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# ILLUSTRATIONS

OF

## BRITISH ENTOMOLOGY;

OR, A

### Synopsis of Indigenous Insects:

CONTAINING

THEIR GENERIC AND SPECIFIC DISTINCTIONS;

WITH

AN ACCOUNT OF THEIR METAMORPHOSES, TIMES OF  
APPEARANCE, LOCALITIES, FOOD, AND ECONOMY,  
AS FAR AS PRACTICABLE.

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BY JAMES FRANCIS STEPHENS, F.L. AND Z.S.

V. PRESIDENT OF THE ENTOMOLOGICAL SOCIETY OF LONDON, ETC.

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EMBELLISHED WITH COLOURED FIGURES OF THE RARER AND  
MORE INTERESTING SPECIES.

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MANDIBULATA.

VOL. VI.

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“In his tam parvis tamque ferè nullis quæ ratio! quanta vis! quam inextricabilis  
perfectio!”—*Plin.*

“Finis Creationis Telluris est gloria DEI, ex opera Naturæ, per Hominem  
solum.”—*Linné.*

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## ILLUSTRATIONS

OF

## BRITISH ENTOMOLOGY.

ORDER II.—DERMAPTERA, *De Geer*.

*Wings* very broad, ovate-triangular, with radiating nervures, folded longitudinally and transversely; stigma large, coriaceous, projecting (during repose) beyond the *melytra*, which are short, subquadrate, with a straight suture (as in the Coleoptera), and truncate at the apex. *Body* linear, nine-jointed in the males, seven-jointed in the females, and furnished at the apex with horizontally moveable appendages, more or less curved in the males, and straight in the females. Metamorphosis semicomplete.

Although probably this order is not of equal value with the Coleoptera or Orthoptera, nevertheless I shall still consider it as distinct, as placed in the commencement of the first volume; with the former it agrees in having coriaceous elytra, destitute of nervures, and united by a straight suture; while it differs therefrom in its trophi, in which it agrees with the Orthoptera, but from them its elytra remove it. The order at present consists of a single family, whence its relative value becomes questionable: it was established by Kirby, in the Linnean Transactions, as the suggestion of Leach, but De Geer had previously noticed it, and his name is employed.

FAMILY I.—FORFICULIDÆ *mihi*.

*Antennæ* filiform, the articulations distinct, variable in number, the basal one most robust, the second smallest, the remainder more or less inconstant in length; *palpi* filiform, with the terminal joint oblong-cylindric; *labrum* rounded, entire; *mandibles* curved, bifid at the apex; *head* scarcely broader than the thorax, flat, porrected; *eyes* slightly prominent; *thorax* somewhat quadrate, flat, especially on the sides; *body* slightly convex above and below, and armed at the tip with forceps; *legs* remote, nearly equidistant and simple, formed for running; *tarsi* triarticulate, the intermediate joint very short, and sometimes bilobed.

The only family of this order is the present; the insects of which it consists are very lively and active; the larva and pupa resembling the imago, excepting that they have only the rudiments of wings, and the anal appendages are less produced; the eggs are white and shining, and are deposited in dung-hills, under clods of earth, &c., and the parent is said to attend them with great care until hatched, when she equally superintends the young larvæ.

The following genera have been distinguished, which may be known by the subjoined concise characters:—

Tarsi articulo intermedio	}	bifido: antennæ articulis	12—14;	Alati:	1. FORFICULA.
				Apteri:	2. CHELIDURA.
	}	simplice: antennæ articulis	{ 10—12: . 20 aut plurimis:		3. LABIA
					4. LABIDURA.

### GENUS I. FORFICULA *Auctorum.*

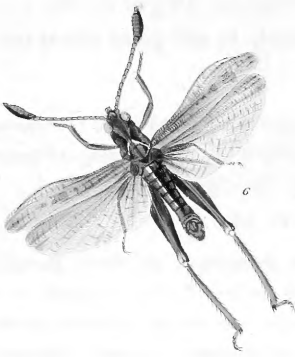
*Antennæ* moderate, consisting of from thirteen to fifteen joints, of which the basal one is somewhat robust, but attenuated towards the base, second very short, third nearly as long again as the second, fourth of the same length as the second, the remainder slender, elongate-cylindric, the terminal one being obtuse. *Palpi* moderate, rather slender, the terminal joint a little attenuated towards the apex, which is truncate; *head* somewhat triangular; *thorax* truncate anteriorly, with the angles nearly straight, or rounded posteriorly; *body* glabrous; *wings* ample; *abdomen* in the males with the caudal appendage curved and acuminate at the apex, the base dentate within; in the female nearly straight, and slightly crenulated within; *tarsi* with the intermediate joint bilobed.

The insects of this genus, known by the familiar name of *earwigs*, from their supposed propensity to penetrate into the ear, arising simply from their endeavour to secrete themselves from the light, when accidentally disturbed and falling upon the human head, are extremely vivacious and nimble, but, at least in this country, rarely employ their beautiful wings in flight: they differ from the other genera by having the intermediate joint of the tarsi bilobed, from bearing wings, and in the relative number of articulations of the antennæ; but from the extreme liability of these organs to fracture, owing to the nimbleness of the insects, some of the terminal joints are frequently wanting during the life of the animal.

Sp. 1. *auricularia*. PLATE XXVIII. f. 1. forceps.—*Rufo-picea, elytris pallidioribus, pedibus thoracisque marginibus pallide testaceis, capite ferrugineo anticè nigricanti, forcipe brevi, semicirculari, testaceâ apice nigricanti femine subrectâ.* (Long. corp. 6—8½ lin.)







*Fo. auricularia.* Linné.—Wood, i. pl. 30.—Steph. Catal. i. 299. No. 3299.

Head ferruginous, more or less dusky in front, eyes black; thorax much depressed, black, with pale margins; elytra about one-fourth the length of the abdomen, pale red; abdomen of a rusty-black, or pitchy-red, the margins of the segments sometimes paler; the apex in the males furnished with a pair of abbreviated, somewhat semicircularly curved forceps, armed with a tooth within at the base, meeting at the tip; in the female they are nearly straight, being faintly incurved towards the apex, and very finely crenulated within; in both sexes they are testaceous, with the apex dusky; legs very pale testaceous; in immature specimens nearly white.

The difference in the form of the forceps, exclusively of other distinctions, as shown in the accompanying figures, will enable the reader to understand the species.

Extremely abundant in gardens throughout England, and very injurious to flowers by destroying the petals, to the great annoyance of the floriculturists.

*Sp. 2. media.* PLATE XXVIII. f. 2. forceps.—*Capite ferrugineo oculis thoraceque nigris, hoc marginibus elytris pedibusque pallidis, forcipe subelongatâ tenuè, pallidâ, in femina subincurvatâ.* (Long. corp.  $4\frac{1}{2}$ — $7\frac{1}{2}$  lin.)

*Fo. media.* Marsham.—Steph. Catal. i. 299. No. 3300.

Head ferruginous; eyes and thorax black, the margins of the latter broadly pale; elytra, legs, and forceps, very pale, the latter slightly elongate, very slender, not semicircular, and in the females somewhat incurved at the apex; abdomen pale testaceous, dusky on the terminal segment; antennæ pale.

Not common; found in the vicinity of London, and at “Cambridge.”—C. C. Babington, Esq.

*Sp. 3. borealis.* PLATE XXVIII. f. 3. forceps.—*Capite toto ferrugineo, oculis atris, thorace nigro marginibus pallidis, elytris testaceis, abdomine ferrugineo-testaceo, forcipe subelongatâ subellipticâ piceâ basi pallidâ, in fœmina subrectâ, apice decussatâ.* (Long. corp. 7—10 lin.)

*Fo. borealis.* Leach MS.—Steph. Catal. i. 299. No. 3301.

Head entirely ferruginous; eyes black; thorax short, black, with the lateral margins broadly pale; elytra dull-testaceous; abdomen rusty-testaceous, somewhat pitchy at the base of each segment, and very finely punctured, the terminal segment broad, very faintly punctured, with an obtuse lateral protuberance, and at the apex two tubercles, with a small fovea between them anteriorly; forceps slightly elongated, the two sides forming somewhat of an elliptic figure, the base pale red, the inside and towards the apex pitchy, at the base within a small tooth; nearly straight, but similarly coloured in the female; legs pale-reddish.

Extremely abundant in some parts of the country, on oaks, espe-

cially at Darenth wood, in June: it also occurs in plenty at Dover, and near Edinburgh. “Berwick upon Tweed.”—*C. C. Babington, Esq.*

Sp. 4. forcipata. PLATE xxviii. f. 4.—*Capite toto ferrugineo, oculis atris, thorace pallido vittâ longitudinali atrâ, elytris pallide testaceis, abdomine ferrugineo-testaceo, forcipe elongatâ paulo incurvatâ pallidâ, apice piceâ, in fœmina subrectâ, apice decussatâ.* (Long. corp. 8—10 lin.)

Fo. forcipata. *Steph. Catal. i. 299. No. 3302.*

Head totally ferruginous; eyes black; thorax pale, with a broad longitudinal streak; elytra pale testaceous; abdomen rusty-testaceous, finely punctured, and with the terminal segment as in *Fo. borealis*, and armed in the male with a pair of very long forceps, which are slightly incurved, armed with a large triangular tooth within rather distinct from the base, of a pale red, with the extreme inner edge and the apex somewhat pitchy; in the female nearly straight, being only a little decussating at the apex; legs very pale, with straight tibiæ.

Less abundant than the last: found at Coombe wood on high trees, and also in the New Forest. “Bath.”—*C. C. Babington, Esq.*

## GENUS II.—CHELIDURA, *Latreille?*

*Antennæ* moderate, twelve-jointed, the basal one stout, the second very minute, third rather slender and longish, the remainder of nearly equal length and form, the terminal one long, a little ovate at the apex. *Palpi* as in *Forficula*; *head* small, rounded-triangular; *thorax* quadrate, depressed; *body* glabrous; *elytra* short, truncate; *wings* none; *abdomen* slightly widened towards the apex, the base with an elongate carina on each side, the apical joint with four tubercles, with a truncate-quadrate projection between the forceps, which are remote at their origin, slightly bent, and have a tooth in the middle of the inner edge in the male; they are nearly straight and simple, but remote in the female.

Not having *Latreille's Familles Naturelles* to refer to, I am not positive that this is really synonymous with his genus *Chelidura*, but I believe that I am correct. I am equally uncertain as to the name of the species, from being unable to obtain a sight of *Hagenbach's Fauna Helv.*, to which *Charpentier* refers, without describing the insect, but in his observations he notices sufficient to enable me to arrive at the fact. The present genus not only differs from *Forficula* in being totally apterous, but in having the forceps remote at their origin, as in *Labidura*, with a tooth in the middle of the inner edge, and a quadrate appendage to the terminal joint of the abdomen

between them; the number of articulations in the antennæ is fewer than in Forficula, with which genus it agrees in having bilobed tarsi.

Sp. 1. albipennis? PLATE XXVIII. f. 5. forceps.—*Testaceo-pallida fronte nigricante, thoracis medio abdominisque vittâ abbreviatâ laterali nigris, forcipe elongatâ subrectâ, apicè paullo incurvatâ laterâ interno dente medio instructâ, in fœmina fere rectâ.* (Long. corp. 4—5 lin.)

Fo. albipennis. *Charpent. Horæ Ent.* 68.—Fo. media. *Hugensch. Faun. Helv.* p. 16, f. 7?—*Steph. Nomen.* 2d edit. Appendix.—Fo. centralis. *Westwood MS.*

Very pale testaceous, the head rather dusky in front; the middle of the thorax obscurely black; the abdomen with a distinct abbreviated black streak on each side at the base, the segments to which it extends having an elevated line: the forceps are long, not very much bent, being a little incurved at the tip, and on their inner edge bear a single triangular tooth in the middle, and at the base are a little waved: in the female the forceps are very slightly incurved at the extreme tip only; and in both sexes they are entirely pale.

The colours are occasionally a trifle darker in tint.

The only examples I have seen of this very distinct species were taken at "Ashford, Kent, June."—*J. C. Westwood, Esq.*, to whom I am indebted for the insect and the loan of his specimens.

### GENUS III.—LABIA, *Leach.*

*Antennæ* short, rather stout, consisting of from ten to twelve joints, basal one stoutish, second very short, third not so long as the fourth, which is stouter, and exceeds the second in length; remainder gradually increasing in length, somewhat elongate-ovate, and stoutish, the terminal joint shortish and more slender. *Palpi* short, slender, terminal joint truncate pubescent; *head* rounded; *thorax* slightly rounded in front, with all the angles rounded; *body* pubescent; *abdomen* with the caudal appendage in the male slightly incurved, and armed with numerous minute denticulations within, in the female straight and simple; *tarsi* with the intermediate joint simple.

From Forficula the simple intermediate joint of the tarsi, in addition to the dissimilarity of the forceps, as also the fewer joints of the antennæ, distinguish Labia, as the latter character will from Labidura, in addition to other discrepancies—the present genus consists of but one indigenous species, which is extremely active, and flies elegantly in the sunshine, whereas the true Forficulæ very rarely fly, at least in this country.

Sp. 1. minor. *Pubescens, testacea, capite nigricante, ore pallido, thorace fuscescente, elytris pallidis, antennis fuscis apice albidis.* (Long. corp. 3—4 lin.)

Fo. minor. Linné.—La. minor. *Samouelle, pl. 4. f. 16.*—*Steph. Catal. i. 299. No. 3303.*

Pubescent; head dusky, rather pale; eyes black; thorax rather fuscous, finely punctured; elytra very pale, and also very finely punctulated; abdomen reddish, black in the middle, the terminal segment in the male with a ridge, and armed with slightly incurved forceps, which are furnished within with numerous equal denticulations: in the female they are straight and scarcely denticulated; legs pale yellowish.

Very abundant in the spring, throughout the metropolitan district, flying about in gardens and near stables, &c., especially in the vicinity of dung-heaps. “Berwick-on-Tweed.”—*C. C. Babington, Esq.*

#### GENUS IV.—LABIDURA, *Leach.*

*Antennæ* rather long and slender, with about twenty-five joints, the basal one stoutish, second minute, third rather longer than the fourth and fifth (which are scarcely longer than the second) united, the five or six following also short and stoutish, but gradually increasing in length and decreasing in breadth; the remainder are slender and elongate, and not very distinctly separated, each articulation being about equal in length to the third. *Palpi* rather long, terminal joint somewhat rounded at the apex; *head* elongate, triangular, wider than the *thorax*, the latter truncate, and with acute angles in front, rounded behind, the disc much depressed; *body* glabrous; *abdomen*, in the males, with the caudal appendage remote at the origin, slightly curved upwards and approximating at the apex, denticulated behind the middle within; in the females approximating at the base, denticulated within from thence nearly to the apex, the tips decussating; *tarsi* pubescent beneath, with the intermediate joint simple.

Exclusively of the form of the forceps, which are remote at their origin, and of the intermediate joints of the tarsi, the numerous abbreviated articulations of the antennæ remove this genus from Forficula, as the last character does from Labia.

Sp. 1. gigantea. *Ochreo-pallida, supra nigro variegata, ano bidentato, forcipe porrectâ unidentatâ.* (Long. corp. 1 unc. 3—5 lin.)

Fo. gigantea. *Fabricius.*—*Donovan, v. xiv. pl. 500.*—*La. gigantea. Steph. Catal. i. 299. No. 3304.*

Pale, with a reddish or ochreous tinge; eyes black; thorax with two dusky black streaks on the disc, placed obliquely, the margins very pale, the disc with a longitudinal channel; elytra also with an oblique blackish streak;

abdomen with the base of each segment, excepting the terminal one, both above and below, broadly black, and punctured, the terminal one with two short dusky teeth, immaculate and impunctate; forceps slightly rufescent, the apex and tooth dusky; legs and antennæ very pale.

This splendid species has hitherto been found only in the vicinity of Christchurch, where it occurred once in plenty, and numerous examples were secured by the late Rev. W. Bingley, from amongst which I have a fine series. Its native origin is questioned by Mr. Kirby, in his valuable Introduction to Entomology, from the circumstance of other examples not occurring,\* but the practical entomologist need scarcely be reminded that various insects which at one season occur in swarms are not to be found subsequently for a long period.

### ORDER III.—ORTHOPTERA, *Olivier.*

Wings four, unequal, anterior or elytra coriaceous, reticulated with nervures, more or less incumbent, covering the posterior or true wings, the latter longitudinally folded and ample, with reticulated nervures; mouth mandibulated; *legs* various. Metamorphosis semi-complete.

The insects of this order, which has been but little attended to in this country, are frequently of very large size; they may be known from the Dermaptera by having the elytra more or less lapping over at the apex of the suture, and in having their surface reticulated, the wings themselves are only folded longitudinally; the tibiæ, at least the posterior, are mostly very spinous; the males have the apex of the abdomen frequently armed with two processes, and the females have frequently a long, exerted, ovipositor: the larva and pupa resemble the imago, are very active and voracious, frequently remain above a year before they undergo their final change: their

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\* In refutation of such an opinion, the sudden appearance of swarms of *Endomychus coccineus* at Coombe wood, in the autumn of 1816, as noticed in vol. iv. p. 399, may be referred to, since which period only one or two stragglers have been there taken; as also the apparent disappearance of *Cucujus Spartii* in the same locality, for which insect, which occurred in profusion there two years since, I sought in vain on the 21st ult.; as well as the myriads of *Thecla W-album* at Ripley in 1827 (now apparently again lost, as I have not seen the insect there since), exclusively of numerous other examples that will immediately suggest themselves to the practical entomologist.

food is various, and like the insects of the preceding order, they will prey upon their own species: the indigenous species appear divisible into the following families, thus concisely distinguished:—

*Corpus compressiusculum* ;

*Tarsi* 4-articulati ; *pectus* laminatum : . . . . 1. GRYLLIDÆ.  
3-articulati ;

*Antennæ* filiformes, breves ; *alæ* simpliciter plicatæ : 2. LOCUSTIDÆ.  
setaceæ, elongatæ ; *alæ* subulatæ-complicatæ : 3. ACHETIDÆ.

applanatum, ovale ; *tarsi* 5-articulati : . . . . 4. BLATTIDÆ.

#### FAMILY I.—GRYLLIDÆ, *Leach*.

*Tarsi* four-jointed ; *antennæ* very long, slender and setaceous ; *head* large, vertical ; forehead convex, sometimes acuminate in front ; *eyes* vertical, more or less prominent ; *thorax* flat above, the sides rather suddenly deflexed, rounded behind ; *body* somewhat compressed, shining, glabrous ; *breast* mostly with two oval foliated plates ; *elytra* vertical, descending on each side, and often longer than the *abdomen*, the latter compressed with two processes at the apex in the male, and a lengthened compressed ovipositor in the female ; *legs* elongate, approximating at the base ; four anterior slender ; posterior pair very much elongated, with large femora, and spinose slender tibiæ, which are tetragonal.

The insects of this family are nearly all of great bulk, arising principally from the length of their members, the antennæ and posterior legs especially, their body being comparatively short: they are chiefly found in the autumnal months, and frequent hedges by the sides of woods, or grassy places; some of them are very local, and appear to affect chalky regions; others are found on trees: the males of some species make a loud stridulous noise by the friction of the membranous elytra: the females have invariably a long exerted ovipositor.

The species of this family have hitherto been associated, at least in this country, under one genus, viz. ACRIDA, but their habit is so various as to call for divisions, and Mr. Curtis is even induced to observe, "it is difficult to find characters that will embrace even the insects that are now included in this genus:" I shall, therefore, follow up the plan that has been lately sketched by Latreille and Serville, and endeavour to divide the indigenous species into genera, and which upon a prima facie appearance may be thus cursorily characterized:—



*Vertex* plus minus acuminatus; *oculi* prominuli, exserti:

<i>Elytra</i> brevissima, in feminis nulla: . . . . .	1. EPHIPPIGERA.
<i>elongata</i> :	
<i>Alæ</i> incompletæ: . . . . .	3. XIPHIDION.
<i>perfectæ, amplæ.</i>	
<i>Elytris</i> (in masculis) ocellatis; ♀ <i>ovipositore</i> incurvo: . . . . .	4. MECONEMA.
(in utroque sexu) inocellatis; ♀ <i>ovipositore</i> recto: . . . . .	5. PHASGONURA.
<i>obtusus, latus</i> ; <i>oculi</i> vix prominuli, sessiles.	
<i>Elytra</i> plus minus abbreviata: . . . . .	2. MICROPTERYX.
<i>abdomine</i> longiora: . . . . .	6. DECTICUS.

### GENUS I.—EPHIPPIGERA, Latreille.

*Body* generally large, stout and heavy, slightly rugose, but rarely smooth; *eyes* small, globose, very prominent; *forehead* gibbous, with a tubercle between the *antennæ*, the latter inserted in a cavity between the tubercle and the eyes, the basal joint very robust, the second also stout, but smaller, the remaining joints very slender; *thorax* rounded above, with the sides somewhat deflexed, scabrous and unequal; *elytra* very short, arched and ocellated in the males; very minute, resembling a roughened scale in the females; *wings* none; *abdomen* with a deep groove beneath and at the apex in the males, with an ascending scale-like bimucronated process; in the females with a moderate, broad, incurved ovipositor; *legs* very slender.

The only indigenous species of this singular genus may be known by the very small size of the incumbent *elytra* in the males, and the almost total absence of these organs in the females, in which sex they are merely represented by a rugose scale; added to which the crown is acuminated and the eyes very prominent; and the apex of the abdomen in the male is furnished with a bimucronated ascending scale below, and of the female with a broad short incurved ovipositor.

Sp. 1. virescens. *Prasinus*, *thorace utrinque lineâ laterali albâ*. (Long. corp. ♂ 5—6 lin.; ovip. inc. 9—10 lin.)

Ac. virescens. *Steph. Catal. p. 300. No. 3309.—Barbitistes autumnalis. Charrp. ?—Lo. autumnalis. Hagenbach, Symb. Faun. Ins. Helv. 25. fig. 14?*

Green, nearly glabrous; *thorax* with a narrow white line on each side, extending from the eyes to the hinder margin; *elytra* in the male rugose, depressed in the middle, and with a smallish ocellus towards the apex; in the female resembling two small semicircular scales of a bright green, and slightly shagreened.

In dried species the rich green fades to a dirty-brown, excepting the *elytra* and ovipositor of the female, which retain most of their brilliant tint; the *tibiæ* become reddish, &c.

Not common; found occasionally in August and September at Darenth and Birch woods, and also near Hertford, and in the New Forest and in Dorsetshire.

GENUS II.—MICROPTERYX\* *mihhi*.

*Body* moderately stout, glabrous; *eyes* scarcely prominent, sessile; *head* gibbous, front broad, obtuse, rounded; *antennæ* very slender, moderately long, inserted in a cavity between the eyes, the basal joint short and robust, second small; *thorax* somewhat flattened above, the sides suddenly and considerably deflexed, rounded behind, the posterior and lateral margins elevated; *elytra* rather short and incumbent, or longish and deflexed, ocellated in the males, sometimes appearing as a minute scale in the females, at others nearly as ample as in the males; *wings* none, or rudimentary; *abdomen* gibbous beneath, furnished at the apex above with two short acute processes, in the males beneath with two others, and in the females with an incurved ovipositor.

The insects of this genus may be recognized from the foregoing by having the elytra nearly as long as the abdomen, combined with a broad obtuse front, with the eyes scarcely prominent, and sessile: they frequent grassy places, and, from the brevity of their wings, they are found on the ground. Anisoptera, having been previously published, I have employed a new appellation here.

A. *Elytra* abbreviated and incumbent in the males; wanting in the females.

Sp. 1. aptera. *Grisea, capite thoraceque lævibus, lineâ utrinque laterali femoribusque posticis extus vittâ longitudinali nigris, elytris maris brevissimis, feminae nullis.* (Long. corp. ♂ 7—8; ♀ ovip. incl. 10—12 lin.)

Lo. aptera. *Fabricius.*—Ac. aptera. *Steph. Catal.* 300. No. 3305.

