

**XLII.** *The Difference in the Number of Eyes with which Spiders are provided proposed as the Basis of their Distribution into Tribes; with Descriptions of newly discovered Species, and the Characters of a new Family and three new Genera of Spiders.* By JOHN BLACKWALL, Esq., F.L.S.

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**M**ESSRS. Walckenaer and Dufour have separated the *Arachnida* constituting the order *Araneidea* into two principal divisions or groups, the former arachnologist having adopted a difference in the structure of the mandibles, and the latter a variation in the number of the branchial sacs of those animals, as the basis of their respective modes of distribution.

M. Walckenaer's first group consists of spiders whose mandibles are articulated horizontally, are prominent, and have a vertical movement; the species whose mandibles are articulated vertically, are not prominent, and have a lateral movement, composing his second group.

The characters supplied by the organic modification on which these groups are founded appear to be too slight, and of too little importance in a physiological point of view, to serve for the establishment of divisions of such magnitude; moreover, another objection to the value attached to these characters by M. Walckenaer arises from the circumstance of their merging gradually into each other, which prevents a clear line of demarcation being drawn between them.

An insuperable obstacle also presents itself to the adoption of M. Dufour's distribution of the *Araneidea* into spiders with four and spiders with two branchial sacs; it being impossible to determine, even on dissection, to which of the two groups numerous species belong. Indeed, that indefatigable and profound naturalist, M. Latreille, in attempting to arrange the *Araneidea* in accordance with M. Dufour's views, has fallen into the error of separating the *Ariadne insidiatrix* of M. Savigny (*Dysdera insidiatrix*, Walck.) from the

family *Dysderidæ*, to which it unquestionably appertains, and of placing it, together with *Segestria perfida* and *Segestria senoculata*, both species of considerable dimensions and provided with four branchial sacs, among the spiders of the second division, or those which have only two sacs\*.

Having endeavoured succinctly to point out the insufficiency of the characters selected to distinguish the foregoing primary groups into which spiders have been divided, I venture to recommend the difference in the number of eyes with which those animals are provided as the most satisfactory basis of their distribution into tribes; supplying, as it does, well-defined characters not difficult to be ascertained, and being in perfect harmony with the leading principle on which the subordinate groups are, for the most part, established.

In the present limited state of our knowledge of the order *Araneidea* it admits of a division into three tribes only.

1. OCTONOCULINA. Eyes eight.
2. SENOCULINA. Eyes six.
3. BINOCULINA. Eyes two.

The first tribe, *Octonoculina*, is much the most extensive of the three, comprising numerous genera, which present considerable differences in organization and œconomy: closely connected with this group by intimate relations of affinity and analogy, the second tribe, *Senoculina*, includes seven or eight genera, species belonging to most of which are indigenous to Great Britain; and the third tribe, *Binoculina*, contains the single genus *Nops*, which has been recently established by Mr. MacLeay for the reception of two remarkable species of extra-European spiders†.

The newly-discovered spiders described in the following pages are arranged according to the method proposed above; and it is a fact deserving of notice, that they have been captured, without exception, in the north of England and Wales.

Considering the narrow limits within which my researches in arachnology

\* Cours d'Entomologie, p. 514-15.

† Annals of Natural History, vol. ii. p. 2, *et seq.*

have been made, and that I have had to depend almost entirely on my own resources, my success in this department of zoology has been greater than I could have anticipated. Much of this success must be attributed to the circumstance of having directed my attention more especially to species which, on account of their diminutive size, require for the accurate investigation of their internal structure the employment of optical instruments possessing a high degree of magnifying power.

In taking the dimensions of spiders, it is important that the relative length of the legs should be ascertained with accuracy. To facilitate this object, I submerge the specimens to be examined in spirit of wine till life is extinct; then removing them to a piece of white card-board, and carefully extending the limbs with a pin, while they are pliable, I take their extent, from the margin of the cephalo-thorax to their extremity, with a pair of compasses, which, on being applied to a scale of inches and parts, gives their measurement.

When exceedingly minute spiders are made the subjects of investigation, it is essential that the sexual organs should be closely inspected, as they afford, by their complete development, an infallible criterion that the animals have attained maturity; they also present, by their greatly diversified organization, particularly as regards the males, in which sex they are connected with the terminal joint of the palpi, excellent specific characters, the value of which will be duly appreciated when it is recollected that many species so nearly resemble each other in size and colour as to be distinguished by differences in structure only.

The principal authorities consulted in putting together the materials of which this paper is composed were MM. Latreille, Walckenaer, Hahn, and Koch.

Class ARACHNIDA.

Order ARANEIDEA.

Tribe OCTONOCULINA.

Family DRASSIDÆ.

Genus CLUBIONA, *Latr.*

1. *Clubiona brevipes*. Cephalo-thorace saturatè brunneo, anticè marginibus-

que saturatiore ; mandibulis labioque nigrescentibus ; maxillis sternoque saturatè rufescenti-brunneis ; seriei anterioris oculis intermediis majoribus ; pedibus brevibus pallidè luteis, pari 4to longissimo, dein 2do, 3tio brevissimo ; abdomine saturatè rufescenti-brunneo, dimidii anterioris lineâ medianâ saturatiore.

Length of the female  $\frac{1}{4}$ th of an inch ; length of cephalo-thorax  $\frac{1}{10}$  ; breadth  $\frac{1}{4}$  ; breadth of abdomen  $\frac{1}{2}$  ; length of a posterior leg  $\frac{1}{4}$  ; length of a leg of the third pair  $\frac{1}{6}$ .

Upper part of the cephalo-thorax convex, glossy, thinly covered with hairs, broadly truncated before, with a narrow indentation in the medial line of the posterior region ; its colour is dark brown, the anterior part and margins being much the darkest. Mandibles powerful, conical, convex at the base, in front rather prominent, armed with a few teeth on the inner surface, and of a very dark brown colour, approaching to black. Lip somewhat oval, truncated at the extremity, resembling the mandibles in colour. Maxillæ long, straight, enlarged where the palpi are inserted, and at the extremity, which is rounded. Sternum oval, glossy, with small eminences on the sides, opposite to the articulation of the legs ; its colour, and that of the maxillæ, is dark reddish brown. Eyes disposed in two transverse, parallel rows on the fore-part of the cephalo-thorax ; the anterior row, which is the shorter, is situated just above the frontal margin ; the intermediate eyes form a trapezoid whose anterior side is the shortest, those of the anterior row being the largest of the eight. Legs short, of a pale dull yellowish hue ; fourth pair the longest, then the second, third pair rather shorter than the first. Each tarsus is terminated by two curved, pectinated claws, below which is a small brush or climbing apparatus. Palpi short, with a small curved claw at their extremity ; they resemble the legs in colour. Abdomen oviform, hairy, slightly depressed, projecting over the base of the cephalo-thorax ; it is of a dark reddish brown hue, the medial line of the anterior half of the upper side being the darkest. Spinners prominent, very dark brown. Plates of the spiracles pale red-brown.

The male resembles the female in colour and in the relative length of its legs, but it is smaller than she is. Third and fourth joints of the palpi

short, the latter having a large apophysis at its anterior extremity, which tapers to a bifid termination curved in front of the fifth joint, a strong obtuse process occurring within the curve, near its base; fifth joint oval, convex and hairy externally, concave within, comprising the palpal or sexual organs, which are highly developed, complicated in structure, with a prominent, obtuse, corneous process near their extremity, and a curved, pointed spine, directed outwards, extending nearly to the termination of the joint; their colour is very dark brown.

This species usually occupies an oval cell of compact, white silk, which it spins on the inferior surface of leaves and of liverwort growing on trees in the wooded districts of Denbighshire and Caernarvonshire. It leaps with agility.

2. *Clubiona fucata*. Cephalo-thorace anticè rufescenti-, lateribus posticèque viridescenti-, lineâ marginali saturatè-brunneis; mandibulis maxillis labioque rufescenti-brunneis; sterno flavescenti-brunneo, lateribus rufescenti-brunneo maculatis; seriei anterioris oculis intermediis omnium minimis; pedibus flavescenti-brunneis, pari 4to longissimo, dein 2do, 1mo 3tioque ferè æqualibus; abdomine flavescenti-brunneo, anticè fasciâ medianâ, posticè maculis triangularibus, ad latera fasciâ interruptâ rufescenti-brunneis notato.

Length of the female  $\frac{3}{16}$ ths of an inch; length of cephalo-thorax  $\frac{1}{12}$ ; breadth  $\frac{1}{16}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of a posterior leg  $\frac{1}{4}$ ; length of a leg of the third pair  $\frac{1}{6}$ .

Cephalo-thorax oval, convex above, thinly covered with hairs, glossy, with a narrow indentation in the medial line of the posterior region; anterior part reddish brown; sides and posterior part greenish brown, with a fine, dark brown line on the margins. Mandibles powerful, conical, rather prominent. Maxillæ long, straight, enlarged where the palpi are inserted, and at the extremity, which is rounded. Lip longer than broad, nearly quadrangular. These parts are of a reddish brown colour. Sternum oval, glossy, with small eminences on the sides, opposite to the articulation of the legs; it is yellowish brown, with dark reddish brown spots on the margins. The eyes, which are seated on black spots, are disposed in two transverse, parallel rows on the fore-part of the cephalo-

thorax; the posterior row is longer than the anterior one, which is situated just above the frontal margin; the intermediate eyes form a trapezoid, whose anterior side is the shortest, those of the anterior row being the smallest of the eight. Legs provided with hairs and sessile spines, a longitudinal row of the latter occurring on each side of the inferior surface of the tibial and metatarsal joints of the first and second pairs; their colour is yellowish brown; fourth pair the longest, then the second, first and third pairs nearly equal in length. Each tarsus is terminated by two curved, pectinated claws, below which is a small climbing apparatus. Palpi short, with a small curved claw at their extremity; in colour they resemble the legs. Abdomen oviform, hairy, slightly depressed, projecting over the base of the cephalo-thorax; it is yellowish brown, with a dark reddish brown band above, extending nearly half its length from the anterior part along the middle, the interval between the posterior extremity of the band and the spinners being occupied by a series of triangular spots of the same hue; on each side of the medial line is an irregular, interrupted, longitudinal band of a dark reddish brown colour; margins of the sexual organs, and three narrow bands, situated between them and the spinners, dark reddish brown. Plates of the spiracles yellowish white.

The male resembles the female in colour. I have taken individuals of this sex in autumn which had the terminal joint of the palpi much enlarged, but they evidently had not attained maturity, as the palpal organs were not fully developed.

Woods in Denbighshire and Caernarvonshire are the haunts of this species, which, in summer, conceals itself among the foliage. I have captured females in the month of June whose abdomens were greatly distended with eggs.

#### Fam. CINIFLONIDÆ.

*Filatoria* 8; 2 inferiora inarticulata, usque ad apices coalita. *Pedum posteriorum metatarsus* calamistro munitus e seriebus 2 parallelis spinarum exiguarum densè approximatarum.

These peculiarities of structure, so strikingly characteristic, exercise a decided influence upon the œconomy of the *Ciniflonidæ*. The calamistra are

employed to curl certain lines proceeding from the spinners, observed to constitute the most remarkable character in the web of every spider comprised in this family, those supplied by the inferior pair being wrought into a delicate inflected band, which chiefly imparts to the snare its most important property, namely, that of adhesion\*.

Crevices in rocks and walls, and the foliage of trees and shrubs, are the favourite haunts of the *Ciniflonidæ*, which, by their general organization and habits, should immediately follow the *Drassidæ* in the systematic arrangement of the *Araneidea*.

Gen. CINIFLO.

*Oculi* in seriebus 2 transversis; serie posteriori posticè convexâ; seriei anterioris et brevioris oculi intermedii recti, supra marginem frontalem positi, paulò majores; utriusque laterales in tuberculis positi. *Maxillæ* fortes, ad apicem dilatatæ rotundatæ paulòque labium versus declinatæ. *Labium* paulò longius quam latum, medio dilatatum, apice truncatum. *Pedes* robusti; pari 1mo longissimo, dein 4to (in ♀), 3tio brevissimo. *Tarsi* triunguiculati; unguibus 2 superioribus curvatis pectinatis, inferiore prope basin inflexo.

*Ciniflo atrox.* (*Clubiona atrox*, Latr. Gen. Crust. et Insect. t. 1. p. 93. Walck. Hist. Nat. des Insect. Apt. t. 1. p. 605. *Amaurobius atrox*, Koch, Uebers. des Arachn. Syst. p. 15.)

This is the only spider at present ascertained to belong to the genus *Ciniflo*; though, from what is stated by M. Walckenaer relative to the appearance of the web of *Clubiona ferox*, Faune Française, Aranéides, p. 152, it scarcely admits of a doubt that this species also is provided with eight spinners and with calamistra; to assign it a place, however, among the *Ciniflonidæ* before this point has been determined by observation would be premature.

I may remark, that the relative length of the legs is different in the sexes of *Ciniflo atrox*, the second pair being rather longer than the fourth in the male.

\* For a description of the calamistrum and of the manner in which it is employed by the *Ciniflonidæ* in the fabrication of their webs, and for an account of the discovery of the fourth pair of spinners in spiders belonging to this family, see the Transactions of the Linnean Society, vol. xvi. p. 473, *et seq.*, and vol. xviii. p. 223.

## Gen. ERGATIS.

*Oculi* subæquales, in seriebus 2 transversis in anticâ cephalo-thoracis parte positi; seriei utriusque intermediæ quadram referentes, laterales ferè contigui in tuberculis obliquè positi. *Maxillæ* mediocres, labium versus declinatæ, basi convexæ, apice rotundatæ, intùs plus quam extùs abruptè curvatæ. *Labium* subtriangulare. *Pedes* breves, mediocres; pari 1mo longissimo, dein 2do, 3tio brevissimo. *Tarsi* triunguiculati; unguibus 2 superioribus curvatis pectinatis, inferiore prope basin inflexo.

*Ergatis benigna.* (*Theridion benignum*, Walck. Hist. Nat. des Aran. livr. v. pl. 8. fig. 1. *Drassus parvulus*, Blackw. Research. in Zool. p. 337. *Dictynna benigna*, Koch, Die Arachniden, b. iii. p. 27. tab. 83. fig. 184—5.)

*Ergatis latens.* (*Dictynna latens*, Koch, Die Arachn. b. iii. p. 29. tab. 83. fig. 186.)

*Ergatis viridissima.* (*Drassus viridissimus*, Walck. Hist. Nat. des Insect. Apt. t. 1. p. 631.)

In addition to the above-named species, it is probable that the *Drassus flavescens* of Kummer might be included in the genus *Ergatis*, as it appears, from the description given of it by M. Walckenaer (*Histoire Naturelle des Insectes Aptères*, tome i. p. 632), to have a close relation of affinity with *Ergatis viridissima*; but it would be precipitate to place it among the *Ciniflonidæ* before it has been proved to possess the essential characters of that family.

When my attention was first directed to *Ergatis benigna*, in the autumn of 1832, I supposed it to be new to arachnologists, and described it in the London and Edinburgh Philosophical Magazine, vol. iii. p. 437—8, under the appellation of *Clubiona parvula*. Soon after, having had an opportunity of comparing this spider with specimens of *Ergatis viridissima* received from the continent, I transferred it to the genus *Drassus*, with the *Phytophilæ*, to which genus it appeared to be allied (Researches in Zoology, p. 337). At this period I was not aware of its specific identity with the *Theridion benignum* of M. Walckenaer, and I am quite unable to comprehend why so accomplished and discriminating an observer should still persist in separating it from the forms with which it is most intimately connected by its organization and œconomy.



In treating upon the *Phytophilæ* in the *Faune Française, Aranéides*, p. 181, M. Walckenaer remarks, "on ne peut se dissimuler, que ce petit groupe, dont les caractères ne sont pas assez tranchés pour former un genre, est d'une classification difficile et douteuse, et que, *Drasse* par ses organes les plus essentiels, il s'allie sous d'autres rapports aux *Clubiones* et aux *Théridions*."

The difficulty and uncertainty alluded to in the foregoing quotation no longer exist as regards those species known to be furnished with eight spinners and with calamistra, and the establishment of the genus *Ergatis* is proposed for their reception.

