locality, has wide white bands on the sides of the cephalothorax, and is much larger.

The drawing of the palpus of *Howardii* (1896) should show the end of the bulb rugose, and the tube notched as in *audax*. The palpi of the two species are almost exactly alike.

***PHIDIPPUS OPIFEX* McCook 1883.**

Plate XXIX, figs. 7–7b.

1883. *ATTUS OPIFEX* McCook ♀, Proc. Acad. Nat. Sci. Philadelphia, p. 276.
 1888. *PHIDIPPUS OPIFEX* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 20.
 1890. *PHIDIPPUS OPIFEX* McCook, American Spiders and their Spinning work, Vol II, p. 149.
 1893. *PHIDIPPUS OPIFEX* McCook, *ibid.*, Vol. III, Pl. xxix, fig. 11.
 1901. *PARNAEUS GRISEUS* P. ♂ and *PHIDIPPUS OPIFEX* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, pp. 288 and 301.¹

Length, ♂ 9–11 mm., ♀ 15 mm. Legs, ♂ 1423, ♀ 4123, first and second pairs fringed and enlarged.

In both sexes the integument is dark brown or black, covered above with silvery hairs, but while in the male the sides of both cephalothorax and abdomen are black, in the female they are covered with gray hairs like the upper surface. In the male there are four indented dots on the front part of the abdomen where the hairs are so thickened as to form white spots. We have seen one female in which the gray of the abdomen is tinged with red. This specimen has a lighter central wedge-shaped region on the hinder half of the abdomen, the apex of which is over the spinnerets. The clypeus is covered with white hairs. The falces are dark brown or black, not iridescent, or only slightly so along their inner front sides, with a straggling growth of not very long white hairs, thickest on the upper part in the male. The legs are brown or black, much darker in some specimens than in others. In the female they are banded. The first pair is fringed with black and white, the colors alternating as is usual in *Phidippus*. The femur of the first, in the male, has black hairs above, and the palpus varies from light brown to

¹ *Parnaeus* is spelled *Parnaenus* in this reference.

black, and is clothed with white hairs. The female palpus is yellow with white hairs.

We have this species from California, which furnished the type to Mr. McCook, and also from Boulder, Colorado, and Las Cruces, New Mexico. Mr. Banks, who has it from Las Cruces and Los Angeles, was the first to point out that our *griseus* was a synonym of *opifex*.

***PHIDIPPUS CARDINALIS* H. 1844.**

Plate XXIX, figs 5—5b.

1844. *A. CARDINALIS* H. ♂, Jour. Bost. Soc. Nat. Hist., IV, p. 386.

1875. *A. CARDINALIS* H. ♂, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 51.

1883. *ATTUS CARDINALIS* P., ♂ only, New or little known Attidae, p. 31.

1888. *PHIDIPPUS CARDINALIS* P., ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 15.

1901. *PHIDIPPUS CARDINALIS* P., ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 285.

In 1883 we described, as belonging to *cardinalis*, some females from Wisconsin, which were really *Whitmanii*. The female of *cardinalis* is now described for the first time.

Length, ♂ 8—11 mm., ♀ 9 mm. Legs, ♂ 1423, ♀ 4132, first pair enlarged and fringed in male.

In both sexes the color above is brilliant red, which, in the male, is uniform, and extends more or less on to the black sides, occasional specimens showing, when under alcohol, two dark longitudinal lines barred with red, on the posterior half of the abdomen. When unrubbed both sexes have the sides of the cephalothorax, as well as the upper surface, covered with red hairs. In the female the abdomen may be uniform red, like the male, or may have two dark lines barred with red on the posterior half. The sides are black with two nearly longitudinal white streaks, one behind and a little below the other.

The legs, in the male, are usually black, lightened to brown at the proximal ends of the metatarsus and tarsus, but some examples have the proximal ends of all the joints light. The

first is heavily fringed with black excepting on the patella and the proximal ends of the terminal joints, where the hairs are white. The tibia has a thick brush from end to end. The palpus is black, without a white band. In the female the femora are all dark, while the other joints are dark at the distal and light at the proximal ends, the third and fourth being lighter, as a whole, than the others. The clypeus is red edged with white, and the falces are iridescent blue.

Hentz says that *cardinalis* is from the southern states. We have it from Wallace and Stockton, Kansas; Denver, Colorado; Texas; and Claremont, California. Mr. Banks reports it from Biscayne Bay, Punta Gorda and Enterprise, Florida.

We have some red males and a female from Oklahoma which differ from *cardinalis* only in the epigynum and palpus; the form of these parts obliges us to class them as *ardens*.

***PHIDIPPUS WHITMANII* n. sp.**

Plate XXIX, figs. 6—6b.

1888. *PHIDIPPUS RUFUS* ♂ only, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 13.

1901. *PHIDIPPUS RUFUS* P. ♂ only, *ibid.*, XIII, p. 285.

Length, ♂ 8.5 mm., ♀ 9—11 mm. Legs, ♂ 1423, ♀ $\overline{41} \overline{23}$, all the femora darkened, other joints barred.

In the male the upper surface of the cephalothorax is red except for a black hairless region extending from the first to the second row of eyes, on the cephalic plate. This region is scalloped behind. The hairs on the sides and on the lower thoracic part tend to become yellowish or white. The abdomen is red with a more or less distinct white band on the base and sides, which sometimes nearly encircles the dorsum. Above, it is usually uniform red, but sometimes shows two pairs of white bars on the posterior part. The palpus is of a light reddish color and is covered, above, with white scales and hairs, which grow long on the tarsus. These are quite different in appearance from

the band of shining white scales on the palpus of *clarus*. Along the sides of the tarsus are long black hairs. The legs are banded with light and dark red, the femora being darker than the other joints. The front legs are covered with short and long white hairs, the latter forming a fringe which varies considerably in length and thickness, being sometimes as striking as the male of *insignarius*. The falces are sometimes metallic green, sometimes dark red with scarcely any iridescence. The clypeus is covered with yellowish white hairs. The black region over the eye distinguishes this spider from *McCookii* and *cardinalis*, the only other males with a red cephalothorax unmarked by black or white bands.

The female is like the male except that a light band comes up from between the front middle eyes, nearly crossing the black hairless region. The venter is black with two light bands, converging towards the spinnerets.

We formerly called this species *rufus* H., but this was plainly a mistake, and we now think that it is impossible to know what Hentz meant by his description of *rufus*, and we therefore name it *Whitmanii*, for Prof. C. O. Whitman, of the University of Chicago.

We have males from Boston, Ithaca, N. Y., and Milwaukee, Wis., and Mr. Banks has them from Franconia, N. H., and East Falls Church, Va. Females have been taken by Mr. Emerton, in Boston, and at Waltham, Mass.

♀. Moults before maturity. Black cephalic region cut in two by light band which comes up from between middle eyes. Between dorsal eyes a large bright red spot, much brighter than abdomen, bordered by yellow, which is brightest in front. Hind thoracic part and sides black with a thin whitish pubescence. Abdomen red with very bright white basal and side bands and three pairs of spots all bordered by deep black.

PHIDIPPUS MCCOOKII P. 1883.

Plate XXIX, figs. 4—4c.

1883. *ATTUS MCCOOKII* P. ♀, New or little known Attidae, p. 16.
 1885. *PHIDIPPUS RUBER* K. ♂ ♀, Ver. z. b., Gesell. VI, p. 493.
 1888. *PHIDIPPUS MCCOOKII* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A, Attidae, p. 17.
 1891. *PHIDIPPUS RUBER* E. ♂ ♀, Trans. Conn. Acad., VIII, New England Attidae, p. 8.
 1892. *PHIDIPPUS MCCOOKII* B. ♂, Proc. Acad. Nat. Sci. Phila., Jan 26, p. 73 (?)
 1901. *PHIDIPPUS MCCOOKII* P. ♀, Wis. Acad. Sciences Arts and Letters, XIII, p. 288.
 1901. *PHIDIPPUS RUBER* P. ♂, *ibid.*, p. 285.

In the type specimen of *McCookii* the red hairs on the abdomen had changed to bright yellow, and we did not suspect its identify with *ruber* until recently, when Mr. Henshaw sent us Keyserling's female. In 1888 we thought that this species, which we called *ruber* was a synonym of *rufus* H., but there is no doubt that they are distinct. We think, as Mr. Banks has suggested, that *McCookii* is the northern representative of *cardinalis* H.

Length, ♂ 6—7 mm., ♀ 11—15 mm. Legs, ♂ 1423, ♀ 4132̄.

This spider resembles *clarus*. The cephalothorax, in both sexes, is covered with orange scales and is light brown beneath. The abdomen in both is light orange above and light to darker below. On the posterior half of the abdomen in the male, are two distinct longitudinal black stripes on which are two pairs of white spots. In the female these black stripes are more indistinct. The base of the abdomen, in both sexes, has a lighter basal band. The femora of all the legs and the tibia in the first pair, especially in the male, are darker than the other joints. The other parts reddish brown, sometimes darker toward the distal end. The falces are brown, and not iridescent in the specimens seen both by Mr. Emerton and ourselves. In Count Keyserling's they were iridescent. No white stripe on palpus of male, which is dark. The fringes of hairs on the

upper and under sides of the femur and also on the other joints are light brown with some white on the tarsi and metatarsi in the male. *Cardinalis* differs from *McCookii* (males) in having the cephalothorax red only on the top while the sides are black; *McCookii* is all red. The palpi are different and will have to be the court of last resort. It is true also of the females that the drawings of the epigynes must be compared before final conclusion. In females distended with eggs the opening of the epigynum is squarer and thinner at the edges than in others.

Keyserling described this species from Massachusetts. Emerton had it from Providence, R. I., and several localities in Mass. In our collection from Columbia, Missouri, and Pennsylvania.

***PHIDIPPUS PIUS* SCH. 1905**

Plate XXIX, figs 8—8b.

1905. *PHIDIPPUS PIUS* Scheffer ♂ ♀, *Industrialist*, Vol. 31, No. 28, Additions to List of Kansas Spiders, p. 6.

Length, ♂ 6—7 mm., ♀ 9—10 mm. Legs, ♂ 1423, ♀ 4123, nearly equal in thickness.

The color is yellow, pale in the female, deepening to orange in the male, the cephalic plate with a deeper tinge owing to a darkening of the integument, and the abdomen marked in the posterior half by two dark bands dotted with white. There are no bands on the front and sides. The clypeus is covered with yellow or reddish hairs, and the falces are light yellowish-brown, without iridescence. In the female the palpi are light with yellowish and white hairs, and the legs are pale yellow and unmarked. In the male the palpus has the femur and patella light and the other joints dark with white hairs and the legs are light yellowish-brown, the first pair with a short, thin fringe of curly white hairs on femur patella and tibia. In one specimen the first and second pairs have a longitudinal black streak on the front face of the femur and large black spots on the front faces of the patella and tibia, while the metatarsus and

tarsus have the distal ends entirely dark. A second example has these dark marks on the front faces of all the legs and also on the posterior face of the fourth, while a third has no marks on the legs except an indistinct dark band on the front of the femur of the first.

Pius looks much like faded specimens of *McCookii*, but this species has dark reddish-brown legs. The palpus, in *pius*, has the tube longer and narrower than in *McCookii* and has no rugose part at the end of the bulb.

Mr. Scheffer has this species from Manhattan, Kansas.

***PHIDIPPUS CLARUS* KEYS. 1885.**

Plate XXX, figs. 1–1j.

1885. *PHIDIPPUS CLARUS* Keys. ♀, Ver. z. h. Gesell., Wien, VI, p. 497.
 1888. *PHIDIPPUS RUFUS* P. ♀ only, Wis. Acad. Sciences, Arts and Letters, VII, N. A, Attidae, p. 13.
 1888. *PHIDIPPUS INSOLENS* P. ♂ ♀, *ibid.*, p. 23.
 1891. *PHIDIPPUS MULTIFORMIS* E. ♂ ♀, Trans. Conn. Acad., VIII, N. E. Attidae, p. 6.
 1892. *PHIDIPPUS MINUTUS* B. ♀, Proc. Acad. Nat. Sci. Philadelphia, Jan. 1892, p. 74.
 1892. *PHIDIPPUS PRINCEPS* B. ♂, *ibid.*, p. 74, Pl. II, fig. 32.
 1899. *PHILAEUS RIMATOR* B. (young), Proc. Ent. Soc. Wash., IV, 3, p. 190.
 1901. *PHIDIPPUS RUFUS* P. ♀ only, Wis. Acad. Sciences, Arts and Letters, XIII, p. 287.
 1901. *PHIDIPPUS MULTIFORMIS* P. ♂ ♀, *ibid.*, p. 285, p. 287.
PHIDIPPUS RUFUS B., up to 1906.

Mr. Banks thinks that *clarus* is a synonym of *testaceus* C. K.

Length, ♂ 5–8.5 mm., ♀ 8–13 mm. Legs, ♂ 1423, ♀ 4132̄, first pair enlarged and fringed in male. Outer corner of maxilla with hook-like apophysis.

This species, which is rather small in New England, grows larger in the southern states. In the female both cephalothorax and abdomen are red, the abdomen having two longitudinal black bands spotted with white, while in the male the cephalo-

thorax is black, and the bands on the abdomen are united to form one wide stripe, although this is often divided by a line of lighter metallic scales, most easily seen when the spider is under alcohol. This band is notched on the outer edges by three pairs of red or white spots. Both sexes have a white basal band and white diagonals on the sides. The red color may be very rich and bright or may be dull, even fading to brown in old specimens.

The palpus, in the male, is conspicuously marked above by a band of snow-white scales which reaches the distal end of the tarsus. The first legs have alternate bunches of black and white hairs but the fringe is not marked.

One of the most characteristic things about this species, in the males, is the long first legs. The first exceeds the second by the distal joints and part of the tibia. The black cephalothorax, in combination with the wide black region on the middle of the abdomen, is enough to distinguish *clarus* among the red males.

Mr. Emerton has this species from various parts of Massachusetts; from Mt. Washington and Dublin, N. H., and from New Haven, Conn. Mr. Banks has specimens from New Jersey, Virginia, Alabama, Enterprise, Fla., and Texas. We have it from several of these places and also from Linville, N. C., Lenoir, Tenn., eastern Nebraska, Manhattan, Kansas, Columbia, Mo., and Salem, Oregon. *P. minutus* B., which we have examined, and believe to be a synonym, comes from near Ithaca, N. Y., and Olympia, Washington.

***PHIDIPPUS COLORADENSIS* THORELL. 1877.**

1877. *PHIDIPPUS COLORADENSIS* Th. ♀, Bull. U. S. Geol. Survey, Article XV, p. 523.

Length, ♂ 13 mm., ♀ 12.5 mm. Legs, ♂ 1423, ♀ 4123, first pair enlarged and fringed in the male. Outer corner of maxilla with hook-like apophysis.

Excepting for its greater size, the male of this species is al-

most exactly like that of *clarus*; the first leg, however, is relatively longer and has a much more conspicuous black and white fringe. The female is like the male, with black cephalothorax covered with inconspicuous gray hairs, and red abdomen marked with a black band on the posterior two thirds. This band is toothed with white or red on the edges. There is a white basal band, and the sides and venter are black. The black band on the abdomen has a line of green metallic scales down the middle, or, as Thorell describes it, is covered with these scales. Thorell does not mention the white basal band, but in other respects his description is excellent for our examples.

The type came from Denver, Colorado. We have the species from Waycross, Ga., Baton Rouge, La., Texas, and Guadalajara, Mexico.

We give no figures of palpus and epigynum as these are almost identical with those of *clarus*.

***PHIDIPPUS INSOLENS* H. 1844.**

Plate XXX, figs. 2—2d.

1844. *ATTUS INSOLENS* Hentz ♂, Jour. Bost. Soc. Nat. Hist. IV.
 1875. *ATTUS INSOLENS* H. ♂, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 51.
 1901. *PHIDIPPUS BARDUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 290.
 1904. *PHIDIPPUS FERRUGINOUS* Scheffer ♀, Industrialist, Vol. 30, no. 24, Preliminary List of Kansas Spiders, p. 5.
 1904. *P. FERRUGINOUS* Sch. ♀, Entomological News, Oct. 1904, p. 257.

Perhaps, also, *P. castrensis* C. K. ♂.

Length, ♂ 8.5 mm., ♀ 10—14 mm. Legs, ♂ 1423, ♀ 4132, first pair enlarged and fringed in the male.

The male has a black cephalothorax covered with inconspicuous brownish hairs. The abdomen may be black with red bands and spots, or may be uniform red, in which case the pattern shows in deeper spots of color when the spider is under alcohol. In the black form the red marks consist of a basal band, an oblique band on each side, a pair of spots directly behind the

basal band, a central triangular spot, and two pairs of bars farther back. Besides these marks, red hairs are scattered here and there over the surface. The palpus has a white band, above, on the femur and patella, and the tube is sickle-shaped and very characteristic. The legs have all the femora darker than the other joints, and all the patellae light at the proximal and dark at the distal ends. In the first leg the tibia, metatarsus and tarsus are dark, but the other legs have these joints light at the proximal and dark at the distal ends. The first leg is fringed with black and white, the white being under the end of the femur, throughout the length of the patella, and at the proximal ends of the metatarsus and tarsus.

In the female the cephalothorax is red on the upper surface, the sides and thoracic slope being black. The abdomen, as in the male, has two forms, being sometimes of a uniform red on the dorsum, or, in some cases, with a small black Λ , pointing up, just above the spinnerets, a faint white basal band, and one white diagonal on each side; while others, as in the type, have the basal band and diagonals yellowish, and are marked with a wide central black band which reaches from the spinnerets to a point in front of the middle. This band is sometimes broader in the middle than at the ends, and is notched on the edges by three pairs of red bars. In the all red form the legs are dark with gray hairs, lightened a little, only at the proximal ends of the metatarsi and tarsi, but in the other they are lighter, all the joints being light at the proximal ends. The venter is brown marked by rows of white points. The palpus has black hairs and is marked with a white band on top, which is accentuated at the end of each joint. Two females, one of which belongs to Mr. Banks, have four red spots on top of the palpus. The falces, in both sexes, are metallic green.

One of the drawings of the epigynum is made from the red specimen, which has the abdomen distended with eggs. In other examples the indistinct darkened parts behind the middle are shown to consist of coiled tubes which run towards the posterior part. The second figure is from the specimen which we described as *bardus*, in 1901, and shows a peculiarly notched

outline at the opening. This is seen, also, in one from Kansas, but not in others. All the epigynes have the posterior opening very broad.

This species was called *bardus* by us, and *ferrugineous* by Mr. Scheffer, but after some hesitation we follow Mr. Banks in considering it identical with *insolens* Hentz. We do not, however, agree with him, in thinking *auctus* C. K. a synonym. In our *bardus* the color had faded to yellow.

Mr. Banks reports it from northern Louisiana and Colorado (Denver and Dixon's Cañon). Mr. Scheffer has it from Manhattan and Wallace, Kansas, and our specimens are from Long Island, New York; Salt Lake, Utah; Columbia, Missouri; Kansas, and Georgia. Dr. Marx reported it from Florida, and Hentz's specimen was from North Carolina. The specimen from Long Island came to us with a large collection of spiders from different places, and it may be that it was incorrectly labeled as to locality.

We have a female from Georgia, which has the sides of the cephalothorax bare, but red in color, perhaps because of air beneath the skin. The abdomen has the central black band, but no basal band, and the diagonals on the sides are black, running up into the bright red of the back. The epigynum has the posterior opening higher and narrower than usual.

It is difficult to distinguish the all red forms of the females of *insolens* and *cardinalis*; the former, however, has red hairs on only the upper surface of the cephalothorax. The form of male with uniform red abdomen is most closely related to the male of *brunneus*, from which it must be distinguished by slight differences in the palpus.

***PHIDIPPUS CALIFORNICUS* P. 1901.**

Plate XXXI, figs. 3—3e.

1901. *PHIDIPPUS CALIFORNICUS* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 289.

Length, ♂ 13 mm., young ♀ 11.5 mm. Legs, ♂ 1423, first pair longer than the body; ♀ 4132, first pair enlarged and fringed in the male.

We have two males and three nearly mature females.

In the male the cephalothorax is black with a covering of coarse brownish hairs which grow long about the front part of the head. The falces are iridescent bluish green. The abdomen is bright red with two longitudinal black bands which are broken behind by two pairs of white bars. These bands do not reach the front end, and in one specimen they do not meet behind, but in the other they form a solid black region to a point a little in front of the white bars. In the California example there is a narrow white band, scarcely visible from above, around the front and sides. The legs are dark, the first and second pairs almost black. The first pair is heavily fringed, the hairs being alternately white and black, or tawny brown. They are dark on the femur and tibia and white on the patella, while on the distal joints they are white at the proximal and dark at the distal ends. The femur has, above, white hairs at the proximal, and dark at the distal end. The tibia is black and iridescent. The palpus has white scales and hairs, above, on the femur, patella and tibia.

So far as the abdomen is concerned the female closely resembles the male, although the long point between the two black bands is white instead of red. The black bands may or may not meet behind. The cephalothorax has bright red hairs on the front of the cephalic plate, a wide white crescent which curves forward from one dorsal eye to the other and a dark red band behind this. The sides and back are covered with whitish hairs. The clypeus is snowy white.

We have one male from California, and in the Cambridge museum collection are three young females and one male from The Dalles, Oregon.

The two black bands on the abdomen are usually sufficient to distinguish the male of *californicus* from *Johnsonii*, but some examples of the latter species are marked in the same way. More constant differences are the shape of the cephalothorax, which in *californicus* is nearly circular, being only one millimeter longer than wide, while in *Johnsonii* it has a less rounded appearance, being, in fact, nearly two millimeters longer than

wide, and the relative length of the first leg which in *californicus* exceeds the second by the distal joints and part of the tibia, while in *Johnsonii* it is longer by only the tarsus and a part of the metatarsus.

***PHIDIPPUS JOHNSONII* P. 1883**

Plate XXXI, figs. 1—1j.

1883. *ATTUS JOHNSONII* P. ♂ ♀, New or little known Attidae, p. 22.
 1885. *PHIDIPPUS BICOLOR* K. ♂, Ver. z. b. Gesell. VI, p. 496.
 1888. *PHIDIPPUS JOHNSONII* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 20.
 1898. *PHIDIPPUS ARIZONENSIS* B. ♀, Proc. Cal. Acad. Sciences, 3rd Series, I, 7, p. 279.
 1901. *PHIDIPPUS JOHNSONII* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 285 and p. 287.

Length, ♂ 7.5—11 mm., young ♀ 11—13 mm. Legs, ♂ 1423 or $\overline{4123}$, ♀ 4123, first pair enlarged and fringed in the male.

The male of this species presents a good deal of variation in size and in the bulb of the palpus, so much so that we for a time thought that the larger form was a distinct species. The cephalothorax is black and usually has a uniform inconspicuous covering of brownish hairs, while the abdomen is rich red, showing infrequently, a narrow white basal band, but lacking diagonal streaks on the sides. Some examples show, especially under alcohol, two longitudinal black bands, crossed by two pairs of red bars on the posterior dorsum. We have three males from Washington, with the relative length of the legs $\overline{4123}$, in which these bands are distinct, almost like those of *californicus*, and in one of the three there are bright red hairs on the cephalothorax, around and between the dorsal eyes. The legs are dark, sometimes nearly black, those of the first pair fringed; the femur has black hairs below, white scales on the inner face, white hairs toward the proximal end above, and white hairs mingled with black ones, giving a gray appearance at the distal end below. There are white hairs under the patella and the proximal ends

of the metatarsus and tarsus, and thick black hairs under the other parts. The palpus is black with a white band on the femur, above. The bulb is sometimes shrunken, giving it the appearance of being truncated, and in one example the upper striated part is shortened and not notched.

The female has the cephalothorax black, covered with brownish hairs. The abdomen, as in *ardens*, is red, with a central longitudinal black band which does not reach the base, but it differs from that species in having a triangular white spot on the band, in front of the middle, and a pair of oblique white bars nearer the base, the posterior part of the band being notched with white or red on the edges. In some specimens there is a line of thinly-set light hairs down the middle of the black band. There is a white basal band, and on the sides are white diagonals. The legs are usually banded and are rather hairy.

From this normal female there are wide deviations in the relative proportions of red and black on the abdomen, and in the depth of color. The red is sometimes reduced to an irregular patch or short band on each posterior side, and we have taken specimens (at Sisson, Cal.), in which the abdomen was black except that toward the end of the dorsum there were two elongated yellow spots, deeply notched with white on their inner edges, the central white spot not being present.

Another female, from Victoria, has a black abdomen with a white basal band, and spots and diagonals which are red in the upper and white in the lower half (see figure). This might, perhaps, be called a distinct species. All these varieties keep the white basal band and at least one diagonal on each side. The palpi are yellowish.

The colors are brightest just before maturity. Females taken at this time have a metallic band running forward from the spinnerets for one-third the length of the abdomen. This band is bounded in front by a pair of very small oblique red spots which are parallel with the larger pair further forward which usually coalesce to form the central triangle.

The types of this species and of *P. bicolor* have been carefully compared and are identical.

We have *Johnsonii* from Salt Lake, Utah; Mill Valley and Sisson, California; Salem, Oregon; Pullman and Seattle, Washington; Victoria and Duncan's B. C. Mr. Banks reports it from several places in central and southern California.

***PHIDIPPUS ARDENS* P. 1901.**

Plate XXXI, figs. 4—4b.

1901. *PHIDIPPUS ARDENS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 288.

Length, ♂ 8—11mm., ♀ 14 mm. Legs, ♂ 1423, ♀ $\overline{4123}$, the first pair, in the male, enlarged and fringed and longer than the second by the metatarsus and tarsus. Outer corner of the maxilla, in the male, with a hooked apophysis.

This is a large handsome spider which usually has the cephalothorax and all the underside black covered with inconspicuous brownish hairs. The abdomen in the male is red, sometimes with two longitudinal black bands united behind, reaching the spinnerets but not the base. Over the abdomen are many long white hairs. The legs, excepting in one individual, are black with lighter proximal parts on the last two joints, most marked in the third and fourth pairs. The first leg is heavy, with black fringes above and below the femur, and below the tibia, alternating with white at the end of the femur, on the patella, and on the proximal parts of the metatarsus and tarsus. In one spider the legs are all light, with the distal parts darker. The palpus is black with black hairs.

The female has a red abdomen usually marked with a rather narrow central black band which does not reach the front end. This band has three pairs of red or white bars on the edges, the first and largest pair in front of the middle, the others behind. There is a gray basal band which runs back on the sides. The lower sides have inconspicuous red diagonals on the black ground. The legs are dark, more or less banded, and covered with gray hairs, the palpi light brown with black and white

hairs. We have one female from Owen's Lake which has an unusually short and narrow band on the abdomen and an epigynum which differs slightly from the ordinary form. In both sexes the clypeus is dark fringed with white, and the falces are bright metallic green.

We are not certain that the male here described is the mate of *ardens*, but the resemblance is strong, and it comes from the same localities. We have the female from Owen's Lake, California; Wallace, Kansas; and Santa Fe, New Mexico; and the male from Owen's Lake, from Manhattan and Norton County, Kansas; and from Denver, Colorado. We have also a male from Chihuahua, Mexico (altitude 7000 feet), with the first legs relatively longer, longer than the second by the tarsus, metatarsus and part of the tibia. It has also a finer tibial apophysis on the palpus. The all black palpus distinguishes this male from most of the red spiders of the group and the form of the palpus is very unusual.

The female of *ardens* is very close to *coloradensis*, but has the fourth leg plainly shorter than the total length, while in *coloradensis* it is as long as the body. The epigynes are perfectly distinct.

We have three males and a female from Oklahoma, which we think must be classed as *ardens*, although the upper surface of the cephalothorax is red, like the abdomen. The abdomen of the female is uniform in color, lacking the usual white spots and black band. The palpus and epigynum are like those of the typical examples, but in all other respects the spiders are like *cardinalis*.

***PHIDIPPUS FORMOSUS* P. 1883.**

Plate XXXI, figs. 2—2c.

1883. *ATTUS FORMOSUS* P. young ♀, New or little known Attidae, p. 23.

1901. *PHIDIPPUS RIMATOR* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 287.

Since 1901 we have received large numbers of this brilliant species, and we do not now believe that it can be identified with

either *rimator* Wlk. or *auctus* C. K., nor is it the species that we described as *Philaeus rimator* in 1888.

Length, ♂ 8 mm., ♀ 10–13 mm. Legs, ♂ 14 $\overline{23}$, ♀ 41 $\overline{32}$, first pair enlarged and fringed in the male.

The male of this species is difficult to distinguish from that of *Johnsonii*, the points of difference being as follows: The black parts are of a deeper black; the cephalothorax, instead of being covered with brownish hairs, having black hairs, and sometimes three spots of bright red, one in the post-ocular depression, and one behind each dorsal eye. The palpus has all the parts heavier, and lacks the white band which is seen on the femur in *Johnsonii*, while the tibial apophysis, instead of tapering gradually, is as wide at the end as at the base, except for a little point at the very tip. The legs are usually black, although one example has light legs with only the distal ends of the joints darkened; and the only white on the femur of the first is supplied by some scales on the inner face and a few hairs above. On the patella, too, the white is less marked than in *Johnsonii*, the hairs being mainly on the anterior face, instead of both in front and behind. The abdomen is without the white basal band which may, or may not appear in *Johnsonii*, and the red is more solid. There is no indication of the two black bands on the posterior part of the abdomen, which, in *Johnsonii*, can usually be detected under alcohol, excepting in the specimen with light legs, mentioned above.

The red on the abdomen is very vivid, and extends to the spinnerets, there being no central, basal or side bands. Low down on base and sides the abdomen is jet black. The first leg is fringed with black, and has, besides the white mentioned above on the femur and patella, the usual white hairs under the proximal ends of the metatarsus and tarsus. The clypeus is clothed with dull yellowish hairs, and the falces are iridescent green.

The female has a jet black cephalothorax with black hairs. The intense red of the upper surface of the abdomen is broken by a central black band which reaches a point a little in front of the middle, and which is not barred, as in *Johnsonii* and *ardens*, although one example shows red indentations along the

edges. The red color is encircled by black, which rises rather high on the base and sides and crosses in front of the spinnerets. There are no basal and side bands of white or yellow excepting in young specimens, so that this female comes nearer to *ardens* than to *Johnsonii*. *Ardens*, however, has brownish hairs on the cephalothorax. The legs are black, a little lightened on some of the tarsi.

We have this species from Iowa; from Martin Co., Kansas; from Palo Alto, from San Diego, and large numbers of both sexes, sent by Mr. Baker, from Claremont, California.

***PHIDIPPUS BRUNNEUS* E. 1891.**

Plate XXXII, figs. 3–3b.

1891. *PHIDIPPUS BRUNNEUS* E. ♀, Trans. Conn. Acad., VIII, N. E. Attidae, p. 7.

Length, ♂ 7.5 mm., ♀ 9.5 mm.

The male has a black cephalothorax thinly covered with brownish hairs, a uniform red abdomen, and white hairs on the palpus, above, as far as the end of the patella. The clypeus is dark, fringed with white hairs, the falces are green, and transversely rugose, and the legs are dark, obscurely barred, with thick white hairs under the patella and the proximal end of the metatarsus of the first. Under the tibia the hairs are black, thin and short.

Mr. Emerton, who is familiar with the appearance of live females, says that some individuals have, indistinctly, the same markings on the abdomen as are seen in females of *clarus*, but that they differ in color and in the epigynum. In his examples the color is reddish brown with gray and black hairs and small gray scales, not close enough to cover the skin. The cephalothorax is a little darker brown than the abdomen. The abdominal markings are indistinct in some individuals, and in most, entirely absent. In our collection are two female specimens of *brunneus*, in which the cephalothorax is dark brown and the abdomen light brown, with a thin covering of pale gray scales

and long black and white hairs. The legs are uniform brown, the hairs on the first pair being black above, and forming an inconspicuous white fringe below. The clypeus is covered with white scales and edged with long white hairs. The falces are reddish brown in the upper part and metallic green below. There is no trace of the bright red color which is found on the abdomen in the male.

This species has been found only in Massachusetts and New York. Mr. Emerton has the only male that has been taken. In the Britcher Collection is a female with twenty-seven young.

It is difficult to distinguish the male of *brunneus* from the male of *insolens*, but the bulb of the palpus is different.

***PHIDIPPUS TYRRELLII* P. 1901.**

Plate XXXII, figs. 1–1b.

January, 1901. *PHIDIPPUS TYRRELLII* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 296.
 1901. *PHIDIPPUS MONTIVAGUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 293.
 November, 1901. *PHIDIPPUS ALBULATUS* F. O. P.C. ♂, Biol. Cent. Am., Arach. Aran., II, p. 285.

♂. Length 9–12 mm. Legs, 1423, first pair heavily fringed with black and white.

The cephalothorax is black with a covering of inconspicuous brownish hairs. A white band crosses above the first row of eyes, passes around the upper sides, and nearly meets behind; below this, on the sides, is a wide dark space, but the lower margin is clothed with white hairs. The long hairs around the eyes of the first row and on the clypeus are tinged with red. The falces are metallic green and have long pure white hairs hanging down along their inner sides and a band of short pure white hairs along each outer side. The abdomen is brilliant red, nearly encircled by a white band and having, on the dorsum, four pairs of white spots, the first one small, the second large and oblique, the third and fourth in the form of bars. Down

the middle of the posterior third is a series of chevrons made of white hairs which seem to overlay the red hairs, since when they are rubbed away the surface below is uniform red.

The palpi are of a light brown with short white hairs on the upper surface of the femur and patella and long white hairs tinged with red on the sides of these joints and all over the tarsus. The legs are very striking, being black, with rings of pure white scales at the proximal ends of the joints. The inner face of the femur of the first is marked by two white bars separated by a black band. On the upper surface of this joint are dark hairs; on the outer side is a white fringe overhung by dark hairs. The patella and the proximal ends of the joints are fringed with white, while nearly all of the tibia both above and below and the distal ends of the metatarsus and tarsus have thick inky black hairs.

We have this male, from the Canadian Rocky Mountains and from Mexico, and Mr. Banks has it from Bear, Idaho. Mr. Cambridge's specimens were from Atoyac, in Vera Cruz, Mexico. It seems probable that *Phidippus montivagus*, which we described from a single specimen in 1901, and which comes from Mexico, is the female of *Tyrrellii*, since the marking of the cephalothorax is the same. The abdomen has less red and is marked by a metallic band. The description of this female is as follows:

♀. Length, 11 mm. Legs $4\overline{123}$, first pair stoutest.

Plate XXXII, figs. 2—2a.¹

The cephalothorax has the cephalic part, the middle sides, and the posterior thoracic part covered with brown hairs, the cephalic plate having also a growth of long light brown hairs, which form tufts before and behind the dorsal eyes. Along the lower margin of the sides is a white band, and a wider white band extends around the front part of the head and upper sides. The abdomen is yellowish-red with a white basal band, and a dark metallic middle band, not reaching the front end, on which are two oblique central spots, and two pairs of bars. These

¹ These figures, and the subsequent paragraph, refer to the female specimen of *P. montivagus* (*Tyrrellii*) described in the preceding two paragraphs.

spots and bars are made of a mixture of white and red hairs, so that while lighter than the ground color; they are not pure white. The clypeus has long white hairs. The falces are dark and slightly iridescent. The palpi and legs are dark brown, the former with white, and the latter with light brown hairs.

Mr. Townsend found a single specimen at Chihuahua, Mexico, 7,000 feet above the sea.

***PHIDIPPUS INSIGNARIUS* C. K. 1846.**

Plate XXX, figs. 3—3c.

1846. *PHIDIPPUS INSIGNARIUS* C. K. ♂, Die Arachniden, XIII, p. 150.

1896. *PHILAEUS MONTICOLA* B. ♂, Trans. Am. Ent. Soc. XXIII, p. 73.

1901. *PHIDIPPUS COMATUS* P. ♂ only, Wis. Acad. Sciences, Arts and Letters, XIII, p. 291.

Length, ♂ 7—8 mm., ♀ 8—10 mm. Legs, ♂ 1423, ♀ 4132, first pair fringed with white and marked with reddish bands in both sexes.

The female is now described for the first time. When we described the male in 1901, we mistakenly gave as its mate a female to which we leave the name *comatus*.

The cephalothorax is black covered with brownish hairs and having striking owl-like tufts of dark hairs extending sideways and forwards on the eye-region; it is conspicuously marked throughout the length of the sides by wide white bands which sometimes have a pinkish tinge toward the front. The clypeus is covered with yellowish-white hairs, and one male shows some long yellow hairs above the front row of eyes. On the edge of the clypeus and thinly covering the bronzy falces, are long white hairs. The abdomen is red with a white basal band which reaches half-way along the sides. On the posterior third is a central black band notched with red or white, and having metallic scales in the middle, and from this two black bands curve forward in such a way as to encircle a large red or red and white spot (sometimes broken by black lines into three) on the front part of the dorsum. This pattern is well figured by Koch.

In the male the femur of the palpus is covered with white hairs, and the other joints with light brown hairs, but in the female the whole palpus is covered with long white hairs which are tinged with red at the extremities of the patella and tibia.

The legs are reddish with black bands at the ends of the joints, or sometimes wholly black. The first is heavily fringed with white throughout its length and has on the upper surface of the tibia, metatarsus and tarsus, and extending a little way on to the patella, a longitudinal band of scales which may be bright red, yellow, or white, and which is sometimes not clearly defined. The second leg has a lighter fringe and repeats the band of scales, having also on the inner face of the tibia, a diagonal yellow band. The white fringe is striking, in good specimens, but being very soft it is easily rubbed away. On the under surface of the femur of the first, in the male, the white fringe sweeps in a broad diagonal from the inner side, at the proximal end, to the outer proximal side, being divided by a dark line from the fringe that runs along the inner edge.

This species is reported from Fort Collins, Colorado, by Mr. Banks and from Pennsylvania by Koch. Mr. Emerton has taken it in Massachusetts and on Mt. Madison, N. H. (5,000 ft.). We have it from the District of Columbia (Mr. Comstock); Wilmington, S. C.; Denver, Col.; Las Vegas, N. M.; Manhattan, Kansas (Mr. Scheffer). *Insignarius* is marked off from *coccineus* by notes under that species.

The epigynum is almost exactly like that of *Johnsonii* from Duncan's B. C., the only difference being that the anterior half of the shield is light colored.

Mr. Emerton says that when the spider is alive the fringes are much fuller and softer than in examples that have been kept in alcohol.

***PHIDIPPUS COCCINEUS* n. sp.**

Plate XXXIII, figs. 1–1c. Plate XXXIV, figs. 1–1a.

Length, ♂ 8.2 mm., ♀ 10 mm. Legs, ♂ $14\overline{23}$, first pair fringed with white; ♀ 4123.

We have two males of this species, one of which is much the redder, having the cephalic plate and thoracic slope covered with red hairs, while the other has these parts rubbed bare except for a central white spot behind the dorsal eyes. Wide white bands begin at the dorsal eyes and pass back, but do not meet behind. Below these bands the sides are black. The abdomen is red, or pinkish, with a wide central black region, not reaching the base, notched on the edges, and split in the front part, the ends being divided by a red figure. In front of the spinnerets are two pairs of white bars, and the end of the dark region is metallic in the middle. There is a narrow white band low down on the base which runs far back, and is jagged on the inner edges. Scattered over the abdomen are many black hairs. The clypeus is fringed with whitish hairs. The falces are blue, and hairless. The palpus has above, a band of white hairs and scales reaching the end of the tarsus. The legs are dark brown, not heavy. The first is fringed with white to the end of the metatarsus. The femur of the first has a bunch of black and white hairs on the upper distal end of the inner face, and on the under surface the white hairs which cover the proximal end bifurcate in the middle of the joint to form two fringes, leaving between them a bare slightly iridescent space.

In the female there is a white line over the front eyes, and then a black metallic region, as in *Whitmanii*. Back of this are red hairs which cover the cephalic plate and part of the thoracic slope. The sides are not banded, but are entirely covered with white hairs, while the end of the thoracic slope is black. There are tufts in front of the dorsal eyes. The clypeus is covered with white hairs, and the falces have the upper part reddish with scattering white hairs and the lower part iridescent blue. The abdomen is red with a dark central band nearly reaching the base, in the anterior part of which is a long white spot, while behind, on the outer edges, are two pairs of white bars. There is a white basal band which runs halfway along the sides, followed by another white band, jagged on the inner edges, which reaches nearly to the spinnerets. The palpi are yellowish with white hairs. The legs are reddish, barred with dark at the dis-

tal ends of the joints, covered with white scales and having light white fringes.

We have two males and a female from Claremont, Cal., sent by Mr. Johnson. This species may be the Pacific slope representative of *insignarius*, the two males resembling each other in the color and pattern of the abdomen. *Insignarius* is a heavier spider, especially as to the legs, and has a different cephalothorax, since the red is lacking, and the white side bands instead of stopping at the dorsal eyes, pass to the front end and cross the clypeus. The falces, convex and hairless in *coccineus*, are flattened and have white hairs in *insignarius*. The fringe on the first leg is heavier in *insignarius*, and while it is double under the femur of the first, it does not bifurcate, but is divided by a dark line throughout the length of the joint; the first and second legs, too, are marked with orange colored bars which are not seen in *coccineus*. The palpus of *coccineus* has a white band throughout its length, while in *insignarius* the band marks only the femur.

Femoratus is also much like *coccineus*, but the male, besides having the first leg differently ornamented, has a white band above the front row of eyes, the white band on the palpus is confined to the femur, and the falces, instead of being bare and blue, are dark, and thinly covered with white hairs which form vertical streaks. The females are most easily distinguished by the difference in the abdomens.

***PHIDIPPUS FEMORATUS* n. sp.**

Plate XXXIII, figs. 2—2d. Plate XXXIV, figs. 2—2a.

Length, ♂ 7 mm., ♀ 10 mm. Legs, ♂ $\overline{14} \overline{23}$, ♀ $\overline{4132}$, femur of first ornamented below in both sexes.

Above the first row of eyes, in the male, is a band of white hairs somewhat mixed with red. Back of this is a dark band, and behind this, again, occupying a central position between the dorsal eye elevations, is a large white figure on a red ground. From the lateral eyes wide white bands pass back along the

upper sides, which may or may not meet behind, and lower down the sides are black. Back of each lateral eye, on the side of the head, are two stiff dark curls. The abdomen is red encircled by white, and has a central black band which passes forward from the spinnerets to the middle of the back, where there is a large white spot, in front of which is a pair of smaller white spots. The posterior third of the dark central band is metallic and has two pairs of white bars on the edges. The clypeus is edged by a fringe of long bright red hairs. The falces are dark red, slightly iridescent, and are thinly covered with long white hairs which form vertical streaks. The femur of the palpus has white hairs above and on the inner side. The patella and tibia are lighter colored than the tarsus. The legs are reddish with darker bands at the ends of the joints.

The most striking thing about this male is the ornamentation of the femur of the first leg, which has, on the under face, with the base of the triangle toward the patella, a convex, triangular, iridescent blue plate, beyond which, toward the patella, is a soft mass of snow-white hairs among which are two black spines. Above the plate, on the inner, or front side, is a very downy fringe of pale green or white, and outside, or behind the plate are white hairs except at the distal corner where there is a long dark curl which overhangs the patella. The inner face of the femur has a thin black fringe overhanging the white below, and on the upper surface of the joint, at the distal end, is a ridge of black hairs. The patella, tibia, and metatarsus are fringed with very soft white hairs.

In the female there is a white band over the front eyes, behind this a dark band, beyond which the upper surface is covered with red hairs as far back as the beginning of the thoracic slope. The sides and lower thoracic part have white hairs thinly covering the dark integument. There is a dark curl and a smaller tuft near each dorsal eye. The abdomen is red without a black band, but having the white marks as they appear in the male except that the large central spot is broken into two. There is a white basal band which runs far back, and an indistinct, whitish, oblique band on each side. Over the abdomen are long

stragglng white hairs. The clypeus is covered with long white hairs. The upper parts of the falces are covered with white hairs, and the ends are green. The palpi are yellowish with white hairs. Above the femur of the first, at the distal end, is a ridge of black hairs, and below there is a dark plate, wider and shorter than in the male, surrounded by white scales, which run into long white hairs except at the outer or posterior side, where there is a bunch of dark hairs. This makes a long white fringe below, which covers the under surface, and there is a thin white fringe under the other joints.

We have a pair sent by Mr. J. D. Johnson, from Claremont, Cal.; a female from San Diego, sent by Mr. Hanham, and a male from Mr. Cockerell, Las Cruces, N. M. The ornamentation of the male is most perfectly developed in the California specimen.

Femoratus is distinguished from *Putnamii* and *coccineus* by notes under those species.

***PHIDIPPUS PUTNAMII* P. 1883.**

Plate XXXIII, figs. 3—3b. Plate XXXIV, figs. 3—3a.

1883. *ATTUS PUTNAMII* P., New or little known Attidae, p. 1.

1885. *PHIDIPPUS GRACILIS* K., Ver. z. b. Gesell., VI, p. 495.

1888. *PHIDIPPUS PUTNAMII* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 35.

1901. *PHIDIPPUS PUTNAMII* P., *ibid.*, XIII, p. 286.

♂. Length 7—9 mm. Legs 1423, femur I crested and enlarged.

All of our specimens are rubbed, and this seems to have been the case with the one described by Keyserling. The ground color of the cephalothorax and abdomen is sometimes reddish-brown, sometimes much darker, even black. There is a large white spot between the dorsal eyes and on each side of the head, from the second to the third row of eyes, is a white bar. Ridges of smoky-brown hairs are found above the first row of eyes and running obliquely forward from each dorsal eye toward the

middle of the cephalic plate. The clypeus has long white hairs in the middle and short orange hairs under the lateral eyes. The falces, which may or may not be iridescent, have white scales on the upper part and long loose white hairs, mixed somewhat with tawny hairs, below. The abdomen has an encircling white band which ends, on the posterior sides, in oblique white bars. There is a large central white spot, and further back are two pairs of white bars, on the edge of a metallic longitudinal band which seems to have been covered with iridescent pinkish scales. We find patches of these scales only on two dark specimens from Ohio.

The palpus has the femur and patella light, with white scales, above, at the end of the femur. The tibia and tarsus are darker. The legs are brown, with a good deal of long whitish hair. The first is fringed and has a curious enlargement below the femur. This joint grows larger from the proximal end until it reaches an enlarged plate on the distal two-thirds. This plate faces inward, and is covered with hairs which form a crest at the top, made of white, or smoky, or greenish hairs, while below and outside is a curly bunch of long dark and white hairs. Surrounding the lower distal end of the plate, where the femur is abruptly narrowed, is a narrow band of pure white scales or hairs. Under the other joints is a fringe of yellowish-white hairs which are mingled with dark hairs on the distal and proximal ends of the tibia.

The ornamentation on the femur and the ridges on the cephalic plate are more developed in some specimens than in others.

We have the type specimen from Iowa, a male from Missouri, and others from Urbana, Ohio, sent by Mr. J. A. Nelson, of Cornell University. Keyserling's example was from Kentucky.

Femoratus, which has the femur similarly ornamented, is very close to *Putnamii*, although the color is bright red instead of reddish-brown. *Femoratus* has a white band above the front eyes, and has wide white bands on the upper part of the sides of the cephalothorax. The pattern on the abdomen is the same in

both. In *Putnamii* the distal end of the femur of the first is abruptly narrowed, which is not true of *femoratus*. The palpi, while similar, are distinct.

PHIDIPPUS ARIZONENSIS P. 1883.

Plate XXX, fig. 4.

1883. *ATTUS ARIZONENSIS* P. ♂, New or little known Attidae, p. 13.
 1888. *PHIDIPPUS ARIZONENSIS* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 18.
 1901. *PHIDIPPUS ARIZONENSIS* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 286.
 1901. *PHIDIPPUS TUBERCULATUS* F. O. P. C. ♂ ♀, and *P. ARIZONENSIS* F. O. P. C. ♂ ♀, Biol. Cent. Am., Arachn., Aran., II, pp. 283, 284.

Not *Phidippus arizonensis* B. ♀, Proc. Cal. Acad. Sciences, 3rd Ser. I, 7, p. 279, which is probably *Johnsonii*.

Length, ♂ 9–11 mm., ♀ 10 mm. Legs, ♂ 1423, ♀ 4132, first and second pairs fringed in both sexes, but not enlarged.

Although the male of this species is variable as to color and marking it has certain peculiarities which easily distinguish it from everything but *cruentus*, which is not found in the United States. These are the heavy fringes of long yellow hairs under the first and second legs; a long pencil of stiff dark hairs which springs from the upper surface of the femur of the first, at the proximal end, curving forwards, and the shape of the cephalothorax, the front part of which is swollen out on the sides to form tubercles.

Cambridge's description, made from fresher specimens than ours, is as follows: "Carapace with stout conical tubercles at the side of the cephalic region, and a pencil of long black hairs above, in front of the posterior lateral eyes; black, or dark red-brown, clothed with brownish-yellow hairs and scales round the central anterior eyes, and black scales and short hairs behind, having a patch of white hairs just below and in front of the tubercle, and a short broad sulphur-yellow band extending posteriorly from

behind the tubercle; the margins fringed with white hairs. Abdomen black, with a double band of sulphur-yellow hairs, the bands coalescent in front, narrowing behind, and almost united in the center by the normal triangular patch, which is, in this case, yellow, extending almost to the spinners; there is also a paler whitish anterior marginal band extending scarcely one-third along the sides, coalescing with the yellow band in front; sides deep olive-brown, becoming streaked with white hairs below, longitudinally; ventral area black, with six or seven tufts of white hair extending transversely inwards; the anterior portion of the white lateral streaks bears some bright metallic-orange scales. Mandibles blue and green, metallic, with yellow hairs at the base above. Leg i. pale red-brown, clothed (except the femur) with yellow scales and fine black hairs above, and with very long yellow hairs beneath, especially on the tibia; femur i. clothed with bright yellow hairs beneath, with a spot of white scales at the apex above, some yellow, brown, and white scales dorsally, and a long pencil of black hairs springing from the base of the dorsal ridge and curving over from behind forwards. Legs ii. as in i, but without the femoral black pencil. Legs iii. and iv. pale red-brown, with whitish scales and fine black hairs above. Sternum, coxae, and underside of legs iii. and iv. with shaggy white hairs."

In our specimens the cephalothorax and abdomen show the spots only when under alcohol, and, when dry, appear as in Cambridge's figure. The bands on the abdomen are white, not yellow. This may be the result of fading, but the yellow on the legs and palpi is as bright as ever. The ground color of the cephalothorax is velvety black, the third and fourth legs, as well as the first and second, are fringed with yellow, and the falces are black, thinly covered with short white hairs. The clypeus is covered with white hairs. The palpus has patches of yellow hairs on tibia and patella, and all over the top of the tarsus.

We have no female. Cambridge's description is as follows: "Carapace white in front, dull yellow at the sides, purple-brown above, with three transverse indistinct bands of dull yellow

scales in the cephalic quadrangle. Abdomen similar to that of the male, but with the two central yellow lines which unite to form a triangular spot more conspicuous, but not meeting behind, with a pair of very small yellow spots between it and the spinners; sides and lower surface entirely clothed with dull white pubescence. Legs pale red-brown, i. and ii., clothed with yellow, iii. and iv., with yellow-white hairs. Mandibles metallic green, clothed with yellow hairs at the base. Palpi fringed with long yellow hairs.”

We have this species from Arizona, Texas, California and Guadalajara, and Cambridge reported it from Chilpancingo, Mexico.

Phidippus cruentus (found in Mexico), of which Mr. Cambridge described only the female, has the male almost exactly like *arizonensis*. The abdomen has two red bands, and white spots on a black ground down the middle; the third and fourth legs are not so hairy, and all the fringes have white hairs mingled with the yellow; the top of the tarsus of the palpus is dark marked with a white line, and the tube is much stouter and does not come off from a marked shoulder. The cephalothorax is not so wide, but has the same tubercles, the legs have the same yellow fringes, and the pencil of hairs on the femur of the first is present, although not quite so large. The markings are like those that Cambridge figures for the female.

***PHIDIPPUS OCTO-PUNCTATUS* P. 1883.¹**

Plate XXXIV, fig. 4.

1883. *ATTUS OCTO-PUNCTATUS* P. ♂, New or little known Attidae, p. 6.

1888. *PHIDIPPUS OCTO-PUNCTATUS* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 21.

♂. Length 8 mm. Legs, $14\overline{32}$, first pair enlarged and fringed.

The cephalothorax is dark above, with a covering of short white hairs, and has long yellow hairs on the eye-region. The sides and clypeus in our specimen, are rubbed, but show patches

¹ Elsewhere in this document, this species name is spelled *octopunctatus* without the hyphen.

of white. The dark integument of the abdomen shows through a covering of short white, and longer yellow hairs. There is a white basal band, rather high up, and farther back on the sides are several short white diagonals. The dorsum has two pairs of spots on the front part and two pairs of oblique bars behind, all white. The venter is black with short yellowish hairs. The falces are dark and the legs are brown, the first pair with a thick yellowish-brown fringe to the end of the tibia.

One male from Missouri.

***PHIDIPPUS CAROLINENSIS* n. sp.**

Plate XXXII, figs. 6—6e.

1901. *PHIDIPPUS OBSCURUS* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 294.

Not *togatus* C. K., nor *gracilis* Keys., nor *obscurus* P. 1888.

Length, ♂ 10 mm., ♀ 10—13 mm. Legs, ♂ 1423̄, ♀ 4132, first pair enlarged and fringed.

The cephalothorax is bright reddish-brown covered with snowy white hairs, except for a band of reddish hairs between the eyes of the second row. In the female there are long black hairs around the eyes of the second row and in two bunches on the middle of the cephalic plate, while the male has a wide ridge of stout rusty-brown hairs which crosses above the front row of eyes and passes back on each side, within the second row, to the dorsal eye. The male has, also, on each cheek, behind the lateral eye, a long tuft of the same rusty-brown hairs, and these are connected by a fringe of shorter hairs of the same color which crosses below the front eyes, edges the clypeus, and hangs down over the falces. The falces are darkly iridescent in both sexes, the female having a band of white hairs across the upper part, while in the male the proximal ends are covered with white, rice-like scales which pass into a stiff fringe of long white hairs, cut squarely off at the ends. The abdomen is of a delicate gray, marked with white spots and bands outlined in black.

There is a band around the front end, a pair of spots in front of the middle, a large central spot, two oblique bands on each side, and a pair of spots in front of the spinnerets. The legs and palpi are brown covered with white scales. The femur of the first leg, in the male, has at the inner upper part of the distal end, a bunch of hairs which are black with white tips. Running along under all the joints of this leg is a double fringe of hairs of mixed colors, white, dark, and rusty-brown, these last growing white at the ends.

We have it from North Carolina and Texas, and Mr. Scheffer has found it at Hays and Stockton, Kansas.

The young males of *obscurus* have three white spots on the cephalic plate, as in the adult female of *mystaceus* Hentz. The white diagonals on the sides of the abdomen are usually convex toward the front, but in the Kansas specimens, perhaps from a shrinkage after the laying of eggs, they curve in the other direction. One of the Kansas females has metallic reflections on the middle of the abdomen.

***PHIDIPPUS PURPURATUS* K.**

Plate XXXIV, figs. 5–5d.

1885. *PHIDIPPUS PURPURATUS* ♂ and *ALBOMACULATUS* ♀ K., Ver. z. b. Gesell., 489-491 (not *albomaculatus* P. 1888).
 1888. *PHIDIPPUS GALATHEA* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 14 (not *Attus galathea* Wlk. 1837.)
 1891. *PHIDIPPUS MYSTACEUS* E. ♂ ♀, Trans. Conn. Acad., VIII, New England Attidae, p. 9 (not *mystaceus* H. 1845).
 1895. *PHIDIPPUS BOREALIS* B. ♀ Can. Ent. p. 96.
 1901. *PHIDIPPUS GALATHEA* P., Wis. Acad. Sciences, Arts and Letters, XIII, ♂ p. 286, ♀ p. 288.

This species bears some resemblance to *asinarius* C. K and also to *electus* C. K.

Length, ♂ 10–12 mm., ♀ 12–15 mm. Legs, ♂ $\overline{142\overline{3}}$, ♀ $\overline{413\overline{2}}$, first pair enlarged and fringed.

Both sexes have a thick covering of light gray hairs over a very dark integument, so that, according to the state of preser-

vation, the appearance may be that of a light, or of a very dark species. Besides the short hairs which form the body covering, there are many longer ones, also gray, especially about the front of the head and on the legs, giving an unusually hirsute appearance. On the abdomen are two more or less distinct dark bands marked with four pairs of pure white spots which are outlined in black. Mr. Emerton draws the second pair of these spots very small, but in our specimens they are large and obliquely inclined, sometimes coalesced to form a large spot, notched behind. There are the usual white bands on the base and sides. In some examples, especially in the males, instead of two dark bands on the abdomen, we have one wide band, but this is probably due to the rubbing away of scales. On the middle posterior part there are metallic reflections. In old specimens the color may change to brown or red. The clypeus is fringed with white hairs and the falces are metallic green. The palpi are reddish with long gray hairs. The legs are dark, not banded, the first pair heavily fringed with a mixture of gray and dark brown hairs, not growing in bunches of alternate color, although the dark strongly predominates on the tibia, and on the upper surface of the femur.

In the Britcher Collection is a female with 140 young.

The specimens in the Cambridge collection from California and the southern states placed by Keyserling in this species, belong elsewhere. In the male from Utah the two spots of the second pair, on the abdomen, are united (in all other male examples they are well separated) but the palpus agrees with *purpuratus*. We have it also from Texas and from Columbia, Mo., as well as from several of the New England states, where Mr. Emerton says it is common.

Purpuratus is close to *texanus*, the epigynes being almost exactly alike. The difference is in the marking on the abdomen, *texanus* having a central longitudinal white band which is lacking in *purpuratus*.

PHIDIPPUS OTIOSUS H. 1845.

Plate XXXIV, figs. 6—6f.

1845. *ATTUS OTIOSUS* H. ♀, Jour. Bost. Soc. Nat. Hist., Vol. V.1875. *ATTUS OTIOSUS* H. ♀, Occ. Pap. Bost. Soc. Nat. Hist. II, p. 59.1888. *PHIDIPPUS OTIOSUS* P. ♀. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 25.1901. *PHIDIPPUS OTIOSUS* P. ♀, *ibid.*, XIII, p. 288.

Length, ♂ 9 mm., ♀ 10—15.6 mm. Legs, ♂ $14\overline{32}$, ♀ 4132 or $14\overline{32}$, first pair heavily fringed.

The only male that we have seen of this species, and the small females, are in the Britcher collection, and seem to form a variety of the species described by Hentz and by ourselves, from large females. This original form has, on the cephalothorax, a wide white band which crosses the clypeus and passes along the sides, not reaching the end nor curving up on the thorax. A black line extends obliquely down behind the front lateral eye, and ends in a tuft of dark hairs; and a second tuft appears above, in front of the dorsal eye. The upper surface may have been covered with hairs, but in our specimens these have been rubbed away, leaving a black ground color. The integument of the abdomen is dark, with an iridescence that shows through the hairy covering. The basal band is made of long white hairs, and on the side, beyond the end of the band, there is usually a white spot, the sides being lined with black and white. Above, behind the basal band, is a pair of white spots. In the middle of the back is a large white triangle, sometimes broken into two. Near the apex are two large white or pinkish spots, concave, and with the border notched, on the inner side. Between these spots the middle dark band is very metallic. There are many long black and white hairs growing over the surface of the abdomen.

The falces have white scales above and are metallic green below. The legs are heavy, sometimes all dark, and sometimes with the proximal ends of the joints lightened, with many close white scales. The hairs above the femur of the first are long and

dark except at the end, where they are short and white, while below they are white at the proximal end and black through the rest of the joint. Under the patella they are white; under the tibia they are white at the proximal end, the rest of the joint having a thick black brush, and under the metatarsus they are white under the proximal and black under the distal end. The other legs are fringed in the same way but not so heavily.

