

while such a feature is abnormal under the circumstances, it is no more so than many of the other features of *Platypsyllus*.

In the discussion of this subject, Mr. Schwarz held that, if not the ultimate larva of *Platypsyllus*, it is certainly Coleopterous, and cannot be referred to the Mallophaga. In the Coleoptera, the Staphylinid genus *Amblyopinus* is known to be parasitic on terrestrial rodents, two species having been found in the fur of mice and rats, one in South America and the other in Tasmania. We might reasonably expect to find this genus in North America under similar circumstances, but a glance at Prof. Riley's larva shows that it cannot possibly belong to the *Amblyopinus* nor to any other genus of Staphylinidæ.

Dr. Marx read the following paper :

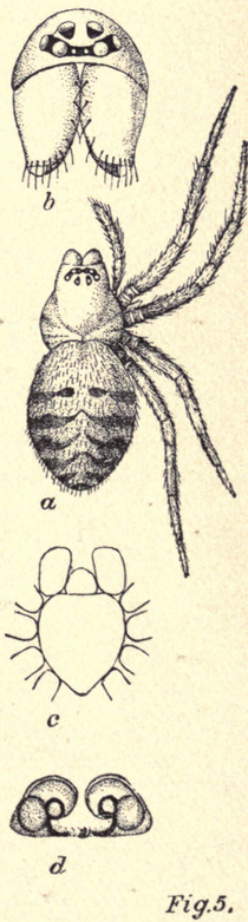
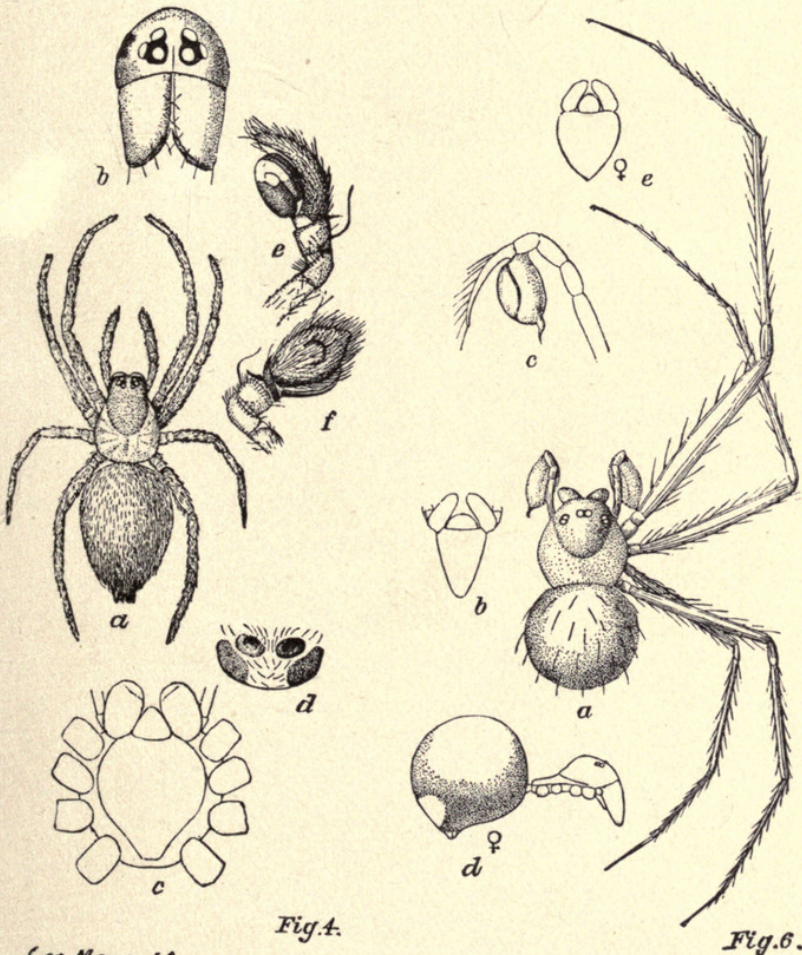
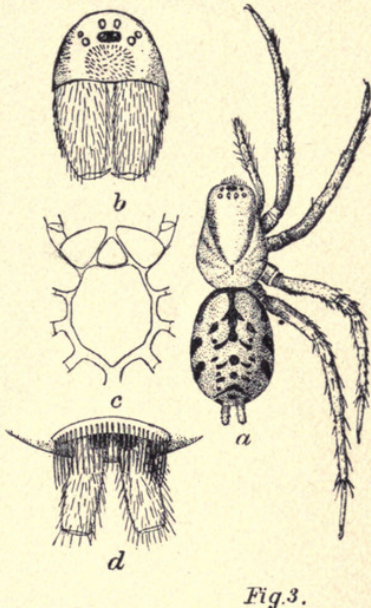
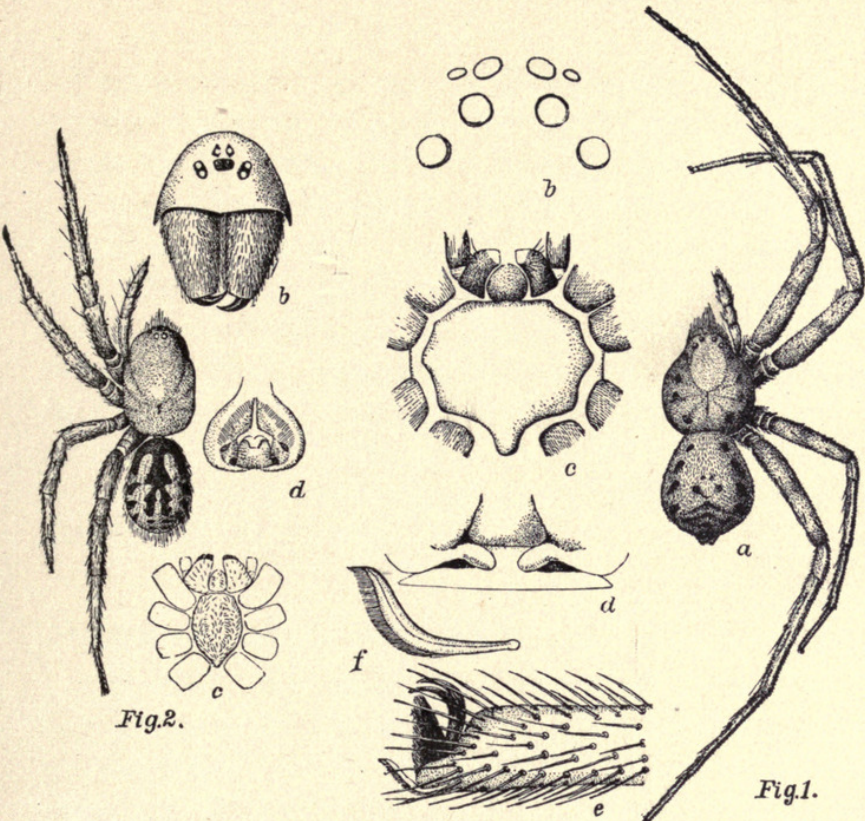
A CONTRIBUTION TO THE KNOWLEDGE OF NORTH AMERICAN SPIDERS.

BY DR. GEO. MARX.

In a large collection of natural history objects from all parts of this country the student will find some specimens, which, by their peculiar and strange morphological features, he cannot place in any of the established families. They lie, consequently, buried in the collection, and are thus lost to science.