Griseous, or fuscous-brown; head large, smooth, broad, and rounded in front; antennæ longer than the body, testaceous, with the basal joint brown; thorax smooth, subconvex above, with a broad black streak on each side extending from the eyes to the hinder margin; elytra of the male very short, incumbent, the left one with a thickly veined opaque space, and the right one with a round pellucid space; female with two rounded flat scales in lieu of elytra, and both sexes destitute of wings; abdomen yellowish beneath; ovipositor in the female short, falcate, fuscous; posterior femora with a black streak at the base without.

Not common: I have taken it in a wood at Hertford, and also near Darenth in September. I have also obtained it from the New Forest.

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\* μικρος parvus, πτερον ala.

B. *Elytra* rather elongated in both sexes and deflexed.

Sp. 2. Roeselii. *Viridis vel testacea, thoracis lineâ dorsali postice elevatâ, margine omni thoracis partis deflexo albo seu flavido, abdomine vittis duabus sublateralibus atris, femoribus posticis externè vittâ nigrâ.* (Long. corp. ♂ 6—7 lin.; ♂ ovip. incl. 10—11 lin.)

Lo. Roeselii. *Hagenbach, Symb. Faun. Ins. Helv.* 39. f. 24.—Ac. Kirbii. *Steph. Catal.* 300. No. 3707.

Green or testaceous; thorax with an elevated dorsal line behind, the anterior margin of the deflexed portion white or yellowish, sometimes bright green; elytra horn-coloured, with a yellowish streak on the shoulders; abdomen with two black streaks towards the sides, and posterior femora with one on the outside at the base; ovipositor short and much curved.

This species appears to be very rare in this country. I have hitherto seen, so far as I remember, two examples only, which are in my own collection, and were found in the vicinity of the metropolis in the autumn, I believe at Hampstead.

Sp. 3. brachyptera. *Viridis vel grisea, thoracis lineâ posticè elevatâ margine lateris deflexi postico albo, elytris margine antico et postico viridibus, interdum totis griseis, femoribus posticis internè et externè vittâ nigrâ.* (Long. corp. ♂ 5—6; ♀ ovip. incl. 9—11 lin.)

Gry. brachypterus. *Linné.*—Ac. brachyptera. *Steph. Catal.* 300. No. 3306. Ac. Kirbii. *Dale MS.*

Green or griseous; thorax with an elevated dorsal line behind, the hinder edge of its deflexed portion alone white; elytra with the anterior and posterior margins bright green, or entirely griseous in the females; posterior femora with a black streak at the base, both in the outer and inner surfaces, the inner one shortest; ovipositor of the female rather long and straightish.

Not uncommon in the New Forest, and occasionally in the vicinity of the metropolis: I have taken it at Coombe and Darent woods, and also near Ripley, in July and August.

### GENUS III.—XIPHIDION, *Latreille.*

*Body* rather slender, glossy; *eyes* prominent, exserted; *head* conspicuously acuminate in front; *antennæ* about thrice the length of the body, very slender, with the basal joint very robust, produced within, the second rather smaller, the other joints considerably attenuated; *thorax* rounded above, with the sides gradually deflexed; *elytra* more or less elongate, nearly or quite as long as the abdomen, ocellated in the males; *wings* small, or rudimentary; *abdomen* somewhat cylindric, with four very short styles at the apex in the males, and two in the females, the latter sex with a short slightly curved, or longish and nearly straight ovipositor.

The elytra are rather longer in this genus than in the insects of the foregoing, in addition to which the forehead is acute, and the eyes prominent and exserted; the wings are very short, but the antennæ are remarkably long and slender.

†Sp. 1. fusca. *Viridis, vertice, thoracis dorso, elytrisque fuscis, his longitudine abdominis, margine exteriore pallido; fœminæ ovipositore recto.* (Long. corp. 5—6 lin.?)

Lo. fusca. *Fabricius.*—Ac. fusca. *Curtis, fol. 82 (!)*—Ac. fusca. *Steph. Catal. 300. No. 3308.*

Green, with the crown, the back of the thorax and the elytra fuscous, the latter as long as the abdomen, and with the outer margin pale; ovipositor of the female straight.

I am not positive whether this species is truly indigenous; Mr. Curtis marks it as being in his collection, but as I know he possesses the following species, which he does not indicate, he may be in error.

Sp. 2. dorsalis. *Viridis aut testacea, strigâ latâ brunneâ in dorso verticis thoracisque, elytris corpore dimidio brevibus, antennis longissimis; fœminæ ovipositore subrecto, testaceo.* (Long. corp. 5—7½ lin.)

Lo. dorsalis. *Latr. Hist. Nat. Crust. &c. xi. 133.*—*Charp. Horæ Ent. 112. pl. 2. f. 4.*—Ac. dorsalis. *Steph. Nomen. 2d edit. col. 109.*

Green or testaceous, with a broad brown streak on the back of the crown and of the thorax; elytra half as long as the abdomen, the latter green, with paler rings, or testaceous-yellow; ovipositor in the female rather short, almost straight, being but slightly curved; antennæ very long and slender.

This insect is not unfrequently met with in the New Forest, and in the neighbourhood of London: it occurs towards the end of July or beginning of August. “Cambridge.”—*C. C. Babington, Esq.*

#### GENUS IV.—MECONEMA, *Serville.*

*Body* rather slender and attenuated; *head* acuminate in front between the antennæ; these organs very long and slender, with the basal joint thick, the second also thickened, but considerably smaller than the first; maxillary palpi with the terminal joint rather short, and considerably thickened at the apex, which is truncate; *eyes* very prominent; *thorax* rounded above, and gradually deflexed on each side; *elytra* ample in both sexes, not ocellated in the males; *wings* also ample, as long as the elytra, which extend to the apex of the abdomen, this last in the males somewhat truncate; and furnished with two long incurved processes, in the females with a curved

ovipositor; four anterior legs rather long and slender; posterior comparatively short.

In this genus the elytra are as long as the abdomen, and in the males are not ocellated, by which character, added to the elongated incurved processes at the apex of the abdomen, and its acuminate forehead, that sex may be recognized, and the female by this last character, combined with the ample wings: one indigenous species only occurs, which frequents trees, and appears in the autumn.

Sp. 1. *varia*. *Flavescens, thorace viridi flavo-lineato, maculisque duabus nigricantibus, elytris viridibus*. (Long. corp. ♂ 7—8 lin.; ♀ ovip. incl. 10—12 lin.)

Lo. *varia*. *Fabricius*.—Gr. *varius*. *Donovan, v. iii. pl. 79. f. 1.*—Ac. *varia*. *Steph. Catal. 301. No. 3314.*

Yellowish, with a greenish tinge; eyes brownish; thorax smooth, green, with a yellow dorsal line, and two dusky, or black, spots towards the base, one on each side; elytra green, with a testaceous streak at the base of the suture; legs yellow; tarsi brown.

Common in the autumn in oaks and lime-trees throughout the metropolitan district, especially about Hertford, and at Coombe wood and Ripley.

#### GENUS V.—PHASGONURA, *Westwood MS.*

*Body* elongate, stoutish, smooth; front acuminate between the *antennæ*, the latter longer than the body, with the basal joint very robust and produced within, the second also robust, but much smaller; the remainder extremely minute, and gradually diminishing in breadth to the apex; *eyes* large, prominent; *thorax* depressed above and flattened behind, where it bears an abbreviated ridge, the sides rather suddenly deflexed, the hinder margin rounded and produced; *elytra* considerably longer than the abdomen, very much deflexed, immaculate, flat at the base of the suture, where in the male is an ocellar process, transparent on the right elytron; *wings* ample, narrowish, as long as the elytra; *breast* beneath with two spinous processes, and four elongate lobes; *abdomen* of the males with four styles at the apex, and of the female with two and an elongate straight acute ovipositor; *legs* moderate; hinder femora with a groove beneath; *tibiæ* spinous, posterior with two distinct rows of minute spines.

The only indigenous species of this genus may be known by having the vertex acuminate, and at the same time the eyes prominent, the elytra in the male much longer than the body, and ocellated at the base, the abdomen furnished at its apex with four short styles, and

in the female with a long, straight, compressed ovipositor; both sexes have two elongate, sharp, spiniform processes on the breast, at the base of the anterior legs, and four other long and obtuse lobes behind.

Sp. 1. *viridissima*. *Viridis, antennis capituli vertice, thorace fasciâ longitudinali elytrorumque suturâ fusco-ferrugineis, elytris corpore multo longioribus.* (Long. corp. ♂ 1 unc. 9—11 lin.; ♀ ovip. inc. 1 unc. 10 lin.—2 unc. 1 lin.)

Gry. *viridissimus*. *Linné.*—*Donovan, v. iv. pl. 130.*—*Ac. viridissima. Steph. Catal. 301. No. 3313.*

Bright grass-green; head shining, yellowish beneath the eyes, the vertex rusty-brown, which colour extends in a rather broad fascia along the back of the thorax, which has an abbreviated ridge behind, and some transverse wrinkles; suture of the elytra, and sometimes the strong longitudinal nervure, rusty-brown or testaceous; the elytra themselves, as also the wings, much longer than the body, and extending in the female to the apex of the ovipositor; abdomen brownish-green, or dusky, sometimes with yellowish wrinkles; ovipositor greenish, with the apex brownish; antennæ with the basal joints green, the rest testaceous; eyes brown; legs generally green.

In some examples the legs are yellowish-brown, with the hinder femora green.

A very common species in most parts of the country, especially in grassy places by the side of woods, and in meadows, towards the end of August and beginning of September. I have frequently taken it in Battersea fields and near Hertford: it also occurs in the New Forest and in Devonshire.

#### GENUS VI.—DECTICUS, *Serville*.

*Body* stout and short; *forehead* broad, very obtuse in front, glabrous; *eyes* sessile, not prominent; *antennæ* inserted in a cavity on each side, rather shorter than the body, the two basal joints rather stout, the basal one the most robust; *thorax* flat above, with a longitudinal central ridge and one on each side, the sides suddenly deflexed, the hinder margin produced and rounded; *elytra* not much longer than the body, rather suddenly deflexed and maculated; the base at the suture flat, and in the males furnished with an ocellar spot, transparent on the right elytron; *wings* short, rounded, triplicate; *abdomen* rather short and stout; in the male with four styles at the apex, in the female with two, and a longish more or less incurved ovipositor; *legs* nearly as in *Phasgonura*.

The insects of this genus are shorter, but comparatively more bulky than those of the foregoing, from which they differ in having the head obtuse in front, the eyes sessile, the thorax flat above, and

having three longitudinal ridges; the antennæ are also shorter; the elytra are spotted, and in the males are not very much longer than the abdomen, furnished with an ocellus at the base; the abdomen has in that sex four small styles at the apex, and in the females a longish, more or less recurved ovipositor.

Sp. 1. verrucivorus. *Viridis, elytris abdomine longioribus fusco parcè maculatis vittâque humerali flavâ.* (Long. corp. ♂ 1 unc. 5—7 lin.; ♀ ovip. incl. 1 unc. 7—10 lin.)

Gr. verrucivorus. *Linne.*—Ac. verrucivora. *Steph. Catal.* 300. No. 3312.

Bright deep apple green; head with a transverse yellow streak in front; antennæ testaceous, black without; thorax entirely green, with three dorsal ridges; elytra not quite twice the length of the abdomen, with a yellow longitudinal streak at the shoulders, vanishing on the disc, the latter with a row of distinct brownish spots and a few smaller dots, the left elytron, in the male, with a rusty ocellar spot, and the right with a large very transparent one; abdomen with a small black dot on the sides of each segment, or in some examples entirely dusky; legs with a brownish spot at the base of the hinder femora; tibiæ somewhat testaceous.

A very local species: it once occurred in great plenty in a field near Rochester in September, where it was observed by Professor Henslow, to whom I am indebted for fine examples.

†Sp. 2. Bingleii. *Fuscus, viridi tinctus, elytris abdomine longioribus fusco valdè maculatis.* (Long. corp. ♂ 1 unc. 6—8 lin.; ♀ ovip. incl. 2 unc. 1 lin.)

Ac. Bingleii. *Dale MS.*—*Curtis, v. ii. pl. 82.*—Ac. Bingleii. *Steph. Catal.* 300. No. 3311.

“Male brown, tinged with green; head rounded, pale and dull green; thorax of the same colour, slightly carinated, dilated behind; abdomen piceous, edges of the segments pale; elytra pale fuscous, tinged with green, spotted with brown, the central spots the largest, interior margins green towards the base; wings transparent greenish at their base; legs griseous-yellow; posterior thighs green at their base, variegated with brown. Female dull and pale ochreous, variegated with brown; abdomen pale down the back; piceous on the sides with irregular pale margins to the segments; ovipositor slightly recurved, brown, with a rosy tinge.”—*Curtis, l. c.*

Whether this be truly distinct from the preceding I am not prepared to say; it appears to be so; but, from Charpentier’s account, *De. verrucivora* appears to be a variable insect:—the above description is extracted from *Curtis*.

The only examples known of this insect have been taken near Christchurch in the autumn by the late Rev. W. Bingley and Mr. Dale.

Sp. 3. griseus. *Obscurus, thorace tricarinato, carinâ mediâ anticè abbreviatâ, clytris abdomine longioribus, griseo subpellucidis, lineis fuscis albo strigatis.* (Long. corp. ♂ 11—14 lin.; ♀ ovip. incl. 14—16 lin.)

Lo. grisea. *Fabricius.*—*Sowerby B. M. i. pl. 64.*—*Ac. grisea. Steph. Catal. 300. No. 3310.*

Obscure fuscous; head glossy, smooth, somewhat testaceous: eyes linear; thorax above flat, with three ridges, the central one abbreviated in front, and terminating in a furcate groove with a black base, the deflexed lateral lobe is spotted with black, and distinctly edged with pale; elytra longer than the abdomen, of a pellucid griseous tint, each with three longitudinal fuscous streaks, faintly interrupted with transverse white ones; the left elytron in the male with an opaque space, the right with a corresponding very pellucid one; legs greenish-brown; posterior femora with a blackish longitudinal streak in the middle; tibiæ testaceous.

A very local species, and apparently confined to chalky maritime districts; found, not uncommonly, beneath the cliffs at Dover, towards the end of July, and also in the Isle of Wight, and I believe near Southampton. “Dawlish, Devon, August 1829.”—*C. C. Babbington, Esq.*

## FAMILY II.—LOCUSTIDÆ, *Leach.*

*Tarsi* three-jointed; *antennæ* short, filiform, sometimes thickened, or capitate, at the apex; *head* perpendicular, forehead descending, generally with a ridge extending backwards; *eyes* ovate, not prominent; *thorax* oblong-subquadrate, sometimes a little narrowed anteriorly, at others produced behind and concealing the wings, its sides equally deflexed; *wings* simply folded, not subulated at the apex; *elytra* vertical, sometimes minute, but mostly as long as the *abdomen*, this last more or less subcylindric, with occasionally a ridge down the back, the apex with four styles; *legs* unequal; anterior short and generally slender; posterior elongated, with their femora ample, and formed for leaping.

The Locustidæ, at least the major portion of the indigenous species, are smaller than the Gryllidæ, and from them they differ in having the antennæ shorter, usually filiform, but occasionally clavate or hooked at the extremity; the elytra are generally longer than the body, though in the less typical genera they become abbreviated or distorted, and the thorax is frequently much produced behind: the majority of the species frequent meadows, &c.: the females have not an exerted ovipositor.

The indigenous genera may be thus briefly known:—



<i>Antennæ clavatæ:</i>	.	.	.	.	.	9. GOMPHOCEROS.
<i>filiformes, haud clavatæ.</i>						
<i>Thorax posticè rotundatus vix productus.</i>						
<i>Elytris plerumque longitudine abdominis</i>	.	.	.	.	.	7. LOCUSTA.
<i>valdè abbreviatis:</i>	.	.	.	.	.	8. PODISMA.
<i>posticè longe productus:</i>	.	.	.	.	.	10. ACRYDIUM.

GENUS VII.—LOCUSTA,\* *Leach.*

*Antennæ* with about twenty-four joints, short, filiform, inserted each in a cavity between the eyes; *head* large, mouth conspicuous; *eyes* ovate, not prominent; *ocelli* three, placed triangularly; *face* tumid, slightly carinated; *thorax* with a central raised line, and mostly with a more or less distinct one on each side, sometimes straight, at others angulated or curved; the lateral portion deflexed, the hinder margin rounded; *elytra* and *wings* generally as long as the *abdomen*, the latter solid, subcylindric, with its back occasionally carinated; the apex in the male recurved, in the female with four horny moveable styles; *legs* slightly pilose, the four anterior placed nearly tetragonally, and short; *tibiæ* all with two rows of spines; posterior legs much longer than the body, robust and formed for leaping; *tarsi* with a small fleshy cushion between the claws.

The insects of this genus, familiarly known by the name *Grasshoppers*, are well distinguished from *Podisma* by having the *elytra* and *wings* nearly as long as, or longer than, the *abdomen*; from *Gomphocerus* their slender and simple *antennæ* remove them; and the form

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\* This is one of those genera—like *Amara*, &c.—alluded to in the Postscript to vol. v. p. 439, which I would, if consistent with the plan of my work, have passed over temporarily, but being compelled to proceed in a given track, I must endeavour to discriminate and describe the species; and I believe that I am correct in asserting that amongst the very numerous collections of indigenous insects that it has fallen to my lot to examine, *not one* has the species of this genus named, or even divided from each other; and, as my own specimens alone have been my guide, it is possible that some species may be omitted, or that, from the peculiarities amongst some of them *in a dried state*, I may have decided improperly in some instances. In reference to one remark in the Postscript above referred to, I have to observe, that my object was not to disparage the accuracy of the *Monographia Apum Angliæ*—far from it—my intention there being merely to show that without the *authentic typical specimens* being at hand, it is not always possible to determine whether other specimens in a different state of perfection are identical therewith, and which is the sense in which Mr. Shuckard intends his remarks, as quoted by me:—and, as regards the insects described in this work from my own collection, I invite a comparison with my specimens, which are open to inspection every Wednesday evening.

of the thorax, as well as the magnitude of the elytra, the greater disproportion in the size of the hinder femora, as also their more remote antennæ, sessile eyes, &c. divide them from *Acrydium*. The indigenous species appear to be either very numerous or subject to great variations; they are very difficult to understand, but the following seem distinct, and to facilitate their examination I have subdivided the genus into sections, as proposed by Zettersted.

A. *Thorax* with a single elevated line.

Sp. 1. *migratoria*. *Thorace anticè subabruptè compresso-angustiori, elytris flavo fuscoque nebulosis, mandibulis cæruleis.* (Long. corp. 1 unc. 6—10 lin.)

*Gryllus migratorius.* Linné.—Donovan, v. viii. pl. 270.—Lo. *migratoria.* Steph. Catal. 301. No. 3315.

Head glossy, greenish-yellow, punctured, with four raised lines in front between the eyes; the two intermediate ones dusky; mandibles pale blue, with blackish tips; thorax rather abruptly compressed, and narrowed anteriorly, the lateral lobes deflexed, subquadrate, with the angles rounded, the hinder margin produced somewhat angularly in the middle; the back with a sharp ridge, the whole of a livid greenish hue, with a brownish longitudinal line on each side; elytra clouded with pale yellowish and fuscous; legs pale; posterior femora green or bluish beneath, with some obscure brownish clouds without, and a spot within and a belt over the apex bluish; tibiæ reddish, or pale.

Although this insect, “the Migratory Locust,” has been taken in several parts of the country, as the vicinity of Nottingham, Packington in Warwickshire, St. James’s Park, the neighbourhood of Yarmouth, the coasts of Essex, Kent, and Suffolk, &c., it can scarcely be called indigenous, excepting inasmuch as the individuals arrive in a state of nature in this country, and are not imported; but I believe they do not breed here.

Sp. 2. *stridula*. *Nigricans, elytris nebulosis, alis in utroque sexù rubris, apice nigris.* (Long. corp. 10—12 lin.)

Gr. *stridulus.* Linné.—Stewart (!)—Steph. Catal. 301. No. 3318 note.

Dusky, obscure, head deeply punctured, with the sides rugged; thorax unequal and rugose, with a central ridge and a rather distinct fovea on each side in the middle of the base; elytra either black, clouded with brown, or brown spotted with black, or dusted with brownish; wings red, with the apex broadly black; legs obscure; posterior tibiæ with a pale or whitish belt at the base.

Stewart gives this as British, but as I have never seen an indigenous specimen, I suspect he is mistaken.

Sp. 5. flavipes. *Fusco-brunneus, thorace lineâ laterali utrinque margineque antico elytrorum viridi-flavis, femoribus posticis subtus sanguineis, tibiis flavis.* (Long. corp. 1 unc. 4—10 lin.)

Gry. flavipes. *Gmelin.*—*Donovan, v. xi. pl. 391.*—Lo. flavipes. *Steph. Catal. 301. No. 3316.*

Fuscous brown; head with three indistinct longitudinal yellowish streaks above; thorax tricarinated, the lateral carina slightly curved, edged with greenish-yellow within, and dusky without; elytra fuscous, with a darker streak at the shoulder, and a bright greenish-yellow one on the costa extending to about its middle; wings yellowish at the base, and fuscous at the apex; posterior femora greenish-brown, with their under surface bright blood-red, the base within with a black streak, a cloud of the same on both sides towards the apex, and a ring near the knees; tibiæ bright yellow, with a black ring at the base and apex, and a fainter one towards the base; spines bluish-black.

Variable in colour, some examples being of a brilliant fleshy or purple hue when alive, and in some the latter colour is retained when dried.

Although not an uncommon insect in this country, it would appear, from the silence of Charpentier, Zettersted, and other continental

†Sp. 3. cærulescens. *Grisea, elytris fasciis duabus et apicem versus maculis obscurioribus, alis viridi-cærulescentibus, fasciâ apici hyalino propriore, arcuatâ, nigrâ, in utroque sexu distinctâ.* (Long. corp. 1 unc. 3—4 lin.)

Gr. cærulescens. *Linné.*—*Stewart (!)*—Lo. cærulescens. *Steph. Catal. 301. No. 3317, note.*

Griseous; elytra with two transverse fasciæ, one occupying the base, and some spots towards the apex obscure; wings greenish-blue at the base, the apex clear, and towards the middle a curved black fascia, in both sexes.

This insect is also introduced by Stewart as indigenous, but evidently without authority.

#### B. Thorax with three elevated lines.

##### a. With the two outer thoracic lines nearly straight.

†Sp. 4. grossa. *Thorace subtricarinato, carinis lateralibus obsolete; virescens, elytris margine exteriori anticè, in utroque sexu, flavo, femoribus posticis subtus sanguineis geniculis nigris.* (Long. corp. 10—12 lin.)

Gry. grossus. *Linné.*—*Berkenhout (!)*—Lo. grossa. *Steph. Catal. 301, No. 3319, note.*

Thorax obscurely tricarinated, the lateral ridges obscure; greenish; elytra with the costa, or outer margin, anteriorly yellow in both sexes; hinder femora beneath blood-red, the knees black or dusky.

Berkenhout gives this as British, but I presume improperly, as I have never seen an indigenous example.

entomologists respecting it, that it was peculiar to Britain: it occurs in marshy districts towards the middle of July, and is found in those about Camberwell, Deptford, &c. near London, and in the vicinity of Whittlesea Mere. "In the fens of Cambridgeshire."—*C. C. Babington, Esq.*

Sp. 6. *elegans*. *Capite valdè declivi, thorace carinis tribus rectis; mas thoracis dorso rufescente, elytris non coloratis margine antico dilatato, corpore paullo longioribus; fœmina lineâ atrâ thoracis, elytris oblongis non dilatatis corpore brevioribus, vittâ albâ ad marginem anticum.* (Long. corp. 8—10 lin.)

Gry. *elegans*. *Charpentier Horæ Ent.* 153.—Lo. *rubroviridatus*. *Steph. Catal.* 302. No. 3325.

Head very much deflexed; thorax with three straight elevated lines, the central one lightest and acute; colour rosy-red, with the sides greenish, or testaceous, sometimes with a black streak accompanying the carinæ; in the male the elytra are horn-colour, and dilated in front; in the female they are oblong, green or testaceous, with a long white streak towards the margin at the base, accompanied by a broad dark one; legs testaceous, with the hinder femora slightly greenish, and obscurely tipped with dusky.