Family LYCOSIDÆ.

Genus LYCOSA, Latr.

3. *Lycosa rapax*. Cephalo-thorace magno, saturatè brunneo, fasciâ medianâ latâ lateraliq̄ue obscuriore flavescenti-brunneis; mandibulis maxillis labio sternoque saturatè rufo-brunneis; pedibus robustis, rufescenti-brunneis, ad femora colore saturatiore maculatis; pari 4to longissimo, dein 1mo, 3tio brevissimo; abdomine fasciâ latâ medianâ flavescenti-brunneâ nigro-marginatâ, margine posticè interrupto et cum maculis parvis lateralibus vittas obliquas efformante.

Length of the female  $\frac{3}{8}$ ths of an inch; length of cephalo-thorax  $\frac{1}{8}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{7}$ ; length of a posterior leg  $\frac{1}{2}$ ; length of a leg of the third pair  $\frac{3}{8}$ .

Cephalo-thorax large, hairy, compressed anteriorly; sides depressed, with slight furrows diverging from the upper part toward the margins, a narrow indentation occurring in the medial line of the posterior region; colour dark brown, with a broad, yellowish brown band extending along the middle, and an obscure one of the same hue above each lateral margin. Four eyes, much smaller than the rest, form a transverse row in front; the other four, situated on the sides and anterior part of the cephalo-thorax, describe a quadrilateral, the anterior ones of which are the largest of the eight. Mandibles powerful, conical, vertical, armed with a few teeth on the inner surface; they are of a dark brown colour, with a faint tinge of red near the base, in front. Maxillæ straight, enlarged and rounded at the extremity, of a reddish brown hue. Lip nearly

quadrate, rather broader at the base than at the extremity; it is dark brown, except the tip, which is reddish brown. Sternum heart-shaped, very dark brown, with a faint tinge of red in the middle. Legs robust, reddish brown, with blackish brown spots and streaks on the thighs; fourth pair the longest, then the first, third pair the shortest. Each tarsus is terminated by three claws; the two superior ones are curved and deeply pectinated, and the inferior one, which is short, is inflected near its base. The palpi resemble the legs in colour, and have a curved, pectinated claw at their extremity. Abdomen oviform, thickly covered with hairs, convex above, projecting over the base of the cephalo-thorax; a broad band of yellowish brown, which tapers to the spinners, occupies the middle of the upper part; anteriorly it comprises an oval mark of a deeper shade, whose margins are blackish; this mark extends nearly half the length of the abdomen, and its posterior extremity is pointed; the yellowish brown band has a black border broken into spots posteriorly, which form, with smaller confluent ones of the same hue, oblique lines extending down the sides, the ground of which is yellowish brown; under part yellowish brown, with three obscure, longitudinal, dark brown bands. Plates of the spiracles brown, with reddish inner margins. Sexual organs dark reddish brown; a straight process, enlarged and depressed at its posterior extremity, is situated in a groove in their medial line.

The male is smaller than the female; the relative length of its legs is the same, but it is darker coloured and more distinctly marked. Thighs and tibiæ of the first pair of legs, and thighs of the second pair, very dark brown, approaching to black. Palpi very dark brown; the second joint is densely covered on the under side with black hairs; third and fourth joints short, the latter rather the stronger; fifth joint oval, convex and hairy externally, concave within, except at the extremity, which is compact and pointed, comprising the sexual organs; they are highly developed, complicated in structure, with a strong, prominent, corneous process on the outer side, and are of a dark reddish brown colour.

This species pairs in May, and in June the female spins a globular cocoon of pale yellowish brown silk of a compact texture, measuring  $\frac{5}{24}$  of an inch in diameter, in which she deposits 60 or 70 spherical eggs of a pale yellow colour,

not agglutinated together. The cocoon is connected with her spinners by short lines of silk, and the young, when they quit it, mount on the body of the mother. I have seen this spider, which frequents woods, pastures, and commons, and is nearly allied to *Lycosa vorax*, on the sea-shore, just above high water-mark, and on the summits of Broad Crag, Helvellyn, Snowdon, and Carnedd Llewelyn, the highest mountains in England and Wales.

4. *Lycosa obscura*. Saturatè brunnea; cephalo-thorace medio lateribusque mandibulis maxillis pedibus palpisque obscurè rufescentibus; abdomine obscurè rufescenti-brunneo maculato, anticè fasciculis 3 minutis pilorum flavescentium; pedum pari 4to longissimo, reliquis subæqualibus.

Length of the female  $\frac{1}{5}$ th of an inch; length of cephalo-thorax  $\frac{1}{10}$ ; breadth  $\frac{1}{4}$ ; breadth of abdomen  $\frac{1}{2}$ ; length of a posterior leg  $\frac{9}{24}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

Anterior part of the cephalo-thorax compressed; sides depressed, marked with slight furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a narrow indentation. Mandibles powerful, conical, armed with a few teeth on the inner surface, inclined towards the sternum, which is heart-shaped and thinly covered with whitish hairs. Maxillæ straight, enlarged and rounded at the extremity. Lip nearly quadrate, rather broader at the base than the extremity. These parts are very dark brown, the middle and sides of the cephalo-thorax, the maxillæ and mandibles, having a faint tinge of red. Four eyes, much smaller than the rest, form a transverse row in front; the other four, situated on the sides and anterior part of the cephalo-thorax, describe a quadrilateral, the anterior eyes of which are the largest of the eight. Legs and palpi dark brown, with a tinge of red. Fourth pair of legs the longest; the other three pairs equal in length, or very nearly so; the third pair extends further, and appears to be longer than the first and second pairs in consequence of being articulated to the broadest part of the cephalo-thorax. Each tarsus is ter-

minated by three claws ; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a small, curved, pectinated claw at their extremity. Abdomen oviform, thickly covered with hairs, convex above, projecting over the base of the cephalothorax ; upper part dark brown, with three minute tufts of yellowish hairs before ; under part hoary, or pale yellowish brown. Sexual organs glossy, of a very dark brown colour, faintly tinged with red ; connected with their anterior part is a large, straight process directed backwards ; it occupies a groove in the medial line, and is enlarged and depressed at its posterior extremity.

The male, though rather smaller than the female, resembles her in the relative length of its legs, and in colour. Third and fourth joints of the palpi short, the latter being the larger ; fifth joint oval, convex and hairy externally, concave within, except at the extremity, which is compact and pointed, comprising the palpal organs ; they are highly developed, complicated in structure, having a strong, pointed spine near the middle, directed downwards and outwards, and a fine, black, curved spine originating on the inner side, and passing obliquely under the former ; their colour is reddish brown.

In the month of August, females of this species may be seen among short grass and heath in pastures and on commons in Denbighshire and Caernarvonshire, with their cocoons attached to their spinners. The cocoon is lenticular, measuring  $\frac{1}{7}$ th of an inch in diameter, and is composed of pale brown, or dull greenish brown silk, of a compact texture, surrounded by a narrow whitish zone of a lighter texture ; it contains about 25 spherical, yellow eggs, which are not agglutinated together. The young, when they quit the cocoon, mount on the back of the mother.

On the 12th of September, 1838, a minute Ichneumon came out of a cocoon belonging to this species, which I had placed in a phial.

5. *Lycosa latitans*. Cephalo-thorace saturatè brunneo ad margines laterales pilis raris albis munito ; mandibulis maxillis labio sternoque rufo-brunneis ; pedibus flavescenti-brunneis, fasciis obscuris saturatioribus, pari 4to

longissimo, reliquis subæqualibus; abdomine saturatè olivaceo-brunneo, serie laterali macularum albarum pilisque numerosis marginalibus albis munito.

Length of the female  $\frac{1}{5}$ th of an inch; length of cephalo-thorax  $\frac{1}{10}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of a posterior leg  $\frac{7}{20}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

Anterior part of the cephalo-thorax compressed; sides depressed, marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a narrow indentation; colour dark brown, a few white hairs occurring on the lateral margins. Mandibles powerful, conical, vertical, armed with a few teeth on the inner surface; they are brown, tinged with red. Maxillæ straight, enlarged and rounded at the extremity, similar in colour to the mandibles, but paler. Lip nearly quadrate, rather broader at the base than the extremity, dark brown, except the tip, which is reddish brown. Sternum heart-shaped, reddish brown, the margins being the darkest. Four eyes, much smaller than the rest, form a transverse row in front; the other four, situated on the sides and anterior part of the cephalo-thorax, describe a quadrilateral, the anterior eyes of which are the largest of the eight; lateral eyes of the frontal row rather smaller than the intermediate ones. Legs yellowish brown, with obscure bands of a darker hue; fourth pair the longest; the other three pairs equal in length, or very nearly so. Each tarsus is terminated by three claws: the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi resemble the legs in colour, and have a small, curved, pectinated claw at their extremity. Abdomen oviform, thickly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is dark brown, with a tinge of olive; a row of minute, white spots extends along each side of the medial line of the upper part, and numerous whitish hairs occur on the sides and under part. Sexual organs black and glossy. Plates of the spiracles pale dull yellow.

The male is rather smaller than the female, which it closely resembles in colour, and in the relative length of its legs. Palpi slender; fourth

joint longer than the third; fifth joint of an elongated oval form, convex and hairy externally, concave underneath, near the middle, comprising the palpal organs, which are moderately developed, not very complicated in structure, with a crescent-shaped process at the extremity, and are of a reddish brown colour.

In the months of May and June, females of this species, which appears to connect the terrestrial with the semiaquatic *Lycosæ*, may be found under stones in moist situations in the woods of Denbighshire, with their cocoons attached to their spinners. The cocoon is globular, measuring  $\frac{1}{8}$ th of an inch in diameter, and is composed of white silk of a compact texture, surrounded by a narrow zone of a slighter texture; it contains 40 or 50 spherical, yellow eggs, which are not agglutinated together.

6. *Lycosa Cambrica*. Maxillis labium versus inflexis, cum cephalo-thorace mandibulis sternoque nigrescentibus; cephalo-thorace magno, pilis raris flavescenti-brunneis, posticè et ad latera irregulariter albo-maculato; pedibus palpisque saturatè flavescenti-brunneis nigro fasciatis; abdomine flavescenti-brunneo, anticè fasciâ medianâ pallidiore obscurè nigro-marginatâ, margine albo-maculato, posticè utrinque serie macularum alternatim nigrarum et albarum ad filatoria confluenta, maculis lineis obscuris nigris transversis angularibus in vertice albo-maculatis connexis.

Length of the female  $\frac{2}{5}$ ths of an inch; length of the cephalo-thorax  $\frac{3}{16}$ ; breadth  $\frac{3}{20}$ ; breadth of abdomen  $\frac{1}{6}$ ; length of a posterior leg  $\frac{11}{20}$ ; length of a leg of the third pair  $\frac{3}{8}$ .

Cephalo-thorax large, convex above, somewhat compressed before, with slight furrows on the sides, and a narrow indentation in the medial line of the posterior region; its colour is brownish black, but it is clad with yellowish brown hairs, which are densest on the anterior part, and the posterior part and sides are marked with white hairs disposed in irregular spots. Four eyes, much smaller than the rest, form a transverse row in front; the other four, situated on the sides and anterior part of the cephalo-thorax, describe a quadrilateral, the anterior ones of which are

the largest of the eight. Mandibles powerful, conical, vertical, with a few teeth and a fringe of long hairs on the inner surface. Maxillæ strong, curved towards the lip, enlarged at the extremity, which is obliquely truncated and fringed with hairs on the inner side. Lip nearly quadrate, rather broader at the base than the extremity. Sternum heart shaped. These parts are brownish black, the maxillæ having a tinge of red at the extremity, and the sternum being thinly covered with long black and short yellowish brown hairs. Legs and palpi dark yellowish brown, with black bands; the latter have a curved claw at their extremity. Fourth pair of legs the longest, then the first; third pair the shortest. Each tarsus is terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. Abdomen oviform, rather broader at the posterior than the anterior extremity, thickly covered with hairs, convex above, projecting over the base of the cephalo-thorax; the upper side is yellowish brown, a band of a paler hue extending from the anterior part, along the middle, more than a third of its length; this band has an obscure border of black, on which are several irregular white spots; a series of black and white spots, disposed alternately, commences near the extremity of the band, on each side of the medial line, and extends to the spinners, where the two meet; the black spots of both series are connected by obscure, black, angular lines, each comprising a white spot within its vertex; the sides are mottled with dull olive-brown, yellowish brown, and white; and the under part is yellowish brown. A compressed, hairy process, enlarged at its extremity, is connected with the anterior margin of the sexual organs.

The male is smaller than the female, and paler; but it resembles her in the general distribution of its colours, and in the relative length of its legs. Base of the thigh of each anterior leg black. The first and second joints of the palpi are dark brown; the third and fourth, which are short, are yellowish brown; and the fifth is dark reddish brown; this last joint is of an elongated oval form, convex and hairy externally, with a cavity near its base, on the under side, comprising the palpal organs;

they are but little developed, complicated in structure, and of a dark reddish brown colour.

Adult males and females of this handsome spider were taken in swampy ground in woods at Oakland, in May 1839. The decidedly curved form of the maxillæ, an approximation to which may be observed in *Lycosa campestris*, *Lycosa allodroma*, and some other species, has not been considered of sufficient importance to require its separation from the genus *Lycosa*, with the semi-aquatic species of which genus it is very closely allied by its general organization, habits, and colours.

Family SALTICIDÆ.

Genus SALTICUS, *Latr.*

7. *Salticus distinctus*. Cephalo-thorace saturatè brunneo, strigâ utrinque marginali albidâ, supernè pilis flavescenti-brunneis albisque intermixtis, strigâ medianâ albâ; mandibulis maxillis labioque triangulari acuto saturatè brunneis; pedibus pallidè rufescenti-brunneis colore saturatiore fasciatis, pari 4to longissimo, dein 3tio, 2do brevissimo; palpis brevibus, basi saturatè brunneis, apice albidis; abdomine brunneo-rufo albidoque tincto, anticè arcubus 2 concentricis obscuris, posticè lineis angularibus seriatis albidis, maculâ anali albâ.

Maris par pedum anterius tertio paulò longius; paribus 1mo et 2do cum femoribus 3tii 4tique saturatè brunneis.

Length of the female  $\frac{1}{6}$ th of an inch; length of cephalo-thorax  $\frac{1}{12}$ ; breadth  $\frac{1}{16}$ ; breadth of abdomen  $\frac{1}{14}$ ; length of a posterior leg  $\frac{3}{16}$ ; length of a leg of the second pair  $\frac{1}{8}$ .

Cephalo-thorax large, nearly quadrilateral, abruptly sloping in the posterior region, prominent in front, projecting beyond the mandibles; it is of a very dark brown colour, with a longitudinal streak of yellowish white immediately above each lateral margin; upper part covered with yellowish brown and yellowish white hairs intermixed, a short streak of the latter hue occurring in the middle, behind the posterior pair of eyes. Mandibles strong, vertical, armed with a few small teeth on the inner surface.



Maxillæ short, straight, greatly enlarged at the extremity. Lip triangular, pointed at the apex. These parts are of a dark brown colour, the extremities of the maxillæ and lip being much the palest. Eyes disposed in three rows, constituting three sides of a square, in the front and on the sides of the cephalo-thorax; the eyes of the anterior row are surrounded by red hairs, the intermediate ones being very large; the intermediate eye of each lateral row is remarkably small. Legs pale reddish brown, banded with dark brown; fourth pair the longest, then the third; second pair the shortest. Each tarsus is terminated by two long, curved, slightly pectinated claws, below which is a small climbing apparatus. Palpi short: first joint and base of the second dark brown, the remaining portion yellowish white; the fourth and fifth joints are abundantly supplied with long hairs, and are employed as brushes to clean the anterior eyes. Abdomen oviform, thickly covered with hairs on the upper part, projecting over the base of the cephalo-thorax; it is of a brown colour, mixed with red-brown and yellowish white; there are some whitish hairs in front, and a white spot occurs on the anus; in the middle of the anterior part are two small, obscure, yellowish white, concentric arcs of circles, to which succeeds a series of angular lines of the same hue, whose vertices are directed forwards; the first two lines of the series are the most extensive, the extremities of the second being reflected and in contact with the first: sides brown, blended with yellowish white; under part dark brown, with the exception of a broad, reddish brown band extending along the middle. Superior spinners dark brown, the others reddish brown. Plates of the spiracles pale brown.