I possess in my collection of North American Arachnida a number of such new forms, which I have hitherto been unable to place in any established family. The principal cause of this difficulty is that the American Arachnologist has still to follow the classification of the European Arachnida, and that no attempt has so far been made to work out, independently, a systematic arrangement, based upon the spider fauna of America. Mr. E. Simon has lately published a list of families of extra-European Araneæ in a systematic order,* and he has promised

*Simon, in his "Remarques sur la Classification des Araignées" (Études Arachnologiques, 22e mémoire, Annales Soc. Ent., France, 1890, p. 79), presents a "succinct tableau" of the families of *Araneæ*, including those which he had to establish for extra-European Spiders. He withdraws two of his former suborders, the *Gnaphosæ* and *Oculatæ* (Les Arachnides de France, Vol. I, p. 14), leaving only the *Theraphosæ* and the *Araneæ veræ*. These latter denominations Simon prefers in place of *Tetrापneumones* and *Dipneumones*, as these names indicate some characters which are subjected to some exceptions, e. g., *Hypochildæ*, which he places amongst the *Araneæ veræ*. The author divides the hitherto described spiders into thirty-nine families, of which eighteen are established upon exotic genera.



Geo. Marx del.

to present in the near future a complete classification of the exotic Araneæ, which, no doubt, will be of the greatest usefulness for the study of the North American fauna.

In order that some of the new forms in our fauna, which have accumulated in my collection, can be referred to by the student of general classification of spiders, I present herewith the descriptions and illustrations of three new genera, whose affinity and relationship have remained obscure to me, and also avail myself of this opportunity to add descriptions of some other new genera, which I have had no difficulty in placing systematically, but which I deemed interesting enough to be put on record.

Homalonychus, nov. genus.

Cephalothorax nearly as broad as long, flat; pars cephal. not higher than thorax, narrow and pointed anteriorly; clypeus less than one-half as broad as the width of pars thorac., high and perpendicular; pars thorac. nearly circular, with a long and distinct median fissure.

Eyes eight in two rows. Anterior row straight, short, M. E. nearly twice as large as the L. E. of this row, as large as those of the posterior row, and about their diameter apart from each other, while the L. E. are closer to them. Space between anterior row and margin of clypeus about five times as large as the diameter of the A. M. E. Posterior row very much recurved, eyes of equal size, space between P. M. E. larger than that between them and the P. L. E.

Mandibles cylindrical, attenuated at tip, of medium size and slightly pointed backward, more slender than femur I, parallel and contiguous throughout; claw small and weak.

Maxillæ longer than broad, strongly inclined over labium, outer side straight, inner side emarginate to fit around the tip, in front squarely truncate, nearly meeting in front of labium.

Labium two-thirds the length of the maxillæ, longer than broad, subovate, rounded at tip.

Sternum arched, circular, with impressions opposite the coxæ, and drawn out between coxæ IV.

Palpal claw toothless, long and curved.

Legs stout, rather long; the fourth pair the longest, the first nearly as long: 4. 1. 2. 3; femora somewhat inflated at base. Tarsi with two long, slender, smooth *claws without teeth*; hypopodium of dense, fine, short, not clavate hairs. Metatarsi and tarsi of all legs with scopula, the terminal spines of the scopula long and projecting over the hypopodium.

Abdomen rhomboid, truncate at base, flat at dorsum, terminating in the spinnerets.

***Homalonychus selenopoides*, nov. species.** Plate I, fig. 1.

Cephalothorax long, 4 mm. ; broad in front of clypeus, 1.3 mm. ; broad at middle, 3.6 mm. Abdomen long, 4 mm. ; broad at base, 2 mm. ; broad at the widest part, 3.5 mm. ; total length, 8 mm.

Leg i	Femur	4.5	Patella	1.6	Tibia	4.4	Metatarsus	3.2	Tarsus	2.2	Total	15.9 mm.
" ii	"	4.2	"	1.6	"	4	"	3	"	2	"	14.8 mm.
" iii	"	3.5	"	1.2	"	3	"	2.4	"	1.8	"	11.9 mm.
" iv	"	5.0	"	1.7	"	4.6	"	4	"	2.3	"	17.6 mm.