The male and female in the Britcher collection, though smaller and not so hairy, are too close to *otiosus* to be considered more than a variety of that species. In the male the white bands on the cephalothorax stop just back of the front lateral eyes, and the clypeus is brown on the sides and white in the middle. The integument of the cephalothorax as well as of the abdomen, is very iridescent. The abdomen has the detached spots on the sides, beyond the ends of the basal band, higher up, and the spots at the end have the appearance of two pairs of white bars. The legs are not heavy and the fringe under the tibia of the first is entirely black. The female has the cephalothorax covered with white hairs, and on the abdomen are two dark longitudinal bands on the outer sides of the white spots. The legs are rather slender and the fringe on the first is entirely white.

Hentz found large numbers of the female of *otiosus* hibernating under bark, in northern Alabama. We have had it from Georgia and Florida, and Mr. Banks reports it from the latter state. The variety described above is from Baltimore, Maryland. Mr. Banks has sent us a female of this variety from the District of Columbia. He considers it identical with *otiosus*.

***PHIDIPPUS MINIATUS* P. 1883.**

Plate XXXII, figs. 5—5a.

1883. *ATTUS MINIATUS* P. ♀, Descr. new or little known Attidae U. S. p. 15.

1888. *PHIDIPPUS MINIATUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 15.

1901. *PHIDIPPUS MINIATUS* P., ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 286.

Length, 13–18 mm. Legs, $4\overline{123}$, first pair enlarged and hairy.

A very large, hairy spider, marked with red. The sides and thoracic part are covered with yellowish-gray hairs. On the cephalic plate are two square patches of black somewhat concave on their inner sides; beneath and in front of the patches and just above the first row of eyes the color is orange to yellowish-red. In the red and between the dorsal eyes, is an indistinct (becomes more distinct under alcohol) crescent-shaped black band. The abdomen is covered with short bright red and long whitish hairs; at the base is a wide band of gray hairs. Near the middle of the back is a large somewhat triangular shaped spot and behind this are two pairs not so large and *transeversely* elongated, all of a lighter red, and all encircled with black. In front of the middle spot are two round light red spots with black centers. The sides are covered with long gray hairs. The underpart of the abdomen is dark in the middle. The clypeus is covered with yellowish-white hairs; there are tufts of black hairs, in front of the dorsal eyes on the sides of the head. The palpi are yellow, with a covering of white scales and long white hairs on the sides. The first legs are plainly the stoutest; they are dark colored, except the metatarsi which are light. All the joints are covered with gray scales, the fringes are grayish except under femora and tibiae where there is a mixture of black and gray. The other legs are colored much like the first pair, except that the proximal halves of the patellae and tibiae of the third and fourth pairs are lighter colored than the outer ends of the joints.

In our collection from Florida and Texas. Mr. Banks has it from Punta Gorda, Citrus County, Jacksonville, Enterprise and Levy County, Florida. Mr. C. R. Crosby took it recently in Alexandria, Virginia.

***PHIDIPPUS COMATUS* P. 1901.**

Plate XXXII, figs. 4—4a.

1901. *PHIDIPPUS COMATUS* P., ♀ only, Wis. Acad. Sciences, Arts and Letters, XIII, p. 291.

♀. Length, 10 mm. Legs, 4132.

There is a band of white hairs over the front eyes and back of this is a band of long dark brown hairs which reaches to a large light-colored square spot between the dorsal eyes, on which the hairs are white in front and reddish behind. The sides of the cephalothorax are covered with white hairs. The thoracic slope, in our specimens, is rubbed, showing only some small patches of red hairs. In front of the dorsal eyes, and on the sides below the lateral eyes, are conspicuous dark tufts. The palpi are of a light reddish color entirely covered with long white hairs; the clypeus is also covered with white hairs and the falces are dark reddish-brown. The pattern on the abdomen is in white. There is a basal band from which a central notched band passes back through two-thirds of the length. This is enlarged at two points, in front of and at the middle, by its union with the usual two pairs of spots, each pair, in this case, having coalesced. Back of the middle the band is made up of two or three long pointed chevrons, which terminate at the first of the two pairs of bars. The outer ends of these bars are joined on the lower sides. On either side of the central white band our specimens show patches of red hairs, indicative, probably, of narrow red bands. The sides are streaked diagonally with white and reddish-gray. The legs are barred with light and dark brown, and are covered with white scales and brown hairs.

Although our specimens are so imperfect this species is distinct by the large light patch in the middle of the cephalothorax. *Workmanii*, which has a smaller patch in the same place, has a wide white band behind the dorsal eyes, and is without red hairs. The description of *comatus* reads, to some extent, like that of *femoratus*, but this latter species has no central spot on

the head, and has a rather heavy wide cephalothorax, while that of *comatus* is relatively light and small.

We have three females from Las Vegas, New Mexico.

***PHIDIPPUS PULCHERRIMUS* KEYS. 1885.**

1885. *PHIDIPPUS PULCHERRIMUS* Keys. ♀, Ver. zool.-bot. Gesellschaft, Wien, VI, p. 492.

♀. Length 9 mm. Legs, 4132, not fringed.

The cephalothorax is dark with long dark hairs on the front part and a wide white band on each side extending backward from the dorsal eyes. The abdomen is rich red with a dark central band on the posterior two-thirds, on which are a large central white spot and two pairs of white bars near the spinnerets. There are no basal and side bands. The clypeus is reddish with coarse white hairs. The falcis are iridescent green. The legs are reddish-brown darkened at the ends of the joints and well covered with white scales and light and dark hairs. The venter has white stripes on the sides.

There is one example in the Cambridge collection, taken in Florida, and Mr. Banks found a female at Biscayne Bay, in the same state, in March.

***PHIDIPPUS RAUTERBERGII* P. 1888.**

Plate XXXIV, figs. 7–7a.

1888. *P. RAUTERBERGII* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 22.

1901. *P. BAUTERBERGII* P. ♀, *ibid.*, XIII, p. 295.

Large, handsome spiders with metallic scales and white tripunctate marking on the abdomen.

♀. Length 13–16 mm. Legs $\overline{14}$ $\overline{23}$, very stout.

The cephalothorax is dark brown or black, with a crescent-shaped white band which curves forward from the dorsal eyes.

There are white hairs on the sides, and between the eyes of the first row. The abdomen is velvety black, with a pure white band around the front end, a white, central spot, two pairs of white spots further back, and two oblique lines on each side, the front one running lower down than the other. Behind the central white spot a bronze band runs to the spinnerets, and in front of the spot there is a less distinct bronze region, which sometimes appears as three indistinct spots, as is represented in the figure, and sometimes consists of a central band crossed by a line, the dorsum being thus broken into four black patches. The venter has a dark wedge-shaped region surrounded by white. The legs are black, barred with reddish-brown, the first one having a double black fringe under the femur, and a single fringe of long hairs under the other joints. This fringe is white on the patella, and on the proximal end of the tibia, black on the rest of the tibia, white at the proximal and black at the distal ends of the metatarsus and tarsus. The falces are iridescent green.

We have several specimens from Texas, and San Rafael, Mexico.

***PHIDIPPUS FARNEUS* P. 1888.**

Plate XXX, fig. 5.

1888. *PHILAEUS FARNEUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 26.

1901. *PHIDIPPUS FARNEUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 297.

♀. Length 9.2 mm. Legs 4132, all fringed.

The cephalothorax has a brown integument covered with white scales and reddish hairs, with long tawny hairs above the front eyes and tufts of the same color above and on the sides. The clypeus is covered with white hairs. The falces are darkly iridescent and have long whitish hairs along the inner sides and around the base of the fang. The abdomen is black, encircled, except at the apex, with a scalloped white band. In the mid-

dle, above, is a white triangle, with a pair of white dots in front and another behind. Near the end, extending upward, on each side, from the encircling band, is an oblique white bar. The middle posterior part is brownish, and shows, under alcohol, a series of chevrons. The markings are more or less obscured by a growth of long white and tawny hairs over the upper surface. The palpi are reddish with white hairs. The legs are banded with light and dark brown. Above the femur of the first are thick tawny hairs, and under all the legs are fringes of mixed tawny and white hairs.

Our single specimen is from Texas.

PHIDIPPUS OBSCURUS P. 1888.

Plate XXXV, fig. 3.

1888. *PHIDIPPUS OBSCURUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 16.

Not *obscurus* P. ♂ ♀ 1901.

In 1888 we described the female of this species from very badly rubbed specimens. In 1901 we described what we thought was the perfect form of both male and female, but examples received since that time prove that the 1888 species is distinct from that of 1901, and to the latter we now give the name *carolinensis*. We have as yet no male and no perfect example of the female of *obscurus*.

♀. Length 13 mm. Legs 4132.

White hairs cover the sides of the cephalothorax and grow above the front row of eyes. Back of this the upper surface of the cephalic and thoracic parts is rubbed, but shows a dark integument, more or less covered with yellow hairs, which thicken to form a crescent between the dorsal eyes. It is probable that these hairs, in perfect specimens, cover the upper surface, and it may be that their color was originally red. The clypeus is covered with white hairs, and the falces, which are bluish-green below, have white hairs above. The palpi and legs are reddish with white hairs.

The coloring of the abdomen is doubtful. It seems to have been golden, or reddish-yellow on either side of the middle (where, in rubbed specimens, the integument is pale), with a white basal band and the usual pattern of white spots down the middle, consisting of a pair on the front part, a central white triangle, and two pairs of bars on the posterior part, which form a parenthesis only when the abdomen is rubbed. There are no white diagonals on the sides but the reddish hairs tend to form many lighter and darker diagonal streaks. The venter is pale yellow, sometimes darker in the middle, with two lines of irregular light spots bordered with dark, which converge toward the spinnerets. Even in poor specimens the characteristic dark borders of the light spots are visible.

The epigynes of *obscurus* and *carolinensis* are distinct. In the drawing the anterior shield appears broken. The two parts are sometimes united in the middle, the anterior part being lighter than the posterior.

We have numerous females from Georgia and Texas.

***PHIDIPPUS BASALIS* B. 1904.**

Plate XXXV, figs. 4—4a.

1904. *PHIDIPPUS BASALIS* B. ♀, Jour. N. Y. Ent. Soc., XII, 2, p. 115.

♀. Length 12 mm. Legs $\overline{14}$ $\overline{23}$.

The cephalothorax is dark brown, darkest on the cephalic plate. The clypeus is covered with gray hairs. The falces are dark, not iridescent, the upper parts covered with brown hairs. The abdomen has the whole front end yellow. Behind this it is black, marked with a pair of white spots in front of the middle, with two pairs of transverse white bars on the upper sides, and a pair of spots over the spinnerets. The legs are dark with many black and white hairs.

Mr. Banks has a single female from Arizona.

PHIDIPPUS PRINCEPS P. 1883.

Plate XXXI, fig. 5.

1883. *ATTUS PRINCEPS* P. ♀, New or little known Attidae, p. 18.1888. *PHILAEUS PRINCEPS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 31.1901. *PHIDIPPUS PRINCEPS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 288.Not *princeps* B. ♂, 1892.♀. Length 8 mm. Legs, 41 $\overline{32}$.

The cephalothorax is reddish, covered with yellowish hairs, with long black hairs around the eyes and long white hairs growing thick on the clypeus. The falces are dark reddish-brown with slight iridescence. The abdomen is covered with tawny-gray hairs and has a whitish band at the base and a pair of white spots on the middle of the back. The legs and palpi are bright-reddish brown with white scales and hairs.

In shape and general color *princeps* is so much like *Putnamii* that very probably Mr. Banks is right in making it the female of that species. They have not, however, been found in the same locality, *princeps* having been taken but once, and then in Pennsylvania, while *Putnamii* (of which *gracilis* K. is a synonym) is reported from Kentucky, Iowa and Missouri.

Mr. Banks says, in a letter of February 2nd, 1907, that the spiders he listed as *Philaeus princeps* in 1892 are males of *clarus*.

PHIDIPPUS PRUINOSUS n. sp.

Plate XXXV, figs. 2–2a.

♀. Length 10 mm. Legs 41 $\overline{32}$, first pair thickened.

This is a medium sized species of dark brown ground color, with the pattern in white, and many long gray hairs which give it a hoary appearance. The clypeus is covered with long white hairs passing into white bands which entirely cover the

upper sides of the cephalothorax; these bands are edged, below, with dark brown, and the lower sides are covered with tawny hairs. Above there is a white band just over the front eyes, the rest of the cephalic plate being mottled with white and brown. On the middle of the thoracic part is a large white figure, narrowing behind, edged by dark brown bands which run back from the dorsal eyes and meet at the end of the cephalothorax. The dark tufts on the eye-region are rather prominent. The abdomen has a wide white band across the base and along the front sides, and behind this are three diagonal bars, the last of which makes a turn low down on the side and curves up, above the spinnerets, forming a parenthesis. On the back there is a wide central white band which begins in two spots a little behind the base and reaches as far as the front end of the parenthesis, and behind this the middle region is metallic. The falces are dark red with long white hairs on their inner sides. The palpi are reddish with long white hairs. The legs are rufus with blackish spots or rings at the ends of the joints and are well covered with white scales. There seems to have been a light white fringe on the first, but this, in our specimens, is nearly demolished.

This species is nearest *otiosus*, but is distinct by the pattern and the epigynum. We have two females from Austin, Texas.

***PHIDIPPUS WORKMANII* P. 1901.**

Plate XXXV, figs. 5—5a.

1901. *P. WORKMANII* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 297.

♀ Length 12—14.5 mm. Legs, 4123, first pair enlarged.

The posterior thoracic slope and the cephalic plate are black, the latter having a white spot in the middle. A wide white band crosses the clypeus, occupies the sides of the cephalic and anterior thoracic parts, and passes across the thorax behind the dorsal eyes. There are two tufts of black hairs on each side of the head. The middle of the abdomen is occupied by a dark more or less bronzy region, on which are two rather indistinct

white spots in front, a large white triangle, and two pairs of white bars near the end. There is a wide white basal band, continuous with the middle part of which a white band (sometimes not very distinct) passes back on either side of the dark central region to near the end of the abdomen. In one specimen the inner edges of these white bands are delicately edged with red. Beyond these bands the sides of the abdomen are brown, covered with gray hairs, and marked, low down, by two oblique white bars, edged with black. The venter has a wide dark central region which is rounded at the spinnerets and widened a little near the epigynum.

The falces are bronze green. The palpi are yellowish, with white hairs. The first, second and third legs, excepting the metatarsi and tarsi, are rufus, the metatarsi being yellow except the distal third, which is rufus, and the tarsi being all yellow, excepting those of the first pair, which have a dark ring in the middle. The fourth leg has the femur and patella rufus, the tibia and metatarsus with the proximal half light colored, and the distal half dark brown, and the tarsus entirely light colored. All the legs are thinly covered with short white hairs.

We have one female from Arizona and one in the Marx collection, marked North America.

Workmanii is much like *farneus* in abdominal marking, but the cephalothorax is banded and the epigynes are of different types.

***PHIDIPPUS MYSTACEUS* H. 1845.**

Plate XXXV, figs. 1—1a.

1845. *ATTUS MYSTACEUS* Hentz ♀, Jour. Bost. Soc. Nat. Hist. V.

1875. *ATTUS MYSTACEUS* H. ♀, Occ Pap. Bost. Soc. Nat. Hist. II, p. 58.

1901. *PHIDIPPUS INCERTUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, XIII, p. 292.

Not *Phidippus galathea* P. 1888, nor *Phidippus mystaceus* E. 1891. We are unable to identify it with any of Koch's species.

♀. Length 9—11 mm. Legs $\overline{41}$ $\overline{32}$, lightly fringed.

The covering of the whole body consists of gray hairs on a black integument. Just over the first row of eyes is a white

band, and back of this there is a darker region upon which are three white spots in a transverse row, the middle one sometimes merging into the gray of the ground color. The sides are gray below, but have wide white bands just under the eyes, and continuing on to the thoracic part. There are strong black tufts in front of the dorsal eyes, and slighter ones on the sides of the head, below the lateral eyes. The abdomen has a white band in front, and diagonals on the sides. Above, near the front end, is a pair of white spots, and farther back, at about the middle point, is a larger pair, sometimes coalesced. From above, the posterior part of the abdomen seems to be marked with two pairs of white bars, but these are usually joined at their lower ends, and sometimes form the peculiar figure that is seen in *otiosus*, while in fresh specimens the marks are more like those of *obscurus*. These three females are easily distinguished, since *obscurus* has a uniform white cephalothorax, and *otiosus*, a much heavier and hairier spider, has the surface of the abdomen, under the hairs, brightly metallic. The clypeus is covered with short white hairs. The upper parts of the falces are dark with not very long white hairs, and the lower parts are metallic green. The palpi are light brown with white hairs, and the legs, more or less banded with light and dark brown, have light fringes of soft white hairs, intermixed with dark at the distal end of the tibia of the first.

Purpuratus is a larger, heavier spider than *mystaceus*, with a uniform cephalothorax and metallic scales on the abdomen.

Our specimens are all from Austin, Texas. Hentz had it from North Carolina. Mr. Emerton's remarks under *mystaceus*, in Occ. Pap. Bost. Nat. Hist. Soc. II, refer to the female of *purpuratus*.

PHIDIPPUS TEXANUS B. 1906.

Plate XXXV, figs. 6–6a.

1888. *PHIDIPPUS ALBOMACULATUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 19.
 1906. *PHIDIPPUS TEXANUS* Banks, ♀, Proc. Ent. Soc. Washington, VII, 2-3, p. 98.

♀. Length, 12–13 mm. Legs 4123, first pair stoutest.

The cephalothorax is deep reddish-brown in color entirely covered with short white hairs which have a slightly yellowish tinge on the top and sides, but are snowy around the front eyes. The clypeus is fringed with white. The falces are brownish just at the top, but otherwise are green and very brilliantly iridescent. A few long white hairs grow on the inner edges. The base and sides of the abdomen are brown marked with white bands. On the front middle part is a branching white figure from which a central white band, notched on the edges and forked at the end, runs back to a point somewhat in front of the spinnerets. On either side of this is a black band, marked toward the end, with two white bars. These black bands meet behind. The legs are reddish brown with white scales and are fringed with white. The femur of the first has black hairs above, and the tibia of the first has the distal half much darkened, almost black. The palpi are much lighter and are well ornamented with fringes of hair.

We do not find the golden scales on the falces, mentioned by Mr. Banks.

Mr. Banks has it from Brazos Co., Texas, and our specimens come from the same state. Mr. Scheffer has found it in Kansas.

PARNAENUS P. 1896.¹

Type, *PHIDIPPUS CYANIDENS*, C. Koch.

1846. *PHIDIPPUS* C. K. (*cyanidens*) Arachn. XIII, p. 156.
 1883. *ATTUS MCCOOKII* (*opifex*), Proc. Acad. Nat. Sci. Phila., p. 276.
 1888. *PHIDIPPUS* P. (*opifex*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 20.

¹ This genus is spelled *Parnaeus* in the species descriptions.

1896. *PARNAENUS* P., Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 37.
1901. *PARNAENUS* F. O. P. C., Biol. Cent. Am., Arachn. Aran., II, p. 287.
1901. *PARNAENUS* P., Wis. Acad. Sciences, Arts and Letters, XIII, p. 300.

The characteristic thing about this genus is that the front part of the cephalothorax is widely swollen, this peculiarity being as marked in the female, as in the male.

The spiders are large and handsome, the males being darker colored than the females, and, usually, having their first legs ornamented with fringes of hair.

The cephalothorax is high and massive, and when looked at from in front the sides are seen to bulge out. The cephalic part is inclined. Behind the dorsal eyes is a depression and then a slight hump, from which the thorax falls in one slope to the margin. The lower outline of the sides is sometimes not far from circular, but there is a distinct bulge in the eye-region, where the cephalothorax is widest. They round out widely from above downward so that although the dorsal eyes are on the sides, they form a row which is much narrower than the cephalothorax at that place. The quadrangle of the eyes is from slightly to plainly wider behind than in front, is from one-fourth to two-thirds wider than long, and occupies about two-fifths of the cephalothorax. The first row is curved, the middle eyes being slightly separated, while the lateral are placed further back, with a distinct space between them and the middle eyes. The middle eyes are nearly twice as large as the lateral. The second row is plainly nearer the first than the third. In the male the falces are strong and projecting, with a long fang. In the males the first leg is plainly the longest, and the fourth next. The falx has one tooth on the lower margin.

This genus has for its type *Phidippus cyanidens* C. K., which we have from Texas, Mexico, Guatemala and Brazil. To this we add *Phidippus funebris* Banks, (*Arachnida from Baja, California, and other parts of Mexico*), from Vera Cruz, *chrysis* Wlk., and *fartilis* P.

PARNAEUS CHRYSIS WALCK. 1837.

1837. *ATTUS CHRYSIS* ♂, Walck., Hist. Nat. des Insectes Aptères, 1, p. 454.
 1837. *ATTUS IRIS* ♀, Walck., *ibid.*, p. 455.
 1844. *ATTUS MULTICOLOR* ♀, H. Jour. Bost. Soc. Nat. Hist., IV.
 1846. *PLEXIPPUS AURECALCEUS* C. K., Die Arachniden XIII, p. 113.
 1847. *ATTUS CHRYSIS* Walck., *ibid.*, IV, p. 422.
 1847. *ATTUS IRIS* id., *ibid.*, p. 423.
 1875. *ATTUS MULTICOLOR* H. Occ. Pap. Bost. Soc. Nat. Hist. II, p. 53.
 1888. *DENDRYPHANTES MULTICOLOR* ♀, P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 40.
 1888. *PHILAEUS CHRYSIS* ♂ ♀ P., *ibid.*, p. 30.
 1898. *PHIDIPPUS FRATERNUS* B., Cal. Acad. Sci., 3d Ser., Zool. 1, 7, p. 281,
 1901. *PARAPHIDIPPUS CHRYSIS* F. O. P. C., Biol. Cent. Amer, Arachn. II, p. 276.

Length, ♂ 7–10 mm., ♀ 8–12 mm. Legs, ♂ 14 $\overline{23}$, ♀ 41 $\overline{32}$.

The male has the cephalothorax black with green iridescent scales on the cephalic plate. There is a narrow band of white scales on each side extending from the anterior lateral eye as far back as the posterior margin. The abdomen is red-brown above covered with green, golden, and pink scales. There is a white basal band reaching nearly to the spinnerets where it is continued as a spot. Sometimes this band is broken up into several elongated spots after the first half. The back has a row of three white spots on each side; the last pair are often elongated and transverse. All the spots and markings are made up of white scales. The falces are inclined forward and divergent with dull green reflections. The legs are black or brown covered with black hairs, except at the base of the patella of the first, when the hairs are white. The tarsi and metatarsi of the posterior three pairs yellow. Under side of the body brown to yellow in different specimens. The palpi are brown without white on upper side. In some specimens the tarsus and metatarsus of the first leg are yellow. Indeed the depth of color of these joints varies greatly.

While the coloration is variable in the male, in the female it is much more so. The top of the cephalothorax is covered with

green iridescent scales; the sides with white. The abdomen above is covered with iridescent scales varying from green to coppery, with pinkish reflections. The white basal band extends back as far as the first third, and is followed by a large spot and two smaller spots; the latter sometimes unite. The posterior spots join just above the spinnerets. There are three pairs of spots on the dorsal area, the posterior pair are often elongated and take a transverse direction. The part in front and behind each spot looks black. The markings may be white, dull yellow, or orange in color, or two of these colors. Under part of body light or dark brown. Legs, palpi and falces red-brown, with the distal ends of the tibiae of the first, second, and fourth dark or black. All these parts are more or less covered with yellowish hairs. In some specimens the basal band is wide and extends to the spinnerets without breaking into spots.

The specimen in our collection which we identify as *multicolor* of Hentz, is from North Carolina. The white on the side of the cephalothorax is only a band and does not extend down to the margin, otherwise it is like the common form of *chrysis*. The cephalothorax is not as much rounded out as in the usual form.

Arizona; Chapel Hill, N. C.; Guadalajara, Mexico; various parts of lower California (Banks); San Domingo, and Central America, (F. O. P. Cambridge).

***PARNAEUS FARTILIS* P. 1888.**

Plate XXXV, figure 7.

1888. *PHILAEUS FARTILIS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 27.

1901. *PARAPHIDIPPUS MARMORATUS* F. O. P. C. ♀, Biol. Cent. Am., Arachn., II, p. 277.

1901. *PARAPHIDIPPUS FARTILIS* F. O. P. C. ♀, *ibid.*, p. 278.

♀. Length 8—13 mm. Legs, $\overline{14} \overline{23}$, first pair stoutest.

The cephalothorax is covered with white hairs, which grow long on the clypeus and the upper part of the falces. The ends

of the falces are dark, not iridescent. The front half of the abdomen has a black integument covered with whitish pubescence, so that the color is gray; behind, it is much darker, with some coppery iridescence. There is a wide white band around the base, and on each side are two large irregular spots, the second reaching the spinners. The anterior one of these is orange color, and the second is partly orange and partly white. On the middle dorsum are three pairs of elongated white spots, and on the posterior part are two pairs of horizontal bars, which come off from the white spots on the lower side, and form a parenthesis. These spots and bars are all edged with dark bands. The venter has a chocolate colored band, without scales or hairs, on either side of which it is white. Over the whole body are many long white hairs. Under alcohol the legs are light reddish with the distal ends of the joints darkened. They are covered with white hairs. Under the distal ends of the tibiae of the first and fourth are some black hairs. The palpi are yellow with white hairs.

Another variety has the abdomen white, with a dark region at the end; this region is iridescent in the middle, and is marked by two pairs of transverse white lines. The basal band shows faintly, its white being more solid. The front side spot and the dorsal spots are marked by black outlines. Cambridge draws two other varieties of this species (*marmoratus*).

Cambridge says that his *marmoratus* is allied to *fertilis*, but that it has a different epigynum. His drawing of the epigynum, however, shows that his specimens were not quite mature.

This species is found in Costa Rica, Mexico, and Texas (Brownsville).

PLEXIPPUS C. K. 1846.

Type, *ATTUS PAYKULLII* Aud. 1825.

- 1846. *PLEXIPPUS* C. K., Die Arachn. XIII, p. 107 (*ligo*).
- 1850. *PLEXIPPUS* C. K., Ueb. Ar. Syst., V, p. 51 (*ligo*).
- 1876. *HASARIUS* E. S., Ar. Fr., III, p. 77 (*Paykullii*).
- 1881. *MENEMERUS* (?) Th., St. Rag. Mal. e Pap., III, p. 500 (*Paykullii*).
- 1881. *MENEMERUS* KEYS., Ar. Austral., p. 1461 (*Paykullii*).

1888. *MENEMERUS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 84 (*Paykullii*).
 1901. *THOTMES* F. O. P. C., Biol. Cent. Am., Arachn., II, p. 240 (*Paykullii*).
 1903. *PLEXIPPUS* E. S., Hist. Nat. Araign., 2me Ed., II, p. 734.
 1905. *PLEXIPPUS* B., Am. Nat. XXXIX, p. 321.

Cephalothorax long and rather high, slightly convex, a little dilated behind dorsal eyes, with sides nearly vertical and parallel in front, rounded behind; cephalic part inclined; thoracic falling gradually from a little way behind dorsal eyes to near the posterior border, then dropping abruptly. Eye-region occupying but little more than 1/3 of cephalothorax, 1/4 wider than long, a little wider in front than behind. Front eyes in a curved row, the middle less than twice as large as the lateral. Second row a little nearer the lateral than the dorsal. Third row slightly narrower than the cephalothorax. Falces with two teeth on the upper and one on the lower margin. Labium a little longer than wide. Coxae of first legs separated by less than the width of the labium. Sternum rather long, rounded behind, contracted in front, not truncated.

***PLEXIPPUS PAYKULLII* AUD. 1825.**

1825. *ATTUS PAYKULLII* Aud., Descr. Egypte, 2nd Ed., XXII, p. 172.
 1837. *ATTUS PAYKULLII* WALCK., Hist. Nat. Ins. Apt., I, p. 426.
 1846. *PLEXIPPUS LIGO* C. K., Die Arachn., XIII, p. 107.
 1876. *HASARIUS PAYKULLII* E. S., Ar. Fr., III, p. 81.
 1881. *MENEMERUS PAYKULLII* Th., St. Rag. Mal. e Pap., III, p. 501.
 1881. *MENEMERUS PAYKULLII* Keys., Ar. Austral., p. 1461.
 1888. *MENEMERUS PAYKULLII* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 84.
 1901. *THOTMES PAYKULLII* F. O. P. C., Biol. Cent. Am., Arachn., II, p. 240.
 1903. *PLEXIPPUS PAYKULLII* E. S., Hist. Nat. Araign., 2me. Ed., II, p. 734.
 1904. *PLEXIPPUS PAYKULLII* B., Proc. Acad. Nat. Sci. Phila., p. 138.

Length, ♂ 9–10 mm., ♀ 9–12 mm. Legs, ♂ $\overline{1432}$, long, first pair stoutest; ♀ $\overline{4312}$. Spines, ♂ ♀, tibiae I, II 3–3 and 2

anterior laterals; met. I, II 2—2 and 1 small anterior lateral; pat. I 1 anterior lateral.

The spider is black with some reddish hairs in the eye-region, a central white longitudinal band from the front eyes to the spinnerets, and wide white bands throughout the length of the sides of the cephalothorax and abdomen. The central band widens toward the end of the abdomen, where, in the female, it is marked by indistinct dark chevrons, and has a pair of transverse white bars extending from it. On the front part of the abdomen, in the female, the central band is divided by a dark line. The clypeus and front of the falces are covered with white hairs, the clypeus in the male, marked with an oblique red band under each lateral eye. The palpus is yellow with the hairs yellowish except on top of the femur, where they are white. The legs are gray, with gray hairs, the front face of the first, in the male, marked by a longitudinal dark line, most marked on the femur; this line is repeated, less distinctly, on the other legs. The venter has a long, dark, wedge-shaped mark.

Mr. Banks has this species from Florida, and we have it from Florida and from Brownsville, Texas. It is found in all the warm regions of the world.

CORYTHALIA C. K. 1850.

Type, *SALTICUS LATIPES* PERTY.

- 1846. *EUOPHRYS* C. K. (*latipes*), Die Arachn., XIII, p. 224.
- 1850. *EUOPHRYS* SUB-GENUS *CORYTHALIA* C. K., Ueber. Arachn. Syst., V, p. 67.
- 1885. *JOTUS* P. (*opimus*), Proc. Nat. Hist. Soc. Wis., p. 71.
- 1888. *DYNAMIUS* E. S. Ann. Ent. Soc. Fr., p. 204.
- 1893. *DYNAMIUS* P., Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 12.
- 1901. (February). *SIDUSA* (*fulvoguttatus*) F. O. P. C., Biol. Cent. Am., Aran. Arachn., II, p. 214.
- 1901. (May). *CORYTHALIA* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 657.

Cephalothorax long, high and convex, sides nearly parallel, thoracic part falling steeply in second half. Eye-region occupying 2/5 of cephalothorax, equally wide in front and behind, or

a little wider in front. Front eyes in a curved row, large, middle less than twice lateral. Second row halfway between the others, or nearer the third, which is narrower than the cephalothorax. Clypeus high. Falces stout, vertical, with small fangs; lower margin with one small tooth. Sternum long, truncated in front. First coxae widely separated. Labium as wide as long.

Ephippus americanus Keys., which Simon includes in *Corythalia*, belongs to the genus *Pellenes*.

CORYTHALIA OPIMA P. 1885.

1885. *JOTUS OPIMUS* P., Proc. Nat. Hist. Soc. Wis., p. 71.

1888. *DYNAMIUS OPIMUS* E. S., Ann. Ent. Soc. Fr., p. 205.

1893. *DYNAMIUS OPIMUS* P., Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 12.

1901. (Feb.). *SIDUSA FULVOGUTTATA* ♀ F. O. P. C., Biol. Cent. Am., Aran. Arachn., II, p. 214.

1901. (May). *CORYTHALIA OPIMA* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 652.

Length, ♂ 8 mm., ♀ 10.7 mm. Legs, ♂ ♀ $\overline{34} \overline{21}$, first three pairs enlarged and fringed, in the male.

Spines, ♂, tib. I and II 3—3 and 3 anterior and 3 posterior lateral spines; met. I and II 2—2 and 2 anterior and 2 posterior lateral spines; pat. I and II 1 anterior and 1 posterior spine.

Coloration of ♂ and ♀. The cephalothorax is black; there is an indistinct patch of whitish hairs just above the middle anterior eyes, and a smaller patch behind each of the eyes of the second row; a little way behind the dorsal eye, on each side, is a longitudinal band of white hairs which becomes narrower and somewhat curved as it passes backward. These bands are sometimes united behind. It seems probable that the upper surface of the thoracic part was originally covered with white hairs, which have been more or less rubbed off in the different specimens. On the lower borders of the cephalothorax are bands of white hairs which begin opposite the dorsal eyes and run as far back as the part overlapped by the abdomen. The ground color

of the abdomen is black. At the base it is covered with whitish yellow hairs, through which there sometimes runs a transverse line of white hairs. Just behind this region is a large spot of bright red hairs which occupies the central anterior portion of the dorsum, and which, in the male, takes somewhat the form of an obtuse triangle. Behind this spot, and touching it, is a transverse band of white hairs (broader in the female) which is frequently (especially in the female) interrupted by black in the middle line. Behind this band the color of the middle region of the abdomen varies from whitish to yellowish. Near the spinnerets is a line of white hairs which, in the female, is parallel with the white band; in the male it takes the form of a **V** pointing backward. The palpi in the male have dark tarsi and the other joints light. The maxillae and labium are brown, usually tipped with white. The venter is black, with a longitudinal band of white hairs on each side. The legs are black, and in the male the patella of the third leg has a brilliant bluish metallic lustre.

Mr. F. O. P. Cambridge remarks that his *Sidusa fulvoguttata* "is probably identical with *Jotus (Dynamius) opimus*, Peckham."

Habitat. Arizona, Mexico and Guatemala.

ESCAMBIA P. 1896.

1896. *ESCAMBIA* P., Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 41.

1901. *CORYTHALIA* E. S. (in part), Hist. Nat. Aragn., 2me Ed. II, p. 657.

1901. *SIDUSA* F. O. P. C. (*conspecta, parvula, alacris*), Biol. Cent. Am., Aran. Arachn., II, p. 196.

Cephalothorax high and convex, nearly as wide as long, sides rounded; thoracic part falling in a rounded slope from dorsal eyes. Eye-region equally wide in front and behind or wider in front, about 1/4 wider than long, occupying 2/5 or more of the cephalothorax. Front eyes in a straight or nearly straight row, the middle less than twice as large as the lateral. Second row about halfway between the others, and third narrower than the

cephalothorax. Sternum nearly round, truncated. Coxae I widely separated. Labium a little longer than wide. Clypeus high. Legs all long, more or less fringed. Spines well developed. Falx with one tooth on lower edge.

We distinguish this genus from *Corythalia* by the rounded shape of the cephalothorax, the rounded sternum and the straight front row of eyes.

***ESCAMBIA CONSPECTA* P. 1896.**

Plate XXXV, figures 10–10a.

Dorsal views et cet., Occ. Pap. Nat. Hist. Soc. Wis., III, 1, Pl. III, figs. 3–3c.

Dorsal views et cet. Biol. Cent. Am. Arachn., II, Tab. 17, figs. 6–6c, 7–7g.

1896. *ESCAMBIA CONSPECTA* P. ♂ ♀, Occ. Pap. Nat. Hist. Soc. Wis. III, 1, p. 42.

1901. *SIDUSA CONSPECTA* F. O. P. C. ♂ ♀, Biol. Cent. Am. Arachn., II, p. 216.

Length, ♂ 7 mm., ♀ 9 mm. Legs, ♂ ♀ 4321, first and second pairs stoutest, and having, in the male, heavy fringes of hair, heaviest on the second. Spines, ♂, tibia I, II 3–3 with 3 anterior and 3 posterior laterals; met. I, II 2–2 with 2 anterior laterals, met. II with 2 posterior laterals, met. I with 1.

The color of the cephalothorax varies from dark brown to black. The cephalic part is iridescent, and seems to have been covered with white scales, although these are nearly all rubbed away in our examples. There are white bands on the lower sides, and on the middle of the thoracic part is a white spot, from which, in some specimens, two divergent white lines run to the dorsal eyes. The abdomen is brown with a deep black band around the anterior end, and behind this a white band, widest in the middle, and with its posterior edge indented. The male has, on the front part of the dorsum, two or three pairs of white spots or bars, which sometimes join to form lines. On the posterior half are alternating white and dark chevrons. The female has the same pattern a little more accentuated, the band

of chevrons being edged with black, upon which appear two pairs of white spots, the posterior pair obliquely elongated. These markings are very variable. The femur and patella of the palpus are white or light brown, with white hairs, and the tibia and tarsus which are much thickened, in the female as well as in the male, are black, with thick long black hairs, intermingled with shorter white ones. The legs are brown, the first and second pairs darkest. In the male the tibiae and metatarsi of the first and second legs, especially of the second, are highly iridescent, and have, on both upper and under sides, long fringes of stiff hairs, longer on the second leg than on the first. These fringes are deep black on the first leg and on the under side of the second, while on the upper side of the second leg they shade through two-thirds of their length, from a light to a very dark brown, and then have the tips pure white, making a strong contrast. The patella of the second leg has dark tufts, above, below, and on the front face.

We have one male from Arizona and numerous examples from eastern Guatemala. Cambridge had it from Costa Rica and Mexico.

THIODINA E. S. 1900.

Type, *ATTUS ELEGANS* Nicolet.

- 1845. *ATTUS* HENTZ (*puerperus, sylvanus*), Jour. Bost. Soc. Nat. Hist., V.
- 1850. *ATTUS* H. (*retiaris*), Jour. Bost. Soc. Nat. Hist., VI, p. 288.
- 1875. *ATTUS* H. (*puerperus, sylvanus, retiaris*), Occ. Pap. Bost. Soc. Nat. Hist., II, p. 64.
- 1883. *ATTUS* P. (*agrestis*), New or little known Attidae, p. 12.
- 1885. *PLEXIPPUS* P. (*puerperus*), Proc. Nat. Hist. Soc. Wis., p. 68.
- 1888. *PLEXIPPUS* P. (*puerperus*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 33.
- 1900. *THIODINA* E. S., Ann. Soc. Ent. Bel. XLIV, p. 392.
- 1901. *THIODINA* B. S., Hist. Nat. Araign., 2me Ed., II, p. 458.
- 1901. *COLONUS* F. O. P. C., Biol. Cent. Am., Arachn. Aran., II, p. 246.
- 1905. *THIODINA* B., Am. Nat., XXXIX, p. 322.

The cephalothorax is high, rounded on the sides and widest behind the dorsal eyes. The ocular area is $1/4$ wider than long,

is a little wider behind and occupies 2/5 of the cephalothorax. The anterior row is straight and the middle are not twice as large as the lateral eyes, from which they are slightly separated. The eyes of the second row are nearer the first than the third. The third row is not as wide as the cephalothorax at that place. The sternum is one and one-half times longer than wide, truncated in front and rounded behind. Lip longer than wide. There are two pairs of bulbous hairs on the under face of the posterior half of the tibia of the first pair in both sexes. These hairs are peculiar to the genus and distinguish it from all other genera in the United States. The teeth on the lower border of the falces are exceedingly variable; in some the tooth is compound, in others single and in a few there are several teeth. Even the two falces in the same specimen are occasionally unlike. The genus is found in all the Americas.

In this genus are included several species that have been reported under different generic names. These are *Attus elegans* Nicolet, *Attus sylvanus* Hentz ♂ (= *Attus retiarus*¹ H ♀), *Attus puerperus* Hentz (= *Attus agrestis* P.), *Alcmena pallida* C. K. (= *Marpissa Branickii* Tacz). *Thiodina* takes precedence of *Colonus* F. O. P. C., which was founded upon *sylvanus* H., which he calls *puerperus*. He included one other species, *crucifer*.

Thiodina is represented in the United States by only two species, *sylvana* and *puerpera*. In 1888 we described *sylvana* under the name *puerpera*. At that time we believed that we had but one species, the two being so nearly alike that we took them to be identical, including *sylvana* as a synonym of the so called *puerperus*, and also wrongly including *A. pallida* C. K. and *M. Branickii* Tacz. Mr. Banks first called attention to the slight but constant differences which characterize the two species. In our error regarding *sylvana* and *puerpera* we were followed by Simon and F. O. P. Cambridge.

¹ According to Hentz, and elsewhere in this document, this is *retiarus*.

THIODINA PUERPERA H.

Plate XXXV, figures 8–8d.

1845. *ATTUS PUERPERUS* H. ♀, Jour. Bost. Soc. Nat. Hist., V.
 1875. *ATTUS PUERPERUS* H. ♀, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 64.
 1883. *ATTUS AGRESTIS* P. ♀, New or little known Attidae, p. 12.

Not *Pl. puerperus* P. 1888, *Colonus puerperus* F. O. P. C., *Alcmena pallida*, C. K., nor *Marpissa Branickii* Tacz.

Length, ♂ 5–6 mm., ♂ (♀) 7–10 mm. Legs, ♂ $\overline{1342}$. ♀ $\overline{4312}$. Spines ♂ and ♀, tibia I 2–2 and 2–2 bulbous hairs, tibia II, 1–1, 1 below and 1 ant. lat. Sometimes the two unpaired spines are lacking.

The general color of the male is like *sylvana*, but instead of the oval white spot there is a white band running from between the dorsal eyes down the thoracic slope; under the dorsal eyes there is a white band instead of the three lines, and there is only one white line on each side coming up from the lower margin. The differences in the markings and the smaller size readily distinguish it from *sylvana*.

The female can be distinguished from *sylvana* only by its smaller size, the slight difference in the spines of the second tibia and the epigynum.

The tooth on the lower border of the falx, in both sexes, is commonly compound, occasionally simple, and sometimes there are several teeth.

From Georgia, North and South Carolina, Florida, Texas, Pennsylvania.

THIODINA SYLVANA H.

Plate XXXV, figures 9–9e.

1845. *ATTUS (vittatus* ♀ and ♂) H., Jour. Bost. Soc. Nat. Hist., V.
 1850. *ATTUS RETIARIUS* H. ♀, Jour. Bost. Soc. Nat. Hist., VI, p. 288.
 1875. *ATTUS SYLVANUS* H. ♂, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 68.
 1875. *ATTUS RETIARIUS* H. ♀, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 161.
 1885. *PLEXIPPUS PUERPERUS* P. ♂ ♀, Proc. Nat. Hist. Soc. Wis., p. 68.

1888. *PLEXIPPUS PUERPERUS* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 33.
 1901. *COLONUS PUERPERUS* F. O. P. C. ♂ ♀, Biol. Cent. Am., Arachn. Aran., II, p. 246.

Length, ♂ 9–11 mm., ♀ 9–12 mm. Legs, ♂ $\overline{1432}$, ♀ 4312. Spines, ♂ tibia I 2–2 and 2–2 bulbous hairs; tibia II 3–3 and 1 below, and 1 anterior lateral; sometimes the two patellae have ant. and post. spines, sometimes only on one side; ♀ tibia I 2–2 and 2–2 bulbous hairs, tibia II 2–2 and 1 ant. lat. All the spines appear to be quite variable.

Color, ♂; the cephalothorax varies from light to dark reddish brown and has on the cephalic-plate a large oval spot of white just in front of the dorsal eyes, two white lines on each side near the posterior border, running upward from the lower margin, and just behind and below each dorsal eye three short parallel lines; the abdomen varies from light testaceous to brown and has on the dorsum two longitudinal white bands; on each side of the bands are some scattered black dots. The legs and falces are brown except the proximal parts of the femora of the last three pairs, which are yellow. Palpus with a white line above. Other parts are light to dark brown. We have from Columbia, Missouri, several males that have the body and legs unusually dark. ♀; the cephalothorax is yellow, darkest in the eye region; the eyes are on black spots, and there is a brown spot just above the anterior middle eyes, the abdomen is yellow with three longitudinal white bands, the middle often less distinct, and many black dots; the other parts are yellow.

Found in California, Arizona (Banks), Florida, Texas, Georgia, Missouri, Mexico.

MAEVIA C. K. 1848.

Type, *MAEVIA PENCILLATA* ♂ C. K. 1848.

1845. *ATTUS (vittatus* ♂ and ♀) H., Jour. Bost. Soc. Nat. Hist V.
 1846. *PLEXIPPUS (undatus* ♂) C. K., Arachn., XIII, p. 123.
 1848. *MAEVIA (pencillata* ♂) C. K., Arach., XIV, p. 69.
 1850. *MAEVIA* C. K. Uber. Arach. Syst., p. 50.

1875. *ATTUS* (*vittatus* ♀, *niger* ♂) H., Occ. Pap. Bost. Soc. Nat. Hist. pp. 63, 64.
 1888. *ASTIA* (*vittata*) P. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 70.
 1891. *MAEVIA* Em., Trans. Conn. Acad., VIII, p. 18.
 1901. *MAEVIA* E. S., Hist. Nat. des Aran., 2nd Ed., II, p. 849.
 1901. *MAEVIA* P., Wis. Acad. Sciences, Arts and Letters XIII, p. 343.
 1905. *MAEVIA* B., Amer. Nat., XXXIX, p. 321.

Cephalothorax rather high, with sides nearly vertical and parallel in front, widening behind. Cephalic part a little inclined, thoracic scarcely falling in first half. Eye-region occupying $2/5$ of cephalothorax, slightly wider in front than behind, from $1/5$ to $1/3$ wider than long. Front eyes in a straight or slightly curved row, middle twice as large as lateral. Second row about half-way between the others. Third row nearly as wide as cephalothorax. Legs rather slender, first pair slightly stoutest. Sternum long, narrow in front. Coxae I nearly touching. Falx with a compound tooth on lower margin.

***MAEVIA POULTONII* P. 1901.**

Plate XLIX, figs. 8—8b.

1901. *MAEVIA POULTONII* P., Wis. Acad. Sciences, Arts and Letters, XIII, p. 344.
 1906. *PLEXIPPUS VITTATUS* ♀, B., Proc. Ent. Soc. Wash., VII, p. 100.

Length, ♂ 7 mm., ♀ 9.5 mm. Legs, ♂ ♀ $\overline{41}$ $\overline{32}$, first and second plainly stoutest, and heavier than in *vittata*. Spines, ♂ tib. I 4—4, and anterior and posterior laterals, pat. I 2 anterior laterals, pat. II 1 anterior lateral, met. I, II 2—2 and laterals; ♀ resembling ♂ but lacking posterior laterals and the patellary spine on the second, and having only one anterior spine on pat. I. The tooth on the margin of the falx is more markedly compound in the female than in the male.

The cephalothorax in the male is blackish in the eye-region, and under alcohol looks dark brown and glabrous behind and on the sides, with black rays on the thorax. When dry it shows a

covering of white hairs. In the female the color is lighter, and there is a row of stiff black hairs along the side under the eyes. The abdomen, in both sexes, is silvery with three longitudinal red bands, the middle one narrower, and sometimes missing. In the male these bands are sometimes broken into spots. When the red scales are rubbed away the bands are black, as was the case with the female described by Mr. Banks as *P. vittatus*. The legs, and the palpus in the female, are reddish yellow, without bands or spots. The palpus in the male is dark colored with long white hairs on the tarsus.

From Texas and Arizona.

***MAEVIA VITTATA* H. 1845.**

Plate XLIX, figs. 7–7c. Plate LI, fig. 8.

1845. *ATTUS VITTATUS* ♀ *NIGER* ♂, H., Jour. Bost. Soc. Nat. Hist.
 1846. *PLEXIPPUS UNDATUS* ♂, C. K., Arachn., XIII, p. 123.
 1848. *MAEVIA PENCILLATA* ♂, C. K., Arachn., XIV, p. 69.
 1875. *ATTUS VITTATUS* ♀ *NIGER* ♂, H., Occ. Pap. Bost. Soc. Nat. Hist., II, pp. 63, 64.
 1888. *ASTIA VITTATA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 70.
 1891. *MAEVIA VITTATA* Em., Trans. Conn. Acad., VIII, p. 18.

Length, ♂ 7 mm., ♀ 8 mm. Legs, ♂ $\overline{41} \overline{32}$, ♀ $\overline{4312}$. Spines, ♂ tib. I, II 4–4 and anterior and posterior laterals, pat. I anterior and posterior laterals, met. I, II 2–2 and anterior and posterior laterals; ♀ tib. I, II only 1 anterior lateral, pat. I 1 small anterior lateral, met. I, II without laterals, otherwise like ♂. Under tib. II the pairs are not equidistant from each other.

The male has two distinct varieties. One of these, *niger* H., has the body black except for a pale spot divided by a longitudinal black line, on the thoracic region. On the front of the head are three long tufts of black hairs. The clypeus, falcis, palpi, and under parts are dark, and the legs pale yellow. The second variety, which is more like the female, has the cephalothorax pale and translucent except for the blackish eye-region,

and a dark central line on the thorax. It is covered, above, with greenish scales and white hairs. The abdomen is mottled with black, red and white, and sometimes has alternate white and red chevrons down the middle. The female is similar, as to the cephalothorax, but the abdomen has two longitudinal red bands, varying much in brightness, with white hairs on the sides. The middle region is white, somewhat flecked with black and red, the posterior half with a series of white chevrons which cut into the red bands. The legs, in the female, are greenish white and translucent. In the male of the second variety they are translucent white, with two black, longitudinal lines, and conspicuous oblique black bars on the front faces of the femoral joints. The palpus has a cushion of bright greenish-yellow hairs on the tarsus, and the tibial hook is black. Otherwise it is white with a black longitudinal line, sometimes broken into spots, on each side.

This is a common species. Mr. Banks has found it in Colorado, Mr. Emerton in Massachusetts and Connecticut, and we have it from Georgia, Missouri, Wisconsin, Nebraska and Kansas. In Wisconsin the males (both forms) mature about the middle of June, the females a little later. For a month they are common, there being about one female to three males, but toward the middle of July their numbers diminish.

***DENDRYPHANTES* C. K. 1837.**

Type, *ARANEUS HASTATUS* CLERCK.

- 1837. *DENDRYPHANTES* C. K. (*hastatus*), Ueb. Ar. Syst., I, p. 31.
- 1844. *ATTUS* H. (*capitatus, militaris*), Jour. Bost. Soc. Nat. Hist., IV.
- 1845. *ATTUS* H. (*castaneus, parvus, octavus*), *ibid.*, V.
- 1846. *ERIS* C. K. (*aurigera*), Die Arachn., XIII, p. 189.
- 1875. *ATTUS* H. (*capitatus, militaris, castaneus, parvus, octavus*), Occ. Pap. Bost. Soc. Nat. Hist., II, pp. 51, 52, 55, 70.
- 1883. *ATTUS* P. (*aestivalis*), New or little known Attidae, p. 2.
- 1885. *ICIUS* K. (*albovittatus, crassiventer*), Ver. zool-bot. Gesell., Wien. VI, pp. 500-503.
- 1888. *ATTUS* P. (*imperialis*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 44.

1888. *PHILAEUS* P. (*militaris*), *ibid.*, p. 28.
 1888. *PSEUDICIUS* P. (*Harfordii*), *ibid.*, p. 51.
 1888. *DENDRYPHANTES* P. (*flavus, capitatus, multicolor, flavipedes*), *ibid.*, pp. 36, 39, 40, 42.
 1888. *ERIS* P. (*octavus*), *ibid.*, p. 54.
 1891. *DENDRYPHANTES* E., *Trans. Conn. Acad.*, VIII, New England Attidae, pp. 10-12.
 1892. *DENDRYPHANTES* CURTIS (*aeneolus*), *Zoe*, III, p. 332.
 1892. *DENDRYPHANTES* B., *Proc. Acad. Nat. Sci. Phila.*, pp. 74, 75.
 1892. *PHILAEUS* B. (*militaris*), *ibid.*, p. 74.
 1892. *ICIUS* B. (*moestus*), *ibid.*, p. 77.
 1895. *DENDRYPHANTES* B. (*bifida*), *Can. Ent.*, p. 96.
 1897. *ICIUS* B. (*canadensis*), *Can. Ent.*, p. 196.
 1898. *PHILAEUS* B. (*limbatus*), *Ar. Baja. Cal.*, *Proc. Cal. Acad. Sci.*, 3rd Ser., Zool., I, 7, p. 282.
 1901. (January). *DENDRYPHANTES* P., *Wis. Acad. Sciences, Arts and Letters*, XIII, p. 309.
 1901. (September). *METAPHIDIPPUS* F.O.P.C., *Biol. Cent. Am.*, Arachn., Aran., II, p. 258.
 1904. *DENDRYPHANTES* B. (*floridanus*), *Proc. Acad. Nat. Sci. Phila.*, p. 138.
 1904. *DENDRYPHANTES* B. (*guttatus*), *Proc. Cal. Acad. Sci.*, 3rd Ser., Zool., III, 13, p. 358.
 1904. *DENDRYPHANTES* SCHEFFER, *Industrialist*, XXX, 24, p. 8.
 1905. *DENDRYPHANTES* SCHEFFER, *ibid.*, XXXI, 28, p. 7.
 1905. *DENDRYPHANTES* B., *Am. Nat.*, XXXIX, p. 322.

This genus is represented in the United States and Canada by *aeneolus* Curtis (= *bifida* B.), *arizonensis* P., *capitatus* H., (= *aestivalis* P., and *exiguus, ornatus* and *insignis* B.), *castaneus* H., *californicus* P. (= *guttatus* B.), *flavipedes* P., *flavus* P., *floridanus* B., *furcatus* F.O.P.C., *glacialis* Sch., *Harfordii* P., *imperialis* P. (= *Mannii* P.), *limbatus* B., *militaris* H. (= *multicolor* P. not H.), *montanus* E., *prosper* P. (= *maxillosus* F.O.P.C.), *neomexicanus* B., and *pervagus* new.

D. vitis Cockerell belongs to *Icius* and *D. alboimmaculatus* P. to *Poultonella*.

The key to the males will be found helpful if used in connection with the figures of the palpi. We have not attempted to make a key to the females, but hope that the descriptions and

figures will serve to distinguish them. The variation in the spines on the tibia of the second leg is sometimes useful.

The spiders of this genus are rather small, rarely over 7 mm., and have, with some exceptions, the following characteristics: Cephalothorax rather high and convex, widest in thoracic part, highest at dorsal eyes, a little wider below than above. Front eyes large, slightly separated, in a curved row. Second row halfway between the others, or a little nearer the first. Eye-region $1/4$ to $1/3$ wider than long, wider behind than in front, occupying $2/5$ of cephalothorax. Body not smooth but not very hairy, legs not lineate with dark, first and fourth longer than second and third, first pair not much the stoutest (except in *castaneus*) and not fringed, although there is, rarely, a brush of hairs under tibia I. Males often bronze or yellow with bright white markings, females usually less conspicuous, gray, brown or yellow with pale indefinite marks. The species are numerous and widely distributed and they resemble each other closely.

KEY TO MALES.

	Falces horizontal.	<i>prosper</i>
1	Falces oblique.*	2
	Falces vertical.	6
2	Falces long and slender.	<i>limbatus</i>
	Falces wide in proportion to their length.	3
3	Palpus with a blunt heavy tube.	<i>montanus</i>
	Palpus with a fine pointed tube.	4
4	Falces with white bars in front; Arizona and Pacific slope.	<i>imperialis</i> †
	Falces not barred with white.	5
5	Tube of palpus bent; white bands high up on sides of abdomen.	<i>militaris</i>
	Tube of palpus straight; white band low down on sides of abdomen.	<i>floridanus</i>
6	Tibial apophysis bifurcated.	7
	Tibial apophysis simple.	8

* Since in *militaris*, *montanus* and *floridanus* the falces are sometimes oblique and sometimes vertical, these species are taken out under both 2 and 6.

† *Imperialis* has a characteristic marking on the face, there being divergent white bands on the clypeus parallel to those on the falces. The tibial apophysis is also distinctive, while in *militaris* the shape of the falx is peculiar. These points are brought out in the figures.

7	Abdomen with four longitudinal white bands alternating with three brown bands.	<i>glacialis</i>
	Abdomen without these bands.	<i>arizonensis</i>
8	Tube of palpus simple*	9
	Tube of palpus bifid, or double, or with two or three points.	14
9	Tube plainly curved.	<i>militaris</i>
	Tube straight.	10
10	Tube fine and pointed.	11
	Tube thick and blunt.	12
11	Proximal parts of femora of posterior three pairs of legs light, distal parts dark; legs banded. Spines on tibia I not evenly paired, not reaching to base of joint. Florida.	<i>floridanus</i>
	Legs uniform in color. Spines on tibia I evenly paired, reaching to base of joint. Pacific Slope.	<i>Harfordii</i>
12	Color gray. Pacific Slope.	<i>californicus</i>
	Color brown or yellow. Eastern and southern states.	13
13	Abdomen with indefinite white spots and no golden hairs.	<i>montanus</i>
	Abdomen with golden hairs and distinct, round, white spots.	<i>canadensis</i>
14	Tube of palpus tipped with three short black stylets.	<i>neomexicanus</i>
	Tube of palpus with not more than two points.	15
15	End of tube slightly bifid.	16
	Tube double, or deeply bifid, or somewhat crescent-shaped, with two ends.	17
16	Color bronze-brown.	<i>aeneolus</i>
	Color yellow.	<i>Harfordii</i>
17	Tube double or bifid.	18
	Tube concave or somewhat crescent-shaped, with two ends.	19
18	Palpus with one broad black deeply bifurcated tube. Arizona, New Mexico.	<i>furcatus</i>
	Palpus with two slender pointed tubes which approach each other.	<i>flavipedes</i>
19	Both ends pointed, one longer than the other.	<i>capitatus</i>
	Ends nearly equally long, one pointed and the other blunt.	<i>castaneus</i>

* We have one example of *Harfordii* with the tube slightly bifid, and therefore include it under both 9 and 14.

DENDRYPHANTES PROSPER P. 1901.

Outline of dorsal view, and palpus, Trans. Wis. Acad., XIII, Pl. XXVII, figs. 5, 5a.

Dorsal view, palpus and falces, Biol. Cent. Am., Arachn., II, Pl. XXIII, figs. 14-14d.

1901. (Jan.), *D. prosper* P., ♂, Wis. Acad. Sci., Arts and Letters, XIII, p. 314.

1901. (Sept.). *METAPHIDIPPUS MAXILLOSUS* F.O.P.C. ♂ Biol. Cent. Am., Arachn., Aran., II, p. 265.

♂. Length 6 mm; length of cephalothorax 3 mm. Falces 2.5 mm. Legs 1432; first and second stoutest and first much longer than the others.

In our specimens the scales and hairs are so nearly gone that it is impossible to get a good idea of the coloration, but the cephalothorax seems to have been bronze, with red, iridescent scales on the cephalic plate, white bands on the upper sides, and a white spot between the dorsal eyes, while the abdomen is brown, with an encircling white band. The falces are bronze brown in color and are long, horizontal, cylindrical, and parallel, with a very long fang. The maxillae are more than twice as long as the labium, and are rounded and divergent. The legs are brown, the first and second pairs darkest, with some close white scales. The palpus is brown, with short white hairs on the patella.

The general appearance of this species is exactly like that of *D. felix*, a species found in Mexico, although there is a slight difference in the relative length of the legs, but the palpi are perfectly distinct, the tube being straight in *felix* and curved in *prosper*.

We have two males from San Antonio, Texas, and Cambridge had it from Orizaba, Mexico.

DENDRYPHANTES LIMBATUS B.

Plate XXXVII, fig. 3.

1898. *PHILAEUS LIMBATUS* B., Proc. California Acad. Sciences, Third Series, Vol. I, No. 7, p. 282.
1901. *DENDRYPHANTES LIMBATUS* P., Trans. Wis. Acad. Sciences, Arts and Letters, Vol. XIII, p. 315.

Length, ♂ 5 mm., ♀ 5 mm. Legs, ♂ 1432; first plainly the longest; ♀ 1432. Falces, ♂ 2.5 mm; fang as long.