Variable in colour, and in some examples the elytra are very faintly spotted with a dusky tint.

This appears to be a rare species; I found it in the marshes near Whittlesea in July 1833.

Sp. 7. *dorsata*. *Thorace carinis lateralibus subrectis; supra viridis, subtus lateribusque fuscis, pedibus pallidis, geniculis concoloribus.* (Long. corp. 8—10 lin.)

Gry. *dorsatus*. *Zettersted Orth. Succ.* 82.—Lo. *dorsata*. *Steph. Nomen.* 2d edit. *Appendix*.—Lo. *ochropa*. *Steph. Catal.* 301. No. 3322.

Thorax with its lateral ridges nearly straight; head above greenish-testaceous, forehead considerably deflexed; thorax rather narrowed anteriorly, smooth, fuscous, green, between the carina, and on each of the lateral lobes (during life) is a splendid golden, or greenish-gold spot; elytra in the male rather longer than the abdomen, in the female of the same length as it, the inner or dorsal portion green, varying in tint in different individuals, the outer or costal edge dusky or brown; legs dull testaceous, the hinder ones with the knees concolorous, and the tibiæ paler.

Rather variable, some examples having a pale line edged with dusky at the base of the elytra; in others the elytra are pale; the thorax has sometimes a black line on each side, or the prominent colour is rosy: several of these varieties arise from the different states of maturity.

This insect occurs, but not abundantly, in meadows in the vicinity of the metropolis in July.

Sp. 8. *parallela*. *Thorace carinis lateralibus subrectis; supra lateribusque viridis, subtus flavicans, geniculis pedum posticorum nigris, elytris pallidis, unicoloratis.* (Long. corp. 8—10 lin.)

Gry. *parallelus*. *Zettersted Orth. Suec. p. 85.—Steph. Nomen. 2d edit. col. 110.*

Thorax with the lateral ridges nearly straight; head and thorax green, the latter entirely of that tint; elytra in the male rather shorter than the abdomen, dilated and bisinuated on the costa; in the female about half the length; in both sexes entirely green and immaculate; abdomen greenish-brown, with the sides occasionally spotted with black, and the lower surface pale; legs testaceous, with the hinder femora above greenish, beneath yellow, with black knees.

Also found, but not commonly, within the metropolitan district.

Sp. 9. *montana*. *Thorace carinis lateralibus anticè nonnihil curvatis; viridis subtus flavida, geniculis posticis nigris; elytris in mare abdominis longitudine, in femina tertia parte thorace capiteque longioribus.* (Long. corp. 8—10 lin.)

Gry. *montanus*. *Charpentier Horæ Ent. p. 173.—Lo. montana. Steph. Nomen. 2d edit. col. 110.*

Thorax with the posterior ridges very slightly curved; head rather wide, and, with the thorax, green; elytra in the male as long as the abdomen, in the female abbreviated; in both greenish; in the former sex they are rather broad, and in both the wings are nearly as long as the elytra; beneath the body is yellowish; legs pale testaceous, with the knees of the hinder pair black.

Also slightly variable, some examples having a black streak on each side of the thorax, and others wanting it; and in some females there is a faint yellowish line at the base of the elytra.

Found near Dover, but apparently not common.

Sp. 10. *tricarinata*. *Thorace carinis tribus atris valdè elevatis rectis; rosea, elytris fuscescentibus apice nigricantibus, margine antico strigâ pallidâ liturâque nigricante adnatâ.* (Long. corp. 10 lin.)

Lo. *tricarinata*. *Steph. Catal. 302. No. 3335.*

Head broad, acute; rosy, or flesh-colour, rest of the body the same, with the base and sides of the abdomen dusky; thorax with three strongly elevated straight black ridges, its anterior margin also black; elytra rather shorter than the abdomen, pale fuscous, with the apex dusky; at the base, near the costa, is a long slender whitish streak, adjoining to which on the disc is a broader blackish one; legs entirely flesh-colour, immaculate.

This very distinct insect is apparently very rare: I have one specimen which I caught near London, but I forget its exact locality.

b. *With the lateral carinæ on the thorax more or less curved or angulated.*

1. *Legs glabrous, or naked.*

Sp. 11. *viridula*. *Thoracis carinis lateralibus anticè curvatis; supra viridis, subtus flavicans, elytris fuscis in medio obscuro-maculatis, margine postico pallido aut viridi, in maribus ad apicem latè nigricantibus.* (Long. corp. 8—13 lin.)

Gr. *viridulus*. Linné.—Sowerby *Brit. Misc.* i. pl. 63.—Lo. *viridula*. Steph. *Catal.* 301. No. 3320.

Thorax with its lateral ridges curved anteriorly, and converging towards the head, the latter large, with the face slightly deflexed and protuberant, and of a dullish-green; thorax the same, brighter on the back, the ridges generally pale, and frequently accompanied by a bright deep black streak within; elytra rather longer than the abdomen, of a horn-colour, and nearly pellucid, in the middle are some dusky clouds, and a small white spot towards the apex, the latter fuscous or dusky, and the inner margin pale or greenish; abdomen fuscous, reddish at the apex; posterior femora greenish-red, with a black streak within at the base, and dark knees; tibiæ reddish. Female rather larger, with shorter antennæ, of a brighter green, with the thorax more spotted with black; the elytra narrow, with the posterior margin of a bright green, the apex pellucid.

Both sexes vary a little in colour and slightly in their markings.

One of the most common species of this order, frequenting meadows, fields, grassy places, and hills, &c. in June and July, throughout the metropolitan district, and near Dover, the New Forest, &c.

Sp. 12. *rubicunda*. *Thoracis carinis lateralibus curvatis, anticè valdè appropinquantibus, capite thorace et margine postico elytrorum viridibus, elytris posticè lunulâ obliquâ albidâ, abdominis apice pedibusque rufescentibus.* (Long. corp. 9—11 lin.)

Gr. *rubicundus*. Schæffer.—Lo. *rubicunda*. Steph. *Catal.* 302. No. 3332.

Thorax with its lateral carinæ much curved, and very closely approximating anteriorly; head, thorax, and hinder part of the elytra green; the latter with a whitish lunule towards the apex on the disc; abdomen at the apex above and the legs reddish.

Found in the vicinity of the metropolis; also at Dover, in July.

Sp. 13. *aprica*. *Thoracis carinis lateralibus subcurvatis; viridi-rosea, elytris maris fuscescentibus immaculatis, ad apicem saturatioribus, feminarum dilutioribus strigâ pallida ad basin costæ, antennis in utroque sexû brevibus.* (Long. corp. 7—9 lin.)

Lo. *aprica*. Steph. *Catal.* 301. No. 3321.

Thorax with its lateral carinæ slightly curved in front, and accompanied by a black line, which sometimes extends to the base, at others is obliterated towards that part; prevailing colour rosy-green, elytra of the male brownish, with the apex darker, the disc immaculate; female much paler, with a slender straight line towards the base of the costa; legs pale greenish-red, with concolourous knees; antennæ in both sexes short, somewhat compressed in the males.

Not common: found in July within the metropolitan district.

Sp. 14. rufipes. *Thoracis carinis lateralibus curvatis; fusca, thoracis vittâ mediâ longitudinali testaceâ, elytris posticè rufescentibus, maculâ albâ et plurimis fuscis, ventre anoque sanguineis, pedibus posticis testaceis, geniculis atris.*  
(Long. corp. 9—11 lin.)

Gry. rufipes. *Zetterstedt Orth. Suec.* 90.—*Lo. rosea. Steph. Catal.* 302. No. 3328.

Thorax with its lateral ridges curved, but less so than in the preceding species; fuscous; thorax with a longitudinal testaceous streak on the back, and a black line on each side; elytra narrow, fuscous, with the apex somewhat pellucid, the disc with numerous fuscous dots placed in a line, and a distinct white spot placed obliquely; abdomen with the sides and some dorsal spots black, the lower part and apex fine red; posterior legs testaceous, with black knees. Female larger, and of a fulvescent or rosy tint.

Found not commonly in the vicinity of the metropolis in June and July, frequenting fields and meadows.

Sp. 15. vittata. *Thoracis carinis lateralibus angulato-curvatis, corporis lateribus pedibusque ferrugineo-luteis, fusco subirroratis, elytris et superiore corporis parte atris.* (Long. corp. 10—12 lin.)

Gry. bicolor. *Charpentier Horæ Ent. p.* 161.—*Lo. vittata. Steph. Catal.* 302. No. 3327.

Thorax somewhat tetragonal, luteous, black above, with a slight dorsal ridge, and on each side a faintly angulated curved one, head luteous, with the crown black; antennæ fuscous, with the base yellowish; elytra oblong, narrow, very slightly dilated anteriorly in the male, of a dusky or smoky tint, with a more transparent space towards the apex of the disc, on which are occasionally some obscure fuscous clouds; legs luteous, spotted with fuscous; posterior femora with a dusky streak on the outer disc, the inner variegated with fuscous, the lower yellowish; posterior tibiæ reddish or greenish.

Inhabits fields and hedges in June within the metropolitan district.

## 2. *Legs pilose.*

Sp. 16. miniata. *Thorace carinato, abdomine miniaceo, punctis dorsalibus*  
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*geminatis nigris, subtus basi virescente, elytris fuliginosis; obscuro-maculatis, maculæque subobliquâ albâ, alis fuliginosis strigâ parvâ ad costam.* (Long. corp. 1 unc. 4 lin.)

Gryl. *miniatus*. Charpentier *Horæ Ent.* p. 162.—Geo. *miniata*. Steph. *Nomen. 2d edit. Appendix.*

Head reddish, mouth pale, antennæ extending to the back of the thorax, red, with the apex fuscous; thorax red-brown, with three ridges, the two outer ones acutely angled towards the head, and accompanied by a black streak and two transverse sulci; abdomen fine red, with a row of six pair of black dots down the back, the base greenish beneath; legs reddish; posterior femora and tibiæ brighter, with the apex of the last fuscous; elytra dull smoky-brown, with some obscure darker spots, and a whitish somewhat obliquely placed dot towards the apex; in the female they are slightly greenish within and are shorter; wings rounded, broad and smoky, with an oblong black streak at the base of the costa.

I obtained this insect from the Marshamian collection, and know not its locality.

Sp. 17. *lineata*. *Viridis aut fusca, lineâ thoracis utrinque curvatâ valdè elevatâ roseâ, latiorem rectam nigram secante, elytris maris fuscis, fœminis margine antico strigâ albidâ signato, in utroque sexu versus apicem lineolâ obliquâ albidâ, pedibus rufis.* (Long. corp. 1 unc. 2—4 lin.)

Gr. *lineatus*. Panzer.—Lo. *lineata*. Steph. *Catal.* 302. No. 3323.

Head large, glabrous, fine green or fuscous; vertex somewhat conical, with a curved rosy line extending from the eyes to the base of the thorax, accompanied by a considerably raised ridge, and a broadish deep black streak; on the thorax are also two transverse impressions, and the sides are variegated with testaceous and brown; abdomen reddish above, greenish beneath; elytra fuscous in the males, with the anterior margin dilated; greenish in the female, with a white streak at the base of the costa, and in both sexes a somewhat crescent-shaped whitish spot towards the apex; posterior femora reddish, with an obscure streak on both sides at the base; knees black; tibiæ red, with black-tipped spines.

Not common: found in fields and meadows in the vicinity of London.

Sp. 18. *biguttula*. *Thoracis carinis lateralibus angulatis; fusca, thorace lineâ utrinque atra, elytris griseis maculis obscurioribus lineolâque obliquâ versus apicem albidâ.* (Long. corp. 10—14 lin.)

Gry. *biguttulus*. Linné.—Lo. *crucigera*. Steph. *Catal.* 302. No. 3329.

Head attenuated in the males, rather convex in the females, either dirty-brown, with brighter spots, or pale, with fuscous; thorax with its lateral ridges distinctly, but obtusely, angulated, entirely brown, or dull testaceous,



with a longitudinal black streak on each side, not touching the base, and another towards the base; elytra of the males pale griseous, with fuscous nervures and a few obscure darker spots, the inner margin sometimes faintly greenish or reddish; in the females the same, but the spots more distinct, and occasionally with a slender longitudinal whitish streak at the base of the costa, and an oblique whitish spot near the apex; abdomen dull testaceous, yellowish-green beneath, the sides spotted with black; legs dull testaceous, spotted with fuscous.

Variable: some examples have the carinæ on the thorax whitish, giving the appearance of a cross; others—females—have the basal inner portion of the elytra green, rosy or blood-red; the body (and the back of the thorax) also varies, of similar colours.

Extremely abundant throughout the metropolitan district, in grassy fields and meadows; also on the borders of woods, hedges, or banks, &c., at the end of June and in July.

Sp. 19. mollis. *Thoracis carinis lateralibus sinuato-curvedis; virescens vel gilva, elytris maculis fuscis et apicali albâ obliquâ.* (Long. corp. 8—10 lin.)

Gry. mollis. *Charpentier Horæ Ent.* 164.—Lo. consobrina. *Steph. Catal.* 301. No. 3330.

Thorax with its lateral carinæ with a waved, but not angulated, curve; colour generally of a fine green, with a yellowish tinge, the hinder portion of the elytra of a reddish tinge, rarely greenish; on their disc is an interrupted row of fuscous spots, and a larger whitish one placed obliquely; in the males they are slightly dilated, and the apex is considerably attenuated; legs dull testaceous, clouded with dusky.

Not uncommon within the metropolitan district in June, frequenting meadows, &c.

Sp. 20. hæmorrhoidalis. *Thoracis carinis lateralibus anticè angulatis; fusca, elytris fusco alboque maculatis, margine postico albo, aut viridi, abdominis ultimâ parte (præsertim maris) coccineâ.* (Long. corp. 8—11 lin.)

Gr. hæmorrhoidalis. *Charpentier Horæ Ent.* p. 165.—Lo. obscura. *Steph. Catal.* 302. No. 3334.

Thorax with its lateral carinæ angulated anteriorly; fuscous; head in the males considerably deflexed; thorax red-brown, sometimes green, with a black streak on each side accompanying the carinæ; elytra narrow, scarcely longer than the abdomen, with several dusky spots alternating with pale ones, placed in the middle; the hinder margin is clearer, and of a whitish or green hue, tinted with bluish; in the females the markings are stronger, and the hinder portion is generally of a more or less brilliant white, rarely greenish; this sex has sometimes a broad whitish streak on the head and thorax, extending backwards, to the apex of the elytra, when they are

closed; abdomen black at the base and sides, yellowish beneath, the remainder fine red, with indistinct geminated black dots on the back; legs red-brown; posterior femora with some largish black clouds within; the knees also black; tibiæ reddish, with the spines and a belt at the base black.

Also found in the vicinity of the metropolis and near Dover, in June and July.

Sp. 21. *rhomboidea*. *Thorace cruciato, carinis lateralibus anticè valdè angulatis; fusca, elytris cinereis ad apicem pallidioribus, disco seriebus duabus macularum fuscarum, pedibus rufescentibus nebulis fuscis.* (Long. corp. 8—11 lin.)

Gr. *rhomboideus*. Schæffer.—Lo. *rhomboidea*. Steph. Catal. 302. No. 3324.

Fuscous; thorax cruciated, the lateral carinæ considerably angulated towards the head and greatly approximating; elytra ashy, or brownish, paler towards the apex and the inner margin, with two distinct rows of fuscous spots, one towards the costa, the other on the edge of the back, when the elytra are closed, and the last one of a rhombic form, and most distinct in the female; legs reddish, with fuscous clouds.

Common within the metropolitan district in July, frequenting the borders of woods, hedges, banks, &c. “Caernarvon.”—C. C. Babbington, Esq.

Sp. 22. *varipes*. *Thoracis carinis lateralibus subangulato-curvatis; rufo-fusca, thoracis dorso elytrisque nigricantibus, his maculâ obsoletissimâ pallidâ, pedibus rufo-fuscescentibus nebulis nigricantibus.* (Long. corp. 8—10 lin.)

Lo. *varipes*. Steph. Catal. 302. No. 3326 and 3331.—Lo. *variegata*. Steph. Nomen. 2d edit. col. 109 ♀.

Thorax with its lateral carinæ somewhat angularly bent; red-brown; with the back of the thorax and the elytra in both sexes deep dusky-brown, the latter with a faint palish spot on the disc towards the apex; legs reddish-brown, with dusky shades.

Less abundant than the last; found within the metropolitan district in June and July.

Sp. 23. *venosus*. *Thoracis carinis lateralibus subangulatis; rufo-fusca, thoracis dorso posticè nigricante, elytris fuscescentibus basi saturatioribus, immaculatis, stigmata fusco excepto, nervis rufescentibus.* (Long. corp. 10—12 lin.)

Gr. *venosus*. Linné?—Lo. *venosa*. Steph. Catal. 302. No. 3333.

Thorax with the lateral carinæ somewhat angled towards the middle; red-brown, with the back of the thorax behind dusky or blackish; elytra brownish, transparent, darkest at the base, which has sometimes two fuscous streaks, the disc immaculate, the costa with a dark stigma towards

the apex, nervures reddish; legs reddish-brown, slightly varied with fuscous.

Also found, but not commonly, within the metropolitan district, in July, and likewise in Yorkshire.

### GENUS VIII.—PODISMA, *Latreille*.

*Antennæ* filiform, consisting of numerous, cylindric, slightly distinct articulations; *head* obtuse; *eyes* moderate; *ocelli* three; *thorax* carinated, the hinder margin rounded, the sides considerably deflexed; *elytra* very short, or almost wanting; *wings* also small, and inadequate for flight; *abdomen* solid, acuminate behind; *legs* moderate; posterior much longer than the body, their *femora* robust, and formed for leaping; *tibiæ* long, spinous; *tarsi* with a minute fleshy cushion between the claws.

This genus differs chiefly from *Locusta* by having the elytra and wings so extremely short as to be totally useless for assisting the animal in flight; the form of the thorax is also slightly different, the lateral carinæ being very faint; the insects also are more robust in proportion than the *Locustæ*, and the antennæ are more attenuated, and the body is glabrous, &c.

Sp. 1. *pedestris*. *Corpore livido incarnato, ventre flavicante, femoribus posticis subtus sanguineis, tibiis cærulescentibus annulo albido.* (Long. corp. 10—12 lin.)

Gry. *pedestris*. *Linné?*—Lo. *pedestus*. *Steph. Catal.* 302. No. 3336.

Of a livid flesh-colour, changing to a dirty hue after death; head with a small black streak behind the eyes; thorax slightly narrowed in front, with a distinct dorsal carina and two obsolete lateral ones, accompanied by a black line; the back of the thorax is inclined to brown and the sides to testaceous; abdomen somewhat brownish, with the edges of the segments in the male, and the under portion in both sexes yellow; legs testaceous-brown, with the hinder femora red beneath, and their tibiæ bluish, with a pale ring and pale spines, the apex of the latter brownish.

Scarce, but found occasionally at the end of July within the metropolitan district.

### GENUS IX. GOMPHOCERUS, *Leach*.

*Antennæ* rather long, slender at the base, consisting of numerous indistinct articulations, the apex more or less dilated, and, in the typical species, forming a spoon-shaped cavity; *head* rather attenuated, and with a shallow groove in front; *eyes* ovate, rather large; *ocelli* three; *thorax* elongate,

truncate in front, rounded behind, tricarinated, the lateral carinæ more or less angulated, the sides considerably and suddenly deflexed; *elytra* and *wings* ample, the former with the costa dilated in the males; *abdomen* solid, attenuated to the apex; *legs* moderate; posterior considerably elongated, their femora robust, compressed and formed for leaping; *tibiæ* slender, spinose; *tarsi* with a small cushion between the claws.

The elongate clavate antennæ of the insects of this genus at once point out their distinction from the other genera of this family, especially in the typical species, in which their apex is very considerably expanded and is hollowed out in form of a spoon, with a slight acute point at the end: in the other species this character is less apparent, but abundantly distinct from *Locusta* and *Podisma*; and from *Acrydium* also, from which its elongate *elytra* and short thorax—rounded behind—remove it: the species are rather of small size, and appear to frequent dry and sandy heaths.

Sp. 1. rufus. PLATE XXVIII. f. 6.—*Thorace cruciato, corpore brunneo-griseo, elytris griseis, abdomine subtus virescente-flavo, femoribus posticis subtus tibiisque rufis.* (Long. corp. 11—14 lin.)

Gry. rufus. Linné.—Donovan, v. xvi. pl. 482.—Go. Sowerbii. Steph. Catal. 302. No. 3337.

Above griseous-brown, sometimes varied with yellowish; head beneath yellowish; thorax with a black streak on each side; *elytra* in the male longer than the abdomen, dilated beyond the middle, immaculate, fuscous, but paler and more transparent on the hinder portion of the dilated costa; in the females nearly as long as the abdomen, and with a few dusky spots towards the hinder margin; abdomen beneath yellowish, above dusky at the base; legs reddish; anterior *tibiæ* yellowish; posterior red; posterior femora reddish-brown, red beneath, the base within with a dusky streak; antennæ longer in the male than in the female, the apex expanded and spoon-shaped, dusky, with the extreme tip, which is acute, white.

Slightly variable: in some examples the thorax has a white streak on each side within the black one.

Rather a local insect; found occasionally in abundance in the fields near the Red House, Battersea, in July and August.

Sp. 2. biguttatus. *Thorace cruciato; rufescente-fuscus, albido maculatus, ano rufo, elytris griseis serie longitudinali macularum fuscarum, lineolæque versus apicem albis.* (Long. corp. 6—10 lin.)

Gryl. biguttatus. Charpentier *Horæ Ent.* p. 166.—Gom. biguttulus. Steph. Catal. 302. No. 3339.—Gyl. biguttulus. Donovan, v. iii. pl. 79. f. 2.

Red-brown, spotted with whitish; head with a black line behind the eyes; thorax with the lateral carinæ strongly angulated, and whitish, with a black

line on each side; elytra griseous, with a longitudinal row of quadrate fuscous spots, interrupted towards the apex with a distinct white one; abdomen with the sides and base above black, the apex red; legs testaceous; posterior femora of a duller hue, with brownish spots, beneath greenish-yellow; knees black; tibiæ red, with the extreme apex fuscous.

Variable: in some examples there is a broad straight yellow streak extending from the crown to the base of the elytra; in others there is a similar mark, accompanied by two other paler ones, along the ridge of the elytra; again in some, the posterior femora are immaculate.

An extremely abundant insect on dry and sandy heaths throughout the metropolitan district, in July and August. "Carnarvon and Cambridge."—*C. C. Babington, Esq.*

Sp. 3. *elegans*. *Thorace cruciato; atro-fuscus, albo maculatus, ano lutescente, elytris pallide griseis, seriebus duabus longitudinalibus macularum fuscarum, lineolæque versus apicem albâ, femoribus posticis albo fuscatis.* (Long. corp. 10—12 lin.)

*Go. elegans*. *Steph. Catal.* 302. No. 3338.—*Gr. rufus*, var. *guttatus*. *Zetterstedt Orth. Succ.* 101?

Deep-brown, spotted with white; thorax with the lateral carinæ acutely angulated, and whitish, with a clear white dot at the base of each, with a black spot adjoining, and a second within the angle on each side; elytra pale griseous, with two rows of large quadrate deep fuscous spots on each, one in the middle of the disc, interrupted by a white dot, the other towards the suture, and, when the elytra are closed, placed on the back; anterior legs dull testaceous, with brown clouds; posterior femora dull testaceous, with yellowish and fuscous clouds without, and two white fasciæ towards the apex within; tibiæ yellowish-white, with the apex brownish.

Apparently a scarce species: it occurs on Ripley and Cobham Heaths in July.

Sp. 4. *ericetarius*. *Thorace cruciato; rufescens, ano pallidiore, thorace utrinque vittâ nigrâ, elytris pallidis serie longitudinali macularum fuscarum, tibiis ferrugineis, apice fusciscentibus.* (Long. corp. 6—9 lin.)

*Go. ericetarius*. *Leach MS.*—*Gom. ericetarius*. *Steph. Catal.* 302. No. 3342.