The male greatly resembles the female, but is rather smaller and darker coloured; the relative length of its legs is also different, the first pair being a little longer than the third. The whole of the first and second pairs of legs, and the thighs of the third and fourth pairs, are of a very dark brown colour. Third and fourth joints of the palpi short; the latter, which is the smaller, projects from its extremity, on the outer side, a long, pointed apophysis curved abruptly at the end; fifth joint large,

oval, very dark brown, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, little complicated in structure, projecting upwards to the articulation of the third and fourth joints, and are of a dark brown colour.

*Salticus distinctus* is common in Denbighshire on stone walls, in the interstices of which the female spins a cell of compact white silk attached to the surface of the stones. In the month of July she constructs in this cell a lenticular cocoon measuring  $\frac{1}{8}$ th of an inch in diameter, in which she deposits about 16 spherical, pale yellow eggs, not agglutinated together. The young, even before they quit the cocoon, exhibit some of the marks most characteristic of the species.

#### FAMILY AGELENIDÆ.

##### GENUS CÆLOTES.

Oculi in seriebus 2 transversis parallelis rectis; seriei anterioris et brevioris intermedii supra marginem frontalem positi, paulò minores; utriusque laterales in tuberculis positi. Maxillæ fortes, labium versus curvatæ, ad palporum insertionem et ad apices obliquè truncatos intùs pilis fimbriatos dilatatæ. Labium paulò longius quam latum, lateribus curvatis, apice truncato. Pedes robusti, pari 4to longissimo, dein 1mo, 3tio brevissimo. Tarsi triunguiculati, unguibus 2 superioribus curvatis pectinatis, inferiore prope basin inflexo.

*Cælotes saxatilis.* (*Drassus saxatilis*, Blackw. Research. in Zool. p. 332. *Amaurobius terrestris*, Koch, Die Arachn. b. vi. p. 45. tab. 192. fig. 463-4.)

A description of this spider was originally given in the London and Edinburgh Philosophical Magazine, vol. iii. p. 436-7, under the name of *Clubiona saxatilis*. Afterwards I was induced to remove it to the genus *Drassus* on account of the curvature of its maxillæ (Researches in Zoology, p. 332). Subsequent investigations, made with great care, have served to convince me that it belongs to the *Agelenidæ*, as it possesses several characteristics in common with the spiders of that family. The anterior part of the cephalo-thorax is compressed; the superior spinners are triarticulate, longer than the rest, and have the papillæ or spinning-tubes disposed on the under side of the terminal

joint; each inferior tarsal claw is provided with two pairs of fine teeth near the base; and the web constructed by this species is of a compact texture, having a tube connected with it, extending, usually, to the extremity of a cylindrical cavity in the earth, which is frequently excavated by the animal itself.

The distinctness of the genus *Cavator* will be immediately perceived on comparing the characters upon which it is founded with those of the other genera comprised in the family *Agelenidæ*.

Genus AGELENA, *Walck.*

8. *Agelena elegans.* Cephalo-thorace mandibulis maxillis palpis labio sterno pedibusque flavescenti-rufis, horum pari 4to longissimo, reliquis æqualibus; oculis seriei anterioris intermediis omnium maximis; abdomine nigricante, serie medianâ linearum obscurarum angularium pallidorum maculâque utrinque anticè ovali nigrâ.

Length of the female, not including the spinners,  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{16}$ ; breadth  $\frac{1}{20}$ ; breadth of abdomen  $\frac{1}{16}$ ; length of a posterior leg  $\frac{1}{6}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

Anterior part of the cephalo-thorax compressed; sides depressed, marked with furrows diverging from the upper part to the margins; a row of bristles, directed forwards, extends along the medial line, and there is an indentation in the posterior region. Mandibles strong, conical, armed with a few very minute teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ short, gibbous at the base, and inclined towards the lip, which is nearly quadrate, being rather broader at the base than the extremity. Fourth pair of legs the longest, the other pairs equal in length. These parts and the palpi are glossy, and of a yellowish red colour, the base of the lip being the darkest. Each tarsus is terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a curved claw at their extremity. Eyes disposed on the anterior part of the cephalo-thorax, in two transverse, curved, nearly parallel rows, whose convexity is directed backwards; the intermediate

eyes of the anterior row are the largest of the eight. Abdomen short, broad, thickly covered with hairs, somewhat larger at the posterior than the anterior extremity, convex above, projecting over the base of the cephalo-thorax; it is of a very dark brown colour, approaching to black, the under part being the palest; along the middle of the upper part extends a series of very obscure, angular lines of a lighter hue, whose vertices are directed forwards; and on each side of the anterior part, near its union with the cephalo-thorax, there is a blackish spot of an oval form. Spinners yellowish red, arranged in a transverse row immediately below the anus; the exterior ones, which are the longest, are triarticulate, and have the papillæ or spinning-tubes disposed along the inferior surface of the terminal joint. Plates of the spiracles yellowish white.

The male is rather smaller than the female, which it resembles in colour, and in the relative length of its legs; the absolute length of the organs of progression, however, is greater, a posterior leg measuring  $\frac{3}{16}$ ths of an inch. The second joint of the palpi has a curved, pointed, yellowish red process on the under side, near the middle; third and fourth joints short; the former is much the larger, very gibbous above, and has a small, pointed, blackish apophysis near its extremity on the outer side; the latter has a strong, blackish apophysis at its extremity on the under side, which is directed upwards, its curved point being in contact with the small apophysis of the third joint; fifth joint oval, moderately convex and hairy externally, concave within, comprising the palpal organs; they are highly developed, not very complicated in structure, vascular, surrounded by a filiform, black spine, and are flesh-coloured. The convex sides of the terminal joints of the palpi are directed from, and the palpal organs towards each other.

This species, which resembles *Textrix agilis* in the relative length of its legs, is found under stones in moist pastures near Llanrwst in Denbighshire. The males have the palpal organs completely developed in the month of August.

9. *Agelena prompta*. Cephalo-thorace brunneo; mandibulis maxillis labioque rufescenti-, sterno flavo-brunneis; oculis seriei anterioris intermediis omnium minimis; pedibus brunneis, pari 4to longissimo, dein 1mo, 3tio brevissimo; abdomine suprâ saturatè brunneo, serie medianâ linearum flavescenti-brunneâ, lateribus pallidè flavescenti-brunneis.

Length of the female, not including the spinners,  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{34}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of a posterior leg  $\frac{1}{9}$ ; length of a leg of the third pair  $\frac{1}{12}$ .

Anterior part of the cephalo-thorax slightly compressed; sides depressed, marked with furrows diverging from the upper part to the margins; a row of long hairs, directed forwards, extends along the middle, and there is an indentation in the posterior region; it is of a brown colour, the anterior part, which is rounded and rather depressed, being the darkest. Eyes disposed on the fore-part of the cephalo-thorax in two transverse, curved, nearly parallel rows, whose convexity is directed backwards; the intermediate eyes of the anterior row are the smallest of the eight, and the lateral eyes, which are seated on a small eminence, and are nearly contiguous, are the largest. Mandibles strong, conical and vertical. Maxillæ short, gibbous at the base, round at the extremity, and inclined towards the lip, which is nearly quadrate, being rather broader at the base than the extremity. These organs are reddish brown. Sternum heart-shaped, of a yellowish brown colour. Legs and palpi brown. Fourth pair of legs the longest, then the first; third pair the shortest. Each tarsus is terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base, where there is a pair of fine teeth. Abdomen oviform, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; upper part dark brown, with a series of strongly marked, yellowish brown, angular lines, whose vertices are directed forwards, extending along the middle; sides and under part pale yellowish brown, the latter having a band of a darker hue in the medial line. Superior spinners much longer than the rest, triarticulate, with the spinning-tubes arranged along the under side of the terminal joint; this joint is whitish, the remaining portion, and the other mam-

mulæ, being of a brown colour. Sexual organs dark red-brown. Plates of the spiracles whitish.

The male is rather smaller than the female, which it resembles in colour. In both sexes the relative length of the legs is the same, but their absolute length is greater in the male, a posterior one measuring  $\frac{1}{8}$ th of an inch. Third and fourth joints of the palpi short: there is a slender, curved process on the outer side of the upper part of the former; another, longer, slenderer at its extremity, and more curved, projecting from a prominence or apophysis at the outer side of the lower extremity of the latter; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are moderately developed, not very complicated in structure, prominent at the upper part, nearly encircled by a fine, black spine, and are of a pale red-brown colour.

*Agelena prompta* occurs under stones in the woods near Llanrwst in Denbighshire. The male has the palpal organs fully developed in October.

10. *Agelena montana*. Cephalo-thorace mandibulis maxillis labio sterno pedibus palpisque brunneis; abdomine nigricante, obscurè sed ad latera evidentiùs flavescenti-brunneo maculato.

Length of the female, not including the spinners,  $\frac{1}{14}$ th of an inch; length of cephalo-thorax  $\frac{1}{26}$ ; breadth  $\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{26}$ ; length of a posterior leg  $\frac{1}{9}$ ; length of a leg of the third pair  $\frac{1}{13}$ .

Anterior part of the cephalo-thorax slightly compressed; sides depressed, marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a narrow indentation. Mandibles strong, conical, and inclined towards the sternum, which is heart-shaped. Maxillæ short, gibbous at the base, round at the extremity, and inclined towards the lip, which is nearly semicircular. These parts are brown, the lip being much the darkest. Legs and palpi brown, the joints being the palest. Posterior pair of legs the longest, then the first, which a little exceeds the second in length, third pair the shortest. Tarsi terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have

a curved claw at their extremity. Eyes disposed on the fore-part of the cephalo-thorax in two transverse, curved, nearly parallel rows, whose convexity is directed backwards; the lateral eyes, which are seated on a small eminence, and are nearly contiguous, are the largest, and the intermediate ones of the anterior row the smallest of the eight. Abdomen short, broad, thickly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is of a dull blackish brown colour, interspersed with obscure, yellowish brown spots, which are most conspicuous on the sides; the under part is the palest. The spinners are arranged in a transverse row immediately below the anus; the exterior ones, which are much the longest, are triarticulate, and have the spinning-tubes disposed along the inferior surface of the terminal joint; second joint of all the spinners reddish brown, the other joints yellowish white. Sexual organs prominent. Plates of the spiracles whitish.

Females of this species were discovered in February 1837, under stones on Gallt y Rhyg, a mountain in Denbighshire, near Llanrwst.

11. *Agelena nava*. Saturatè brunnea ferè nigra.

Length of the female, not including the spinners,  $\frac{1}{15}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{32}$ ; length of a posterior leg  $\frac{1}{12}$ ; length of a leg of the third pair  $\frac{1}{15}$ .

Anterior part of the cephalo-thorax compressed; sides depressed, marked with furrows diverging from the upper part to the margins; a row of fine bristles, directed forwards, extends along the middle, and in the posterior region, which is depressed, there is an indentation. Mandibles strong, conical, vertical. Maxillæ short, convex at the base, round at the extremity, and inclined towards the lip, which is nearly quadrate, being rather broader at the base than the extremity. Sternum heart-shaped. These parts are glossy, and, with the legs and palpi, are of a dark brown colour, the margins of the cephalo-thorax and the base of the lip being much the darkest. Fourth pair of legs the longest, then the first, third pair the shortest. Tarsi terminated by two curved, pectinated claws. Eyes disposed on the fore-part of the cephalo-thorax in two transverse, curved

rows, whose convexity is directed backwards; the lateral eyes are the largest, and the intermediate ones of the anterior row the smallest of the eight. Abdomen soot-coloured, thickly covered with hairs, short, rather larger at the posterior than the anterior extremity, convex above, projecting a little over the base of the cephalo-thorax. Spinners brown; the superior pair, which is much longer than the rest, and triarticulate, has the spinning-tubes arranged along the inferior surface of the terminal joint. Sexual organs prominent, and dark reddish brown. Plates of the spiracles pale yellow.

About midsummer, individuals of this species may be seen on rails and gates in pastures near Llanrwst in considerable numbers, but they are all females. The only male which has come under my observation was found beneath a stone imbedded in earth, in the autumn of 1837. It bore a close resemblance to the other sex, but escaped from me before I had an opportunity of describing the structure of the palpal organs, which were completely developed.

12. *Agelena celans*. Cephalo-thorace saturatè brunneo lateribus fasciâque medianâ flavescenti-brunneis; oculis seriei anterioris intermediis omnium multò minimis; mandibulis maxillis labio pedibus palpisque rufo-brunneis; abdomine saturatè brunneo rufescenti et flavescenti tincto, fasciâ medianâ obscurâ dentatâ rufescenti-brunneâ.

Length of the female  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{12}$ ; breadth  $\frac{1}{16}$ ; breadth of abdomen  $\frac{1}{14}$ ; length of a posterior leg  $\frac{5}{16}$ ; length of a leg of the third pair  $\frac{5}{24}$ .

Anterior part of the cephalo-thorax slightly compressed; sides depressed, marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a narrow indentation; it is hairy, and of a very dark brown colour, with yellowish brown lateral margins, and a band of the same hue extending along the middle. Eyes disposed on the fore-part of the cephalo-thorax in two transverse, curved, nearly parallel rows, whose convexity is directed backwards; the lateral eyes are the largest, and the intermediate ones of the anterior row much



the smallest of the eight. Mandibles strong, conical, vertical, armed with a few teeth on the inner surface. Maxillæ short, convex at the base, round at the extremity, and inclined towards the lip, which is nearly quadrate, being rather broader at the base than the extremity. These organs are brown, with a tinge of red, the base of the lip being much the darkest. Sternum short, heart-shaped, and of a yellowish brown colour. Legs and palpi brown, tinged with red; the thighs are the palest. Fourth pair of legs the longest, then the first, third pair the shortest; the tibiæ and metatarsal joints of the first and second pairs have a series of large, sessile spines on each side of the inferior part. Tarsi terminated by two curved, pectinated claws. The palpi have a small, curved claw at their extremity. Abdomen oviform, rather broader at the posterior than the anterior extremity, hairy, convex above, projecting over the base of the cephalo-thorax; the upper part is very dark brown, with reddish brown and scattered hairs of a yellowish brown colour intermixed; along the middle extends an obscure, dentated band of reddish brown; the under part is yellowish brown, with three faint, longitudinal lines of a darker hue. The superior spinners are short, and have the spinning-tubes disposed at their extremity. Plates of the spiracles pale yellow.

The male is smaller than the female, which it resembles in colour and in the relative length of its legs. Third and fourth joints of the palpi short, the latter having a straight, pointed apophysis at its extremity, on the outer side; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs: they are highly developed, rather complicated in structure, vascular, with a black, corneous process at the extremity, which is broad, depressed, and curved near the base, and abruptly recurved about the middle; their colour is red-brown.

*Agelena celans* frequents woods in the vicinity of Llanrwst, running nimbly upon the ground and concealing itself under stones. The male has the palpal organs fully developed in August. It is a scarce species.

## Family THERIDIIDÆ.

GENUS THERIDION, *Walck.*

13. *Theridion fuscum*. Saturatè rufescenti-brunneum, abdomine maculis obscuris saturatoribus; oculis in seriebus 2 transversis, intermediis trapezoidem anticè multo brevioribus, seriei posterioris omnium maximis, anterioris minimis; pedibus robustis, pari 1mo longissimo, dein 4to, 3tio brevissimo; labio semicirculari.

Length of the female  $\frac{1}{8}$ th of an inch; length of the cephalo-thorax  $\frac{1}{32}$ ; breadth  $\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{1}{10}$ ; length of a leg of the third pair  $\frac{1}{8}$ .