The cephalothorax is moderately high and has a rounded appearance, being nearly as wide as long. The first row of eyes is almost straight, the middle being subtouching and less than twice as large as the lateral, which are a very little separated from them. The second row is a very little nearer to the first than to the third, and the third is narrower than the cephalothorax at that place. The quadrangle of the eyes is one-third wider than long, and is wider behind than in front. The cephalic part is a little inclined, and the thoracic falls scarcely at all until the last third, when it drops abruptly. In the male the whole body is bronze. The eye-region and a central band down the dorsum of the abdomen are covered with green metallic scales. The cephalothorax has a white line around the margin, and a white band starting from the lateral eye and running back on to the thorax, but not quite uniting with its fellow of the opposite side. The abdomen has a white band around the base and sides, which does not reach the spinnerets. The female is similar, but lacks the white bands. The falces of the male are long, oblique, and divergent, with a strong tooth underneath, and a long slender fang. In the female they are vertical and parallel. The coloring is bronze, with iridescent scales. The legs are dark brown with the tarsi pale, and the proximal ends of the femora lighter, especially in the third and fourth. The palpi are dark brown, those of the male having white scales and a row of short black spines on the rather elongated patella.

We have one female and many males from Mexico and Rocks Reseca, Texas. Mr. Banks received three males from Tepic, Mexico.

DENDRYPHANTES MONTANUS E. 1891.

Plate XXXVII, figs. 4—4c.

1891. *Dendryphantes montanus* E., ♂ ♀, Trans. Conn. Acad., VIII, New England Attidae, p. 11.

Length, ♂ 5.5 mm., ♀ 5—7 mm.

Spines, ♂ tibia I 3—3, tibia II 1—1 and 2 single farther back, with 1 anterior lateral; met. I, II 2—2. ♀ like ♂ except that one of the inferior single spines on tibia II is lacking.

The coloring is alike in the two sexes, and is nearly like that of the female of *militaris*. The cephalothorax is brown, thinly covered with gray hairs. In the darker specimens the abdomen has a brown, slightly metallic region down the middle, on either side of which is a black band, broken by four pairs of white spots, those of the posterior two pairs, oblique. The sides and base are white. In lighter examples there is a pale branching band down the middle and a light brown stripe on either side, broken into four blocks by the branches of the middle band; and the sides and base are pale. The clypeus is covered with white hairs. The legs and palpi are brown, with many white hairs.

Mr. Emerton has a pair from Mt. Washington, N. H., and we have a male from that region and a female from Roan Mountain, N. C.

DENDRYPHANTES IMPERIALIS P. 1888.

Plate XXXVII, figs. 2—2d.

1888. *ATTUS IMPERIALIS* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 44.1901. *DENDRYPHANTES MANNII* P. ♂, Wis. Acad. Sciences, Arts and Letters, XIII, p. 326.

Length, ♂ ♀ 4 mm. Legs, ♂ $\overline{14}$ $\overline{23}$, ♀ 4123. Spines, ♂ ♀ tibia I 3—3, not evenly paired; tib. II, 1—1 and 2 single, farther back, with 1 anterior lateral; met. I, II 2—2.

In our male specimens the upper part of the cephalothorax is rubbed, leaving the reddish-brown integument bare, but the

sides are entirely covered with white hairs which thicken into bands above. The clypeus is brown with two conspicuous white bands which begin between the middle and lateral eyes of the front row, and extend obliquely down and back to the lower margin. Parallel with these are two equally wide and white bands across the dark front of the falces. The abdomen, when rubbed, is dark brown in the middle, with two black stripes and an encircling white band, but when fresh the whole region within the encircling white band is covered with yellow metallic scales. The palpus is brown, the upper surface covered with white hairs. The legs are brown, darkest on the femora.

The female has the cephalothorax dark brown with white bands on the sides, and the upper surface thinly covered with white hairs. The clypeus is densely covered with long white hairs, and a white band crosses the upper part of the black falces. The abdomen is light brown, with a central, branching, whitish band edged with black stripes, which are more or less broken by white bars. There is a white basal band, and the sides are striped, obliquely, with white and brown. The legs are banded with light and dark brown, the first pair less distinctly than the others. The palpi are pale yellow, with white hairs. The venter has three dark stripes on a light ground.

We have this species from Arizona, and from San Diego and Palo Alto, California.

***DENDRYPHANTES MILITARIS* H. 1844.**

Plate XXXVII, figs. 1—1f.

1844. *ATTUS MILITARIS* HENTZ, Jour. Bost. Soc. Nat. Hist., IV.
 1846. *ERIS AURIGERA* C. K. ♂, Die Arachn., p. 189.
 1875. *ATTUS MTLITARIS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 62.
 1885. *PHILAEUS MILITARIS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 28.
 1888. *ICIUS ALBOVITTATUS* K. Ver. zool-bot. Gesell., Wien, VI, p. 502.
 1888. *DENDRYPHANTES MULTICOLOR* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 40.
 1891. *DENDRYPHANTES MILITARIS* E., Trans. Conn. Acad., VIII, New England Attidae, p. 12.

1892. *PHILAEUS MILITARIS* B., Proc. Acad. Nat. Sci. Phila., p. 74.
 1892. *ICIUS MOESTUS* B. ♂, *ibid.*, p. 77.
 1901. *DENDRYPHANTES MIITARIS* P., Wis. Acad. Sciences, Arts and Letters, XIII, p. 311.
 1901. *PARAPHIDIPPUS MILITARIS* F.O.P.C., Biol. Cent. Am., Arach. Aran., II, p. 279.
 1905. *DENDRYPHANTES MILITARIS* Sch., Industrialist, XXXI, 28, p. 7.

Length, ♂ 6 mm., ♀ 8 mm. Legs, ♂ $\overline{1432}$, ♀ $\overline{1423}$. Spines ♂ ♀ tibia I 3—3 the proximal two not evenly paired, tibia II 1—1 and 2 single ones with 1 anterior lateral; met. I, II 2—2. Falces sometimes oblique, sometimes vertical.

The male is a yellowish-brown or bronze-brown spider with white marks. The cephalothorax has white bands along the upper sides, a transverse white band on the cephalic plate between the eyes of the second row, and a central white streak on the thoracic part. The dorsum of the abdomen is bronze, sometimes with two rows of white spots, and is marked by an encircling white band. The very slender palpi have the femora and the distal ends of the patellae covered with white scales and are otherwise dark brown. The clypeus is brown with a band of white hairs. The legs are brown with the femur of the first very dark and the proximal parts of the other femora yellowish. The falces have a bunch of white hairs on the inner basal part.

In the female the cephalothorax is brown, covered with gray hairs. The abdomen is bronze-brown with four pairs of somewhat oblique white spots. In front there is a white band, and the sides have oblique white marks. The legs are brown, more or less ringed with yellow. The clypeus is white. The venter is dark in the middle, and lighter on the sides.

The smaller specimens of *militaris* look like *montanus* E. but the tube of the *palpus* is curved in *militaris* and straight in *montanus*. The females can be distinguished by the epigynes.

A male from Kansas has the white side bands on the cephalothorax short, extending from the eyes of the second row to just beyond those of the third. The abdomen of this specimen is bronze only in the middle.

This species is common through the eastern, southern and

middle states. It is also found in the far west, in Mexico and in Canada (Fox Bay, Anticosti, Lake Winnepegosis, Alberta).

***DENDRYPHANTES FLORIDANUS* B. 1904.**

Plate XXXVII, fig. 5.

1904. *DENDRYPHANTES FLORIDANUS* B. ♂ ♀, Proc. Acad. Nat. Sci., Phila., p. 138.

Length, ♂ 5 mm., ♀ 7mm. Legs, ♂ 1423, ♀ $\overline{14} \overline{23}$. Spinal armature in the male, tibia I 3—3, tibia II 1—1 and two single spines, with one anterior lateral; met. I, II 2—2. The female is like the male, excepting that the tibia II has 2—2 and one behind.

In the male the abdomen is rather narrow and pointed. The upper surface of the body is brown, and seems to have been clothed with yellow hairs. The cephalothorax has wide white bands on the upper sides and a central white spot behind the third row of eyes. The clypeus is thickly covered with light yellow hairs, and the falces have white scales along the inner sides. The abdomen has two rows of dark dots down the middle, and a silvery, somewhat iridescent basal band which runs far back, low down on the sides. The legs are brown with darker cloudings on the inner faces of the femora and at the ends of the joints. The palpi are much lighter, with two black spines on the upper surface of the femur, and white scales on femur and patella.

In the female the cephalothorax has white scales uniformly distributed over a reddish integument. On the clypeus and upper part of the falces the hairs are tinged with yellow. The abdomen has a white branching band down the middle and white hairs on the sides, the space between being covered with light yellow scales. The venter and legs are yellow.

Mr. Banks has several examples from Altoona, Fla., taken in July. Mr. Powell has sent us a pair from Lakebury, Fla.

Metaphidippus (Dendryphantes) apicalis F.O.P.C., from Teapa, Mexico, is very close to *floridanus*.

The females of *floridanus* and *militaris* are very different but the males are much alike. *Floridanus* is distinguished by the falces, which are wider in proportion to their length, by the straight tube of the palpus, and by the low position of the white bands on the sides of the abdomen.

***DENDRYPHANTES GLACIALIS* SCH. 1905.**

Plate XXXVII, figs. 7–7b.

1905. *D. GLACIALIS* SCHEFFER. ♂ ♀, Industrialist, XXXI, 28, p. 7.

Length, ♂ 5 mm., ♀ 5.5 mm. Legs, ♂ 1423, ♀ 4123. Spinal armature alike in the two sexes; tibia I 3–3, tibia II 1–1 and 2 single spines, with 1 anterior lateral; met. I, II 2–2.

The cephalothorax is reddish-brown, thinly covered with white hairs, with bands of white hairs along the upper sides to the end of the thoracic part. The abdomen is marked by alternate brown and white bands; the middle brown band does not reach the front end of the dorsum, the white stripes on either side of it being continuous; beyond these white stripes are wider brown bands, and beyond these the sides are white broken with brownish bars. The edges of all the bands are wavy. The legs are brownish-yellow, darker and somewhat banded in the male. The color becomes reddish in alcohol.

The palpus of *glacialis* is somewhat like that of *arizonensis*.

From Kansas only. Mr. Scheffer has two females from Manhattan and a pair from St. George.

***DENDRYPHANTES ARIZONENSIS* P. 1901.**

Plate XXXVI, fig. 7.

1901. *DENDRYPHANTES ARIZONENSIS* P, Trans. Wis. Acad. Sciences, Arts and Letters, Vol. XIII, p. 326.

♂. Length 5 mm. Legs 1423.

The cephalothorax is narrow in front but widens in the thoracic part. The quadrangle of the eyes is one-fourth wider than

long, is wider behind than in front and occupies two-fifths of the cephalothorax. The front eyes form a curved row, the middle subtouching and twice as large as the lateral, which are a little separated from them. The cephalothorax, including the clypeus, seems to have been entirely covered with yellowish white hairs. The abdomen is encircled with a band of the same color. The middle part of the dorsum, in our specimens, is rubbed bare, but under alcohol, it shows on the anterior part, a dark, diamond-shaped spot on a lighter background, and, further back, three dark chevrons. The posterior part has three pairs of black spots just at the edge of the white. The legs are brown, darkest at the distal ends of the femoral joints. The palpi and falces are brown, the falces vertical and diverging, with two teeth on the lower margin. The maxillae are truncated, with a projection at the outer corner, and are a little more than twice as long as the lip, which is about as long as wide.

The apophysis on the tibia of the palpus is bifurcated, and the tube is much enlarged.

One male from Arizona.

***DENDRYPHANTES HARFORDII* P. 1888.**

Plate XXXVII, figs. 6–6b. Plate XXXVIII, fig. 4.

1888. *PSEUDICIUS HARFORDII* P. ♂♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 51.

1904. *DENDRYPHANTES HARFORDII* B., Proc. Acad. Sci., 3rd Ser., Zool., III, 13, p. 358.

Length, ♂♀ 6.5 mm. Legs, ♂ 1423, ♀ $\overline{4123}$. Spines, ♂♀ tibia I 3–3, tibia II 1–1 and 2 single, behind, with 1 anterior lateral; met. I, II 2–2. In some males the first leg is relatively longer than in others.

In the male the cephalothorax is brown, clothed with yellow hairs above and on the sides, and marked with white bands. One of these comes up from between the front middle eyes and passes back to a point between the dorsal eyes, where it ends in a spot. White bands pass along the sides of the upper surface,

beginning at the lateral eyes, including the dorsal eyes, and reaching the posterior end, but not meeting behind. The middle sides are covered with yellow hairs (sometimes faded to white) and there is a white marginal line. The middle of the clypeus is covered with long, flowing white hairs, which cover the upper part of the falces. From each middle eye a white band, edged with a dark line above and below, passes below the lateral eye and back as far as the small eye of the second row; lower down is the white marginal line, and just under the front lateral eyes are some white hairs. Below the small lateral eyes are tufts of black hairs. The ground color of the abdomen is usually brown, but sometimes much paler, especially on the sides. An oval region, on the dorsum, is covered with golden hairs, and this is encircled by a wide white band, below which, and covering the venter, the hairs are yellow. The legs are light or dark brown, not banded.

In several males the hairs surrounding the eyes of the front row, and in lines just below and just above them, are bright yellowish-red, with a white line higher up. This with the ornamental clypeus, makes the face view very striking.

In the female the cephalic plate is brown with a white stripe running back from the front eyes to a point between the dorsal eyes, where it bifurcates, passing back a little way on to the thoracic part. The rest of the cephalothorax, and the whole of the abdomen, has a thin covering of white hairs, which allows the reddish integument to show through in the form of punctate dots. The clypeus and legs are as in the male. The young female has a mixture of white and yellow hairs over the body, but the cephalic stripe is distinct.

This species is common along the Pacific coast from Seattle, Washington, to San Diego, California.

DENDRYPHANTES CALIFORNICUS P. 1888.

Plate XXXVI, figs. 5—5d.

Palpus, mouthparts and falces of male, Wis. Acad. VII, Pl. V, figs. 54, 54a.

1888. *MAEVIA CALIFORNICA* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 73.1904. *DENDRYPHANTES GUTTATUS* B. ♂ ♀, Proc. Cal. Acad. Sci., 3rd Ser., Zool., III, 13, p. 358.

Length, ♂ 6 mm., ♀ 6.5 mm. Legs, ♂ $\overline{14} \overline{23}$, ♀ $\overline{14} \overline{23}$, first pair stoutest in the male. In both sexes the spinal armature for the tibia of the first is 3—3, and for the metatarsi of the first and second, 2—2. In the female, the tibia of the second has one pair, two serially, further back, and one very small anterior lateral, while in the male one of the inferior serial spines is lacking.

In the male the spider is gray, the cephalothorax with dark sides. Above the first row of eyes is a white region, and white diagonal bands (indistinct) run from the dorsal to the middle front eyes. Intermixed with the gray hairs, on the upper surface, are many red hairs, these being more marked in some specimens than in others. The abdomen has four impressed dark dots, and some indistinct white bars on the sides. One example has a pair of white bars over the spinnerets. The legs are banded except the femora, which are dark. In the posterior three pairs, especially, the proximal halves of the joints are light yellowish. The tarsi are all light. In the female the gray hairs on top of the cephalothorax are mixed with red as far back as the middle of the thoracic part. There are three white spots on the cephalic plate, and two, within and back of the dorsal eyes, and curved white bands run back from the dorsal eyes, becoming continuous behind. The sides are dark. The abdomen has the sides and middle light gray, but this ground color is broken by two brown spots near the front end, and two wide, angular, brown bands, with their edges cut out in square blocks, which pass from in front of the middle to the spinnerets.

The lower sides are black, and three wide dark bars, on each side, at the posterior end, connect this region with the brown bands higher up. The first legs are lighter than in the male.

We described the male of this species in 1888, from a specimen which had the hairs entirely rubbed away, leaving it black. Later we received perfect specimens of both sexes. Mr. Banks, in the meantime, had described it under the name "*guttatus*." It is found in Victoria, B. C., and in various parts of California, San Mateo, San Diego, and Santa Rosa Island.

***DENDRYPHANTES CANADENSIS* B. 1897.**

Plate XXXVI, figs. 2–2d.

1897. *ICIUS CANADENSIS* Banks ♂ ♀, Canadian Entomologist, p. 196.

Length, ♂ ♀ 5 mm. Legs, ♂ ♀ $41\overline{32}$, first pair much thickened in both sexes. Spines, ♂ ♀, tib. I 3–3, tib. II 1–1, and sometimes 1 farther back, below; met. I and II 2–2. Falces vertical.

The coloring is alike in the two sexes. The cephalothorax is dark brown, blackish on the eye-region, with a thin covering of light hairs. The abdomen has a dark background of deep gold-colored hairs. Down the middle is a blackish region upon which there is a series of yellow spots and chevrons, as shown in the figure. Behind the middle, on the sides of the chevrons, is a pair of round, pure white spots, and farther back is a second pair, smaller. There is a white basal band, and a pair of less distinct whitish bands on the sides. The venter is white with two jet black stripes nearly meeting behind and a short dark streak in the middle. The first legs are brown, clouded with a darker shade, the others light brown, not annulated.

We have *canadensis* from Pineola and Roan Mt., N. C., and Mr. Banks has it from Ottawa, Canada.

DENDRYPHANTES NEOMEXICANUS B. 1902.

Plate XXXVIII, figs. 2—2a.

Palpus of male, Proc. Acad. Nat. Sci., Phila. 1901, Pl. XXXIII, fig. 21.

1902. *ICIUS NEOMEXICANUS* B. ♂, Proc. Acad. Nat. Sci., Phila., Nov. 1901, p. 589.

♂. Length, 3.8 mm.

As we have no example of this species we copy the color description given by Mr. Banks. His specimen was rubbed, but the peculiar palpus will serve to identify it.

"Cephalothorax reddish, eyes on a black band, two indistinct dark spots in middle of eye-region, a white stripe each side below eye-region and extending backward, lower sides black, some golden hairs around the anterior eyes; mandibles reddish; sternum red-brown; femora red-brown, rest of legs clear pale yellow, except the patella, tibia and metatarsus of leg I, which are red-brown like the femora; abdomen reddish-brown above, with faint indications of a few black spots, the sides of the abdomen are distinctly white, the venter black, spinnerets black."

The tube of the palpus is tipped with three short black stylets, visible from below. In Mr. Emerton's drawing from the unique example, only two stylets are shown.

Mr. Banks has a single male, from Beulah, New Mexico (8000 ft.).

DENDRYPHANTES AENEOLUS CURTIS 1892.

Plate XXXVI, figs. 1—1b. Plate XXXVIII, figs. 6—6a.

1892. *D. AENEOLUS* Curtis ♂ ♀, Zoe, III, p. 332.1895. *D. BIFIDA* Banks, ♂ ♀, Can. Ent., p. 96.Length, ♂ 4.5 mm., ♀ 5.5 mm. Legs, ♂ 1423, ♀ $\overline{1423}$.

Under the tibia of the first, in both sexes, are three pairs of spines, which occupy but little more than the distal half (in *capitatus* they occupy nearly the whole length); the first meta-

tarsus has two pairs; the tibia of the second, in the female, has underneath, one pair, and a single spine farther back, besides one anterior lateral.

In the male the cephalothorax is dark brown, deepening to black around the eyes, and having whitish bands on the sides. The abdomen is bronze-brown, with a white basal band which reaches half-way along the sides, and sometimes has, on the posterior dorsum, two pairs of oblique white bars, alternating with three pairs of indistinct dark spots. The legs are not distinctly annulated; the femora, especially those of the first pair, are darker than the other joints. In the female the cephalothorax is brown, covered with small gray scales. The abdomen is whitish on the base and sides. The back has two dark longitudinal bands, broken by three pairs of white bars, extending from in front of the middle to the spinnerets; outside these bands the color of the abdomen is yellow; between them the front half of the space is filled by a block of white, the color behind being golden-yellow. The legs are light-brown, not annulated. The venter is pale with two dark stripes, and sometimes a third stripe, less distinct, in the center.

We have this species from the neighborhood of San Francisco and from Sisson, in California; and from Salem, Oregon. Mr. Banks has it from Olympia, Washington.

The figure of *aneolus* is drawn from a perfect female specimen. When the spider is rubbed, and especially when looked at under alcohol, the markings appear much like rubbed specimens of *versicolor*, *capitatus* and *montanus*.

***DENDRYPHANTES CAPITATUS* H. 1844.**

Plate XXXVI, figs. 4—4c. Plate XXXVIII, figs. 5—5a.

1844. *ATTUS CAPITATUS* H., Jour. Bost. Soc. Nat. Hist., IV.
 1845. *ATTUS* H. (*parvus, octavus*), *ibid.*, V.
 1875. *ATTUS* H. (*capitatus, parvus, octavus*), Occ. Pap. Boston Soc. Nat. Hist., II, pp. 51-70.
 1883. *ATTUS AESTIVALIS* P., New or little known Attidae p. 2.
 1885. *ICIUS CRASSIVENTER* K., Ver. zool-bot. Gesell., Wien. VI, p. 503.

1888. *DENDRYPHANTES CAPITATUS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 36.
 1888. *ERIS OCTAVUS* P., *ibid.*, p. 54.
 1891. *DENDRYPHANTES AESTIVALIS* E., Trans. Conn. Acad., VIII, New England Attidae, p. 10.
 1892. *DENDRYPHANTES* B. (*insignis, ornatus, exiguus, capitatus*), Proc. Acad. Nat. Sci. Phila., pp. 74, 75.
 1901. *METAPHIDIPPUS CAPITATUS* F. O. P. C., Biol. Cent. Am., Arachn. Aran. II, p. 272.
 1904. *DENDRYPHANTES CAPITATUS* Scheffer, Industrialist, XXX, 24, p. 8.

♂. Length 4.5 to 5 mm. ♀ 5 to 6.5 mm. Legs ♂ 1423, ♀ 4123. Spinal armature, ♂ ♀ tibia, I 3—3, occupying nearly the whole length of the joint; tibia II 1—1 and 2 single spines farther back, and 1 anterior lateral; pat. I, II 1 anterior lateral; met. I, II 2—2.

The cephalothorax of the male is dark brown, a white band passes back from behind the lateral eyes, under the dorsal eyes, bending toward the one opposite behind, but not uniting with it. Above the front eyes are white hairs and below each lateral eye white stripes pass out and down on the sides; between the large front eyes is a vertical white line. The falces are dark. The palpi have bunches of white hairs on the distal ends of the femora and white also on the upper sides of the tarsi. The abdomen is dark brown, bronze in the middle, and is encircled by a white band, which is notched on its inner side. The legs are ringed, white at the end of each joint and brown in the middle.

The females are very variable in color. The light variety has the light parts white or light yellow and the dark parts dark brown covered with white hair and scales. The cephalothorax is brown covered thinly with white scales. The abdomen is yellower than the thorax with four pairs of purplish brown spots, the second pair largest, connected with a paler brown middle marking. The other parts are light brown. The legs are yellow, ringed with brown on each joint.

The dark variety, Mr. Emerton says, is generally smaller and covered with longer hairs and scales. The dark spots on the abdomen are smaller and more connected with dark lines. The legs and palpi are more distinctly ringed with dark brown.

In alcohol the dark parts finally fade to a dull red and both varieties look much alike. This is one of the commonest species all over New England, and through the south. In our collection west to Utah and various parts of Mexico. It is also reported from Fox Bay, Anticosti.

D. aeneolus replaces *capitatus* on the Pacific slope.

***DENDRYPHANTES FLAVIPEDES* P. 1888.**

Plate XXXVIII, figs. 3—3c.

1888. *DENDRYPHANTES FLAVIPEDES* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 42.

♂ ♀. Length 4.6 mm. Legs, ♂ 1423, ♀ $\overline{41}$ $\overline{32}$.

In the male the cephalothorax is brown, the upper surface covered with greenish or yellowish metallic scales. The face and sides are conspicuously marked with snow-white bands. Three bars, the middle one extending farthest back, begin on the cephalic plate and pass down between the eyes. The middle one runs down vertically to the edge of the clypeus, while the side ones curve around, leaving a brown space below each of the middle eyes, and pass diagonally downward along the sides of the cephalothorax, ending opposite the dorsal eyes. Higher up on the sides are wide white bands, which begin at the lateral eyes of the first row and pass back, nearly meeting behind, and between these bands the color is brown. Sometimes, in addition to these, there is a white line along the lower edge of the cephalothorax. The abdomen is brown with a not very distinct greenish-bronze branching band down the middle, and a white band around the base and sides; this band is sometimes scalloped on its inner edges, toward the end. The legs are pale yellow with black longitudinal bars on the front faces of all the femora, and sometimes of the other joints. In life the first leg has a soft white fringe, but this is easily rubbed away. The palpi are brown with two snow-white spots above, one on the femur and one on the patella.

In the female the clypeus and nearly all the upper surface are covered with white hairs. There is a greenish spot on the front of the cephalic plate and a curved greenish band behind the third row of eyes. The abdomen has white hairs at the base, in bars on the sides, and in a branching band down the middle, the color in between varying from yellow to a warm chestnut brown. Some specimens show more greenish spots, as is seen in the figure. The legs are like those of the male.

We have this species from Canada, and it appears in the Britcher Collection from Labrador, and also from Darwin, Maine, where it was taken ballooning on September fourteenth. Mr. Emerton also found it at Portland, Maine, early in September.

***DENDRYPHANTES CASTANEUS* H.**

Plate XXXVI, figs. 3–3d.

1845. *ATTUS CASTANEUS* Hentz, ♀, Jour. Bost. Soc. Nat. Hist. V.

1875. *ATTUS CASTANEUS* Hentz, ♀, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 55.

Length, ♂ 5.5 mm., ♀ 7 mm. Legs, ♂ 1423, ♀ 4132, first pair much thickened. Spines, tib. I 3–3, tib. II 1–1, and sometimes 1 farther back, below; met. I and II 2–2.

The female has the eye-region covered with yellowish hairs, the thoracic part and sides brown with white hairs. Between the dorsal eyes is an abbreviated white streak. The abdomen has a covering of dark golden hairs. On the dorsum are four pairs of white dots (the two hinder pairs more distinct than the others), which mark the ends of four of a series of indistinct yellow chevrons which are patterned on a blackish region down the middle. There is a white line around the base, and behind, on each lower side, are two successive white dots, which look as though they were parts of an encircling band. The venter is dark, bordered by white in front, and with four white stripes converging behind. The first legs are light reddish, with a dark spot at the end of each joint. The

others are pale with darker cloudings. In the male the legs and palpi are dark red, the latter with white hairs on the tarsus, and the hairs on the upper surface of the cephalothorax are dark yellow, like those on the abdomen. Otherwise, it is exactly like the female.

Hentz had one female from North Carolina. Mr. Banks has taken it at East Falls Church, Va., under pieces of wood, on ground; he has it also from Black Mts., N. C.

***DENDRYPHANTES FURCATUS* F. O. P. C. 1901.**

1901. *METAPHIDIPPUS FURCATUS* C., Biol. Cent. Am., Arachn., Aran., II, p. 267.

Length, ♂ 4 mm. Legs ♂ 1423̄.

Since our specimen is rubbed bare we copy Cambridge's color description, "Carapace red-brown, clothed with iridescent scales, without any marginal band, but with a median lateral band of white hairs on each side extending from beneath the small eyes almost to the posterior margin. Abdomen brown, with iridescent scales, margined with a band of white hairs, unbroken in front; ventral area brown, margined with pale yellow. Legs yellow-brown, i and ii darker, unicolorous, iii and iv more or less annulated with darker brown." The bifurcation of the palpal tube easily separates it from other species.

Orizaba, Mexico (H. H. Smith); our collection, Arizona.

***DENDRYPHANTES FLAVUS* P. 1888.**

Plate XXXVII, figs. 8—8a. Plate XXXVIII, fig. 1.

1888. *DENDRYPHANTES FLAVUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 39.

♀ Length, 6.2 mm. Legs 1432. Under the tibia of the second are one pair of spines, and two single spines, farther back; and there is one anterior lateral.

The cephalothorax is brown, with black spots around the eyes, well covered with yellow hairs, which sometimes fade to white,

especially on the sides. On the front of the cephalic plate the hairs are bright reddish gold in color, and across the middle there is a white band, which is sometimes broken into three spots, one central, and one in front of each dorsal eye. One specimen has three white points, visible from above, between the eyes of the first row, and a central white spot on the anterior thoracic part. The hairs on the clypeus are sometimes white and sometimes yellow. The falces are reddish with a few white scales. The abdomen is yellow, marked by pure white basal and side bands, and by two velvety black bands, broken by three pairs of white spots, which extend from in front of the middle to the spinnerets. The legs are yellow like the abdomen, sometimes with darker shadings at the joints. The palpi are yellow with white hairs.

We have several examples from New York, and one from [Tallehasse](#), Florida.

***DENDRYPHANTES PERVAGUS* n. sp.**

Plate XXXVII, figs. 9–9a.

♀ Length 4.5 mm. Legs $4\overline{123}$. Spines, tibia I 3–3, tibia II 1–1 and 1 farther back, with 1 anterior lateral; met. I, II 2–2. The spines under tibia I not evenly paired.

The cephalothorax is dark red, rather thinly covered with hairs, which are white on the sides and thoracic part, and yellow on the cephalic part and clypeus. The abdomen, when under alcohol, is light brown with a dark brown central region, as it appears in the figure. When dry, the light base, sides and central band show a covering of white hairs, while the two dark stripes have yellow hairs. In the posterior half long dark diagonal bands, covered with yellow hairs, come up from the venter and cross the white sides, and, alternating with these, white oblique bars cut the outer edges of the two dark, longitudinal stripes. The legs and palpi are yellow, the former banded with dark brown.

We have a single female from Wallace, Kansas, sent by Mr. Papenhoe.

DENDRYPHANTES VERSICOLOR n. sp.

Plate XXXVI, figs. 6—6a.

♀. Length, 4—5 mm. Legs, 4123.

Spines, tibia I 3—3, tibia II 1—1 and 2 single, further back, with one anterior lateral.

This species bears the same relation to *militaris* in the west, that *montanus* does in the east, except that the differences have gone farther.

The cephalothorax is dark brown, thinly covered with white hairs. The clypeus has thick white hairs. The markings of the abdomen, which are variable, are best seen under alcohol. The general color is brown (turning red in alcohol) with a basal white band which passes on to the sides. On the dorsum this color is broken into various forms by the intrusion of white. There is usually a central white region with a dark band down the middle and a brown stripe on either side, which is broken, by white lines, in the posterior part, into two or three spots. In some specimens the abdomen is mostly pale, the brown being reduced to four pairs of spots. In one example the posterior part of the abdomen is white, divided into two parts by the central brown band, which is notched on the edges. The palpus is yellow with white hairs.

Several females from Salem, Oregon.

SALTICUS LATREILLE. 1804.

Type, *SALTICUS SCENICUS* Clerck.

- 1757. *ARANEUS* Cl. (*scenicus*), Sv. Spindl., p. 117.
- 1804. *SALTICUS* LATR. (*scenicus*), Nouv. Dict. H. N. XXIV, p. 135.
- 1832. *EPIBLEMUM* H. (*faustum*), Am. Jour. Sci., XXI, p. 108.
- 1837. *CALLIETHERA* C. K. (*scenica*), Ueb. Ar. Syst., I, p. 30.
- 1845. *EPIBLEMUM* H. (*faustum*), Jour. Bost. Soc. Nat. Hist., V.
- 1875. *EPIBLEMUM* H. (*faustum*), Occ. Pap. Bost. Soc. Nat. Hist., II, p. 70.
- 1888. *EPIBLEMUM* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 76.

1891. *EPIBLEMUM* E., Trans. Conn. Acad., VIII, New England Attidae, p. 20.
 1894. *EPIBLEMUM* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 107.
 1896. *EPIBLEMUM* P., Occ. Pap. Nat. Hist. Soc. Wis. III, 1, p. 84.
 1901. *EPIBLEMUM* F. O. P. C., Biol. Cent. Am., Arachn. Aran., II, p. 300.
 1901. *SALTICUS* E. S., H. N. Araign., 2me Ed., II, p. 606.
 1904. *EPIBLEMUM* B., Proc. Cal. Acad., Third Series, III, 13, p. 360.
 1905. *EPIBLEMUM* B., Am. Nat., XXXIX, p. 320.

Cephalothorax long, narrow in front, a little wider behind, moderately high, and slightly convex above. Eye-region short, occupying scarcely more than 1/3 of the cephalothorax, equally wide in front and behind, and 1/3 wider than long. Front row of eyes straight or curved downward, and middle twice or nearly twice as large as lateral eyes. Second row halfway between the others except in *albocinctus*, where it is nearer third row. Third row a little narrower than the cephalothorax. Legs nearly equal in thickness, relative length 1423 or 1432¹ in male and 4312 or 4132 in female. Sternum narrowing in front. Labium a little longer than wide. Coxae I separated by width of labium. Falces long and projecting in male, vertical in female, with one tooth on the lower margin.

KEY TO *SALTICUS*.

	Spider iridescent. at least on cephalothorax.	2
1	Spider without iridescence, body black with white transverse bands on cephalothorax and abdomen; legs light yellow.	<i>albocinctus</i>
	Body marked with transverse or oblique white bars or bands; abdomen not iridescent.	3
2	Body unmarked by bars or bands, entirely covered with iridescent scales.	<i>Peckhamae</i>
	Iridescent scales on sides and back of cephalothorax as well as on cephalic plate. Bands on abdomen transverse.	<i>palpalis</i>
3	Iridescent scales only on eye-region. Bars or bands on abdomen oblique.	<i>scenicus</i>

¹ In this context, 32 is most likely an abbreviation for 1432.

SALTICUS SCENICUS CL. 1757.

Plate XLII, figs. 8—8a.

1757. *ARANEUS SCENICUS* Cl., Sv. Spindl., p. 117.
 1804. *SALTICUS SCENICUS* Latr., Nouv. Dict. H. N., XXIV, p. 135.
 1832. *EPIBLEMUM FAUSTUM* H., Am. Jour. Sci., XXI, p. 108.
 1845. *EPIBLEMUM FAUSTUM* H., Jour. Bost. Soc. Nat. Hist. V.
 1846. *CALLIETHERA SCENICA* C. K., Arachn., XIII, p. 37.
 1875. *EPIBLEMUM FAUSTUM*, H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 70.
 1888. *EPIBLEMUM SCENICUM* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 76.
 1891. *EPIBLEMUM SCENICUM* E., Trans. Conn. Acad., VIII, New England Attidae, p. 20.

Length, ♂ 5 mm., ♀ 5.5 mm. Legs, ♂ $\overline{1423}$, ♀ 4132. First pair scarcely stouter than the others, first and second pairs without spines.

The cephalothorax has a dark brown ground color with a marginal band, a band above the front eyes, and two triangular spots behind the dorsal eyes, pure white, and with iridescent whitish scales on the cephalic plate. The abdomen varies from grayish rufus to a rather bright red, and has a basal band and two pairs of oblique bands, farther back, white. In some cases, the oblique bands meet on the back, and a longitudinal white band passes down the middle of the abdomen, widening at the spinnerets. The legs are brown with lighter rings, and are covered with gray and white hairs. The hairs on the palpi and clypeus are white.

This species, which is common throughout the United States, is found also in Europe and North Africa.

SALTICUS PALPALIS BANKS. 1904.

Plate XLII, figs. 10—10a. Plate XLIV, figs. 7—7a.

1904. *EPIBLEMUM PALPALIS* B. ♀, Proc. Cal. Acad., Third Series, III, 13, p. 360.

Length, ♂ ♀, 4.5 mm. Legs, ♂ 1432, ♀ 4312, first pair a little the stoutest in both sexes, first and second legs without

spines. Male falces stout, and obliquely directed forward, with a long fang.

The cephalothorax is long, with the sides nearly parallel, there being only a slight bulge in the thoracic part. The first row of eyes is curved downward, the middle eyes twice as large as the lateral.

The cephalothorax seems to have been covered above with iridescent rose-colored scales, which change to green on the sides and behind. Over the front row of eyes are three white spots, and around the margin is a broad white band which crosses the clypeus. The abdomen is entirely without iridescence, the color being bright brick-red, with four transverse pure white bands, the last of them at the spinnerets. The palpi are light brown in the male, pale yellow in the female, in which they contrast with the very dark falces behind, and are covered with pure white scales. In the male the falces are light brown. The legs have dark femora and the tarsi are yellow excepting in the first pair, where they are brown. The other joints are darkened on the sides, and have, above, a longitudinal band of more or less iridescent white scales, which, in the first pair, extends on to the tarsi.

We have a male and female from Claremont, California.

***SALTICUS PECKHAMAE* COCKERELL 1897.**

Plate XLII, figs. 9—9a. Plate XLIV, fig. 6.

1897. *ICIUS PECKHAMAE* C., Can. Ent. p. 223.

Length, ♂ 5.7 mm., ♀ 5 mm. Legs, ♂ 1432, ♀ 4312. First and second legs without spines. First pair scarcely stouter than the others. Falces in male long and projecting.

This is a beautiful species, the body being covered with iridescent scales, which, in the male, are brilliant peacock-green on the cephalothorax and gold and green on the abdomen, while in the female they are gold and green on the cephalothorax and magenta and copper-colored on the abdomen. Both sexes have a white marginal band on the cephalothorax and white hairs

around the eyes. In the male the legs and palpi are brown, the first pair darkest, all lightening toward the tips, with many long metallic scales, white on the palpus and colored on the legs. In the female the palpi are light brown covered with white hairs, and the legs are distinctly barred with light and dark brown, these bands, in life, bearing, according to Mr. Cockerell, alternate rings of white and black hairs. The falces are dark brown. In the male the front row of eyes is straight, the middle less than twice the lateral; in the female it is curved downward and the middle eyes are fully twice as large as the lateral.

We have one male and one female, sent to us from Mesilla Park and Las Cruces, New Mexico, by Mr. Cockerell, who found it not infrequently, hibernating under the bark of apple trees.

***SALTICUS ALBOCINCTUS* P. 1896.**

Plate XLIV, fig. 5.

1896. *EPIBLEMUM ALBOCINCTUM* P. ♀, Occ. Pap. Nat. Hist. Soc. Wis., III, 1, p. 84.

♀. Length, 4.9 mm. Legs 4312, nearly equal in thickness, first and second pairs without spines, except one on the metatarsus of the first.

This is a very distinct species, the body being black with transverse white bands, and the legs and palpi light clear yellow. On the cephalothorax there is a band above the front row of eyes, a second in the depression behind the dorsal eyes, and a third, less distinct at the end. There is also a white marginal band. The abdomen has four bands, one in front, one in the middle, and two near the end, the last at the spinnerets. On the abdomen the edges of the white bands are tinged with orange. The falces are black.

The first row of eyes is curved downward, and the middle eyes are twice as large as the lateral. The second row is nearer the third than the first.

We have three females, from Refugio, Mexico, and La Blanca and Austin, Texas.

MARPISSA C. K. 1846.

Type, *MUCOSA* Clerck.

1845. *ATTUS* H. (*rupicola, familiaris*), Jour. Bost. Soc. Nat. Hist. V.
 1846. *MARPISSA* C. K. (in part), Arachn., XIII, p. 56.
 1875. *ATTUS* H. (*rupicola, familiaris*), Occ. Pap. Bost. Soc. Nat. Hist. II, p. 56.
 1888. *MARPTUSA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 80.
 1891. *MARPTUSA* Em., Trans. Conn. Acad., VIII, p. 19.
 1892. *MARPTUSA* B., Proc. Acad. Nat. Sci., Phila., p. 79.
 1894. *MARPTUSA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 86.
 1901. *MARPISSA* F. O. P. C., Biol. Cent. Am., Arachn., Aran., II, p. 248.
 1901. *MARPISSA* E. S. Hist. Nat. Araign. 2me Ed., II, p. 610.
 1905. *MARPISSA* B. Am. Nat., XXXIX, p. 321.

Although four species of *Marpissa* have been described from the United States, we are unable to distinguish more than three. *Minor* and *melanura* of Cambridge, from Mexico, are forms of *californica*. There is more difference between *rupicola* H., which Mr. Banks considers a good species, and *undata*, but after studying Mr. Banks' specimens of *rupicola* (a male and a young female), and a mature female in our collection, we consider it a variety of *undata* with considerably more tawny color on both abdomen and cephalothorax, and with the first legs relatively longer, in the male.

The variation in the form of the epigynum, as shown by Cambridge, seems to be due to the depth of color in the skin. We find the same variation in *californica*.

The spiders in this genus are large and flat, with a wide abdomen which is marked by an angular central band.

Cephalothorax long, wide, flat and low, widest behind the dorsal eyes. Eye-region occupying but little more than 1/3 of the cephalothorax, about 1/4 wider than long, and equally wide in front and behind. Front eyes in a straight or slightly curved row, the middle about twice as large as the lateral. Second row halfway between the others or a little nearer the first. Third row plainly narrower than the cephalothorax. Lower margin of falx with a single tooth. Sternum narrowed in front.

Front coxae separated by barely the width of the labium, which is as wide as long. Legs usually 1423 in the male and 4132 in the female. In both sexes the first and second have 3–3 spines below, and, anterior lateral, and the metatarsi 2–2 below.

CHARACTERISTICS OF THE THREE SPECIES.

Upper sides and top of cephalothorax uniform gray; sides widely rounded out; clypeus in male covered with salmon-colored hairs; no black spots on distal joints of palpus in female.	<i>undata</i>
Top of cephalothorax with a wide gray band, bounded by dark brown; sides not much rounded out; clypeus of male covered with white hairs; distal joints of palpus in female with black spots.	<i>californica</i>
Top of cephalothorax with a white band bounded by dark rufus; sides widening in thoracic part only; clypeus white; female palpus yellow, without black spots.	<i>melanognathus</i>

MARPISSA UNDATA DE GEER. 1778.

Plate XXXIX, figs. 1–1a. Plate XL, fig. 1.

1778. *ARANEA UNDATA* De Geer, Mem. pour servir a l'Hist. des Ins., p. 320.
 1845. *ATTUS FAMILIARIS* AND *RUPICOLA* H., Jour. Bost. Soc. Nat. Hist., V.
 1846. *MARPISSA UNDATA*, *CONSPERSA* AND *VARIA* C. K., Arachn., XIII, pp. 60, 61, 69.
 1875. *ATTUS FAMILIARIS* AND *RUPICOLA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, pp. 56, 61.
 1888. *MARPTUSA FAMILIARIS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 80.
 1891. *MARPTUSA FAMILIARIS* Em., Trans. Conn. Acad., VIII, New England Attidae, p. 19.
 1892. *MARPTUSA RUPICOLA* B., Proc. Acad. Nat. Sci. Phila., p. 79.
 1898. *MARPTUSA UNDATA* B., Ent. News, June, p. 142.

Length, ♂ 9.5 mm., ♀ 10.5 mm. Legs, ♂ 1432, ♀ 4132, first pair a little the stoutest.

The cephalothorax has the top and upper sides covered with

white and rufus hairs which give a uniform gray tint, while the lower sides are black. In the female the hairs just above the front eyes are bright red, while those below, and on the clypeus, are white, but in the male the eyebrows are white and the clypeus is covered with bright chestnut-colored hairs. The abdomen has a wide angular gray band, bordered with black, down the middle, the sides being covered with gray and dark tawny hairs. The palpi are light reddish-brown covered with long white hairs, and the legs dark brown with short gray hairs. In the male, long white hairs hang down between the falces, and partly cover their front faces.

This species is common through the eastern, southern and middle states, and is found as far west as Salt Lake, Utah. It is also found in Mexico. In the far west its place is taken by *californica*. We consider *rupicola* H., from Florida, Alabama and New York, a variety of *undata*. It has more red intermixed with the gray, on the top of the cephalothorax and on the sides of the abdomen, and in the male the first legs are relatively longer.

MARPISSA CALIFORNICA P. 1888.

Plate XXXIX, figs. 2—2a. Plate XL, fig. 2.

1888. *MARPTUSA CALIFORNICA* P. ♂ ♀, Trans. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 81.

1901. *MARPISSA MINOR* ♂ ♀, AND *MELANURA* ♀, F. O. P. C., Biol. Cent. Am., Arach., Aran., II, pp. 250, 251.

Length, ♂ 9.2 mm., ♀ 9 mm. Legs, ♂ $143\bar{2}$ ¹, ♀ $41\bar{2}\bar{3}$. first pair a little the stoutest.

This is a smaller, slighter species than *undata*. The gray and rufus hairs on the top of the cephalothorax are limited to form a distinct light band, which narrows and becomes wedge-shaped on the thoracic part. The upper sides are very dark brown with thin rufus hairs, and the lower sides have a band of white hairs. In both sexes the clypeus has long white hairs, the hairs over the front eyes being reddish. The abdomen has an

¹ It is likely that 1432 was intended here (see *M. undata*).

angular gray band bordered with black, as in *undata*, but the sides are covered with bright rufus hairs and are marked with several short, oblique, white bands, which, however, are sometimes lacking. The dark reddish palpi are covered with white hairs, the two distal joints having conspicuous black spots on the upper surface. The legs are dark with a covering of short gray hairs.

Cambridge had this species (*melanura* and *minor*) from Guatemala City, Guatemala, and from Teapa, Mexico. We have it from Arizona; New Mexico; southern, middle and northern California; Salem, Oregon; and Salt Lake, Utah.

MARPISSA MELANOGNATHUS LUCAS. 1839.

Plate XXXIX, figs. 3—3a. Plate XL, figs. 3—3a.

1839. (?). *SALTICUS MELANOGNATHUS* H. Lucas, Webb and Berthelot's Hist. Nat. des Iles Canaries, Tom. II, p. 29, pl. VII, fig. 4.
1846. *MARPISSA DISSIMILIS* C. L. Koch, Die Arachn., XIII, p. 70, Tab. CCCCLIV, figs. 1135 and 1136.
1846. *MARPISSA INCERTA* id., *ibid.*, p. 73, Tab. CCCCLIV, fig. 1138.
1859. *SALTICUS CONVERGENS* Doleschall, Tweede Bijdr. Arachn. Indischen Archipel, p. 15, Tab. IX, fig. 4.
1863. *ATTUS MUSCIVORUS* A. Vinson, Araneides des Iles de la Reunion, etc., p. 47, Pl. X, fig. 1.
1867. *ATTUS FOLIATUS* L. Koch, Arach., etc., Verhandl. zool. and bot. Ges., in Wien, 1867, p. 226.
1870. *SALTICUS NIGRO-LIMBATUS* Cambridge, Proceed. Zool. Soc. of London, 1869, p. 542, Pl. XLII, fig. 10.
1873. *SALTICUS NIGRO-LIMBATUS*, id., Transact. of the Linn. Soc. of London, XXVII, p. 527.
1874. *MARPISSA NIGRO-LIMBATUS*, id., Syst. list of Spiders of Gr. Britain and Ireland, *ibid.*, XXX, p. 333.
1876. *MARPISSA NIGRO-LIMBATUS*, E. Simon, Arachnides de France, T. III, p. 29.
1878. *ICIUS* (?) *CONVERGENS* Thorell, Studi, etc., II, Ragni di Amboina, pp. 232, 309.
1879. *MARPTUSA MARITA* Karsch, West-Afrik. Arachn. in Zeitschr. f. die gesamt. Naturwissensch, LII, p. 338.
1879. *MENEMERUS FOLIATUS* L. Koch, Arachn. Australiens, p. 1123, T. XCVIII, fig. 1, 2.

1881. *ICIUS* (?) *DISSIMILIS* Thorell, Studi, etc., III, Ragni Malesi e. Papuani, p. 461.
 1883. *ATTUS MANNII* Peckham, New or little known spiders of the family Attidae, p. 27, Pl. III, fig. 21.
 1883. *MENEMERUS MELANOGNATHUS* E. Simon, Arachn. de l'Qcean Atlantique, Soc. Entom., France, pp. 284, 306.
 1888. *MENEMERUS MELANOGNATHUS* P. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 82.
 1898. *MARPTUSA MELANOGNATHUS* Banks, California Acad. Sciences Proc., 3d Ser. Zool, I, p. 285.
 1904. *TAPINATTUS MELANOGNATHUS* Banks, Acad. Nat. Sciences, Philadelphia, Jan. p. 138.

Length, ♂ 8 mm., ♀ 9.5 mm. Legs, ♂ $\overline{14} \overline{23}$, ♀ 4312.

The cephalothorax is dark rufus with reddish hairs over the front eyes. The lower margin is encircled by a white band which crosses the narrow clypeus, where the hairs grow with their ends toward the middle, and the sides of the cephalic part are covered with white hairs. Above, a white band begins between the middle front eyes and passes over the cephalic and thoracic parts, widening until it reaches the third row of eyes and then narrowing slightly. The abdomen has bright rufus bands in the middle and on the sides, alternating with two longitudinal white bands. The posterior part of the middle rufus band is marked with white chevrons. In the female the whole upper surface of the abdomen is covered with mixed gray and rufus hairs, this region being narrowed and somewhat foliated behind, and bounded on the outer sides by dark bands. The falces are dark and iridescent, with white hairs on their inner edges. The palpi are yellow with white hairs, the tarsus dark in the male. In the female the legs are all yellow; in the male they are rufus with dark rings, the first pair darkest.

Florida.

***MENEMERUS VITTATUS* B. 1903.**

Plate XXXIX, figs. 4—4a.

1902. *FUENTES VITTATA* Banks, ♀, Proc. Acad. Nat. Sci., Phila., p. 590.

Length, ♀ 6 mm. Legs, 4132, first much the stoutest, fourth longer than third by tarsus and metatarsus. Spines,

tib. I 3—3.; tib. II an anterior lateral, a pair at distal end, and one behind, below; met. I and II 2—2.

Cephalothorax rather low with cephalic part a little inclined, and thoracic part flat in first half. Front eyes in a slightly curved row, moderately large, the middle less than twice the lateral. Eye-region equally wide in front and behind. Second row halfway between the others, third row narrower than the cephalothorax. Sternum oval, a little narrowed and truncated in front, labium longer than wide. Coxae I separated by width of labium.

When dry the integument is dark brown, blackish in eye-region, with a thin covering of white hairs, and a whitish stripe on the middle of the abdomen. Under alcohol the pattern comes out more distinctly, the spider being gray with a lighter longitudinal band on the abdomen, from base to apex, which is edged with a series of short, pure white bars, outlined in black. On the posterior sides are some oblique whitish bars. The first legs are brown, with incomplete dark rings, the others yellow, with dark bands. The clypeus has long white hairs. Mr. Banks has two examples from *Alberquerque*, New Mexico.

***METACYRBA* F. O. P. C. 1901.**

1845. *ATTUS* Hentz, (*taeniola*), Jour. Bost. Soc. Nat. Hist., V.
 1875. *ATTUS* Hentz, (*taeniola*), Occ. Pap. Bost. Soc. Nat. Hist. II, p. 56.
 1888. *CYRBA* P., (*taeniola*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 75.
 1901. *METACYRBA* F. O. P. C., Biol. Cent. Am. Arachn., Aran., II, p. 252.
 1903. *FUENTES* E. S., (*taeniola*), Hist. Nat. Araign., 2me Ed., II, p. 850.
 1904. *FUENTES* B., Proc. Cal. Acad. Sci., 3rd Series, III, 13, p. 360.
 1905. *METACYRBA* B., Am. Nat., XXXIX, p. 322.

Cephalothorax low and flat, sides vertical in front, and nearly parallel, widening slightly in thoracic part. Eye-region $\frac{1}{3}$ wider than long, equally wide in front and behind, occupying $\frac{2}{5}$ of the cephalothorax. Front eyes in a straight row, middle twice as large as lateral. Small eyes about halfway between the others. Third row as wide as cephalothorax. Sternum

narrowing to a long point between front coxae, which are separated by width of labium. Labium nearly as wide as long. Lower edge of falx with a compound tooth. Legs short, first pair stoutest, especially in male. Femoral spines poorly developed. Tibia and metatarsus I each with 2—2 below.

***METACYRBA TAENIOLA* H. 1845.**

Plate XXXIX, figs. 5—5a. Plate XL, fig. 4.

1845. *ATTUS TAENIOLA* H., Jour. Bost. Soc. Nat. Hist., V.
 1875. *ATTUS TAENIOLA* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 56.
 1888. *CYRBA TAENIOLA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 75.
 1901. *METACYRBA TAENIOLA* F. O. P. C., Biol. Cent. Am. Arachn., Aran., II, p. 252.
 1904. *METACYRBA SIMILIS* B., Proc. Cal. Acad. Sci., 3rd Series, III, 13, p. 360.

Length, ♂ 4—7 mm. ♀ 6—9 mm., largest in the south. Legs, ♂ ♀ 4123, first pair much the stoutest, especially in males, tibia and patella, in male, with a short fringe of hairs. Spines, ♂ ♀, tib. and met. I 2—2 below, tib. II 1 below, nearer distal than proximal end, met. II, below, with a pair and one farther back, or sometimes with only two serially. In one example there is a lateral spine on tibia I. There are no developed spines on femur I.

The integument is black with a thin covering of short yellow and white hairs. The cephalothorax has a white line around the margin, and the abdomen has two lines of white hairs, more or less broken into abbreviated bars, which become oblique in the hinder half. In *similis* B., which we believe to be identical with *taeniola*, these lines are not broken. The very narrow clypeus has a line of yellow hairs under the eyes and a short yellow fringe, with a black space between. The short and vertical falces are black. The first legs excepting the two distal joints, and the femora of the other legs, are black or sometimes (especially in the female), brown, the other joints being much lighter.

The fringe on the first leg is dark brown.

This species is reported from New York, Pennsylvania, South Carolina, Georgia, Florida, Alabama, northern Louisiana, Texas, Wisconsin and California, as well as from Mexico.

Cambridge says that in *taeniola* the tibia of the first leg has no spines, or at most three on the outer side. We find two pairs in most specimens, the inner ones being less developed than the outer. One example has only one spine on the inner side, and another has three on the outer and two on the inner.

HYCTIA E. S. 1876.

Type, *SALTICUS NIVOYI* Lucas.

- 1845. *ATTUS* H., (*binus*) Jour. Bost. Soc. Nat. Hist., V.
- 1875. *ATTUS* H., (*binus*) Occ. Pap. Bost. Soc. Nat. Hist., II, p. 54.
- 1876. *HYCTIA* E. S., Ar. Fr. III, p. 18.
- 1888. *HYCTIA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 79.
- 1891. *MENEMERUS* Em., Trans. Conn. Acad., VIII, New England Attidae, p. 27.
- 1892. *ICIUS* B., Proc. Acad. Nat. ci. Phila., p. 76.
- 1894. *PSEUDICIUS* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 110.
- 1894. *HYCTIA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 116.
- 1901. *HYCTIA* E. S., Hist. Nat. Araign. 2me Ed., II, p. 609.
- 1905. *HYCTIA* B., Amer. Nat. XXXIX p. 321.
- 1906. *HYCTIA* B., Proc. Ent. Soc. Wash., VII, p. 99.

Long, slender spiders, with the first pair of legs plainly stoutest. The cephalothorax is long, low, flat and narrow, and is nearly twice as long as wide. The cephalic and thoracic parts are on the same plane. The sides are vertical and almost parallel, widening a little behind the dorsal eyes. The quadrangle of the eyes is $\frac{1}{4}$ wider than long, and is equally wide in front and behind, and occupies from $\frac{1}{3}$ to $\frac{2}{5}$ of the cephalothorax. The first row is straight, or a little curved, and the middle eyes are almost twice as large as the lateral. The second row is about half way between the other two. The dorsal eyes form a row as wide as the cephalothorax at that place. The labium is longer than wide, the falces are vertical and have a simple tooth

on the lower border. The sternum is oval and contracted in front, where the coxae are separated by less than the width of the labium.

***HYCTIA PIKEI* P. 1888.**

Plate XXXIX, figs. 7–7b. Plate XL, figs. 8–8b.

1888. *HYCTIA PIKEI* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 79.

1894. *HYCTIA PIKEI* P. Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 116.

Length, ♂ 7–8.2 mm., ♀ 8–9.5 mm. Legs, ♂ ♀ 1423. Spines, ♂ and ♀, tib. I 4–4, and 1 ant. lat.; met. I 2–2; tib. II 1–1, and 1, 1, underneath; met. II 2–2; pat. I 1.

The male, when fresh, has the entire body, in the middle, black, and snow-white stripes on each side, from the end of the abdomen to the end of the palpi. Sides of cephalothorax pale, lower margin edged with black; sides of abdomen darkish, falces dark brown, coxae and venter yellowish. First pair of legs much the stoutest and dark brown, other legs yellow.

The female is much like the male but lighter in color; the central band on the abdomen is dark brown, the sides lighter, but not white.

In some males there are three pairs of white bars running into the middle black band of the abdomen; the bars point forward. Possibly these bars are always present unless rubbed off.

The species is easily distinguished, as the abdomen is more than three times as long as wide. *Robusta*, its first cousin, is not found in the eastern or middle states, having been reported, so far, only from Arizona and California.

The species ranges through New York, Pennsylvania, Massachusetts, Kansas, Nebraska, New Mexico, Florida, South Carolina, Georgia.

HYCTIA ROBUSTA BANKS. 1906.

Plate XXXIX, fig. 6.

1906. *HYCTIA ROBUSTA* ♀ Bnks., Proc. Ent. Soc. Wash. VII, Nos. 2-3, p. 99.

Length, ♀ 8.5 to 11 mm. Spines, tib. I 4—4, 1 a. l.¹ met. I 2—2; tib. II 1—1 and 1, 1, underneath, and 1 a. l.; sometimes there are 2—2 and 1 under tib. II; met. II 2—2, pat. I 1 a. l. Legs, 1432.

Our specimens are rubbed, but the cephalothorax is yellowish, darker in the eye-region, the whole seems to have been covered with white hairs with a few red ones mixed in. The abdomen has a medium longitudinal band of greyish-white hairs, on either side of which are dark stripes, the outer sides are grey, the venter and sternum pale. The legs are yellow, in some specimens the first pair is darker, especially at the distal ends of the joints. The palpi are pale yellow with a black line on each side beginning at the patella. There is a tuft of black hairs behind each lateral eye. The abdomen is three times as long as wide. This is a larger and hairier species than *H. Pikei* and has white in the middle of the-abdomen where *pikei* has dark brown. It is most like *H. bina*, but is larger, *bina* having the abdomen only twice as long as wide. Mr. Banks had the type from Arizona. Our specimens came from Claremont, California.

HYCTIA BINA H. 1845.

Plate XXXIX, figs. 8—8d.

1845. *ATTUS BINUS* ♀ H., Jour. Bost. Soc. Nat. Hist., V.1875. *ATTUS BINUS* ♀ H., Occ. Pap. Bost. Soc. Nat. Hist. II, p. 54.1888. Not *M. PAYKULLI* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 84.1891. *MENEMERUS BINUS* ♀ Em., Trans. Conn. Acad. VIII, New England Attidae, p. 21.¹ a.l. (or ant. lat., elsewhere) is an abbreviation for anterior lateral.

1892. *ICIUS FORMOSUS* ♂ Bnks., Proc. Acad. Nat. Sci., Phila., p. 76.

1894. *PSEUDICIUS BINUS* ♀ P., Occ. Pap. Nat. Hist. Soc. Wis. II, 2, p. 110.

Length, ♂ 6.5 to 10 mm., ♀ 9 mm. Spines ♂ ♀, tib. I 4—4, met. I 2—2, tib. II 2—2, and 1 below, 1, 1, ant. lat.; sometimes only 1—1 under tib. II; met. II 2—2.

Legs, ♂ 1432̄. In the large males the first leg is elongated, being longer than the second by the tarsus, metatarsus, and nearly all the tibia, while in the smaller forms it exceeds the second by only little more than the tarsus and metatarsus; ♀ 1432. In both sexes the first leg is much the stoutest.