Reddish, or flesh-colour; thorax with the lateral carinæ strongly angled, pale, with an adjoining black streak on each side; elytra pale, with a single central longitudinal row of indistinct fuscous spots; abdomen dusky, with the apex pale; legs testaceous; hinder femora dusky, with brown clouds; tibiæ ferruginous, with the extreme apex brownish.

Also found on heaths like its congeners, and not uncommon in the vicinity of the metropolis in July.

Sp. 5. *calidoniensis*. *Thorace cruciato, rufescens, ano pallido; abdomine supra nigro, elytris griseo-fuscis immaculatis; geniculis posticis fuscis.* (Long. corp. 7—8 lin.)

Gen. *calidoniensis*. *Leach MS.—Steph. Catal. 302. No. 3341.*

Reddish; thorax immaculate, with the lateral carinæ considerably angulated and palish; elytra griseous-brown, immaculate, with two faint palish clouds on the disc; abdomen black above, with the apex reddish; legs pale testaceous, the hinder femora with some dusky clouds, and the knees also dusky; tibiæ testaceous.

Taken in the island of Iona, and in other parts of Scotland, by Dr. Leach, in July.

Sp. 6. *apricarius*. *Thorace tricarinato, carinis lateralibus angulatis; viridifuscus, thorace utrinque lineâ atrâ, elytris pallidis, in mare immaculatis, in femina maculis fuscis, antennis thorace duplo longioribus, subcompressis.* (Long. corp. 8—10 lin.)

Gryll. *apricarius*. *Zetterstedt Orth. Suec. p. 91.—Go. apricarius. Steph. Nomen. 2d edit. col. 110.*

Thorax tricarinated, the lateral carinæ angulated; of a greenish-brown, with a black streak on each side of the thorax; elytra pale, immaculate in the male, and spotted with brown in the female; legs testaceous-brown, with the knees concolorous; posterior tibiæ pale; the hinder femora with an oblique distinct black line; antennæ rather long and somewhat compressed; fuscous, with the base testaceous.

Rare in England: inhabits the metropolitan district in the autumn.

†Sp. 7. *sibiricus*. *Thorace gibboso; griseo-nebulosus, elytris hyalinis, femoribus posticis griseo nigroque maculatis, subtus flavis; tibiis anticis in maribus ovato-clavatis, crassis.* (Long. corp. 8½—10 lin.)

Gryll. *sibiricus*. *Linné.—Go. sibiricus. Steph. Catal. 302. No. 3343.*

Obscure griseous-brown, slightly clouded; thorax gibbous, faintly carinated; elytra hyaline; posterior femora spotted with griseous and black, yellow beneath; anterior tibiæ in the male ovate-clavate, thickened, simple in the female.

This singular insect is in Mr. Hope's rich collection: taken on the hills near Netley.

#### GENUS X.—ACRYDIUM, *Fabricius*.

*Antennæ* filiform, short, somewhat approximating, inserted beneath the eyes, consisting of about fourteen or sixteen articulations; *head* acuminate in

front; *eyes* globose, slightly prominent; *ocelli* three; *moult* placed in a hollow in front of the sternum; *forehead* with a grooved keel; *thorax* carinated, its hinder margin produced to, or beyond, the extremity of the abdomen, and terminating in a point; *elytra* extremely short, appearing distorted, and resembling oval scales; *wings* sometimes ample, at others rudimentary; *abdomen* solid, conical, without an exerted ovipositor; *legs* glabrous, anterior short, posterior longer than the body, with the femora robust, and formed for leaping; *tibia* spinulose, anterior with some spines at the apex only; *tarsi* without a cushion between the claws.

The Acrydia are well known by their elongated prothorax, which in one of the species extends backwards beyond the apex of the abdomen, and in the others reaches almost to its extremity; exclusively of this prominent character, however, they may be distinguished with facility by their minute elytra, and by the absence of the pulvilli, or foot-cushions, between the claws; their wings consist of many longitudinal folds, and their costal edge is broadly coriaceous. As to the number of species which are indigenous I am utterly at a loss to define them, as far too much uncertainty exists upon that point: prior to the appearance of my Catalogue it was supposed that there were four species found in Britain, but in the Catalogue I was induced to sink two and add one, thereby leaving only three; since that time Mr. Curtis has published on the genus, and thinks there may be four species—one new; but, long anterior to the publication of my Catalogue, Zetterstedt, in his Orthoptera Suecica (1821)—a work I have only recently seen—described as different no less than eighteen, all of which I possess; which Charpentier, in his Horæ Entomologica (1825) reduces to two, considering Zetterstedt's first six species as one, and the other twelve as another. More recently, Serville (in 1831) has made about eight species, corresponding with specimens found in this country. In the face, therefore, of such conflicting opinions amongst authors who have expressly devoted themselves to the study of the Orthoptera, viz. Zetterstedt, Charpentier, and Serville, it would be ridiculous for me to attempt the solution of the question, especially as I have scarcely attended to the peculiarities of the genus beyond the occasional capture of some of the more conspicuous varieties: I shall, therefore, merely introduce as species those given in the second edition of my Nomenclature, adding, from Zetterstedt, brief characters of the assumed varieties, so far as I possess them.

A. *Thōrax* with the keel slightly elevated, the produced hinder portion extending beyond the abdomen; *wings* ample; *stature* narrow.

Sp. 1. *subulatum*. *Obscure testaceo-fuscum, tibiis pallidis fusco-maculatis, corpore angustato, prothorace posticè productá ultrà apicem abdominis.* (Long. corp. 4—8 lin.)

Gryl. *subulatus*. *Linné.*—Ac. *subulatum*. *Steph. Catal.* 302. *No.* 3344.—*Curtis, v. x. pl.* 439.

Dull testaceous-brown, minutely shagreened; body slender, thorax produced behind beyond the apex of the abdomen, rather abruptly narrowed at the base, and somewhat linear behind; *tibiæ* pale, spotted with brown; *wings* ample.

Var.  $\beta$ . Ac. *pallescens*. *Zett. O. S.* 109.—Ac. *bipunctatum*. *Panzer, v. f.* 18. *Tet. Panzeri. Serville Encl. v. x. p.* 599. *No.* 2.—Fuscous, with the base of the antennæ, the crown and the back of the thorax, nearly entirely dull ochreous; on the latter beneath the angle of the shoulders is a somewhat lunate-triangular black spot; posterior femora testaceous.

Var.  $\gamma$ . Ac. *marginatum*. *Zett. O. S.* 110.—Griseous-brown, with the base of the antennæ, the lateral ridges of the thorax, and a longitudinal streak on the hinder femora without, yellow.

Var.  $\delta$ . Ac. *humerales*. *Zett. O. S.* 111.—Fuscous or griseous; thorax in the middle with a large transverse whitish blotch, and a black triangular spot on each side beneath the shoulders; posterior femora with a testaceous band.

Var.  $\epsilon$ . Ac. *dorsata*. *Zett. O. S.* 112.—Dull-brown, with a broad whitish-yellow streak on the central keel of the thorax, and on each side an abbreviated waved longitudinal black line.

Var.  $\zeta$ . Ac. *bimaculatum*. *Zett. O. S.* 114.—Brown; thorax with an oblique yellow patch on the angle of the shoulder, and terminated beneath by a somewhat triangular black spot.

In addition to these, various intermediate varieties occur both in colour and markings.

Not uncommon from the early spring till towards the end of autumn in certain situations; frequent in Battersea fields; also at Ripley, Hertford, Darent and Coombe woods, the vicinity of Whittlesea Mere, the New Forest, &c.

B. *Thōrax* with its dorsal keel considerably elevated; its produced hinder portion not so long as the abdomen; *wings* moderate or abbreviated; *stature* robust.

Sp. 2. *bipunctatum*. *Corpus robustum, rufescenti-testaceum aut fuscum, sæpè variegatum, thorace in medio utrinque macullâ obliquâ nigrâ; alis elongatis.* (Long. corp.  $3\frac{1}{2}$ —6 lin.)



*Gryl. bipunctatus.* *Linné.*—*Ac. bipunctatum.* *Steph. Catal.* 303. No. 3345.

Wings ample, as long as the produced apex of the thorax; body robust, generally reddish-testaceous or brown, and occasionally variegated with griseous or ochreous; thorax with two more or less distinct black spots, placed obliquely a little behind the shoulders; legs reddish-testaceous, or griseous, a little clouded with brown occasionally.

No two examples are found precisely alike: the following varieties have been described as distinct by Zetterstedt and others:—

Var.  $\beta$ . *Ac. laterale.* *Zetter. O. S.* 118.—Fuscous, with the head dusky, thorax reddish, the deflexed lateral lobes yellow, the back on both sides with an oblique black spot.

Var.  $\gamma$ . *Ac. ephippium.* *Zetter. O. S.* 118.—Reddish, the thorax with a broad ochreous humeral fascia, terminated in front by a small streak-like spot, and behind by two ordinary black spots.

Var.  $\delta$ . *Ac. binotatum.* *Zetter. O. S.* 119.—Variegated with ashy and brown, the elevated keel on the thorax testaceous, with a white patch on both sides, terminated anteriorly and posteriorly as in var.  $\gamma$ .

Var.  $\epsilon$ . *Ac. cristatum.* *Zetter. O. S.* 120.—Griseous-brown, with the carinæ on the front and vertex, and the central one of the thorax yellow; the thorax spotted as usual.

Var.  $\zeta$ . *Ac. vittatum.* *Zetter. O. S.* 121.—Fuscous, variegated with griseous, the crown and central thoracic keel yellow, the disc of the thorax with an abbreviated waved longitudinal black line, on each side.

Var.  $\eta$ . *Ac. zonatum.* *Zetter. O. S.* 124.—Dusky-black, with a broad waved white band on the thorax, in which are two very obscure dusky spots, and a flexuous fascia on the outer edge of the femora whitish.

Var.  $\theta$ . *Ac. obscurum.* *Zetter. O. S.* 125.—Brown, or dusky-black; thorax, on both sides, with an oblique black spot, with a triangular white one towards the head; the hinder femora with a pale streak without.

Var.  $\iota$ . *Ac. ochraceum.* *Zetter. O. S.* 124.—Fuscous, with the legs variegated with testaceous; above ochreous; the thorax with the deflexed lobes brown or pitchy, the disc on each side with a lateral triangular black spot.

Var.  $\kappa$ . *Ac. hieroglyphicum.* *Zetter. O. S.* 125.—Fuscous, spotted with testaceous; thorax with four rather distinct black ziczac streaks and dots, placed irregularly; the deflexed lateral lobes with the apex testaceous.

Var.  $\lambda$ . *Ac. scriptum.* *Zetter. O. S.* 126.—Fuscous or ashy; back of the thorax on each side anteriorly with a black incurved crescent-like line, and behind this the ordinary spot, having a slight tooth behind, and thus becoming bifid; on the hinder portion are some brown streaks and spots disposed somewhat in lines.

Var.  $\mu$ . *Ac. variegatum*. *Zetter: O. S. 127*.—Variegated with ashy, fuscous, and black; thorax as in var. *a*; the hinder femora with a whitish fascia on the outer edge.

Numerous intermediate varieties occur; and I suspect that *Ac. nigricans* is referrible to this species.

Frequents nearly the same places as the preceding species, and during the entire summer, appearing towards the end of spring, and continuing till the autumn.

Sp. 3. *nigricans*. *Corpus subrobustum; atrum vel fuscum, sæpè variegatum, thorace utrinque maculâ triangulari atrâ; alis abbreviatis*. (Long. corp. 4—6 lin.)

*Ac. nigricans*. *Sowerby B. M. v. i. pl. 74*.—*Ac. brevipenne*. *Steph. Catal. 303. No. 3346*.

Body somewhat robust; deep black or dusky, sometimes variegated; thorax behind slightly exceeding the abdomen in length, with a more or less distinct triangular black spot on each side behind the middle; wings abbreviated.

Almost all the varieties described under *Ac. bipunctatum* occur in this species, which appears chiefly to differ by having the thorax longer, and the wings shorter and very small.

Taken at Hertford, Ripley, in Battersea fields, Hants, &c., throughout the summer.

### FAMILY III.—ACHETIDÆ, *Leach*.

*Tarsi* three-jointed; *antennæ* elongate, setaceous; *head* large; crown convex; *eyes* ovate; *ocelli* two or three; *thorax* truncate in front, and receiving the head, which is inserted nearly to the eyes; *elytra* horizontally incumbent, with the sides suddenly deflexed, with an acute ridge at the angle, the disc veined, and dissimilar in the sexes; *body* elongate; *breast* without laminated appendages; *wings* considerably folded longitudinally, and terminating in a kind of subulated tail; *abdomen* cylindric, with two exarticulate, setaceous, elongate, villose processes, or styles; *legs* rather stout, especially the posterior, and their *femora*; the hinder *tibiæ* spinose, robust; *tarsi* without foot cushions between the claws.

This is a limited family, and embraces only three indigenous genera, which are no less remarkable from their aspect and habit than from the singularity of their form and manners, as more particularly detailed under their respective genera: from the *Locustidæ* (which have three-jointed tarsi) their elongate setaceous antennæ,

exclusively of their robust bodies, their horizontally incumbent elytra, elongate subulate wings, semicylindric thorax—which is destitute of carinæ—elongate caudal appendages to the abdomen, &c. manifestly remove them, in addition to their habits. In some instances the females have an exerted ovipositor, and in all cases the elytra differ in the sexes.

The indigenous species are divisible into the following genera, which may be thus hastily distinguished:—

- Pedes* antici dilatati; *thorax* ovatus: . . . . . 11. GRYLLOTALPA.  
 simplices, haud dilatati;  
*Thorax* transversus; *antennæ* remotæ: . . . . . 12. ACHETA.  
 elongato-quadratus; *antennæ* appropinquantes: . 13. ÆCANTHUS.

GENUS XI.—GRYLLOTALPA, Ray.

*Antennæ* inserted before the eyes, shorter than the body, setaceous, consisting of upwards of sixty indistinct articulations; *head* somewhat conic, nutant; *eyes* exerted, small; *ocelli* two, minute; *thorax* subovate and somewhat cylindrical; *elytra* abbreviated, partially incumbent on each other, with the humeral portion deflexed, veined; areolets dissimilar in the sexes; *wings* ample; *abdomen* robust, flat below, furnished at its apex, in both sexes, with a setaceous pilose process on each side; the female without an exerted ovipositor; *legs* stout, compressed, anterior formed for digging, their *femora* beneath with a sharp compressed tooth at the base, and the *tibiæ* palmate, the apex divided vertically into robust teeth;\* the *tarsi* compressed and trigonate, inserted on the side of the tibia; intermediate *legs* moderate; posterior with rather long and thickened *femora*, and the four hinder *tibiæ* short and armed with spines towards the apex.

The insects of this singular genus, known by the name of “*Mole-crickets*,” may be instantly recognized by their extraordinary palmated anterior legs, which do not unaptly represent the fore-feet of the animal whence their peculiar appellation is derived: they are amongst the largest of the indigenous insects; they subsist on the roots of plants, and are said to be very destructive in some gardens: the female deposits her eggs in a large oval cell, to the amount of

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\* Mr. Curtis says four, but that is a *specific* difference, not a *generic* character; inasmuch as *Gryll. didactyla* (a South American species), which is sometimes improperly placed in English collections, is furnished with two teeth only at the apex of the tibiæ.

300: they are round, and of a shining yellowish-brown, and are excluded in about three or four weeks.

The sexes, as pointed out by Zetterstedt in his Orthoptera Succica in 1821, differ in the neuration of the elytra, as do the other genera of the family to which the mole-crickets appertain: they rarely fly, and the male makes a not unpleasant chirping sound by the friction of its elytra: they burrow with great rapidity by means of their strong anterior legs.

Sp. 1. vulgaris. *Tomentosa, supra fusca, subtus ferrugineo-flavescens, tibiis anticis quadridentatis, alis elytris duplo longioribus.* (Long. corp. 1 unc. 10 lin.—2 unc. 3 lin.)

Gry. gryllotalpa. *Linné.*—Gryllot. vulgaris. *Steph. Catal.* 303. No. 3347.—*Curtis, v. x. pl.* 456: an elegant figure.

Above brown, beneath testaceous, or rusty-yellowish, entirely clothed with a fine velvety pile: margins of thorax fulvous; elytra dull whitish-yellow, or ashy, with the costa and base brownish, and the nervures dark likewise; wings whitish, slightly iridescent, with the costa, a longitudinal streak through the disc, and the anterior nervures, brown; anterior tibiæ furnished exteriorly with four teeth; of a pitchy hue, the tibiæ themselves being of a chestnut hue.

The sexes, as stated by Zetterstedt in 1821, differ in the neuration of the elytra, the disc in the male being more closely reticulated with nervures, and during repose, in this sex, the right elytron laps over the left.

This insect is not very abundant, but still cannot be considered rare, at least in the south of England; it frequents meadows, fields, boggy places, the rich mould of garden grounds, &c.: the female, towards the beginning of May, forms her cell about six inches beneath the surface, in which she deposits her eggs, and the young are hatched in less than a month, and do not assume their final state till about the end of the succeeding May: they occur in many places within the metropolitan district, and I have taken them near Ripley; they are also found in Devonshire and Cornwall: it has been supposed to be the cause of the "Will o' the wisp," but I think erroneously, as those specimens that I have kept alive have shown no appearances of phosphorescence; and the effects of electrochemical phenomena are amply sufficient to account for the one in question, which, like many other natural events, appears to have been enveloped in mystery, from the proneness of mankind to hazard theoretical opinions.

GENUS XII.—ACHETA, *Fabricius*.

*Antennæ* inserted close to the eyes, remote at their base, consisting of upwards of 100 articulations, and longer than the body; *head* large, rounded, somewhat transverse; *eyes* lateral, slightly exserted; *ocelli* three, rather obsolete; *thorax* transverse-quadrangle, flat above; *elytra* flat, horizontally incumbent, irregularly veined in the males, and abruptly inflexed towards the humeral angle; *wings* ample, or wanting; *abdomen* rather stout and short, its apex with two slender elongate pilose styles, and in the female with a long porrected ovipositor; anterior *legs* short and simple; posterior nearly as long as the body, with their *femora* thickened, the *knees* swollen, and the *tibiæ*, with a double row of moveable spines.

Unlike the *Gryllotalpæ*, these insects have the anterior legs very slender, and not materially dissimilar to the second pair; but the hinder pair are elongated, and have incrassated femora, as in the *Locustæ*: the head is very broad, and the antennæ are remote at their origin; the thorax is short and transverse; the females have a long exserted ovipositor: the eggs are deposited either in a cell under the surface of the earth, or in holes in old kitchen walls; in constructing which they are assisted by their powerful jaws: the eggs are hatched in about a fortnight or three weeks, and the imago (at least in the domestic species) appears in about three or four months: all the species are remarkable for their loud chirping noise.

Sp. 1. *campestris*. *Niger, nitidus, capite thorace majore, elytris griseo-fuscis, nigro-reticulatis, ad basin et externè dilutioribus, obscuro-flavescentibus, femoribus posticis suprâ sanguineis.* (Long. corp. 1 unc. 4—8 lin.)

*Gryl. campestris.* *Linné.*—*Sowerby B. M. v. i. pl. 64.*—*Ac. campestris.* *Steph. Catal. 303. No. 3348.*

Robust; deep shining black; head larger than the thorax, the latter nearly twice as broad as long, rather widest in front; *elytra* griseous-brown, irregularly reticulated with black nervures; the base and inner side palest, or dull yellowish; wings small, much shorter than the *elytra* in the male, but longer in the female; posterior femora beneath blood-red at the base. The ovipositor in the female is nearly as long as the abdomen, and ascends; and the *elytra* are deep black and regularly reticulated.

This is a rare species, at least, I would rather say, is but seldom captured, on account of its extreme shyness; but I am inclined to believe that it is far from uncommon in several parts of the south of England: it has been found in the vicinity of London and at Windsor, in the New Forest, Devonshire, Cornwall, &c., but I

believe not towards the north; on the continent it does not occur beyond the latitude of York: it is found in June and July, frequenting holes in dry soils, the male making a very loud chirping by day as well as by night.

Sp. 2. *sylvestris*. *Apterus, ochreo-ferrugineus, capite atro orbitis maculâque frontali ochreis, thoracis disco pallido minutim nigro punctato, elytris brevissimis piceis.* (Long. corp. 9—11 lin.)

Ac. *sylvestris*. *Fabricius.—Steph. Catal. 303. No. 3349.—Curtis, v. vii. pl. 293.*

Apterous; rusty-ochreous; head black, shining, with the orbits of the eyes and a patch on the face pale tawny, or ochreous; thorax black, slightly pilose, the disc spotted with black; elytra about two-thirds the length of the abdomen, pitchy, with the principal nervure and the base pale; abdomen black, with two pilose styles at the apex; legs variegated with black.

Female with the elytra very short, dirty-ochreous, with the sides and nervures pitchy.

I obtained this insect above twenty years since from Mr. D. Bylder, who discovered it in the New Forest, in the vicinity of Lyndhurst, the second year that he found the indigenous Cicada; since that period it has been again found in the same neighbourhood, and I obtained many specimens from a collector, whom I employed in the years 1820 and 1821, from the vicinity of Brockenhurst; also in the New Forest.

Sp. 3. *domesticus*. *Cinereo-glaucus, glaber, thorace posticè truncato, alis elytris longioribus.* (Long. corp. 9—14 lin.)

Gryl. *domesticus*. *Linné.—Donovan, v. xi. pl. 409.—Ac. domesticus. Steph. Catal. 303. No. 3350.*

Shining glaucous ash, scarcely tomentose; head pitchy-black, very glossy, with whitish transverse lines; thorax truncate in front and behind, with a fine dorsal channel; the disc slightly pilose, and with three triangular blackish spots; elytra scarcely so long as the abdomen, in the male with a large pellucid space, in which the nervures run very irregularly, the apex alone reticulated as usual, as the entire disc is in the female; wings whitish, with the costa and a streak near the apex brownish; abdominal styles pale and pilose; ovipositor of the female about half the length of the body, somewhat clavate at the apex; legs pilose; posterior femora very glossy within.

This, which is the “*domestic cricket*” that most persons have heard, though few have seen, occurs in plenty in kitchens, bake-houses, and in other warm situations, existing positively within a few inches of the fiercest domestic fires; it is very impatient of cold; is

fond of all sorts of kitchen refuse, crumbs of bread, yeast, &c.; also of milk, broth, water, wet linen, woollen stockings, &c., in which last it will frequently gnaw holes, while they are also not uncommonly found drowned in vessels of beer and the like: when numerous, they are very destructive, as, by means of their powerful mandibles, they burrow away the mortar from between the bricks, and thus at times open a communication from one house to another: although very active, they rarely fly, except when they wish to change their residence: it is said that they may be extirpated from situations where they are troublesome by making a loud noise, or by the introduction of *Ac. campestris*, but in this country this latter remedy cannot readily be adopted, from the rarity of the insect just alluded to.

GENUS XIII.—ÆCANTHUS, *Serville*.

*Antennæ* approximating at the base, setaceous, longer than the body; *head* oblong-ovate, deflexed; *palpi* four, terminal joint cylindric; *mandibles* stoutish, bi- or tridentate at the apex; *eyes* oblong; *thorax* somewhat convex above, of an elongate-quadrate form, and a little deflexed behind; *elytra* incumbent, longer than the abdomen, oval, with numerous impressed striæ, and three distinct decussating ones; *wings* rounded, without a tail; *abdomen* oblong, furnished at the apex, in the males, with elongate styles, and in the females with a filiform ovipositor, which is nearly straight, being but slightly recurved at its apex; *legs* long and rather slender, posterior longest, the *femora* simple, the *tarsi* with two rows of minute spines.

One indigenous species only is known of this curious genus, which differs from the foregoing in having the antennæ approximating at the base, the thorax somewhat longer; the elytra larger, and exceeding the abdomen in length, the latter being oblong, and furnished at the apex, in the females, with a very long ovipositor.

†Sp. 1. *Italicus*. *Virescente-albidus, oculis atris, elytris hyalinis, abdomine subdiaphano*. (Long. corp. 9 lin.)

*Ac. Italicus*. *Fabricius*.—*Steph. Catal.* 303. No. 3351.—*Aphelomera Italica*. *Steph. Nomen*. 2d edit. col. 111.