This spider is of a dark reddish brown colour, the abdomen being marked with obscure spots of a deeper shade. Cephalo-thorax glossy, compressed before, very convex immediately behind the eyes, depressed in the posterior region, with a large indentation in the medial line, and furrows on the sides. Eyes disposed on the fore-part of the cephalo-thorax in two transverse rows; the intermediate ones form a trapezoid whose anterior side is much the shortest, and those of each lateral pair are contiguous and placed obliquely; the posterior eyes of the trapezoid are the largest, and the anterior ones much the smallest of the eight. Mandibles small, conical, armed with a few teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ obliquely truncated at the extremity on the outer side, and inclined towards the lip, which is semicircular. Legs robust; first pair the longest, then the fourth, third pair the shortest. Tarsi terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a slender, curved claw at their extremity. Abdomen subglobose, somewhat depressed, thinly covered with hairs, glossy, projecting greatly over the base of the cephalo-thorax.

Females of this species were captured in November and December 1837, on rails and under stones in pastures near Llanrwst.

14. *Theridion albens.* Albidum; ovalibus 2 parvis obliquis e lineis tenuibus nigris efformatis prope abdominis medium; cephalo-thorace fasciâ obscurâ medianâ; oculis in anteriore cephalo-thoracis parte positis, intermediis quadram referentibus; labio triangulari acuto.

Length of the female  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{3\frac{1}{2}}$ ; breadth  $\frac{1}{3\frac{1}{6}}$ ; breadth of abdomen  $\frac{1}{3\frac{1}{2}}$ ; length of an anterior leg  $\frac{1}{10}$ ; length of a leg of the third pair  $\frac{1}{16}$ .

Cephalo-thorax glossy, compressed before, convex above, with a slight indentation in the medial line of the posterior region. Mandibles small, conical, vertical. Maxillæ slender, obliquely truncated at the extremity, on the outer side, and inclined towards the lip, which is triangular, and pointed at the apex. Sternum heart-shaped. First pair of legs the longest, then the fourth, which a little exceeds the second in length, third pair the shortest. Tarsi terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a curved claw at their extremity. Abdomen thinly covered with hairs, very convex above, projecting greatly over the base of the cephalo-thorax. The general colour of this spider is whitish, but a small, oblique oval, formed by a fine, black line, occurs near the middle of the upper part of the abdomen, on each side of the medial line; the sexual organs also are black, and an obscure band of a darkish hue extends along the middle of the cephalo-thorax. Eyes seated on black spots on the anterior part of the cephalo-thorax; the four intermediate ones form a square; the other four are disposed in pairs on the sides of the square, the eyes constituting each pair being contiguous and placed obliquely on a slight protuberance.

The minute spider from which the foregoing description was made was discovered in July 1837, among strawberry plants growing in my father's garden at Hendre House, near Llanrwst.

15. *Theridion callens.* Cephalo-thorace pallidè flavescenti-brunneo, lateribus maculisque pluribus triangularibus quarum maximâ centrali nigris; oculis in anteriore cephalo-thoracis parte, intermediis quadram referentibus, seriei anterioris in tuberculo positis; mandibulis saturatè brunneis;

maxillis rufo-brunneis, extùs brunneo-maculatis; labio triangulari basi nigro apice rufo-brunneo; sterno pallidè rufo-brunneo, maculis irregularibus marginalibus nigricantibus; pedibus gracilibus, pallidè flavescenti-brunneis, fasciis numerosis saturatoribus; abdomine nigro, rufo alboque vario, prope medium tuberculis 2 anticè nigris posticè albescens-tibus.

Length of the female  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{16}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{16}$ ; length of an anterior leg  $\frac{1}{4}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

This interesting spider has the cephalo-thorax oval, glossy, very convex above, and abruptly sloping in the posterior region, where there is an indentation in the medial line; along the middle extends a row of fine, curved bristles, directed forwards; its colour is pale yellowish brown, the lateral margins, and a triangular spot in the centre, which projects a line from the middle of its base to the eyes, and has a narrow triangle at its apex, whose base terminates at the medial indentation, together with a small triangular spot immediately behind each lateral pair of eyes, being black. Eyes seated on black spots on the anterior part of the cephalo-thorax; the four intermediate ones form a square, the two in front being placed on a prominence; the lateral eyes are disposed in pairs on the sides of the square, those constituting each pair are contiguous and placed on a small protuberance. Mandibles powerful, conical, armed with a few minute teeth on the inner surface, rather inclined towards the sternum, and of a dark brown colour. Maxillæ red-brown, with a dark brown mark on the outer side; they are pointed at the extremity and encompass the lip, which is triangular, black at the base, and red-brown at the apex. Sternum oblong heart-shaped; it is of a pale red-brown colour, with large, irregular, brownish black marks on the margins. Legs long and slender; there is a row of curved spines on the anterior side of the tibial, metatarsal, and tarsal joints of the first and second pairs, those on the metatarsal joint being much the longest; both the legs and palpi are pale yellowish brown, with numerous dark brown bands. First pair of legs the longest, then the fourth, which a little exceeds the second in length, third pair the shortest. Tarsi terminated by three claws; the two supe-

rior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a curved, pectinated claw at their extremity. Abdomen very convex above, projecting over the base of the cephalo-thorax; it is thinly covered with long, coarse hairs, and is variegated with black, red, and white; on the upper part, rather nearer the anterior than the posterior extremity, are two tubercles, which are black in front, and pale yellowish white behind; the prevailing tint of the part before the tubercles is black, and of that behind them, which comprises two transverse, black streaks connected in the middle, red. Plates of the spiracles yellow. Sexual organs reddish brown; a small process connected with their anterior part is directed backwards, and on each side of its extremity is a minute, glossy convexity of a deeper shade.

*Theridion callens*, which has a close affinity to the *Theridion aphane* of Walckenaer, constructs a very remarkable cocoon of a balloon-shape, measuring about  $\frac{1}{8}$ th of an inch in diameter; it is composed of soft silk of a slight texture, and a pale brown colour, enclosed in a loose, irregular network of strong, dark red-brown silk; several of the lines composing this network are united near the apex of the cocoon, leaving intervals there through which the young spiders pass when they quit it, and, being agglutinated together throughout the remainder of their length, form a slender stem, varying from  $\frac{1}{10}$ th to  $\frac{1}{2}$  of an inch in length, by which the cocoon is attached to the under surface of stones and fragments of rock, appearing by its figure and erect position like a small fungus or some minute production belonging to the vegetable kingdom. The eggs are very large, considering the small size of the spider, five or six in number, spherical, not agglutinated together, and are of a brown colour. I have not been able to procure an adult male of this species, which frequents woods in the west of Denbighshire.

GENUS WALCKENAËRA\*, *Blackw.*

16. *Walckenaëra punctata.* Cephalo-thorace sternoque punctatis cum man-

\* For the characters of this genus, see the London and Edinburgh Philosophical Magazine and Journal of Science, vol. iii. pp. 105-6; and Researches in Zoology, pp. 314-15. Subsequently to the publication of these characters, M. Koch has constituted the genus *Micryphantes* with species belonging to the genus *Walckenaëra*. See his Uebersicht des Arachn. Syst. p. 11.

dibulis maxillis labioque saturatè brunneis; palpis pedibusque rufis, horum pari 1mo 4toque longissimis æqualibus, 3tio brevissimo; abdomine nitente nigro.

Length of the female  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{20}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{20}$ ; length of an anterior leg  $\frac{1}{7}$ ; length of a leg of the third pair  $\frac{1}{9}$ .

Cephalo-thorax oval, convex above, glossy, prominent before, where the eyes are seated, with an indentation in the medial line of the posterior region; numerous strongly marked punctures occur on the margins, from which rows of punctures converge to the upper part. Mandibles conical, armed with a few teeth on the inner surface, and inclined towards the sternum, which is broad, heart-shaped, and thickly marked with punctures. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are very dark brown, the mandibles and maxillæ having a tinge of red. Legs and palpi red. The first and fourth pairs of legs, which are the longest, are equal in length, and the third pair is the shortest. Tarsi terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. Eyes of the lateral pairs the largest, and those of the intermediate pair of the anterior row much the smallest of the eight. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and black. Sexual organs rather prominent, and reddish brown. Plates of the spiracles dull yellow.

Females of this species were taken in May 1838, under stones in a moist pasture near Llanrwst.

17. *Walckenaëra turgida*. Cephalo-thorace mandibulis maxillis labio sternoque saturatè pedibus palpisque rufescenti-brunneis; abdomine brunneo saturatiùs marmorato.

In anteriori cephalo-thoracis parte maris protuberantia magna oculifera lateribus fortitèr dentatis; et ante utrumque oculum paris superioris protuberantia magna obtusa.

Length of the female  $\frac{1}{13}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth

$\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{32}$ ; length of an anterior leg  $\frac{1}{11}$ ; length of a leg of the third pair  $\frac{1}{13}$ .

Cephalo-thorax oval, convex above, glossy, slightly prominent behind the eyes, with a small indentation in the medial line of the posterior region; it is of a dark brown colour. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum; they are of a dark brown colour, slightly tinged with red. Maxillæ rather paler than the mandibles. Sternum broad, heart-shaped, and convex; it and the lip are of a dark brown hue. Legs and palpi reddish brown. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Tarsi terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, and is of a brown colour, mottled with darker brown. Plates of the spiracles pale yellowish brown.

The male is darker coloured than the female, and has on the anterior part of the cephalo-thorax a strong prominence, deeply indented on the sides, on which the eyes are seated. Immediately before each eye of the superior pair is a large, obtuse protuberance. Fourth joint of the palpi rather larger than the third, projecting a strong apophysis in front, which is bifurcated, the inner process being longer and more pointed than the outer one; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are highly developed, complicated in structure, prominent, with a fine, curved spine at the extremity, and are of a red-brown colour.

Specimens of *Walckenaëra turgida* were discovered in September and October 1836, under stones and blocks of wood in the plantations at Crumpsall Hall, near Manchester.

18. *Walckenaëra atra*. Nigra; mandibulis maxillis pedibus palpisque brunneis.

Anterior cephalo-thoracis pars in mare elevata obtusa, indentatione utrinque oblongâ.

Length of the female  $\frac{1}{4}$ th of an inch; length of cephalo-thorax  $\frac{1}{32}$ ; breadth

$\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{1}{14}$ ; length of a leg of the third pair  $\frac{1}{20}$ .

Cephalo-thorax oval, glossy, depressed on the sides, which are marked with slight furrows diverging from the upper part towards the margins; in the medial line of the posterior region there is an indentation. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. First and fourth pairs of legs the longest, and equal in length, third pair the shortest. Anterior intermediate eyes the smallest of the eight. The tarsi of this spider, and of all the species belonging to the genus which have come under my observation, are terminated by three claws; the two superior ones curved and pectinated, and the inferior one inflected near its base. Abdomen thinly clad with hairs, glossy, convex above, projecting over the base of the cephalo-thorax. This species is black, with the exception of the mandibles, maxillæ, legs, and palpi, which are brown, the first two being much the darkest.

The male is rather smaller than the female, but resembles her in colour, and in the relative length of his legs. The anterior part of the cephalo-thorax, where the eyes are situated, is elevated, but obtuse, with an oblong indentation on each side, extending backwards from the lateral eyes. Third and fourth joints of the palpi short, the latter being much the stronger; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a very prominent, filiform, curved, black spine, enveloped in a delicate membrane, originating about the middle of the outer side, and a short, straight, pointed one at their extremity; they are of a reddish brown colour.

Both sexes of *Walckenaëra atra*, the males having the palpal organs fully developed, were found in May 1838, under stones in moist pastures near Llanrwst. The species probably comes near *Theridion acuminatum*, Wider, in Mus. Senk. i. p. 232. t. 15. f. 11.

19. *Walckenaëra hiemalis*. Cephalo-thorace mandibulis maxillis labio ster-



noque nigricantibus; pedibus palpsque rufo-brunneis; abdomine nitente nigro.

Anterior cephalo-thoracis pars in mare prominens, indentatione utrinque magnâ.

Length of the female  $\frac{1}{15}$ th of an inch; length of cephalo-thorax  $\frac{1}{27}$ ; breadth  $\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{32}$ ; length of an anterior leg  $\frac{1}{11}$ ; length of a leg of the third pair  $\frac{1}{14}$ .

Cephalo-thorax oval, convex above, glossy, rather prominent before, where the eyes are situated, depressed in the posterior region, with a small indentation in the medial line. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. These parts, with the maxillæ and lip, are brownish black, the mandibles and maxillæ being the palest. Legs and palpi red-brown. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and black. Sexual organs prominent. Plates of the spiracles brown.

The male is rather smaller than the female, and has the anterior part of the cephalo-thorax much more prominent, a large indentation occurring on the sides, behind each lateral pair of eyes. Relative length of the legs the same in both sexes, those of the male being the redder. Fourth joint of the palpi brown-black, much larger than the third joint, depressed, hairy externally, overlapping the base of the fifth joint, and having its extremity curved outwards; immediately above which, on the outer side, is a curved, pointed spine, with a projection at its base: fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are highly developed, complicated in structure, and have several curved, pointed spines at their extremity; their colour is reddish brown.

Numerous individuals of this species were observed running actively on rails in meadows and pastures near Llanrwst in December 1836, and January 1837.

20. *Walckenaëra bifrons*. Mas saturatè brunneus; pedibus palpisque flavescenti-rufis; cephalo-thorace anticè protuberantiâ magnâ perpendiculari obtusâ longitudinaliter bilobâ.

Length of the male  $\frac{1}{4}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{8}$ ; length of an anterior leg  $\frac{1}{9}$ ; length of a leg of the third pair  $\frac{1}{2}$ .

On the anterior part of the cephalo-thorax, which is compressed, there is a large, perpendicular, obtuse eminence, divided into two lobes at the summit by a longitudinal furrow; the posterior region is depressed, and the frontal margin very prominent. Mandibles small, conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are dark brown, the lip and frontal eminence of the cephalo-thorax being the darkest. Legs and palpi yellowish red. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Four eyes, situated on the anterior part of the frontal eminence, form a square; the two superior ones are seated on a minute tubercle, and the inferior ones are the smallest of the eight; the other four are disposed in pairs on the sides of the eminence, near the front, those of each pair being contiguous. The fourth joint of the palpi, which is much shorter than the third, projects a small, slightly curved apophysis from its anterior extremity, on the outer side; the fifth joint is oval, convex and hairy externally, with an indentation on the outer side of the upper part; it is concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a curved, black spine at the extremity, enveloped in a delicate membrane, and are of a reddish brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and dark brown. Plates of the spiracles dull yellow.

The spider described above was captured by T. Glover, Esq., of Smedley, near Manchester, in June 1838, among coarse herbage in Gwydir woods, near Bettws y Coed, Caernarvonshire.

21. *Walckenaëra bicolor.* Maris cephalo-thorace mandibulis maxillis labio sterno pedibus palpisque brunneis; abdomine nigricante; cephalo-thoracis parte anteriori prominente obtusâ utrinque indentatâ.

Length of the male  $\frac{1}{16}$ th of an inch; length of cephalo-thorax  $\frac{1}{32}$ ; breadth  $\frac{1}{36}$ ; breadth of abdomen  $\frac{1}{32}$ ; length of an anterior leg  $\frac{1}{11}$ ; length of a leg of the third pair  $\frac{1}{16}$ .

Cephalo-thorax oval, convex above, glossy, prominent, but obtuse, in front, with a slight indentation in the medial line of the posterior region, and another immediately behind each lateral pair of eyes. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. These parts, with the maxillæ, lip, legs, and palpi, are brown, the lip being the darkest, and the legs the lightest coloured. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Third and fourth joints of the palpi short, the latter being much the stronger; fifth joint somewhat oval, having a projection on the outer side; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a slender, corneous process at the superior part, directed upwards, a bold prominence on the inner side, and a fine, convoluted, filiform spine, enveloped in a delicate membrane, extending from the upper part of the extremity; their colour is red-brown. Abdomen oviform, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is of a brownish black colour. Plates of the spiracles pale yellow.

Males of this species, with the palpal organs fully developed, were taken in July 1836, on rails near Llanrwst.

22. *Walckenaëra parva.* Brunnea, abdomine saturatiore; maris cephalo-thorace anticè parùm prominente utrinque indentato.