There are two forms of males, the large form has the cephalothorax enlarged and widened, and is much less *Hycitia*-like in appearance than the small specimens. The general color of the male is dark brown, with some bronze on the top of the head and more on the back of the abdomen. There are patches of white behind each dorsal eye, and shorter bars further back on the thoracic slope. On the top of the head just above the space between the two large middle eyes is a short bar of white. A white line runs around the lower margin. The abdomen is bronze-brown, with a white basal band extending about the anterior end and reaching one-third of the way back; there is a white band on either side of the middle more or less broken up into three or four bars; in some specimens there are white spots lower down on the side; venter pale; sternum and mouth-parts dark. First legs dark, other femora dark and also proximal ends of tibia and metatarsus of fourth leg, other joints of legs yellow. In some specimens the legs are nearly all dark, except the posterior patellae.

The female cephalothorax is dark brown with the lower edges yellowish. There is a white median longitudinal band on the back of the abdomen, that reaches both ends; there is a black stripe on each side that does not reach either end, and the lower sides and venter are yellow, sternum pale, mouth-parts dark. Front legs orange-brown with spots or rings near the distal ends of the joints; other legs yellow, sometimes with indistinct brownish stripes at the sides.

Mr. H. Britcher, in his notes, mentions having taken the two sexes together. Maine, Massachusetts, Connecticut, New York, New Jersey, Illinois, Nebraska, Missouri, South Carolina, Louisiana, North Carolina.

ONONDAGA new.

Type, *MAEVIA LINEATA* C. K.

1848. *MAEVIA* C. K., in part (*lineata*), Arachn., XIV, p. 77.
 1883. *ATTUS* P., (*quadrilineatus*), New or little known Attidae, p. 19.
 1888. *ICIUS* P., in part (*lineatus*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 45.
 1891. *MENEMERUS* Em., in part (*lineatus*), Trans. Conn. Acad., VIII. New England Attidae, p. 21.
 1894. *FUENTES* P., in part (*lineatus*), Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 113.
 1901. *FUENTES* E. S., in part (*lineatus*), Hist. Nat. des Araign., 2me Ed., II, p. 850.
 1905. *FUENTES* B., in part (*lineatus*), Am. Nat. XXXIX, p. 321.

Cephalothorax low and nearly flat, with a transverse groove behind the dorsal eyes. Sides a very little dilated behind the dorsal eyes, nearly vertical in front, rounded behind; cephalic part inclined, thoracic falling slightly in first half then more steeply. Eye-region occupying two-fifths of cephalothorax, one-fourth wider than long, very slightly wider behind than in front. Front eyes subtouching, in a straight row, middle about twice as large as lateral. Second row a little nearer the third than the first. Third row as wide as the cephalothorax. Falces vertical, parallel, with a compound tooth on the lower margin. Sternum pointed in front and behind, nearly as wide as long. Front coxae separated by less than the width of the labium, which is as wide as long. Tibia of first leg thickened. Spinal armature, ♂ and ♀, tib. I 4—4, tib. II 1 pair and 2 serially, met. I and II 2—2. All the spines are long.

Although this genus is like *Maevia* in the armature of the falces and of the legs it differs in the shape of the cephalothorax.

ONONDAGA LINEATA C. K. 1848.

Plate XXXIX, figs. 9—9e.

1848. *MAEVIA LINEATA* C. K., Arachn, XIV, p. 77.
 1883. *ATTUS QUADRILINEATUS* P., New or little known Attidae, p. 19.
 1888. *ICIUS LINEATUS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 45.
 1891. *MENEMERUS LINEATUS* Em., Trans. Conn. Acad., VIII, p. 21.
 1895. *ICIUS LINEATUS* Banks, Jour. N. Y. Ent. Soc., III, 2, p. 92.
 1904. *FUENTES LINEATUS* Banks, Proc. Acad. Nat. Sci., Phila., p. 139.

Length, ♂ 4 mm., ♀ 4—5.3 mm. Legs, ♂ 1423, ♀ $\overline{4123}$. First legs much thickened.

Small spiders marked with two longitudinal lines on the dorsum of the abdomen, and two others on the sides. The latter are so low down on the sides that only their anterior ends are seen from above.

The color of the female is brown, the male is much lighter. The white lines on the abdomen have their edges very dark. The eye-region is black covered with yellowish and white hairs. The thoracic part brown in the female, testaceous in the male, though the depth of color varies in different specimens. The thoracic part and also the abdomen are thinly covered with yellow and white hairs. The legs in the female are brown, in the male light yellow, except the tibia of the first, which is brown and in striking contrast with the other joints of the leg; some of the other joints have narrow dark rings.

Mr. Banks reports this spider from Long Island, N. Y., and Runnymede, Florida; Mr. Emerton, from Massachusetts, and we have it from Wisconsin, Kansas, Pennsylvania, Georgia and Labrador (Britcher Collection).

PSEUDICIUS E. S. 1885.

Type, *ARANEA ENCARPATA* Wlk. 1802.

1885. *PSEUDICIUS* E. S., Bull. Soc. Zool. Fr., p. 28.
 1888. *ICIUS* P., (*piraticus*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 49.

1894. *PSEUDICIUS* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 109.
 1894. *SPADERA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 117.
 1895. *ICIUS* B., (*monticola*), Can. Ent., p. 98.
 1901. *PARAMARPISSA* F. O. P. C., Biol. Cent. Am., Arachn. Aran., II, p. 252.
 1902. *MARPISSA* B., (*albopilosa*), Proc. U. S. Nat. Mus., XXV, p. 219.
 1904. *EREMATTUS* B., Jour. N. Y. Ent. Soc., XII, p. 117.
 1905. *EREMATTUS* B., Am. Nat., XXXIX, p. 320.

Cephalothorax rather low and flat, narrow in front, widest in the middle (*monticolus*) or behind (*siticulosus*, *piraticus*). Eye region occupying about 2/5 of the cephalothorax, equally wide in front and behind or (*monticolus*) a little wider behind. Front eyes in a straight row, the middle less than twice as large as the lateral. Second row a little nearer the first than the third. Third row nearly as wide as the cephalothorax. Sternum rounded in *piraticus*, truncated in *monticolus*, and much attenuated in *siticulosus*. Front coxae separated by more than the width of the labium in *monticolus*, by less in the other species. Labium plainly longer than wide. First leg enlarged, with tibia cylindrical. Tibiae of first and second with scanty unpaired spines, excepting tibia of first in *siticulosus*.

This genus is represented by three species from Colorado, Texas and California.

***PSEUDICIUS MONTICOLUS* BANKS 1895.**

Plate XL, figs. 5—5a.

1895. *ICIUS MONTICOLA* Banks ♂, Canadian Entomologist, 1895, p. 98.

♂. Length, 4 mm. Legs, 1432, first pair stoutest. Tibia I with 1 spine on anterior side, below, and 1, 1, on posterior side, below; tibia II 1 spine below, met. I and II 2—2.

“The cephalothorax is red-brown, black on margin and in eye-region, clothed with white scales; a median row of stiff bristles just above the anterior eyes. Legs yellow-brown, the femora darker, on the posterior pairs a black ring at base of tibia, metatarsus and tarsus; clothed with long black hairs and shorter

white scales; palpi red-brown, clothed with white scales, sternum dark red-brown; abdomen blackish (but somewhat discolored), clothed above with white scales, and below with fine hairs." We quote the color description from the author.

Mr. Banks, near Livermore, Colorado.

***PSEUDICIUS PIRATICUS* P. 1888.**

Plate XXXIX, figs. 10–10b.

1888. *ICIUS PIRATICUS* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 49.
 1894. *PSEUDICIUS PIRATICUS* P. ♂, Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 110.
 1901. *PARAMARPISSA TIBIALIS* F. O. P. C. ♂, Biol. Cent. Am. Arachn. Aran., II, p. 252.
 1902. *MARPISSA ALBOPILOSA* B. ♀, Proc. U. S. Nat. Mus., XXV, p. 219.
 1904. *EREMATTUS ALBOPILOSUS* B. ♀, Jour. N. Y. Ent. Soc., XII, p. 117.

Length, ♂ 7 mm., ♀ 7.2 mm. Legs, ♂ 1432, ♀ 4132, both sexes with first leg, especially tibia, much thickened, with unusually short terminal joints, and with a heavy white fringe below. Spines, ♂ ♀, tib. I 1 short stout anterior lateral toward tip, tib. II none, met. I and II 2–2, those of front row short and thick.

In the male the cephalothorax is dark, with a covering of white hairs above, and a white spot above the front row of eyes. The sides are black with a white line on the margin. There are reddish rings around the front eyes and the clypeus is covered with red and white hairs. The abdomen is black with a wide central longitudinal band, white, and with white on the lower sides. Under side with white hairs. The first legs are black with heavy white fringes, the others brown with white hairs.

Our female specimens are in poor condition. When dry, the cephalic plate is gray, with a white spot in the middle, over the eyes, and marked with diagonal bands of a bright reddish color. The sides and back are gray, and the clypeus has long white hairs. The abdomen is gray with a branching dark line down the middle and rather indistinct white and dark oblique bars

on the sides. The underside is covered with white hairs. The first leg is shaped as in the male, but the color is brown with a dark band running along the outer side, and a similar band on the inner side of tibia and patella. The leg is covered with short scale-like white hairs, and has a row of black hairs above, and some long, soft, white hairs beneath. The other legs are lighter brown with dark bands on the sides and many long black and white hairs. The palpus is light brown covered with white hairs, and having a bunch of black hairs under the tarsus.

Mr. Banks has this species from Arizona (Williams), and we have several specimens from Austin, Texas.

***PSEUDICIUS SITICULOSUS* n. sp.**

Plate XXXIX, figs. 11–11a.

♀. Length 7 mm. Legs, 1423, first pair with femur patella and tibia much enlarged. Tibia of first, with three pairs of spines, those of the anterior much shorter than those of the posterior row; tibia of second with two fine, small spines, one at each end; metatarsi of first and second with two pairs.

This spider seems to belong to the genus *Pseudicius* in spite of the fact that it has six spines under the tibia of the first leg. Our specimen is rubbed.

The cephalothorax is brown, darkest in the eye-region, and seems to have been covered with white hairs. The abdomen is reddish-brown, this color being broken, on the dorsum, into four pairs of somewhat quadrate spots by a median, branching, white band. The sides are covered with white hairs. The underparts are light. The legs and palpi are light yellow.

We have a single female from Owen's Lake, California.

***ICIUS* E. S. 1874.**

Type, *ICIUS NOTABILIS* C. K.

1845. *ATTUS* H., (*elegans* ♀, *superciliosus* ♂), Jour. Bost. Soc. Nat. Hist. V.
 1846. *ICELUS* C. K., (*notabilis*), Arachn., XIII, p. 174.
 1848. *MAEVIA* C. K., (*cristata* ♂), Arachn., XIV, p. 70.

1874. *ICIUS* E. S., Ar. Fr., III, p. 54.
 1875. *ATTUS* H., (*elegans* ♀, *superciliosus* ♂), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 37.
 1888. *DENDRYPHANTES* P., (*elegans* ♂ ♀), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 37.
 1891. *ICIUS* E., (*elegans*, *Hartii*, *formicarius*), Trans. Conn. Acad., VIII, p. 15-17.
 1894. *DENDRYPHANTES* COCK., (*vitis*), Entomologist, p. 207.
 1894. *ICIUS* P., (*Wickhamii*), Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 109.
 1895. *ICIUS* B., (*sexmaculatus*, *similis*), Can. Ent. p. 100.
 1901. *TUTELINA* E. S., Hist. Nat. Araign., 2me Ed., II, p. 554.
 1905. *TUTELINA* B. Am. Nat. XXXIX, p. 322.

Cephalothorax not very high and only slightly convex, usually inclined in both directions from the dorsal eyes, sometimes level for a short distance in the anterior thoracic part (*vitis*, *similis* ♀). Sides usually nearly parallel, sometimes rounded out a little behind the dorsal eyes (*Wickhamii*, *exornatus*, *formicarius*, *vitis*). Eye-region about 1/3 wider than long, occupying about 2/5 of the cephalothorax, wider behind than in front. Front eyes in a straight or slightly curved row (plainly curved in the males of *elegans* and *similis*). Middle eyes about twice as large as laterals. Second row nearer the first than the third (*formicarius*, *Wickhamii*) or halfway between. Dorsal eyes forming a row as wide or nearly as wide as the cephalothorax, sometimes very large (*sexmaculatus*). Abdomen usually long, slender and cylindrical. Sternum oval, rounded or truncated in front. Coxae of first pair separated by width of labium except in *exornatus*. Labium not much longer than wide. Falces usually vertical, sometimes directed forward (*vitis* ♂); lower margin with a single conical tooth except in *Wickhamii*, which has the compound tooth characteristic of the Fissidentati. Legs, ♂ 1423, ♀ 4123, first pair, at least the femur, enlarged, often marked with longitudinal dark lines. Hairs and scales very small, often iridescent, showing many colors, although in some species the colors are dull. Spiders rather small.

KEY TO *ICIUS*.

MALES.

1	Abdomen iridescent or metallic.	2
	Abdomen not iridescent nor metallic.*	7
2	Conspicuous tufts over the front eyes.	3
	No tufts over front eyes.	4
3	A black spot and a tuft of black hairs at distal end of tibia I. Tube of palpus slender.	<i>elegans</i>
	No black spot nor tuft on tibia I. Tube of palpus stout.	<i>similis</i>
4	Falces vertical, without apophysis.	5
	Falces obliquely directed, with an apophysis below	<i>vitis</i>
5	Falx with a compound tooth on lower margin. First leg with only the femur enlarged. Tube of palpus long, curved on itself. Rings of red hairs around front eyes. From the Bahamas and Florida.	<i>Wickhamii</i>
	Falx with a single conical tooth on lower margin. First leg with femur patella and tibia enlarged. Tube of palpus of ordinary form. No red hairs around eyes.	6
6	Tibia I with a fringe of stiff brown hairs.	<i>Hartii</i>
	Tibia I not fringed. Legs lineate.	<i>formicarius</i>
7	Abdomen reddish brown with six white spots. Tube of palpus thickened but not truncated. Tib. I not fringed.	<i>sexmaculatus</i>
	Abdomen gray with white border and indistinct bars. Tube of palpus blunt, truncated. Tib. I fringed.	<i>Hartii</i>

FEMALES.

1	Tibia I not fringed. Abdomen iridescent.	2
	Tibia I plainly fringed. Abdomen gray or slightly metallic; or tibia I not fringed, abdomen dark with white spots.	6
2	Abdomen with a white band around front end.	3
	Abdomen lacking white band.	4
3	No white on abdomen except the basal band. Legs with longitudinal stripes.	<i>elegans</i>
	One or two pairs of oblique or curved white bands on sides behind middle. Legs without stripes.	<i>vitis</i>
4	Eye-region with bright green scales. Legs without stripes.	<i>exornatus</i>
	Eye-region not so brilliant. Legs striped.	5
5	White longitudinal stripes, two above and one below, with dorsal and anterior black stripes, on first leg, extending on to femur. Epigynum deeply notched.	<i>formicarius</i>
	Only one dorsal black line on first leg, not visible on femur. Epigynum scarcely notched.	<i>similis</i>
6	Abdomen not metallic, with four longitudinal lines of white dots. Tibia I not fringed.	<i>versicolor</i>
	Abdomen sometimes metallic, marked with a white border broken into bars. Tibia I with fringe.	<i>Hartii</i>

* As *Hartii* is sometimes metallic and sometimes not metallic, It Is taken out under both headings.

ICIUS SIMILIS B. 1895.

Plate XLI, figs. 2—2c.

1891. *ICIUS ELEGANS* E., (dark variety), Trans. Conn. Acad. VIII, p. 16.1895. *ICIUS SIMILIS* B., ♂ ♀, Can. Ent., p. 100.

Length, ♂ 4.5 mm., ♀ 5.5 mm. Legs, ♂ 1423, ♀ 4123, slender, with longitudinal stripes, femur I slightly enlarged in both sexes, tibia I in male with black hairs throughout its length. Spines ♂ ♀, tib. I 2—2 or 1—1 and 1 behind, tib. II 2 below, serially; met. I and II 2—2, all small and fine.

This is an iridescent spider, with tufts over the eyes in the male, as in *elegans*. The two species are nearly alike, differing only in the following particulars. In the male the tibia of the first leg is spined differently, has no dark spot at the end, and the hairs grow throughout the length of the joint; the color on the sides of the cephalothorax, below the eyes, is darker, lacking the red tinge of *elegans*; and the palpus is distinct, with a much thicker tube. In the female the color of the body is darker, the femur of the first leg is lighter, there is no white basal band on the abdomen, and the epigynum is different. We have some males which have the hairs, throughout the length of the first leg, white.

This is the most widely distributed of all the species of *Icius*. Mr. Emerton has it from the Adirondacks (New York) and the White Mountains (New Hampshire), Mr. Banks, from Colorado, New Mexico and Washington, and we have found it in Wisconsin and in Victoria, British Columbia.

ICIUS ELEGANS H. 1845.

Plate XLI, figs. 1—1d.

1845. *ATTUS ELEGANS* ♀, *ATTUS SUPERCILIOSUS* ♂ H., Jour. Bost. Soc. Nat. Hist. V.1848. *MAEVIA CRISTATA* ♂ C. K., Arachn., XIV, p. 70.1875. *ATTUS ELEGANS* ♀, *ATTUS SUPERCILIOSUS* ♂ H., Occ. Pap. Bost. Soc. Nat. Hist., II, pp. 56, 68.

1888. *DENDRYPHANTES ELEGANS* ♂ ♀ P., Trans. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 37.
 1891. *ICIUS ELEGANS* E., Trans. Conn. Acad., VIII, p. 15.
 1901. *TUTELINA ELEGANS* E. S., Hist. Nat. Araign. 2me Ed., II, p. 554.

Length, ♂ 4.3 mm., ♀ 5.5 mm. Legs, ♂ $14\overline{23}$, ♀ 4123, delicate, with longitudinal stripes, femur I slightly enlarged in both sexes, tibia I in male with black spot and tuft of black hairs at distal end. Spines ♂ ♀, tib. I 3—3, tib. II 2 below, serially; met. I and II 2—2.

Both sexes are brilliantly iridescent, but the female is darker than the male. In the male the integument of the eye-region and of the abdomen is black, while the sides and thoracic part of the cephalothorax are brown, the whole body being covered with greenish-yellow, metallic scales. On the front of the cephalic plate are long tufts of hairs, sometimes black and yellow, sometimes whitish, which curve inward and forward. Around the lower margin of the cephalothorax is a pure white band, continuous behind, but stopping in front under the lateral eyes of the first row. The abdomen is without bands or spots. The legs and palpi are pale, the legs with a black longitudinal line above, sometimes lacking on the tarsi, most conspicuous and heavy on the tibia of the first, which has also an inky black spot on the inner side of the distal third, from which grows a fringe of black hairs. The clypeus and falces are brown, covered with scales like those on the body. The venter is black covered with the same yellow scales.

In the female the color of the integument is like that of the male, but the scales which clothe the body are rosy-purple, green, and gold. The white band on the cephalothorax is present and also a white basal band on the abdomen. The legs are like those of the male except that the femur of the first is nearly all black, and that the tibia of the first lacks the black spot and the fringe.

The clypeus and falces have iridescent scales. The palpus has the proximal two joints dark brown and the distal joints white.

The falces are small and the fang short, especially in the female. The sternum is pointed behind and truncated in front.

I. elegans is found in Maine, New Hampshire, Massachusetts, New York (Mr. Banks has it from Long Island), Florida, Illinois, Wisconsin and Nebraska. In Wisconsin it matures about July 10, and for from ten days to two weeks it is very common. We have taken large numbers on the hazel bushes.

***ICIUS FORMICARIUS* E. 1891.**

Plate XL, figs. 7—7a. Plate XLI, figs. 3—3a.

1891. *ICIUS FORMICARIUS* E. ♀, Trans. Conn. Acad. VIII, p. 17.

Length, ♂ 4 mm., ♀ 5 mm. Legs, ♂ 1423, ♀ 4123, first pair scarcely thicker than the others, all striped. Spines, ♂ ♀ tib. I 3—3, tib. II 1 pair and two behind, serially, met. I 2—2, met. II 1 pair and 1 behind.

This is a dark spider, and looks very much like an ant.

The cephalothorax and abdomen are dark with iridescent greenish scales. There is a white marginal band on the thorax. The legs are black with white stripes, two on the sides and one below. The palpus is dark with a white line within and an indistinct light line on the outside.

The sides of the cephalothorax are nearly parallel, and both cephalothorax and abdomen are more rounded than is usual.

Mr. Emerton had only the female, from Connecticut and Massachusetts, but Miss Bryant has recently found the male and female, with cocoon and eggs, under a stone, in Boston. Mr. Banks has it from New York (Long Island).

***ICIUS HARTII* E. 1891.**

Plate XLI, figs. 5—5d.

1891. *ICIUS HARTII* E. ♂ ♀, Trans. Conn. Acad. VIII, p. 17.

Length, ♂ 5.5 mm., ♀ 7 mm. Legs, ♂ 1423, ♀ 4123, first pair, in both sexes, plainly the stoutest, with a short stiff fringe on the tibia, which extends, in the male, on to the distal end of the patella. Spines, ♂ ♀, tib. I and II 3—3, met. I and II 2—2.

This species is unusually low and flat. The figures drawn by Mr. Emerton are excellent, except that in more perfect specimens than he used there are white scaly hairs over the front eyes, and around the margin of the cephalothorax, and that the male as well as the female has an encircling band of these scales, broken into bars, on the abdomen. In life the colors are as he describes them, the cephalothorax brown with a covering of gray hairs, the abdomen dark gray with white border. After being in alcohol for a time, the white markings grow indistinct, and the scales on the thorax and the middle of abdomen become metallic. The metallic appearance is more distinct when the white marks, which are made up of elongated scales, are rubbed off. The first leg is brown, darker than the others, with the metatarsus and tarsus lighter colored. The other legs are light brown, darkened a little at the ends of the joints, and having, on the femora, fine, dark, longitudinal lines. All the legs have a good many white scales. The fringe on the tibia of the first is light brown. The palpi are brown with white scales, which also grow on the upper part of the falces.

This species is found in Massachusetts, New York (Long Island, Mr. Banks), Wisconsin and Nebraska.

***ICIUS VITIS* COCK. 1894.**

Plate XL, fig. 11. Plate XLI, fig. 7.

1894. *DENDRYPHANTES VITIS* Cock., ♂ ♀, Entomologist, p. 207.

Length, ♂ 3.5 mm., ♀ 4.5 mm. Legs, ♂ $14\overline{23}$, ♀ 4123, those of the first pair plainly thickened in both sexes. Spines, ♂ tib. I 3—3, not in pairs, those on the front side crowded into the distal half of the joint, tib. II 1 pair and 2 behind, serially, and 1 anterior lateral, met. I 2—2, met. II 1 pair and 1 behind; ♀ tib. I 3—3, tib. II 3 serially, below, met. I 2—2, met. II 1 pair and 1 behind. Falces in male directed forward, with long curved fangs, and with an apophysis below.

The colors of the male and female are similar but the male is darker, and the female has more rose color in the metallic scales.

The cephalothorax has golden scales above and on the sides and a white marginal band which extends from front to back in the female, but in the male is limited to the thoracic part. Just behind each dorsal eye is a whitish spot. The clypeus, and the upper part of the falces have long, yellowish-white scales. The abdomen is covered with golden scales. There is a white band around the front part, which runs back on the sides to near the spinnerets, where it ends in a curved white band which runs up on to the back. In some specimens, especially in females not quite mature, there is a second pair of white curved bands on the sides, just back of the middle. In the female the legs and palpi are light brown. In the male the first leg is dark excepting the tarsus, which is yellow, the patella and tibia having a line of white scales along the inner face. The other legs have the femur and tibia dark, the patella brown, the metatarsus yellow with a black ring at the distal end and the tarsus yellow. The palpus is black.

This species has been reported from Kansas, Colorado, Utah, Arizona, New Mexico, Texas, and California.

***ICIUS WICKHAMII* P. 1894.**

Plate XLI, figs. 8–8b.

1894. *ICIUS WICKHAMII* P. ♂, Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 109.

1895. *ICIUS FLORIDANUS* B. ♂, Can. Ent., p. 100.

♂. Length 3 mm. Legs, 1423, femur I enlarged, tibia and patella I not much stouter than the same joints in other legs. Spines, tib. I 3–3, on the distal two-thirds, met. I 2–2. The spines on the second leg are transparent, and difficult to see.

This is the smallest and most delicately formed species that we have in the genus *Icius*, and is distinguished from all others by the compound tooth on the lower margin of the falx. The general ground color is dark, and the cephalothorax has no marginal band. In our specimens the scales are much rubbed, but there are a few left of a slightly metallic silvery color, both on

cephalothorax and abdomen. The front eyes are surrounded by rings of red hairs. The abdomen has a white basal band. The falces, palpi and femora of the first legs are bright reddish-brown. The rest of the first leg is lighter brown, and the other pairs are pale, all marked with two longitudinal black stripes from the beginning of the patella to the end of the metatarsus. The tube of the palpus is curved on itself.

Mr. Banks has found this species in Florida. We have it only from the Bahamas.

***ICIUS SEXMACULATUS* B. 1895.**

Plate XL, figs. 6—6a. Plate XLI, fig. 10.

1895. *ICIUS SEXMACULATUS* B. ♂, Can. Ent., p. 100.

♂. Length 3.5 mm. Legs, 1423, first pair plainly the thickest. Spines, tib. I 3—3, met. I 2—2, tib. II 1 below, met. II 1 pair and one behind, all long, especially those on met. I.

Our specimen is rubbed nearly bare. The eye-region is black with a few reddish hairs. The sides and thoracic part are brown, with no marginal band. The abdomen is light brown with six white spots, two at the front end, two larger, and obliquely directed, at the middle, and two smaller ones farther back. Between the white spots, on the hinder half of the dorsum, are three white chevrons. The palpi and front legs are bright-reddish brown banded with dark brown. The other legs are pale with blackish streaks, like interrupted lines, along the sides. The venter is pale, with two longitudinal dark bands.

The front lateral and dorsal eyes are unusually large for *Icius*, and the front row is straight.

Reported from the District of Columbia, and Louisiana.

***ICIUS VERSICOLOR* n. sp.**

Plate XLI, figs. 4—4a.

♀. Length 7 mm. Legs, 4132, first pair much the stoutest. Spines, tib. I 3—3, tib. II 1—1, met. I, II 2—2. There seems to have been an unpaired spine, further back, under the tibia of the second, but in our example it is broken.

The single specimen is unfortunately rubbed. The cephalothorax was probably covered with white hairs growing on a dark skin. The abdomen has a thin covering of white hairs over a reddish integument, and is marked by four rows of white spots, two down the middle and one on each side. When wet, two round dark spots appear on the middle of the back.

The palpi are light. The legs have the proximal joints brown and the distal joints, especially in the third and fourth pairs, light, darkening toward the ends.

There is a single female in the Britcher Collection, unmarked as to locality, but probably from Maine.

***ICIUS NIGROMACULATUS* K. 1885.**

Plate XLI, figs. 9–9a.

1885. *ICIUS NIGROMACULATUS* Keyserling ♂, Ver. zool.-bot. Gesell., Wien, p. 500.

Length, ♂ ♀ 5.5 mm. Legs, ♂ 1423, ♀ 123— (fourth pair missing); first pair much the stoutest.

Spines, ♂ ♀, tibia I 3–3, tibia II, 1–1 and two farther back, with 1 anterior lateral; met. I, II 2–2.

We have a female which agrees with the type (a male) in color and marking. The cephalothorax is dark brown covered with yellowish-white scales, with white hairs above the front eyes and on the clypeus. The abdomen is covered with reddish-yellow scales, the male having a narrow white basal band which passes halfway along the sides. On the front of the dorsum are two oblique blackish spots, and farther back, beginning in front of the middle and extending to the spinnerets, is a notched band of the same color, which grows narrow toward the end. These dark marks are on the integument and show through the scales, and are more distinct under alcohol than when dry. The first leg is yellowish-brown clouded with dark under the femur and tibia. The tibia has a slight black fringe. The second and

third legs are yellower with darker rings at the ends of the joints, especially on the patella and tibia.

Keyserling's type is from Utah, and our female is from Manhattan, Kansas.

***ICIUS EXORNATUS* n. sp.**

Plate XLI, fig. 6.

♀ Length 5.5 mm. Legs $\overline{4123}$, first pair stoutest. Spines tib. I 3—3; tib. II 1 pair, 2 behind, serially, and 1 anterior lateral; met. I 2—2 met. II 2—2; pat. I and II 1 anterior lateral.

Cephalothorax flat, and rounded out opposite the dorsal eyes. The front eyes form a slightly curved row, with the middle less than twice as large as the lateral eyes. The second row is halfway between the others. Coxae I separated by less than the width of labium.

The cephalothorax is light brown covered with green metallic scales. The abdomen is yellow or brown covered with green or golden metallic scales. The legs are light brown with the ends of the joints darkened.

Two females were sent to us from Texas, by Mr. Tyler Townsend.

WALA KEYS. 1885.

Type, *EPIBLEMUM PALMARUM* H.

- 1832. *EPIBLEMUM* H., (*palmarum*), Am. Jour. Sci. and Arts, art. 21, p. 108.
- 1845. *EPIBLEMUM* H., (*palmarum*), Jour. Bost. Soc. Nat. Hist., V.
- 1875. *EPIBLEMUM* H., (*palmarum*), Occ. Pap. Bost. Soc. Nat. Hist., II, p. 70.
- 1883. *EPIBLEMUM* P., (*palmarum*), New or little known Attidae, p. 28.
- 1885. *ICIUS* KEYS., (*vittatus* K. = *palmarum* H.), Verh. zool-bot. Gesellsh., Wien, p. 504.
- 1885. *WALA KEYS*, *ibid.*, p. 517.
- 1888. *ICIUS* P., (*palmarum*, *mitratus*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., pp. 46, 48.
- 1891. *ICIUS* Em., (*palmarum*, *mitrata*), Trans. Conn. Acad., VIII, New England Attidae, p. 14.

1894. *ANOKA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 125.
 1901. *ANOKA* E. S., Nat. Hist. Araign., 2me Ed., II, p. 630.
 1901. *ANOKA* F. O. P. C., Biol. Cent. Am. Arach. Aran., II, p. 255.
 1905. *WALA* B., Am. Nat. XXXIX, p. 322.

Cephalothorax not very high, somewhat flattened, not much longer than wide, the widest point behind the dorsal eyes. Thoracic part level in first $\frac{2}{3}$, then falling steeply. Eye-region $\frac{1}{3}$ wider than long, a little wider behind than in front, occupying $\frac{2}{5}$ of the cephalothorax. Front eyes forming a straight row the *middles* ones subtouching and less than twice as large as the laterals. Second row about halfway between the others. Third row narrower than cephalothorax. Coxae I separated by more than width of labium, which is twice as long as wide. First legs, in males, much longer than the others. Abdomen long and slender.

This genus has three species in the United States, *palmarum*, *mitrata*, and *grenada*, the last having been found only once, by Mr. Banks, in Florida. Keyserling founded *Wala* upon *albovittatus*, which equals *palmarum* H. Mr. Henshaw, of the Cambridge Museum, has lent us the Keyserling types, and there is no doubt that they are the same.

KEY TO WALA.

MALES.

First legs brown, except tarsus. Whole body brown with white stripes along sides. In large specimens, falces horizontal.	<i>palmarum</i>
First legs white, fringed with white. Body light with white stripes along sides. Falces vertical.	<i>mitrata</i>
First legs pale, blotched with dark. Cephalothorax white with brown bands on sides and upper surface. Abdomen with brown stripes along sides and an irregular brown band in the middle, on either side of which is a white band. Falces horizontal.	<i>grenada</i>

FEMALES.

Abdomen white, with three pairs of dark spots.	<i>mitrata</i>
Abdomen white with a central, branching rufus band made up of many dots, spots and lines.	<i>palmarum</i>

WALA GRENADA P. 1894.

Plate XL, figs. 12–12a. Plate XLI, fig. 11.

1894. *ANOKA GRENADA* P., ♂, Occ. Pap. Nat. Hist. Soc. Wis. II, 2, p. 126.♂. Length 5.5 mm. Legs, $\overline{1423}$, first pair plainly, longest and stoutest.

The eye-region and central thoracic part are light brown with some white scales. A dark brown band, on each side, passes from the front lateral eye backward to the hind margin. The upper sides have wide white bands, below which the color is dark brown. The clypeus is white, and the broad, flat, horizontal falces are pale brown, fringed with white hairs along the outer sides. The abdomen has a branching white band down the middle, which is split at the base by a short white streak, and has on it a pair of white spots, in front of the middle. On either side is a band of white hairs, and outside of these the color is brown. The legs are all pale brown, those of the first pair blotched with a darker shade, and thinly covered with white scales. Mr. Emerton's figure, which accompanies the original description, is exceedingly good.

We have only one male from the northern part of Columbia, but Mr. Banks has found several at Miami, Florida.

WALA MITRATA H. 1845.

Plate XLI, figs. 12–12a. Plate XLII, figs. 2–2a.

1845. *ATTUS MITRATUS* (♂) and *ATTUS MORIGERUS* (♂), Hentz, Jour. Bost. Soc. Nat. Hist., V.1875. *ATTUS MITRATUS* (♂) and *ATTUS MORIGERUS* (♂) Hentz, Occ. Pap. Bost. Soc. Nat. Hist. II, pp. 68, 69.1888. *ICIUS MITRATUS* (♂ ♀), Wis. Acad. Sciences, Arts and Letters VII. N. A. Att., p. 48.1891. *ICIUS MITRATUS* Em., Trans. Conn. Acad. VIII, New England Attidae, p. 14.1894. *ANOKA MITRATA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 125.

Small pale spiders, with greenish white legs.

Length, ♂ 4.7 mm. ♀ 5 mm. Legs, ♂ ♀ $\overline{1423}$, first pair, in the male, much the longest, fringed with white. Falces vertical.

Spines ♂ ♀, tib. I 3—3, those of ♂ not in regular pairs; met. I 2—2. The female has also a patellary spine.

In both sexes the cephalothorax is reddish, covered with white hairs. Around the margin is a pure white band. The abdomen is white, the male with a pure white encircling band, and three short, transverse, dark bars on the dorsum, the female with three pairs of dark spots, more or less coalesced. Female specimens preserved in alcohol become more like *palmarum*, the marks growing indistinct. When wet, the marks on the male abdomen look like those of the female.

We have this species from Wisconsin, Massachusetts, Connecticut, Pennsylvania, North Carolina, Georgia, Florida and Alabama. Mr. Banks has found it in New York and northern Louisiana, and Mr. Emerton reports it from near Ottawa, Canada.

We formerly thought that *Maevia pallida* might equal *mitrata*, but this now seems to us improbable.

Mitrata matures, in Wisconsin, about May 25, the male several days before the female. There seem to be many more males than females. They disappear about June 20, and not one can be found in the same places that had so many a few days earlier.

WALA PALMARUM H. 1832.

Plate XLII, figs. 1—1f.

- 1832. *E. PALMARUM* H., Jour. Sci. and Arts, art. 21, p. 108.
- 1845. *E. PALMARUM* H., Jour. Bost. Soc. Nat. Hist., V.
- 1875. *E. PALMARUM* H., Occ. Pap. Bost. Nat. Hist. II, p. 70.
- 1883. *E. PALMARUM* P., New or little known Attidae, p. 28.
- 1885. *ICIUS VITTATUS* K., Verh. zool-bot. Gesell., Wien, VI, p. 504.
- 1885. *WALA ALBOVITTATUS* K., *ibid.*, p. 517.
- 1888. *ICIUS ALBOVITTATUS* P., Wis. Acad. Sc., Arts and Letters, VII, N. A. Att., p. 50.
- 1888. *ICIUS PALMARUM* P., *ibid.*, p. 46.
- 1891. *ICIUS PALMARUM* Em., Trans. Conn. Acad., VIII, New England Attidae, p. 14.

Length, ♂ 4—5.5 mm., ♀ 5 mm. Legs, ♂ 1423, ♀ 14 $\overline{23}$, first pair, in the male, much the longest. Falces of male sometimes horizontal. Spines, ♂ ♀, tib. I 3—3, met. I 2—2.

The male has a bronze-brown cephalothorax and abdomen, with metallic reflections. Around the eyes of the first row are bright red hairs. White bands pass along the sides of the cephalothorax and encircle the abdomen, which shows, when wet, three dark spots on a lighter ground. The clypeus is covered with snowy hairs. The falces are brown edged with white hairs, and are sometimes short and vertical, and sometimes horizontal, and nearly as long as the cephalothorax. When they are short, the patella and tibia I do not much exceed the femur, while in the other variety these joints, together, are once and a half as long as the femur. The first legs are dark brown, except for the somewhat lighter tarsi, forming a contrast to the white legs of the other three pairs. The palpi are brown except the tarsi, which are yellow. The tibia is as wide as long and the patella a little longer than wide. The tibial apophysis is as long as the joint itself, and is thin, and curved upward at the point.

In the female, fresh specimens have the whole body covered with light gray or white scales mixed with black hairs. Down the middle of the abdomen is a series of more or less distinct brown chevrons, and on the sides are oblique brown spots and lines. The legs and palpi are white. After immersion in alcohol the integument of the body turns red, and shows through the scales, and the legs change to yellow. In still older specimens the red is less marked. There should be no confusion between this female, and that of *Dendryphantes capitatus*, since the abdomen in *palmarum* is twice as long as wide.

It is reported from Massachusetts, Connecticut, New York, District of Columbia, North Carolina, South Carolina, Alabama, Florida, Texas.

***ADMESTINA* P. 1888.**

Type, *MAEVIA TIBIALIS* C. K.

- 1848. *MAEVIA* C. K. (*tibialis*), Die Arachn. XIV, p. 78.
- 1888. *ADMESTINA* P., Wis. Acad. Sciences. Arts and Letters, VII, N. A. Att., p. 78.
- 1892. *ADMESTINA* B., Proc. Acad. Nat. Sci., Phila., p. 78.
- 1894. *ADMESTINA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 2, p. 120.

1901. *ADMESTINA* E. S., Hist. Nat. des Aran., 2me Ed., II, p. 629.

1905. *ADMESTINA* B., Am. Nat., XXXIX, p. 320.

Small spiders, with cephalothorax narrow in front and rounding out widely in thoracic part. First leg with femur and tibia thickened. Falx with one tooth on lower margin. Met. I with one pair of stout spines; tib. I lacking spines, in both sexes. Met. I shorter than tar. I.

Cephalothorax low and flat, widest in middle of thoracic part, more contracted in front than behind, a little less than twice as long as wide. Sides vertical in front, rounded out behind. Eye-region nearly twice as wide as long, a little wider behind than in front, occupying 1/3 of cephalothorax. Front eyes in a curved row, close together, middle twice lateral. Second row nearer first than third, which is as wide as cephalothorax. Abdomen rather narrow and long. Sternum oval, not truncated. Coxae I separated by width of labium, which is as wide as long.

***ADMESTINA TIBIALIS* C. K. 1848.**

Plate XLII, figs. 3—3b.

1848. *MAEVIA TIBIALIS* C. K. ♂, Die Arachn., XIV, p. 78.

1888. *ADMESTINA WHEELERII* P. ♂, Wis. Acad. Sci., Arts and Letters, VII, N. A. Att., p. 78.

1892. *ADMESTINA WHEELERII* B. ♀, Proc. Acad. Nat. Sci., Phila., p. 78.

Paramarpissa tibialis F. O. P. C., which Simon suggests may be this species, equals *Pseudicius piraticus*.

♂ ♀. Length 4 mm. Legs 4132, first pair much thickened, especially in male. Met. 1 (I) with 1 pair stout spines; none on tibia.

The cephalothorax is dark, black on the eye-region and sides, thinly covered with white hairs which are slightly mixed with light-yellow. The very small, short falces, and the clypeus are very dark in color, the latter covered with white hairs. When wet the abdomen shows a branching dark line down the middle, the sides being covered with round whitish scales. In one female the brown branching band becomes more solid, so that the upper surface is dark, with two short longitudinal white bands

at the front end, and three pairs of white bars, on the edges, behind. On the back part of this dark dorsum are chevrons made of delicate white lines. In this specimen the side scales are pure white. Low down on each side is a row of black dots, and still lower down is a dark line. In the male, the palpi and first legs are reddish with darker spots, the other legs, as well as the four pairs and the palpi in the female, being white, conspicuously dotted with black.

The male of *tibialis* was first figured in Die Arachniden, fig. 1333, then in the Transactions of the Wisconsin Academy, 1888, Pl. I, fig. 58, Pl. V, fig. 58, and for the third time in the Occasional Papers of the National History Society of Wisconsin, 1894, Pl. XI, fig. 6.

This species comes from Massachusetts, New York, Pennsylvania, District of Columbia, Louisiana, Texas and Wisconsin.

***PHLEGRA* E. S. 1876.**

Type, *FASCIATA* HAHN.

- 1844. *ATTUS* (*leopardus*), H., Jour. Bost. Soc. Nat. Hist. IV.
- 1875. *ATTUS* (*leopardus*), H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 63.
- 1876. *PHLEGRA* E. S., Ar. Fr., III, p. 120.
- 1891. *PHLEGRA* E., Trans. Conn. Acad. VIII, New England I Attidae, p. 24.
- 1901. *PHLEGRA* E. S., Hist. Nat. Araig., 2me Ed., II, p. 670.
- 1905. *PHLEGRA* B., Am. Nat. XXXIX, p. 321.

The cephalothorax is long and a little widest behind the middle, rather low and flat, the cephalic plate is slightly inclined forward and the thoracic slope begins not far from the posterior end. The quadrangle of the eyes is short, equally wide in front and behind, and occupies only 1/3 of the cephalothorax. The first row of eyes plainly curved, the middle less than twice the lateral. The second row is half way and the dorsal row is not quite as wide as the cephalothorax at that place. The sternum is oval and the anterior coxae are separated by the width of the lip, which is as wide as long. The metatarsi are shorter than the tarsi and the fourth leg is longer than the third.

PHLEGRA LEOPARDUS HENTZ. 1844.

Plate XLII, figs. 6—6e.

1844. *ATTUS LEOPARDUS* H., Jour. Bost. Soc. Nat. Hist. IV.1875. *ATTUS LEOPARDUS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 63.1891. *PHLEGRA LEOPARDUS* E., Trans. Conn. Acad. VIII, p. 24.

Length, ♂ 6 mm., ♀ 8 mm. Legs, ♂ ♀ 4312, and nearly equally stout. Spines, ♂ I tib. 3—3, met. 2—2 and lats; tib. II 1—1, 1, 1 below and 1 a.l.; met. II 2—2 and lats., ♀ I tib. 3—3, met. 2—2, II tib. like ♂, met. 2—2.

This is a very distinctly marked spider, two white lines on the cephalothorax and three on the abdomen. The male cephalothorax is dark brown, except the cephalic plate and the anterior sides of the head where it is brick-red. A white stripe extends backward from each dorsal eye to the base of the thorax. The abdomen is dark with a middle and two lateral white stripes. Under parts light. The clypeus is covered with flattened hairs of a lovely turquoise blue. The legs are dark in some specimens, the patella, tibia and metatarsus of the first almost black. All the tarsi are light yellow.

The female resembles the male, but is without the red on the cephalic plate and the blue on the clypeus, and the two white lines extend forward to the anterior lateral eyes. A middle white stripe begins between the middle eyes but fades out before reaching the thorax. The legs are light brown, with two darker rings on each joint.

Mr. Emerton found this species in Massachusetts. We have it from Texas, and Wisconsin, Mr. Scheffer from Kansas.

For an account of the mating habits of this species, see Occ. Pap. Nat. Hist. Wis. I, pt. 3, p. 120.

MARCHENA new.Type, *MARCHENA SISSONII*.

Cephalothorax low, flat, a little contracted at the second row of eyes, with sides nearly vertical in front and slightly rounded behind. Eye-region occupying about one-third of the cephalo-

thorax, one-fourth wider than long and equally wide in front and behind, or a little wider in front. Front eyes in a straight row, the middle about twice as large as the lateral. Second row halfway between the others. Third row a little narrower than the cephalothorax. Clypeus very narrow. Falces short, vertical, and rather stout, with one tooth on the lower margin. Sternum truncated. Coxae separated by the width of the labium, which is a little longer than wide. First legs scarcely stouter than the others. Spinal armature differing with the species.

The short cephalic part, the flat upper surface, and the longitudinal banding bring this genus into relationship with *Phlegra*.

MARCHENA SISSONII n. sp.

Plate XL, fig. 9. Plate XLII, fig. 5.

♂. Length 3–8 mm. Legs $\overline{4132}$, nearly equal in thickness.

The upper surface is bright reddish-brown, banded with white. The cephalothorax has a central longitudinal band which reaches forward only to the second row of eyes, and bands occupying the lower halves of the sides, which pass around on to the face, and, narrowing toward their ends, touch the lower outer edges of the front middle eyes. The spaces between these bands and the lower edges of the front lateral eyes are covered with reddish hairs, and the hairs between the eyes are bright red, while over the front row is a band of white. The upright hairs on the cephalic plate are black. The abdomen has two longitudinal bands which are widely separated in front, but which unite over the spinnerets, and in the middle of the front end is an abbreviated silvery line which seems to be a continuation of the middle line on the cephalothorax. Under alcohol the dorsum shows two lines of indistinct light spots. The venter is covered with white hairs. The palpus is light brown with a white band on the inner face. The legs are light brown and almost hairless, the inner face of the patella, tibia and metatarsus of the first marked with a dark streak. The tibiae of the first and second

have each one lateral spine, and the metatarsi of these legs have each two pairs below.

One male from Sisson, California.

MARCHENA MINUTA P. 1888.

Plate XL, fig. 10. Plate XLII, fig. 4—4a.

1888. *CYTAEA* (?) *MINUTA* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 73.

Length, ♂ 4.8 mm., ♀ 5 mm. Legs, ♂ $\overline{1324}$, ♀ $\overline{4312}$, nearly equal in thickness.

The cephalothorax, in the male, has the thoracic part dark brown and the cephalic rufus with long black hairs, three reddish tufts appearing between the front eyes, which are surrounded by red rings. There are three longitudinal white bands, one central, running from the anterior eyes to the end, and one on each lower side. The clypeus is covered with yellowish-white hairs. The abdomen is dark brown, with a central abbreviated white line in front, and, on each side, a line which reaches beyond the middle, posterior to which are three transverse curved white marks, one behind the other. The palpi are covered with thick white hairs above. The legs are light brown with darker rings, and are tipped with black. The venter is covered with white hairs.

In the female the cephalothorax is similar to that of the male but with a greater tendency to red in the eye-region, with the white of the bands not so clear, and with the central band extending forward only as far as the third row of eyes. The abdomen is dark brown, with a wide, notched, central white band made up of separate figures. On each side is a series of short, diagonal, white bars. The palpi are pale with white hairs. The other parts are like the male except that the legs are paler.

One pair from California.

EUOPHRYS C. KOCH. 1834.

Type, *A. FRONTALIS* WALCK.

1806. *ATTUS* WALCK. (*frontalis*), Tableau des Araneides, p. 24.
 1834. *EUOPHRYS* C. Koch, in Schaeffer, 123, 8.
 1850. *ATTUS* C. Koch, Ueb. Ar. Syst., V, p. 68.
 1876. *EUOPHRYS* E. Simon, Ar. Fr. III, p. 170.
 1891. *EUOPHRYS* Emerton, Trans. Conn. Acad., VIII, New England Attidae, p. 23.
 1895. *ATTUS* Banks (*monadnock*), Ann. N. Y. Acad. Sci., VIII, XIV, p. 431.
 1901. *EUOPHRYS* E. Simon, Hist. Nat. Araign. 2me Ed., II, p. 572.

Cephalothorax, in the American species, moderately high and convex, highest at dorsal eyes. Sides parallel in cephalic part, bulging behind dorsal eyes, vertical, or slanting inward. Eye-region occupying two-fifths of cephalothorax, equally wide in front and behind or a little wider in front. Front eyes touching, in a straight or slightly, curved row, the lateral half or more than half as large as the middle. Small side eyes halfway between the others or a little nearer the dorsal. Third row as wide as cephalothorax. Fourth legs plainly longest. Sternum oval, coxae of first pair very widely separated, labium wide and semicircular. Falces, at least in *monadnock*, unarmed below, and with two teeth above.

EUOPHRYS MONADNOCK E. 1891.

Plate XLIII, figs. 8—8c.

1891. *EUOPHRYS MONADNOCK* E. ♂ ♀, Trans. Conn. Acad., VIII, New England Attidae, p. 23.
 1895. *ATTUS MONADNOCK* Banks, Ann. N. Y. Acad. Sci., VIII, XIV, p. 431.

Length, ♂ 4 mm., ♀ 5 mm. Legs, ♂ 4132, ♀ 4123, first pair, in male, thickened, and fringed with scales.

The spines in the male are so small that we are uncertain of the armature. In the female they are long; the tibia of the first has three pairs below, that of the second one pair and one

unpaired behind, and the metatarsi of the first and second two pairs without laterals.

In the male the high clypeus and the sides of the cephalic part slope inward. The color of the body is black, glistening on the cephalothorax. The legs are mostly black, the tarsi of the first and second legs, and the tips of the tarsi of the third and fourth being pale yellow, while the femora of the third and fourth are light orange, fading to white in alcohol. The first leg has a short fringe of stiff black hairs above, and below, under the patella, tibia, and metatarsus, a fringe of long, thick purplish scales. The palpus has the femur black and the other joints pale yellow.

The female specimens that we have are not very perfect. When dry the body is brown with thin, short yellowish hairs. Under alcohol it is as Mr. Emerton [describes](#) it, the cephalothorax dark brown in front and lighter behind, marked with dark radiating lines, the abdomen pale gray with light chevrons along the middle and irregular oblique lines on the sides. The legs are light brown, the first and second pairs a little deeper in tint and somewhat stouter than the others.

A [cocoon](#) of this species contained only fourteen eggs.

The male and female described by Mr. Emerton were found in New Hampshire, on and near Mt. Monadnock. In the summer of 1905, when Mr. Emerton was with us in California, we took two pairs at Sisson, near Mt. Shasta, and had a fine view of the display of the male in courtship, of which Mr. Emerton made a color drawing from life. The spider took a peculiar attitude which served to show not only the ornamental first leg, but the colored femora of the third and fourth.

Mr. Emerton has recently found young males of *monadnock* with the red third and fourth femora, yellow palpi and general black color of the adult, but without the fringe on the first leg.

Mr. Banks reports the species from West Cliff, Colorado.

EUOPHRYS CRUCIATUS E. 1891.

Plate XLIII, figs. 7–7c.

1891. *EUOPHRYS CRUCIATUS* Emerton, ♂, Trans. Conn. Acad., VIII, New England Attidae, p. 23.

♂. Length 5 mm. Legs 4132.

As we have no specimens of *cruciatus* we copy Mr. Emerton's description.

“This species is more generally covered with scales than *monadnock*, the front tibiae are less thickened, and do not have the long scales of that species, and the colors are less bright and more like those of *Attus palustris*. The only specimen I have, a male, is 5 mm long. The cephalothorax is three-fourths as wide as long, widest behind the middle. It is low in front, and the front row of eyes are turned a little downward, the lateral pair half their diameter, higher, and farther back. The middle eyes are nearer the dorsal than lateral. The dorsal eyes are nearer together than the lateral pair. The abdomen is as long and as wide as the cephalothorax, widest in the middle and pointed behind.

“The lengths of the legs are 4132, the fourth pair very long. The first and second pairs are a little thickened.

“The cephalothorax of my specimen is so much rubbed that the markings are nearly destroyed; it shows only long black hairs over the eyes, and irregular white markings behind the eyes and at the sides. The abdomen is black, with a distinct white cross in the middle. The legs have dark and light rings, which were probably covered with white and black hairs. The tibia of the palpi is light, and the other joints dark, with long hairs.

“The tibia of the male palpus is wider than long. The tibial hook is nearly as long as the tarsus, and curved to fit along its edge. The tarsus is strongly curved downward. The palpal organ is oval, and the tube begins near the outer end, curves around its base and again outward through a groove in the edge of the tarsus to a notch near the end of the tibial hook.

“Dublin, N. H., July 16.”

SITTACUS E. S. 1901.

Type, *TEREBRATUS* (*Attus*. Clerck.)

1883. *ATTUS* P., (*palustris*), New or little known Attidae of U. S., p. 25.
 1888. *ATTUS* P., (*palustris*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 43.
 1891. *ATTUS* Em., (*palustris, sylvestris*), Trans. Conn. Acad., VIII, p. 29.
 1901. *SITTACUS* E. S., Hist. Nat. Araign., 2me Ed., II, p. 581.
 1905. *ATTUS* B., Am. Nat., XXXIX, p. 321.

Lower edge of falx without a tooth (*palustris, ranieri, sylvestris*), or with a single tooth (*claremonti*).

Cephalothorax high, convex, and rather wide, especially the thoracic part, which is rounded on the sides. Eye-region nearly twice as wide as long, parallel or a little wider behind, occupying less than 2/5 of cephalothorax. Front eyes in a straight (*palustris, sylvestris, claremonti*) or slightly curved (*ranieri*) row, the middle less than twice the lateral. Second row about half way between the others; third row not quite so wide as cephalothorax. Coxae I widely separated. Sternum oval, more or less truncated in front. Labium as wide as long. Fourth leg plainly longer than third. Tibia I below, with not more than two complete pairs of spines. Abdomen short and wide.

***SITTACUS CLAREMONTI* n. sp.¹**

Plate XLIII, fig. 4. Plate XLIV, fig. 3.

♀. Length 6 mm. Legs 4123, first pair scarcely stouter than the others. Spines, tib. I and II below, 2—2 and 1 farther back, with 2 anterior laterals; met. I and II 2—2 and 1. Falx with one tooth below and two above.

The single specimen in our collection is damaged. The black eye-region is rubbed bare, as well as the lower sides and middle thoracic part. On the upper sides, below the eyes, are light bands of mixed white and red hairs which reach the hind margin. Some of these hairs are seen also on the middle thoracic part. Close around the eyes are bright red hairs, while those

¹ This species name is spelled *claremontii* in the key, figure captions, and index.

on the clypeus seem to have been white. The abdomen is covered with tawny gray, the white hair predominating, in spots, to form an angular spot behind the middle, a light band edged with white in front of this and several chevrons behind. At the posterior end, on each side, are two white spots, the anterior one being the larger. The legs are brown, much clouded with black, covered with short white and red hairs. The palpi are brown with white hairs.

This species comes from Mr. Pierce, Claremont, California. It is drawn as it appears under alcohol.

***SITTACUS PALUSTRIS* P. 1883.**

Plate XLIII, figs. 3–3c. Plate XLIV, fig. 4.

1883. *ATTUS PALUSTRIS* P., New or little known Attidae, p. 25.

1888. *ATTUS PALUSTRIS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 43.

1891. *ATTUS SYLVESTRIS* and *ATTUS PALUSTRIS* E., Trans. Conn. Acad., VIII, New England Attidae, p. 29.

Length, ♂ 4–5 mm., ♀ 5–6 mm. Legs, ♂ 1423, ♀ 4123. First pair but little stouter than the others. Spines, ♂ ♀ tib. I 2–2 below and 1 or 2 anterior laterals, tib. II a pair below at distal end and 2 serially behind; met. I, II 2–2.

In the male the cephalothorax is dark brown, reddish toward eyes; three white lines begin at the hind margin and run forward; the middle one ends before reaching the front eyes, while the lateral lines pass outside the dorsal and inside the small eyes, and are connected by a white line which crosses above the first row. The median line is sometimes crossed, on the thoracic part, by one or two transverse white lines, and there is a white line around the margin. The wide clypeus is covered with white or reddish hairs which grow long in the middle. The base and sides of the abdomen are gray or white, the dorsal marking being white on a darker ground. Just behind the middle is a heavy, wide, white, angular, transverse mark, in front of which is a pair of large black spots, each with a white dot in the front half. Behind are several light semicircles on a dark

ground. The posterior sides are marked with two or three indistinct light bars. The legs are light brown with dark rings and inconspicuous white hairs. The femur and patella of the palpus are light yellow with thick snow-white hairs; the tibia and tarsus are dark with brown hairs, which grow long on the inner side of the tibia. The tarsus sometimes has a conspicuous white spot at the end.

The female is clothed with reddish-brown hairs, and is marked like the male, but with less striking contrast of colors, the white being replaced by light brown. The palpi are reddish-yellow with white hairs.

Mr. Emerton agrees with us that the form which he described as *sylvestris* is a variety of *palustris*, with the leg a little shorter and stouter.

Mr. Banks reports *palustris* from New York (Long Island) and Colorado. We have it from Wisconsin and New York (Britcher Collection), and Mr. Emerton from Portland, Maine; Massachusetts; Connecticut; Ellis Bay, Anticosti; Lake Winnepegosis; and Laggan, Alberta.

***SITTACUS RANIERI* n. sp.¹**

Plate XLIII, figs. 5–5c.

Length, ♂ 5 mm., ♀ 7 mm. Legs, ♂ ♀ 4132, nearly equal in thickness, fourth pair plainly longest, with tibiae enlarged at distal end. Spines, ♂ tib. I 2–2 and laterals, tib. II 1–1 and 2 serially behind, with 1 lateral; met. I and II 2–2, with a lateral on the second; ♀ tib. I 2–2, with 1 farther back and 2 laterals, tib. II 1–1, and 2 serially behind, with 2 laterals; met. I and II 2–2 and laterals.

A red species.

The integument is jet black, with a rather thin covering of bright red hairs, mingled with some silvery white hairs, which cover clypeus, legs, and two joints of the palpus, and appear also on the upper part of the falces. The eye-region has a growth of long upright black hairs, in front and on the sides. Farther

¹ In the figure caption and index, this species name, based on Mt. Rainer (also misspelled in the text), is spelled ranerii.

back, near the thoracic line, is a large, triangular, velvety black spot, and in the midst of this is a short white streak edged with red. Continuous with this, and running to the hind margin, is a white or light red line. The marks on the abdomen are sometimes bright red, sometimes nearly white. There are some indistinct bands in front, and two large spots behind the middle, some chevrons farther back, and two bands on each side, at the end. The legs have black rings, on which grow black hairs, at the ends of the joints. In the female the tibia and tarsus of the palpus, which is otherwise red and white, are light brown covered with white hairs, but in the male these joints are very broad and blunt, and are jet black, with black hairs.

We caught one male of this species, on logs, at Glacier, B. C. In life the red was not nearly so bright as it afterward became in alcohol. A male and two females were afterward sent us by Mr. Emerton, from Paradise Park, Mt. Rainier, Washington. A *Sittacus* in the Cambridge museum from Labrador, collected by Mr. C. Schmitt, is almost certainly this species, but the epigynum is slightly different, and the marks are rubbed.

HABROCESTUM E. S. 1876.

Type, *PULLATUM* E. S., (*agilis* E. S.).

- 1869. *ATTUS* (*agilis*) Simon, Monogr. des Att., p. 73.
- 1845. *ATTUS*, (*pulex*) H., Jour. Bost. Soc. Nat. Hist., V.
- 1875. *ATTUS*, (*pulex*) H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 65.
- 1876. *HABROCESTUM*, Simon, Arachn. de France III, p. 131.
- 1885. *CYRBA* (*pulex*) K., Ver. zool-bot. Gesellschaft, Wien, VI, p. 509.
- 1885. *SAITIS* (*xnotata*) K., *ibid.*, p. 510.
- 1888. *SAITIS* (*pulex*) P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 67.
- 1888. *ASTIA* (*morosa*) P., *ibid.*, p. 71.
- 1891. *SAITIS* (*pulex*) E., Trans. Conn. Acad., VIII, N. E. Attidae, p. 28.
- 1905. *HABROCESTUM* B., Am. Nat., XXXIX, p. 322.