Of a greenish-white, with black eyes; abdomen oblong, whitish, diaphanous; elytra hyaline, somewhat yellowish towards the apex; wings transparent white; legs also diaphanous white.

Of this singular insect I have seen one imperfect example only, which was taken by my late friend Mr. Haworth, near Halvergate in Norfolk, many years since, and is now in Mr. Westwood's cabinet.

FAMILY IV.—BLATTIDÆ, *Stephens.*

*Body* broad and flat, oval; *antennæ* very long and setaceous, consisting of from 50 to 150 minute articulations; *head* somewhat triangular, often concealed beneath the front of the thorax; *maxillary palpi* elongate, with the terminal joint somewhat securiform; *eyes* kidney-shaped; *ocelli* obsolete; *thorax* rounded, nearly transverse, margined; *elytra* lapping over on the inner margin, the apex slightly gaping, as long as the wings, and frequently longer than the *abdomen*, the latter flat above, convex beneath, terminated at the apex with two jointed moveable processes, and occasionally also with two inarticulate styles; *legs* compressed, formed for running; *tibiæ* very spinous, the spines moveable; *tarsi* five-jointed.

The disagreeable insects comprised in this family, called “*Cock-roaches*,” differ from the true Orthoptera by having the tarsi five-jointed; the body also is ovate, depressed, the head concealed beneath the front of the thorax, the legs all formed alike, compressed, with very spinous tibiæ, the spines themselves being moveable; the apex of the abdomen is furnished with two porrect articulated processes, in addition to two styles that are frequently present; the sexes chiefly differ in the number of segments to the abdomen, being

GENUS XIV.—BLABERUS, *Serville.*

*Antennæ* moderate; *head* nutant; *thorax* with its anterior margin rounded and entire, completely concealing the head; *elytra* gradually rounded on the lateral margin, and not suddenly narrowed towards the apex, the disc with a curved stria: *body* elongate, ovate, glabrous; *abdomen* with its terminal segment moderate and unarmed, but furnished with the usual appendages; *legs* rather moderate in length; *tibiæ* with long spines without; *tarsi* with the basal and terminal joints elongate, the intermediate stout, and each of equal length; the *claws* without any cushion between them.

The want of a cushion between the claws is a leading mark of the separation of this genus from the other assumed indigenous ones of this family, to which other characters might be added, as the relative proportions in the joints of the tarsi, &c.

†Sp. 1. *giganteus*. *Lividus*; *thoracis clypeo maculâ quadratâ fuscâ*. (Long. corp. 2 unc. 1—2 lin.)

Bl. *gigantea*. *Linné*.—*Pantologia* (!)—*Shaw*, *General Zoology*, v. vi. pl. 41 (!)  
*Steph. Catal.* 303. No. 3352, note.

Livid: thorax with a large fuscous spot on its disc.

In the *Pantologia* (article *Blatta*) this large insect is stated to be British, but



eight in the males, and six or seven in the females, and the last sex has the terminal segment sometimes keeled: the eggs of these insects are compound, that is, they are enclosed in an oblong case,

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I believe that it is a native of South America and the West Indies: certain it is that specimens have been found in England, as in Mr. Beck's cabinet are several examples which he found in the West India Docks; but it is evident from that they have no pretensions to be considered British. In Shaw's General Zoology, it is supposed, by a quotation from Mouffett, that a specimen once occurred in the tower of a church at Peterborough, but the vagueness of the description renders the story improbable.

#### GENUS XV.—BLATTA, *Auctorum*.

*Antennæ* glabrous, very long, inserted in an excavation near the eyes; *head* nutant, nearly concealed beneath the anterior margin of the thorax; *eyes* depressed; *thorax* rounded in front, slightly waved behind; *elytra* with a shallow curved channel towards the base, the apex sometimes truncate; males with wings, females generally destitute thereof, and in some instances wanting *elytra*; *body* glabrous and shining, of a soft consistence, much depressed above; *abdomen* in the males furnished at the apex with two articulated processes and two styles; *legs* slender, long, especially the posterior; the hinder *femora* and all the *tibiæ* armed with spines, the former below and the latter on the outside; *tarsi* with the basal joint as long as all the others united; *claws* with a more or less evident puvillus, or cushion, between them.

From the preceding genus these insects may be known by having a cushion between the claws, exclusively of other differences; and from *Ectobius* they differ not only by having the basal joints of the tarsus as long as the four remaining joints, the femora more or less spinose beneath, but in being of a much larger size, &c.; they are most voracious insects, and devour all kind of animal and vegetable substances that they can obtain: they are extremely destructive in kitchens, bakehouses, on board ship, &c.: they are probably the most active of insects, running from the light, which they detest, when suddenly disturbed, with inconceivable velocity; they are, consequently nocturnal insects, and the common species, *Bl. orientalis*, abounds so in some underground apartments in London, as literally to cover the floor, within a few minutes after the lights are extinguished.

Sp. 1. Maderæ. *Fusca, thorace elytrisque lividis fusco variegatis*. (Long. corp. 1 unc. 6—10 lin.)

*Bl.* Maderæ. *Fabricius*.—*Donovan, v. xiii. pl. 457 (!)*—*Steph. Catal. 304. No. 3354, note.*

having a ridge on one side, whence the young larvæ escape. The indigenous species are divisible into the following genera:—

<i>Pulvilli</i> intra unguis nulli :	.	.	.	.	.	14. <i>BLABERUS</i> .
					conspicui :	
<i>Tarsorum</i> art. basali reliquis longiori :	.	.	.	.	.	15. <i>BLATTA</i> .
					breviori :	16. <i>ECTOBIUS</i> .

Head greenish-brown; antennæ dusky; thorax livid, with irregular fuscous spots; elytra also livid, elegantly veined longitudinally, and thickly adorned from before the middle with raised transverse lines, placed somewhat irregularly; these lines are broadly fuscous, and produce a variegated appearance; the base is plain in colour, but is ornamented with a longitudinal fuscous streak on the angle of the elytra, and a curved one extending to the suture, before the middle; the body beneath and legs are slightly testaceous.

This fine insect, which is a native of Madeira and the adjoining islands, has been frequently taken in London, but like the other species of the genus is not indigenous.

Sp. 2. *Americana*. *Ferruginea, thoracis clypeo posticè fasciâ exalbidâ, elytris alisque abdomine longioribus, apice rotundatis*. (Long. corp. 1 unc. 5—8 lin.)

Bl. *Americana*. *Linné*.—*Shaw, Gen. Zool. v. vi. pl. 41 (!)*—*Steph. Catal. 304. No. 3355, note*.

Ferruginous; head with a whitish spot on each side between the antennæ; eyes dusky; thorax with a waved whitish fascia on the hinder margin (which is a little sinuated), sometimes emitting a branch on each side, which extends round the entire margin, and a second in the middle, forming a longitudinal streak, and united to the other two on the anterior edge, leaving only two large ferruginous spots on the disc; elytra of a brownish tinge, prettily veined, and with the interstices transversely strigose; the apex rounded; abdomen paler, with the terminal segment rounded in the male, and glabrous, carinated and pilose in the female, its apex furnished with two processes of about fourteen joints, and also the usual styles; legs pale testaceous; femora and tibiæ with dusky spines.

Found occasionally in warehouses and outbuildings, by the side of the Thames, especially below London Bridge; it is a native of America, and has evidently been brought into this country, and is consequently not an indigenous production.

Sp. 3. *orientalis*. *Ferrugineo-fusca, thorace concolore, elytris alisque abdomine brevioribus, apice subtruncatis; fœmina aptera elytrorum rudimento*. (Long. corp. 8—14 lin.)

Bl. *orientalis*. *Linné*.—*Wood, Gen. v. i. pl. 31*.—*Steph. Catal. 304. No. 3353, note*.

GENUS XVI.—ECTOBIUS, *Westwood*.

*Antennæ* glabrous, very slender; *head* nutant; *thorax* rounded in front, and concealing the head, slightly produced in the middle behind; *eyes* small; *elytra* in the males as long as the abdomen, with a single curved channel towards the base; *wings* generally complete in both sexes; *body* oblong, more or less depressed above, mostly glabrous, sometimes slightly pubescent above; *abdomen* of the males furnished at the apex with two jointed processes only, but destitute of styles; in the female the terminal segment is not carinated beneath; *legs* moderate, posterior rather the longest; *femora* rarely with spines beneath; *tibiæ* with spines on the outer edge; *tarsi* with the three basal joints gradually diminishing in length, the basal one not so long as the four others united; *claws* without a cushion between them.

This genus embraces all the truly indigenous species of "Cockroach," though probably the first two of those, hereafter given, may have been introduced as there surmised: they differ not only in their smaller size and paler tints from *Blatta*, but from having the tarsi dissimilar in the proportions of the joints, the basal one being shorter than the remainder united; the males are not furnished with styles at the apex of the abdomen, and both sexes are generally winged: all but the first two occur beneath the bark of trees.

Rusty-brown, somewhat obscure; head with a white dot between the eyes on each side; *thorax* immaculate; *elytra* abbreviated in the male, truncate at the apex, longitudinally veined and transversely strigose, as in the preceding species; *wings* small, whitish, with the costa fuscous; female without wings, and with the rudiments only of *elytra*; *abdomen* and appendages as in *Bl. Americana*: *legs* ferruginous, with concolorous spines; *tarsi* testaceous; *pulvilli* (or cushions) minute.

Like the foregoing insect this has been introduced into this country, and is not, therefore, an aboriginal native: it occurs, however, in houses, especially in London and in maritime commercial towns, in utter profusion, swarming by myriads in some of the underground apartments of the metropolis: it is a native of India, and has not only been introduced into this country through the aid of commerce, but into most other European ones; it appears not to have reached Sweden till about a century back (1734 or 1739), having been introduced from Russia; but it has been known in Britain twice as long, being common in wine cellars in London "*Londini apud nos in cellis vinarijs,*" according to Mouffett, whose "*Theatrum*" was published in 1634.

Sp. 1. *germanicus*. *Lividus*, *antennis articulo basali excepto, oculis, thoracisque lineis duabus parallelis, nigris*. (Long. corp. 9—10 lin.)

Bl. *germanica*. *Linné*.—*Donovan*, v. x. pl. 341.—*Steph. Catal.* 304. No. 3356.

Head yellow, with a dusky streak between the eyes, the latter black; antennæ, except the basal joint, which is yellow, the same; thorax livid, very glossy, with two longitudinal parallel black lines, neither touching the anterior nor posterior margins; scutellum and elytra livid, immaculate, the nervures single in the middle of the costa, furcate towards the apex, and reticulated on the inner margin; wings whitish at the base, the apex and nervures dusky; abdomen yellow, with the region of the stigmata dusky or pitchy; legs yellow, immaculate; femora beneath and tibiæ on the outside with concolorous spines.

It is extremely doubtful whether this insect be really indigenous: I feel inclined to decide against its admission, as it appears to be confined, at least in this country, to dwellings and warehouses; and it unquestionably occurs, not uncommonly, in merchant vessels: it is said to inhabit the woods of India; but it occurs in various parts of Europe: in England it has been found about and in London, Portsmouth, Plymouth, &c.

Sp. 2. *pallens*. *Pallide-testaceus, nitidus, thorace flavo-testaceo lurido, toto immaculato, oculis atris*. (Long. corp. 8½ lin.)

Bl. *pallens*. *Steph. Catal.* 304. No. 3357.—Bl. *lucida*. *Hagenb. Symb. Faun. Helv.* 18. f. 9?

Above pale-testaceous, and shining; beneath of a paler hue, and immaculate; thorax very glossy, and of a fine testaceous-yellow, also immaculate; eyes deep black; legs pale testaceous, with the femora beneath and the tibiæ on the outside armed with concolorous spines.

Charpentier considers this insect (that is, if it be synonymous with Bl. *lucida* of Hagenbach) to be a variety of the foregoing; but its jet black eyes, and totally immaculate glossy thorax, appear to form sufficient characters of distinction: however, upon this point I am uncertain, having only my own dried specimen to assist me: it nevertheless appears to differ in form.

My example of this insect was taken near London.

Sp. 3. *lapponicus*. PLATE xxviii. f. 7.—*Elongato-ovatus, postice attenuatus, flavescens, thoracis disco maris, elytrorum atomis abdomineque in utroque sexû, nigris, pedibus piceis aut flavis*. (Long. corp. 7—8 lin.)

Bl. *lapponica*. *Linné*.—*Steph. Catal.* 304. No. 3358.

Elongate-ovate, attenuated behind; yellowish; head black, with the crown brownish; antennæ also black; thorax smooth, black, with the lateral margins broadly, and the anterior and posterior narrowly, pellucid yellow;

elytra longer than the abdomen, pellucid-yellow, thickly sprinkled with numerous minute dusky atoms, and with a few larger spots disposed longitudinally; wings slightly brownish; abdomen black, with the lateral margins yellow; femora slightly spined; legs posteriorly with the tibiæ and tarsi frequently paler, and the tips of the latter dusky or blackish. The female is rather less, shorter and paler, head obscure; base of the antennæ sometimes pale; thorax with the disc testaceous, the margins yellow; elytra scarcely as long as the abdomen, with the spots rather more distinct than in the male; abdomen broadish, pitchy or black, with the sides and margins of the segments yellow; legs yellow, with the apex of the tarsi, the claws and pulvilli black.

This appears to be a rare species in England: I once (in July 1827) took a pair in a wood near Albury in Surrey, and obtained it in the same season from the vicinity of Lyndhurst; and I do not remember to have seen other specimens elsewhere.

Sp. 4. *perspicillaris*. *Ovatus, flavescens, thoracis disco testaceo, elytris atomis, abdomineque supra fuscis, antennis pallidis.* (Long. corp. 6—7 lin.)

Bl. *perspicillaris*. *Fuesly* ?—*Steph. Catal.* 304. No. 3359.

Ovate, yellowish; thorax with the disc testaceous, the margins pellucid yellow; elytra with some distinct dusky spots disposed longitudinally, and numerous blackish atoms on the surface; abdomen above fuscous, with pale lateral margins, beneath blackish; legs pale yellowish-pitchy, with the knees paler; femora with a few spines within; wings fuscous, darkest at the apex.

Of this insect (which is supposed by Charpentier to be a variety of *Ec. lapponicus*) I have two examples—one taken in the neighbourhood of Lyndhurst; the other I obtained from the Marshamian collection.

Sp. 5. *Panzeri*. *Elongatus, pallide-ochraceo-flavescens, thoracis disco testaceo fusco, elytris pallidis lateribus membranaceo-pellucidis, disco ferè immaculato, antennis pedibusque piceis.* (Long. corp. 5—6 lin.)

Bl. *Panzeri*. *Steph. Catal.* 304. No. 3360.—Bl. *germanica*. *Panzer Faun. Germ.* ii. f. 16.

Slightly elongate, or elliptic; of a pale ochreous yellow; head dusky; mouth pale; thorax with its disc testaceous-brown, sometimes a little blackish, the margins pale and pellucid; elytra also pale, the lateral margins pellucid brownish-yellow, the disc with a few minute brownish atoms; abdomen beneath pitchy, above pale testaceous-brown; legs pale pitchy, the femora palest and without spines; antennæ also pitchy.

Found not uncommonly on the coast of Devonshire, near Kings-

bridge and Plymouth; also in Cornwall and in the New Forest, in June.

Sp. 6. *nigripes*. *Elongatus, ochraceo-flavesçens, thoracis disco antennis pedibusque nigris, tarsorum articulo basali coxisque albidis.* (Long. corp. 6 lin.)

*Bl. nigripes.* *Steph. Catal.* 304. No. 3361.

Elongate-ovate, or elliptic; ochreous-yellow, with a brownish tinge; head, antennæ, and eyes, black; thorax with its disc black, the margins pale testaceous and pellucid; elytra pale yellowish-brown, or ochreous, with some remote, somewhat indistinct, darker atoms on the disc, especially towards the apex; abdomen black beneath, dark brownish-ochre above, with a black streak on each side; legs black, with the coxæ pale ochreous, the base of the tarsi whitish; femora without spines.

This species also occurs, in June, in the New Forest, about Lyndhurst, and I believe also in Dorsetshire.

Sp. 7. *lividus*. *Brevis, latus, ovatus, pallide testaceo-flavus, immaculatus, oculis atris; abdominis basi nigro.* (Long. corp. 5—6 lin.)

*Bl. livida.* *Fabricius.*—*Samouelle, pl. 4. f. 17.*—*Steph. Catal.* 304. No. 3362.

Rather broad and short, ovate; pale testaceous-yellow; the head and centre of the thorax brighter; eyes deep-black; elytra pale immaculate; breast and abdomen beneath also very pale, the latter above black, with the sides, apex, and a fine margin to each segment, pale testaceous-yellow; legs very pale ochreous; femora with a few spines within; tarsi at the apex and claws dusky.

This species occurs beneath the bark of trees at Darenth and Birch woods in June, and I rather think in the vicinity of Dover.

Sp. 8. *pallidus?* *Brevis, sublatus, ovatus, pallide testaceo-brünneus, oculis atris, pleuris, abdominis lateribus infra, basi que supra nigris, elytris maculis aliquot brunneis.* (Long. corp. 4—5 lin.)

*Bl. pallida.* *Olivier?*—*Steph. Catal.* 304. No. 3363.

Short, rather broad and ovate; of a pale testaceous-brown; eyes deep black; thorax glossy, sometimes faintly varied with brownish atoms; elytra paler, also with some faint brownish atoms, and three or four rather conspicuous brownish spots; pleuræ, base of the abdomen, and a lateral streak on each side beneath black; legs very pale; femora with a few spines beneath.

I have received this insect from Devonshire, and it has occurred in the New Forest in June.

## ORDER IV.—NEUROPTERA.

*Wings* all membranaceous and reticulated, with numerous areolets, generally four, rarely two, or wanting; *eyes* usually large; *ocelli* two or three; *mouth* various; *prothorax* distinct, ample; *scapulæ* and *parapleuræ* parallel and oblique. Metamorphoses various: larva with six articulate legs, and with strong horny mandibles.

The contents of this order are so extremely various and diversified, as almost to preclude the possibility of drawing up a concise set of characters, that shall embrace every species that legitimately belongs thereto: in some the wings are four in number and alike, and the posterior ones (occasionally) actually exceed the anterior in bulk; while in other groups they are not only dissimilar to the anterior, in reticulation, &c., but they actually become so much diminished, as in some genera (*Cloëon*, *Cænis*, &c.) to disappear; while again in other genera (*Boreus*, *Atropos*, &c.) all the wings are wanting. If we select other characters, the same discrepancy is observable—the antennæ, for instance, in *Ascalaphus*, a foreign genus, are longer than the body and clavate, while in the gigantic *Libellulæ* they are so short and slender, especially at the tip, as to be scarcely visible; again, in these last insects the mandibles, and in fact all the oral organs, are strongly developed, while in the *Ephemeridæ* they almost totally disappear, the rudiments of a labrum and palpi only being evident: in fine, there appears scarcely an organ but what undergoes the extreme of variation in this Protean order.

If the structure of these insects is so diversified, their habits are no less so: some of them in the primary stages inhabit the water, others live on trees, beneath bark, &c., but most of them appear to be carnivorous: again, in metamorphoses, there is as much diversity, as more particularly noticed under the respective families, and in one group (*Ephemeridæ*) a sort of quadruple metamorphosis takes place.

From the extremely variable contents of this order, it becomes necessary to subdivide it into various groups before treating of their contents: I shall therefore proceed to notice the first of the indigenous ones, in which one of the genera (*Boreus*) approaches nearest to the *Orthoptera*.

## SECTION I.—PANORPINA.

*Head* produced in front in form of a rostrum, or beak, at the apex of which

the trophi are placed; the latter variable in the different genera; *antennæ* setaceous, inserted between the eyes, and somewhat approximating, composed of numerous articulations, the basal one being largest, the remainder generally distinct: *head* transverse; *eyes* prominent; *thorax* with the anterior segment occasionally very short, but sometimes ample; *wings* sometimes wanting, or four, either uniform in appearance, or very dissimilar; *body* elongate-conic, or subcylindric; *legs* generally long and slender; *tarsi* long, five-jointed, slender. Metamorphosis unknown.

This family contains only two British genera, thus distinguished:

<i>Alæ</i> 4, subsimiles, incumbentes, reticulatæ :	.	.	.	2. PANORPIDÆ.
nullæ, aut rudimentes :	.	.	.	1. BOREIDÆ.

#### FAMILY I.—BOREIDÆ *mih.*

*Wings* none, or only rudimentary; *ocelli* wanting; *prothorax*, or collar, ample; *abdomen* obtuse at the apex in the males; furnished with an ovipositor in the females.

The ample *prothorax*, combined with the almost total absence of wings, obtusely terminated abdomen in the males, as well as the presence of a peculiar ovipositor in the females, sufficiently indicate the distinctions of this family, which consists only of one indigenous genus.

#### GENUS I.—BOREUS, *Latreille.*

*Antennæ* approximating at the base, rather long, filiform, composed of more than twenty joints, the basal one of which is broad and the terminal conic; *head* nutant; *thorax* ample, its first segment or *prothorax* large and uneven; the two following, or *meso-* and *meta-thorax* short, each furnished in the males with a pair of slender *wings*, above half the length of the abdomen, and resembling an awl, the apex recurved and ciliated; and in the females with a pair of short scale-like appendages; *abdomen* robust, cylindric, and obtuse at the apex in the males; somewhat acuminate at the apex in the females, and furnished with a triarticulate ovipositor, having a bilobed valve beneath; *legs* long and slender, simple in both sexes.

The characters of this genus are sufficiently indicated in the observations appended to the family Boreidæ, so that it is unnecessary to repeat them: the only British species is found in the winter season under moss, stones, &c., and appears to be rather extensively distributed: its metamorphoses are unknown.



Sp. 1. *hyemalis*. *Fuscus, subæneo lucidus, rostro, ovipositore pedibusque ochreis.* (Long. corp. 2—3½ lin.)

*Pan. hyemalis.* Linné.—*Bo. hyemalis.* Curtis, v. iii. pl. 118.—*Steph. Catal.* 304. No. 3364.

Fuscous, with a bronzed tinge; head and eyes black, the former bronzed; rostrum pale ochreous, with the tip brown; prothorax dusky; meso- and meta-thorax ochreous; abdomen with the edges of the segments palish; the ovipositor ochreous, with a dusky tip; legs pale ochreous, with the terminal joint of the tarsi black at the apex; antennæ blackish, with the base pale.

The wings are pale ochreous-brown in the male.

This is a very local insect: it was first taken by Dr. Leach near Costessy in Norfolk, and subsequently, rather in abundance, by the Messrs. Walker, near Southgate; and last winter, in the vicinity of Nottingham, by R. Bakewell, Esq., to whom I am indebted for specimens.

## FAMILY II.—PANORPIDÆ, Leach.

*Wings* four, ample, reticulated, incumbent during the repose of the animal, though slightly extended in form of a long triangle; *ocelli* distinct; *prothorax* short, resembling the *collar* of the Hymenoptera; *abdomen* generally elongate and attenuated to the apex, sometimes furnished with a cheliform appendage in the males, but never with an ovipositor in the females.

Of this family the metamorphoses are likewise unknown; and from the Boreidæ it differs in having ample wings, combined with a very short prothorax, distinct ocelli, an elongate tapering abdomen; furnished at the base in the males (at least in the British genus) with forceps, and without an exerted ovipositor in the females.

## GENUS II.—PANORPA *Auctorum.*

*Antennæ* approximating at the base, long, slender, inserted between the eyes, composed of numerous articulations, setaceous; *head* vertical; *palpi* subequal, filiform; *ocelli* three, disposed in a triangle on the front, the two hinder ones largest; *body* elongate, narrow; *thorax* short, the anterior segment small; the two posterior producing large elongate reticulated equal *wings*, of an ovate-elliptic form, and resembling each other; *abdomen* conic, furnished at the apex in the males with a claw-like appendage, or forceps, and in the female with a simple hook; *legs* long, slender; *tibiæ* with spurs at the apex; *tarsi* with short denticulated *claws*, between which is a spongy pulvillus.