Cephalothorax brown, with three black small spots on each side near the lateral border ; pars cephal. a little lighter in color, trophi and sternum yellowish brown. Mandibles covered with dense dark-brown and short hairs. Abdomen light grayish olive-brown, with a row of six black spots on each side and three black, transverse, short lines on the posterior area. The whole abdomen and the legs densely covered with very short stiff bristles. Legs more yellowish, with indistinct indications of darker rings at base, tip and middle region of the femora and a few similar rings on the other joints ; all joints, especially the tibiæ, metatarsi and tarsi, provided at the under side with long spines standing upon black basal points ; the short stiff bristles on all metatarsi and tarsi, and on the tibiæ of two anterior pairs arranged in distinctly separated longitudinal lines. These are at the under side denser and longer, forming thus a scopula. A hypopodium, or cushion of soft, dense hair between and below the tarsal claws, triangular and very prominent. There is also a peculiarly formed auxiliary claw below the hypopodium and projecting over it ; it is bent upward, and its under side is provided with a dense row of teeth or stout hairs. See figure 1 f.

This spider shows affinities with the family *Sparassidæ* by the arrangement of the eyes (*Parhedrus*, Simon) and by the flat body and toothless claws (*Selenops*). But in other structural features it deviates from the characters of this family, *e. g.*, in the relative length of the legs, and in the fact that here the maxillæ are strongly inclined over the labium.

Habronestes* L. Koch.

Cephalothorax long, high, with nearly parallel sides ; pars cephal. two-thirds of the length of cephalothorax, anteriorly broad, nearly as broad as thorax ; clypeus high and rounded, median fissure very small.

* Since the presentation of this paper to the Society I have discovered that this spider, to which I had given a new generic name, belongs without doubt to the genus *Habronestes* L. K., family *Enyoidæ*. This genus is very closely allied to *Storena* Walck, and has hitherto only been collected in Australia (thirteen species). My specimen, which constitutes a new species, was collected in 1882, at Cohuta Springs, Murray Co., Ga., by my late friend, L. D. Ferguson, of Philadelphia ; he found it in

Eyes 8 in two rows, which are so strongly procurved that they appear to form three rows. The first row consists of two eyes, which are twice their diameter distant from each other and about three times their diameter from the margin of the clypeus. The second row, consisting of four eyes, is straight and a little broader than the first; the two contiguous M. E., which are slightly larger than all other eyes, stand in front of the free space between the two eyes of the front row; the lateral eyes stand about the length of their diameter from the M. E. and close to the eyes of the first row. The two eyes forming the third row stand closer together than their diameter and a little farther from the M. E. of the second row, with which they form a quadrangle a little longer than broad.

Mandibles cylindrical, as stout as femur I, of moderate length, vertical and parallel. Claw small and weak.

Maxillæ longer than broad, slightly broader at base, inclined over labium; truncate at tip; outer side straight, inner side emarginate.

Labium two-thirds the length of maxillæ, longer than broad, with rounded sides.

Sternum long, narrow, oval and arched, without impressions.

Legs 4. I. 2. 3, short and stout. Three tarsal claws, the superior with 6-8 teeth, inferior prominent.

Abdomen short, oval. Inferior spinnerets the longest, two-jointed, contiguous; superior pair shorter and farther apart.

Habronestes americanus, nov. species. Plate I, fig. 2.

♀ Length of cephalothorax 4.2 mm., width at clypeus 2.2 mm., width in the middle 2.5 mm. Length of abdomen 3.8 mm.; total length 8 mm.