Cephalothorax long, high and convex with sides nearly parallel; cephalic part inclined forward, thoracic falling steeply from a little way behind dorsal eyes. Eye-region $1/4$ wider than long, occupying about $2/5$ of the cephalothorax, wider in front than

behind. Front eyes bulging forward, and looking down, in a straight or slightly curved row, the middle less than twice as large as the lateral. Second row halfway between the others. Third row narrower than the cephalothorax. Sternum longer than wide, narrowed behind. Coxae I separated by width of labium. Labium about as wide as long or (*pulex*) longer than wide. Falx with one tooth on lower margin. Legs not conspicuously fringed nor enlarged. Abdomen wide and short. Tube of male palpus, short and curved.*

Simon describes this genus as having the third pair of legs much longer than the fourth, but this does not hold true of American species, in which the fourth leg is somewhat the longer, except in *acerbum*, where the ♂ is 3412 and the ♀ 3412. The third and fourth legs are longer than the first and second in both sexes.

***HABROCESTUM ACERBUM* n. sp.**

Plate XLIV, figs. 1–1c.

Length, ♂ 2.5 mm., ♀ 4.5 mm. Legs, ♂ $\overline{3412}$, ♀ $\overline{3412}$. The tibiae of the first legs, in both sexes, have the spines in two pairs below, and one anterior lateral, and the metatarsi of the first and second have two pairs and laterals. The tibia of the second has two pairs and one anterior lateral in the male, and one pair and two serially below, and one anterior lateral in the female.

In this species there is a very great variation in the distribution of the light and dark coloring. In the male the cephalothorax is reddish-brown with a more or less distinct white band on each side of the cephalic plate from the lateral to behind the dorsal eye, and a transverse whitish band behind the dorsal eyes. There is a white marginal band. The clypeus is dark under the middle eyes and white under the lateral. The abdomen has a black band at the base, and above this a wider band of white

* The only species of *Pellenes* that has a short curved palpal tube is *P. limatus*.

hairs, which indents a black, kidney-shaped region which occupies the middle part of the dorsum. On this dark region are two round, snow-white spots, and further back, and more widely separated, a second pair of smaller white spots. The part above the spinnerets is grayish with a central white spot. The legs are brown, with the tarsi and metatarsi lighter than the rest. We have one specimen in which all the legs are light yellow with indistinct dark bands, and the thoracic part is yellow, while all the white bands and spots are distinctly accentuated. The palpus has the femur and patella light colored with white hairs, while the tibia and tarsus are dark. Our single female is badly rubbed, but seems to have been colored like the male excepting that there are no white bands on the cephalothorax. The palpi are yellow with dark spots, and the legs yellow with black circles at the joints and longitudinal black lines on all the tibiae. The falcies, in both sexes, are vertical and brown. The labium is as wide as long.

We have one female and several males, sent to us by Prof. Wheeler, from Austin, Texas, and one male from Georgia.

While in color and marking this species strongly resembles *S. palustris* and *S. sylvestris*, it is easily distinguished by the fact that in those spiders the fourth leg is very much longer than the others.

***HABROCESTUM MOROSUM* P. 1888.**

Plate XLIII, figs. 2—2a. Plate XLIV, fig. 2.

1888. *ASTIA* (?) *MOROSA* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters. VII, N. A. Attidae, p. 71.

1904. *SIDUSA MOROSA* B., Jour. N. Y. Ent. Soc., XII, p. 116.

Length, ♂ 5 mm., ♀ 6 mm. Legs, ♂ 4312, ♀ 4312.

We have only two mature specimens, a male and a female, both in poor condition. We therefore copy the description made in 1888.

♂. Cephalothorax pale in thoracic part, much darker in eye-region, probably originally covered with short white hairs, marginal line black, anterior eyes surrounded by rings of white

hairs. Clypeus reddish brown. Abdomen with a black, central longitudinal line over the anterior part of the dorsum, which bifurcates posteriorly, thus bounding a large, triangular, pale spot; this spot is limited behind by some irregular black marks; the sides are pale with black dots and spots. Falces, mouthparts, sternum and coxae all light brown. Venter pale with black dots. Legs brown with black rings and tips, the color being considerably darker on the last three joints of the first leg. ♀. Cephalothorax and abdomen black, almost covered with mixed red and gray hairs; on the abdomen these hairs are thick at the base, and form three wide, longitudinal bands over the dorsum, and a large triangular spot behind the middle; near the apex, on each side, are two white dots, the anterior one larger and a little external to the posterior. Clypeus covered with short white hairs. Falces dark brown. Mouthparts, sternum and coxae light brown. Legs and palpi brown with darker rings. Venter pale with irregular black dots.

The spinal armature, in both sexes, is as follows: Tib. I 3—3, 2 anterior laterals; tib. II 2—2 and 1 unpaired behind, and 2 anterior laterals; met. I 2—2, 2 laterals; pat. I and II 1 anterior lateral.

California.

***HABROCESTUM PARVULUS* B. 1895.**

1895. *SAITIS PARVULUS* ♂, Canadian Entomologist, 1895, p. 101.

As we have no specimen of this species we copy Mr. Banks' description.

“Length, 3 mm.; ceph., 1.4 mm. long, 1.05 mm. wide. The eye-region black, the thoracic part reddish with two black spots on the posterior margin; the palpi and first legs black, the second legs mostly black; the other pairs yellowish. No black spots as in *S. pulex*; the mandibles red-brown; the sternum yellowish-brown; the abdomen black above, with a broad white stripe, broadest at the middle, beginning just before the middle; it contains five broad black chevrons; venter yellowish, with a median black spot and two black stripes. Similar to *S. pulex*,

but the cephalothorax is shorter and the eye-region is proportionately broader, the quadrangle being a little narrower behind; the palpus is much smaller, the tibia has not the long, thin projection, nor a broad lobe below, but a moderate, curved black process; the bulb of palpus has a swollen part not seen in *S. pulex*.

One male from a deep and cold swamp near Ithaca, N. Y."

Mr. Banks writes us that the spinal armature is as follows: tibia I, II 2 pairs below, one near base, the other beyond middle; on tibia I the inner one of second pair longer than the other and placed rather more inward than usual.

HABROCESTUM PULEX H. 1845.

Plate XLII, fig. 11. Plate XLIII, fig. 1—1d.

1845. *ATTUS PULEX* H. ♂ ♀, Jour. Bost. Soc. Nat. Hist., V.
 1875. *ATTUS PULEX* H. ♂ ♀, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 65.
 1885. *CYRBA PULEX* K. ♂, Ver. zool-bot. Gesellschaft, Wien, VI, p. 509.
 1885. *SAITIS XNOTATA* K. ♀, *ibid.*, p. 510.
 1888. *SAITIS PULEX* P. ♂ ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 67.
 1891. *SAITIS PULEX* E. ♂ ♀, Trans. Conn. Acad., VIII, N. E. Attidae, p. 28.

Length, ♂ 4 mm., ♀ 4.5 mm. Legs, ♂ $\overline{4312}$, ♀ $\overline{4312}$. The third and fourth are much longer than the first and second.

The spines are alike in the male and female, the tibiae of the first and second legs having, below, three under the posterior border, and one under the anterior, with two anterior laterals. The typical species in this genus, has the six spines arranged in three pairs. The first and second metatarsi have each two pairs, besides laterals.

In the male the cephalic part is rufus, with a narrow white triangle pointing forward. The front of the thoracic part is covered with white hairs. The hinder thoracic part and the sides are darker. When rubbed, these parts are yellow or orange and the cephalic plate is black. The abdomen is dark brown with two nearly parallel light lines on the front half;

just behind these is a broad transverse white mark, pointing forward in the middle line. Further back, and on the sides, are light chevrons and irregular marks. On the front lower sides are white bands which curve up on the dorsum, toward the ends of the white transverse mark. The venter is dark. The legs have, usually, yellow tarsi, the other joints being gray above, indistinctly marked with longitudinal yellow lines, and black below. The palpi are yellow, the ends of the tarsi sometimes darkened. The coxae are yellow with a black line in the middle; the sternum, falces and maxillae yellow, the sternum sometimes with a black middle line.

The female has the cephalothorax gray, a central region on top being covered with mixed gray and rufus hairs; this region narrows on the thoracic slope. The sides are dark. The abdomen is brown. On the front half it may have the two light lines, as in the male, or these may be replaced by a series of irregular light marks. The transverse white band is present, and around and behind this are irregular light markings. The legs are covered with alternate light and dark spots.

This species has been found near Ottawa, Canada, in Ship Harbor, Nova Scotia, and in Massachusetts, Connecticut, New York, Pennsylvania, North Carolina, Kentucky, Tennessee, Georgia, Alabama, Louisiana, Wisconsin, Iowa and Kansas.

At Pine Lake, Wisconsin the males of *pulex* mature about May 25th, and are common through June. The females mature several days later. During the height of the season the males are little, if at all, more numerous than the females.

STOIDES SIMON. 1901.

Type, *PROSTHECLINA PYGMAEA* P., 1893.

- 1845. *ATTUS (auratus)* Hentz, Jour. Bost. Soc. Nat. Hist., V.
- 1875. *ATTUS (auratus)* Hentz, Occ. Pap. Bost. Nat. Hist. Soc., IT, p. 66.
- 1888. *PROSTHECLINA* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 69.
- 1892. *PROSTHECLINA* B., Jour. N. Y. Ent. Soc., p. 126.

1893. *PROSTHECLINA* P., Proc. Zool. Soc. London, Nov., p. 702.
 1901. *STOIDES* E. S., Hist. Nat. Araign., 2me Ed., II, p. 658.
 1901. *PROSTHECLINA* B., Proc. U. S. Nat. Mus., XXIV, p. 225 (probably).

Our two species differ in the shape of the cephalothorax. In *pygmaea* it is high, and is plainly widest in front, the cephalic part being strongly inclined, and projecting over the margin, so that the front eyes look downward and the clypeus and sides slant in. In *aurata* it is high and convex, but the widest part is behind the dorsal eyes, and the sides and clypeus are vertical. The front row of eyes is curved, the lateral eyes rather large. The second row is halfway in *aurata*, and nearer the third row in *pygmaea*. The third row is as wide as the cephalothorax. The sternum is nearly round. The labium is about as wide as long. The falces are vertical, or inclined backward, moderately stout, with one tooth on the lower border.

The genus is found in the United States, Jamaica., and Porto Rico (*signata* B., *illustris* C. K.).

***STOIDES AURATA* H. 1845.**

Plate XXXVIII, fig. 7. Plate XLIII, figs. 9—9a.

1845. *ATTUS AURATUS* Hentz, Jour. Bost. Soc. Nat. Hist., V.
 1875. *ATTUS AURATUS* Hentz, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 66.
 1888. *PROSTHECLINA CAMBRIDGII* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 69.
 1892. *PROSTHECLINA AURATA* B., Jour. N. Y. Ent. Soc., p. 126.

Not *Habrocestum auratum* P. 1888.

Length, ♂ 5.2 mm., ♀ 5.8 mm. Legs, ♂ $\overline{1342}$, ♀ 4312. Spines, tibia I 3—3 and 2 anterior laterals; tibia II 2—2 and 1 behind, with 1 (♂) or 2 (♀) anterior laterals; met. I, II 2—2 with laterals.

Cephalothorax black, with some gray hairs above the anterior eyes, a white parenthesis on the anterior part of the thoracic region, and white bands on the lower sides; abdomen greyish rufus with four black spots; clypeus, falces, and sternum black with short white hairs; mouthparts and coxae rufus; legs of the first, dark, nearly black, of the second, third, and fourth, varied

with black, white and rufus, palpi with distal ends of tibiae and all of patellae covered above and below with white hairs, and with tarsi black. Venter covered with gray hairs.

Hentz had this species from South Carolina. Holden and Banks report it from Florida, and our examples also come from that state.

While strikingly like *Pellenes* in appearance, *aurata* differs from the genus in the form of palpus and epigynum, as well as in the relative length of the legs.

PELLENES E. S. 1876.

Type, *BIPUNCTATUS* FABR.

- 1845. *ATTUS* H., Jour. Bos. Soc. Nat. Hist., V.
- 1846. *ATTUS* H., *ibid.* VI.
- 1875. *ATTUS* H., Occ. Pap. Bos. Soc. Nat. Hist., pp. 64-67.
- 1876. *PELLENES* E. S., Ar. Fr., III, p. 90.
- 1883. *ATTUS* P., New or little known Attidae, pp. 4, 7, 17, 20.
- 1885. *EPHIPPIUS* Keys., Ver. z. b. Gesell., Wien, p. 506.
- 1885. *PELLENES* Keys., *ibid.*, p. 512.
- 1888. *HABROCESTUM* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. pp. 58-67.
- 1888. *HASARIUS* P., *ibid.*, p. 57.
- 1891. *HABROCESTUM* E., Trans. Conn. Acad., VIII, pp. 26-27.
- 1891. *HASARIUS* E., *ibid.*, p. 25.
- 1892. *HABROCESTUM* B., Jour. N. Y. Ent. Soc., p. 126.
- 1892. *HABROCESTUM* B., Proc. Acad. Nat. Sci. Phila., Jan., p. 77.
- 1894. *HABROCESTUM* E., Trans. Conn. Acad., IX, p. 420.
- 1895. *HABROCESTUM* B., Can. Ent., pp. 101, 102.
- 1900. *HABROCESTUM* B., Can. Ent., XXXII, 4, p. 101.
- 1902. *EVARCHA* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 708.
- 1902. *PELLENES* B., Proc. Acad. Nat. Sci., Phila., Nov. 1901, p. 591.
- 1904. *PELLENES* B., Jour. N. Y. Ent. Sbc., XII, 2, pp. 117, 118.
- 1904. *PELLENES* B., Proc. Cal. Acad. Sci., 3rd Ser., III, 13, p. 359.
- 1905. *PELLENES* B., Am. Nat., XXXIX, p. 322.
- 1906. *PELLENES* B., Ent. Soc. Wash., VII, 2-3, p. 99.

The cephalothorax is high, convex, and a little longer than wide, with the cephalic plate inclined, and the thoracic part dilated, and somewhat widened out from above downward. The quadrangle of the eyes is from one-fourth to one-third wider than

long, occupies two-fifths of the cephalothorax, and is usually wider behind than in front, although in some cases it is equally wide in front and behind or wider in front. The front eyes form a straight or slightly curved row, the middle eyes being near together and about twice as large as the lateral, from which they are distinctly separated. The second row is about halfway between the first and the third; the third, is nearly as wide as the cephalothorax at that place, the eyes being almost equally distant from each other and from the lateral borders. The labium is at least as wide as long and is half as long as the maxillae. The falces are vertical, parallel and rather weak, with small fangs. Among the European species the legs are 1342 in the males and 3142 in the females, but among the American, the third and fourth are most commonly longer than the first and second, in both sexes. The male palpus is very constant in form, the bulb being short and rounded.

The males of *Pellenes* have, usually, some peculiar modification of form, color or ornament, appearing in the first and third legs. These fringes, enlargements, and markings are used to attract and delight the female during courtship, the posturing and dancing being such as to show off every beauty to the greatest advantage. They make the identification of the males comparatively easy, while the females resemble each other so closely as to make it very difficult to distinguish them. The young males are like the females until within one or two moults from maturity.

We have classified the males of *Pellenes* by the ornamentation of the first and third legs, as this is easily observed, and answers well in most cases, but it must be remembered that the fringes that decorate the first leg are delicate and perishable, and that the enlargements of the femur and patella of the third vary in size and are sometimes scarcely perceptible or even wanting. If, therefore, a spider that is sought for in the Key under "Legs not modified nor fringed" is not found there, it should be looked for under the other heading.

KEY TO MALES OF *PELLENES*.

1	First or third leg modified or fringed.	2
	Legs not modified nor fringed.	21
2	Enlargements or fringes on both first and third legs.	3
	Only first leg fringed or enlarged	9
3	Clypeus red; spatulate spines on tibia of first leg. Southern states and Colorado.	<i>coronatus</i>
	Clypeus not red.	4
4	Femur and patella of third leg modified.	5
	Only patella of third leg modified.	6
5	Clypeus marked with white and dark bands; spatulate spines on tibia of first leg. Arizona, Utah, Colorado.	<i>clypeatus</i>
	Clypeus white; spatulate spines on tibia of first leg. South and west.	<i>brunneus</i>
6	No fringe of hairs under first leg, but on outer side of femur, near tip, a row of pendant black scales. Two spatulate spines on tibia of first leg and a curious enlargement on patella of third. California.	<i>californicus</i>
	First leg with fringe of light colored hairs.	7
7	Patella of third leg almost as wide as long, triangular, with pale spine coming off below enlargement and projecting over tibia. Abdomen banded.	8
	Patella of third leg plainly longer than wide, with long spur coming off from upper ridge of enlargement, extending over tibia; two spatulate spines on tibia of first. Abdomen spotted. Tennessee, Georgia, Florida.	<i>calcaratus</i>
8	Abdomen with solid black and white stripes. Fourth leg longer than first; tibia of first with two long spines, not spatulate. East and south.	<i>peregrinus</i>
	Abdomen black with white notched band down middle and white basal and side bands. First leg longer than fourth; tibia of first with two large spatulate spines. Widely distributed through United States and Canada.	<i>viridipes</i>
9	Tibia of first with spatulate spines. Clypeus banded with white and dark.	<i>clypeatus*</i>
	Tibia of first without spatulate spines.	10
10	Tibia of first leg as wide as long. Oregon, California, New Mexico.	<i>oregonense</i>
	Tibia of first leg longer than wide.	11
11	Full soft bunch of red, pinkish or salmon-colored hairs on tarsus of palpus. Abdomen black with central white stripe. B. C., California, Utah.	<i>americanus*†</i>
	No plumy hairs on tarsus of palpus.	12

* As the enlargements on the third leg of *clypeatus* are sometimes inconspicuous, it is taken out here as well as under 5.

† *Americanus* includes three varieties from the same locality; the first has a wide iridescent clypeus, sometimes white, sometimes darker, and a bifurcate tibial apophysis on palpus; it has no red hairs on legs. The second, which Mr. Banks described as *speciosa*, and which he thinks is a distinct species, has a simple apophysis, a white clypeus, falces scarlet at base and red hairs on first legs; and the third has an iridescent clypeus, a simple apophysis, and red hairs on first and second legs.

12	Metatarsus of first leg flattened and colored iridescent blue; femur of first iridescent below; tibia of first with bunch of stiff dark hairs above and patella and tibia with long fringe below; clypeus sometimes red. Utah, Colorado, New Mexico, Pacific Coast	<i>hirsutus</i>
	First leg unlike the above.	18
13	Clypeus red. Brushes of stiff black hair under femur, patella and tibia of first leg. California.	<i>signatus</i>
	Clypeus not red.	14
14	Legs pale yellow, tarsus of first jet black. Clypeus with a curved white band under first row of eyes. California.	<i>tarsalis</i>
	Legs and clypeus unlike the above.	15
15	Clypeus covered with slightly iridescent white scales (not hairs), edged below with golden scales, with eight long white bristles in the middle. Abdomen white with two dark bands which do not meet at base. First leg fringed with black and white. Arizona.	<i>arizonensis</i>
	Clypeus unlike that of <i>arizonensis</i> .	16
16	Three longitudinal lines of white hairs running back on eye-region. Abdomen black with central and side white bands. First leg fringed with black and white. Eastern, middle and southern states.	<i>agilis</i>
	No such lines on eye-region.	17
17	First leg with white fringe, extending to end of metatarsus, and having front face pale, with black spot at end of tibia, and dark longitudinal lines on metatarsus and tarsus. Arizona.	<i>tranquillus</i>
	First leg lacking the dark spot and lines found on that of <i>tranquillus</i> , and without fringe under metatarsus.	18
18	First leg fringed and white, except tibia and metatarsus which are black. Abdomen with distinct white marking. Texas.	<i>delectus</i>
	First leg without such contrast.	19
19	Abdomen banded centrally with white. First leg with double fringe. California, New Mexico, Arizona.	<i>elegans</i>
	Abdomen not banded.	20
20	Clypeus light brown; three transverse white lines alternating with black, in front of spinnerets. Mt. Shasta, Cal.	<i>amicus</i>
	Clypeus white on sides, with bunch of long tawny red hairs in middle; dorsum and sides of abdomen covered with reddish-gold scales. Camp Umatilla, Washington.	<i>umatillus</i>
21	Abdomen with iridescent scales.	22
	Abdomen without iridescent scales.	23
22	Cephalothorax dark, iridescent. Eastern and middle states, Washington.	<i>splendens</i>
	Cephalothorax not iridescent; covered with white pubescence. Wisconsin, Pennsylvania.	<i>roseus</i>

23	Palpus with large tibial apophysis, straight on lower edge, rounded above, wider at end than at base; abdomen with light foliated band outlined in black. Alberta, Colorado.	<i>montanus</i>
	No such apophysis.	24
24	Under part of coxae, trochanters and femora of first and second legs, and femur of palpus, shiny black, the rest of the legs and palpus being light brown; abdomen dark marked with white; basal and transverse bands connected longitudinally. Eastern states and Wisconsin.	<i>borealis</i>
	No such contrast.	25
25	Cephalothorax marked with white.	27
	Cephalothorax not marked with white.	26
26	Cephalothorax red-brown; clypeus white. California.	<i>pacifica*</i>
	Cephalothorax black; clypeus and hairs around eyes crimson; abdomen black with white line, broken behind. British Columbia, Alberta.	<i>laggani</i>
27	Cephalic plate with four white lines; abdomen black with basal band, scalloped border, and angular spot, white. Texas.	<i>fallax</i>
	Cephalic plate without these lines.	28
28	Abdomen with two yellowish brown bands, the middle and sides being white; palpus with one short broad tube (unique in <i>Pellenes</i>). California, Texas.	<i>limatus</i>
	Abdomen and palpus differing from the above.	29
29	Cephalothorax (dry) with small white spot between dorsal eyes; abdomen with middle dorsum yellow; palpus with tibial apophysis long, square at end, and bulb with angular corner at inner side. Eastern, middle and western states and Arizona.	<i>Hoyi</i>
	Cephalothorax (dry) with Λ mark running forward from dorsal eyes; abdomen with median white band.	<i>Cockerellii</i>

KEY TO *PELLENES* FEMALES.

1	Clypeus marked with white and dark bands.	2
	Clypeus not banded.	7
2	Cephalic plate with one or more bands.	3
	Cephalic plate without white bands.	6
3	Cephalic plate with one central longitudinal white band; abdomen with narrow white herring-bone stripe from base to apex. California, Texas.	<i>limatus</i>
	Cephalic plate with more than one white band.	4

* *P. pacifica* B. 1904, from San Francisco, was represented by a unique male specimen in the rooms of the California Academy, which was lost at the time of the fire. It is described as 4 mm. long, cephalothorax dark red-brown, a long black fringe over front eyes, clypeus snow-white with white scale-like hairs and long white hairs, palpi mottled, abdomen black with an oblong oblique white spot on each side near the middle, and behind, on the median line, a small white spot followed by two still smaller ones; venter pale. The palpus is figured (Proc. Acad. Sci. California, Third Series, Zoology. III. 13. p. 359. Pl. XXXIX, fig. 37).

4	Cephalic plate with four slightly oblique white bands on a fawn ground; abdomen light fawn with dark mottlings. Oregon.	<i>mundus</i>
	Cephalic plate with three white bands.	5
5	Clypeus with two faint chestnut spots; hairs around front eyes all yellowish-white; cephalic plate gray with middle bifurcating white band. Third leg 5.5 mm. Eastern and southern states and Kansas.	<i>agilis</i>
	Clypeus with four bright chestnut spots; hairs above and below front middle eyes rufus, while those on the sides are white; cephalic plate with three longitudinal white bands. Third leg 6.5 mm. New Mexico.	<i>politus</i>
6	Thoracic part with scalloped white band behind dorsal eyes; abdomen black with salmon markings. Southern states.	<i>carolinensis</i>
	No bands on upper surface; abdomen gray with lighter markings. Southern states.	<i>sabulosus</i>
7	Abdomen plainly banded above.	8
	Abdomen not plainly banded above.	19
8	Abdomen with at least one transverse band behind basal band.	9
	Only longitudinal bands behind basal band, on abdomen.	10
9	Color dark gray banded with light gray or white; abdomen with two transverse bands, connected in the middle.	<i>calcaratus</i> (southern states) or <i>borealis</i> (northern states)
	Color yellowish with whitish bands. Southern states, Colorado.	<i>coronatus</i>
10	Abdomen with central light band reaching a light basal band.	11*
	Abdomen without central light band reaching a light basal band.	13
11	A central white band on the cephalic plate; abdomen with two dark longitudinal bands, interrupted near the end by oblique white bars. New Mexico.	<i>Cockerellii</i>
	No central white band on cephalic plate.	12
12	Central and side notched white bands on abdomen, and dark bands between, interrupted in the middle by oblique white bars. California, British Columbia.	<i>jucundus</i>
	Central and side white bands, not notched on edges, on the abdomen. Southern and middle states and New England.	<i>peregrinus</i>
13	Abdomen without light basal band but having a light central band which reaches front end. Alberta, Colorado.	<i>montanus</i>
	Abdomen without light central band reaching front end.	14
14	Abdomen dark in middle, with two longitudinal light bands which reach a light base. Arizona.	<i>scotsdalei</i>
	Abdomen without two light bands reaching base.	15
15	Posterior half of abdomen with solid white central band.	16
	Posterior half of abdomen with a white spot or a band of white chevrons.	17

* In 11 is included the female of *peregrinus*, although in Mr. Emerton's specimen the central band becomes indistinct in front and behind.

16	Cephalic plate without white border. Eastern, Middle and western states.	<i>splendens</i>
	Cephalic plate bordered with white. Texas.	<i>delectus</i>
17	Posterior part of abdomen with a white spot; four white lines on cephalic plate. Texas.	<i>fallax</i>
	Posterior part of abdomen with band of chevrons.	18
18	Cephalic plate with white bands on sides and central bifurcating band. Western and middle states.	<i>hirsutus</i>
	Cephalic plate fawn-color, without white bands. Utah, California (Sisson), Victoria.	<i>americanus</i>
19	Oblique bands on sides of abdomen.	20
	No oblique bands on sides of abdomen.	22
20	Sides of abdomen with pale or white bands on dark ground.	21
	Sides of abdomen with black bands on fawn ground; cephalothorax fawn above, whitish on sides and behind. Canada and United States.	<i>viridipes</i>
21	Cephalic plate with three white bands. Central rounded shield of epigynum as wide as long. California, Washington.	<i>Hutchinsonii</i>
	Cephalic plate without white bands. Central rounded shield of epigynum longer than wide. Arizona.	<i>superciliosus</i>
	Cephalothorax with a black Λ between dorsal eyes, and having a white line which begins back of the dorsal eye, curves around above the small lateral eye, and then passes downward, ending behind the lateral eye of the first row; abdomen with oblique side bands edged with black. Epigynum without the central shield usually found in <i>Pellenes</i> . Eastern, middle and western states and Arizona.	<i>Hoyi*</i>
22	Clypeus covered with short fawn hairs, with some long white bristles in the middle, and a white marginal line. Upper sides and middle of thorax dark; abdomen uniform fawn color with four indented dots. Oregon, Cal., N. M.	<i>oregonense</i>
	Clypeus pure white.	23
23	First row of eyes plainly curved; eye-region white and copper color. Arizona.	<i>nemoralis</i>
	First row of eyes straight.	24
24	Central rounded shield of epigynum long and narrow. Cephalothorax and abdomen covered with yellowish-white hairs; a faint lighter herring-bone stripe on posterior part of abdomen. Utah.	<i>candidus</i>
	Central rounded shield of epigynum as wide as long.	25
25	Sides of thoracic part nearly parallel, cephalothorax but little narrowed in front and behind. Cephalothorax and abdomen covered with gray hairs; a distinct herring-bone stripe at end of abdomen. Utah. California.	<i>griseus</i>
	Thoracic part bulging behind dorsal eyes, cephalothorax plainly narrowed in front and behind. Arizona, Colorado.	<i>dolosus</i>

* *Hoyi*, which Simon puts into the genus *Evarcha*, differs from the normal *Pellenes* in the form of palpus and of the epigynum. The color markings on the abdomen are exceedingly variable.

PELLENES ARIZONENSIS B. 1904.

Plate XLIX, fig. 5.

1904. *P. ARIZONENSIS* B., Jour. N. Y. Ent. Soc., XII, 2, p. 118.

♂. Length 5 mm. Legs of first pair fringed with black and white. Spines, tib. I 3—3 and 2 anterior lateral, pat. I 1 anterior lateral, met. I 2—2, very long, but not spatulate.

The cephalothorax, when dry, is reddish-fawn above the front eyes, golden on cephalic plate, yellowish-brown on upper sides and middle of thoracic part, with two wide white bands which pass from within the dorsal eyes back to the posterior margin, and then curve forward along the lower sides, passing to the clypeus, which is covered with slightly iridescent white scales, is edged with yellow scales, and has some long white bristles under the middle eyes, these being surrounded by red rings. The falces are dark with a covering of white hairs. The abdomen has two wide yellowish-brown bands which unite over the spinnerets. The middle, sides, and base are pure white. The palpus has the femur and patella white. The legs are yellow with white hairs. The fringe is black under the femur, patella and tibia of the first, and white above the femur and patella, but that above the tibia is black at the base and white at the tip. The metatarsus and tarsus are clothed with white hairs except for a longitudinal yellow band above.

Mr. Banks has one male from Arizona.

PELLENES AGILIS B. 1892.

Plate XLVI, figs. 1—1b.

1888. *HABROCESTUM AURATUM* P. (not Hentz), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 63.
 1892. *HABROCESTUM AGILIS* B., N. Y. Ent. Soc., p. 126.
 1901. *PELLENES AURATUS* P. ♂ ♀, and *COGNATUS* P. ♀, Bull. Wis. Soc. Nat. Hist., N. S., I, 4, pp. 202, 208, 224.

Length, ♂ 5 mm., ♀ 6.4 mm. Legs, ♂ $3\overline{14}2$, ♀ 3412 , first pair fringed in ♂. Spines, ♂ tib. I a pair at distal end and 2

serially behind; tib. II like tib. I, with the addition of 2 anterior laterals; pat. I, II 1 anterior lateral; met. I 2—2; met. II 2—2 and 1 anterior lateral at end.

In the male the cephalothorax is covered with short black hairs which are intermingled with others of a yellowish-brown color, these latter being by far the more numerous in the eye-region, giving to that part its predominating tint. Three white bands come up on to the cephalic plate from the interspaces between the front eyes; the middle one terminates behind the middle of the eye-region, while the laterals pass just above the small eyes, surround the dorsal eyes, and on the thoracic part curve first toward and then away from each other, ending at the posterior border. A white band passes along the lower sides and crosses the clypeus, which, however, shows a little chestnut color just below the middle eyes; there is a black band from each lateral eye to the falces, and behind this the hairs are chestnut. The abdomen is black with a white band at base and three oblique white bars on each side, the two hinder ones joining at their lower ends. Down the middle is a notched white band, widest in the middle, pointed behind. The falces are dark, covered with long white hairs. The palpus is brown with a black tarsus. The legs are brown, the first stoutest with a white fringe below on femur, patella and tibia; the patella and tibia have also a white fringe above, in the midst of which, on each joint, is a bunch of stiff black hairs. The metatarsus and tarsus are lighter colored than the tibia and have a white band running along the upper surface. The figure of this leg is made from a male taken by Mr. Emerton at Ipswich. None of our specimens has the fringe so heavy. In the female the pattern is like that of the male, but gray is substituted for black, the cephalothorax being nearly all gray. The middle white band on the eye-region bifurcates, the ends reaching the dorsal eyes. The clypeus has a white triangle in the middle, upon which grow long white bristles, the point of the triangle being between the middle eyes. From each of these eyes a band of chestnut runs diagonally backward; behind these again, are wide diagonal white bands, bounded by dark bands which run down from the lateral front eyes.

The light yellow palpi and dark brown falces are covered with white hairs. The legs are brown, the first pair darkest, all covered closely with long white scales. The central band on the abdomen is sometimes broken up into wide chevrons in the anterior part, and is bordered with dark behind. The venter has a light brown shield-shaped central region, distinctly bordered with dark, in the middle of which are sometimes three distinct dark lines.

This species appears in the Britcher Collection from Maine; Mr. Cockerell has sent it to us from Albuquerque, New Mexico; Mr. Banks found it at Ithaca, New York, and we have it from Kansas; Austin, Texas; Georgia; South Carolina; New York and Connecticut.

PELLENES AMERICANUS KEYS. 1885.

Plate XLVI, figs. 6—6d.

1885. *EPHIPPIUS AMERICANUS* Keys. ♂, Verh. z. b. Ges., Wien, Spinnen aus Amerika, p. 20.

1904. *PELLENES SPECIOSA* B., Proc. Cal. Acad. Sci., 3rd Ser., III, 13, p. 359.

Length, ♂ 5.5 mm., ♀ 5 mm. Legs, ♂ $\overline{3412}$, ♀ 3412, first pair scarcely stouter than the others. In the male there is sometimes a short bright red fringe under the femur of first and second. The tarsus of the palpus has a soft bunch of hairs varying in color from salmon and pink, to bright raspberry red.

The male presents so much difference in the coloring of different specimens that Mr. Banks believes there are two species. In the form that he describes as *speciosa*, the cephalothorax is black, sparsely clothed with white and gray hair and with a dark gray tuft at each anterior corner, which overlaps the heavy cream-white crest over the eyes; the clypeus is snow-white; the base of mandibles scarlet, with two black spots, apex yellowish; the legs are mostly brown with adpressed white, and erect black hairs, and the first one has a dense brush of long, bright red hair under the apex of the femur, whole of patella, and base of tibia, which, when the leg is flexed, projects on each side. The tibia

is yellowish, and has a black stripe on each upper side, the metatarsus and proximal half of tarsus yellowish, and the end of the tarsus jet black. The palpus has, on the tarsus, a long bunch of soft, raspberry red hairs. The tibial apophysis, is single, with one point. In a form from Victoria, the crest over the eyes is brown, the falces are black, the clypeus dark but iridescent, and not only has the first leg red hairs through the length of the femur but the fringe of red on the first leg is repeated on the second, and all the legs are banded, longitudinally, with black and white. The tibial apophysis is double, with two points. In a third form, which we found at Sisson, the crest is brown, the falces are iridescent white with three dark vertical lines on each, the clypeus is iridescent white, the tibial apophysis is double, and there is no red on the legs, the femur having only a brush of black, below, at distal end. The palpus, in the Victoria and Sisson specimens, has bright red hairs on the tarsus, and has the tibia with white hairs. In a male which Mr. Emerton found 8,000 feet up on Mt. Shasta, the tibia is pink, and the tarsal plume pinkish yellow.

In this specimen and in the one from Sisson, the legs are black, the first one with a white line throughout its length above, and separate diagonal white bars on the inner faces of femur patella and tibia. The patella is edged by a white band, except at the proximal end. The second leg is marked in the same way, but less distinctly.

In all of our specimens the cephalothorax is black, with a low encircling band of white. The abdomen is black, with a central white band which narrows a little from base to apex. The lower sides are white, cut by two slender diagonal black lines. The venter is white.

Mr. Hanham has sent us several females, but only one of them is mature. This has less black than the male, and the white is replaced by a bright reddish fawn color. The cephalothorax is nearly all fawn, with erect black hairs on the eye-region and black bands under the side eyes. The clypeus has white hairs. The abdomen has a black ground on which are basal and middle indistinct transverse bands of fawn and a herring-bone stripe

down the middle which splits apart in front, showing black between the points. There are indistinct oblique fawn bands, separated by black lines, on the posterior sides. Young males and females are alike, the light pattern on a black ground being more distinctly outlined than in the mature female.

Mr. Banks has a pair from Claremont, Cal. Our specimens are from Sisson, Mt. Shasta, and Victoria B. C. Count Keyserling's single example was from Utah.

PELLENES AMICUS n. sp.

Plate XLVI, figs. 7–7b.

♂ Length 6.3 mm. Legs 3412, nearly equal in stoutness, femur of first dark, distal end with white spot on inner face and black tuft on outer side; patella and tibia with short brown fringe below. Spines, difficult to see, tib. I 3–3 and an anterior and a posterior lateral; met. I and II 2–2 and an anterior lateral.

The cephalic plate, lower sides and clypeus are light brown, the upper sides and thoracic part dark brown. There is a ridge of whitish hairs over the first row of eyes. The falces are dark. The abdomen is brown, shading to bright reddish at outer sides, base, and apex. In front of the spinnerets are three transverse white lines alternating with black, the front two connected at the ends. The legs are brown, the first and second having the metatarsus and part of the tarsus light, and the end of the tarsus black. The palpi are brown with white hairs at the sides.

The palpus and first leg resemble the same parts in *umatillus*, and although this species is larger the two might be confused if the covering of the abdomen were not different. In *amicus* this is made of hairs, only the transverse bars over the spinnerets being made of scales. In *umatillus* the abdomen is covered with elongated scales, three times as long as wide, except a spot on the front middle part of the dorsum which is covered with scales which are as wide as long. Mr. Emerton found two males on Mt. Shasta, Cal., between 5,000 and 8,000 feet up.

PELLENES BOREALIS B. 1895.

Plate XLVIII, figs. 3–3a.

1888. *HABROCESTUM CORONATUM* P. young ♂, *H. coecatum* P. young ♂, *H. cristatus* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., pp. 59, 60, 62, including specimens from northern states only. The specimens from southern states, grouped with these, belong to *coronatus*.
1895. *HABROCESTUM BOREALIS* B. ♂, Can. Ent., p. 101.
1901. *PELLENES BOREALIS* P. ♂, Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 207.
1901. *PELLENES COECATUS* P. young ♂ and *P. cristatus* P. ♀, Bull. Wis. Nat. Hist. Soc., N. S., I, 4, pp. 214, 207.

Length, ♂ 5.5 mm., ♀ 6 mm. Legs, ♂ $\overline{3412}$, ♀ 3412, first pair not modified.

The coloring of two males, taken alive is different, the hairs of one of them probably having been partly rubbed away. In one, the cephalothorax, including clypeus, is all black, and the abdomen is black with a white basal band and a white encircling band which sends up two bars on each side, the anterior pair of which is continued in a straight transverse band across the back, in front of the middle. This transverse band is connected with the base by an indistinct stripe of white. On the posterior part of the back is a good-sized central white spot, and behind this are two white dots. The coxae, trochanters, mouthparts and sternum are shiny black, contrasting with the brown legs. The venter has two dark bands, near together. The palpi are darker than the legs, with white bands along the outer and inner sides, and fawn-colored hairs on the tarsus.

In the second male the cephalothorax has whitish bands from the dorsal eyes to near the hind margin, where they turn and pass forward along the lower sides, and the upper sides are covered with gray hairs. On the abdomen the spaces between the bands and spots are filled in with gray hairs. In front of the transverse band are two narrow transverse black lines, one on each side of the middle. Behind, instead of the white spot, there is a band of tiny white chevrons bordered by short oblique

black bars, reaching the spinnerets. The white dots above the spinnerets are present.

A male one moult from maturity has the cephalic plate covered with fawn hairs, and whitish bands on the thoracic part and sides, as above. The abdomen is black, marked with fawn basal, encircling, and transverse bands. The middle band on the front of the abdomen, which in the mature form connects the transverse and basal bands, does not reach the base, being only an elongated fawn spot, in front of, and touching the transverse band. Behind are three very small pure white chevrons and a pair of white dots. The clypeus is red.

In the female the ground color of the whole body is dark gray the effect being produced by a thin covering of gray hairs on a black integument. The cephalothorax has light gray dorsal and marginal bands, and the abdomen has light gray basal and transverse bands, the two being connected by two light lines, instead of by a solid band. Just behind the transverse band are two fawn dots, and further back are four chevrons and two dots of the same color. On the posterior sides are several oblique gray bands. The hair on the clypeus and above the front eyes is fawn.

We have several young females. At two moults from maturity the body is covered with fawn hairs, the clypeus and sides of cephalothorax are whitish, and there is a pair of white dots in front of the spinnerets. At one moult from maturity the body is gray rather than fawn, the abdomen has faint curved white bands crossing at, and behind the middle, and the two white dots are surrounded by black rings. One of our mature females retains this appearance.

This is a northern species, corresponding to *coronatus* and *calcaratus* in the south. Mr. Banks has it from Franconia, New Hampshire; Mr. Emerton has found it in Massachusetts and at Long Island, Maine, and we have it from New York, Connecticut and Milwaukee, Wisconsin.

It was Mr. Emerton who discovered that the young male of *borealis* has a red clypeus which disappears in the adult.*

* Psyche, Vol. II, p. 32, April, 1904.

This threw light on the confusion which had existed between *borealis* and *coronatus*. The spiders from the north that we described in 1888 as *coronatus* and *coecatus* were really *borealis* B. In a recent letter Mr. Emerton says: "I have found the young males of *borealis*, for the last two seasons, in August as well as in the spring, —in August a few mature males with them. I found them at Ipswich as late as June, so they appear to mature at any time, spring or fall."

PELLENES BRUNNEUS P. 1901.

Plate XLIV, fig. 8. Plate XLV, figs. 4—4a.

1901. *PELLENES BRUNNEUS* P. ♂, Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 210.

1901. *PELLENES FESTUS* P. ♂, *ibid.*, p. 215.

1901. *PELLENES KLAUSERII* P. ♂, *ibid.*, p. 216.

♂. Length, 4.5—6 mm. Legs $\overline{3142}$. Spines I tib. 1—1 and 1 . 1 behind, below. Two anterior lateral spatulate spines.

The cephalothorax is dark to light brown. Covering the clypeus and extending back on either side is a band of short white hairs; this band turns up on the thorax and reaches the top, widening behind each dorsal eye. The cephalic plate is covered with short yellowish hairs surrounded by a white border, which lies just within the quadrangle of the eyes. The abdomen is black with a white basal band which runs down on the sides. Near the middle is a second curved transverse white band the two being joined by a white band, which extends from one to the other in the middle of the dorsum. Further back there is another median longitudinal band made up of short white chevrons. Just above the spinnerets are two white spots. The posterior sides have white scallops the points of which sometimes come up to the top of the abdomen. The venter usually has four light bands uniting at the spinnerets; between the bands the color is dark. The first leg has fringes both above and below, on the femur, patella and tibia; the hairs on the femur are brown, those behind being tipped with white, as are also

those on the posterior border of the tibia. Some of these hairs are pedicellate. There is an indistinct narrow white stripe on the upper face of the tibia, patella and distal part of the femur. The last three pairs of legs are dark yellow, with short white hairs and some black marks. The third leg has the femur constricted and rounded at the distal end with a short apophysis above and a black dot in front. Several black longitudinal lines appear on the anterior and upper sides. The patella has two short apophyses above. The joints of the palpi and also the front faces of the falces are covered with short white hairs.

This is a very variable species, both as to marking and depth of general color. Sometimes the spider is more nearly yellow than brown, and the marking fawn than white; the legs range from pale to nearly black, and so do the falces. The fringe on the first leg may be white, as in the form we described as *festus*, or brown and white as in those called *brunneus* and *Klauserii*.

This species closely resembles *coecatus*, but differs in not having the red clypeus, or the white oval spots on the front faces of the falces, and it has a band of chevrons, instead of a diamond-shaped spot behind the second transverse white mark on the abdomen. *Coecatus* lacks the narrow white line just inside the ocular area.

Key West, Florida; Salt Lake City, Utah; Denver and Fort Collins, Col. Mr. Banks, Las Cruces, New Mexico.

***PELLENES CANDIDUS* P. 1901.**

Plate XLVIII, fig. 10.

1901. *P. CANDIDUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 221.

♀. Length 6.5 mm. Legs 3412. Spines, tib. I 3—3, tib. II 2—1—1, and 1 anterior lateral; met. I and II 2—2; pat. II 1 anterior lateral.

Under alcohol the spider is of a pale yellowish color, the eye-region being darker than the rest, with an indistinct, light, herring-bone stripe on the abdomen, which disappears after the

spider has been kept for a time. When dry, the upper surface of the cephalothorax, and the entire abdomen, above and below, are closely covered with yellowish-gray hairs, giving a pale golden tint, with scattering, long, black hairs over all. There are white hairs on the sides and posterior thoracic slope of the cephalothorax. The clypeus and the spaces between the eyes have long white hairs, which are also found on the palpi. The falces are brown with a few white hairs, and the legs reddish, with white scales.

We have one female from Salt Lake City, Utah.

PELLENES CALIFORNICUS B. 1904.

Plate XLV, figs. 1–1a.

1904. *P. CALIFORNICUM* B., ♂, Jour. N. Y. Ent. Soc., XII, 2, p. 117.

♂. Length, 4 mm. Pat. III triangular, with a wide blunt apophysis above, projecting over tibia, pale in color, with many brown dots. Tib. I 3 serial spines on posterior side below, and 3 long spatulate spines in front; above is 1 long simple spine. Met. I 2–2. Fem. I black above and on outer side, with fringe of black scales near tip; pat. and tib. not fringed below, but with a row of dark scales, enlarged at ends, on outer side.

When dry the eye-region is seen to be covered with white hairs with fine spots of black. There is a band of fawn hairs over the front eyes, and two whitish bands pass along the sides of the eye-region to the hind margin. In this specimen the sides and back are rubbed bare, except for a few white hairs. The abdomen is black above, with a basal white band, a wide transverse spot in front of the middle, and a white elongated spot behind. Under alcohol the eye-region looks black, and the rest of the cephalothorax pale reddish-brown with a median black spot behind. The legs are pale yellow, excepting for the black region on the femur I, for several black transverse curved bars on femur III, and for the tibia III, which has an oblique black line above, a broad pale stripe below this, and the rest of the

front blackish. The palpus has white hairs on the outside of the tarsus.

Mr. Banks has one male from San Diego, California.

PELLENES CORONATUS H. 1845.

Plate XLV, fig. 3—3d.

1845. *ATTUS CORONATUS* H. ♂, *A. coecatus* H. ♂, and *A. cristatus* H. ♀, Jour. Bost. Soc. Nat. Hist., V.
1875. *ATTUS CORONATUS* H. ♂, *A. coecatus* H. ♂, and *A. cristatus* H. ♀, Occ. Pap. Bost. Soc. Nat. Hist., p. 64, p. 65, p. 67.
- 1888, *HABROCESTUM COECATUM* P. ♂, *H. coronatum* P. ♂, *H. cristatum* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 59, p. 60, p. 62, including specimens from southern states only. The specimens from northern states, grouped with these, belong to *borealis*.
1901. *PELLENES COECATUS* P. ♂, and *P. cristatus* P. ♀, Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 214, p. 207, including specimens from southern states only.

Length, ♂ 4.3 mm., ♀ 5.5 mm. Legs, ♂♀ 3412. On the anterior face of the first tibia are two long spatulate spines, and a simple spine nearer end. The cephalic plate in the male is covered with short fawn-colored hairs, the sides and thorax vary from dark to pale; there is the usual marginal white line which in this species begins at the side of the head and passes back and then up to the dorsal eye where it is united with its fellow and spreads out on the upper part of the thorax, leaving on the lower median part the triangular place bare. The clypeus is covered with short brilliant red hairs. The falces are brown with an oval spot of white in the middle of each front face. The abdomen has a basal band, white, running down on the sides; near the middle a second transverse white stripe, and there may be a more or less distinct longitudinal white band uniting the two. There is a faint narrow white line just behind the second transverse stripe, which is in some specimens lacking. Behind this is a diamond-shaped white spot, and above the spinnerets two white spots or short lines. The general color of the abdomen is

black or brown. The under parts are yellow. The first leg is dark with the last two joints lighter. At the distal end of femur there are two short bunches of dark hair, also scales and white hairs on the other parts. The other legs are yellow with spots and shades of black. The third leg has the distal end of the femur constricted and enlarged, with an apophysis above and a black dot on the front face, and has, on the dorsal surface of the patella, a simple or a double ridge and a wide apophysis.

The female is much less distinctly marked. The cephalothorax is covered with light yellow hairs, the cephalic plate being the darkest. Faint suggestions of the white marks found on the male are seen in some females. The abdomen is light fawn and the transverse marks are less clearly indicated; the one in the middle is most distinct. The white diamond-shaped spot and the short lines above the spinnerets are well marked and usually outlined in dark, though all the marks on the abdomen are very indistinct in some specimens. The legs are yellow to light brown.

Hentz found this species in Alabama. We have it from Waycross, Ga.; Mariana, Fla.; Baton Rouge, La.; Texas and Columbia, Mo.; and Mr. Banks reports it from Shreveport, La. and Fort Collins, Col. In a recent letter Mr. Banks says: "I have no *coecatus* from the north; my Ithaca record refers to young of *P. borealis* apparently." *Coecatus* H., and *cristatus* H. (of which he had only the female), are synonyms of *coronatus* H. The *coecatus* which Hentz took in September, was probably a young male. Mr. Emerton has *coronatus* from Long Island, N. Y., which seems to be the northern limit of several southern species.

***PELLENES CALCARATUS* B. 1904.**

Plate XLV, figs. 7—7b. Plate XLVII, fig. 8.

1904. *P. CALCARATUM* B., Jour. N. Y. Ent. Soc., XII, 2, p. 117.

Length, ♂ 4 mm., ♀ 5 mm. ♂, fem. I, with long white fringe below; pat. III somewhat swollen toward tip, with a black spot in front below, and a large, long spur above; tib. I with 3 serial

spines below, and 3 on the front side, 2 of these, at distal end, spatulate, overlapping each other; the distal one less developed.

Under alcohol the male has the eye-region black, scalloped behind. The upper sides and the middle of the thoracic part are dark. On the lower sides are wide white bands which curve up on the thoracic part and run forward to the dorsal eyes. The abdomen is black with a white band at the base which passes back, in scallops, along the sides. On the middle of the back is a pair of white spots, and behind these is a central white spot. Legs, pale yellowish; femur I white below, with long white hair, dark brown in front and behind, with a pale stripe above; tibia I without fringes or dark lines; femur III mostly dark brown in front; femur and patella IV, dark at tip. Palpus with snow-white hair on outside of tarsus. Clypeus yellowish-brown. Falces black.

The female is dark gray with the pattern in light-gray or white. Two white bands pass back from the sides of the eye-region. The lower sides are gray. The abdomen is dark with an encircling white band and three pairs of white curved bands coming up over the sides. The first pair is stopped at the upper surface, by short white lines at right angles which run forward to the base. Behind the middle is a central white figure made up of a bar and a chevron. There is no contrast between the coxae and trochanters and the other joints. The falces are dark red with scattering white hairs, and there are some white hairs under the middle eyes.

Mr. Banks has a pair from Punta Gorda, Fla., and a male from Palm Beach, Fla., and we have it from Waycross, Ga., and Lenoir, Tenn.

Calcaratus is nearest *coronatus*, but the male has no red on the clypeus, has the tibia of the first differently spined, the femur of the first differently fringed, and the falx has not a white spot on a dark ground. The palpi are very different. The females are more difficult as the pattern is the same in both, but in *calcaratus* the ground color is dark gray, while in *coronatus* it is light yellowish. The transverse band on the abdomen is

in front of the middle in *calcaratus* and behind the middle in *coronatus*.

The females of *calcaratus* and *borealis* are indistinguishable; the former is found in the south, the latter in the north. The males are distinct.

***PELLENES CLYPEATUS* B. 1895.**

Plate XLIV, fig. 12. Plate XLV, figs. 2—2c.

1895. *HABROCESTUM CLYPEATUM* ♂, Canadian Entomologist, 1895, p. 102.

1901. *PELLENES CLYPEATUS* P., Bull. Wis. Nat. Hist. Soc. N. S., I, 4, p. 205.

1906. *PELLENES FORMOSUS*, Ent. Soc. Wash VII, 2-3, p. 99.

Length, ♂ 4.7—5 mm. Legs $\overline{3412}$. On the tibia of the first on the anterior face are two long spatulate spines; just below the distal spine is a third smaller spatulate spine, and above is a fourth spine, large, but scarcely spatulate. Third leg with femur and patella more or less enlarged at end.

The cephalic plate is covered with tawny scales; a white line surrounds this plate, passing just above the first row of eyes, and outside the lateral row. The sides of the head are brown. The lower margin of the cephalothorax is white. The thorax is yellowish-white, except the lower sides and a triangular shaped spot behind in the middle, which are dark brown. The face is very striking, and is best understood from the drawing. The black under the middle eyes in some specimens, is less marked, and the black spots on the base of the front of the falces more pronounced than is shown in the drawing. The palpi are yellow covered with white hairs. The abdomen has a white basal band and white scalloped sides, the middle region somewhat rounded in outline, also white, between this region and the scalloped sides the back of the abdomen is dark brown; in some lights there is a reddish hue on the back.

First leg is dark brown, except the metatarsus and tarsus, which are pure white; on top of the patella and tibia is a pale, indistinct line and under the femur patella and tibia are white scales, both plain and pedicellate, being longest under the tibia

Second leg not so dark. Femur of the third, simple in some specimens, in others a little enlarged and round at end; patella of the third more or less enlarged, and spotted with black; there may or may not be black stripes on the joints of the second and third legs. Fourth in general color much like the third.

Sternum pale; venter pale with three dark stripes.

Mr. Banks has this species from Yuma, Arizona, and Dixon Cañon, Colorado. It appears in the Britcher Collection from Scottsdale, Arizona. We have many specimens from Salt Lake, Utah.

PELLENES CAROLINENSIS P. 1901.

Plate XLVIII, figs. 6–6b.

1901. *PELLENES CAROLINENSIS* ♀ P., Bull. Wis. Nat. Hist. Soc., N. S., I, No. 4, p. 219.

A distinctly marked, black and salmon-colored species.

♀. Length, 5.5–7 mm. Legs, 3412, first and second a little stouter than the others.

The hairs on the cephalic part are bright yellowish-red over the first row of eyes, and silvery further back. There is a scalloped salmon-colored band behind the dorsal eyes. In our specimens the other parts of the cephalothorax are rubbed bare, excepting the clypeus, which is white in a band along the margin, in a large spot under each lateral eye, and in a narrow band which begins just between the middle eyes, and widens as it passes downward to the margin, and which has an oblique chestnut-colored band running outward from below each of the middle eyes. The abdomen is velvety black, with markings of a bright pinkish and salmon-color; there being a wide transverse band near the front end, an oblique band on each side, further back, two oblique marks in the middle and two irregular, sometimes continuous spots on the posterior part of the dorsum, and two dots near the spinnerets. The pattern is complicated by a sprinkling of salmon-colored hairs, which surround the posterior part of the dorsum. The legs are yellowish, and are covered with white and salmon-colored scales.

We have several females from Charleston, S. C., and Waycross, Georgia.

Very much like the female of *viridipes*; see this species, where the differences are noted in detail.

***PELLENES COCKERELLII* B. 1902.**

Plate XLVI, figs. 5—5d.

1902. *PELLENES COCKERELLII* B., Proc. Acad. Nat. Sci., Phila., for Nov. 1901, p. 591.

Length, ♂ 5 mm., ♀ 7 mm. Legs, ♂ ♀ 3412, first pair a little the stoutest. In the male the pattern is most distinct under alcohol. The eye-region is fawn over the front eyes and darker behind, bordered on the sides by white, with a white V-mark between the dorsal eyes, the point of which touches the fawn region. The sides and thoracic part are dark, with fawn bands on the lower sides, and running back from the dorsal eyes. The abdomen is black with a middle notched band, an encircling band, and a bar on each side white. The legs and palpi are light brown except the tarsus of the palpus which is dark.

The female has a black cephalothorax with a white band on each side arising above the front lateral eyes and running just below the dorsal eyes to the end, where it curves forward along the side margin. An abbreviated white band comes up from between the front middle eyes. The abdomen is white in the middle of the dorsum, with a broad black band on each side, interrupted near the end by an oblique white mark, which comes up from a wide white band encircling the sides and base. The black bands do not meet in front.

Mr. Banks has one pair from New Mexico, Las Vegas Range, 11,000 ft., taken in the last week of June.

***PELLENES DELECTUS* n. sp.**

Plate XLVII, figs. 6—6a. Plate XLIX, figs. 1—1a.

Length, ♂ 3.5 mm., ♀ 5 mm. Legs, ♂ ♀ 3412, first a little stoutest, and in ♂ fringed with white under femur and patella.

In the male the cephalic plate is dark, covered with reddish-yellow hairs, lightest in front, with a transverse row of three white spots, the largest in the middle. Two wide white bands run back on the thoracic part and encircle the lower sides, leaving the other parts, including the clypeus, reddish-yellow. The abdomen is dark, covered with reddish-yellow hairs, and having a wide transverse band in front of the middle, an oblique band on each side, and a longitudinal band running forward from the spinnerets to the middle of the back, pure white. The first leg has the femur and patella transparent white, lightly fringed with white hairs, the tibia and metatarsus black, the latter with two dorsal white spots, and the tarsus pale, tipped with black. The second leg is brown with white hairs in indistinct diagonal bands, and the other legs are brown with light tarsi. The palpus is pale yellow, the tarsus a little darker, with white hairs on the outer side. The falces are small and pale.

The eye-region in the female has a wide white border all around, the central spot seen in the male being connected with the white band across the front, while the side spots are included in the lateral bands. Otherwise the pattern is like that of the male except that the middle band on the abdomen runs farther forward, and the side bands are nearly parallel with it. All the tarsi, and the femoral joints of the third and fourth, are light brown, but otherwise the legs are dark.

We have two males and a female of this dainty little species from Austin, Texas.

***PELLENES DOLOSUS* P. 1901.**

Plate XLVIII, fig. 1.

1901. *P. DOLOSUS* P., Bull. Wis. Nat. Hist. Soc., N. S., 1, 4, p. 224.

♀. Length 7.5 mm. Legs 3412, first pair plainly stoutest.

Our only specimen is badly rubbed. The cephalothorax is jet black with a scattering of white hairs. The clypeus is covered with white hairs which reach the lower edges of the lateral eyes. The falces are brown, the legs and palpi light brown, the

first legs darker than the others. The integument of the abdomen is brown with pale chevrons and mottlings and a few white hairs at the front end.

This species is easily distinguished from *nemoratus* by the eyes of the first row, which in *dolosus* are all subtouching, and form a straight row, while in *nemoratus* they are separated and form a curved row.

We have one female from Arizona, and Mr. Banks reports it from Ft. Collins and Denver, Colorado.

PELLENES ELEGANS P. 1901.

Plate XLIV, fig. 9. Plate XLVI, fig. 4.

1901. *PELLENES ELEGANS* ♂ P. Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 212.

1901. *PELLENES BIRGEI* ♂ P, *ibid.*, p. 217.

♂. Length 5 mm. Legs $\overline{3412}$, the first, second and fourth differing but little in length, first pair fringed.

The cephalothorax is covered with short fawn-colored hairs; there is a band of white hairs on lower margin which passes in front across clypeus, and behind, at back of thorax, runs up on each side to dorsal eye, leaving the space between dark-colored. On the sides just above the white band there is a brown space. On the clypeus, the white band reaches to the lower edge of the large middle eyes; above this and also below the lateral eyes of the first row there is a tinge of chestnut color. The front faces of the falces are covered with short, white hairs. In some specimens the face is rather light fawn than white, and there is an indistinct light line continued forward from the dorsal eye to the anterior lateral eye. On the abdomen a white median longitudinal band extends from the base nearly to the spinnerets, narrowing to a point at the posterior end. On either side of the median white band, are dark bands; a reddish tinge shows in these bands next to the white. The sides are white. The under parts are yellow or brown, and there is a ridge of black hairs above the first row of eyes. The first leg is ornamental; on both sides of the femur, patella and tibia are fringes of hairs;

in some specimens they may be all white (as in the specimen we described as *Birgei*), in others they may be alternating white and dark. The metatarsus and tarsus are yellow and without fringe; the other legs are yellow, with darker rings at the distal ends, and covered with short white hairs. Since first describing these spiders we have received more material and now see that *Birgei* was a badly rubbed specimen of *elegans*.

From San Diego, Cal., and Lower California, Mr. A. W. Hanham; Elinor, Cal., Mr. Baker; Mesilla Park, New Mexico, Prof. T. D. A. Cockerell; Hot Springs and Bright Angel, Arizona, Mr. N. Banks.

PELLENES FALLAX n. sp.

Plate XLVII, fig. 5. Plate XLIX, figs. 3—3a.