The presence of ample incumbent reticulated wings, and distinct ocelli, sufficiently characterizes the only indigenous genus of this family; to which may be added the forcipated tail of the male, elongate-attenuated abdomen of the females, exclusively of other less evident external differences. The transformations are unknown.

Sp. 1. communis. *Nigra, alis hyalinis, venis fasciâ apiceque fuscis, costâ obscure testaceâ; thorace maculis pedibusque testaceis.* (Exp. Alar. 1 unc. 1—5 lin.)

Pa. communis. Linné.—Leach, *Zool. Misc. v. ii. pl. 94. f. 1.*—Steph. *Catal. 305. No. 3365.*

Black; thorax with a row of livid or testaceous spots on the back, arranged longitudinally; rostrum reddish; wings hyaline, with the nervures, an irregular fascia towards the apex, with the tip itself, and a few scattered spots, dark fuscous; the costa dull testaceous; three or four terminal joints of the abdomen reddish; legs dull testaceous.

Slightly variable in size, and a little so in the disposition of the spots on the wings; but in all the varieties, the fascia on the wings (behind the middle) is very evident.

Extremely abundant, during the summer, in hedges by the sides of woods, meadows, &c. throughout the metropolitan district; also common in other parts of the country.

Sp. 2. affinis. *Nigra, alis hyalinis, venis maculis apiceque fuscis, costâ obscure testaceâ, thorace maculis pedibusque testaceis.* (Exp. Alar. 11—15 lin.)

Pan. affinis. Leach, *Zool. Misc. v. ii. pl. 94. f. 2.*—Steph. *Catal. 305. No. 3366.*

Black; rostrum and apex of the abdomen reddish; thorax with some yellowish or testaceous dorsal spots, placed longitudinally; wings hyaline, with the nervures, and numerous scattered spots and the extreme apex fuscous; legs testaceous.

The generally smaller size of this species, in addition to the difference in the maculation of the wings, sufficiently points out its distinction from the foregoing.

Also a very common insect, within the metropolitan district, occurring rather earlier in the season, but continuing throughout the summer: likewise found in other parts of the country.

Sp. 3. apicalis. *Nigra, alis hyalinis, immaculatis, apice fusco solo excepto, venis fusciscentibus, pedibus piceis.* (Exp. Alar. 9—10 lin.)

Pa. apicalis. Steph. *Catal. 305. No. 3367.*

Black; rostrum and apex of the abdomen reddish; thorax immaculate; wings

the same, with the extreme apex alone fuscous, the nervures slightly brownish, and the costa faintly testaceous; legs pitchy.

This insect is much smaller than either of the other species, and may be known by having the extreme tips alone of all the wings deep fuscous.

I possess a pair of this species that occurred in the vicinity of London; one at Darenth wood, in June.

Sp. 4. borealis. *Nigra, rostro, abdominis apice pedibusque piceis, alis hyalinis venis maculâque costali fuscescentibus.* (Exp. Alar. 9½ lin.)

Pan. borealis. *Steph. Nomen. 2d edit. col. 112.*

Black; rostrum, apex of the abdomen, and the legs pitchy; thorax with some obscure testaceous spots; wings hyaline, with the nervures, and a spot on the costa, towards the apex, brownish.

This may probably be a variety of the following species.

Found in the neighbourhood of Edinburgh.

Sp. 5. germanica. *Nigra, rostro, abdominis apice pedibusque rufis, alis hyalinis subnebulosis, maculâ costali conspicuâ fuscâ.* (Exp. Alar. 9—13 lin.)

Pan. germanica. *Linné.—Steph. Catal. 305. No. 3368.*

Black; rostrum, apex of the abdomen and legs red or reddish; thorax with a dorsal row of testaceous or yellowish spots; wings hyaline, obscurely clouded with fuscous, with a conspicuous spot of the same towards the apex of the costa, and some darker clouds near the hinder margin, or tip of the wing.

As in the other species of this genus, some examples are more clouded with fuscous, on the wings, than others.

Much less abundant, at least within the metropolitan district, than either *P. communis* or *P. affinis*: it occurs, however, not uncommonly, especially in the New Forest, in the months of June and July.

## SECTION II.—ANISOPTERA, *Leach.*

*Antennæ* short, subulated; *mandibles* obsolete or wanting; *wings* erected during repose, anterior generally elongated, of a somewhat triangular form, with the hinder margin rounded, and considerably larger than the posterior, which in some cases are totally wanting; *abdomen* furnished at its apex with two or three setæ or filaments, variable in length, according to the species; *legs* various; anterior elongated, porrected; intermediate and posterior short; *tarsi* with four joints. Metamorphosis quadruple.

The insects comprehended in this division of Neuroptera are remarkable for several peculiarities, both of structure and of habit, as

more particularly detailed in the notice of the only family in which they are embraced: it may, however, be here remarked that they may be known by their minute antennæ, porrected anterior legs, the filamentous appendages to the abdomen, and by the great dissimilarity in the size of the two pair of wings, the second, or posterior, being sometimes entirely absent; again, the insects are nearly, or totally in some instances, destitute of a mouth, and the eyes are usually very large.

### FAMILY III.—EPHEMERIDÆ, *Leach.*

*Antennæ* inserted on the inner margin of the eyes, triarticulate, the two basal joints very short and thickened, the third long, and resembling a slender tapering bristle; *mouth* wanting? *body* elongate, soft; *head* as wide as the thorax, transverse; *eyes* large, suboval, united on the forehead in the males; *ocelli* three, placed triangularly; *thorax* subcylindric; *wings* two or four; *abdomen* elongate-conic, with two or three very long setæ, or filaments, at the apex, composed of numerous joints, and two or three shorter setaceous ones (also jointed) beneath; *legs* slender, anterior remote from the others, inserted, to appearance, beneath the head, much longer than the others, their femora thickened, the intermediate and anterior pairs with the femora less robust; all the tibiæ simple, and forming at first sight, as it were, the basal joint of the tarsi, being gradually attenuated from the base, the *tarsi* consisting of a few cylindric articulations, of which the first is shortest, and the terminal one is furnished with two unequal membranous compressed *claws*, the smallest having a horny tooth at the apex, and the other being broader and obtuse. The metamorphosis is quadruple, inasmuch as the insect is furnished with wings, enveloped in an outer case, which is ultimately slipped off before the true imago is declared.

The insects of this family, as previously alluded to, are remarkable for undergoing a quadruple metamorphosis, as, in addition to the ordinary states of egg, larva, pupa, and imago, there is an intermediate one to the last two, inasmuch as a sort of representative of the imago is produced after the pupa, but which has to undergo a further ecdysis, or shedding of its skin, before the true insect appears: in this state the insect is capable of flying, the true wings being encased in a delicate membrane, which is cast very expeditiously, when sufficiently mature: in this operation a slit is made on the back, through which the insect forces itself, and gradually withdraws its body, limbs, and wings, leaving its exuvium, exactly corresponding with its previous form, excepting that portion which enveloped the wings,

and which is rolled up into a mass on each side of the thorax: in the first three states these insects inhabit the water, and upon their emersion from the pupa they become inhabitants of the air; their life is of short duration, but nevertheless some of the species exist for a considerable period, as noticed under *Cloëon dipterum*: the larvæ vary slightly in structure, according to the genera, those of the true *Ephemera* and of *Baëtis* having exerted respiratory organs along both sides of the body.

The indigenous genera may be thus distinguished:—

*Alæ quatuor, posticis distinctis* :

*Cauda triseta* : . . . . . 3. EPHEMERA.

*biseta* : . . . . . 5. BAËTIS.

*duæ, posticis nullis, aut vix conspicuis* :

*Cauda triseta* : . . . . . 4. CÆNIS.

*biseta* : . . . . . 6. CLOËON.

### GENUS III.—EPHEMERA *Auctorum*.

*Head* small, emarginate in front; *eyes* rather large, ovate, united on the crown in the males, somewhat remote in the females; *thorax* not very stout, elongate-ovate; *wings* four, anterior much longer than the abdomen, somewhat lanceolate, more or less reticulated, the costa slightly waved, posterior very small, ovate-triangular; *abdomen* as long again as the thorax, slightly tapering at the apex, and terminated by three very long filaments, of which the central one is shortest in the males; *legs* rather long and slender.

The species of this genus are probably more numerous than I have indicated, as the account of them is entirely made up from those that are contained in my own cabinets, other collections thereof not being *named* or divided into species: it is therefore fair to conclude, that if among the more conspicuous long genera I occasionally lack specimens, such is the case in this genus, which may be known by having four wings and three filaments, or setæ, at the apex of the abdomen.

A. The transverse nervures of the wings very distinct, giving the wings a strongly reticulated appearance.

Sp. 1. *vulgata*. *Obscure-fusca, abdomine lutescente, alis fusciscentibus, fusco reticulatis et maculatis, costâ anticarum pallide fuscâ, pedibus pallidis obscure nebulosis.* (Exp. Alar. 1 unc. 2—4 lin.:—Long. corp. 6—7½ lin.; l. setarum 1 unc. 3—4 lin.)

Ep. *vulgata*. *Linné.*—*Wood*, v. ii. pl. 47.—*Steph. Catal.* 305. No. 3369.

Dull fuscous; anterior portion of the thorax yellowish, with a brighter stripe of the same colour on each side before the wings, the latter hyaline, the anterior suffused with pale fuscous, excepting towards the inner portion of the base, the costa of a rather darker hue, nervures fuscous, the transverse ones edged with the same, producing a variegated appearance; towards the base is a small irregular fuscous cloud, and about the middle, near the costa, is an interrupted waved fascia of the same hue; posterior wings fuscous towards the apex, and with a spot of brown in the centre; abdomen fuscous, varied with yellowish, or with the basal and terminal joints dusky, and the remainder ochreous-yellow, with brownish edges to the stigmata; legs pale, anterior with the femora, and the others clouded with, fuscous.

Rather variable in the spotting of the wings, some examples being more clouded than others.

This insect—the *May-fly*—sometimes occurs in great abundance in the vicinity of the metropolis, especially on the banks of the New River and of the Lea, near Hackney and at Hertford, towards the end of May, flying about, with the peculiar vacillating motion of the family, in the afternoon in myriads, and again towards evening.

Sp. 2. *cognata*. *Fusco-ferruginea, abdomine pallidiore, marginibus segmentorum albis, alis hyalinis subluteo-fuscis, nervis maculisque fuscis, pedibus rufescentibus, geniculis fuscis*. (Exp. Alar. 1 unc. 6—7 lin. :—Long. corp. 8—9 lin.; l. setar. 8—9 lin.)

Eph. *cognata*. *Steph. Catal.* 305. No. 3370.—Eph. *vulgata*. *Donovan, v. iv. pl.* 128?

Rusty-brown; collar anteriorly and a stripe before the wings pale yellowish-white; wings hyaline, of a somewhat yellowish-, or luteous-brownish, with the nervures, especially the transverse ones, fuscous, two or three conspicuous brown spots about the middle towards the costa, and one near the base; abdomen of a pale reddish-ochre, with the apex dusky, and the margins of the segments whitish; beneath on each segment are two oblique fuscous lines, and another on each side; legs reddish, with the knees and tips of the tibiæ and tarsi dusky.

The great dissimilarity in the proportions of the parts, as well as the difference in colouring, sufficiently point out the propriety of establishing this as a species. Not having an opportunity of reconsulting Donovan's figure at present, I have placed a query to the reference.

Also found in the neighbourhood of London, about the beginning of June, but apparently rare.

Sp. 3. *Stigma*. *Piceo-fusca, abdomine pallidiore, pedibus setisque luridis, immaculatis, alis hyalinis pallide lutescentibus, haud maculatis, anticarum costâ ad*

*apicem luteo-fuscescente.* (Exp. Alar. 11 lin.:—Long. corp.  $4\frac{1}{2}$  lin.; 1. setar.  $8\frac{1}{2}$  lin.)

Eph. Stigma. *Steph. Catal.* 305. No. 3371.

Pitchy-brown; thorax in front and abdomen paler, or of a rusty tinge; legs and setæ, or filaments, lurid, and not spotted; wings hyaline, of a pale yellowish hue and immaculate, the anterior with the costa at the apex luteous-brown.

I have a single example of this insect, of which I know not the locality.

Sp. 4. *talcosa. Piceo-fusca, abdominis apice pedibus setisque luridis, alis hyalinis immaculatis.* (Exp. Alar. 10 lin.:—Long. corp.  $4\frac{1}{2}$  lin.; 1. setar. 7 lin.)

Eph. *talcosa. Mus. Marsham.—Steph. Catal.* 305. No. 3372.

Pitchy-brown, immaculate, with the apex of the abdomen and the legs lurid; filaments the same, but paler; wings transparent, immaculate, nervures very pale ochreous-brown, the costal ones slightly yellowish, and the costa itself towards the apex of a luteous-brown hue.

Of this species—which I obtained from the Marshamian collection—I am ignorant of its locality.

Sp. 5. *lutea. Lutea, oculis marginibusque segmentorum abdominis nigris, alis hyalinis, albis, immaculatis, setis nigro punctatis.* (Exp. Alar. 10 lin.:—Long. corp. 4 lin.; 1. setar. 6 lin.)

Eph. *lutea. Linné.—Steph. Catal.* 305. No. 3373.

Luteous; eyes and margins of the abdominal segments black; legs pale luteous, immaculate; filaments also pale luteous, rather closely dotted with black; wings very clear and transparent white and immaculate, with the nervures slightly luteous, the costal ones brightest.

Found, but not commonly, within the metropolitan district, in June.

Sp. 6. *marginata. Nigra, alis hyalibus albis, margine exteriore fusco.* (Exp. Alar. 10 lin.:—Long. corp. 4 lin.—long. set. 5 lin.)

Eph. *marginata. Linné.—Shaw Gen. Zool. v. vi. pl. 81, fig. inf.?*—*Steph. Catal.* 305. No. 3374.

Black; abdomen brownish, with darker rings; wings hyaline white, with the costa fuscous; legs pale; filaments spotted with black, with long articulations.

Found in the vicinity of the metropolis in June, apparently rare.

## B. With the transverse nervures of the wings indistinct.

Sp. 7. submarginata. *Rufo-picea, pedibus pallidioribus, geniculis posticis nigricantibus, alis hyalinis, costâ subochraceâ.* (Exp. Alar.  $9\frac{1}{2}$  lin.; Long. corp. 4 lin.; 1. set. 2 lin.)

Eph. submarginata. *Steph. Catal. 305. No. 3375.*

Reddish pitch colour, glossy; eyes and ocelli black; legs very pale pitchy-red, posterior pair with blackish knees; filaments pale ferruginous; wings clear and spotless, anterior pair with the costa slightly ochraceous.

Found in the vicinity of London.

Sp. 8. dispar. *Piceo-nigra, abdominis basi pedibusque pallide rufo-piceis, setis luridis fusco subannulatis.* (Exp. Alar.  $9-9\frac{1}{2}$  lin.; long. corp.  $4\frac{3}{4}$  lin.; 1. set. 4 lin.)

Eph. dispar. *Steph. Catal. 305. No. 3376.*

Pitchy-black, shining: abdomen pale reddish, pitchy at the base, with the sides paler, and marked with an indistinct row of dots, the apex blackish; legs pale rusty-piceous; filaments long, lurid, obscurely annulated with fuscous; the joints short; wings transparent; anterior with the costa slightly yellowish.

Pseudimago with the wings fuscous, the nervures, especially the transverse ones, darker, producing a pale spotted appearance.

Not uncommon within the metropolitan district in July.

Sp. 9. fusca. *Obscure picea, vertice et basi pedum anteriorum ferrugineis, pedibus posterioribus ochraceis, setis luridis fusco punctatis.* (Exp. Alar. 7—8 lin.; long. corp.  $2\frac{1}{4}-2\frac{1}{2}$  lin.; 1. set.  $3\frac{1}{2}-4$  lin.)

Eph. fusca. *Curtis, Phil. Mag. 1834—Eph. nigricanus. Steph. Catal. 305. No. 3377.*

Obscure pitchy, crown and base of the anterior legs ferruginous, two hinder pair ochreous; filaments pale lurid, dotted with fuscous; the joints long; wings transparent.

Found at Hertford in June.

Sp. 10. diluta. *Pallide rufo-ferruginea, abdomine nigricante, pedibus pallidis, alis hyalinis costâ concolore.* (Exp. Alar. 9 lin.; long. corp. 4 lin.; 1. set. 3 lin.)

Eph. diluta. *Steph. Catal. 305. No. 3378.*

Shining, pale rusty-red; abdomen dusky, the apex and the margins of the segments reddish; legs pale ochreous; filaments lurid, immaculate; wings transparent, with the costa concolorous.

Inhabits the neighbourhood of London.



Sp. 11. *apicalis*. *Fusco-ferruginea, nitida, abdominis basi pallidâ, pedibus ochraceo-ferrugineis, alis hyalinis.* (Exp. Alar. 8 lin.; long. corp.  $3\frac{1}{2}$  lin.; l. set. 5 lin.)

Eph. *apicalis*. *Steph. Catal.* 305. No. 3379.

Rusty-brown, shining; thorax very glossy; abdomen pale, with the margins of the segments and its apex rusty-brown; filaments pale lurid, immaculate, with long joints; legs pale ochreous; wings transparent, costa faintly yellowish.

Also found near London.

Sp. 12. *rufescens*. *Pallide rufo-fulva, subnitida, pedibus rufescentibus posterioribus pallidioribus, setis luridis fusco maculatis, alis hyalinis costâ flavescente.* (Exp. Alar. 8— $9\frac{1}{2}$  lin.; long. corp.  $3\frac{1}{2}$ —4 lin.; l. set. 4—5 lin.)

Eph. *rufescens*. *Steph. Catal.* 305. No. 3380.

Pale tawny-red, slightly shining; abdomen dusky-red; legs reddish, two hinder pair paler; filaments lurid, spotted with fuscous, the joints short; wings transparent, costa yellowish.

Abundant throughout the metropolitan district at the end of June and beginning of July.

Sp. 13. *rosea*. *Pallide rosea, subnitida, pedibus pallidioribus, setis luridis, fusco maculatis; alis hyalinis basi summa et costâ dilute roseis.* (Exp. Alar. 7— $8\frac{1}{2}$  lin.; Long. corp. 3—4 lin.; l. set. 4— $4\frac{1}{2}$  lin.)

Eph. *rosea*. *Steph. Catal.* 306. No. 3383.

Pale rose colour, slightly shining; legs very pale rosy, anterior pair darkest; filaments pale lurid, spotted with fuscous; wings hyaline, with the extreme base and the costa pale rose colour.

Found near Hertford in June: not very common.

Sp. 14. *helvipes*. *Piceo-nigra obscura, pedibus helvolis, setis pallide luridis, immaculatis, alis hyalinis.* (Exp. Alar. 9 lin.; long. corp. 4 lin.; l. set. 3 lin.)

Eph. *helvipes*. *Steph. Catal.* 306. No. 3382.

Dull pitchy-black, thorax slightly shining; legs pale red, with a rosy tinge; filaments pale lurid, immaculate, joints short; wings narrow, transparent, costa slightly tinted with yellowish.

Also taken near Hertford: apparently rare.

Sp. 15. *dubia*. *Fusca subnitida, abdominis basi pedibusque pallidis, setis pallide luridis, immaculatis, alis hyalinis, costâ subflavescente.* (Exp. Alar. 7 lin.; long. corp.  $2\frac{1}{2}$  lin.; l. set. 3 lin.)

Eph. *dubia*. *Steph. Catal.* 305. No. 3381.

Fuscous, slightly shining; abdomen pale, the apical segments and the margins of the central ones dusky-brown; legs pale; filaments pale lurid, immaculate, joints short; wings transparent, costa faintly yellowish.

Found within the metropolitan district.

Sp. 16. minor. *Obscure fusca, segmentorum marginibus rufescentibus, pedibus pallidis, alis angustis hyalinis costâ concolore.* (Exp. Alar.  $5\frac{1}{2}$  lin.; long. corp. 2 lin.; 1. set. 3 lin.)

Eph. minor. *Steph. Nomen. 2d edit. Appendix.*

Slender, dull fuscous; segments of the abdomen with their margins slightly reddish; legs very pale; filaments lurid, immaculate; wings narrow, transparent, costa concolorous.

Taken at South Lambeth, in June.

#### GENUS IV.—CÆNIS *mihî*.

*Head* broad, short: *eyes* small, remote, rounded: *thorax* large, ovate: *wings* two, short, broad, with numerous longitudinal nervures, and two or three transverse ones near the costa: *abdomen* about as long as the thorax, obtuse at the apex, and terminated by three filaments of very variable length in the respective species: anterior *legs* in the male long, their femora thickened, tibiæ and tarsi slender, four hinder pair short, rather slender.

This genus is readily known by the brevity of its wings and abdomen, the latter not exceeding the length of the thorax, and scarcely extending beyond the outer anal edge of the expanded wings; its apex is, however, furnished with three setæ, or filaments, by which character alone it may be distinguished from the two following genera. The species appear to be rather scarce, or are very local.

A. With the *filaments* several times longer than the body:—CÆNIS *mihî*.

Sp. 1. macrura. PLATE XXIX. f. 1.—*Fusco-nigra, abdomine piceo, pedibus piceofuscis, alis hyalinis costâ fuscâ, setis longissimis.* (Exp. Alar.  $4\frac{1}{2}$  lin.; Long. corp.  $1\frac{3}{4}$  lin.; 1. set. 7 lin.)

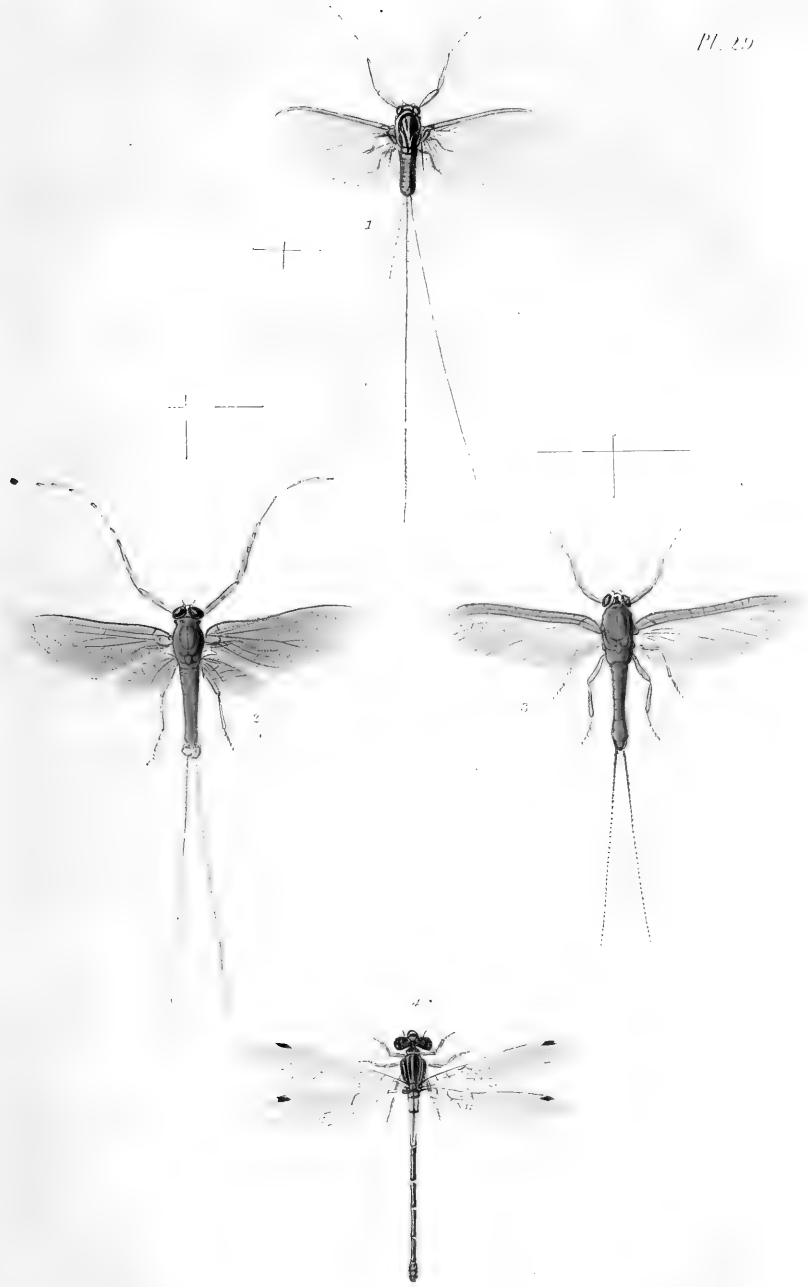
N. G. macrura. *Steph. Catal. 306. No. 3385.*—CÆNIS macrura. *Steph. Nomen. 2d edit. col. 112.*

†Sp. 17. vespertina. *Nigra, alis posticis albis.*

Eph. vespertina. *Linné.—Berkenhout (!)—Steph. Catal. 306. No. 3384.*

Amongst the smaller species of the genus (family) with the entire body, and the anterior wings black; the posterior wings white.