Length of the female  $\frac{1}{16}$ th of an inch; length of cephalo-thorax  $\frac{1}{32}$ ; breadth  $\frac{1}{48}$ ; breadth of abdomen  $\frac{1}{40}$ ; length of an anterior leg  $\frac{1}{15}$ ; length of a leg of the third pair  $\frac{1}{20}$ .

Cephalo-thorax oval, glossy, very convex behind the eyes, depressed in the

posterior region, with an exceedingly minute indentation in the medial line. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is heart-shaped and glossy. Maxillæ strong, and inclined towards the lip, which is semicircular and prominent at the extremity. These parts, with the legs and palpi, are brown, the mandibles, lip, and margins of the cephalo-thorax being the darkest. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and very dark brown, or brown black. Plates of the spiracles brown.

The male, though smaller than the female, resembles her in colour and in the relative length of his legs; but differs from her in having an indentation on each side of the anterior part of the cephalo-thorax, immediately behind the lateral eyes. The fourth joint of the palpi, which is rather shorter and stronger than the third joint, projects an acute, prominent apophysis from its extremity, in front; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are moderately developed, not very complicated in structure, rather prominent, and of a red-brown colour.

Numerous specimens of this very minute spider were procured on rails near Llanrwst, in December 1836, and January 1837.

23. *Walckenaëra humilis*. Nigricans; pedibus palpisque rufo-brunneis.

Maris pedes posteriores anterioribus paulo longiores; cephalo-thoracis pars anterior elevata truncata apice pilis plurimis brevibus instructa.

Length of the female  $\frac{1}{16}$ th of an inch; length of cephalo-thorax  $\frac{1}{29}$ ; breadth  $\frac{1}{32}$ ; breadth of abdomen  $\frac{1}{30}$ ; length of an anterior leg  $\frac{1}{12}$ ; length of a leg of the third pair  $\frac{1}{14}$ .

Upper part of the cephalo-thorax glossy, convex, particularly behind the eyes, depressed in the posterior region, with an indentation in the medial line. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad, heart-shaped, convex and glossy. These parts, with the maxillæ and lip, are brown-black, the mandibles

and maxillæ being the brownest. Legs and palpi red-brown. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Abdomen oviform, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is brownish black. Plates of the spiracles very dark brown.

The male is rather darker than the female, and the anterior part of the cephalo-thorax, which is elevated and truncated, has numerous short hairs on its summit. On this summit, also, the eyes are distributed in pairs; one pair, situated on its posterior part, forms with another, on its anterior margin, an elongated trapezoid, whose front side is considerably the shortest; the two other pairs are disposed on the lateral margins, the eyes constituting each being contiguous; the anterior eyes of the trapezoid are much the smallest of the eight. The sexes differ, likewise, in the relative length of their legs, the posterior ones of the male, which measure  $\frac{1}{11}$ th of an inch, exceeding the anterior ones a little in longitudinal extent. The palpi are dark-coloured; the second joint is clavate, and has a small, pointed apophysis on the inner side, at the base; third and fourth joints moderately long; the latter projects a large apophysis from its anterior extremity, which curves outwards and rather upwards in front of the fifth joint; it is somewhat enlarged at its termination, and has a pointed process on the outer side; a small, obtuse apophysis occurs, also, on the under side of the fourth joint; the fifth joint is oval, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, very prominent, with a strong, curved, black spine at the superior part, and a fine, convoluted one on the outer side, near the extremity, resembling in form the human ear, contiguous to which, on the under side, is a slightly curved, pointed, projecting process. The colour of these organs is red-brown.

Specimens of *Walckenaëra humilis* were discovered in October 1836, under slates, in the garden belonging to T. Warner, Esq., of Crumpsall Green, near Manchester; and others were observed afterwards on rails at Crumpsall Hall.

24. *Walckenaëra apicata*. Nigricans; maxillis rufescenti-brunneis; pedibus

rufo-brunneis, nisi in tibiis paris 1mi et 2di saturatè brunneis; pari 4to longissimo, dein 1mo, 3tio brevissimo.

Maris pars anterior cephalo-thoracis elevata transversè bipartita, segmento posteriori longiori obtuso, anterioris apice instructo tuberculo parvo conico prope cujus apicem anticè processus duo minuti sursùm curvati.

Length of the female  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{32}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of a posterior leg  $\frac{1}{7}$ ; length of a leg of the third pair  $\frac{1}{10}$ .

Cephalo-thorax oval, glossy, gibbous above, with slight furrows on the sides, and a minute indentation in the medial line of the posterior region. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad, convex and heart-shaped. These parts, with the lip, are brownish black. Maxillæ reddish brown. Legs red-brown, with the exception of the tibiæ of the first and second pairs, which are dark brown; fourth pair rather the longest, then the first, third pair the shortest. Palpi dark brown. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and brownish black. Sexual organs rather prominent. Plates of the spiracles yellow.

The male resembles the female in colour and in the relative length of its legs. The fore part of the cephalo-thorax is elevated, and divided into two segments by a transverse groove in front; the posterior segment is the larger, and has a pair of eyes seated on its summit, which is obtuse and rounded; the anterior segment is surmounted by a small, conical eminence, near the apex of which, in front, are two minute processes curved upwards; at the base of this cone, immediately below the curved processes, the smallest pair of eyes is situated, the two lateral pairs being placed on the sides of the anterior segment. The fourth joint of the palpi is larger than the third, and consists of three parts; one in front, which is broad, and round at the extremity; a smaller one underneath, of a similar form; and a long, slender one on the inner side, which passes obliquely before the fifth joint: fifth joint somewhat oval, having a pro-

minent lobe on the outer side ; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a fine spine at their extremity, enveloped in a delicate membrane, and curved in a circular form ; they are of a reddish brown colour.

Males and females of this species were found on rails near Llanrwst in November 1837, and May 1838.

25. *Walckenaëra pumila.* Cephalo-thorace mandibulis maxillis labio sternoque saturatè pedibus palpisque rufescenti-brunneis ; pedum pari 4to paulò longiore, dein 1mo, 3tio brevissimo ; abdomine nitente nigro.

Maris cephalo-thorax anticè elevatus obtusus utrinque indentatione instructus.

Length of the female  $\frac{1}{3}$ th of an inch ; length of cephalo-thorax  $\frac{1}{8}$  ; breadth  $\frac{1}{8}$  ; breadth of abdomen  $\frac{1}{8}$  ; length of a posterior leg  $\frac{1}{10}$  ; length of a leg of the third pair  $\frac{1}{2}$ .

Cephalo-thorax oval, glossy, depressed on the sides, which are marked with slight furrows diverging from the upper part to the margins, and having an indentation in the medial line of the posterior region. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are of a dark brown colour, the mandibles and maxillæ being the palest. The lateral eyes are the largest, and the anterior ones of the trapezoid the smallest of the eight. Legs and palpi reddish brown. Fourth pair of legs rather the longest, then the first, third pair the shortest. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax ; it is thinly clad with hairs, glossy and black. Plates of the spiracles dull yellow.

The male is rather smaller than the female, but resembles her in colour and in the relative length of his legs. The anterior part of the cephalo-thorax is elevated, but obtuse, with an oblong indentation on each side, extending backwards from the lateral eyes. Fourth joint of the palpi shorter than the third ; it is produced at the extremity, on the inner side,

and has a small, pointed apophysis in front; fifth joint of an irregular figure, having a long process or lobe on the inner side, and a bold prominence at the upper part, from which a ridge extends to its extremity; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a long, black, prominent, filiform spine, enveloped in a delicate membrane, curved from the upper part downwards to their extremity, where it is directed to the outer side; their colour is pale reddish brown.

This spider conceals itself under stones in moist pastures near Llanrwst. The male has the palpal organs developed in May.

26. *Walckenaëra picina*. Mas nigricans, nisi in pedibus rufo-brunneis; horum pari 4to 1mo paulò longiore; cephalo-thorace anticè elevato obtuso indentatione utrinque magnâ.

Length of the male  $\frac{1}{4}$ th of an inch; length of cephalo-thorax  $\frac{1}{8}$ ; breadth  $\frac{1}{2}$ ; breadth of abdomen  $\frac{1}{30}$ ; length of a posterior leg  $\frac{1}{10}$ ; length of a leg of the third pair  $\frac{1}{2}$ .

Anterior part of the cephalo-thorax elevated, but obtuse, with a large indentation immediately behind each lateral pair of eyes; in the medial line of the posterior region there is a small indentation. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are glossy and brownish black, the mandibles and maxillæ being the palest. Legs red-brown; fourth pair rather the longest, then the first, third pair the shortest. One pair of eyes is placed on the anterior part of the summit of the frontal elevation of the cephalo-thorax; the eyes of another pair, situated lower, in front, and constituting the shortest side of a trapezoid, which they describe with the former, being the smallest of the eight; those of each lateral pair are contiguous. The palpi are brown; the fourth joint is much larger than the third, and has the upper part of its extremity greatly produced, and tapering to a point, which curves in front of the fifth joint, towards its outer side; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are



highly developed, complicated in structure, with a curved, pointed, corneous spine at the extremity, and are of a reddish-brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly clad with hairs, glossy and brownish black. Plates of the spiracles brown.

A specimen of this species, captured in the neighbourhood of Manchester, was received from T. Glover, Esq., in June 1838; and in the following month another specimen was taken near Llanrwst. Both individuals were adult males.

27. *Walckenaëra nemoralis.* Maris cephalo-thorace mandibulis maxillis labio sterno pedibus palpisque brunneis; abdomine nigricante; cephalo-thorace anticè elevato obtuso transversè bipartito; pedum pari 4to 1mo longiore.

Length of the male  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{3\frac{1}{2}}$ ; breadth  $\frac{1}{4\frac{1}{8}}$ ; breadth of abdomen  $\frac{1}{3\frac{1}{2}}$ ; length of a posterior leg  $\frac{1}{1\frac{1}{3}}$ ; length of a leg of the third pair  $\frac{1}{1\frac{1}{7}}$ .

There is no indentation in the medial line of the posterior region of the cephalo-thorax; the anterior part is elevated, but obtuse, with a transverse groove in front, which divides it into two segments. One pair of eyes is situated on the upper segment, near its anterior margin, and the rest are seated on the lower segment, one pair being placed on each side, and the other in front; the eyes of the last pair are the smallest of the eight, and, with those on the upper segment, form a long trapezoid, whose shortest side is before. Mandibles conical, armed with teeth on the inner surface, and inclined towards the sternum, which is broad, convex and heart-shaped. These parts, with the maxillæ, lip, legs, and palpi, are brown, the legs being the palest, and the lip, anterior part of the cephalo-thorax, and terminal joint of the palpi the darkest. Fourth pair of legs the longest, then the first, third pair the shortest. The fourth joint of the palpi, which is shorter than the third, projects three apophyses from its extremity; the smallest is situated underneath, the largest in front, and the third, of intermediate size, on the outer side; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are highly

developed, complicated in structure, having a bold protuberance near the middle, and a short, fine, curved spine at the extremity; their colour is dark reddish brown. Abdomen oviform, rather broader at the posterior than the anterior extremity, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy and brownish black. Plates of the spiracles dull yellow.

In March 1837, adult males of this species were found under stones in the woods about Llanrwst.

GENUS *NERIËNE*\*, *Blackw.*

28. *Neriëne munda*. Maris cephalo-thorace mandibulis maxillis labio sternoque rufescenti-brunneis; pedibus palpisque pallidè rufis; pedum pari Imo 4toque reliquis longioribus æqualibus, 3tio brevissimo; abdomine nigricante.

Length of the male  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{18}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{20}$ ; length of an anterior leg  $\frac{1}{6}$ ; length of a leg of the third pair  $\frac{1}{8}$ .

Cephalo-thorax oval, glossy, convex above, with a slight indentation in the medial line of the posterior region. Mandibles strong, conical, vertical, provided with teeth on the inner surface, and a small, conical prominence in front, near the extremity, on the inner side. Maxillæ powerful, greatly enlarged where the palpi are inserted, and inclined towards the lip, which is semicircular and prominent at the extremity. Sternum broad and heart-shaped. These parts are reddish brown, the mandibles and maxillæ being the reddest. Legs and palpi pale red, with the exception of the terminal joint of the latter, which is reddish brown. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. This spider, like the rest of the genus, has the tarsi terminated by three claws; the two superior ones curved and pectinated, and the inferior one inflected near its base. The intermediate eyes form a trapezoid, the anterior ones of which are the smallest of the eight. Third and fourth

\* For the characters of the genus *Neriëne*, see the London and Edinburgh Philosophical Magazine and Journal of Science, vol. iii. p. 187-8; and Researches in Zoology, p. 362-3.

joints of the palpi short; the former is very strong and convex in front, and the latter projects three apophyses from its extremity; the largest is situated on the outer side, the next in size on the inner side, and the smallest underneath; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, and of a reddish brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy and brownish black. Plates of the spiracles yellowish white.

Males of this species, with the palpi fully developed, may be seen in May and June among grass and plants growing in the woods about Llanrwst.

29. *Neriëne errans*. Cephalo-thorace appendicibusque brunneis, nisi in pedibus palpisque pallidè rufo-brunneis; abdomine obscurè viridescenti-brunneo serie medianâ obscurâ linearum angularium flavescenti-brunneâ.

Length of the female  $\frac{1}{9}$ th of an inch; length of cephalo-thorax  $\frac{1}{8}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of an anterior leg  $\frac{3}{8}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

Cephalo-thorax oval, convex above, glossy, with an indentation in the medial line of the posterior region. Mandibles powerful, conical, armed with teeth on the inner surface, and inclined towards the sternum, which is heart-shaped. Maxillæ strong, and inclined towards the lip, which is semicircular and prominent at the extremity. These parts are brown, the sternum being the palest, and the mandibles, maxillæ and lip having a tinge of red. Eyes small. Legs and palpi pale red-brown. First and fourth pairs of legs, which are the longest, equal in length, third pair the shortest. Abdomen oviform, rather convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, of a brownish colour faintly tinged with green, and has a series of obscure, angular lines, of a pale yellowish brown hue, whose vertices are directed forwards, extending along the middle of the upper part. Sexual organs dark red-brown. Plates of the spiracles dull yellowish brown.

The male resembles the female in colour and in the relative length of

his legs, but is rather smaller than she is. Third and fourth joints of the palpi short, the latter being much the stronger; fifth joint somewhat oval, with a large lobe on the outer side, near the upper part; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with several curved, pointed, prominent, corneous processes at the extremity, and of a red-brown colour.

*Neriène errans* is of frequent occurrence on rails in the vicinity of Manchester, and of Llanrwst.

30. *Neriène sylvatica*. Mas brunneus; abdomine nigricante.

Length of the male  $\frac{1}{9}$ th of an inch; length of cephalo-thorax  $\frac{1}{16}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{1}{5}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

Anterior part of the cephalo-thorax, where the eyes are situated, rather prominent; sides marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a large indentation. Mandibles conical, provided with a few teeth on the inner surface, and a longitudinal row of exceedingly short, fine spines in front, on the outer side; they are inclined towards the sternum, which is broad and heart-shaped. Maxillæ very gibbous near the base, and inclined towards the lip, which is semicircular and prominent at the extremity. Legs slender. These parts are brown; the legs, which are the palest, and the mandibles, maxillæ and lip, which are the darkest, having a tinge of red. First and fourth pairs of legs the longest and equal in length, third pair the shortest. Eyes seated on black spots. The palpi resemble the legs in colour; the third and fourth joints are short, the former projecting a long bristle from its extremity, in front, and the latter, which is the stronger, being gibbous underneath, at the base; fifth joint somewhat oval, with a bold, conical protuberance at the upper part, in front, and a prominent lobe on the outer side; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a strong, curved, obtuse, corneous process, slightly serrated on its external edge, situated on the outer side of the

upper part; another curved, corneous process, whose point is enveloped in a delicate membrane, extends from the upper part to the extremity of the fifth joint, and within its curvature a small, dentated spine occurs; their colour is red-brown. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and brownish black. Plates of the spiracles pale yellow.

Adult males of this species were taken in February 1837, under fragments of rock imbedded in earth in the woods about Llanrwst.

31. *Neriëne viaria*. Mas brunneus; abdomine nigricante; filatoriis pallidè flavescenti-brunneis.