1888. *HABROCESTUM VIRIDIPES* P, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 60.
 1901. *PELLENES VIRIDIPES* P, Bull. Wis. Nat. Hist. Soc., N. S., 1, 4, pp. 204, 207.

Not *viridipes* H.

Length, ♂ 5 mm., ♀ 6.5 mm. Legs 3412, first pair a little stoutest, not fringed.

The integument is black, and under alcohol it seems to be a black spider with white bands, but when thoroughly dry, dark gold-colored hairs, brighter in the male than in the female, are seen to cover the dark portions of the body. The eye-region is golden, the front part growing whitish in the female, sometimes all white, but still contrasting with four snow-white bands which cross it from front to back. The outer two of these bands begin at the front lateral eyes, pass below the side eyes and widen out behind the dorsal eyes; from this point they grow narrow, and after reaching the hind margin, bend forward along the lower sides and cross the clypeus, which has also a white fringe on the edge. The middle bands of the eye-region begin at one spot, between the large front eyes, and after diverging a little, run straight back between the dorsal eyes and are merged in the widened side bands. This white banded cephalic plate, alike in

both sexes, makes it easy to recognize the species. The abdomen is black with a thin covering of dark yellow hairs; there is a basal band, an angular spot behind the middle, and a scalloped border on the posterior two-thirds, white, the spot being sometimes connected with the base by an indistinct whitish band. The legs and palpi are ringed with very dark brown and light brown, the light parts being covered with pure white scales, so that the effect is of black and white rings. In the male the palpal tarsus is black, with long white hairs.

We have numerous examples from Texas.

The female is much like *carolinensis*, which, however, lacks white lines on cephalic plate, has the central abdominal spot narrower, and twice as long as wide, has two white dots at spinnerets, and has two oblique bands on sides of abdomen sometimes united below, different from the wide scalloped band of *viridipes*. *Carolinensis* has also chestnut on clypeus, and the epigynum is different. Several species have on the middle of the eye-region, two white lines from between the large eyes to the dorsal eyes, but no other has, like *viridipes*, these lines running straight back, not touching the dorsal eyes.

Mr. Emerton has called our attention to the fact that our *P. Howardii* is identical with *viridipes* H., and that the species which we have called *viridipes* must have a new name.

***PELLENES GRISEUS* P. 1901.**

Plate XLVIII, fig. 12.

1901. *P. GRISEUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 221.

♀. Length 6 mm. Legs 3412. Spines, tib. I 3—3, tib. II 2—1—1, and one anterior lateral; met. I and II 2—2, pat. II 1 anterior lateral.

The cephalothorax is covered with gray hairs which are tinged with yellow on the eye-region, where there are some erect black hairs. The clypeus is covered with white hairs. The abdomen is gray with a central white band, composed of indistinct chevrons, behind the middle. On the edges of this band are ob-

lique chestnut-colored bars. The legs are yellow, with gray hairs.

Mr. Hutchinson has sent us a specimen from Los Angeles, Cal., and we have it also from Salt Lake, Utah.

***PELLENES HIRSUTUS* P. 1888.**

Plate XLVI, figs. 2—2a.

1888. *HABROCESTUM HIRSUTUM* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 64.
1901. *PELLENES HIRSUTUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 211.

Length, ♂ 5 mm., ♀ 6 mm. Legs 3412, first pair in male stoutest, with fringes, and iridescent metatarsi.

In the female the eye-region is dark, covered with reddish-gray hairs, and edged with white on the sides. A white band comes up from between the front eyes and reaches the middle of the cephalic plate, where it splits into two, which diverge and pass back to the inner sides of the dorsal eyes. Around the lower sides are white bands which pass up on to the thoracic part and join the two bands from in front, leaving a diamond-shaped dark region, bounded by white, between the dorsal eyes. The white clypeus is continuous with the side bands, and has long white hairs in the middle. The upper sides and the middle of the thoracic part are brown. The abdomen is dark, covered with tawny-gray hairs. Around the base is a white band, and behind this is a black border which is widest in the middle. On the back, behind the middle, is a dark region, on which is a longitudinal band of four small triangular white spots. There is an oblique white band in the middle of each side and a pair of curved white bands at the end. The legs are light yellowish-brown, the first and the femur of the second darkest, all covered with white hairs. The falces are reddish, the sternum is pale, encircled by a black ring on which grow white hairs, and the venter is white. A female recently taken by Mr. Hanham at Duncan's, Vancouver Island, differs in a marked degree from other specimens. The hairs that form the pattern, instead of

being white, are all copper-colored and similar hairs thinly cover the whole cephalothorax. The pattern is comparatively indistinct. The clypeus is plainly banded, dark bars separating the white middle part from the white on the sides. The peculiar sternum and venter are present. A young female taken at the same time is also copper-colored, but has the band running back from between the anterior middle eyes, white.

In the male the color varies. Our specimens from New Mexico and Utah, have the cephalothorax brown, the eye-region being covered with yellowish-gray hairs. The upper sides of the cephalic part, and the sides of the clypeus, are covered with short white hairs, but the middle of the clypeus has long yellow or tawny-red hairs. White marginal bands begin opposite the small eyes of the second row; before reaching the end they turn up over the back, and pass forward, becoming indistinct and blending with the yellowish color of the cephalic plate. The abdomen is dark with a covering of reddish-gray hairs. There is no basal band, but two white bands start near the front end, passing obliquely down the sides, and in front of the spinnerets is a row of tiny white chevrons, as in the female. The first leg is highly decorated. The lower face of the femur is iridescent bluish-green edged on the inner side by a white band, and on the outer by short thick white fringe. Below the patella is a mass of stiff dark hairs which curve inward. Above the tibia, along the inner edge is a stiff ridge of dark hairs with a bar of peacock-green on their tips and a bristly tuft near the proximal end, while below is a long soft white fringe which is overlapped on the inner side, and to some extent on the outer side also, by a short thick fringe made up of black or brown hairs of different lengths, each of which ends in a large white scale. This joint, although it is enlarged, is twice as long as wide. The metatarsus is flattened in front and iridescent blue in color, with two long dark spines and a white fringe, which extends on to the tarsus, below. In one specimen (from Duncan's) this first leg has many metallic coppery pink scales above, the patella being nearly covered with them. This male has a bright red clypeus. The second leg has, along the front face, a pure white band with

a black band just above it on all the joints, except the femur. The femora of the posterior three legs are yellow, darkened at the ends; the other joints are a little darker, and all are covered with short white hairs. The sternum and venter are like the female. The palpus is light yellow, with white hairs on the tarsus, which extends beyond the bulb.

In a fine example which we took at Sisson the tibia of the first is jet black and the brush above is very dense and striking. The clypeus is entirely covered with bright red hairs. In life the cephalothorax and **abodmen** and the upper sides of the first legs were all bronze, but having been for some time in alcohol the color has changed to nearly black, with iridescent bluish reflections. There are some small light-colored scales on the upper surface, and the abdomen is thinly covered with erect yellowish hairs, but there are no white bands. The legs are like those already described except that those of the second pair have fringes under the femur and patella. A male from Owen's Lake has the integument all iridescent blue, covered, on the abdomen, with coppery-pink hairs. The cephalothorax has white sides and thoracic bands, but the eye-region has the middle part bright copper-color with a border of white along the front and sides. It is probable that the other dark-colored males were originally like this. The scales are so easily removed that even in life they are often rubbed off.

We have *hirsutus* from Oregon, California (Sisson's and Owen's Lake), Utah, and Las Cruces, N. M. Mr. Banks has it from West Cliff, Colorado.

PELLENES HOYI P. 1883.

Plate XLVIII, figs. 4—4d.

1883. *ATTUS HOYI* P. ♂. New or little known Attidae, p. 7.

1883. *ATTUS PINUS* P. ♀, *ibid.*, p. 20.

1888. *HASARIUS HOYI* P. ♂ ♀, *Wis. Acad. Sciences, Arts and Letters*, VII, N. A. Attidae, p. 57.

1891. *HASARIUS HOYI* E. ♂ ♀, *Trans. Conn. Acad.*, VIII, New England Attidae, p. 25.

1892. *HABROCESTUM LATENS* B. ♀, Proc. Acad. Nat. Sci., Phila., Jan. 26, p. 77.
1902. *EVARCHA HOYI* E. S., Hist. Nat. des Araign. 2me Ed., II, p. 708.
1905. *PELLENES HOYI* B., Am. Nat., XXXIX, p. 322.

Length, ♂ 5.2 mm., ♀ 5.9 mm. Legs, ♂ 1342, ♀ 3412, first pair a little the stoutest. Spines, ♂ tibia I, II 3—2 (1 anterior lacking), and laterals; pat. I, II 1; met. I, II 2—2, no laterals. In the female they are small and indistinct, but seem to be like those of the male.

The male is a brilliant spider with variable markings. The upper part of the cephalothorax is bright yellowish-red, marked, above the front eyes, by a snowy band which curves back to the eyes of the second row, where it merges in the white side region, and by a small white spot between the dorsal eyes. Below the eyes are wide white bands which occupy the entire sides in front, but are limited to the upper half further back, the lower sides being black. These bands become narrower and, turning upward and inward at their ends, send an oblique bar downward and outward; they do not meet behind, the space between being black. Under alcohol the cephalic plate has a black scalloped border behind, which contrasts with the paler thoracic region. The hairs between the front eyes are bright red, those on the clypeus, white. The abdomen is light golden on the back with an encircling white band, scalloped behind the middle, bordered with red around the base and front sides and with black toward the spinnerets. Two short white lines run back from the middle of the basal band. On the posterior part, above, are one or two pairs of oblique white bars. Under alcohol the abdomen shows two oblique white bands on the front part, a white triangle surrounding a dark spot behind the middle, and two curved white bands over the spinnerets. All the femoral joints are white at the proximal and dark at their distal ends, the other parts of the legs being covered with white and red hairs. The palpus is covered with yellowish hairs.

The female is less brilliant but not less variable than the male. The cephalothorax is covered with a mixture of orange, black and white hairs, the sides being lighter than the back.

White angular lines, less distinct in front than behind, begin at the front lateral eyes, point up over the small eyes, down under the dorsals and then up again, but do not meet behind. Many specimens have a scalloped black line between the dorsal eyes. The pale golden region down the middle of the abdomen may or may not be marked in the second half with fine, white chevrons. The bands on either side of the posterior central region are black, or red mixed with black, and the white basal band is mixed with red. In other females the surface is of a uniform pale brown with an encircling band gray. The white marks behind the middle consist of two long oblique lines, commonly bordered with black, which meet at an acute angle in front, and some small black-bordered chevrons further back. The clypeus and palpus are covered with white hairs, and the legs with a mixture of white, black and red. The epigynum is unique, having two large anterior openings, and two other openings behind, near the edge.

This species is common in New England and Wisconsin and we found it in numbers on the Pacific coast from San Francisco to Victoria. Mr. Banks reports it from New York and Colorado, and it has been taken in Pennsylvania and in Arizona.

***PELLENES HUTCHINSONII* n. sp.**

Plate XLVIII, figs. 13–13b.

♀. Length 5.5–7 mm. Legs 3412, nearly equal in thickness.

The eye-region is covered with yellowish-brown hairs and has a white stripe in the middle and on each side. The middle of the thoracic part is black but otherwise the back and the sides are covered with gray hairs, lightest on the lower margin. The clypeus is white with a bunch of long bristly white hairs in the middle. The falces are dark red. The integument of the abdomen is black, thinly covered with gray or brownish-gray hairs, giving a mottled appearance. On the front part is a black diamond with a gray spot in the middle. In front of the spinnerets is a white bar, outlined in front by a black chevron. The sides are black, each with two oblique white bands, the posterior

one reaching the spinnerets. The legs are brown covered with white scales. The venter is yellow.

This species is named for Mr. Hutchinson, from whom we have two females from Los Angeles, California, one of them much browner than the other. There is also a specimen in the Cambridge Museum, taken by Mr. Henshaw at Wenass V., Washington.

The pattern shows most plainly under alcohol.

***PELLENES JUCUNDUS* n. sp.**

Plate XLVIII, figs. 7—7a.

♀. Length 6—7 mm. Legs 3412, first pair stoutest.

The eye-region is fawn, mottled with black, bordered by whitish bands which widen behind the dorsal eyes, and then pass to the hind margin. The hairs along the lower sides are white, the upper sides, and the middle of the thoracic part being dark brown. The face is fawn, a little darker below the middle eyes. The abdomen has the base, an irregular band down the middle, and the lower sides fawn-colored, each side being marked with two oblique black bands; on the upper surface, on the sides of the middle fawn band, is a pair of wide black stripes, more or less notched on the edges, which do not meet in front, but which approach each other behind, and meet over the spinnerets. The legs, are brown, covered with white scales and black hairs. In one specimen the femoral joints of the legs and palpi, have, above, a clear space in which is a dark longitudinal line.

This female resembles the male of *Viridipes*. We found it at Sisson, Cal., and Glacier, B. C.

***PELLENES LAGGANII* n. sp.**

Plate XLIX, figs. 2—2a.

♂. Length 5 mm. Legs $\overline{1342}$, first a little stoutest, not fringed, second pair very short.

This is a black species with crimson hairs around the front eyes and on the clypeus, a few white hairs on the cephalic plate,

and yellowish-red hairs around the dorsal eyes. The abdomen has a white basal band with some reddish hairs in front of it, a white line down the middle, broken, behind, into five spots, and two oblique white bands on each side, one at the middle and one behind. The legs are dark, the skin on the inside of the first tibia reddish. The palpus is dark with white hairs which are tinged with red on the tarsus. The venter and lower sides are thinly covered with white hairs. The bulb of the palpus is elongated.

We found this species running on fallen trees at Glacier, B. C., and again at Laggan, Alberta.

PELLENES LIMATUS P. 1901.

Plate XLVIII, figs. 2–2a.

1901. *P. LIMATUS* P. ♂, Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 217.

1901. *P. TOWNSENDII* P. ♀, *ibid.*, p. 218.

Length, ♂ 6 mm., ♀ 5 mm. Legs, ♂ ♀ 3412, first pair but little stoutest. Spines, ♂ ♀ tib. I 2–2–1, tib. II 2–1–1 and 1 anterior lateral, near end; pat. II 1 anterior lateral; met. 1 (I) and II 2–2.

In the male the upper sides and the middle part of the upper surface are covered with yellow hairs, the color being deepest on the eye-region. Two white bands run from the front lateral eyes to the hind margin where they meet white marginal bands which reach forward only to a point opposite the dorsal eyes. The clypeus is yellow, the falces brown. The abdomen is white with two longitudinal bands of yellow hairs which reach the apex but not the base, and which have, on their edges, in the posterior part, a series of darker bars, giving them a jagged appearance. The distal three joints of the first leg are brown, but otherwise the legs are light yellow with many short white hairs.

The female, which we formerly described as a separate species, has the yellow replaced by fawn, and has the dark bands on the abdomen much wider. The eye-region has a white band coming up from between the middle eyes which splits into two, the ends

diverging and reaching the inner sides of the dorsal eyes. The white marginal bands on the cephalothorax pass to the clypeus. The face is very striking. The first row of eyes is strongly curved, and from the outer side of each of the large middle eyes a broad brown streak runs outward and obliquely downward. The middle eyes are separated by white hairs, which also cover the middle part of the clypeus and the spaces under the lateral eyes. The falces are brown. The palpi and legs are brown with black spines and white hairs, the first legs being the darkest.

While the clypeus of the female resembles those of *sabulosus* and *carolinensis*, the white band throughout the length of the abdomen distinguishes the species.

We have a male from California and a female from Texas.

***PELLENES MONTANUS* E. 1894.**

Plate XLVII, figs. 9—9c.

1894. *HABROCESTUM MONTANUM* Em., Trans. Conn. Acad., IX, p. 420.

1901. *PELLENES MONTANUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 204.

Length, ♂ 7 mm., ♀ 8 mm. Legs, ♂ 3142, ♀ 3412, first pair scarcely stouter than the others. Tib. III narrowest in middle.

In the female the colors are black and gray. The sides of the cephalothorax are light below, with a dark band, narrowing toward the front, above. In the middle the cephalothorax is light, almost white, mixed with gray hairs and a few yellow scales; between the dorsal eyes is a dark angular mark, usually with a light spot at the anterior angle. The abdomen is dark with a light longitudinal band outlined in black, which widens and breaks into chevrons in the second half, and with oblique light and dark bands along the sides. The legs are gray, ringed with black at the base and near the end of each joint. In the male the front of the head is white; the white bands along the sides of the cephalothorax are more distinct and farther down the sides, and the middle of the cephalothorax is light yellow.

The middle of the back of the abdomen is also yellow, mixed with yellow hairs.

Mr. Emerton, from whom we have taken the description given above, has several specimens from Laggan, Alberta. We have only females. They are marked like Mr. Emerton's specimens but are colored differently. In one from Laggan the spaces on the back of the abdomen between the central black-bordered white band and the oblique black and white bands on the sides, are filled in with hairs of a bright coppery-pink color, which also cover the clypeus. In a female from Denver, not only is the ground color pink but the white bands are strongly tinged with the same color. The legs are dark, contrasting with the palpi, which are of a very light brown. The falces are black. A young female has the upper surface of both cephalothorax and abdomen pink, the pattern being in a lighter shade.

Montanus comes from Laggan, and from Denver, Colorado.

PELLENES MUNDUS n. sp.

Plate XLVII, figs. 4–4a.

♀. Length 6.2 mm. Legs 3412, first pair stoutest.

Under alcohol the cephalothorax is dark with four oblique white bands on the cephalic plate, and the abdomen and legs are light brown mottled with dark brown. When dry the white bands on the eye-region become more distinct, one on each side and two in the middle, which start from one point between the front eyes, and diverge so that their ends touch the dorsal eyes. The spaces between are filled with fawn-colored hairs. Whitish bands pass back from the dorsal eyes and encircle the lower sides, the upper sides and middle thoracic part being covered with dark, yellowish-brown hairs. The clypeus is white with two oblique dark bars which run outward from under the middle eyes. The abdomen is light fawn with dark mottlings, and shows an indistinct band of chevrons down the middle.

One female in the Cambridge Museum Collection, taken by Mr. Henshaw at The Dalles, Oregon.

Viridipes, another species with four white bands on the eye-region, has a very different abdomen.

***PELLENES NEMORALIS* P. 1901.**

Plate XLVIII, fig. 9.

1901. *P. NEMORALIS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 221.

♀. Length, 5.3 mm. Legs, 3412, first pair plainly stoutest.

The general color is brown. This specimen has the eye region covered with white and copper-colored hairs, and has patches of the same on the abdomen, where, however, they are nearly all rubbed off, leaving pale chevrons and mottlings visible. Clypeus covered with thick white hairs. Falces brown, with some white hairs. Legs, light brown, with some light-colored and white hairs.

See remarks under *dolosus*.

We have one female from Arizona.

***PELLENES OREGONENSE* P. 1888.**

Plate XLV, figs. 6—6b.

1888. *HABROCESTUM OREGONENSE* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 66.

1901. *PELLENES OREGONENSE* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 203.

Length, ♂ 5.8 mm., ♀ 8 mm. Legs, ♂♀ 3412, first pair fringed and enlarged in ♂. In the male the cephalothorax is dark colored, and is covered with iridescent red hairs with white over the first row of eyes. Abdomen, venter, clypeus, falces, palpus and legs also covered with iridescent red hairs. The first leg has the tibia as wide as long, and rounded out in all directions, with fringes of stout dark hairs on the femur patella and tibia. The inner face of both the patella and tibia is a glistening black; metatarsus and tarsus white.

We have a number of males from Sisson, California, that are fawn-colored instead of red, and have more white on the cephalic plate, otherwise they agree with the other form.

The female is a uniform fawn, with four indented dots on the abdomen. There is a bare black triangular region on the middle of the thoracic part, and under alcohol the sides of the cephalothorax look darker than the upper surface.

We have it from Oregon and Sisson, California. Las Vegas, New Mexico, Mr. Banks.

***PELLENES PEREGRINUS* P. 1883.**

Plate XLV, figs. 5–5b. Plate XLVII, fig. 7.

1883. *ATTUS PEREGRINUS* ♂ P., Descr. new or little known Attidae of the United States, p. 17.
 1888. *HABROCESTUM PEREGRINUM* ♂ P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 61.
 1891. *HABROCESTUM PEREGRINUM* ♂ ♀ E., Trans. Conn. Acad. VIII, N. E. Attidae, p. 27.
 1901. *PELLENES PEREGRINUS* ♂ ♀ P., Bull. Wis. Nat. Hist. Soc., N. S., 4., pp. 203, 207.

Length, ♂ 5.3 mm., ♀ 6 mm. Legs, ♂ $\overline{3412}$, ♀ 3412, first pair fringed and third pair modified in ♂. Spines, ♂ tib. I 3–3, of which the front spines of the second and third pairs are so far forward that they are almost anterior lateral; these spines are large and long but not spatulate. Tib. II 1–1 and 1.1 and 3 anterior lateral. Patellae I and II 1 anterior lateral. Met. I 2–2; met. II 2–2 and 2 anterior lateral.

The male has the cephalothorax with the usual marking; the cephalic plate is covered with light brown short hairs in front, growing darker behind. A white stripe passes back from the anterior lateral eye on each side, past the dorsal eye down to the base of the thorax where it turns forward along the margin of the cephalothorax and is united with the one of opposite side over the clypeus. Abdomen snowy white on the sides and middle of dorsum, with two black longitudinal bands extending throughout its length. The under sides of the body and legs are light brown, with white and black hairs. The first leg has a fringe on the femur, patella and tibia. The patella of the third is widened and somewhat triangular in shape, the distal end has an apophy-

sis which projects over the tibia, and on the anterior face is a black dot.

The female is much like the male in marking, except that the cephalothorax is sometimes entirely covered with dull fawn colored short hairs and the abdomen is brown rather than black; the central white longitudinal band sometimes reaches neither the base nor the spinnerets.

Mr. Emerton has it from Hyde Park, Mass.; Mr. Banks, Fall Creek, N. Y., and Punta Gorda, Florida; Britcher Collection, Maine; our collection, New York and Connecticut.

***PELLENES POLITUS* P. 1901.**

Plate XLVI, fig. 10.

1901. *PELLENES POLITUS* ♀ P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 223.

♀. Length, 6.5 mm. Legs 3412, first and second stoutest.

The whole body is thinly covered with a mixture of white and rufus hairs. On the cephalic part are three longitudinal white bands. The sides of the cephalothorax are white, and the margin has a black line with a white line below it. The abdomens of our specimens are badly injured, showing only a white basal band, and two white spots near the spinnerets. The hairs around the front middle eyes are rufus above and below, and white on the sides. The middle of the clypeus has a large snow-white triangle, the apex being above, and the broad base covering the margin. Running obliquely outward from below the middle eyes, are two chestnut-colored bars, and outside of these, running from between the lateral and middle eyes, two oblique snow-white bands. Just under each lateral eye is another short chestnut-colored streak. The legs are brown with white hairs.

We have two females from New Mexico, sent us by Prof. Cockerell.

PELLENES ROSEUS H. 1846.

Plate XLVIII, figs. 11–11b.

1846. *ATTUS ROSEUS* H., Jour. Bost. Soc. Nat. Hist., V, p. 362.1875. *ATTUS ROSEUS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 66.

♂. Length 5 mm. Legs 3412, first pair a little the stoutest, not fringed.

The integument of the cephalothorax is dark, black on the cephalic plate, with a scalloped pale band behind the dorsal eyes. When dry the whole cephalothorax, including the clypeus, is seen to be covered with white, downy hairs. The falces are dark with long, white hairs on their inner sides; palpi are pale brown, with the tarsi black, covered with long white hairs; the femoral joints are all light brown, those of the first and second pairs with a black line along the anterior faces; otherwise the legs are dark brown, the first and second darkest. The abdomen is iridescent pink with slight purplish reflections, and has a pure white band across the base, and erect white hairs on the back. It is much like the male of *splendens*, but is smaller and lighter in build.

Hentz found this species in Massachusetts “not **unfrequently**.” We have taken it twice in Wisconsin, and we have three males from Philadelphia, Pa. Mr. Emerton has taken the female and male at Ipswich, Massachusetts.

PELLENES SABULOSUS P. 1901.

Plate XLVIII, figs. 5–5a.

1901. *PELLENES SABULOSUS* ♀ P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 219.

A very dark species, with indistinct markings.

Length, ♀ 6–8 mm. Legs 3412.

The integument of the cephalothorax is black, with a covering of short yellowish-gray hairs. There are wide, white bands on the sides which unite behind but do not run up on the thorax. The clypeus is much like that of *carolinensis* but lacks the white

margin. It has a white spot in the middle, running from between the middle eyes to the falces and an oblique chestnut-colored spot passing outward from under each of the middle eyes to the margin. Above these, below the lateral eyes, it is white. The abdomen is black, mottled with gray, with a lighter basal band, running on to the sides. There are two pairs of gray spots on the anterior part of the dorsum and a central gray spot further back. Near the spinnerets are two snow-white dots. The legs have the coxae and trochanters yellow, contrasting strongly with the other joints, which are dark, with many white hairs. The front faces of the falces are thinly covered with white hairs. The under parts are light gray.

We have several females from Waycross, Georgia.

***PELLENES SCOTSDALEI* n. sp.**

Plate XLIX, figs. 6—6a.

♀. Length 6 mm. Legs 3412, first a little the stoutest.

Under alcohol the color is mottled brown, the abdomen with a white region mottled with black at the base and three short white bars on each side. Two indistinct light bands start at the white base, pass back through two-thirds of the length of the abdomen, and then diverge and join the middle pair of side bars. The legs are light brown, the first pair a little the darkest. When dry, the cephalothorax shows a covering of copper-colored hairs mottled with black. The color is clearest in three short bands coming up between the front eyes. These eyes have long black hairs above them and are surrounded by white hairs. The clypeus is pinkish-white on the sides, and has a bunch of long, bristly, white hairs in the middle. The falces are black with thin, white hairs. The legs have a good many pink scales and black and white hairs. The dark part of the abdomen, in one specimen, is nearly black, and the pattern which looks white when wet, is seen to be formed by copper-colored hairs. In a second example the whole abdomen is copper-colored, mottled with black.

There are two mature females and two young ones in the Horace W. Britcher Collection, New York Museum. They were found in Scottsdale, Arizona.

***PELLENES SIGNATUS* B. 1900.**

Plate XLVI, fig. 3. Plate XLVII, figs. 3—3a.

1900. *HABROCESTUM SIGNATUM* B., Can. Ent., XXXII, 4, p. 101.

Length, ♂ 4.5 mm., ♀ 6 mm. Legs of first pair clothed with long, white hair, and with brushes of stiff black hair under femur, patella and tibia, especially long, and thick on the tibia. Patella of third leg, simple.

The cephalothorax is brown, with gray hairs on eye-region and in two bands on the thoracic part, which has a dark stripe in the middle. There are gray bands along the sides, and the clypeus is bright red. The abdomen is gray with a curved brown stripe on each side, the two being connected, behind, by a band of dark chevrons, and being united at the spinnerets. Near the front end is a median, diamond shaped, brown mark which touches each stripe. The legs are light colored with white hairs.

We have not seen the female of *signatus*, but Mr. Banks describes it as having a dark cephalothorax clothed with hairs of gray and yellowish-gray, clypeus white, with white fringe on edge and over eyes; legs, pale yellowish, darker on outside of tibiae and metatarsi; abdomen, dark brown, a median pale irregular stripe behind, and pale oblique bands on sides.

Mr. Banks has this species from Los Angeles, California.

***PELLENES SPLENDENS* P. 1883.**

Plate XLVII, fig. 2. Plate XLVIII, figs. 8—8a.

1883. *ATTUS SPLENDENS* P., New or little known Attidae, p. 4.

1885. *PELLENES NIGROCEPS* Keys., Verh. z. b. Ges., Wien, VI, p. 512.

1888. *HABROCESTUM SPLENDENS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 65.
1891. *HABROCESTUM SPLENDENS* Em., Trans. Conn. Acad. VIII, N. E. Attidae, p. 26.

Mr. Banks thinks that this species is *Salticus decorus* Blk. 1846.

Length, ♂ 6.5 mm., ♀ 7.7 mm. Legs, ♂ ♀ 3412, first pair a little stouter than the others, not fringed. Spines, ♂ tib. I 2–2–1, tib. II 2–2–1 and 1 anterior lateral, pat. I and II 1 anterior lateral, met. I 2–2, met. II 2–2 and 2 anterior laterals. Sometimes tib. I has 3–3; ♀ tib. I 2–2–1, tib. II 2–2–1 and one anterior lateral, pat. II 1 anterior lateral, met. I and II 2–2.

The male, in life, is one of the most brilliant of our Attidae, the cephalothorax, including clypeus, being covered with iridescent blue scales, and the abdomen, above and below, with iridescent pinkish-red. In alcohol, two white scallops appear behind the dorsal eyes, and the abdomen shows light bands at the base and sides and a fleur-de-lis mark in the middle, this being the pattern of the young male and of the female. Examples that have been kept in alcohol, when dried sometimes show this pattern in red on an iridescent bluish background. On the eye-region are erect black hairs. The legs and palpi are dark brown, the falces reddish with long white hairs on the inner edges.

The female is variable. In the typical form the eye-region is mottled with short fawn and black hairs, with a darker transverse band between the dorsal eyes, behind which are two white scallops. The hairs behind, and on the upper sides are yellowish-brown, and those on the lower sides and clypeus are white. The abdomen is velvety black with a white band at base, a wide scalloped white band on each side behind the middle, and a central, irregular, white band which begins in front of the middle in a broad arrow head, and which may or may not reach the apex. At the end is a pair of white dots. The legs are medium brown. Another form has a white abdomen with a black band behind the base and four large black spots on the back.

This species is common in Wisconsin. We have it also from Salt Lake, Utah, (Mr. Chamberlain), and from Pullman, Washington. Mr. Emerton took it at Beverly, Mass., and near Albany, N. Y., and reports it from Ship Harbor, Nova Scotia. Mr. Banks has it from Fort Collins, Colorado, and in the Cayuga Lake Basin, N. Y.

***PELLENES SUPERCILIOSUS* P. 1901.**

Plate XLVI, fig. 9.

1901. *P. SUPERCILIOSUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 222.

♀. Length 7 mm. Legs 3412. First pair stoutest.

Under alcohol the eye-region is white with two indistinct yellow bands which begin at each large front eye and pass back, diverging, to the dorsal eyes. The clypeus is thickly covered with white hairs except just under the lateral eyes, where it is dark. The lower sides are white. Our only example has the rest of the cephalothorax rubbed. The falces are reddish, thinly covered with white hairs. The abdomen shows patches of white and reddish hairs, pale chevrons, mottlings and oblique bands being visible on the dark integument. The legs are light brown, clouded with dark.

A single female from Arizona.

***PELLENES TARSALIS* B. 1904.**

Plate XLIV, fig. 11. Plate XLVI, fig. 8.

1904. *PELLENES TARSALIS* ♂ Banks., Jour. N. Y. Entom. Soc., XII, 2, p. 118.

Length, ♂ 5 mm. Legs 3142, first pair fringed.

This is a very striking little male; the black tarsi, the white on the palpus and the snow-white line across the clypeus just under the first row of eyes serve to distinguish it from all other species.

The cephalothorax is dark, covered with short brown and gray hairs; a narrow white line runs back on the cephalic plate from

between the large middle eyes, as far as the dorsal eyes. In some specimens a white line comes off at a right angle on either side and goes to the dorsal eye, in others the upper surface is uniform in color. On the lower margin of the thorax, white bands pass back and are continued up over the back to the dorsal eyes, and more or less distinctly to the anterior lateral eyes. The sides of the head and the high clypeus are covered with short yellowish-white hairs; just below the front row of eyes a snow-white line runs across the clypeus giving the effect of a grin. The falces are pale, the palpi brown, with white hairs on the patella and a stripe of snow-white short hairs around the outside of the tarsus. Under parts pale, sometimes with some black spots.

Abdomen black or brown, two white dots above spinnerets, two or three white chevrons in front of these and then two bands, which unite at the base; sides white. Legs, pale yellowish; first have fringes of yellowish-white hair; there is a dark stripe above on the femur, patella and tibia; tarsus, jet black. Some of the other legs have, in some specimens, dark bars or spots.

***PELLENES TRANQUILLUS* P. 1901.**

Plate XLIV, fig. 13.

1901. *P. TRANQUILLUS* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 213.

♂. Length 5 mm. Legs 3412, tibia of first enlarged, pale, dotted with black; patella and tibia with very long, white, and shorter dark fringe below, some of the white hairs being pedicellate. Metatarsus with white fringe, and both metatarsus and tarsus with black bands on a pale ground. Spines, tib. I 2—2; tib. II underneath, 2 serially behind and 2 anterior lateral, pat. II 1 anterior lateral and 1 posterior lateral, met. I 2—2, met. II 2—2 and 1 anterior lateral. It is unusual for *Pellenes* to have only two pairs under tib. I, and it may be that the third pair is broken off. The spinal armature varies somewhat in the individuals of a species.

Our only specimen of *tranquillus* is so much rubbed that we

can say little about its color and marking. It is a small, delicately made spider; the cephalothorax large in proportion to the abdomen. The ground color is dark brown, with white hairs over the front eyes, on the sides of the cephalothorax, and the front end of the abdomen. The clypeus is light fawn. The legs are light brown with some darker cloudings, the first heavily and the second lightly fringed with white. On the upper surface of the femur of the first are three small dark points. The third leg is simple.

One male from Arizona.

***PELLENES UMATILLUS* n. sp.**

Plate XLVII, fig. 1. Plate XLIX, fig. 4.

♂. Length 4.5 mm. Legs 3412, first slightly stoutest, with a ridge of short, stiff brown hairs under patella and tibia and a small bunch of stiff reddish hairs at the distal end of the outer side of the femur. The spines are transparent white, and difficult to see and are very long. There are two pairs and an anterior lateral on metatarsus, and one anterior lateral on tibia and on patella of first and second legs.

The cephalothorax is deep black covered with pure white hairs excepting a yellow stripe on each side under the eyes, and a yellow band on the middle of the thoracic part. The front eyes are ringed with red, and the clypeus is white with a bunch of long tawny red hairs in the middle. The abdomen is covered thickly with long scales, white at the base, reddish-golden on sides and back. There is a spot of white scales (as wide as long) in front of the middle, which may originally have been differently colored. The tarsi and metatarsi are light yellow; otherwise the legs are brown, the first pair much the darkest, thickly covered with snow-white scales. The palpi are brown with white scales, the tarsi covered with long white hairs.

A single male, in the Cambridge Museum Collection, taken by Mr. Henshaw, at Camp Umatilla, Washington.

PELLENES VIRIDIPES H. 1845.

Plate XLIV, fig. 10. Plate XLV, figs. 8—8a.

1845. *ATTUS VIRIDIPES* H., Jour. Bost. Soc. Nat. Hist. V.1875. *ATTUS VIRIDIPES* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 66.1901. *P. HOWARDII* P., Bull. Wis. Nat. Hist. Soc., N. S., I, 4, p. 209.

Length, ♂ 4.3 mm., ♀ 5.5 mm. Legs, ♂ ♀ $\overline{3142}$, the first pair but little stouter than the others. In the male the legs of the first pair are fringed and those of the third have an enlargement on the patella. Spines, ♂ tib. I 1 pair and 2 behind on the posterior side, while in front are 2 not very heavy spatulate spines and 1 anterior lateral; tib. II 1 pair and 2 serially behind, and 3 anterior laterals; pat. I 1 anterior lateral, pat. II 1 anterior lateral and 1 posterior lateral; met. I 2—2, met. II 2—2 and 2 anterior laterals.

In the male the cephalic plate is covered with hairs of a soft fawn-color tinged with red, and is bordered, behind, by a scalloped, yellowish-white band. The upper sides of the cephalothorax and the middle of the thoracic slope are velvety black. A wide white band runs back from each dorsal eye to the posterior margin, and then curves forward and passes along the lower side to a point opposite the dorsal eye. The abdomen is velvety black with central and encircling white bands, and a pair of white dots above the spinnerets. The encircling band sends up an oblique bar on each side, and the central band is enlarged and notched in the middle. The first legs, in life, are of a tender green color, the others, yellowish with white scales. The first has, on the outer under side of the femur, a thick fringe of white, continued in a thin fringe which is short on the patella and long on the tibia. The tibia has also some long white hairs, and two black spines on the inner side. The third leg has the patella enlarged at the distal end, and has a short curved apophysis which extends over the tibia. The front face of the enlarged part is pale and on it is a small black spine. This is evidently in the nature of an ornament since it is used in display during courtship. The clypeus and the front of the falces are

covered with thick snow-white hairs. The palpi are brown with white hairs.

In the female the body is nearly covered with a mixture of white and fawn-colored hairs with longer black hairs over them. The fawn-color predominates everywhere excepting on the sides and thoracic part of the cephalothorax, which are nearly white. There are two oblique black bands on each side of the abdomen. The clypeus is thickly covered with brownish white hairs. The falces have only a few white hairs.

We have taken this species in Wisconsin and at the snow line on Mt. Hood, Oregon, and we have it from Austin, Texas. Mr. Emerton caught it in Massachusetts and 5,000 ft. up on Mt. Shasta, California. In the Britcher Collection is a female from Arizona, with twenty-seven young in her cocoon. Hentz had it from South Carolina, and Mr. Banks reports it from Palm Beach, Fla.

In some specimens, under alcohol, there is, in the female, a light-colored longitudinal bar outlined in black, behind the middle of the abdomen, and two white dots above the spinnerets.

TALAVERA new.

Type, *ICIUS MINUTUS* B.

1895. *ICIUS* BANKS, in part (*minutus*), Can. Ent., p. 99.

1896. *SAITIS* BANKS, Jour. N. Y. Ent. Soc., p. 193.

Very small spiders. Cephalothorax moderately high with sides parallel and vertical. Cephalic part strongly inclined, thoracic falling but little in the first 2/3. Eye-region occupying nearly half the cephalothorax, about 1/4 wider than long, wider in front than behind. Front eyes close together in a straight row, middle plainly less than twice as large as lateral. Second row about halfway between the others. Third row as wide as cephalothorax. Sternum oblong. Front coxae separated by a little more than the width of the labium, which is wider than long. Falx with a single tooth on lower margin. Clypeus very narrow. There are three pairs of spines under the tibia of the first leg, and two serial spines under that of the second, the *metartarsi* of the first and second having two pairs.

TALAVERA MINUTA B. 1895.

Plate XLII, fig. 7.

1895. *ICIUS MINUTUS* B. ♀, Can. Ent., p. 99.1896. *SAITIS MINISCULUS* B. ♂ ♀, Jour. N. Y. Ent. Soc., p. 193.Length, ♂ 2 mm., ♀ 2.5 mm. Legs $\overline{4312}$.

The cephalothorax is reddish-brown, with the eye-region blackish. The abdomen, in the male, is black, in the female gray with indistinct pale chevrons. The legs are white banded with black, except the femur of the first in the female, which is more or less darkened, and the femur and tibia of the first in the male, which are entirely dark. The palpi are white, the falces yellowish.

Mr. Banks, who collected this species on Long Island, N. Y., has also a female from Olympia, Washington. We have it from Woods [Holl](#), Mass., Salt Lake, Utah, and Claremont, Cal.

POULTONELLA new.Type, *ATTUS ALBOIMMACULATUS* P.1883. *ATTUS* P. (*alboimmaculatus* ♀), New or little known Attidae, p. 5.1888. *DENDRYPHANTES* (*alboimmaculatus* ♀), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 41.

Cephalothorax rather low, contracted in front and behind, widest at dorsal eyes. Cephalic part slightly inclined; thoracic, falling but little in first half and then abruptly. Sides nearly vertical. Eye-region occupying half the cephalothorax, 1/4 wider than long, plainly wider behind than in front. Front eyes small, in a slightly curved row, the middle ones subtouching and nearly twice as large as the lateral, which are well separated from them. Eyes of second row very small, nearer the first than the third row. Third row nearly as wide as cephalothorax. Falces stout and vertical, with a compound tooth on the lower margin. Labium longer than wide. Sternum twice as long as wide, contracted and truncated in front. First coxae separated by nearly the width of the labium. The tibia of the first leg

has one spine below and one at the distal end, and the tibia of the second is unarmed. The metatarsus of the first has two pairs, and the metatarsus of the second, one pair, below.

POULTONELLA ALBOIMMACULATUS P. 1883.

♀. Length 5 mm. Legs $4\overline{1}2\overline{3}$, first three joints of first leg, especially the tibia, enlarged and fringed.

The upper and under surfaces of the body, and the clypeus, falces and palpi are covered with short, close, white hairs, there being also a few long scattered black hairs above. The first leg is brown, excepting the tibia, which is black. The femur has a row of short, strong, black hairs near the middle of the lower border; the patella has two circles of white hairs separated by a hairless median part; the tibia, which is as wide as long, has a ridge of short, strong, black hairs above, and a ridge of longer ones below. The metatarsus and tarsus are slender. The other legs are brown with longitudinal lines of white hairs.

We have two specimens, one from Iowa and one from New York.

ZYGOBALLUS P. 1885.

Type, *RUFIPES* P.

1844. *ATTUS* H. (*sexpunctatus*), Jour. Bost. Soc. Nat. Hist. IV.
 1875. *ATTUS* H. (*sexpunctatus*), Occ. Pap. Bost. Soc. Nat. Hist. II, p. 54
 1885. *ZYGOBALLUS* P., Proc. Nat. Hist. Soc. Wis., Dec., 1885, p. 82.
 1888. *ERIS* P. (*nervosus* ♀) Wis. Acad. Sci. Arts, and Letters, VII, N. A. Att., p. 56.
 1888. *ZYGOBALLUS* P., *ibid.*, p. 89.
 1891. *ZYGOBALLUS* P., Em. Trans. Conn. Acad. VIII, New England Attidae, p. 12.
 1895. *ZYGOBALLUS* P., Occ. Pap. Nat. Hist. Soc. Wis. II, 3, p. 172.
 1896. *ZYGOBALLUS* P., *ibid.*, III, 1, p. 89.
 1896. *RHENE* F. O. P. C. (*munda*), Biol. Cent. Am., Arach., Aran., II, p. 162.
 1901. *ZYGOBALLUS* F. O. P. C. *ibid.*, p. 289.
 1903. *ZYGOBALLUS* E. S., (*sexpunctatus*, not *messua* P.), Hist. Nat. Araignées, 2me Ed., II, p. 865.
 1905. *ZYGOBALLUS* B., Am. Nat. XXXIX, p. 320.

Cephalothorax high, a little longer than wide, widest at dorsal eyes, falling steeply behind. Eye-region $1/5$ wider than long,

plainly wider behind than in front, occupying 3/5 of the cephalothorax. Front middle eyes subtouching, about twice as large as laterals and separated from them, these four forming a straight or slightly curved row. Second row plainly nearer first than third. Third row as wide as cephalothorax. Coxae I separated by width of labium, which is not much, if at all, longer than wide. Sternum narrowed in front, and truncated. Coxae and trochanters I elongated in the males, except in *nervosus*.

This distinct genus is represented in the United States by four species, *rufipes*, *Bettini*, *sexpunctatus* and *nervosus*. *Iridescens* B., which Mr. Banks has kindly lent us for examination, is founded upon an example which is not quite mature, and we think it may be *Bettini*. The males have obliquely directed falces, with long fangs, and two apophyses, one strong and vertical, coming down from the inner proximal end of each falx, and a heavier, hammer-headed one on the outer side.

There is so much variation in color, size and marking within the limits of each species, as to make it difficult to distinguish them by these points. Fortunately the palpi and epigynes are distinct.

KEY TO ZYGOBALLUS—MALES.

1	Face and sides of cephalothorax beyond second row of eyes covered thickly with white scales. Tib. I about 4 times as long as wide.	2
	Sides of cephalothorax dark, or covered with rather inconspicuous whitish scales. Tib. I either 5–6 (5 to 6), or only 2 1/2 times as long as wide. ¹	3
2	Cephalothorax with a large white spot at the beginning of the thoracic slope. Bulb of palpus with a longitudinal division.	<i>sexpunctatus</i>
	Cephalothorax with no white spot on thorax. Bulb of palpus with a transverse division.	<i>Bettini</i>
3	Patella and tibia I long and slender, tibia 5–6 (5 to 6) times as long as wide. Found only in Texas and farther south. ¹	<i>rufipes</i>
	Joints of first leg comparatively short. Tibia 2 1/2 times as long as wide. Found in New England and as far south as Virginia.	<i>nervosus</i>

The females of *Zygoballus* must be distinguished by the epigynes, of which we give illustrations.

¹ This illustrates the ambiguity in the use of expressions like 5–6 in this paper, representing either 5 to 6 or 5/6. In this context, it is clear that 5 to 6 is the correct interpretation.

ZYGOBALLUS BETTINI P. 1888.

Plate L, figs. 7–7e. Plate LI, fig. 10.

1888. *Z. BETTINI* P., ♂ ♀. Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 89.1891. *Z. BETTINI* Em. ♂ ♀, Tran. Conn. Acad., VIII, New England Attidae, p. 12.

Length, ♂ 3–6 mm., ♀ 4 mm. Legs, ♂ 1423, ♀ 4123, femur I enlarged. Spines, ♂ tib. I 3–3, met. I 2–2, tib. II 1 pair and 2 serially below, with 1 anterior lateral, met. II 2–2. ♀ like ♂. Some males have 1 patellary spine. The spines under the tib. I are not in regular pairs. In large specimens the legs are relatively longer, and the irregularity of the spines is emphasized.

In the male the whole body is bronze-brown, with red and green reflections on the eye-region. The falces, the clypeus, and the sides of the cephalothorax beyond the second row of eyes, are covered thickly with white scales. The abdomen has a basal band and two curved transverse bands, interrupted in the middle, all iridescent white. The color of the abdomen is darkened on the edges of the transverse bands. The first leg is usually reddish-brown, sometimes with a white stripe on patella, tibia and part of metatarsus, but in other examples the femur only is red, the other joints being yellowish-white, with or without a dark longitudinal line on the inner side. The other legs are light yellow, sometimes marked with black lines. The palpus is brown. The males do not develop their peculiar falces until maturity.

In the female the ground color is bronze, similar to that of the male. The white ornamental scales on the front are lacking. The abdomen has a white basal band, and on the front part of the dorsum are two short longitudinal, angular, white bands, with bronze scales between. Behind this are several whitish chevrons, which grow smaller as they approach the spinnerets. Alternating with these are dark spots, and the sides are indistinctly barred with white. In some examples the chevrons are

broken up into irregular dark and light spots. The femur of the first is dark red-brown. The other joints, as well as the second and third pairs, are white, while the fourth pair is light with the distal ends of the joints darkened. The first, second, and third legs occasionally show black longitudinal lines. The palpus is white.

This species is common in the eastern, southern and central states. We have it from Maine, Massachusetts, Connecticut, New York, North Carolina, Georgia, Florida (Banks), Texas, Missouri and Wisconsin.

ZYGOBALLUS NERVOSUS P. 1888.

Plate L, figs. 8–8c. Plate LI, fig. 12.

1888. *ERIS NERVOSUS* P. ♀, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 56.

1891. *ZYGOBALLUS TERRESTRIS* Em. ♂ ♀., Trans. Conn. Acad. VIII, New England Attidae, p. 13.

Length, ♂ 3–4.5 mm., ♀ 3–4 mm. Legs, ♂ 1423, ♀ 4123, fem. I enlarged. Spines, ♂ ♀ tib. I 3–3, met. I 2–2, tib. II 2 serially below, and 1 anterior lateral.

Nervosus is less difficult to distinguish than the other species. The cephalothorax is heavier and wider, with the thoracic slope not so steep. The legs are heavier, with shorter joints, the tibia of the first, in the male, being only about two and one-half times as long as wide. The joints of the palpus, in the male, are also shorter and heavier, the patella plainly longer than the tibia, and each of these joints about as wide as long, while in all the other species the patella is plainly longer than wide.

In both sexes the cephalothorax is brown, thinly covered with whitish scales. The narrow clypeus is white. In the male the abdomen is brown, slightly metallic, with a very bright white basal band extending two-thirds of the way along the sides, a nearly longitudinal white bar, edged with black, on each side at the posterior end, and a white spot at the spinnerets. The female abdomen, of a lighter brown, is marked much like that of *Bettini*, with two short curved bands just back of the basal band, fol-

lowed by two large white spots with black spots behind them, and farther back, a series of indistinct whitish chevrons, with a second pair of black spots a little in front of the spinnerets. The example which we described as *Eris nervosus* was rubbed on the middle of the abdomen.

The falces of the male are similar to those of *Bettini* but smaller. The femur of the first leg is dark, with the rest of the leg lighter, although darkened at the ends of the joints, the patella and tibia being sometimes marked by a dark line. The other legs are lighter, sometimes tinged with red, and sometimes darkened at the ends of the joints. In the female the legs are more distinctly banded.

Mr. Emerton saw mature examples of this species ballooning on October fifteenth, near Boston.

It is found in Maine, (Britcher); Massachusetts, Connecticut, (Emerton); New York, (Long Island, Banks); Virginia; and has lately been taken in Chicago, Illinois, by Mr. W. H. Wright.

We have sent the type of *nervosus* to Mr. Emerton and he agrees with us that his *terrestis* is the same species.

ZYGOBALLUS RUFIPES P. 1885.

1885. *Z. RUFIPES* P. ♂, Proc. Nat. Hist. Soc. Wis., Dec., 1885, p. 82.

1901. *Z. RUFIPES* F. O. P. C. ♂, Biol. Cent. Am., Arach., Aran., II, p. 291.

Length, ♂ 3—4.5 mm., ♀ 5 mm. Legs, ♂ 1423, ♀ 4123, femur I enlarged. Spines, ♂ tib. I 3—3, met. I 2—2, tib. II 1 pair and 2 serially below, with 1 anterior lateral, met. II 2—2. ♀ like ♂ except that it lacks the anterior lateral on tib. II.

In both sexes the cephalothorax is dark brown with a thin covering of white scales. The abdomen, in the male, is bronze-brown with basal and two oblique bands on each side, of iridescent white scales. In the female the ground color is lighter, not iridescent, and is covered with whitish scales which thicken to form bands like those of the male, but less distinct. Down the middle is a pattern of indistinct chevrons. The falces and cly-

peus have some scattered white hairs, longer in the female than in the male. The male has the coxa, trochanter and femur of the first leg, reddish; the remainder of this leg, and all of the second and third are light. The fourth leg is reddish. A black line is seen on the inner face of the patella and tibia of the first, on the femur, patella and tibia in the second and third, and sometimes on the same joints in the fourth. The black line is more distinct in some specimens than in others. The male palpus is red-brown. In our original example of this species the jet-black appearance was due to the rubbing off of the white scales. In the female the femur of the first is brown, and the other joints of this leg yellow with a black line on the patella and tibia. The second and third legs are usually light yellow, sometimes with a black line on the femur, and a darkening at the distal ends of the joints. The fourth leg is yellow, much darkened at the distal ends of the joints, and with a black line at the outer side of the femur and tibia. The palpus is white.

Rufipes is very close to *Bettini*, but is a Mexican species, probably uncommon in the United States, since we have but a single example, from San Antonio, Texas. The male may be distinguished by the greater slenderness of the legs, especially the first, the tibia of the first being five or six times as long as wide, while in *Bettini* it is only about four times as long; and by the comparatively dark clypeus, falces, and sides of the cephalothorax, these parts in *Bettini* being thickly covered with enlarged white scales, which cover the sides beyond the second row of eyes. In the females the epigynes must be relied upon to distinguish the two species.

The female of *rufipes* is not *Z. strenuus*, which was confused with it by F. O. P. Cambridge (Biol. Cent. Am. Arachn. Aran., II, p. 291). Mr. Cambridge drew the epigynum of *strenuus* and called it *rufipes*. He illustrates the male of *rufipes* by many drawings.

ZYGOBALLUS SEXPUNCTATUS H. 1844.

Plate LI, fig. 11.

1844. *ATTUS SEXPUNCTATUS* H. ♂, Jour. Bost. Soc. Nat. Hist. IV.1875. *ATTUS SEXPUNCTATUS* H. ♂, Occ. Pap. Jour. Bost. Soc. Nat. Hist. II, p. 54.1888. *ZYGOBALLUS SEXPUNCTATUS* P. ♂, Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 89.

Length, ♂ 3–4.5 mm., ♀ 3 mm. Legs, ♂ 1423, ♀ 4123, femur I enlarged. Spines, ♂ ♀, tib. I 3–3, met. I 2–2, tib. II one pair and 2 serially below, with 1 anterior lateral; met. II 2–2. All the spines are long. The spines under tib. I are in regular pairs in small examples, but not in large ones.

The cephalothorax of the male is bronze-brown with the front of the falces, the clypeus, and the sides of the cephalothorax beyond the second row of eyes, covered with white scales. There is also a white spot, wider than long, at the beginning of the thoracic slope. This spot is not found in *Bettini*, which it otherwise closely resembles. The abdomen is of a darker bronze than *Bettini*, with the same basal band and two curved transverse bands usually broken in the middle, but in this species the black behind these bands is stronger, and, in the typical form, it indents the front transverse band so as to cut it into four oblique white bars, and also encroaches on the hinder band until there are left two similar bars. This form is easily distinguished from *Bettini*. When these characteristic marks are not present, or when the abdomen and the thoracic spot are rubbed, reliance must be placed upon the palpus, which has the bulb with a longitudinal division, while in *Bettini* it is transverse. The first leg is usually red, but sometimes this color is confined to the femur, the other joints being paler, with a longitudinal black line. The other legs are yellowish, sometimes with darkened femora. In this latter case the other joints show a variable degree of darkening.

The female, to judge from our imperfect specimens, is bronze-brown. There are some indistinct white scales left on the eye-region, and the cephalothorax has a marginal white band. The

abdomen has a basal band and two central round spots made of iridescent white scales, and further back are some indistinct whitish chevrons. The cephalothorax is wider in proportion to its length than in *Bettini*, and the epigynum is distinct. All the femora are dark. The patella and tibia of the first are yellow with a black line, while the metatarsus and tarsus are paler. The other joints of the second and third legs are light, and in the fourth they are light with dark rings at the distal ends.

Sexpunctatus has been reported only from the southern states; North Carolina, Florida, Texas, Louisiana, and Mississippi.

AGOBARDUS ANORMALIS KEYS. 1885.

Plate XXXVIII, fig. 8. Plate XLIX, fig. 13.

1885. *AGOBARDUS ANORMALIS* Keys., Ver. zool-bot. Gesell., Wien, VI, p. 519.

1888. *AGOBARDUS ANORMALIS* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 90.

Length, ♂ ♀ 4.6 mm. Legs, ♂ 1432, ♀ 4312, first pair a little the stoutest. Spines, ♂ ♀ tibiae I, II 3—3 with 1 anterior and 1 posterior lateral; pat. II 1 anterior lateral; met. I, II 2—2 with 1 anterior and 1 posterior lateral.

Cephalothorax very high at dorsal eyes, but, in front, not higher than clypeus and lateral eye, on account of the steep inclination of the cephalic part. Sides nearly parallel, a very little dilated in the middle, vertical in front, rounded behind; thoracic part falling steeply from dorsal eyes. Quadrangle of eyes occupying one-half of cephalothorax, twice as wide as long, equally wide in front and behind. First row of eyes much bent; middle eyes subtouching; lateral a little more than one-half as large, separated from them by one-half their own diameter. Eyes of second row a very little nearer lateral than dorsal eyes. Dorsal as large as lateral eyes, equally distant from each other and the lateral borders, forming a row as wide as cephalothorax at that place. Clypeus one-fifth as high as middle eyes. Falces extending to inner edges of lateral eyes, one and one-half

times as long as face, inclined backward, a little diverging; fang weak. Maxillae slightly diverging, enlarged and rounded at extremity. Labium one-half as long as maxillae, as wide as long. Sternum nearly as wide as long, oval, projecting between anterior coxae. Anterior coxae separated by nearly the width of the labium. Legs of the first pair a little stoutest. Femoral, patellary, tibial and metatarsal spines on the four pairs; those on metatarsi of the fourth extending to base.

Cephalothorax brown with a lighter central longitudinal band in thoracic part, in the midst of which is a spot of white hairs; the eyes are placed on black spots; the anterior part of the cephalic plate, the lower sides, and the clypeus are covered with white hairs; the lower margin is black. Abdomen brown, with a curved white basal band and a central wide white longitudinal band which is often indistinct in the anterior part, and is interrupted behind by a slender brown transverse curved band; this middle band gives off on either side two short white spots which are longer than wide, one in the middle of the first half, the other, oblique, just in front of the spinnerets. Venter dark brown or black with a white band behind and on the sides. Palpi yellowish-brown excepting the last two joints which are black, with black hairs. Falces, mouthparts, sternum, coxae and legs, reddish brown.

United States. Several examples.

We include this species, since it was described by Keyserling as belonging to the United States, although Mr. Banks is probably correct in thinking that it is from the West Indies.

***BALLUS* C. K. 1850.**

Type, *B. DEPRESSUS* Walck.

- 1850. *BALLUS* C. K., Ueb. Arachn. Syst., V, p. 68.
- 1876. *BALLUS* E. S., Arachn. de France, III, p. 203.
- 1888. *BALLUS* P., Wis., Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 87.
- 1895. *BALLUS* P., Occ. Pap. Nat. Hist. Soc., Wis., II, 3, p. 166.
- 1901. *BALLUS* E. S., Hist. Nat. des Araign., 2me. Ed., II, p. 485.
- 1905. *ATTIDOPS* B., Am. Nat., May 1905, XXXIX, p. 321.

Small thick-set spiders, with the abdomen not much larger than the cephalothorax.

Cephalothorax low, flat, slightly dilated behind the middle, with sides vertical in front and slightly rounded behind. Thoracic part truncated and hollowed behind. Eye-region scarcely shorter than thoracic part, 1/3 wider than long, slightly wider behind than in front. Front eyes touching, in a straight row; second row nearer first than third; dorsal eyes as large as lateral eyes of first row, further from each other than from lateral borders, forming a row as wide as the cephalothorax at that place. Clypeus high, slanting backward. Falces parallel, weak, with two or more teeth on the lower margin. Labium rounded, wider than long, or but little longer than wide. Sternum oval. Abdomen small, the anterior end fitting into the excavation of the cephalothorax.

Mr. Banks, in his Classification of the Attidae, makes our *Ballus Youngii* the type of his genus *Attidops*, although *Youngii* is so close to the type of *Ballus (depressus)* that Mr. Emerton, in a letter to us, has suggested that it may be identical. We think that it differs enough to be a good species, but it clearly belongs to the genus *Ballus*, and hence we treat *Attidops* as a synonym.

***BALLUS YOUNGII* P. 1888.**

Plate XLIX, figs. 9—9a. Plate LI, figs. 13—13a.

1888. VII, N. A. Attidae, p. 87.

♂♀. Length 2.8 mm. Width of abdomen, 1.4 mm. Legs 4123, first and second pairs stoutest.

The whole abdomen and the upper surface of the cephalothorax are black; there is a scanty covering of short yellow hairs, which thicken, on the abdomen, to form two yellow spots in front and three transverse bands further back. The other parts are brown, the legs and palpi with short yellow hairs.

Col. J. J. Young, who first sent us this species, wrote of it as follows: "These spiders are found at this season (November) under the bark of trees, usually hickory and sycamore. You

will note that the general color of the spider corresponds with the rusty brown of the under side of the bark of the shag-bark hickory when first pulled off. In that hibernating locality it covers itself with a thin bluish envelope. The spider is so nearly of the bark color, and so small, that we would often overlook the speck in the center of the envelope, supposing it to be merely the empty tube or cell of some young spider.”

Allegheny, Pa., and Pine Lake, Wisconsin.

***CHALCOSCIRTUS MONTANUS* B. 1896.**

Plate XLIII, fig. 6.

1896. *ICIUS MONTANUS* ♂, Canadian Entomologist, Vol. 28, No. 3, p. 62.