Leg i	Femur 2.5	Patella 1.4	Tibia 2.2	Metatarsus 1.7	Tarsus 1	Total 8.8
" ii	" 2	" 1	" 1.6	" 1.6	" 1	" 7.2
" iii	" 2	" 0.8	" 1.2	" 2	" 1	" 7
" iv	" 2.8	" 1.3	" 1.8	" 2.5	" 1.5	" 9.9

Cephalothorax reddish testaceous, glossy; mandibles dark brown, densely covered with short bristle-like hairs; maxillæ pale yellow, lighter at tips; labium and sternum reddish; legs reddish yellow; abdomen sparsely covered with soft black hairs, greenish yellow, with a broad black spot occupying the base and dividing posteriorly into three branches, the middle one extending back about two-thirds of the length of abdo-

a dark corner of an old abandoned stable. It is certainly a remarkable and noteworthy fact that an Australian genus is represented in the Apalachian mountains of the Southern States in the same region where *Hypochilus Thorellii* occurs, while the other known species of *Hypochilus* (*H. Davidii* Simon) lives in China. I have not suppressed my description of the genus, as the original description of Koch is not readily accessible, having been published in the "Arachniden Australiens," Vol. I, p. 299.

men, having three equally distanced serrations at the outside border ; at the second tooth-like lateral projection the band divides longitudinally and is continued to the apex as three pairs of small round spots. The two lateral branches run close to the sides only a short distance backward and are then broken up each in a row of three larger spots. The under side of the abdomen is pale gray, with two small black spots at the base of the inferior spinnerets.

Legs sparsely covered with a long and soft pubescence, which is particularly long at the underside of metatarsi and tarsi but not dense enough to form a scopula ; the two anterior pairs of legs without spines, excepting a spinous bristle on femur I at the inner side near apex ; femur III and IV with a few scattered bristles. Patella, tibia and metatarsus of these legs covered with short spines all around. Tarsi III and IV without spines. Tarsal claws with from six to eight small teeth. Eyes grouped close together, occupying less than the whole middle third of anterior cephalic region. Coxæ IV as long as the width of sternum, coxæ I longer.

Lutica,* nov. genus.

Cephalothorax long, rather narrow, anteriorly two-thirds of the width of thorax ; cephalic part high, very distinct and rounded. Clypeus truncate, median fissure very short.

Eyes 8 in two rows, anterior row a little shorter than the posterior ; both rows slightly procurved when seen from above ; when viewed from the front the posterior row is very much procurved. The A. M. E. the largest, subcontiguous ; distance between them and the A. L. E. equals the diameter of the latter. Eyes of posterior row subequal, the median closer together than they are from the lateral.

Mandibles perpendicular, moderately long, as thick as femur I. Claw small.

Maxillæ triangular, longer than their basal width, strongly inclining over the labium.

Labium subtriangular, higher than its basal width, rounded at tip.

Sternum broadly oval, nearly as broad as long.

Palpi of female with a four-toothed claw and a horny groove at the tip of the tarsal joint, beneath the claw.

Abdomen small, oblong oval, smooth and narrow. Only *two* long and cylindrical spinnerets (the superior), the others aborted and only indicated by tufts of long hairs.

Legs 4. 3. 1. 2, short, slender, with three tarsal claws. Anterior leg not thicker than the others.

* Indian name for spider.

Lutica maculata, nov. species. Plate I, fig. 3.

Female. Length of cephalothorax 2.5 mm. Width at clypeus 1 mm. Width of thoracic part 1.4. Length of abdomen 2.8 mm. Total length 5.3 mm.

Leg i	Femur 1.5	Patella and Tibia 1.6	Metatarsus 0.8	Tarsus 0.8	Total 4.7 mm.
" ii	" 1.4	" " 1.1	" 0.4	" 0.5	" 3.4 mm.
" iii	" 1.6	" " 1.4	" 1	" 1	" 5 mm.
" iv	" 1.8	" " 1.8	" 1.4	" 1.2	" 6.2 mm.