Length of the male  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{20}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{3}{20}$ ; length of a leg of the third pair  $\frac{1}{9}$ .

Cephalo-thorax oval, moderately convex above, glossy, with slight furrows on the sides, and an indentation in the medial line of the posterior region. Mandibles powerful, conical, armed with teeth on the inner surface, rather divergent at the extremities, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. First and fourth pairs of legs the longest and equal in length, third pair the shortest. These parts are brown, the margins of the cephalo-thorax and the lip being the darkest, and the legs and maxillæ the palest. Intermediate eyes of the anterior row much the smallest of the eight. The palpi resemble the legs in colour; the third and fourth joints are short, the former, which is the stronger, having some long hairs projecting from its extremity, in front; the latter is gibbous underneath, at the base; fifth joint somewhat oval, with a large lobe on the outer side; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, very prominent, and of a pale reddish brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and of a dark brown hue, approaching to black. Plates of the spiracles and spinners pale yellowish brown.

The spider from which the foregoing description was made was found running on a footpath at Oakland, near Llanrwst, in May 1838.

32. *Neriëne pulla.* Maris cephalo-thorace saturatè brunneo; mandibulis maxillis labioque saturatè rufo-brunneo; sterno brunneo, punctis saturatoribus; pedibus palpisque rufescenti-brunneis, nisi in horum articulo terminali saturatè brunneo; abdomine flavescenti-brunneo, punctis numerosis strigisque tenuibus saturatoribus.

Length of the male  $\frac{1}{11}$ th of an inch; length of cephalo-thorax  $\frac{1}{20}$ ; breadth  $\frac{1}{24}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{1}{8}$ ; length of a leg of the third pair  $\frac{1}{11}$ .

Cephalo-thorax oval, convex above, glossy, with slight furrows on the sides, and an indentation in the medial line of the posterior region; its colour is dark brown. Mandibles strong, conical, armed with a few teeth on the inner surface, and inclined a little towards the sternum. Maxillæ powerful, and inclined towards the lip, which is quadrate. These parts are of a dark reddish brown colour. Sternum heart-shaped, glossy and brown, with very minute spots of a darker hue. Legs reddish brown; first and fourth pairs the longest and equal in length, third pair the shortest. Second joint of the palpi curved towards the cephalo-thorax; third and fourth joints short, the latter having a large process, rounded at the extremity, on the outer side, and a smaller one on the inner side; these joints are of a red-brown colour; fifth joint dark brown, oval, hairy and very convex externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, and red-brown. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly clad with hairs, and of a yellowish brown colour, with numerous minute spots and fine streaks of a darker hue. Plates of the spiracles pale yellow.

Males of this species, with the palpi fully developed, were taken in June 1836, on rails near Llanrwst.

33. *Neriëne gracilis.* Nigricans; pedibus pallidè rufescenti-brunneis; palpis saturatè viridibus.

Length of the female  $\frac{1}{12}$ th of an inch; length of cephalo-thorax  $\frac{1}{4}$ ; breadth  $\frac{1}{32}$ ; breadth of abdomen  $\frac{1}{34}$ ; length of an anterior leg  $\frac{1}{8}$ ; length of a leg of the third pair  $\frac{1}{12}$ .

Cephalo-thorax oval, convex above, glossy, with an indentation in the medial line of the posterior region. Mandibles powerful, conical, armed with teeth on the inner surface, and inclined towards the sternum, which is heart-shaped. Maxillæ strong, and inclined towards the lip, which is semicircular and prominent at the extremity. These parts are brownish black. Legs slender, and of a pale reddish brown colour; first and fourth pairs the longest and equal in length, though, as in numerous other instances, the latter limbs do not extend so widely as the former, in consequence of being articulated nearer to each other, third pair the shortest. Palpi of a dark greenish colour. Abdomen slender, oviform, projecting a little over the base of the cephalo-thorax; it is thinly covered with hairs, and brownish black. Plates of the spiracles very dark brown.

The male resembles the female in colour, and in the relative length of his legs, but his mandibles and maxillæ are tinged with red, and the former have a small process in front, near the articulation of the nail. The second joint of the palpi has a row of hairs, directed forwards, extending along its upper part; third and fourth joints short; the latter, which is much the stronger, is slightly elongated in front, and has a small, pointed projection on the outer side, near its extremity; fifth joint somewhat oval, having on the upper part a bold prominence, indented on the outer side, and a curved, conical protuberance on the inner side; it is convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, and of a dark reddish brown colour.

Adults of both sexes were captured on rails at Capel Garmon, in Denbighshire, and at Crumpsall Hall, near Manchester, in the autumn of 1836.

34. *Neriène parva.* Mas brunneus; abdomine saturatiore.

Length of the male  $\frac{1}{20}$ th of an inch; length of cephalo-thorax  $\frac{1}{36}$ ; breadth  $\frac{1}{40}$ ; breadth of abdomen  $\frac{1}{40}$ ; length of an anterior leg  $\frac{1}{13}$ ; length of a leg of the third pair  $\frac{1}{16}$ .

Anterior part of the cephalo-thorax slightly compressed ; posterior part depressed, with an indentation in the medial line. Mandibles conical, armed with teeth on the inner surface and a tooth-like process in front, near the extremity ; they are inclined towards the sternum, which is broad and heart-shaped. Maxillæ strong and inclined towards the lip, which is semicircular and prominent at the extremity. These parts, with the legs, are glossy and of a brown colour, the mandibles and lip being the darkest. First and fourth pairs of legs the longest and equal in length, third pair the shortest. The palpi are brown, the fourth joint being much the darkest ; third and fourth joints short ; the latter is produced, very prominent and pointed in front, with a large projection near its base, on the inner side ; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a bold projection at the upper part, on the outer side, and one or two small, pointed ones at the extremity ; they are of a red-brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax ; it is thinly covered with hairs, glossy and dark brown. Plates of the spiracles pale yellow.

Males of this very small species, with their palpal organs completely developed, were discovered on rails at Oakland, near Llanrwst, in January 1837.

35. *Neriène rubella*. Flavescenti-rufa ; labio rufo-brunneo.

Maris pedes anteriores posterioribus longiores ; paris 1mi et 2di tibiæ infrà prope apicem dilatatæ.

Length of the female  $\frac{1}{10}$ th of an inch ; length of cephalo-thorax  $\frac{1}{20}$  ; breadth  $\frac{1}{24}$  ; breadth of abdomen  $\frac{1}{20}$  ; length of an anterior leg  $\frac{3}{20}$  ; length of a leg of the third pair  $\frac{1}{8}$ .

Anterior part of the cephalo-thorax compressed and rather prominent ; in the medial line of the posterior region there is an indentation. Mandibles robust, conical, armed with teeth on the inner surface and inclined towards the sternum, which is broad, convex and heart-shaped. These parts, with the maxillæ, are yellowish red, and the lip is red-brown. Legs and palpi pale yellowish red. First and fourth pairs of legs the



longest and equal in length, third pair the shortest. Eyes seated on black spots; the intermediate ones of the anterior row are much the smallest of the eight. Abdomen oviform, glossy, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; its colour is yellowish red. Sexual organs black, faintly tinged with red. Plates of the spiracles dull yellow.

The male resembles the female in colour, but the anterior part of his cephalo-thorax is more prominent, and the relative length of his legs is different, the first pair being the longest, and the second and fourth pairs equal in length. The tibiæ of the first and second pairs of legs are somewhat dilated underneath, near their extremity, and these enlargements are thickly clad with long, fine hairs. Third joint of the palpi remarkably large, very prominent on the inner side, and provided with an acute apophysis in front, near the outer side; fourth joint crescent-shaped, the lower limb of the crescent being turned outwards, in front of the fifth joint, which is oval, convex and hairy externally, concave within, comprising the palpal organs; these organs are highly developed, complicated in structure, prominent, with two long, slender, curved, black spines on the under side, and are of a red-brown colour.

This species, which bears a strong resemblance to *Neriène rubens*, occurs under stones and on plants growing in the woods at Oakland, near Llanrwst. The male has the palpal organs fully developed in October.

36. *Neriène abnormis*. Cephalo-thorace appendicibusque rufescenti-brunneis; abdomine brunneo saturatiùs obscurè marmorato.

Maris cephalo-thorax pedesque multò magis rufi, abdomen saturatiùs, pedes anteriores posterioribus longiores.

Length of the female  $\frac{1}{7}$ th of an inch; length of cephalo-thorax  $\frac{1}{4}$ ; breadth  $\frac{1}{9}$ ; breadth of abdomen  $\frac{1}{8}$ ; length of an anterior leg  $\frac{1}{4}$ ; length of a leg of the third pair  $\frac{3}{16}$ .

Cephalo-thorax oval, convex above, glossy, with slight furrows on the sides, and an indentation in the medial line of the posterior region. Mandibles powerful, conical, convex in front, armed with teeth on the inner surface and inclined towards the sternum, which is heart-shaped. Maxillæ

robust and nearly straight, greatly resembling those of the *Linyphiæ*. Lip semicircular and prominent at the extremity. These parts are of a reddish brown colour, the sternum being rather the darkest, and the mandibles, maxillæ and lip the reddest. Eyes placed on black spots. Legs and palpi reddish brown; first and fourth pairs of legs the longest and equal in length, third pair the shortest. Abdomen oviform, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is of a dull brown colour, obscurely mottled with darker brown. A depressed, oval, flesh-coloured protuberance is connected with the sexual organs. Plates of the spiracles yellowish white.

The male, which is rather smaller than the female, has the cephalo-thorax, legs, palpi, mandibles, maxillæ and lip red, with a slight tinge of brown; moreover, the abdomen is darker coloured than that of the female. The relative length of the legs, also, is different in the sexes, the male having the first pair longer than the fourth. Third and fourth joints of the palpi short, the latter being much the stronger and somewhat produced in front; fifth joint of an irregular, oval form, having a large lobe on the outer side; it is convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, exhibiting several strong, corneous processes; one of which, situated at the extremity, is curved, pointed and enveloped in a semitransparent membrane, and a large one, at the upper part, projects two branches, one directed upwards, extending nearly to the articulation of the third and fourth joints, and the other directed downwards; both are pointed and curved outwards, an obtuse prominence occurring near the base of the latter, within the curve: these organs are of a reddish brown colour. The convex sides of the terminal joints are directed towards each other.

Adult specimens of this spider, which is very nearly allied to the *Linyphiæ* by the structure of the mouth and the disposition and relative size of the eyes, were discovered under stones at Crumpsall Hall, in October 1836.

37. *Neriène variegata*. Cephalo-thorace flavescenti-brunneo, marginibus serie macularum parvarum utrinque guttâque triangulari pone oculos nigris;

mandibulis maxillis labio sterno palpisque flavescenti-brunneis; pedibus gracilibus flavescenti-brunneis nigro-fasciatis; abdomine sordidè luteo, fasciâ nigrâ medianâ in anteriori parte anticè triangulari posticè subramosâ, in series duas macularum parvarum ante filatoria coalitarum desinente.

Maris pedes anteriores posterioribus longiores.

Length of the female  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{32}$ ; breadth of abdomen  $\frac{1}{24}$ ; length of an anterior leg  $\frac{3}{20}$ ; length of a leg of the third pair  $\frac{1}{9}$ .

Anterior part of the cephalo-thorax compressed; sides depressed and marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is an indentation; colour yellowish brown, with blackish margins, a longitudinal row of small black spots on each side, and a black mark of a triangular form, whose vertex is directed backwards, immediately behind the eyes, which are seated on black spots. Mandibles long, powerful, divergent at the extremity, armed with a few teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. These parts, with the maxillæ, lip and palpi, are yellowish brown, the sternum and lip being the darkest. Legs slender, of a yellowish brown colour, with black bands; first and fourth pairs the longest and equal in length, third pair the shortest. Abdomen ovi-form, thinly covered with hairs, very convex above, projecting over the base of the cephalo-thorax; it is of a dull yellow colour, with a black band in the medial line of the upper part, extending from before rather more than a third of its length; the anterior portion of the band is triangular, with its vertex directed forwards; the posterior part is narrower and somewhat ramified; from the termination of the band extends a longitudinal row of irregular black spots, on each side of the medial line; a few of these spots unite immediately above the spinners, and form there short, curved, transverse lines; numerous streaks and patches of black occur on the sides, the largest of which are on their anterior part; the under part, and the plates of the spiracles, are dull yellowish brown. The sexual organs are prominent, and have a curved process in connection

with them, which is greatly enlarged at the extremity, and of a red-brown colour.

The male resembles the female in colour and design, but is rather smaller, and the absolute and relative lengths of his legs are different, the anterior legs, which exceed the posterior ones in longitudinal extent, measuring  $\frac{1}{6}$ th of an inch. Third and fourth joints of the palpi short; the latter is the stronger, and the former has a long bristle projecting from its extremity, in front; fifth joint somewhat oval, with a large lobe on the outer side, and a small projection at the upper part, which is notched at the extremity and curved outwards; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, and of a red-brown colour.

Both sexes of *Neriëne variegata* were obtained, in a state of maturity, in December 1837, under stones on Gallt y Rhyg, a mountain in the vicinity of Llanrwst.

38. *Neriëne dubia*. Maris cephalo-thorace appendicibusque rufo-brunneis; abdomine nigricante; pedibus anterioribus posterioribus paulò longioribus.

Length of the male  $\frac{1}{12}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{30}$ ; breadth of abdomen  $\frac{1}{8}$ ; length of an anterior leg  $\frac{1}{9}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

Cephalo-thorax oval, convex above, glossy, with a small indentation in the medial line of the posterior region. Mandibles conical, vertical, and armed with a few teeth on the inner surface. Maxillæ strong, gibbous near the base, enlarged at the extremity, and slightly inclined towards the lip, which is semicircular and prominent at the tip. Legs and palpi robust. First pair of legs rather the longest, then the fourth, third pair the shortest. These parts are of a red-brown colour, the legs being the palest. The intermediate eyes of both rows form nearly a square, the anterior pair being much the smallest of the eight. Second joint of the palpi curved towards the cephalo-thorax, and clavate; third and fourth joints short, the latter, which is the stronger, being produced and rounded

at the extremity, on the outer side, and slightly so on the inner side; fifth joint of an elongated oval form, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a fine, straight, prominent, pointed spine near the middle, and one or two slightly curved ones, enveloped in a semitransparent membrane, at the extremity; they are of a red-brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, and of a brown-black colour.

The male of this species, which makes a near approximation to the *Theridia* in external structure, was captured on iron rails at Crumpsall Hall, in October 1836. I have placed it, provisionally, in the genus *Neriëne*, till the female shall be discovered, as the sexes of the same spider frequently differ in the relative length of the legs and in the form of the maxillæ.

39. *Neriëne gibbosa*. Saturatè brunnea; pedibus palpisque flavescenti-brunneis; pedibus posterioribus anterioribus paulò longioribus.

Maris cephalo-thorax prope medium obtusè gibbosus, anticè fovea profunda pilis rigidis densè vestita.

Length of the female  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{20}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of a posterior leg  $\frac{1}{7}$ ; length of a leg of the third pair  $\frac{1}{9}$ .

Cephalo-thorax oval, glossy, rather gibbous near the middle, with slight furrows on the sides, diverging from the upper part towards the margins, and an indentation in the medial line of the posterior region. Mandibles strong, conical, armed with teeth on the inner surface and slightly inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are dark brown, the mandibles and maxillæ being the palest. Legs and palpi yellowish brown. Fourth pair of legs rather the longest, then the first, third pair the shortest. Intermediate eyes of the anterior row the smallest of the eight. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy and very dark brown. Plates of the spiracles dull yellow.

The male is rather smaller than the female, but resembles her in colour and in the relative length of his legs. He has a large, obtuse prominence near the middle of the cephalo-thorax, between which and the anterior part, where the eyes are situated, there is a deep depression, thickly clad with strong hairs. The mandibles are provided with a small, conical protuberance in front, near their extremity. The fourth joint of the palpi, which is rather larger than the third, projects two minute, pointed apophyses from its extremity; one situated in front, and the other, which is the smaller, on the inner side; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are neither highly developed, nor very complicated in structure, a dark reddish brown process, curved outwards, occurring at the upper part; their colour is yellowish brown, with a faint tinge of red.