“♂ 2.1–2.4 mm.; ceph. long, 1 mm.; broad 6 mm., jet black, shining, almost coppery, extreme tips of palpi, tip of maxillae, a spot on each coxa and trochanter, and an elongate spot on the femur, pale; the tarsi infuscated¹; pale dots on legs at origin of hairs. Cephalothorax long, moderately low, nearly flat, sides almost parallel. Eye-region one-third broader than long, occupying not much over one-third of the cephalothorax; a trifle broader in front than behind; eyes of second row full as close to the dorsal eyes as to the lateral eyes; A. M. E. large, distinctly separated, plainly farther from the S. E. Sternum one-fourth longer than broad, broadest in middle, pointed behind, truncate in front; coxae I separated by full width of lip; legs short, fourth pair longest, femora I thicker than others; only a few indistinct spines, those on metatarsi IV, are at apex. Abdomen barely wider than cephalothorax and but little longer, pointed behind. Body and legs clothed with scattered black hairs. The male palpi short, the tibia with a short process on the outer side, twice as long as wide, and appressed to the tarsus so as to be hardly visible except in side view, palpal organ very large, with the lower part full and extended over the base of the tibia; on the outer side near tip is a crescent-shaped yellowish mark; the bulb is small and on one side, and is tipped with a minute spine-like tube.”

One ♂ Mt. Washington, N. H.

¹ The meaning of *infuscated* is *darkened with a blackish tinge*.

We copy Mr. Banks' description, making it include the generic as well as the specific characters. He writes us that the spinal armature is as follows: tibia I 2 below, 1 near base, 1 beyond middle; metatarsi 2 pairs below (long), 1 close to base, 1 toward tip.

Mr. Emerton has sent us a male, also from Mt. Washington. There is no tooth on the lower margin of the falx.

NEON E. S. 1876.

Type, *SALTICUS RETICULATUS* Blackwall.

1876. *NEON* E. S., Ar. Fr., III, p. 208.
 1888. *NEON* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 88.
 1891. *NEON* E., Trans. Conn. Acad., VIII, New England Attidae, p. 22.
 1895. *NEON* P., Occ. Pap. Nat. Hist. Soc., Wis. II, 3, p. 174.
 1895. *ICIUS* B. (*obliquus*), Can. Ent., p. 78.
 1901. *NEON* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 577.
 1905. *NEON* B., Am. Nat., XXXIX, p. 321.

Very small spiders.

Cephalothorax high, a little longer than wide, sides nearly parallel, slanting inward in cephalic part, outward in thoracic. Cephalic part inclined, thoracic nearly level for a very short distance, then falling abruptly. Eye-region scarcely $\frac{1}{5}$ wider than long, equally wide in front and behind (at least in *Nellii*), occupying more than half the cephalothorax. Front eyes close together in a straight row, the middle less than twice as large as the lateral. Second row about halfway between the others. Dorsal eyes very large, forming a row as wide as the cephalothorax. Sternum truncated in front. Front coxae separated by more than the width of the labium, which is wider than long. Falx with a single tooth on the lower margin.

NEON NELLII P. 1888.

Plate L, figs. 5—5b.

1888. *NEON NELLII* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 88.
 1891. *NEON NELLII* E., Trans. Conn. Acad., VIII, New England Attidae, p. 22.

1895. *NEON NELLII* P., Occ. Pap. Nat. Hist. Soc., Wis., II, 3, p. 175.
 1895. *NEON NELLII* B., Jour. N. Y. Ent. Soc., III, 2, p. 92.
 1895. *ICIUS OBLIQUUS* B., Can. Ent., p. 98.

Length, 2.5 mm. Legs, ♂ 1432, ♀ 4132, first pair a little the stoutest, spines very long, three pairs under the first tibia, two serially under the second tibia, and two pairs under the first and second metatarsi.

The male cephalothorax is brown, darkening toward the front end. In the female there is a black band across the front and running back on the sides of the eye-region, while the rest of the cephalic plate is white except for two short dark lines which end in small black spots, in front of the middle. The thoracic part is brown. The abdomen has a pale ground covered with brown mottlings, which form a herring-bone stripe down the middle. The legs are brown except the proximal joints of the posterior three pairs, which are pale. They are marked with darker lines and spots, and the first pair is much the darkest. The palpi and underparts are pale in the female, dark brown, sometimes black, in the male.

Mr. Banks has this species from Long Island, N. Y., and he also describes it under the name *Icius obliquus*, from Olympia, Washington. We have it from the Canadian Rockies and from Pennsylvania, and Mr. Emerton says that it is common in New England. He also reports it from near Ottawa, Canada.

AGASSA E. S. 1901.

Type, *ATTUS CYANEUS* H. (*georgiana* E. S.)

1845. *ATTUS* H. (*cyaneus*), Jour. Bost. Soc. Nat. Hist., V.
 1848. *MAEVIA* C. K., probably, (*chrysea*), Die Arachn., XIV, p. 83.
 1875. *ATTUS* H. (*cyaneus*) Occ. Pap. Bost. Soc. Nat. Hist., II, p. 69.
 1885. *HOMALATTUS* Keys. Ver. zool-bot. Gesel. in Wien, VI, p. 515.
 1888. *HOMALATTUS* P., Wis. Acad. Sci., Arts and Letters, VII, N. A. Att., p. 85.
 1895. *RHENE* P. (*cyaneus*), Occ. Pap. Nat. Hist. Soc. Wis., II, 3, p. 161.
 1901. *AGASSA* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 643.
 1905. *HOMALATTUS* B., Am. Nat. XXXIX, p. 320.

Cephalothorax moderately high, short, about as wide as long, flat above, and hollowed behind to receive the abdomen. Thor-

acic part falling steeply, overlapped, behind, by abdomen. Cephalic part occupying 2/3 of cephalothorax. Eye-region much wider behind than in front, 1/3 wider (behind) than long. Front eyes close together in a slightly curved row, the middle less than twice as large as the lateral. Second row much nearer the first than the third, which is about as wide as cephalothorax. Falces short, vertical, with a single long tooth on lower margin. Sternum about as wide as long, narrowed in front. Anterior coxae separated by width of labium, which is about as wide as long. Abdomen truncated in front.

AGASSA CYANEA H. 1845.

Plate XLIX, figs. 12–12a. Plate LI, figs. 9–9b.

1845. *ATTUS CYANEUS* H., Jour. Bost. Soc. Nat. Hist., V.
 1848. *MAEVIA CHRYSSEA* C. K. (probably), Die Arachn. XIV, p. 83.
 1875. *ATTUS CYANEUS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 69.
 1885. *HOMALATTUS SEPTENTRIONALIS* Keys, Ver. zool-bot. Gesel., VI, p. 515.
 1888. *HOMALATTUS CYANEUS* P., Wis. Acad. Sci. Arts and Letters, VII, N. A. Att., p. 85.
 1895. *RHENE CYANEA* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 3, p. 161.
 1901. *AGASSA GEORGIANA* E. S., Hist. Nat. des Araign., 2me Ed., II, p. 643.

Small, beetle-like, coppery-green spiders, with the cephalothorax fitting over the abdomen.

Length, ♂ 4.8 mm.; ♀ 4.6 mm. Legs, ♂ 1432, ♀ 4132, first pair stoutest in both sexes. Tibia of first with one spine below; metatarsus with two pairs.

The whole spider is covered with green metallic scales, which have a coppery iridescence. There is a narrow, yellowish-white line around the front end of the abdomen. The legs have a scattering of metallic scales. The first pair is dark with light tarsi, the others are lighter with the tarsi and the proximal ends of the metatarsi white. The scales are easily rubbed off, leaving the body black.

Homalattus septentrionalis K. and *Agassa georgiana* E. S. were both sent to us by their authors, so that we are sure of their identity with *cyanea*.

This species is reported from New York, Pennsylvania, Massachusetts, North Carolina, Georgia, Alabama, Florida, New Mexico, Iowa and Nebraska.

Cyanaea might easily be confused with *Sassacus Papenhoei*, but the shape of the **cephalothorax** is different, being more narrowed behind in *Papenhoei*. It also lacks the white band on the cephalothorax found in that species and the metatarsi are not so light.

SASSACUS P. 1895.

Type, *SASSACUS PAPHENHOEI* P.

1888. *ERIS* P. (*barbipes*), Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att., p. 55.
 1895. *SASSACUS* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 3, p. 176.
 1901. *SASSACUS* E. S., Hist. Nat. Araig., 2me Ed., II, p. 631.
 1901. *ASHTABULA* F. O. P. C. (*nigricans*), Biol. Cent. Am., Arachn., Aran., II, p. 257.

Cephalothorax rather high, longer than wide, growing wider from first row of eyes to middle of thoracic part. Cephalic part flat, or slightly inclined, thoracic falling very little at first, and then more steeply, especially in male. Eye-region occupying 1/2 of cephalothorax, wider behind than in front, 1/3 wider than long. Front eyes in a straight row, middle twice as large as lateral. Second row nearer first than third. Third row not quite so wide as cephalothorax. Sternum, in type species, narrow in front, with coxae near together and labium as wide as long.

We include *barbipes* (*Eris barbipes* P.), which Cambridge put into *Ashtabula*, in this genus although it does not entirely agree with the type. The cephalothorax is longer and less rounded, the spines are different, the coxae are widely separated, the labium is longer than wide, and the sternum is slightly truncated.

The falces have a single tooth below in both species, and in the males they usually project obliquely forward, but while *Papenhoei* has the fang very long, with a double curve, in *barbipes* it is of the ordinary shape, but stronger than usual.

SASSACUS PAPENHOEI P. 1895.

Plate XLIX, figs. 11–11c.

1895. *SASSACU. PAPENHOEI* P., Occ. Pap. Nat. Hist. Soc. Wis., II, 3, p. 177.

Length, ♂ 4.7 mm., ♀ 5.5 mm. Legs, ♂ 1423, first plainly longest and stoutest, with enlarged femur; ♀ 14 23, first not much longer than fourth, but stouter than in ♂. Spines, ♂ ♀ tib. I 2–2 at distal end (rarely a fifth spine below, further back), met. I 2–2.

There is a marked difference between the two sexes in the shape of the cephalothorax. While in the male the anterior thoracic part is flat, and is on a level with the cephalic, and the posterior slope abrupt, in the female, the thoracic part rounds off gently from the dorsal eyes to the posterior border. The falces are vertical; the lip as wide as long, and the sternum is small and oval.

The coloring is very brilliant. The upper surface of the cephalothorax and the upper and under surfaces of the abdomen are covered with iridescent scales, the prevailing colors of which are pink and gold. The upper sides of the cephalothorax are covered with iridescent scales, which are white with greenish reflections. The clypeus and lower sides have snow-white bands, which are pale yellow in the four pairs. At the union of these two joints is a black ring and the tarsi are tipped with black. The palpi are pale brown in the female, and dark brown in the male, and are covered with white hairs.

We have this species from Kansas, Arizona, New Mexico, Texas and California.

SASSACUS BARBIPES P. 1888.

Plate L, figs. 6–6a.

1888. *ERIS BARBIPES* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Att. p. 55.1901. *ASHTABULA NIGRICANS* F. O. P. C., Biol. Cent. Am., Arach., Aran. II, p. 257.

Length, ♂ 4.5–5.5 mm., ♀ 6.8–8.5 mm. Legs, ♂ 1423, ♀, 4123, first legs much the stoutest, especially the tibia, the ♀ be-

ing thicker than the ♂. Spines, ♂ ♀, I tib. 3—3, on distal half, II tib. 1—1 and 1.1, below; I and II met., 2—2.

The lip is plainly longer than wide and longer in the female than in the male. Sternum oval, truncated in front; coxae separated by the width of the lip. The color is similar in the two sexes. The body is black, the cephalothorax is covered dorsally over the cephalic plate and the anterior thoracic part, with green and copper-colored iridescent scales; there is a very narrow white line around the lower margin. Abdomen covered with iridescent green scales and there is a white basal band. Femur of palpus dark, other joints yellow, with metallic scales. In some males all the joints are darkish brown. The first leg is dark, except the last two joints which are yellow; there is a fringe of short thick hairs under the tibia; there are white scales on the inner face of the femur and bunches of white hairs on the distal end of the femur and proximal part of patella; the metatarsus is as long as the tibia. The other legs have the femora dark; the other joints vary from yellow to brown in different specimens, and have white and dark longitudinal lines running nearly to the ends of the legs. In large males the first leg is unusually long, both the patella and tibia being elongated.

This species was first described from specimens from Mexico. Recently we have obtained others, well preserved and of both sexes, from Guadalajara, Mexico, and California. Cambridge reports it from Leapa, Mexico, and Guatemala.

***SIDUSA BOREALIS* B. 1904.**

Plate XLVII, fig. 10.

1904. *SIDUSA BOREALIS* ♂ B., Jour. N. Y. Entom. Soc. XII, p. 116.

“Eye-region black, concave behind, thoracic part pale reddish brown, darker on posterior part; clypeus brown; mandibles brown; legs yellowish-brown; leg I rather darker, and all femora darker than other joints, no bands. Abdomen black at extreme base, then a curved transverse whitish band (not very clear); behind in the middle is a broad pale stripe to tip (not

very distinct); and on each side is a broad black stripe containing two white dots, one behind middle, and the other (smaller) close to tip. Sternum and venter pale. Abdomen pointed at tip not depressed. A row of bristles over first eye-row. Leg I not much thickened, tibia I fully three times as long as broad; all legs with many stout spines, as in the genus;¹ male palpi very slender, the tibia longer than tarsus, and clothed with long white hair, tarsus on outside with black hair; palpal organ simple; a short spur at tip of tibia. Length, 5–6 mm. Two males, one from Ithaca, N. Y., the other from Falls Church, Va.”

We have copied Mr. Banks description; he writes to us that this species has “one simple distinct tooth back of falx-claw.”

***SIDUSA ARIZONENSIS* B. 1904.**

1904. *SIDUSA ARIZONENSIS* ♀ B., Journ. N. Y. Entom. Soc. XII, p. 116.

“Cephalothorax dark brown, scarcely paler behind, clothed with white and black hairs, a row of white over first eye-row, more golden below dorsal eyes. Abdomen black, with white and black appressed hairs, more golden around base. Legs pale yellowish, blackish at bases and tips of joint. Sternum pale brownish; venter whitish, unmarked. Cephalothorax about one and one-half as long as broad, broadest in middle, not depressed; eye-region one-third broader than long, a little broader in front than behind. Abdomen longer than cephalothorax, about one and two-thirds as long as broad, not depressed. Leg I not much thickened; spines as in the genus¹. Epigynum shows two large contiguous nearly circular cavities, in the inner basal part of each is a rounded reddish elevation.

Length, 5 mm.” One female from Arizona.

We have copied Mr. Banks description. “One simple distinct tooth back of falx-claw.”

¹ Tibia II 3—3

LYSSOMANES HENTZ. 1844.

Type, *ATTUS VIRIDIS* Walck.

1837. *ATTUS* WALCK, Hist. Nat. des Insectes Aptères, T. I, p. 469 (in part).
 1844. *LYSSOMANES* Hentz, Journal Boston Soc. Nat. Hist., Vol. 4, p. 388.
 1875. *LYSSOMANES* Hentz, Occ. Pap. Bost. Soc. Nat. Hist., II, p. 48.
 1888. *LYSSOMANES* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 97.
 1888. *LYSSOMANES* P., Wis. Acad. Sciences, Arts and Letters, VII, p. 226.
 1896. *LYSSOMANES* P., Occ. Pap. Nat. Hist. Soc. Wis., Vol. III, No. 1, p. 97.
 1900. *LYSSOMANES* F. O. P. C., Biol. Centr. Amer., Arachn., Aran., Vol. II, p. 179.
 1901. *LYSSOMANES* Simon, Hist. Nat. des Araign., 2me Ed., 2, p. 398.
 1905. *LYSSOMANES* Banks, Amer. Nat., vol. XXXIX, p. 320.

Cephalothorax moderately high, longer than wide. Eyes in four transverse rows of two each. Eyes of first close together, from two to three times as large as those of second row, occupying the entire face. Second row just behind first and about as wide. Third row composed of very small eyes and nearer the second than the fourth row; narrower than the second and wider than the fourth row. Eyes of the fourth row about as large as those of the second and nearer together. Quadrangle formed by second and fourth rows as wide as long, or slightly wider.

Sternum heart-shaped; about equally long and wide. Legs long and slender.

LYSSOMANES VIRIDIS WALCK. 1837.

1837. *ATTUS VIRIDIS* Walck., Hist. Nat. des Insectes Aptères, T. 1, p. 469.
 1844. *LYSSOMANES VIRIDIS* H., Journal Boston Soc. Nat. Hist., Vol. IV, p. 388.
 1875. *LYSSOMANES VIRIDIS* H., Occ. Pap. Bost. Soc. Nat. Hist., II, p. 49.
 1888. *LYSSOMANES* P., Wis. Acad. Sciences, Arts and Letters, VII, N. A. Attidae, p. 97.
 1888. *LYSSOMANES VIRIDIS* P., *ibid.*, p. 228.

Length ♂ 6.5 mm., ♀ 8 mm. Legs, ♂ ♀ 1234, long and slender.

In life the color is tender grass-green, turning to yellow in alcohol. Cephalothorax with a slender, central, dark, longitudinal line on the thoracic part. Eyes of second and third rows on black tubercles. Abdomen with six black dots (sometimes wanting) arranged in two longitudinal rows. There are some orange-colored hairs around the anterior eyes, and in the male the falces are reddish in front.

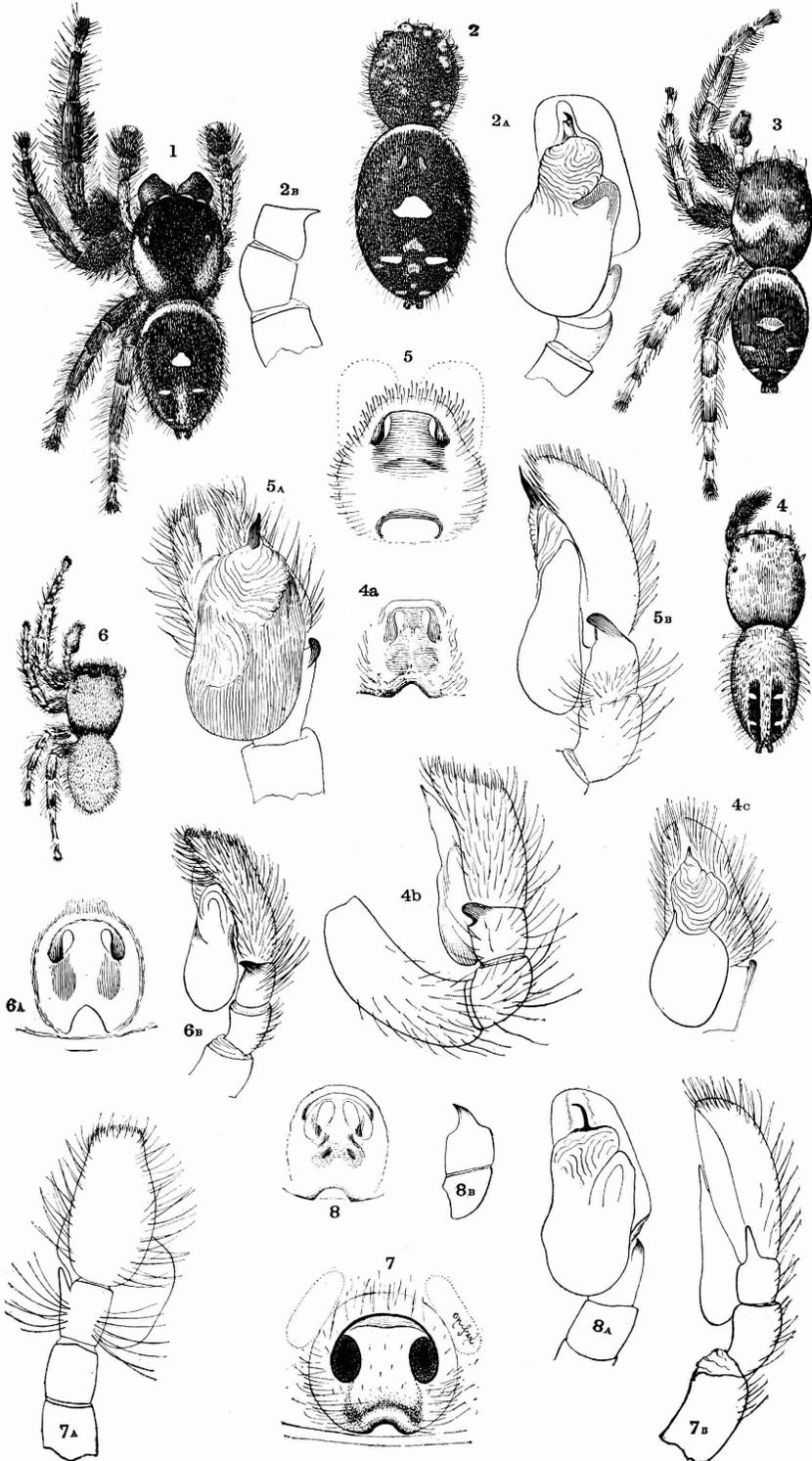
North and South Carolina, Hentz; Florida, Banks; in our collection from Alabama, Louisiana and Texas.

PLATE XXIX

Plates (with blank reverse side) were not paginated, but were inserted opposite respective captions in the original document. Odd-numbered pages, like this page (597), carried only the plate number as shown here, without the page number. For ease of use, odd-numbered pages 599-641 (inclusive), bearing only these plate numbers, have been omitted in this digital version. For historical reference to folio assembly of the entire document, page 611 ("PLATE XXXVI") was labeled with "41—S. & A." and page 627 ("PLATE XLIV") was labeled with "42—S. & A."

EXPLANATION OF PLATE XXIX.

- Fig. 1, *Phidippus variegatus*, male X 3.
- Fig. 2, *P. audax*, female X 4; 2a, male palpus; 2b, patella and tibia of male palpus.
- Fig. 3, *P. Howardii*, male X 4.
- Fig. 4, *P. McCookii*, male X 4; 4a, epigynum; 4b and 4c, male palpus.
- Fig. 5, *P. cardinalis*, epigynum; 5a and 5b, palpus of male.
- Fig. 6, *P. Whitmanii*, male X 2½; 6a, epigynum; 6b, palpus.
- Fig. 7, *P. opifex*, epigynum; 7a and 7b, male palpus.
- Fig. 8, *P. pius*, epigynum; 8a, male palpus; 8b, patella and tibia of male palpus.

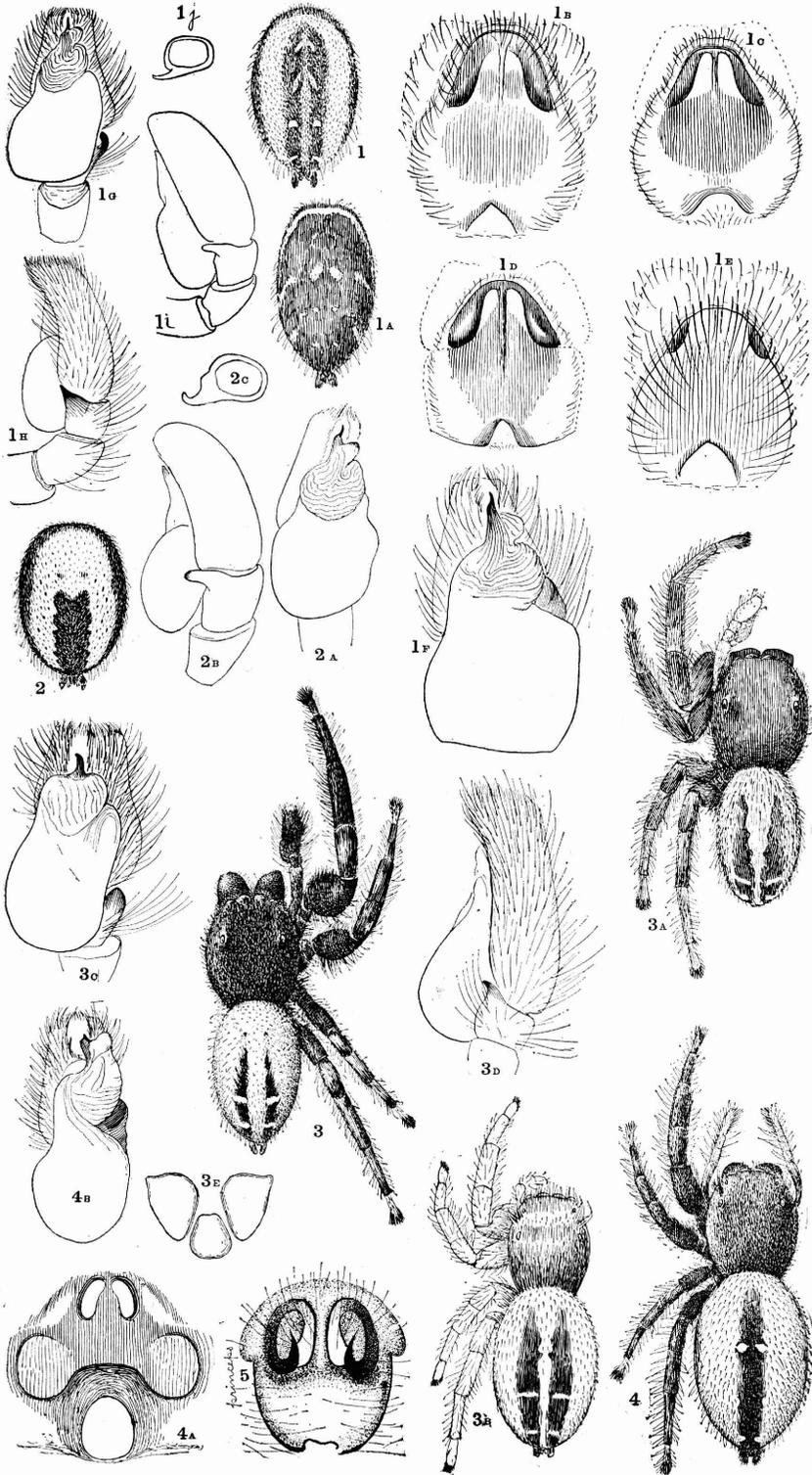


EXPLANATION OF PLATE XXX.

- Fig. 1, *Phidippus clarus*, female X 4; 1a, male X 4; 1b, female nearly full grown; 1c, young; 1d, young soon after leaving cocoon; 1e, 1f, varieties of epigynum; 1g, immature epigynum; 1h, 1i, male palpus; 1j, mouthparts of male.
- Fig. 2, *P. insolens*, male X 3; 2a, 2b, varieties of epigynum; 2c, 2d, male palpus.
- Fig. 3, *P. insignarius*, male X 3; 3a, 3b, 3c, male palpus.
- Fig. 4, *P. arizonensis*, male palpus.
- Fig. 5, *P. farneus*, epigynum.

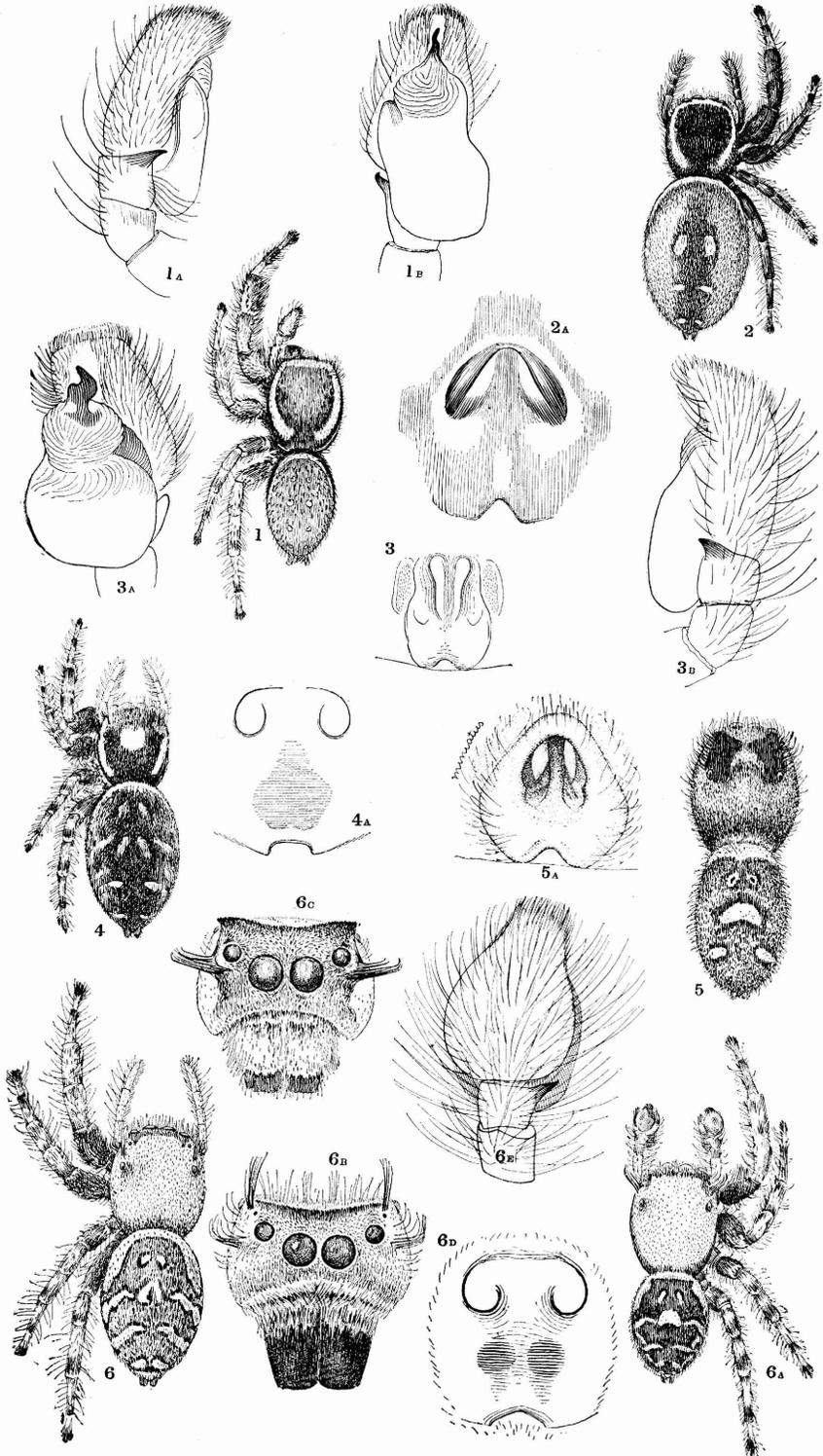
EXPLANATION OF PLATE XXXI.

- Fig. 1, 1a, *Phidippus Johnsonii*, varieties of female abdomen X 3; 1b, 1c, 1d, 1e, varieties of epigynum; 1f, 1g, 1h, 1i, male palpus; 1j, diagram of tibia of palpus showing apophysis.
- Fig. 2, *P. formosus*, female abdomen; 2a, 2b, male palpus; 2c, diagram of tibia of palpus showing apophysis.
- Fig. 3, *P. californicus*, male X 3; 3a, another male; 3b, young female X 3; 3c, 3d, male palpus; 3e, mouthparts of male.
- Fig. 4, *P. ardens*, female X 3; 4a, epigynum; 4b, male palpus.
- Fig. 5, *P. princeps*, epigynum.



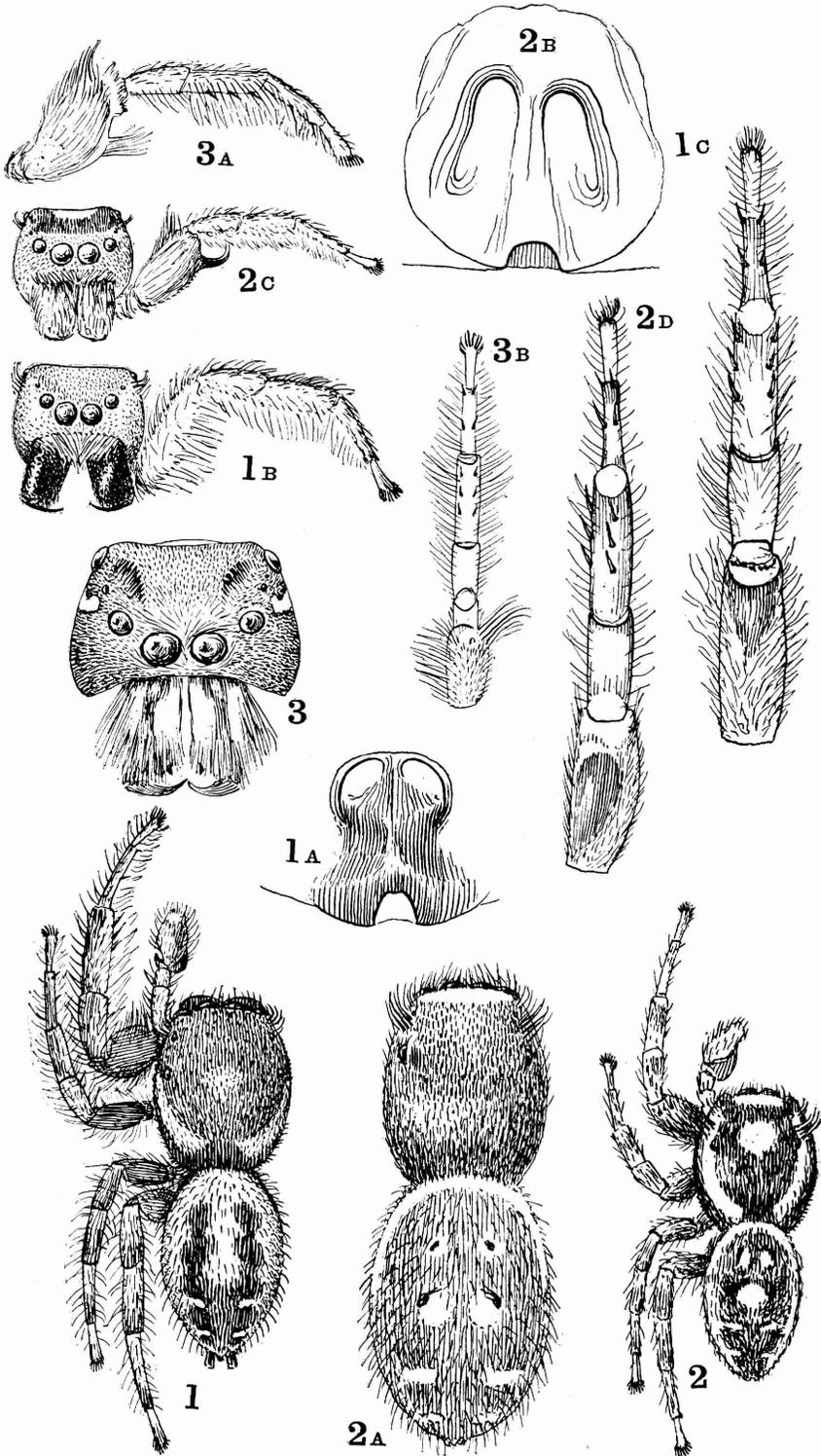
EXPLANATION OF PLATE XXXII.

- Fig. 1, *Phidippus Tyrrellii*, male X 3; 1a, 1b, male palpus.
- Fig. 2, *P. montivagus* (probably female of *Tyrellii*) X 3; 2a, epigynum.
- Fig. 3, *P. brunneus*, epigynum; 3a, 3b, male palpus.
- Fig. 4, *P. comatus*, female X 3; 4a, epigynum.
- Fig. 5, *P. mineatus*, female X 2; 5a, epigynum.
- Fig. 6, *P. carolinensis*, female X 3; 6a, male X 3; 6b, face of female; 6c, face of male; 6d, epigynum; 6e, male palpus.



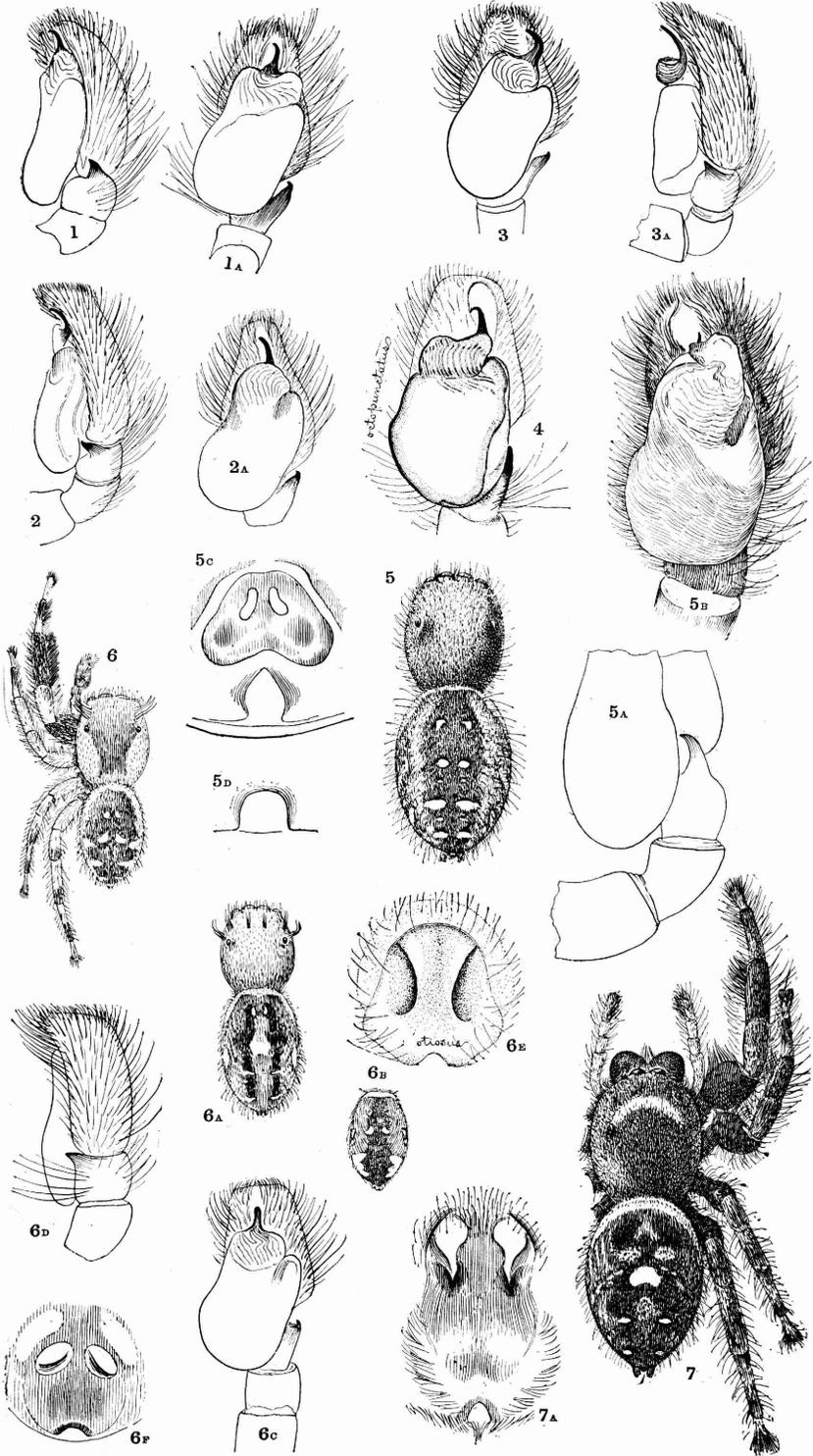
EXPLANATION OF PLATE XXXIII.

- Fig. 1, *Phidippus coccineus*, male X 4; 1a, epigynum; 1b, face and first leg of male; 1c, first leg of male from below.
- Fig. 2, *P. femoratus*, male X 4; 2a, female X 4; 2b, epigynum; 2c, face and first leg of male; 2d, first leg of male from below.
- Fig. 3, *P. Putnamii*, face of male X 5; 3a, first leg of male from in front; 3b, first leg of male from below.



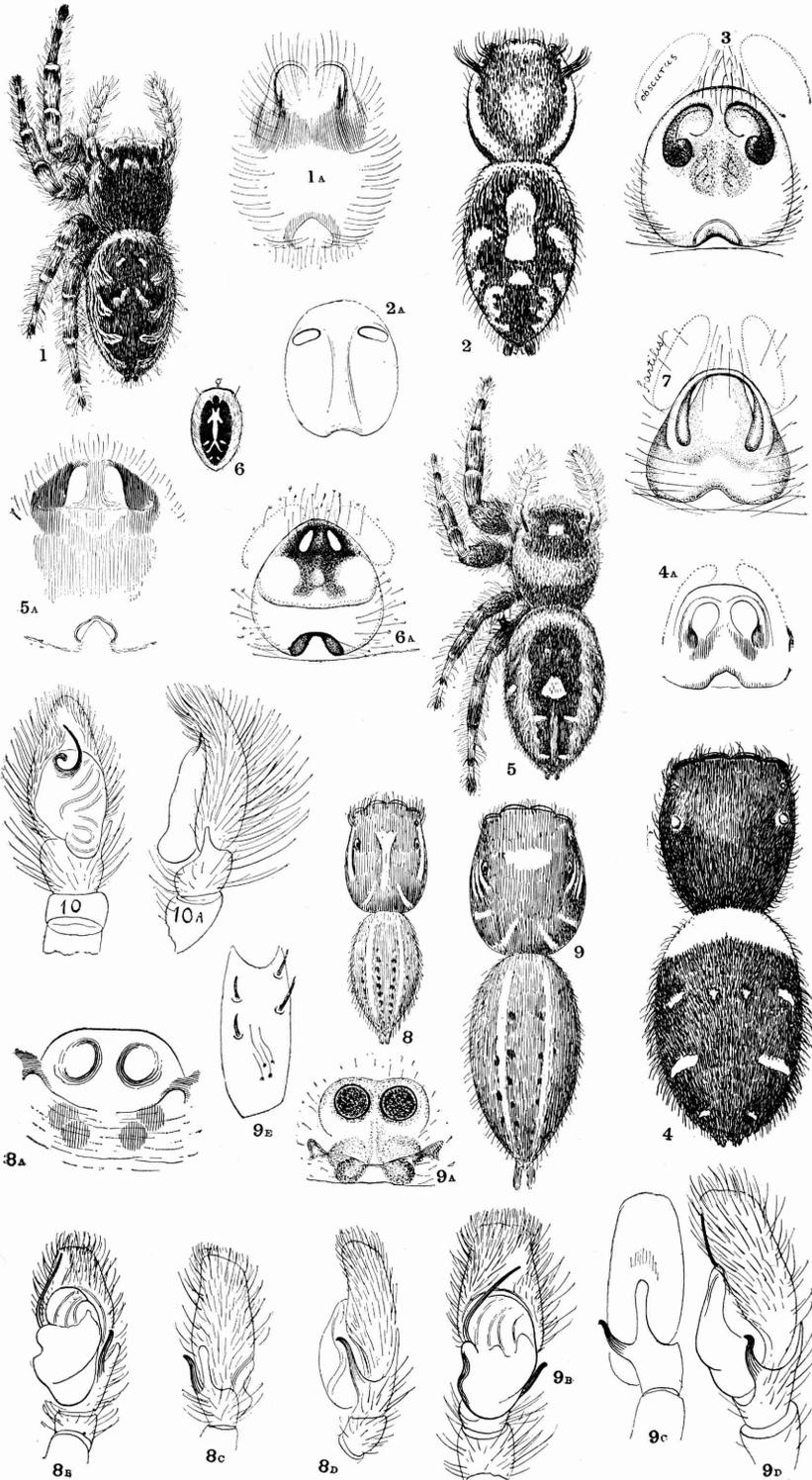
EXPLANATION OF PLATE XXXIV.

- Fig. 1, *Phidippus coccineus*, male palpus.
- Fig. 2, *P. femoratus*, male palpus.
- Fig. 3, *P. Putnamii*, male palpus.
- Fig. 4, *P. octopunctatus*, male palpus.
- Fig. 5, *P. purpuratus*, female X 4; 5a, 5b, male palpus; 5c, epigynum; 5d, posterior notch of epigynum of another female.
- Fig. 6, *P. otiosus*, male X 3; 6a, female X 3; 6b, abdomen of another female X 2; 6c, 6d, male palpus; 6e, 6f, varieties of epigynum.
- Fig. 7, *P. Rauterbergii*, female X 3; 7a, epigynum.



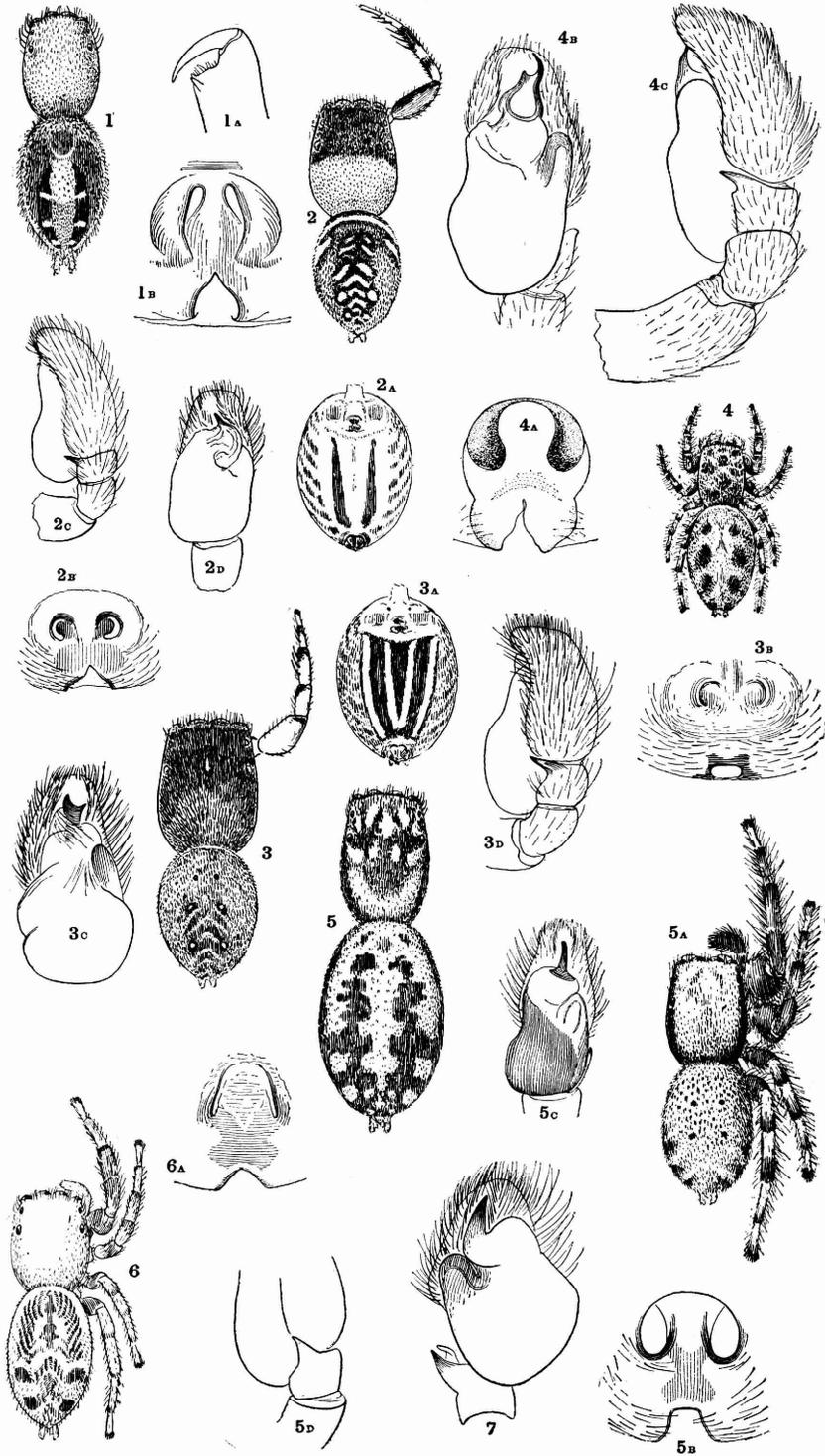
EXPLANATION OF PLATE XXXV.

- Fig. 1, *Phidippus mystaceus*, female X 3; 1a, epigynum.
- Fig. 2, *P. pruinosus*, female X 4; 2a, epigynum.
- Fig. 3, *P. obscurus*, epigynum.
- Fig. 4, *P. basalis*, female X 4; 4a, epigynum.
- Fig. 5, *P. Workmanii*, female X 3; 5a, epigynum.
- Fig. 6, *P. texanus*, abdomen of female life size; 6a, epigynum.
- Fig. 7, *Parnaeus fertilis*, epigynum.
- Fig. 8, *Thiodina puerpera*, male X 6; 8a, epigynum; 8b, 8c, 8d, male palpus.
- Fig. 9, *Thiodina sylvana*, male X 6; 9a, epigynum; 9b, 9c, 9d, male palpus; 9e, tibia of first leg from below, showing bulbous hairs (after Cambridge).
- Fig. 10, 10a, *Escambia conspecta*, male palpus.



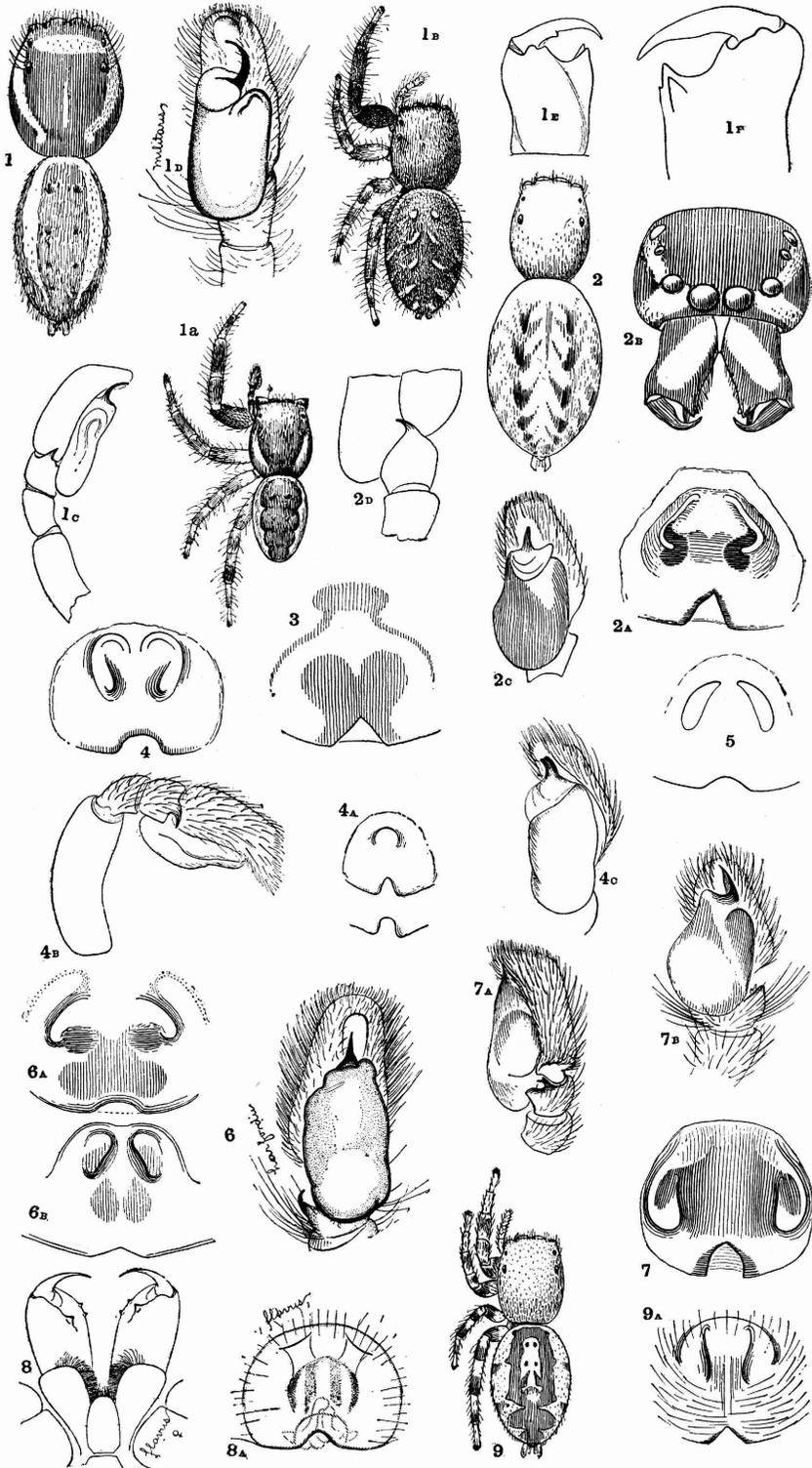
EXPLANATION OF PLATE XXXVI.

- Fig. 1, *Dendryphantès aeneolus*, female X 5; 1a, inside of left falk of male; 1b, epigynum.
- Fig. 2, *D. canadensis*, female, X 5; 2a, female abdomen from below; 2b, epigynum; 2c, 2d, male palpus.
- Fig. 3, *D. castaneus*, female X 5; 3a, female abdomen from below; 3b, epigynum; 3c, 3d, male palpus.
- Fig. 4, *D. capitatus*, light variety, female X 4; 4a, epigynum; 4b, 4c, male palpus.
- Fig. 5, *D. californicus*, female X 6; 5a, male X 6; 5b, epigynum; 5c, male palpus; 5d, tibia of male palpus.
- Fig. 6, *D. versicolor*, female X 6; 6a, epigynum.
- Fig. 7, *D. arizonensis*, male palpus.



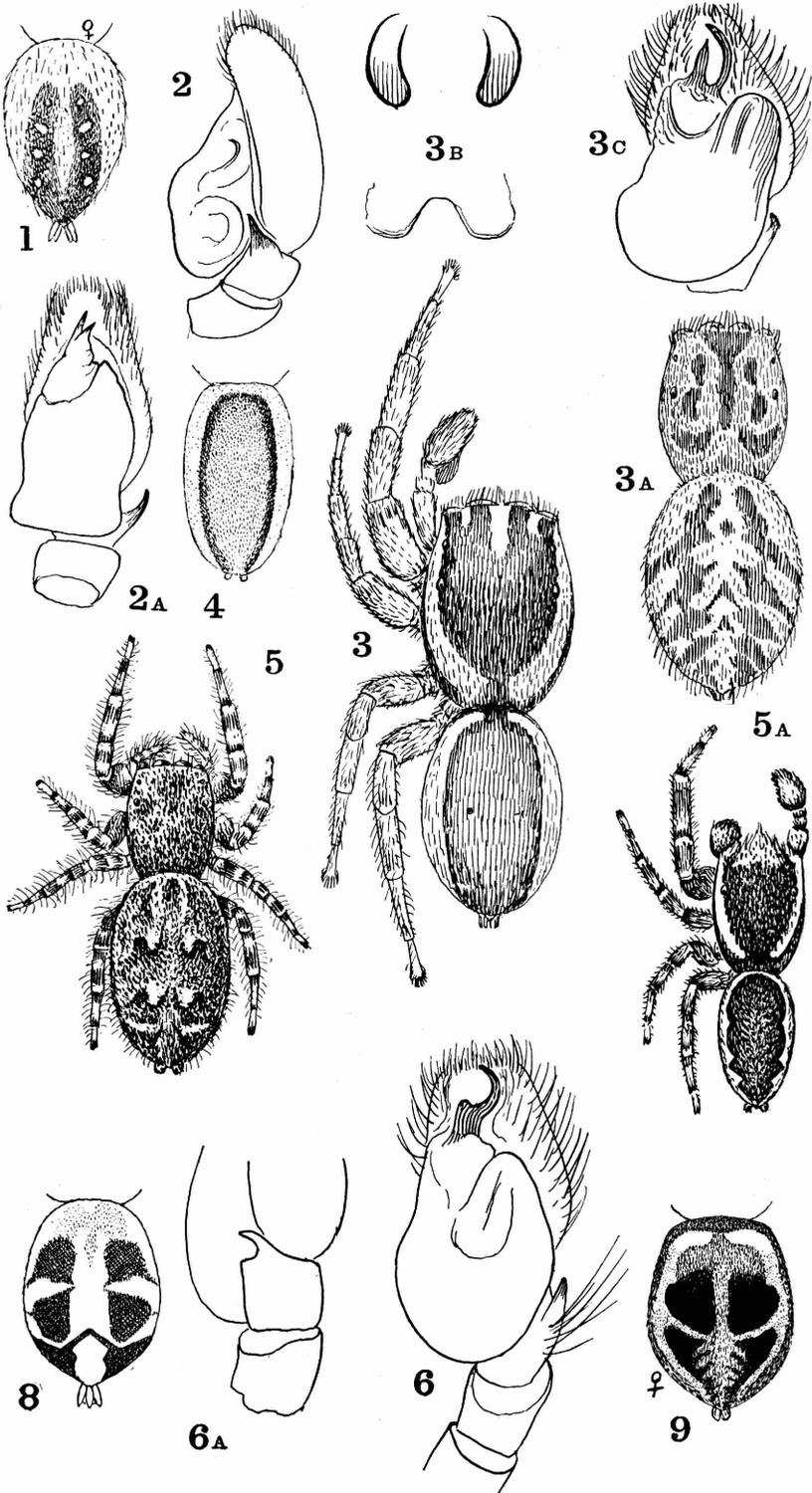
EXPLANATION OF PLATE XXXVII.

- Fig. 1, *Dendryphantes militaris*, male X 6; 1a, rubbed male X 4; 1b, female X 4; 1c, 1d, male palpus; 1e, falx of male, upper side; 1f, falx of male, under side.
- Fig. 2, *D. imperialis*, female X 6; 2a, epigynum; 2b, face and falces of male; 2c, male palpus; 2d, patella and tibia of male palpus.
- Fig. 3, *D. limbatus*, epigynum.
- Fig. 4, 4a, *D. montanus*, epigynes; 4b, 4c, male palpus.
- Fig. 5, *D. floridanus*, epigynum.
- Fig. 6, *D. Harfordii*, male palpus; 6a, 6b, epigynes.
- Fig. 7, *D. glaciales* epigynum; 7a, 7b, male palpus.
- Fig. 8, *D. flavus*, mouthparts and falces of female; 8a, epigynum.
- Fig. 9, *D. pervagus*, female X 6; 9a, epigynum.