Cephalothorax, trophi, palpi, sternum and legs pale yellow testaceous; cephalic part marked at the sides by a brownish band, leaving the median area light. Abdomen mottled with white and gray; a black band surrounds the base in front and at the side to about the end of the first third of its length, and is then broken up on each side into two short oblique stripes. Three rows of small black dots run over the dorsum back to the apex; the first dot of the middle band is connected with the transverse basal band by a small stripe. Anterior two pair of legs not spined, femora III and IV only at their tip, and all other joints of them covered with short spines, at the terminal extremity of the metatarsi a circle of long spines. Superior tarsal claws long, slender, curved, with eight and ten long teeth; inferior claw extremely minute.

One female from Lake Klamath, Oregon.

The principal feature of interest in this spider is that it possesses only two spinnerets (the superior); the other four are aborted, and only indicated by tufts of hair. There are at present only three genera known which possess only one pair of spinnerets: *Palpimanus*, *Stenochilus* and *Cryptothele*. These genera are in all other respects so widely differing from each other that for each a separate family had to be established. To none of these genera *Lutica* shows any special affinity, only the peculiar form of its maxillæ resembles those of *Cryptothele*.

Another noteworthy character of rare occurrence in *Araneæ* is that the third leg is longer than the first, and the second leg the shortest.

Neophanes, nov. genus.

Cephalothorax a little longer than broad, anteriorly about half as broad as in the middle region, truncate in front, rounded posteriorly, p. cephal. high, prominent, two-thirds of the whole length of the cephalothorax; dorsum highly arched; median fissure distinct.

Eyes 6, in two groups of three each, separated longitudinally by a space whose width is about equal to twice the diameter of a single eye; the three eyes of each cluster form a triangle, the inner side of which is the longest. Eyes equal and round, anterior pair close to the margin of the clypeus.

Mandibles strong, cylindrical, inflated in the middle region, slightly diverging, without teeth at the claw-groove. Claw long and curved.

Maxillæ slightly longer than broad, inclined over the labium, a little broader at the truncated tip.

Labium about two-thirds the length of the maxillæ, subtriangular, as long as the basal width, rounded at tip.

Sternum round-ovate, a little longer than broad, pointed between the coxæ IV.

Legs short, fourth pair the longest, without spines, moderately stout. Three tarsal claws, superior with from 8 to 10 long and very slender teeth. Calamistrum distinct.

Abdomen ovate, pointed at tip. Cribellum oval, undivided.

***Neophanes pallidus*, nov. species.** Plate I, fig. 4.

Female. Cephalothorax long, 0.6 mm. ; abdomen long, 1 mm. ; total length, 1.6 mm. Leg I, 1.3 mm. ; II, 1.2 mm. ; III, 1 mm. ; IV, 1.5 mm.

Cephalothorax and trophi pale orange yellow ; abdomen and legs yellowish white. Body and legs sparsely covered with grayish hairs ; no spines. Cephalothorax one-fourth longer than broad, dorsum high and arched, the highest point at the middle region, from where it evenly slopes to both margins ; p. cephal. two-thirds the whole length. Anterior eyes about their diameter away from the margin of clypeus. The six eyes surrounded by black pigment, which fills out the interspaces between them ; the four middle eyes form a quadrangle, which is higher than broad and slightly broader in front. The front eyes are nearer to the lateral than the latter to the posterior eyes.

The *male* is smaller than the female, but resembles it in all other respects. The patellar and tibial joints of the palpi are together shorter than the femoral joint, and the spoon-shaped tarsus is a little longer than the two preceding joints combined.

Several specimens of both sexes from the District of Columbia, Long Island, N. Y., New Hampshire and Tennessee.

***Prodalia*, nov. genus.**

Cephalothorax longer than broad, anteriorly half as broad as in the middle region ; p. cephal. prominent, high and rounded ; clypeus truncate ; no median fissure.

Eyes 8 in two rows, anterior row close to the margin of the clypeus, straight, shorter than the posterior ; A. M. E. very small, much smaller than the obliquely set A. L. E. ; the distance between them equals their diameter ; distance between A. M. E. and A. L. E. smaller. Posterior row strongly procurved, so that the P. L. E. are contiguous to the A. L. E., while the P. M. E. are at least the length of their diameter apart from the A. M. E. Distance between the P. M. E. greater than that between them and the P. L. E.