Specimens of this remarkable spider, in a state of maturity, were discovered under stones in a moist pasture at Oakland, in May 1838.

40. *Neriëne tuberosa*. Mas saturatè brunneus; pedibus palpisque flavescenti-brunneis; cephalo-thorace prope medium gibboso; pedibus posterioribus anterioribus paulò longioribus.

Length of the male  $\frac{1}{2}$ th of an inch; length of cephalo-thorax  $\frac{1}{4}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{8}$ ; length of a posterior leg  $\frac{1}{8}$ ; length of a leg of the third pair  $\frac{1}{2}$ .

Cephalo-thorax oval, glossy, gibbous near the middle, with slight furrows on the sides, diverging from the upper part towards the margins, and an indentation in the medial line of the posterior region. Mandibles strong, conical, armed with teeth on the inner surface, and a small, conical protuberance in front, near the extremity; they are slightly inclined towards the sternum, which is broad and heart-shaped. Maxillæ inclined towards the lip, which is semicircular and prominent at the extremity. These parts are dark brown, the mandibles and maxillæ being the palest. Legs and palpi yellowish brown. Fourth pair of legs rather the longest, then the first, third pair the shortest. The intermediate eyes of the anterior row are the smallest of the eight. The fourth joint of the palpi, which is rather stronger than the third, projects two minute, pointed apophyses

from its extremity; one situated in front, and the other, which is the smaller, on the inner side; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs; they are moderately developed, complicated in structure, with a curved process at the upper part, directed outwards, and a small, black, pointed, curved spine at the extremity; their colour is red-brown. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy and very dark brown. Plates of the spiracles dull yellow.

The spider described above was found under a stone in a moist pasture at Oakland, in May 1838.

Genus LINYPHIA, *Latr.*

41. *Linyphia cauta*. Cephalo-thorace flavescenti-brunneo, marginibus lineâque medianâ anticè dilatatâ nigris; mandibulis maxillisque brunneis; labio sternoque nigricantibus; pedibus palpisque flavescenti-brunneis nigro-fasciatis; pedum pari 1mo longissimo, dein 2do, 3tio brevissimo; abdomine flavescenti-brunneo albo-punctato, anticè nigricanti-guttato posticè transversim lineato, lateribus nigricantibus fasciâ longitudinali medianâ flavescenti-brunneâ albo-maculatâ, maculis tribus confluentibus flavis rhomboidem efformantibus ad basin filatoriorum inferiorum.

Length of the female  $\frac{5}{4}$ ths of an inch; length of cephalo-thorax  $\frac{1}{2}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{10}$ ; length of an anterior leg  $\frac{7}{8}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

The anterior part of the cephalo-thorax, on which are distributed some long hairs directed forwards, is compressed; and in the medial line of the posterior region there is a large indentation; it is of a yellowish brown colour, with black margins, and a band of the same hue extending along the middle, whose anterior extremity is greatly enlarged. The eyes, which are seated on black spots, are arranged in two transverse rows on the fore part of the cephalo-thorax; the intermediate ones form a trapezoid, whose anterior side is the shortest; the other four are disposed in pairs on the sides of the trapezoid, the eyes constituting each pair being placed obliquely on an eminence, and almost contiguous; the posterior

eyes of the trapezoid are much the largest, and the anterior ones, which are placed on an eminence, the smallest of the eight. Mandibles powerful, conical, armed with two rows of teeth on the inner surface, and inclined towards the sternum, which is heart-shaped, glossy, and thinly covered with long, erect hairs. Maxillæ strong, straight, and somewhat quadrate. Lip semicircular and prominent at the extremity. The mandibles and maxillæ are brown, with a faint tinge of red, and the sternum and lip brownish black, the latter being dark brown at the tip. Legs and palpi long, and of a yellowish brown colour, with brownish black bands. First pair of legs the longest, then the second, third pair the shortest. Each tarsus in this, as in the other species of *Linyphia*, is terminated by three claws; the two superior ones curved and pectinated, and the inferior one inflected near its insertion. The palpi have at their extremity a long, slightly curved claw, minutely dentated more than half its length from the base. Abdomen thinly covered with hairs, very convex above, projecting over the base of the cephalo-thorax; it is of a yellowish brown colour, freckled with small, whitish spots, which are fewer in number and more minute on the under side; on the anterior part of the upper side are large, brownish black blotches, and on the posterior part numerous transverse, curved lines of the same hue, whose convexities are directed forwards; the sides are brownish black, with an irregular, longitudinal band of yellowish brown, spotted with white, extending along the middle. The spinners are brown, and at the base of the inferior pair are three confluent, yellow spots, forming a rhomboid. A small, cylindrical, semitransparent process is connected with the anterior part of the sexual organs, within the external orifice. Plates of the spiracles pale yellow.

The male bears a strong resemblance to the female, but is rather smaller and darker coloured than she is; the anterior part of the cephalo-thorax also, on which the eyes are seated, is more elevated. The relative length of the legs is the same in both sexes, but their absolute length is greater in the male, an anterior one measuring  $\frac{1}{24}$ ths of an inch. Third and fourth joints of the palpi short, the former having a long bristle projecting from its extremity, in front; the latter, which is the larger, is of



an oval form, and greatly elongated before, overlapping the base of the fifth joint, which is somewhat oval, with a bold, pointed projection at the superior part, on the inner side, and a prominent lobe on the outer side; it is convex and hairy externally, concave within, comprising the palpal organs; they are depressed, very highly developed, and remarkably complicated in structure, having a strong, curved, corneous process on the outer side of the superior part, which has an obtuse protuberance on its upper side, and a pair of exceedingly long, filiform, black spines of unequal thickness, enveloped in a transparent membrane, curved twice into a circle measuring about  $\frac{1}{16}$ th of an inch in diameter. These organs are of a red-brown colour.

This spider spins an extensive, delicate, horizontal sheet of web, supported above by fine lines connected with it and with each other at various angles, in the corners of walls, both in and out of doors, under hollow banks, and in depressions in the trunks of large trees. On the under side of this web it takes its station in an inverted position, and watches for its prey. In many parts of Denbighshire and Caernarvonshire it is a common species, and I have been favoured with specimens from the north of Lancashire by Miss Ellen Clayton of Church Town.

42. *Linyphia vivax*. Cephalo-thorace flavescenti-brunneo, fasciis tribus nigris quarum intermediâ anticè bifidâ; mandibulis maxillisque rufescenti-, labio sternoque saturatè brunneis; pedibus palpisque rufescenti-brunneis saturatiùs fasciatis; abdomine flavescenti-brunneo albo-punctato, serie medianâ linearum transversarum angularium nigricantium ad extremitates dilatatarum, fasciis duabus longitudinalibus nigricantibus ad utrumque latus, alterâque latâ medianâ infrâ.

Length of the female  $\frac{5}{24}$ ths of an inch; length of cephalo-thorax  $\frac{1}{2}$ ; breadth  $\frac{1}{16}$ ; breadth of abdomen  $\frac{1}{11}$ ; length of an anterior leg  $\frac{1}{2}$ ; length of a leg of the third pair  $\frac{1}{3}$ .

Cephalo-thorax oval, convex above, glossy, with a large indentation in the medial line of the posterior region; it is of a yellowish brown colour, with an irregular, longitudinal, blackish band on each side, and a finer one of the same hue, which is bifid in front, extending along the middle.

Eyes placed on black spots on the anterior part of the cephalo-thorax; the intermediate ones form a trapezoid whose anterior side is the shortest; the other four are disposed in pairs on the sides of the trapezoid, those constituting each pair being seated on a small eminence, and contiguous; the posterior eyes of the trapezoid are the largest, and the anterior ones the smallest of the eight. Mandibles reddish brown, powerful, conical, armed with teeth on the inner surface, and slightly inclined towards the sternum, which is heart-shaped, rough with long, erect, black hairs, and is of a dark brown colour. Maxillæ short, strong, straight, and somewhat quadrate, resembling the mandibles in colour. Lip semicircular and prominent at the extremity, which is reddish brown, the base being blackish. Legs and palpi long, slender, and of a reddish brown colour, with blackish brown bands. First pair of legs the longest, then the second, third pair the shortest. The palpi are terminated by a slightly curved claw. Abdomen pointed at the extremity, very convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, and of a yellowish brown colour, freckled with numerous, minute, whitish spots; along the middle extends a series of angular lines of a brownish black hue, whose vertices are directed forwards, and whose extremities, greatly enlarged, form a row of very conspicuous, irregular spots on each side of the medial line; several of the anterior angles are bisected by a fine, brownish black line; two longitudinal, irregular, brownish black bands occur on each side of the abdomen, the upper one being connected with the enlarged extremities of the angular lines by small, confluent spots of the same hue; a large, brownish black band, whose anterior extremity is the broadest, occupies the middle of the abdomen underneath, and comprises a yellowish brown medial line. Sexual organs prominent and brownish black, except at the extremity, which is flesh-coloured. Plates of the spiracles pale yellow.

The male is smaller than the female, but resembles her in colour, design, and the relative length of his legs; the absolute length of these organs, however, is rather greater, an anterior one measuring  $\frac{1}{2}\frac{3}{4}$ ths of an inch. Third and fourth joints of the palpi short, the former, which is the larger, having several long, curved bristles projecting from its extremity,

in front; the fourth joint is gibbous underneath, and has three short apophyses before, the middle one, which is the largest and darkest coloured, being transversely striated in front; fifth joint somewhat oval, with a slightly curved, conical prominence at the upper part; it is convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, with a slightly curved, pointed spine, and a finer one, enveloped in a semi-transparent membrane, at their extremity; they are of a red-brown colour. The convex sides of the terminal joints are directed towards each other.

Both sexes of this species, which bears a striking resemblance to *Linyphia cauta*, were discovered in the greenhouse and melon-pits belonging to Mrs. Darbshire, of Green Heys, near Manchester, in September 1836. Compare *Linyphia globosa*, Wider, Mus. Senkenb. i. p. 259. t. 17. f. 9.

43. *Linyphia sylvatica*. Cephalo-thorace mandibulis maxillis labio sternoque saturatè, pedibus palpisque flavescenti-brunneis; abdomine fasciâ medianâ latâ dentatâ saturatè brunneâ albido-marginatâ; lateribus saturatè brunneis fasciâ longitudinali albidâ.

Maris pedes flavescenti-rufi; abdomen subcylindricum, saturatè brunneum, anticè utrinque maculâ albâ notatum.

Length of the female  $\frac{1}{5}$ th of an inch; length of cephalo-thorax  $\frac{1}{12}$ ; breadth  $\frac{1}{16}$ ; breadth of abdomen  $\frac{1}{11}$ ; length of an anterior leg  $\frac{3}{8}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

Cephalo-thorax oval, convex above, glossy, with a few slight furrows on the sides, and a large indentation in the medial line of the posterior region. Mandibles powerful, conical, convex in front, armed with two rows of teeth on the inner surface, and slightly inclined towards the sternum, which is heart-shaped. Maxillæ strong, straight, and somewhat quadrate. Lip semicircular and prominent at the extremity. These parts are of a very dark brown colour, the cephalo-thorax being the palest. The intermediate eyes form a trapezoid, whose anterior side is the shortest, the posterior pair being the largest of the eight. Legs and palpi long, slender, and of a yellowish brown colour, occasionally tinged with

green. First pair of legs the longest, then the second, third pair the shortest. The palpi have a slightly curved claw at the extremity. Abdomen thinly covered with hairs, glossy, very convex above, projecting over the base of the cephalo-thorax; a broad, dentated, dark brown band, bordered with yellowish white, occupies the medial line of the upper part; sides dark brown, with a large, irregular, yellowish white band extending along each, and uniting above the spinners; underside, and plates of the spiracles dark brown, the latter having a tinge of red. The sexual organs have two large, external orifices, and a small, oval process connected with their inferior margin.

The male bears little resemblance to the female. He is rather smaller, and the mandibles, which are very powerful, have a small, obtuse prominence at the base, numerous minute tubercles in front and on the outer side, and are armed with a large tooth, and several small ones on the inner surface. Maxillæ inclined towards the lip. Legs yellowish red, the haunches and thighs being the reddest. Fourth joint of the palpi stronger than the third; it is somewhat produced at its extremity, in front, and has some fine, long bristles on the outer side; fifth joint of an elongated oval form, convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with a pointed, corneous process, directed obliquely downwards and outwards, and a spiral spine, enveloped in membrane, at their extremity; they are of a dark reddish brown colour. Abdomen nearly cylindrical, projecting a little over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and dark brown, with an irregular white spot on each side of the anterior part, on the upper side, near the cephalo-thorax.

*Linyphia sylvatica* pairs in May and June. It is common in Denbighshire and Caernarvonshire, constructing its web among grass and plants growing in and near woods. In the summer of 1838, I received specimens of this species from Miss Ellen Clayton, who captured them in the north of Lancashire. The male closely resembles the male of *Linyphia fuliginea*, but may be distinguished from it by its superior size, and by the structure of its palpal organs. Compare *Linyphia pratensis*, Wider, Mus. Senkenb. p. 258. t. 17. f. 8.

44. *Linyphia rubea*. Cephalo-thorace anticè saturatè, posticè flavescenti-brunneo; mandibulis maxillis labio sternoque saturatè, palpis pedibusque flavescenti-brunneis, his virescentibus; abdomine fasciâ medianâ latâ dentatâ brunneâ, laterali utrinque albâ, strigâque brevi brunneâ ab ano utrinque sursùm ductâ; lateribus brunneis lineis duabus flavescenscentibus, anticâ horizontali posticâ fere verticali.

Length of the female  $\frac{3}{20}$ ths of an inch; length of cephalo-thorax  $\frac{1}{8}$ ; breadth  $\frac{1}{21}$ ; breadth of abdomen  $\frac{1}{12}$ ; length of an anterior leg  $\frac{1}{4}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

Cephalo-thorax oval, convex above, glossy, with a large indentation in the medial line of the posterior region; its colour is yellowish brown, with the exception of the anterior part, which is dark brown. Mandibles powerful, conical, armed with teeth on the inner surface, and slightly inclined towards the sternum, which is broad and heart-shaped. Maxillæ robust, straight, and somewhat quadrate. Lip semicircular and prominent at the extremity. These parts are dark brown, the mandibles and lip being the darkest. Eyes placed on black spots, the anterior pair of the trapezoid being the smallest of the eight. Legs slender, and of a yellowish brown colour, tinged with green; first pair the longest, then the second, third pair the shortest. Palpi yellowish brown, with a slightly curved claw at the extremity. Abdomen thinly clad with hairs, glossy, very convex above, projecting over the base of the cephalo-thorax; a broad, dentated, brown band, which is darkest at its posterior extremity, extends along the middle of the upper part, nearly to the spinners; on each side of the brown band is an irregular white one; these white bands unite immediately above the spinners, and a short, brown streak is directed upwards from each side of the anus; the sides are brown, obscurely mottled with yellowish spots, and are marked with two yellowish lines on the lower part, the anterior one being horizontal, and the posterior one nearly vertical; the under part is brown, a large space in the middle having a tinge of yellow. The sexual organs, which are very dark brown, approaching to black, have a minute prominence on their inferior margin. Plates of the spiracles brown.

The male is smaller and slenderer than the female, but the relative length of his legs is the same; their absolute length, however, is greater, an anterior one measuring  $\frac{3}{10}$ ths of an inch. He resembles the female in design, but is darker coloured. The cephalo-thorax, mandibles, maxillæ, lip, and sternum, have a tinge of red, and the legs are without the green tint perceptible on those of the other sex. Fourth joint of the palpi much stronger than the third, a long, slender bristle projecting from each, near the extremity, in front; fifth joint oval, very dark brown, convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, with a pointed, corneous spine, directed from the inner side obliquely downwards, and a delicate, prominent membrane at the extremity; their colour is very dark reddish brown.

In May and June *Linyphia rubea* spins a web of moderate extent in bushes, and is of frequent occurrence in the woods of Denbighshire and Caernarvonshire. It has been captured by Miss Ellen Clayton in the north of Lancashire, and by T. Glover, Esq. in the neighbourhood of Manchester.