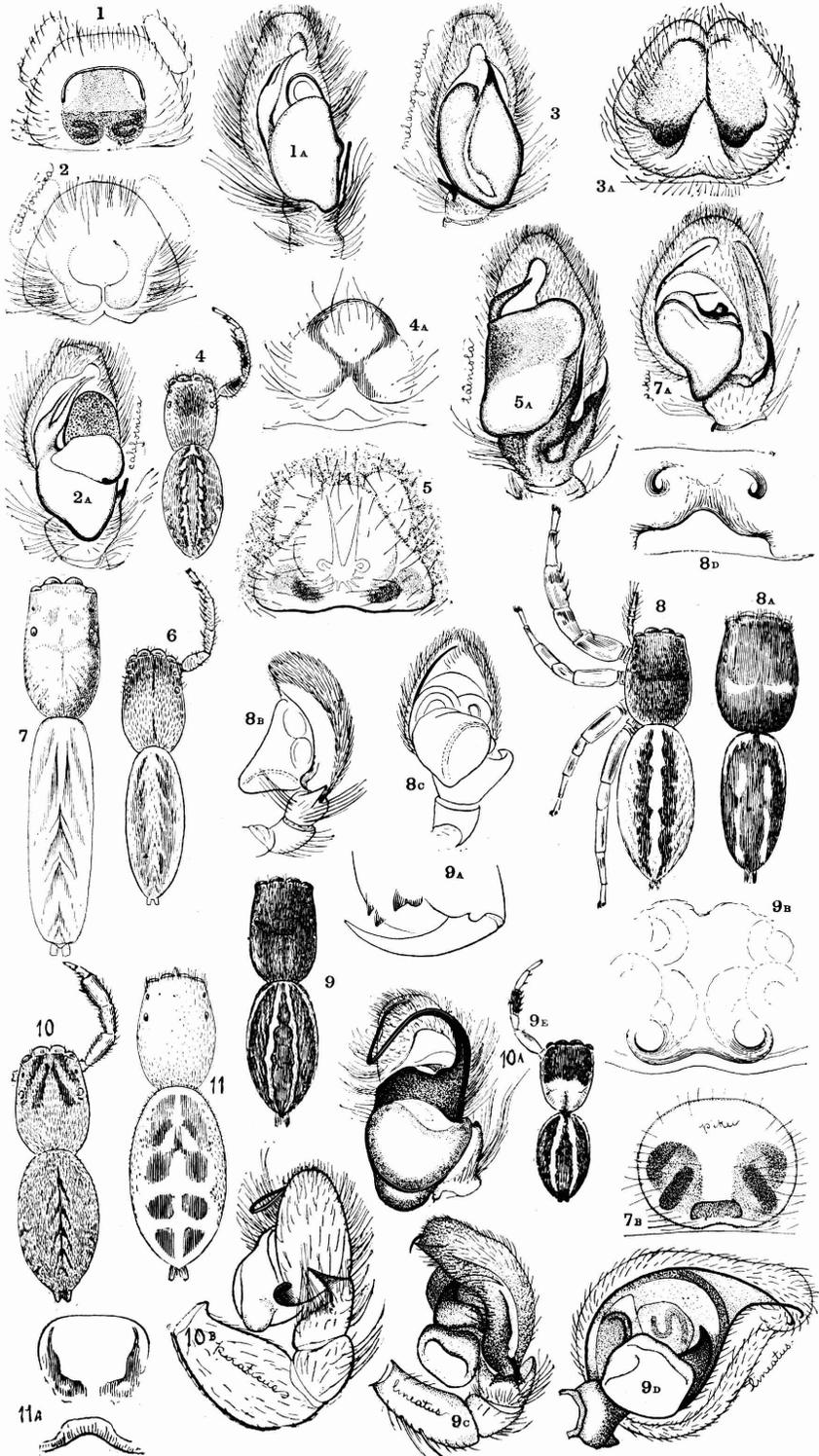
EXPLANATION OF PLATE XXXVIII.

- Fig. 1, *Dendryphantes flavus*, abdomen of female X 2.
- Fig. 2, 2a, *D. neomexicanus*, male palpus.
- Fig. 3, *D. flavipedes*, male X 8; 3a, female X 12; 3b, epigynum; 3c, male palpus.
- Fig. 4, *D. Harfordii*, abdomen of male X 2.
- Fig. 5, *D. capitatus*, female of dark variety, X 5; 5a, male X 5.
- Fig. 6, 6a, *D. aeneolus*, male palpus.
- Fig. 8, *Agobardus anormalis*, abdomen of female X 2 1/2.
- Fig. 9, *Stoides aurata*, abdomen of female X 2.



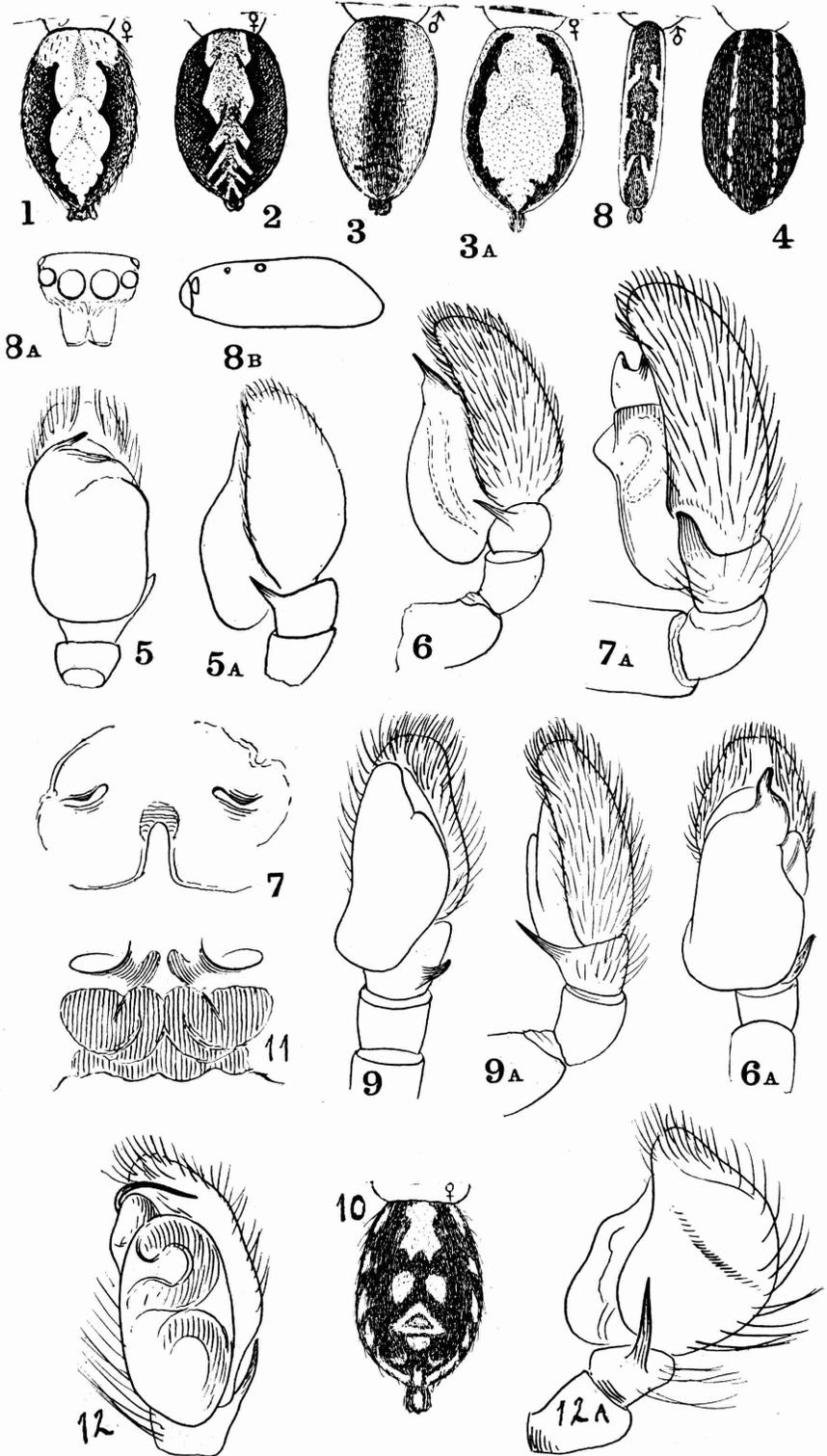
EXPLANATION OF PLATE XXXIX.

- Fig. 1, *Marpissa undata*, epigynum; 1a, male palpus.
- Fig. 2, *M. californica*, epigynum; 2a, male palpus.
- Fig. 3, *M. melanognatha*, male palpus; 3a, epigynum.
- Fig. 4, *Menemerus vittatus*, female under alcohol, X 4; 4a, epigynum.
- Fig. 5, *Metacyrba taeniola*, epigynum; 5a, male palpus.
- Fig. 6, *Hyctia robusta*, female under alcohol, X 4.
- Fig. 7, *Hyctia Pikei*, female X 8; 7a, male palpus; 7b, epigynum.
- Fig. 8, *Hyctia bina*, female X 4; 8a, male X 4; 8b, 8c, male palpus; 8d, epigynum.
- Fig. 9, *Onondaga lineata*, female X 4; 9a, end of falx; 9b, epigynum; 9c, 9d, male palpus; 9e, male X 6.
- Fig. 10, *Pseudicius piraticus*, female X 5; 10a, 10b, male palpus.
- Fig. 11, *Pseudicius siticulosus*, female X 6; 11a, epigynum.



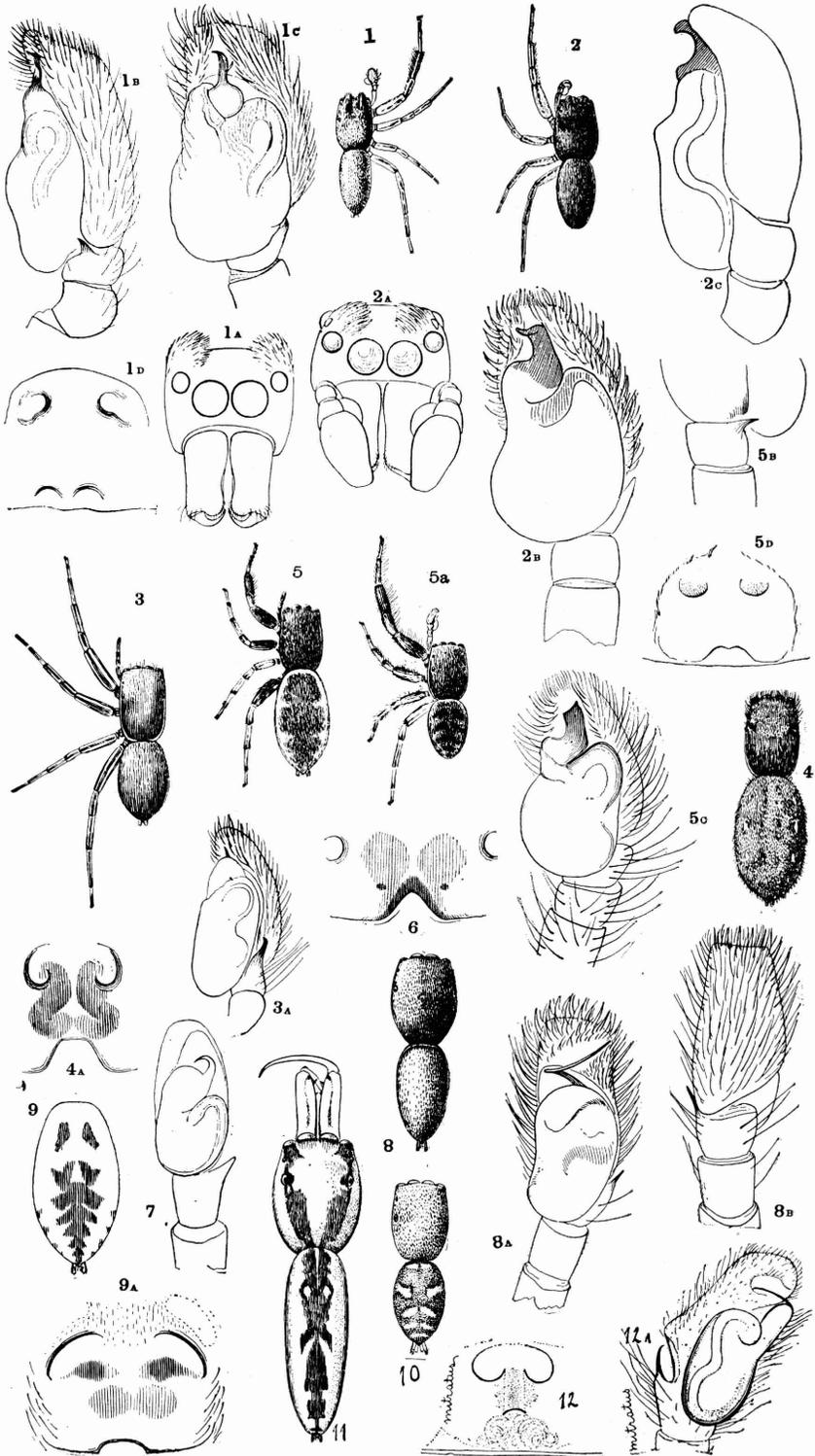
EXPLANATION OF PLATE XL.

- Fig. 1, *Marpissa undata*, abdomen of female X 2.
- Fig. 2, *M. californica*, abdomen of female X 2.
- Fig. 3, *M. melanognatha*, abdomen of male X 2; 3a, abdomen of female X 2.
- Fig. 4, *Metacyrba taeinola*, abdomen of female X 2.
- Fig. 5, 5a, *Pseudicius monticolus*, male palpus.
- Fig. 6, 6a, *Icius sexmaculatus*, male palpus.
- Fig. 7, *Icius formicarius*, epigynum; 7a, male palpus.
- Fig. 8, *Hycitia Pikei*, abdomen of male X 2; 8a, face and falces of female; 8b, profile of cephalothorax.
- Fig. 9, *Marchena sissonii*, male palpus.
- Fig. 10, *Marchena minuta*, abdomen of female X 2.
- Fig. 11, *Icius vitis*, epigynum.
- Fig. 12, 12a, *Wala grenada*, male palpus.



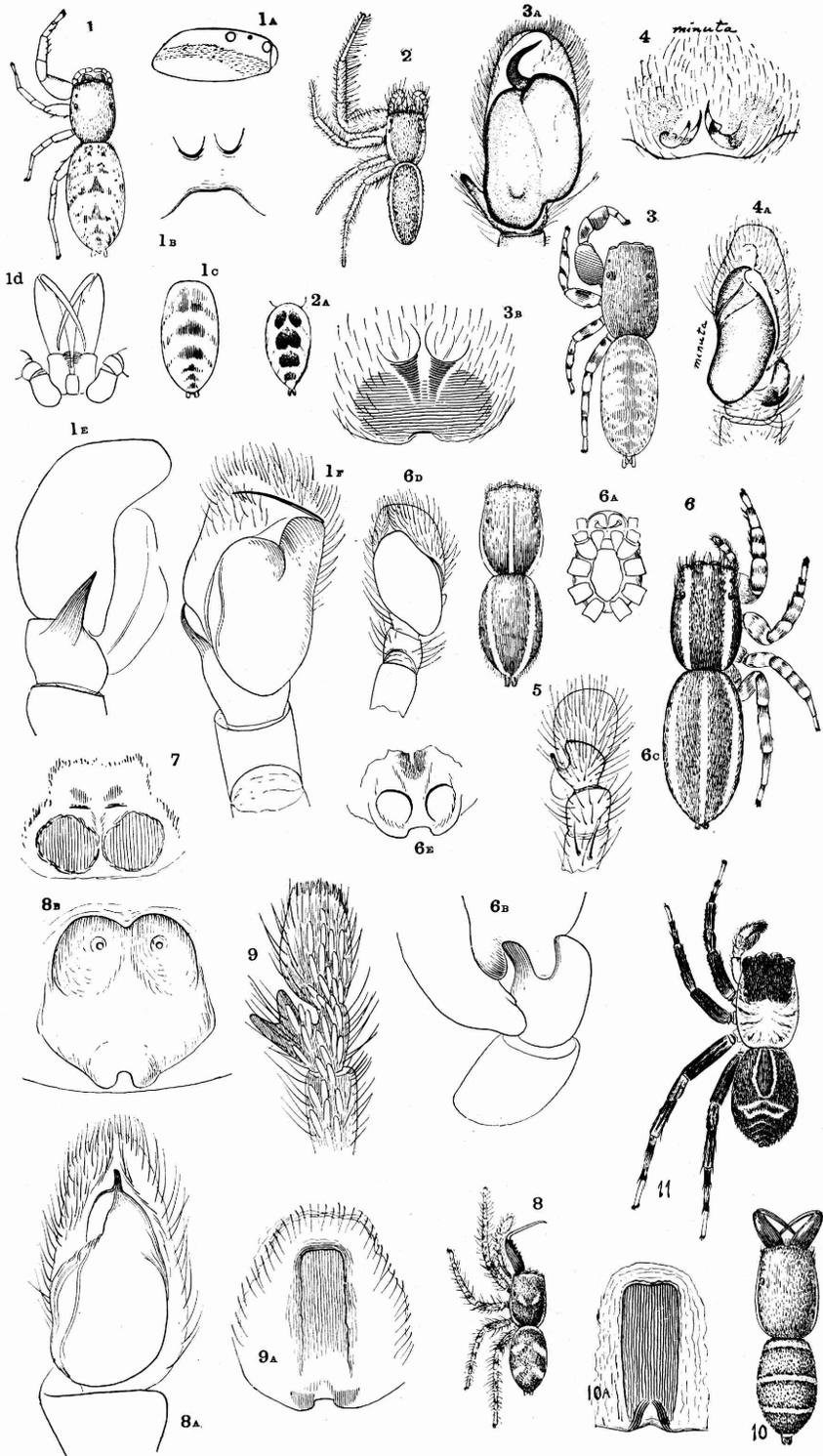
EXPLANATION OF PLATE XLI.

- Fig. 1, *Icius elegans*, male X 4; 1a, face and falces of male; 1b, 1c, male palpus; 1d, epigynum.
- Fig. 2, *I. similis*, male X 4; 2a, face and falces of male; 2b, 2c, male palpus.
- Fig. 3, *I. formicarius*, female X 4; 3a, male palpus.
- Fig. 4, *I. versicolor*, female X 4; 4a, epigynum.
- Fig. 5, *I. Hartii*, female X 4; 5a, male X 4; 5b, tibia of male palpus; 5c, male palpus; 5d, epigynum.
- Fig. 6, *I. exornatus*, epigynum.
- Fig. 7, *I. vitis*, male palpus.
- Fig. 8, *I. Wickhamii*, male X 4; 8a, 8b, male palpus.
- Fig. 9, *I. nigromaculatus*, abdomen of female, X 6; 9a, epigynum.
- Fig. 10, *I. sexmaculatus*, male X 6.
- Fig. 11, *Wala grenada*, male X 8.
- Fig. 12, *Wala mitrata*, epigynum; 12a, male palpus.



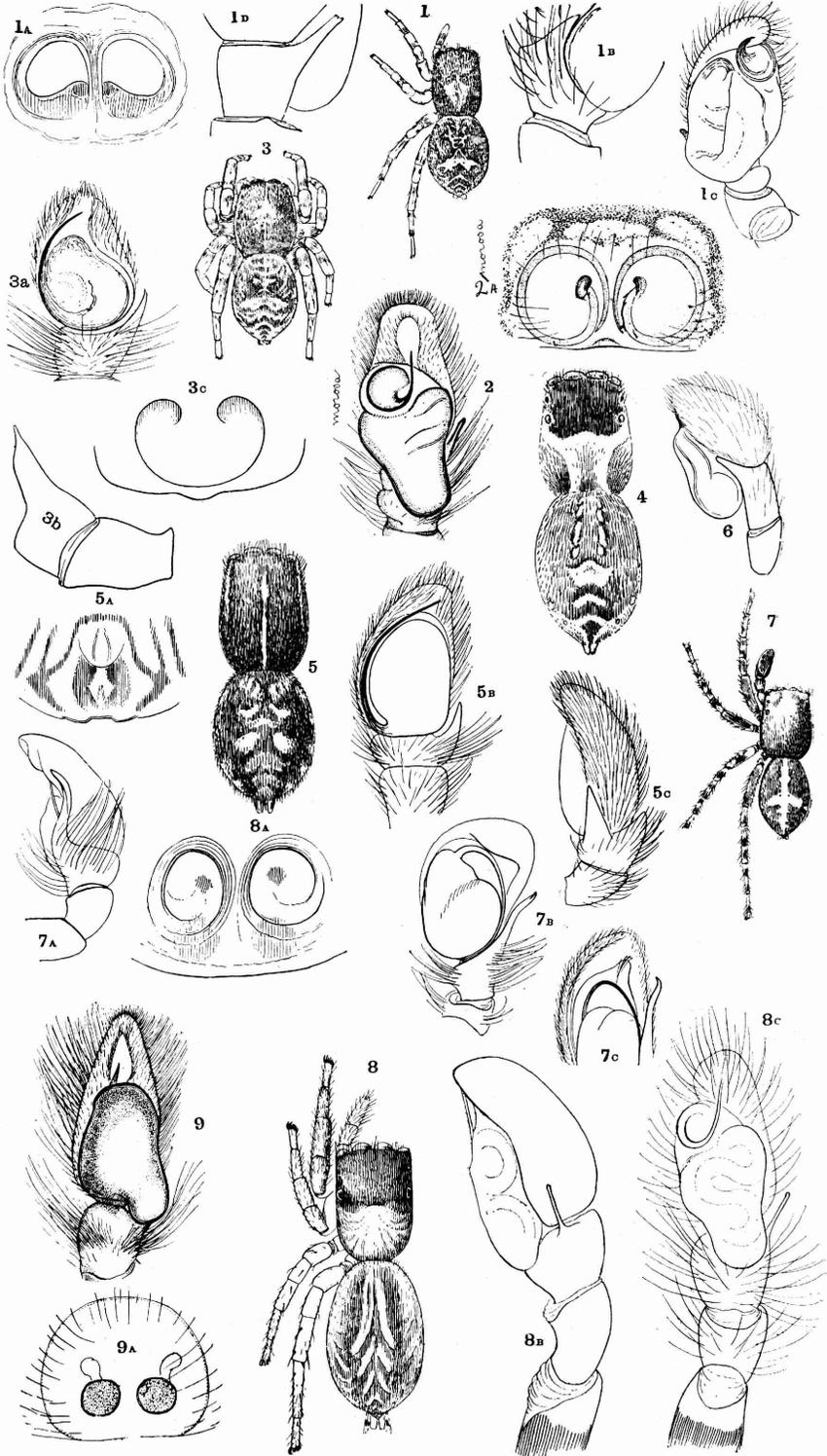
EXPLANATION OF PLATE XLII.

- Fig. 1, *Wala palmarum*, female X 4; 1a, profile of cephalothorax; 1b, epigynum; 1c, abdomen of another female; 1d, falces of male from below; 1e, 1f, male palpus.
- Fig. 2, *Wala mitrata*, male X 4; 2a, abdomen of female.
- Fig. 3, *Admestina tibialis*, male X 8; 3a, palpus of male; 3b, epigynum.
- Fig. 4, *Marchena minuta*, epigynum; 4a, male palpus.
- Fig. 5, *Marchena sissonii*, female X 6.
- Fig. 6, *Phlegra leopardus*, female X 4; 6a, sternum and mouthparts; 6b, 6c, 6d, male palpus; 6e, epigynum.
- Fig. 7, *Talevera minuta*, epigynum.
- Fig. 8, *Salticus scenicus*, male X 4; 8a, male palpus; 8b, epigynum.
- Fig. 9, *Salticus Peckhamae*, male palpus; 9a, epigynum.
- Fig. 10, *Salticus palpalis*, male X 4; 10a, epigynum.
- Fig. 11, *Habrocestum pulex*, male X 4.



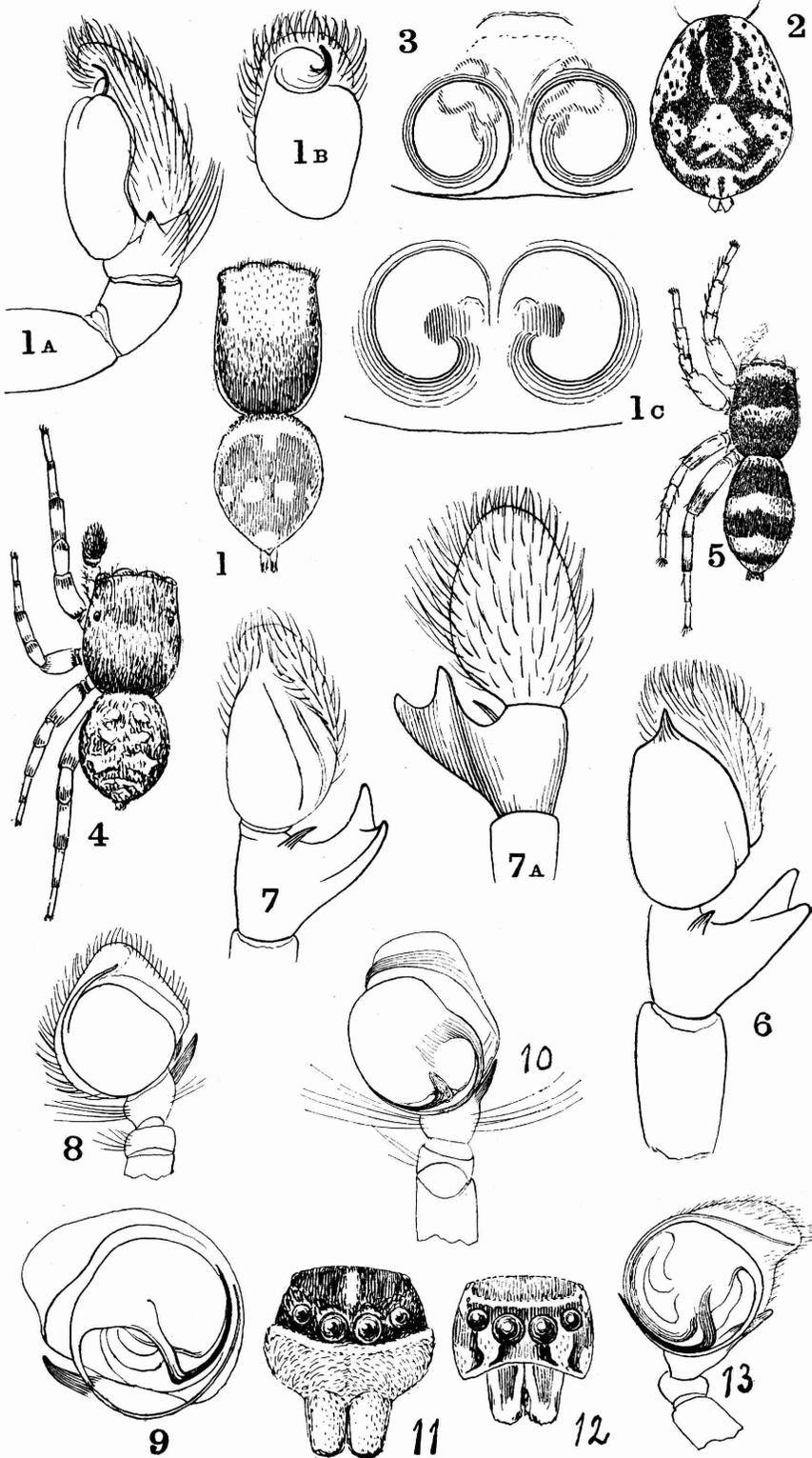
EXPLANATION OF PLATE XLIII.

- Fig. 1, *Habrocestum pulex*, female X 4; 1a, epigynum; 1b, 1c, male palpus; 1d, tibia of male palpus.
- Fig. 2, *Habrocestum morosum*, male palpus; 2a, epigynum.
- Fig. 3, *Sittacus palustris*, female X 4; 3a, male palpus; 3b, tibia of male palpus; 3c, epigynum.
- Fig. 4, *Sittacus claremontii*, female under alcohol, X 6.
- Fig. 5, *Sittacus ranierii*, male X 6; 5a, epigynum; 5b, 5c, male palpus.
- Fig. 6, *Chalcoscirtus montanus*, male palpus.
- Fig. 7, *Euophrys cruciatus*, male X 4; 7a, 7b, 7c, male palpus.
- Fig. 8, *Euophrys monadnock*, female X 7; 8a, epigynum; 8b, 8c, male palpus.
- Fig. 9, *Stoides aurata*, male palpus; 9a, epigynum.



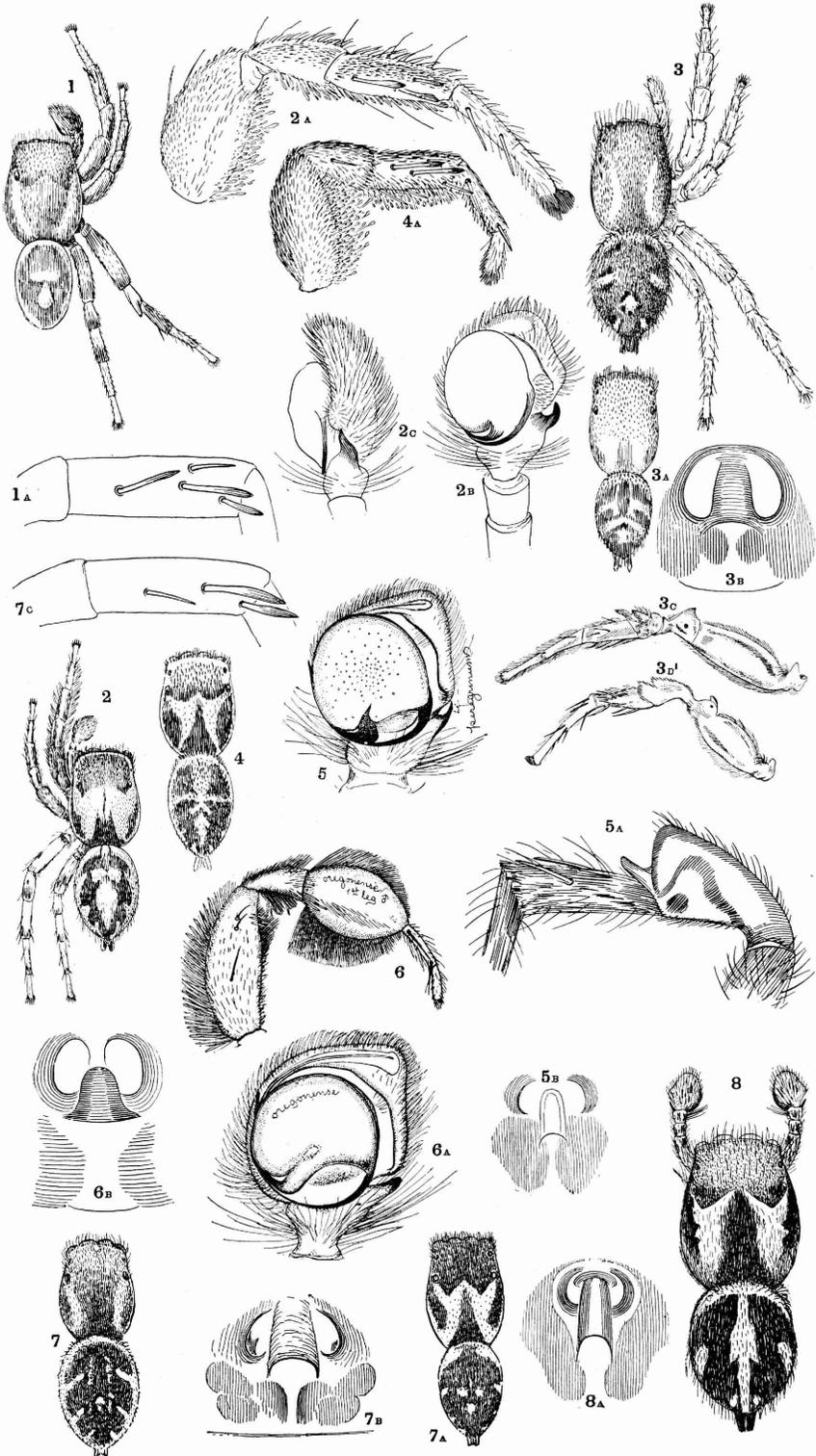
EXPLANATION OF PLATE XLIV.

- Fig. 1, *Habrocestum acerbum*, male under alcohol, X 8; 1a, 1b, male palpus; 1c, epigynum.
- Fig. 2, *Habrocestum morosum*, abdomen of female X 2 1/2.
- Fig. 3, *Sittacus claremontii*, epigynum.
- Fig. 4, *Sittacus palustris*, male X 4.
- Fig. 5, *Salticus albocinctus*, female X 5.
- Fig. 6, *Salticus Peckhamae*, male palpus.
- Fig. 7, 7a, *Salticus palpalis*, male palpus.
- Fig. 8, *Pellenes brunneus*, male palpus.
- Fig. 9, *Pellenes elegans*, male palpus.
- Fig. 10, *Pellenes viridipes*, male palpus.
- Fig. 11, *Pellenes tarsalis*, face and falces of male.
- Fig. 12, *Pellenes clypeatus*, face and falces of male.
- Fig. 13, *Pellenes tranquillus*, male palpus



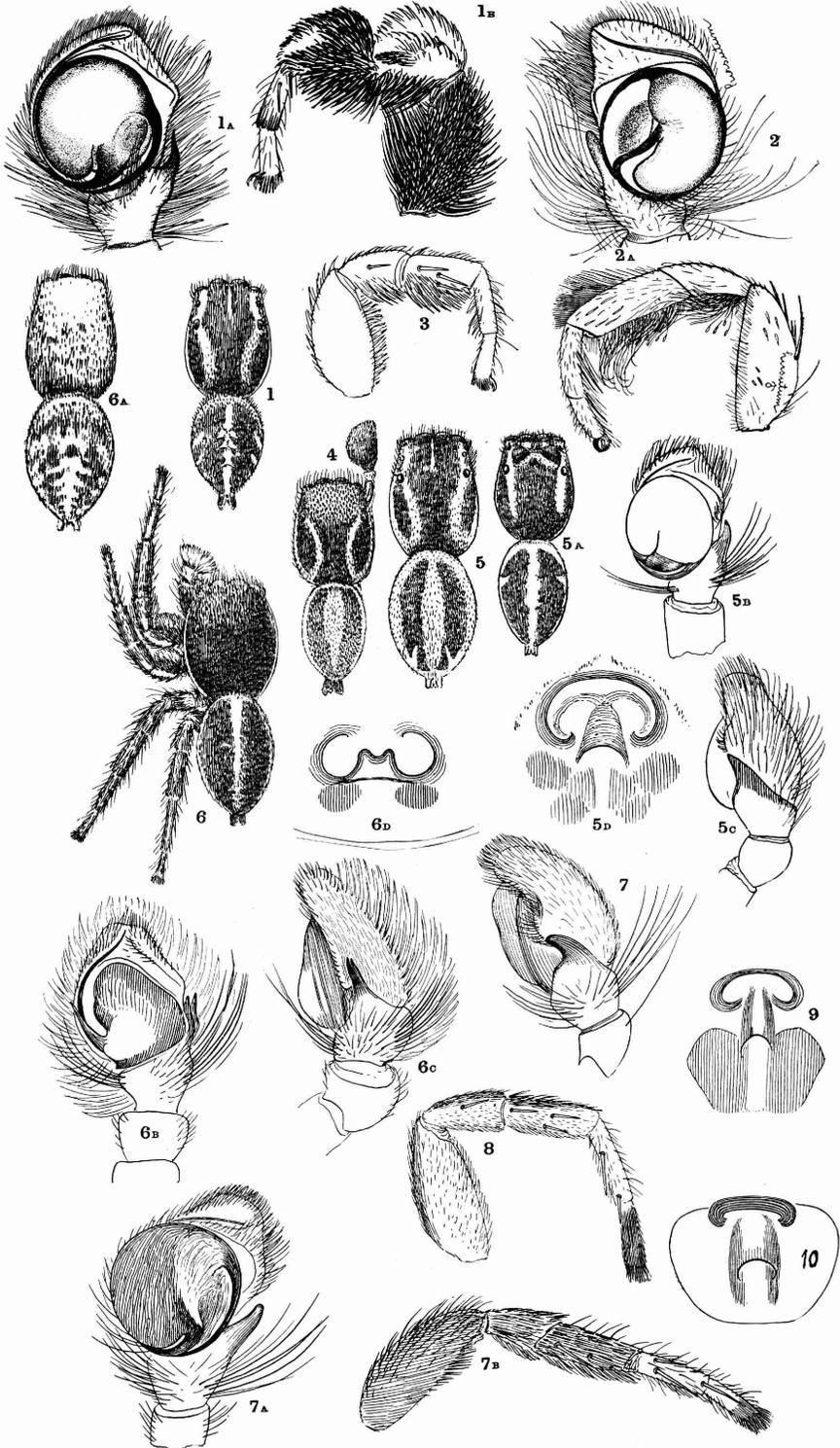
EXPLANATION OF PLATE XLV.

- Fig. 1, *Pellenes californicus*, male X 6; 1a, tibia of first leg, inside.
- Fig. 2, *P. clypeatus* male X 6; 2a, first leg of male; 2b, 2c, male palpus.
- Fig. 3, *P. coronatus*, female X 6; 3a, young female X 6; 3b, epigynum; 3c, 3d, 3rd leg of male from inside.
- Fig. 4, *P. brunneus*, male X 6; 4a, first leg of male.
- Fig. 5, *P. peregrinum*, male palpus; 5a, third leg of male; 5b, epigynum.
- Fig. 6, *P. oregonense*, first leg of male; 6a, male palpus; 6b, epigynum.
- Fig. 7, *P. calcaratum*, female X 5; 7a, male X 6; 7b, epigynum.
- Fig. 8, *P. viridipes*, male X 8; 8a, epigynum.



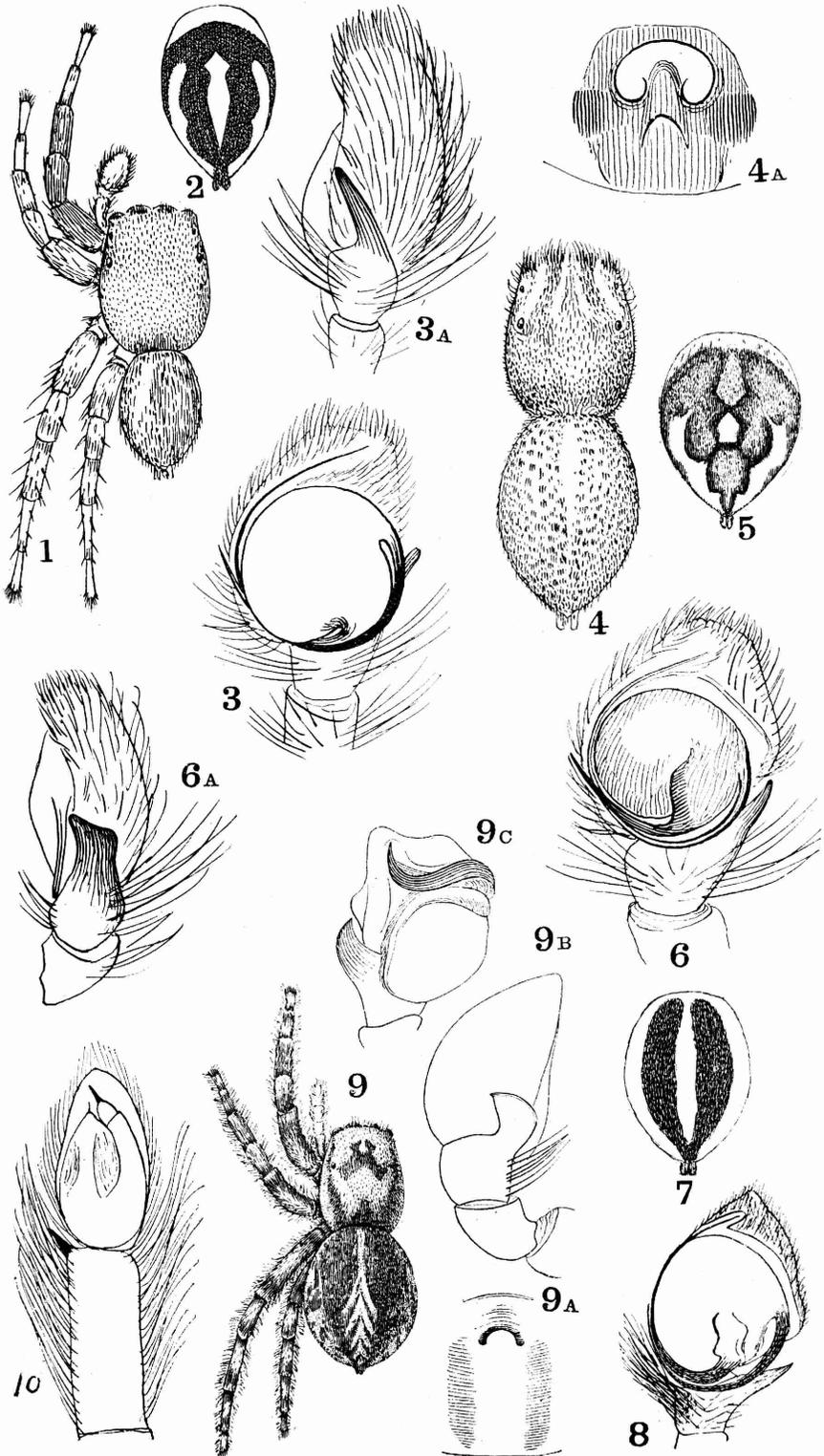
EXPLANATION OF PLATE XLVI.

- Fig. 1, *Pellenes agilis*, male X 6; 1a, male palpus; 1b, first leg of male.
- Fig. 2, *P. hirsutus*, male palpus; 2a, first leg of male.
- Fig. 3, *P. signatus*, first leg of male.
- Fig. 4, *P. elegans*, male X 6.
- Fig. 5, *P. Cockerellii*, female X 5; 5a, male X 6; 5b, 5c, male palpus; 5d, epigynum.
- Fig. 6, *P. americanus*, male X 6; 6a, female, X 6; 6b, 6c, male palpus; 6d, epigynum.
- Fig. 7, 7a, *P. amicus*, male palpus; 7b, first leg of male.
- Fig. 8, *P. tarsalis*, first leg of male.
- Fig. 9, *P. superciliosus*, epigynum.
- Fig. 10, *P. politus*, epigynum.



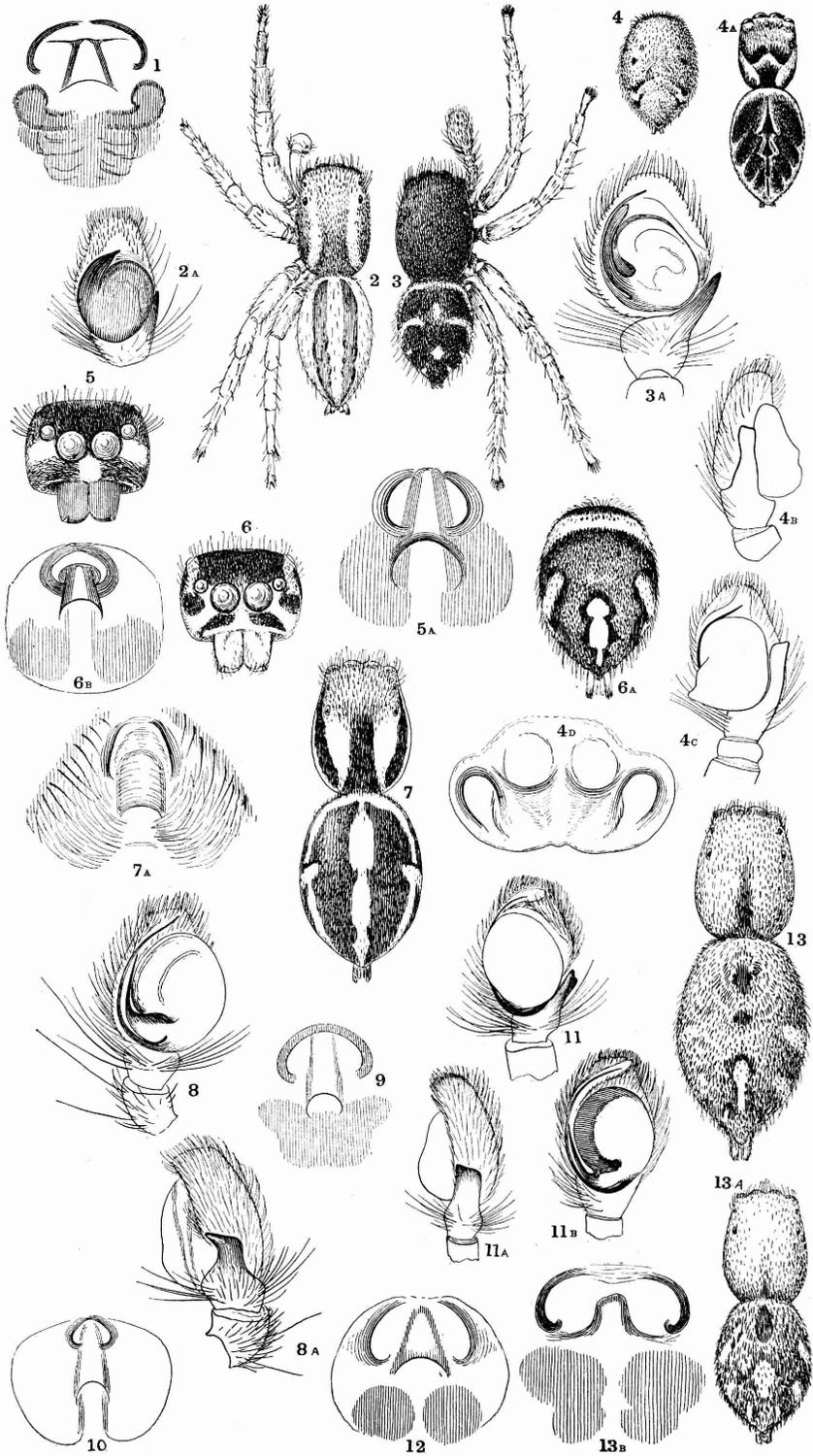
EXPLANATION OF PLATE XLVII.

- Fig. 1, *Pellenes umatillus*, male X 5.
- Fig. 2, *P. splendens*, abdomen of female.
- Fig. 3, 3a, *P. signatus*, male palpus.
- Fig. 4, *P. mundus*, female X 5; 4a, epigynum.
- Fig. 5, *P. fallax*, abdomen of female.
- Fig. 6, 6a, *P. delectus*, male palpus.
- Fig. 7, *P. peregrinus*, abdomen of male.
- Fig. 8, *P. calcaratus*, male palpus (after Banks).
- Fig. 9, *P. montanus*, female X 2 1/2; 9a, epigynum; 9b, 9c, male palpus.
- Fig. 10, *Sidusa borealis*, male palpus (after Banks).



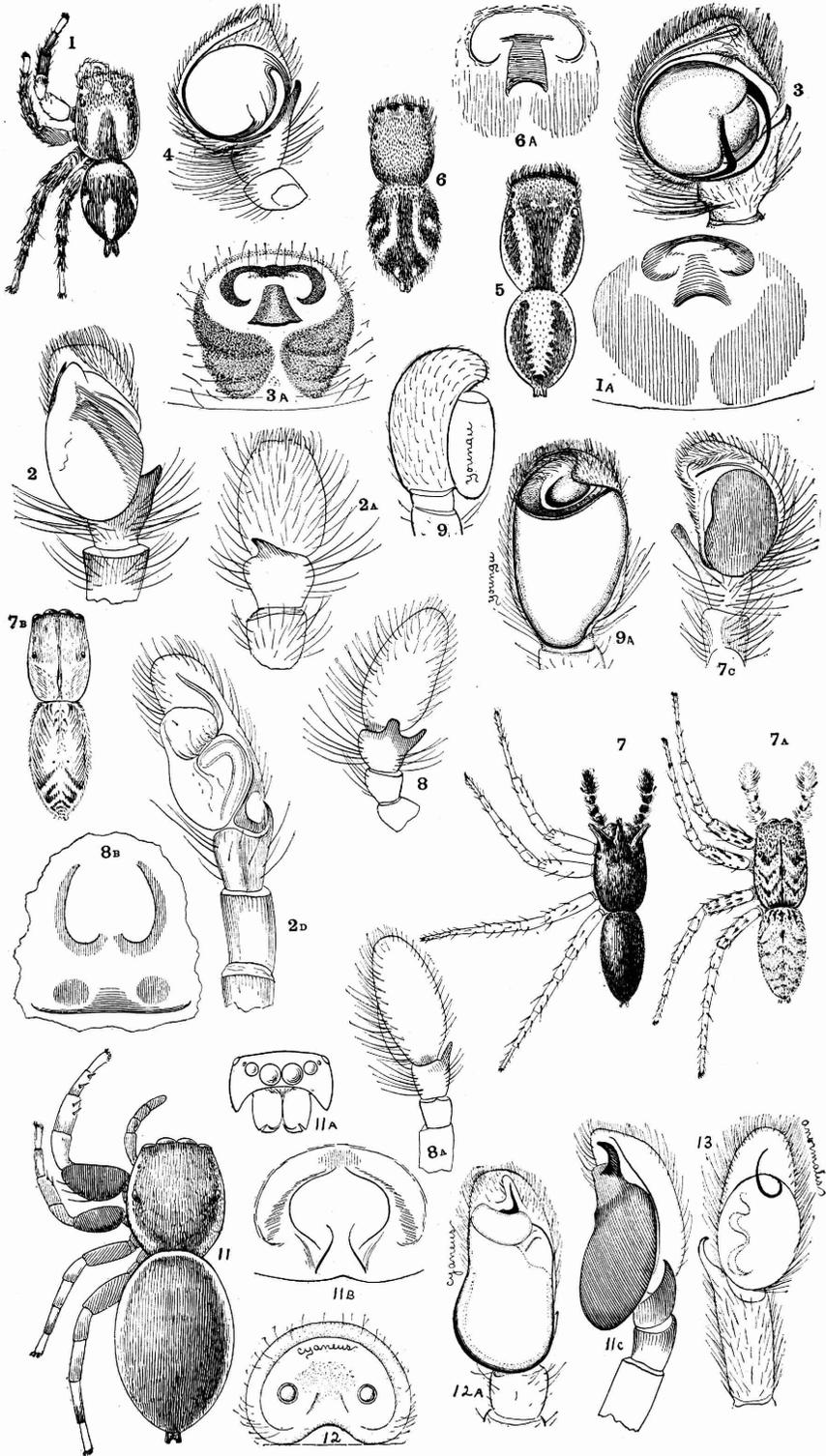
EXPLANATION OF PLATE XLVIII.

- Fig. 1, *Pellenes dolosus*, epigynum.
- Fig. 2, *P. limatus*, male X 6; 2a, male palpus.
- Fig. 3, *P. borealis*, male X 6; 3a, male palpus.
- Fig. 4, *P. Hoyi*, abdomen of female; 4a, young female; 4b, 4c, male palpus; 4d, epigynum.
- Fig. 5, *P. sabulosus*, face of female; 5a, epigynum.
- Fig. 6, *P. carolinensis*, face of female; 6a, abdomen of female; 6b, epigynum.
- Fig. 7, *P. jucundus*, female X 6; 7a, epigynum.
- Fig. 8, 8a, *P. splendens*, male palpus.
- Fig. 9, *P. nemoralis*, epigynum.
- Fig. 10, *P. candidus*, epigynum.
- Fig. 11, 11a, 11b, *P. roseus*, male palpus.
- Fig. 12, *P. griseus*, epigynum.
- Fig. 13, 13a, *P. Hutchinsonii*, females X 6; 13b, epigynum.



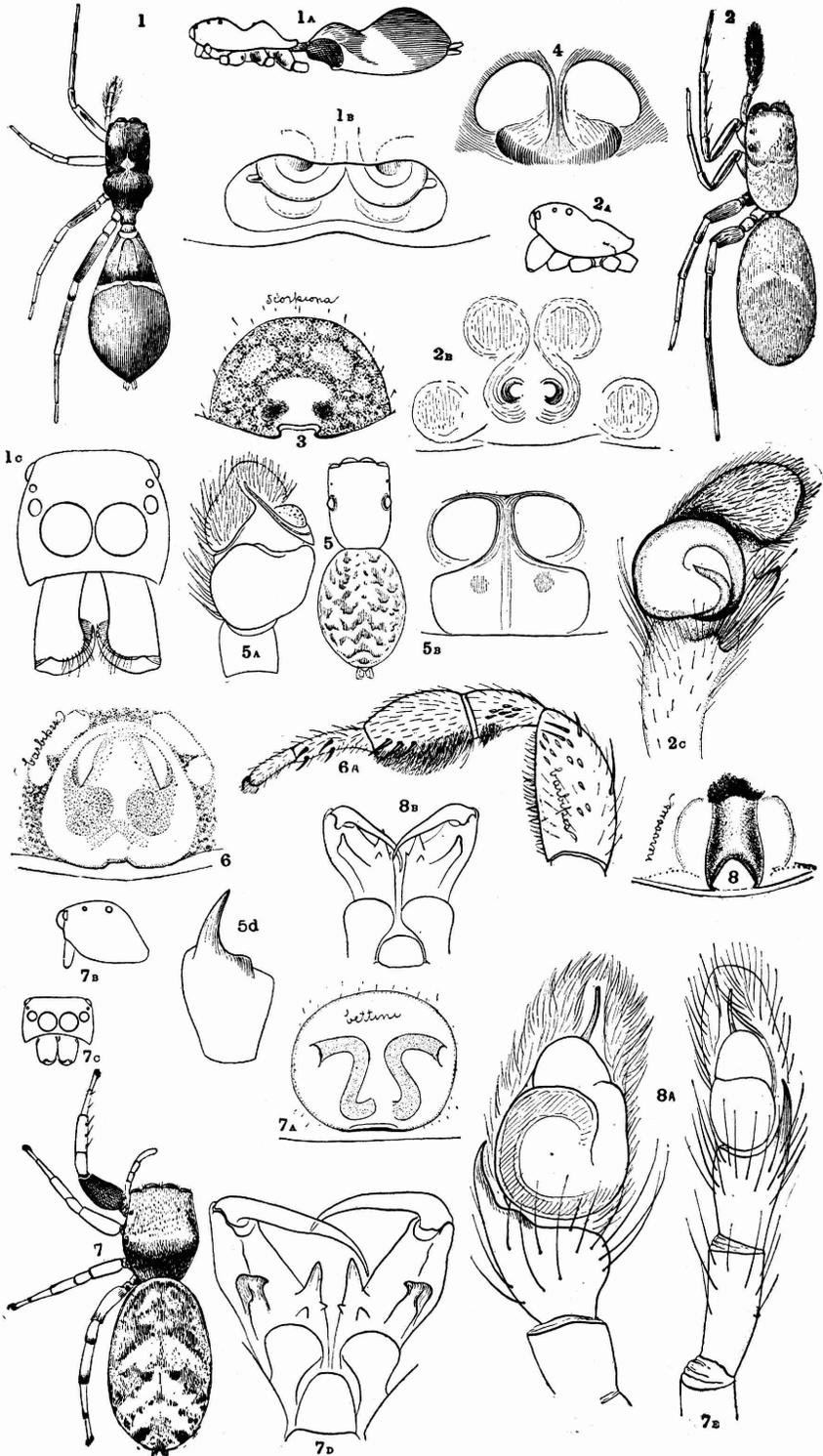
EXPLANATION OF PLATE XLIX.

- Fig. 1, *Pellenes delectus*, male X 8; 1a, epigynum.
- Fig. 2, 2a, *P. lagganii*, male palpus; 2d, *Paradamoetas formicina*, palpus.
- Fig. 3, *P. fallax*, male palpus; 3a, epigynum.
- Fig. 4, *P. umatillus*, male palpus.
- Fig. 5, *P. arizonensis*, male X 6.
- Fig. 6, 6a, *P. scotsdalei*, female X 4, epigynum.
- Fig. 7, 7a, *Maevia vittata*, two forms of male, X 4; 7b, female X 4; 7c, male palpus.
- Fig. 8, 8a, *Maevia Poultonii*, male palpus; 8b, epigynum.
- Fig. 9, 9a, *Ballus Youngii*, male palpus.
- Fig. 11, *Sassacus Papenhoei*, female X 8; 11a, face and falces of female; 11b, epigynum; 11c, male palpus.
- Fig. 12, *Agassa cyanea*, epigynum; 12a, male palpus.
- Fig. 13, *Agobardus anormalis*, male palpus.



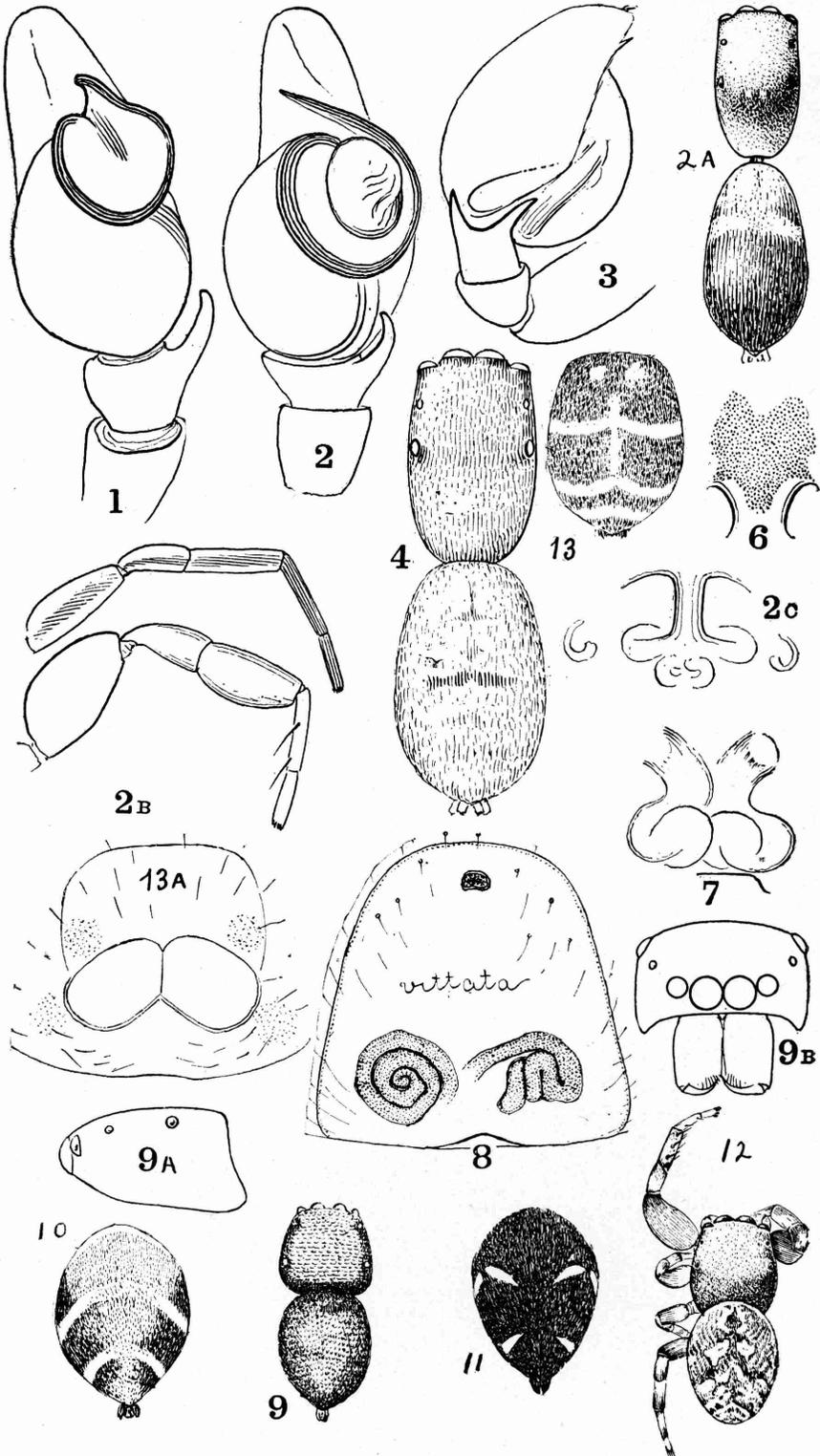
EXPLANATION OF PLATE L.

- Fig. 1, *Synemosyna formica*, female X 6; 1a, profile; 1b, epigynum; 1c, face and falces of male.
- Fig. 2, *Myrmarachne albocinctus*, female X 6; 2a, side of cephalothorax of female; 2b, epigynum; 2c, male palpus.
- Fig. 3, *Peckhamia scorpiona*, epigynum.
- Fig. 4, *Peckhamia americana*, epigynum.
- Fig. 5, *Neon Nellii*, female X 10; 5a, male palpus; 5b, epigynum.
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- Fig. 8, *Zygoballus nervosus*, epigynum; 8a, male palpus; 8b, mouthparts and falces of male; 8c, tibial hook.



EXPLANATION OF PLATE LI.

- Fig. 1, *Peckhamia americana*, male palpus.
- Fig. 2, *Peckhamia picata*, male palpus; 2a, young female X 4; 2b, first and second legs of male; 2c, epigynum.
- Fig. 3, *Peckhamia scorpiona*, male palpus.
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- Fig. 6, *Bellota micans*, epigynum.
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