Mandibles rather long and stout, thicker than femur I; vertical, parallel, but at the inner side at apex obliquely cut; claw small and weak.

Maxillæ longer than broad, subparallel, straight, hardly inclined over labium; anteriorly slightly rounded.

Labium two-thirds the length of maxillæ, square, a little broader than long, and slightly broader at base than at the rounded apex.

Sternum very prominent, cordiform, anterior margin truncate; drawn out considerably between coxæ IV.

Legs 4. I. 2. 3, weak and short, anterior and posterior of equal length; without spines. Calamistrum about half as long as metatarsus IV; tarsal claws three, superior with six teeth, inferior very strong, without teeth.

Abdomen oval, truncate at base. Cribellum long, narrow and undivided; spinnerets stout, short, of equal size, superior two-jointed.

***Prodalía foxii*, nov. species. Plate I, fig. 5.**

Cephalothorax long, 0.5 mm.; abdomen long, 1.3 mm.; total length, 1.8 mm. Leg I and IV, 2 mm. long; II, 1.5 mm.; III, 1.3 mm.

Cephalothorax yellow testaceous; trophi, sternum and legs pale yellow; abdomen grayish white with dark gray markings at the dorsum, consisting of about five transverse angular lines pointing to the front; underside pale, region before the spinnerets darker; abdomen and legs sparsely covered with long, darker pubescence.

The A. L. E. and the P. M. E. and P. L. E. form a cluster as in *Neophanes*, but in *Prodalía* two minute A. M. E. are present. The spaces between these eyes are filled out by black pigment. The mandibles have no claw groove, but a short row of dark bristle-like hairs running longitudinally over the front.

This spider and *Neophanes* belong undoubtedly to the family *Dictynidæ*; it was collected by Dr. Fox in Tennessee, where it seems to be rare.

Usofila*, Keyserling, nov. genus.

Cephalothorax a little longer than broad, anteriorly moderately narrower than in the middle region; p. cephal. prominent, strongly arched; clypeus high; median fissure indistinct.

Eyes 6 in two rows, anterior row consisting of four eyes, shorter and slightly recurved, the two M. E. contiguous; the two eyes of the posterior row closely behind the lateral of the first row.

* Count Keyserling, who examined this interesting spider, named it *Usofila*, and intended to publish the description in the eighth number of his "Neue Spinnen aus Amerika," but was prevented by his untimely death. I received from his publishers, amongst his other manuscripts, also the description of *Usofila*, and present it herewith in translation with that of the only species, *U. gracilis*.

Mandibles small and weak, vertical, not much arched in front, obliquely truncate at the inner side of apex; claw weak.

Maxillæ not quite twice as long as broad, inclined over labium, at the outer side a little emarginate, at apex obliquely truncate.

Labium triangular, a little longer than broad, rounded at the tip, and about two-thirds as long as the maxillæ.

Sternum flat, triangular, longer than broad.

Legs 1. 2. 4. 3. very long and slender, without spines, but sparsely provided with fine hairs; three tarsal claws.

Abdomen globose, four stigmata at the ventral side; spinnerets short and equal.

Usofila gracilis, Keyserling, nov. species. Plate I, fig. 6.

♂ Cephalothorax long, 0.5 mm.; abdomen long, 0.6 mm.; total length, 1.1 mm.

Leg	i	Femur	1.2	Patella and	Tibia	1.4	Metatarsus and	Tarsus	1.4	Total	4 mm.
"	ii	"	1	"	"	1.2	"	"	1	"	3.2 mm.
"	iii	"	0.8	"	"	0.9	"	"	0.8	"	2.5 mm.
"	iv	"	1.1	"	"	1.0	"	"	1.2	"	3.3 mm.