Probably the pseudimago of one of the foregoing species.





Deep brown-black, slightly shining; abdomen pitchy; filaments nearly four times as long as the body, pale fuscous, faintly dotted with fuscous, articulations long; legs pitchy-brown; wings transparent; costa, especially towards the base, fuscous.

Taken in the vicinity of London, in June.

Sp. 2. *dimidiata*. *Piceo-nigra*, abdomine pallido, pedibus ochraceis, alis lacteis costâ fuscâ. (Exp. Alar.  $3\frac{1}{2}$  lin.; Long. corp.  $1\frac{1}{2}$  lin.; l. set. 4 lin.)

Cæ. *dimidiata*. *Steph. Nomen. 2d edit. Appendix.*—Br. *minimus*. *Curtis, Phil. Mag.* 1834?

Pitchy-black, shining; abdomen pale; legs ochreous; setæ long and pale; wings milk-white, costa fuscous.

Taken near London; and in Norfolk?

B. With the *filaments* scarcely longer than the body, or shorter, stout at the base:—BRACHYCERCUS, *Curtis*.

Sp. 3. *brevicauda*. *Piceo-fusca*, abdomine pedibusque pallidis, alis albidis, costâ fuscâ, setis brevibus. (Exp. Alar.  $4-4\frac{1}{2}$  lin.; Long. corp.  $1\frac{3}{4}-2$  lin.; l. set.  $\frac{3}{4}$  lin.)

Eph. *brevicauda*. *Fabricius.*—N. G. *brevicauda*. *Steph. Catal.* 306. No. 3386.

Pitchy-brown, or black, slightly shining; abdomen pale, its base fuscous; filaments about half its length, and, with the legs, pale; anterior femora dusky; wings whitish, transparent, the costal nervures fuscous.

Found near London, in June; and near Cambridge and Whittlesea Mere, in July 1833.

†Sp. 4. *Harrisella*. *Pallida*, alis hyalinis, costâ concolore. (Exp. Alar. 6 lin.; Long. corp.  $2\frac{1}{2}$  lin. ? l. set. 1 lin. ?)

Br. *Harrisellus*. *Curtis, Phil. Mag.* 1834.—Ephemeron. *Harris, Exp. pl. vi. f. 3.*—Cæ. *Harrisella*. *Steph. Nomen. 2d edit. Appendix.*

Pale: wings “deadish-white,” transparent; costa concolorous.

Harris says the *expansion* of this insect is about half an inch: *Curtis* that it is five lines *long*. I have never seen a specimen corresponding with *Harris's* figure, but, if his dimensions are correct, the other must be erroneous: this latter appears to have been arrived at by measuring the lower figure in *Harris's* plate, which represents the insect in a sitting position.

Found by *Harris* in a window, in London.

Sp. 5. *pennata*. *Thorace lato fusco ferrugineo, abdomine pedibusque albidis, oculis atris, setis brevibus pennatis*. (Exp. Alar. 5 lin.; Long. corp.  $2-2\frac{1}{2}$  lin.; l. set. 1 lin.)

N. G. *pennata*. *Steph. Catal.* 306. No. 3387.

Rusty-brown: eyes black; thorax broad, ovate, glossy; abdomen pale; setæ short, pale, pilose; legs very pale; wings whitish, costa somewhat fuscous.

Pseudimago with ashy, ciliated, wings.

Taken in June, at Hertford.

Sp. 6. chironomiformis. *Ochracea nitida, oculis nigris, pedibus pallidis, alis lacteis, costâ fuscâ.* (Exp. Alar. 5 lin.; Long. corp.  $2\frac{1}{2}$  lin.; l. set. 1 lin.)

Br. chironomiformis. *Curtis, Phil. Mag.* 1834.—Cæ. chironomiformis. *Steph. Nomen. 2d edit. Appendix.*

Shining, ochreous: eyes black; legs whitish; wings milk-white, costa fuscous.

Found near London; and at Bath, by C. C. Babington, Esq.

Sp. 7. interrupta. *Atra nitida, abdomine pallido, strigis 2-bus dorsalibus atris interruptis, pedibus fuscis, alis fusciscentibus, costâ saturatiore.* (Exp. Alar.  $4\frac{1}{2}$  lin.; Long. corp. 2 lin.; l. set.  $\frac{3}{4}$  lin.)

Cæ. interrupta. *Steph. Nomen. 2d edit. Appendix.*

Deep glossy black: abdomen pale, with an interrupted black streak on each side down the back; filaments and legs fuscous; wings also fuscous, with the costa darker.

Found at Whittlesea Mere, in July 1833.

#### GENUS V.—BAËTIS, *Leach.*

*Head* large, transverse, hemispherical: *eyes* large, united on the crown in the males, remote in the females: *thorax* ovate, stout: *wings* four, anterior long, narrow, obtuse, considerably reticulated, costa slightly varied; posterior small, somewhat ovate: *abdomen* moderately long, rather tapering, furnished at its apex with two filaments: anterior *legs* long, with the femora compressed; four hinder ones short; *claws* dissimilar.

The insects contained in this genus may be readily known by having two filaments only at the apex of the abdomen, and at the same time being furnished with two pair of wings: it is probably a more numerous genus than I have indicated, but the species of this family are so extremely fragile, and are so susceptible of injury, that they are difficult to investigate satisfactorily, after having been long preserved in cabinets, and unfortunately several of my old specimens were injured by the damp, several years back, at South Lambeth.

A. *Wings* very distinctly and rather thickly reticulated.

Sp. 1. *dispar*. *Pallide castanea, abdominis segmentorum marginibus brunneis, alis hyalinis, costâ flavescente ante apicem fusciscente.* (Exp. Alar. 14 lin.; Long. corp.  $5\frac{1}{2}$ —6 lin.; l. set. 16—17 lin.)

Ba. *dispar*. *Curtis, v. xi. pl. 484.—Steph. Nomen. 2d edit. Appendix.*

“Pale castaneous: eyes and disc of thorax sometimes much darker in the male; segments of the abdomen with the margins brown, filaments more than twice as long as the insect; tibiæ, excepting the anterior pair, ochreous towards the apex; tarsi fuscous; wings transparent, anterior pale yellow at the base in the male, as well as the costal margin, which is pale brown towards the apex, nervures of the same colour.

“The wings in the pseudimago—a term employed by Mr. Curtis—have all the nervures suffused with fuscous, and the costa not darker than the rest of the wing.”—*Curtis, l. c.*

Found, but rarely, in the vicinity of London, in June: also taken in the north of England.

Sp. 2. *venosa*. *Obscure fusca, alis albis, nervuris fuscis.* (Exp. Alar. 15 lin.; Long. corp. 6 lin.; l. set. 8 lin.)

Eph. *venosa*. *Fabricius.—Ba. venosa. Steph. Catal. 366. No. 3389.*

Dull fuscous: wings broad, white, with fuscous nervures.

Probably a variety of the foregoing species; but the wings are much broader, and the filaments shorter.

Found near London, in June.

Sp. 3. *longicauda*. *Ochraceo-lutea, pedibus pallidioribus, geniculis abdominisque segmentorum marginibus fuscis, setis longissimis.* (Exp. Alar. 14 lin.; Long. corp.  $5\frac{1}{2}$  lin.; l. set.  $14\frac{1}{2}$  lin.)

Ba. *caudata*. *Steph. Catal. 366. No. 3388.*

Pale luteous-ochre: eyes fuscous; thorax glossy; abdomen pale ochreous at the base, the apex darker, the segments edged with fuscous; filaments considerably above twice the length of the insect, pale ochreous, with faint fuscous spots; legs pale ochreous, tips of femora fuscous; wings transparent, with the costa and nervures yellowish.

Pseudimago?—Ba. *mellea*. *Curtis, Phil. Mag. 1834.*

“Bright ochreous: eyes black; segment of abdomen edged with brown, with a trigonate brown mark on the back of each, and the spiracles forming a double row of black dots down each side; filaments longer than the insect, dotted with brown; wings pale yellow, costa a little darker, nervures yellow and brown.”—*Curtis, l. c.*

Taken near Hertford, towards the middle of June.

Sp. 4. *costalis*. *Pallide castanea, thoracis lateribus abdominis apice et pedibus ochraceis, alis hyalinis, costâ flavescente.* (Exp. Alar.  $13\frac{1}{2}$  lin.; Long. corp. 5 lin.; l. set. 9 lin.)

Ba. *costalis*. *Curtis, Phil. Mag.* 1834.—*Steph. Nomen. 2d edit. Appendix.*

Slender, pale chestnut, with the sides of the thorax, tip of the abdomen, and the legs ochreous; joints of the tarsi fuscous at their articulations; filaments very long, pale yellow, each joint tipped with black; wings transparent, anterior with the costa dirty-yellowish.

Also found in June, near Hertford.

Sp. 5. *subfusca*. *Obscure castanea, abdomine fusciscente, segmentorum marginibus saturatoribus, alis subflavescentibus costâ concolore stigmatâ subochraceâ.* (Exp. Alar. 11 lin.; Long. corp.  $4\frac{1}{2}$  lin.; l. set. 7 lin.)

Ba. *subfusca*. *Steph. Catal.* 306. No. 3390.

Dull chestnut: eyes and abdomen brownish, the latter with the margins of the segments fuscous; legs dull ochreous; filaments dusky, each joint with a darker spot at the tip; wings faintly suffused with yellowish, the costa towards the apex darker; nervures luteous.

Found in June, at Hertford.

Sp. 6. *elegans*. *Ochraceo-flava, abdomine pallide subcastaneo, tarsorum articulorum apicibus niger alis subflavescentibus, costâ saturatiore.* (Exp. Alar.  $13\frac{1}{2}$  lin.; Long. corp.  $4\frac{1}{2}$  lin.; l. set. 8 lin.)

Ba. *flavescens*. *Steph. Catal.* 306. No. 3391.—Ba. *elegans*. *Curtis, Phil. Mag.* 1834.

Bright ochreous yellow: abdomen palish chestnut; filaments pale, the tips of the joints fuscous; legs very pale ochreous; the tarsi with the apex of each joint blackish; wings iridescent, pale ochreous-yellow, costa darker, especially towards the apex, forming a stigmoid spot.

Taken within the metropolitan district.

Sp. 7. *semicolorata*. *PLATE XXIX. f. 2.—Fulvescente-ochracea, abdominis segmentorum marginibus brunneis, alis flavescente-brunneis, anticis apice hyalino.* (Exp. Alar. 11—12 lin.; Long. corp.  $3-3\frac{1}{2}$  lin.; l. set. 13 lin.)

Ba. *basalis*. *Steph. Catal.* 306. No. 3392.—Ba. *semicolorata*. *Curtis, Phil. Mag.* 1834.

Tawny-ochreous: thorax sometimes varied with a darker hue; abdomen paler, the edges of its segments brown or dusky; legs pale; knees and tarsi brown; filaments long and slender, pale, with the tips of the joints darker; wings pale brownish-yellow, the anterior with the tips transparent and colourless; nervures all yellowish-brown.

Found in the neighbourhood of London: not very common.



Sp. 8. *lateralis*. *Picea, thorace maculâ aurantiacâ, abdomine ferrugineo lateribus pallidis, alis hyalinis, nervuris 3-bus costalibus carneis.* (Exp. Alar. 8—9 lin.; Long. corp.  $3\frac{1}{4}$ — $3\frac{3}{4}$  lin.; l. set. 7 lin.)

Ba. *phæopa*. *Steph. Catal.* 306. No. 3394.—Ba. *lateralis*. *Curtis, Phil. Mag.* 1834.

“Piceous, shining, an orange spot before the wings; abdomen dull ferruginous, the sides paler, with the spiracles piceous; filaments very long; wings with the three costal nervures rosy or ferruginous; legs lurid, excepting the anterior, which are ochreous at the base.”—*Curtis, l. c.*

Taken, in June, within the metropolitan district.

Sp. 9. *obscura*. *Piceo-rufa, abdomine pallidiore, setis luridis fusco annulatis, alis hyalinis costâ subochraceâ.* (Exp. Alar.  $7\frac{1}{2}$  lin.; Long. corp.  $3\frac{1}{2}$  lin.; l. set. 6 lin.)

Ba. *obscura*. *Steph. Catal.* 306. No. 3395.

Dull pitchy-red: abdomen paler, its filaments lurid, long, the joints tipped with fuscous; legs pale lurid; wings hyaline, costa somewhat ochreous, the nervures brownish.

Found at Hertford, &c. in June and July.

Sp. 10. *carnea*. *Incarnata, abdomine saturatiore, setis immaculatis, alis elongatis, hyalinis, costâ subroseâ, nervuris subbrunneis.* (Exp. Alar.  $8\frac{1}{2}$  lin.; Long. corp.  $3\frac{1}{2}$  lin.; l. set.  $6\frac{1}{2}$  lin.)

Ba. *carnea*. *Curtis, Phil. Mag.* 1834.—*Steph. Nomen.* 2d edit. *Appendix.*

“Ochreous, with a pink tinge; abdomen darker; filaments twice as long as the insect, pale, unspotted; wings elongated, with the costa slightly tinged, nervures reddish-brown.”—*Curtis, l. c.*

Also found within the metropolitan district, in June and July.

#### B. *Wings faintly reticulated.*

Sp. 11. *striata*. *Fusca, abdomine albo maris pellucido, femine opaco rufescente, alis hyalinis, nervuris subfuscis.* (Exp. Alar. 4 lin.; Long. corp. 3 lin.; l. set. 5 lin.)

Eph. *striata*. *Linné.*—Ba. *striata*. *Steph. Catal.* 306. No. 3393.

Fuscous: abdomen white, pellucid in the male, opaque and somewhat reddish in the female; filaments short, immaculate; legs lurid; wings hyaline, longitudinal nervures rather brownish.

Found occasionally within the metropolitan district, in June.

Sp. 12. *bioculata*. *Ochraceo-lutea, abdominis medio albo diaphano, apice subfusco, pedibus niveis, setis longioribus, albis, fusco punctatis.* (Exp. Alar.  $6\frac{1}{2}$ — $7\frac{1}{2}$  lin.; Long. corp.  $3\frac{1}{2}$  lin.; l. set. 3 lin.)

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Eph. bioculata. *Linné*.—Ba. bioculata. *Steph. Catal.* 306. No. 3399.

Ochreous-yellow: head with two largish luteous tubercles; thorax clouded with brownish; abdomen with the basal segment brownish; abdomen with the basal segment brownish, the four following white and pellucid, the remainder brownish; legs white; filaments also white, faintly spotted with fuscous, and much longer than the body; wings hyaline, faintly reticulated.

Pseudimago pale ochreous, legs paler; wings brownish.

The silence of Linnæus as to the number of wings possessed by this species is fair presumption that it has four, as he expressly states "alis duabus" where there are but two only; and, as the above insect agrees in the main with the Linnæan definition, I consider his insect to be a *Baëtis*.

Found abundantly near Hertford, in June and July.

Sp. 13. fuscata. *Fusca, abdominis medio pedibusque pallidis, setis brevibus.* (Exp. Alar. 6—7 lin.; Long. corp. 3—3½ lin.; l. set. 4 lin.)

Eph. fuscata. *Linné*.—Ba. fuscata. *Steph. Catal.* 306. No. 3398.

Fuscous, shining: abdomen with the basal segment fuscous, the four following pale or whitish, the remainder fuscous; filaments shorter than the body, white, immaculate; legs pale, claws fuscous; wings hyaline, immaculate.

Inhabits the vicinity of London, in June.

Sp. 14. culiciformis. *Nigricans, abdomine fusco, pedibus pallidis, alis immaculatis.* (Exp. Alar. 6—7 lin.; Long. corp. 3 lin.; l. set. 6 lin.)

Eph. culiciformis. *Linné*.—Ba. culiciformis. *Steph. Catal.* 306. No. 3397.

Blackish, shining: abdomen fuscous; filaments as long as the body, pale lurid, immaculate; legs pale; wings hyaline.

Pseudimago pale reddish-ochre; wings yellowish-brown.

Not uncommon in the metropolitan district, especially near Hertford, in June and July.

Sp. 15. horaria? *Fusca, abdomine cinerascete, segmentorum marginibus albis, pedibus pallidis, alis hyalinis, costâ nigricante.* (Exp. Alar. 6—7 lin.; Long. corp. 3 lin.; l. set. 4 lin.)

Eph. horaria. *Linné?*—Ba. horaria. *Steph. Catal.* 306. No. 3396.

Fuscous, shining: abdomen ashy, with the edge of the segments white; filaments as long as the body, pale; legs also pale; wings hyaline, costa dusky.

Not common: found near Hertford, in July.

Sp. 16. verna. *Pallide ferruginea, thorace piceo, ochraceo maculato, setis pallidis, fusco punctatis, pedibus obscuris.* (Exp. Alar. 7—8 lin.; Long. corp. 3½ lin.; l. set. 7 lin.)

Ba. vernus. *Curtis, Phil. Mag.* 1834.—*Steph. Nomen. 2d edit. Appendix.*

“Pale ferruginous; head and thorax piceous above, with an ochreous dot on each side the collar, and several beneath the wings; filaments twice as long as the insect, pale and dotted; legs dirty ochre; wings (hyaline) with the costa tinged.”—*Curtis, l. c.*

Taken in May and June, near London.

Sp. 17. autumnalis. *Pallide brunnea, thoracis lateribus ochraceis, setis longissimis pallidis, pedibus luridis.* (Exp. Alar. 6—7 lin.; Long. corp. 2—2½ lin.; l. set. 5½ lin.)

Ba. autumnalis. *Curtis, Phil. Mag.* 1834.—*Steph. Nomen. 2d edit. Appendix.*

“Pale castaneous-brown; margin of eyes and sides of thorax ochreous; filaments thrice as long as the insect, whitish; legs pale lurid; wings with the anterior margin slightly tinged. Pseudimago more ochreous.”—*Curtis, l. c.*

Also found near London, in July.

Sp. 18. cingulata. *Gracilis, fusca, abdominis segmentorum marginibus pedibusque posterioribus luridis, alis hyalinis.* (Exp. Alar. 7—8 lin.; Long. corp. 3½ lin.; l. set. 3¼ lin.)

Ba. cingulata. *Steph. Catal.* 306. No. 3401.

Slender, fuscous, shining; abdomen with the margins of the segments livid; filaments pale livid, scarcely so long as the insect, and faintly dotted with brown; anterior legs fuscous, four posterior ones livid; wings hyaline, rather narrow.

Taken near Hertford, in June.

## GENUS VI.—CLOËON, *Leach.*

*Head* small, somewhat transverse, hemispherical: *eyes* moderate, remote, lateral: *thorax* ovate, convex, robust: *wings* two, elongate, rounded at the apex, with numerous longitudinal nervures, and a few transverse ones; posterior pair wanting: *abdomen* rather long, attenuated to the apex, which is furnished with two, more or less elongated, filaments: *legs* slender, anterior pair frequently elongated, their femora occasionally thickened: *claws* unequal.

†Sp. 19. nigra. *Nigra, pedibus pallidioribus, alis nigricantibus, posticis minimis*

*Eph. nigra. Linné.*—Ba. nigra. *Steph. Catal.* 306. No. 3400.

Size of a gnat: black; legs palish; wings blackish, posterior ones very small; all with the hinder margin somewhat fringed.

A pseudimago, but of what species I am not aware.

This genus differs from the preceding one by possessing one pair of wings only (the anterior), and from the other two genera of this family by having two filaments only at the apex of the abdomen; the wings are generally furnished with but few transverse nervures, and are mostly of very delicate structure, and the insects are usually of pale yellowish or ochreous tints.

Sp. 1. dipterum. *PLATE XXIX. f. 3.*—*Pallide rufescente-griseum, segmentorum marginibus fusciscentibus, alis hyalinis, costâ flavescente-brunnâ, albo marmoratâ, setis fusco punctatis.* (Exp. Alar. 8—10 lin.; Long. corp. 3½—4 lin.; l. set. 6—7 lin.)

Eph. diptera. *Linné.*—Cl. dipterum. *Steph. Catal. 306. No. 3402.*

Pale reddish griseous: the edges of the abdominal segments brownish, filaments as long again as the insect, closely dotted with fuscous; legs pale ochreous, anterior femora lurid; wings hyaline, faintly tinged with yellowish, costa broadly brownish yellow, marbled with irregular white dots.

Pseudimago ashy-ochreous, with the wings fuscous and ciliated, the costa dusky.

Abundant throughout the metropolitan district from the end of May, and at intervals during the summer: it is, for an insect of this family, tenacious of life, as I have twice kept individuals alive above three weeks.

Sp. 2. ochraceum. *Pallide rufo-ochraceum, pedibus pallidioribus, alis hyalinis costâ concolore, setis pallidis fusco subpunctatis.* (Exp. Alar. 6 lin.; Long. corp. 3 lin.; l. set. 2 lin.)

Cl. ochraceum. *Steph. Catal. 307. No. 3403.*

Pale reddish-ochreous: eyes dusky; legs very pale ochreous; filaments pale, very faintly, but closely, dotted with pale fuscous; wings hyaline, costa concolorous.

Taken near Hertford, in June.

Sp. 3. hyalinatum. *Incarnatum, pedibus pallidioribus, alis hyalinis, nervuris obsoletissimis.* (Exp. Alar. 5½—6½ lin.; Long. corp. 2½—3¼ lin.; l. set. 3½ lin.)

Cl. hyalinatum. *Steph. Catal. 307. No. 3405.*

Pale flesh-colour: thorax with two fainter lines; legs pale flesh-colour; filaments as long as the insect, whitish, with a tint of red, and faintly dotted with fuscous; wings long and narrow, very clear and transparent, colourless; nervures extremely faint.

Pseudimago pale ochreous, with the wings above brownish-yellow.

Not uncommon throughout the metropolitan district; also found near Dover and in Devonshire, in June and the beginning of July.

Sp. 4. albipenne? *Nigrum, abdominis basi pallido, apice fusco, pedibus pallidis geniculis nigricantibus; alis hyalinis.* (Exp. Alar.  $5\frac{1}{2}$  lin.; Long. corp. 3 lin.; l. set. 4 lin.)

Cl. dorsale. *Steph. Catal.* 307. No. 3406.—Ep. albipennis. *Fabricius, E. S.* ii. 70?

Black: abdomen pale at the base and diaphanous, the apex fuscous; filaments very long, white, faintly dotted with fuscous; legs pale, the tips of the femora dusky; wings hyaline, colourless.

Not uncommon near Hertford, in June, and occasionally found in other parts of the metropolitan district.

Sp. 5. unicolore. *Rufescente-ochraceum, pedibus pallidioribus, setis albis immaculatis, alis hyalinis, costâ versus apicem brunnescente.* (Exp. Alar. 8 lin.; Long. corp. 4 lin.; l. set. 4 lin.)

Cl. obscurum. *Steph. Catal.* 307. No. 3404.—Cl. unicolore. *Curtis, Phil. Mag.* 1834.

Reddish ochre: filaments pale; legs pale ochreous; wings hyaline, nervures reddish ochre; costa pale brown towards the tip.

Taken in June, near Hertford.

Sp. 6. cognatum. *Piceo-rufum, abdominis basi pallidioris, pedibus setisque luridis, his fusco punctatis, alis hyalinis.* (Exp. Alar.  $9\frac{1}{2}$  lin.; Long. corp. 4 lin.; l. set. 3 lin.)