45. *Linyphia insignis*. Cephalo-thorace mandibulis maxillisque flavescenti, labio sternoque saturatè, pedibus palpisque pallidè flavescenti-brunneis; abdomine obscurè flavo, lineis transversis medianis angularibus fasciâque utrinque longitudinali nigricantibus.

Length of the female  $\frac{3}{20}$ ths of an inch; length of cephalo-thorax  $\frac{1}{16}$ ; breadth  $\frac{1}{20}$ ; breadth of abdomen  $\frac{1}{16}$ ; length of an anterior leg  $\frac{5}{16}$ ; length of a leg of the third pair  $\frac{1}{4}$ .

Cephalo-thorax oval, convex above, glossy, with some slight furrows on the sides, and a large indentation in the medial line of the posterior region; its colour is yellowish brown, the margins being the darkest. Mandibles powerful, conical, vertical, and armed with a few teeth on the inner surface. Maxillæ straight, and somewhat quadrate. These organs resemble the cephalo-thorax in colour, but are rather darker. Lip semicircular and prominent at the extremity. Sternum heart-shaped. These parts are dark brown, the lip being paler at the tip. Legs and palpi long,

slender, and pale yellowish brown. First pair of legs the longest, then the second, third pair the shortest. Eyes seated on black spots. Abdomen oviform, glossy, thinly covered with hairs, convex above, projecting over the base of the cephalo-thorax; it is of a dull yellow colour, with a series of blackish, angular lines, whose vertices are directed forwards, extending along the middle of the upper part, a longitudinal band of the same hue on each side, and an irregular, blackish spot above the plate of each spiracle. A very long, subcylindrical process of a red-brown colour, notched at the extremity, is directed backwards from the sexual organs, with which it is connected. Plates of the spiracles pale yellow.

The spider from which the foregoing description was taken was captured by Mr. J. Parry at Trafford, near Manchester, in the autumn of 1837.

46. *Linyphia furva*. Saturatè brunnea ferè nigra; pedibus palpisque flavescenti-brunneis.

Length of the female  $\frac{1}{8}$ th of an inch; length of cephalo-thorax  $\frac{1}{4}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of an anterior leg  $\frac{5}{4}$ ; length of a leg of the third pair  $\frac{1}{7}$ .

Cephalo-thorax oval, convex above, glossy, with an indentation in the medial line of the posterior region. Mandibles long, conical, divergent at the extremity, armed with teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ strong, straight, and somewhat quadrate. Lip semicircular and prominent at the tip. These parts are very dark brown, approaching to black, the mandibles and maxillæ being the palest. Legs and palpi long, slender, and yellowish brown, the latter being the darker. First pair of legs the longest, then the second, third pair the shortest. The posterior eyes of the trapezoid are the largest, and the anterior ones decidedly the smallest of the eight. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and brownish black. A small, prominent, cylindrical process is connected with the inferior part of the sexual organs. Plates of the spiracles brown.

The male is rather smaller than the female, but resembles her in colour, and in the relative length of his legs; these organs, however, have

a greater absolute length, an anterior one measuring  $\frac{1}{4}\frac{1}{8}$ ths of an inch. Third and fourth joints of the palpi short, the latter, which is much the stronger, being produced on the inner side; fifth joint somewhat oval, with a prominent lobe near the extremity, on the inner side; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly developed, complicated in structure, with two contiguous, black, spiral spines, enveloped in a delicate membrane, at their extremity; they are of a dark reddish brown colour.

This species was found under stones in a moist pasture at Oakland, in May 1838.

47. *Linyphia Claytoniæ*. Maris cephalo-thorace appendicibusque pallidè flavescenti-rufis; labio sternique marginibus brunneis; abdomine livido.

Length of the male  $\frac{1}{10}$ th of an inch; length of cephalo-thorax  $\frac{1}{8}$ ; breadth  $\frac{1}{4}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of an anterior leg  $\frac{1}{5}$ ; length of a leg of the third pair  $\frac{1}{8}$ .

Cephalo-thorax oval, convex above, glossy, with an indentation in the medial line of the posterior region, and some fine bristles, directed forwards, on the middle of the anterior part. Mandibles long, powerful, conical, provided with a small protuberance in front, near the base, one or two minute teeth on the inner surface, and inclined towards the sternum, which is broad and heart-shaped. Maxillæ straight, and somewhat quadrate. Lip semicircular and prominent at the extremity. Legs long and slender, first pair the longest, then the second, third pair the shortest. These parts are of a light yellowish red colour, with the exception of the lip, and the margins of the sternum, which are brown. Eyes seated on black spots, those constituting the anterior pair of the trapezoid being the smallest of the eight. The palpi resemble the legs in colour; third and fourth joints short, the latter being much the stronger; fifth joint oval, convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, with two contiguous, curved spines, enveloped in membrane, near their middle, and of a red-brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly clad with



hairs, glossy, and appears to be livid; but, as the specimen had been some time in spirits when I made the description from it, I cannot speak with certainty concerning its colour.

I have named the above species in compliment to Miss Ellen Clayton, of Church Town, near Garstang, Lancashire, who discovered it in the neighbourhood in which she resides. To the zeal of this lady in collecting specimens, and to her kindness in forwarding them to me for description, I am indebted for this and other interesting spiders.

48. *Linyphia obscura.* Maris cephalo-thorace mandibulis maxillis labio ster-noque saturatè, pedibus palpisque flavescenti-brunneis paululùm rufo tinctis, horum articulo terminali saturatè brunneo; abdomine nigri-cante.

Length of the male  $\frac{1}{2}$ th of an inch; length of cephalo-thorax  $\frac{1}{4}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{4}$ ; length of an anterior leg  $\frac{1}{8}$ ; length of a leg of the third pair  $\frac{1}{10}$ .

Anterior part of the cephalo-thorax compressed; sides marked with slight furrows diverging from the upper part towards the margins; in the medial line of the posterior region there is an indentation. The posterior eyes of the trapezoid are much the largest, and the anterior ones the smallest of the eight. Mandibles conical, armed with a few teeth on the inner surface, and inclined towards the sternum, which is heart-shaped. Maxillæ strong, pointed at the extremity, on the inner side, encompassing the lip, which is semicircular and prominent at the tip. These parts are of a dark brown colour; the cephalo-thorax, which is the darkest, is almost black, and the maxillæ are the palest. Legs long, and yellow-brown, with a slight tinge of red; first pair the longest, then the second, third pair the shortest. The palpi resemble the legs in colour, with the exception of the terminal joint, which is dark brown; third and fourth joints short, a long, slender bristle being connected with the former, at the anterior part of its extremity; fifth joint somewhat oval, with a projection on the outer side, and a conical, acute, slightly curved process, directed upwards, at its superior part; it is convex and hairy externally, concave within, comprising the palpal organs, which are highly deve-

loped, and very complicated in structure, having on the outer side of the upper part a curved, corneous process, bifurcated at the extremity, an obtuse, glossy prominence lower down, and a long, acute spine directed downwards and outwards; they are of a dark red-brown colour. Abdomen oviform, convex above, projecting over the base of the cephalo-thorax; it is thinly clad with hairs, glossy, and brownish black. Plates of the spiracles dark brown.

Adult males of this species were taken in June 1836, on rails at Oakland.

49. *Linyphia gracilis*. Mas nigricans; mandibulis maxillis pedibus palpisque brunneis paululum rufo tinctis.

Length of the male  $\frac{1}{12}$ th of an inch; length of cephalo-thorax  $\frac{1}{24}$ ; breadth  $\frac{1}{32}$ ; breadth of abdomen  $\frac{1}{30}$ ; length of an anterior leg  $\frac{1}{6}$ ; length of a leg of the third pair  $\frac{1}{10}$ .

Anterior part of the cephalo-thorax compressed; sides marked with furrows diverging from the upper part to the margins; in the medial line of the posterior region there is a large indentation. Mandibles conical, armed with a few teeth on the inner surface, and inclined towards the sternum, which is heart-shaped, convex, glossy, and provided with some scattered hairs. Maxillæ strong, enlarged at the base, where the palpi are inserted, and slightly inclined towards the lip, which is semicircular and prominent at the extremity. The cephalo-thorax, sternum, and lip are brownish black, and the mandibles and maxillæ brown, faintly tinged with red. The posterior eyes of the trapezoid are the largest, and the anterior ones much the smallest of the eight. Legs long, slender, and pale brown, tinged with red. The palpi are short, and resemble the legs in colour, with the exception of the terminal joint, which is darker; fourth joint much stronger than the third; fifth oval, convex and hairy externally, concave within, comprising the palpal organs, which are prominent, highly developed, complicated in structure, with a small, glossy protuberance on the outer side of the upper part, and a fine spine at the extremity, enveloped in a delicate membrane, and curved into a circular form; they are of a red-brown colour. The convex sides of the terminal joints are directed towards each other. Abdomen oviform, convex above,

projecting over the base of the cephalo-thorax; it is thinly covered with hairs, glossy, and brownish black. Plates of the spiracles dull brown. Some individuals have an obscure series of angular lines of a brownish hue, whose vertices are directed forwards, extending along the middle of the upper part of the abdomen.

Males of this spider, in a mature state, were found on rails in the township of Crumpsall, in November 1836.

Genus MANDUCULUS\*, *Blackw.*

50. *Manduculus limatus.* Cephalo-thorace sternoque rufo-brunneis, illo fasciâ medianâ maculisque paucis lateralibus nigris; mandibulis maxillis labioque saturatè rufescenti-, pedibus palpisque flavescenti-brunneis; pedum pari 1mo longissimo, dein 2do, 3tio brevissimo; abdomine rufo-brunneo serie medianâ linearum angularium albarum, fasciâque utrinque laterali latâ flavescente supernè pallidiore infernè rufo-brunneo tinctâ.

Length of the female  $\frac{1}{6}$ th of an inch; length of cephalo-thorax  $\frac{1}{12}$ ; breadth  $\frac{1}{8}$ ; breadth of abdomen  $\frac{1}{2}$ ; length of an anterior leg  $\frac{7}{4}$ ; length of a leg of the third pair  $\frac{1}{6}$ .

Cephalo-thorax rather large, oval, convex above, glossy, and rough, like sha-green; the anterior part, where the eyes are situated, is slightly elevated, and rounded, and there is an indentation in the medial line of the posterior region; its colour is red-brown, with a black band extending along the middle, and a few obscure spots of the same hue on the sides, just above the margins. The sternum is heart-shaped, and rough, resembling in colour the ground of the cephalo-thorax. Mandibles remarkably powerful, conical, convex in front, widely divergent at the extremity, armed with two rows of teeth on the inner surface, and of a very dark reddish brown colour, approaching to black. Maxillæ inclined towards the lip, which is triangular; these organs are dark reddish brown, the latter being rather the darker. Legs and palpi long, slender, and yellowish brown. First pair of legs the longest, then the second, third pair the

\* For the characters of this genus, see the London and Edinburgh Philosophical Magazine and Journal of Science, vol. iii. p. 110-11; and Researches in Zoology, p. 358-9.

shortest. Each tarsus is terminated by three claws; the two superior ones are curved and pectinated, and the inferior one is inflected near its base. The palpi have a curved, pectinated claw at the extremity. Abdomen oviform, thinly covered with short hairs, convex above, projecting over the base of the cephalo-thorax; it is of a red-brown colour, with a series of white, angular lines, whose vertices are directed forwards, extending along the middle of the upper part; on each side is a broad, irregular, yellowish band, which is palest on the upper edge, and is tinged with light red-brown below; underneath, an obscure, yellowish streak extends along each side of the medial line. Plates of the spiracles dull yellow.

The male resembles the female in colour, and in the relative length of his legs, but is rather smaller than she is. The nails of the mandibles have a slight indentation near the middle, externally, and a corresponding projection on the inner side. Fourth joint of the palpi longer than the third, and clavate; the fifth joint consists of two parts; the shorter and slenderer one is attached to the upper side of the palpal organs, and the longer one is connected with the same organs on the inner side, and extends a little beyond them. Palpal organs glossy, of a globular form, with a pointed elongation anteriorly, which has the appearance of being twisted; their colour is very dark reddish brown, approaching to black.

*Manduculus limatus* occurs under stones and on bushes in the woods about Oakland. The male has the palpal organs completely developed in September. Compare *Linyphia tenebricola*, Wider, Mus. Senkenb. i. p. 267. t. 18. f. 2.

#### FAMILY EPEIRIDÆ.

#### GENUS EPEIRA, *Walck.*

51. *Epeira celata*. Cephalo-thorace pallidè brunneo, marginibus strigis paucis transversis lateralibus fasciâque medianâ anticè pallidè brunneo-maculatâ nigris; mandibulis maxillisque saturatè rufescenti-brunneis; labio sternoque nigricantibus; pedibus palpisque flavescenti-brunneis albo-maculatis fasciatisque; pedum pari 1mo longissimo, dein 2do, 3tio brevissimo; abdomine nigro brunneoque vario fasciâ medianâ latâ dentatâ anticè angustatâ lineâque brevi decussante flavis.

Length of the female  $\frac{7}{20}$ ths of an inch ; length of cephalo-thorax  $\frac{3}{20}$  ; breadth  $\frac{1}{9}$  ; breadth of abdomen  $\frac{1}{8}$  ; length of an anterior leg  $\frac{2}{3}$  ; length of a leg of the third pair  $\frac{5}{18}$ .

Anterior part of the cephalo-thorax compressed ; sides marked with slight furrows diverging from the upper part to the margins ; there is a large indentation in the medial line of the posterior region ; colour pale brown, with black margins, a few transverse, black streaks on the sides, and a band of the same hue extending along the middle, and increasing in breadth as it approaches the eyes, where it comprises several pale brown spots. Eyes disposed in two transverse rows on the anterior part of the cephalo-thorax ; the four intermediate ones form a square, and those of each lateral pair, which are nearly contiguous, together with the eyes of the anterior intermediate pair, are seated on small eminences. Mandibles powerful, conical, convex in front, armed with two rows of teeth on the inner surface, and inclined towards the sternum ; their colour is very dark brown, tinged with red. Maxillæ straight, enlarged and rounded at the extremity, and dark reddish brown. Lip semicircular and brownish black, having a faint tinge of red at the tip, which is prominent. Sternum heart-shaped, with prominences on the margins, opposite to the insertion of the legs ; its colour is brownish black. Legs and palpi long ; their colour is yellowish brown, with black spots and rings ; the tarsi are reddish. First pair of legs the longest, then the second, third pair the shortest. Abdomen oviform, thickly covered with hairs, convex above, projecting over the base of the cephalo-thorax ; it is mottled with black and brown, having an obscure, yellowish, curved line on each side of the anterior part, and a broad, dentated, yellow band extending along the middle of the upper part ; this band, which comprises a fine, longitudinal, branched line of a darker hue, is narrowest at its anterior extremity, near which a short, yellow line crosses it at right angles ; on each side of the middle of the under part is a longitudinal, yellow line. Plates of the spiracles pale brown.

The male is smaller than the female, but resembles her in colour, and in the relative length of his legs. Third and fourth joints of the palpi short ; the latter is the stronger, and has a pointed apophysis at the extre-

mity, in front; the fifth joint consists of three parts, one of which projects boldly in front; this process is curved, glabrous, transversely striated above, and has a thin membrane attached to it; another part, united to the base of the curved process on the outer side, is slender and hairy; and the third part, which is much the largest, is oval, convex and hairy externally, and concave within; all three are connected with the palpal organs, which are moderately developed, rather complicated in structure, and of a reddish brown colour. The convex sides of the oval parts of the fifth joints are directed towards each other.

This species, like *Epeïra antriada*, to which it is nearly allied, frequents damp caverns, and hollow banks, to the sides of which it attaches its subglo-bular cocoon in the month of May. This cocoon, which is composed of whitish silk of a loose texture, is depressed on the attached side, and measures about half an inch in diameter; it comprises between two and three hundred spherical eggs of a yellow colour, agglutinated together in a lenticular mass measuring  $\frac{3}{10}$ ths of an inch in diameter.