Cephalothorax, palpi and legs yellow; abdomen dirty white, with a few long darker hairs at the dorsum.

Cephalothorax hardly longer than broad; in front about half as wide as in the middle; posteriorly broadly rounded. Seen from the side the dorsum is highly arched, and the highest point is a little behind the eyes; the median fissure absent; clypeus as high as the length of the mandibles.

Eyes in pairs, forming two rows, the anterior row a little recurved; the two median eyes contiguous and not much more than their diameter separated from the also contiguous L. E.

Mandibles diverging, rather porrected and weak; obliquely truncate on the inner side near apex. Claw in the male long and thin.

Maxillæ about two-thirds longer than broad, curvately inclined, partly embracing the triangular labium..

Sternum triangular; narrower in the male than in the female.

Legs very long and slender, sparsely provided with short pubescence. Three tarsal claws. The patellar joint of the male palpi shorter than the tibial joint, and both together longer than the very slender and slightly bent femur. The tarsal joint emarginate at the underside, near the base, shorter than the pyriform prominent bulbus, which terminates in a curved projection.

Abdomen hardly longer than broad, globose, projecting a little over the spinnerets, of which the inferior pair seems to be a little thicker than the superior.

One male and several undeveloped females from Alabaster Cave, El Dorado Co., Cal.

The female resembles the male; the legs are considerably shorter. On the abdominal apex, just above the spinnerets, is a round white spot. The four stigmata are distinctly visible in one female, which is a little darker colored than the others.

The three last-named genera belong, no doubt, to well-known families; *Neophanes* and *Prodalia* will find their place in the *Dictynidæ*. The presence of a calamistrum and cribellum, the elevated, rounded head and the form of the maxillæ and labium place these genera in close relationship to the genus *Dictyna*.

The genus *Usofila* was placed by Keyserling in the *Dysderidæ* on account of the four ventral stigmata and the six eyes.

EXPLANATION OF PLATE I.

- Fig. 1—*Homalonychus selenopoides* Marx: *a*, female, enlarged 2 times; *b*, eyes seen from above; *c*, maxillæ, labium and sternum; *d*, epigynum; *e*, tarsus; *f*, auxiliary claw.
- Fig. 2—*Habronestes americanus* Marx: *a*, female, enlarged 2 times; *b*, face; *c*, maxillæ, labium and sternum; *d*, epigynum.
- Fig. 3—*Lutica maculata* Marx: *a*, female, enlarged $3\frac{1}{2}$ times; *b*, face; *c*, maxillæ, labium and sternum; *d*, spinnerets.
- Fig. 4—*Neophanes pallidus* Marx: *a*, female, enlarged 12 times; *b*, face; *c*, maxillæ, labium and sternum; *d*, epigynum; *e*, male palpus, from the side; *f*, the same, from above.
- Fig. 5—*Prodalia foxii* Marx: *a*, female, enlarged 12 times; *b*, face; *c*, maxillæ, labium and sternum; *d*, epigynum.
- Fig. 6—*Usofila gracilis* Keyserling: *a*, male, enlarged 15 times; *b*, maxillæ, labium and sternum; *c*, male palpus; *d*, female, enlarged 15 times; *e*, maxillæ, labium and sternum of female.

Considerable discussion followed relating to the advisability of erecting monotypical families. The conclusion reached was that generally it would be better to give isolated species sub-family importance in the nearest related existing family.

Mr. Linell then gave an account of some observations which indicate the identity of *Megapenthes limbalis*, Herbst, and *M. granulosus*, Melsh., hitherto considered to be distinct species. He had found these beetles *in coitu* on several occasions, and as only males of *limbalis* and females of *granulosus* have been known previously, the identity of the two forms was fully established. The males, having been first characterized, will give the name to the species.



Marx, George. 1891. "A contribution to the knowledge of North American spiders." *Proceedings of the Entomological Society of Washington* 2, 28–37.

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