Cl. cognatum. *Steph. Catal.* 307. No. 3407.

Shining pale pitchy-red; eyes dusky; abdomen rather palish towards the base, the apex darker, filaments about the length of the insect, pale livid, irregularly dotted with fuscous; wings hyaline, the nervures very pale, the three costal ones tinted with rose-colour.

Found near London, in June.

Sp. 7. dimidiatum. *Castaneo-brunneum, collaris lateribus puncto ochraceo, pedibus stramineis.* (Exp. Alar. 7— $8\frac{1}{2}$  lin.; Long. corp. 3—4 lin.; l. set. 6—7 lin.)

Cl. consobrinum. *Steph. Catal.* 307. No. 3408.—Ba. dimidiatum. *Curtis, Phil. Mag.* 1834.

Chestnut-brown: collar with an ochreous dot on each side; abdomen banded with ochre, especially at the base; filaments very long, white, more or less minutely dotted with fuscous and black; legs pale straw-colour; wings hyaline, colourless, with very faint nervures.

Pseudimago ashy-brown, with fainter rings at the base of the abdomen; wings pale fuscous, with the costal nervures darker.

Found near London, in June; at Hertford, Dover, &c.

Sp. 8. Virgo. *Pallidum, oculis nigris, femoribus anticis versus apicem obscuris, alis hyalinis.* (Exp. Alar. 5 lin.; Long. corp. 2 lin.; 1. set. 3 lin.)

Eph. Virgo. *Olivier.*—Cl. Virgo. *Steph. Catal.* 307. No. 3409.

Pale: eyes black; filaments longer than the body, immaculate; legs pale, anterior pair moderate, their femora obscure towards the apex; wings hyaline, colourless.

Inhabits the vicinity of London, in June.

### SECTION III.—LIBELLULINA, *Mac Leay.*

*Antennæ* short, awl-shaped, inserted between the eyes, consisting of from five to seven joints, the two basal ones mostly largest, the remainder forming a hair-like style: *mouth* ample: *mandibles* powerful, horny, robust, 3-gonate, more or less dentate: *maxillæ* crustaceous, compressed, strong: *head* large, hemispheric or transverse: *eyes* very large: *ocelli* three, placed triangularly, or in a straight line: *wings* equal, or the posterior pair sometimes the largest, all very thickly reticulated, placed erect (during repose), or extended horizontally: *abdomen* very long, cylindric, or slightly clavate, sometimes depressed, not furnished with setæ at the apex, but in the males with forcipated or lamellated appendages: *legs* short, inflexed anteriorly: *tibiæ* angulated, ciliated: *tarsi* 3-jointed, cylindric. Metamorphosis triple.

This section comprises a race of insects no less distinguished by their pre-eminent voracity than by their gigantic stature; some of the species being amongst the largest of the indigenous insects. The larvæ and pupa are aquatic, and somewhat resemble the perfect insect, except in wanting wings; they subsist upon other insects, and are extremely voracious; their oral organs are in part combined into a sort of mask, concealing the face, and with which they are enabled to seize their prey with great facility.

They may be divided into the two following families, thus cursorily distinguished:—

<i>Caput</i> transversum ( <i>alæ</i> erectæ):	.	.	.	.	1. AGRIONIDÆ.
hemisphæricum ( <i>alæ</i> horizontalitèr extensæ):	.	.	.	.	2. LIBELLULIDÆ.

### FAMILY I.—AGRIONIDÆ, *Leach.*

*Head* transverse, much broader than the thorax, not vesicular above: *eyes* remote, semiglobose: *ocelli* placed in a triangle: *wings* erect, narrow: *abdomen* linear-cylindric, slender, and sometimes very long; of the males occasionally with a forcipated appendage at the apex.

The larvæ and pupæ are long and slender, rather gradually attenuated to the

apex of the abdomen, which is terminated by three broad, somewhat elliptic plates: the mask is flat, with the upper edge of the mentum in some terminating in a point, or forked in others.

The indigenous species are comprehended in the following genera, thus distinguished by external characters:—

<i>Alæ membranacæ; stigmatâ rhomboideâ:</i>	.	.	.	7. AGRION.
<i>oblongo-quadratâ:</i>	.	.	.	8. LESTES.
<i>coriaceo-membranacæ, stigmatâ nullâ:</i>	.	.	.	9. CALEPTERYX.

GENUS VII.—AGRION, *Leach.*

*Wings* very narrow, thin and membranaceous, composed of numerous areolets, the major portion of which are tetragonal and quadrate, the fourth longitudinal nervure not angulated towards the apex: *stigma* rhomboidal: *abdomen* very slender, linear, its apex in the males not furnished with forceps, but with from two to six short appendages, of variable form: of the female simple. Mask of the larva with a single projection on the upper edge of the mentum.

This genus differs conspicuously from *Lestes* in the structure of its wings, and may be readily distinguished therefrom by the following characters, viz. that the majority of the areolets are 4-angled and nearly quadrate, there being usually but one, or at the most two, rows on the hinder margin and apex, that are 5-angular; the stigma also is rhomboidal: the species are much smaller than those of the following genus, the head narrower in proportion, the body more cylindrical and linear, and in the males destitute of forceps; though in one species the caudal appendage is curved and somewhat forcipated, but that may be known from *Lestes* by the wings and by having the posterior tibiæ dilated.

A. †Four posterior tibiæ not dilated (*caudal appendage* of the males not incurved).

Sp. 1. *rubellum*. PLATE XXIX. f. 4.—*Rufescens, capite postice et thorace supra fusco-æneis, abdomine maris rubro, femina nigro, basi rubro, pedibus rubris.* (Long. corp. 1 unc. 2—3 lin.; Exp. Alar. 1 unc. 5—6 lin.)

*Ag. rubellum.* *Vander Linden.*—*Ag. rufipes.* *Steph. Catal.* 307. No. 3410.

Head above and behind, and the thorax above, brownish-brass, beneath reddish or greenish; abdomen bright red, immaculate; legs pale red; wings with a pale fuscous stigma. Female with the abdomen black, the two basal and the terminal segments, and a line beneath the others, red.

The wings are sometimes suffused with pale yellow.

Found in June near Brockenhurst, and in other parts of the New

Forest not uncommonly; and occasionally within the metropolitan district.

Sp. 2. xanthopterum. *Rubra, maculâ verticis lineâ dorsali thoracis abdomineque supra, segmento antepenultimo excepto, viridi-æneis, alis flavescentibus.* (Long. corp. 1 unc.  $3\frac{1}{2}$  lin.; Exp. Alar. 1 unc. 7 lin.)

Ag. xanthopterum. *Steph. Nomen. 2d edit. col. 113.*

Head pale red, with a black transverse streak on the labrum and another on the clypeus, crown with a large rhombic blackish-green-brassy patch; thorax bright pale red, with a narrow dorsal brassy-green streak; abdomen pale red, the basal segment with an irregular blackish streak above, the five following brassy-green above, the next wholly red, the remainder brassy above; legs red, with a brassy streak on the anterior edge of the four anterior femora and tibiæ; wings pale yellowish, with a fuscous stigma.

Taken near London, in June.

Sp. 3. elegans. *Atro-æneum, puncto rotundo post oculum utrumque, lineâ longitudinali utrinque in thorace cæruleis, viridibus aut flavidis, collaris margine postico in medio cornuto, segmento antepenultimo cæruleo.* (Long. corp. 1 unc. 3—4 lin.; Exp. Alar. 1 unc. 5— $6\frac{1}{2}$  lin.)

Ag. elegans. *Van Linden.—Ag. zonata. Steph. Catal. 307. No. 3411.*

Brassy-black, bluish beneath; on each side the head, behind the eyes, above, is a round blue or yellowish spot; thorax with a longitudinal blue line on each side; abdomen with the antepenultimate segment blue, the penultimate with two elevated tubercles; legs pale, black above; wings white; stigma anteriorly pale, posteriorly black. Female with the abdomen stouter, fuscous, the antepenultimate segment less evidently blue, or with two dots only of that colour, and its terminal segment destitute of the tubercles; wings with a white or bluish stigma; collar, in both sexes, with the hinder margin reflexed, and armed with a short horn in the middle.

In some examples the thorax is pale reddish or yellowish, with a narrow dorsal streak of brassy black.

Abundant, during June and July, within the metropolitan district.

Sp. 4. ezonatum. *Fusco-æneum, subtus flavidum, thoracis lineâ utrinque longitudinali lateribusque cæruleis, collaris margine postico rotundato.* (Long. corp. 1 unc. 2 lin.; Exp. Alar. 1 unc. 6 lin.)

Ag. ezonata. *Steph. Catal. 307. No. 3412.*

Brown-brassy, yellowish beneath; labrum with a transverse black streak; collar rounded behind; thorax with a slender blue line on each side, and the sides themselves also blue, gradually shaded into yellowish; abdomen with the base and sides bluish, beneath yellowish; the basal segments



above with an irregular brassy-black streak, thickened posteriorly; legs pale, femora with a black patch towards the apex anteriorly; wings white, stigma pale fuscous.

Also found near London, in June, but rarely.

Sp. 5. Puella. *Azureum, nigro-æneo pictum, collari æneo, undique azureo marginato et punctis 2-bus ad latera azureis, margine postico profundè bisinuato.* (Long. corp. 15—16½ lin.; Exp. Alar. 19—20 lin.)

Li. Puella. Linné.—Li. lucifugus. Harris, *Exp. pl. xxix. f. 5, 6 ?*—Ag. Puella. Steph. *Catal. 307. No. 3413.*

Azure, varied with æneous, paler in the female: collar somewhat quadrate, deeply bisinuated behind; brassy-black, edged with azure, and with a spot of the same on each side; thorax of the male with four broad brassy-black streaks, nearly united behind, so as to form an azure mark, resembling !, when viewed laterally; of the female with narrow brassy streaks, not united behind; abdomen with brassy-black markings above on a blue ground, the 2d segment with furcate brassy spots, pointing anteriorly, and always united behind with the dark margin, beneath all the segments are whitish-sulphur; male with six caudal appendages, female with two; in this sex the 2d segment bears a trilobate spot; legs in both sexes blue, with the outer edge of the femora and inner one of the tibiæ black.

Rare in England: it has occurred, in June, near London.

Sp. 6. furcatum. *Azureum, æneo pictum, collari æneo undique azureo marginato punctisque 2-bus ad latera azureis, margine postico levitèr bisinuato.* (Long. corp. 15½—16 lin.; Exp. Alar. 18—19 lin.)

Ag. furcatum. Charpentier, *Horæ Ent. p. 48.*—Ag. cingulata. Steph. *Catal. 307. No. 3414.*

Azure, paler in the female, with brassy markings; collar nearly quadrate, slightly bisinuated behind, brassy-black, edged with azure, and a dot of the same on each side; thorax nearly as in Ag. Puella, but the azure streaks broader, and never forming a mark of ! in the males; abdomen above marked and the segments bordered with brassy-black, the 2d segment with a horse-shoe shaped brassy spot, opening forwards, angulated behind, and never united to the margin of the segment; beneath pale azure; caudal appendages four, and two in the female, in which sex the abdomen wants the azure colour; legs as in the foregoing species.

Extremely abundant during the summer, within the metropolitan district: found also in the New Forest, and at Dover, Whittlesea Mere, &c.

Sp. 7. hastulatum. *Azureum, æneo pictum, collari nigro-æneo undique azureo marginato, margine postico recto, in medio perpauillum producto.* (Exp. Alar. 18—19 lin.; Long. corp. 15½—16 lin.)

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Ag. hastulatum. *Charpentier, Horæ Ent. p. 20.—Steph. Nomen. 2d edit. col. 113.*

Azure: face with two transverse black-brassy streaks; crown and occiput bronzed, the latter with two large spots, square in the male, yellowish in the female, sometimes united by a faint line; collar brassy-black, bordered with azure or yellowish, its hinder margin very slightly produced in the middle; thorax azure, yellow in the female, the back and a lateral line in both sexes brassy; male with the abdomen azure, the 1st segment with a transverse brassy dot at the base, 2nd with short longitudinal lines of the same on the sides at the base, and a spear-shaped spot behind; the 3rd to 6th segments have increasing brassy margins, the two following are wholly azure, the terminal one black, with the sides azure; its hinder margin is deeply cut out, and is furnished with four appendages. Female yellowish, or greenish, varied with brassy-black, the two basal segments each with a large spot of this colour, that of the 2nd emitting a lateral twig; the remaining segments are brassy above, with a short transverse yellow line at the base of each; legs whitish, black without.

Found, not commonly, near London, in June.

Sp. 8. annulare. *Azureum, æneo pictum, collari nigro-æneo flavido marginato: margine postico subreflexo et bisinuato, abdomine cingulis flavidis.* (Long. corp. 16 lin.; Exp. Alar. 19 lin.)

Ag. annularis. *Leach MSS.—Steph. Catal. 307. No. 3415.*

Azure, varied with brassy; face yellowish, with two transverse black streaks; crown and occiput brassy-black, the latter with a triangular yellowish spot on each side; collar rather short, edged with yellowish, its hinder margin faintly reflexed and a little varied; thorax brassy-black, with five azure streaks; abdomen brassy-green, the extremity of each segment with a yellowish ring; legs ochreous, with a black line above.

Abundant within the metropolitan district in June.

Sp. 9. rufescens. *Pallide rufa, thorace lineis 3-bus atro-æneis, pedibus rufescentibus extus nigris, abdomine maris rufo segmentis nigro marginatis, foeminae supra æneo subtus luteo-rufo, pallide marginatis.* (Long. corp. 15—16 lin.; Exp. Alar. 20—21 lin.)

Ag. rufescens. *Leach MSS.—Steph. Catal. 307. No. 3416.*

Head reddish, pale beneath; labrum with a black streak, crown and occiput black, the latter with two red dots behind the eyes; thorax pale red, with a broad brassy-black line in the middle, and a very narrow one on each side, faintly edged with whitish without; abdomen pale red, each segment broadly tipped with brassy-black, and the three last segments nearly all of that colour, the last segment deeply excised; legs pale red, black without; legs hyaline, stigma pale. Female with the abdomen brassy above, the sides and beneath reddish, each segment with a narrow pale reddish border.

Not very uncommon, in the neighbourhood of the metropolis, in June.

Sp. 10. *minium*. *Sanguineo-minium; atro-æneo pictum, pedibus nigris*. (Long. corp. 14—17 lin.; Exp. Alar. 20—23 lin.)

Ag. *minium*. *Charpentier, Horæ Ent. p. 13.—Ag. sanguinea. Steph. Catal. 307. No. 3417.*

Blood-red: head brassy-black above, greenish beneath, reddish in front, with two black streaks; eyes red; thorax brassy-black above, with a red or luteous streak on each side, the sides themselves luteous, with two black stripes; abdomen with its first segment black, five next red, with the hinder margin black, 7th red, brassy in the middle, two following brassy, red at the apex, 10th red, with two brassy dots; appendage black; legs black, coxæ luteous. Female with the abdomen having a brassy-black dorsal line from the base of the 2nd to the tip of the 6th segment, dilated on the apex of each segment, the three following segments brassy-black, the edge of the 9th being red.

Extremely abundant throughout the metropolitan district, during the month of June; also found in other parts of the country, as at Dover, in Devonshire, the New Forest, &c.

Sp. 11. *fulvipes*. *Sanguineum, nigro-æneo pictum, pedibus rufo-fulvis*. (Long. corp. 17 lin.; Exp. Alar. 24 lin.)

Ag. *fulvipes*. *Steph. Nomen. 2d edit. col. 113.*

Head brassy, front red, with two black streaks; thorax brassy above, with a slightly interrupted yellowish-red streak on each side, the sides themselves and beneath reddish-yellow, with brassy sutures; abdomen blood-red, the five basal segments each with two transverse brassy streaks at the apex, the remainder brassy above, with the sides and apex red; legs tawny-red; wings hyaline, stigma pale red.

Sometimes all but the two basal segments of the abdomen are brassy above.

Taken at Coombe wood, and near Ripley, in June.

Sp. 12. *Chloridion*. *Supra æneum, subtus flavescens, abdomine supernè levitèr subtus et in ultimis segmentis totis cæruleo pulveratis; fœminæ thoracis dorso lineâ pictâ utrinque abbreviatâ punctoque adjacentè flavo*. (Long. corp. 16½ lin.; Exp. Alar. 23 lin.)

Ag. *Chloridion*. *Charpentier, Horæ Ent. p. 14.—Ag. Lincolnensis. Steph. Catal. 307. No. 3418.*

Head large; front yellowish, very hairy, mouth black above; crown brassy-brown; eyes very large, anterior yellow, above rusty or red; collar unequal, moderately rounded behind, brassy-brown, sides yellow; thorax brassy above, the sides and space between the wings yellow; abdomen deep

brassy-green above, beneath yellow, slightly dusted with blue, the two terminal segments wholly blue; the margins black; the last segments deeply excised, furnished with four appendages; legs black, whitish within; wings hyaline, stigma whitish, black in adults. Female with the eyes rusty-luteous, the collar with the hinder margin reflexed, and deeply bisinuated, forming an acute yellow prominence in the middle; thorax brassy above, with an interrupted streak on each side, resembling a ! in form, the sides and beneath sulphur-yellow; abdomen brassy, its sides and below bright yellow, sometimes dusted with whitish; legs yellow, with a black streak without.

The adult males have the back of the head, the space between the wings, &c. more or less dusted with blue.

Found in Lincolnshire, in June.

B. Four posterior *tibiæ* dilated (*caudal appendage* of the males curved, and resembling forceps).

Sp. 13. *platypoda*. *Albidum, thorace strigis 5 longitudinalibus fusco-æneis, abdomine cæruleo aut lacteo, segmentis atro-æneo marginatis punctisque binis notatis, tibiis 4 posterioribus dilatatis.* (Long. corp. 16—17 lin.; Exp. Alar. 22—24 lin.)

Ag. *platypoda*. *Van. Linden, p. 37.—Ag. corea. Steph. Catal. 307. No. 3419.*

Head whitish, behind yellowish or blue, with a streak in front, and a broader one between the eyes, which are very remote, black; collar rough; thorax whitish or bluish, with a broad central black streak (sometimes divided by a narrow pale one down the back), and two narrow ones on each side, somewhat interrupted anteriorly; abdomen bluish, the 2nd segment with three black spots, the four next with a longitudinal line, and the rest with two lines; the proportions varying in different examples; legs whitish, the four hinder *tibiæ* with a broadly dilated white membrane, edged with black hairs; wings hyaline, stigma rusty. Female reddish when the male is blue, and with a black streak on the two basal segments of the abdomen.

Var.  $\beta$ . *Ag. albicans. Leach MSS.*—With the abdomen white, each of the six anterior segments with a double black spot near the tip, and the extreme edge also black, the remaining segments with two black streaks.

Apparently not very abundant, or rather local, as it occurs somewhat plentifully in Walsham meadows, near Ripley, in July; also found in the New Forest and in Devonshire.

#### GENUS VIII.—LESTES, *Leach*.

*Wings* narrow, thin and membranaceous, composed of numerous small areolets, the greater portion of which (especially towards the apex) are pentagonal, the fourth longitudinal nervure angulated; *stigma* oblong,

rather large: *abdomen* slender, nearly linear, being a little dilated at the apex, which in the males is furnished with semicircular appendages, of the female with simple ones; *wings* half expanded (as in *Smerinthus*) during repose. Mask of the larvæ with a double projection on the upper edge of the mentum.

From *Agrion* the species of this genus are distinguished with facility by the areolets of the wings being more numerous, and by the greater portion of them towards the apex, especially on the margins, being either pentagonal or polygonal, rarely quadrangular, the fourth longitudinal nervure being much angulated in numerous zigzags; the stigma is oblong, and the males are distinguished by having the apex of the abdomen armed with curved forceps; yet, regardless of these obvious distinctions, these insects, as well as those of the preceding genus, were long considered as constituting *one species* only, and are thus considered in the latest works of the celebrated Latreille, although the discrepancies of the two genera were pointed out by Leach in 1810!!

Sp. 1. *viridis*. *Suprà lateribusque viridi-ænea, nitens, subtus flavescens, pedibus luteis suprâ atris, stigmatè rufo.* (Long. corp. 17—18 lin.; Exp. Alar. 20—21 lin.)

Ag. *viridis*. *Van. Linden, p. 36.—Le. sponsa. Steph. Catal. 308. No. 3420.*

Head bright brassy-green; mouth and beneath yellow; tips of the mandibles black; collar brassy-green, with the sides and a dorsal line yellow in the females; thorax above bright grassy-green, with three slender longitudinal yellow lines, the sides and space between the wings luteous-yellow; abdomen above and on the sides rich brassy-green, beneath yellowish, the extreme edge of most of the basal segments also yellowish; upper caudal appendage in the male luteous, the tip fuscous; lower fuscous; legs luteous, black above; wings with a red or fuscous stigma.

Some examples are of a brighter and richer green than others, while some are bronzed.

Not uncommon in the New Forest in June and July; also found near Wanstead in Essex, and in the vicinity of Ripley, and in Suffolk.

Sp. 2. *Nympha. Suprà lateribusque viridi-ænea, nitens, subtus flavescens, pedibus rufescentibus suprâ atris, thoracis lateribus utrinque lineâ nigrâ, stigmatè atro.* (Long. corp. 17—18 lin.; Exp. Alar. 20—21½ lin.)

Le. *Nympha. Kirby MSS.—Steph. Catal. 308. No. 3421.*

Head bright brassy-green or bronzed above, the mouth and beneath yellowish; thorax also brassy-green above, with three fine yellowish streaks, the sides

yellowish, each with a single irregular black streak; space between the wings dull luteous; abdomen above and on the sides brassy-green, beneath luteous; caudal appendages of the males fuscous, pale at the base; legs reddish, black above; wings with a black or fuscous stigma.

Probably a mere variety of the foregoing insect.

Found with the preceding insect.

Sp. 3. forcipula. *Supra lateribusque viridi-ænea, nitens, abdomine subtus flavescente, thoracis lateribus maris cæruleo pulveratis, fœminæ luteis, pedibus atris.* (Long. corp. 18—19 lin.; Exp. Alar. 21—22 lin.)

Ag. forcipula. *Charpentier, Horæ Ent. p. 6.—Le. autumnalis. Steph. Catal. 308. No. 3422.*

Head dull brassy-green, the mouth yellowish; tips of the mandibles black; collar with a yellowish margin behind; thorax above dull brassy-green, with three faint yellowish streaks, the sides and space between the wings covered with a fine blue bloom, on a dusky ground; abdomen brassy-green above, yellowish below, the terminal segments with a blue bloom; caudal appendages of the males black, sometimes luteous at the base; legs black, occasionally yellowish beneath, especially at the base; wings with a black or fuscous stigma. The female has the sides of the thorax luteous, without the blue gloss.

Found abundantly in some of the marshy districts in the vicinity of the Thames, especially about Plaistow in Essex; also taken in the New Forest, in Devonshire, near Ripley, &c.

#### GENUS IX.—CALEPTERYX, *Leach.*

*Wings* coloured, broadish, of a coriaceous texture, composed of very numerous rectangular and polygonal areolets, which are very small and irregular on the margins; the longitudinal nervures also numerous and recurved towards the inner margin at the apex: *stigma* in the males wholly obliterated, in the females formed by a curve in the nervure, and thickened: *head* very broad, tumid in front, and very pilose: *eyes* large, globose: *collar* unequal: *thorax* ample, with a strong dorsal ridge: *abdomen* very long, cylindric, somewhat linear, a little swollen at the apex, which last, in the males, is furnished with curved appendages. Mask of larva with a triangular excision at the tip, terminating in two points.

These insects may be known from those of the two preceding genera by the greater width of their wings, which are moreover very thickly reticulated, and composed of very numerous areolets, of various forms, though the majority are rectangular: they are mostly adorned with bright colours, and in the males wholly destitute of

stigmata, which mark in the females is indicated by a white patch in a small wave towards the apex of the second costal nervure: the abdomen of the male is furnished at its tip with a curved appendage.

Sp. 1. *Virgo*. *Viridi-aut cæruleo-ænea, sericea, ore ventreque nigris, abdominis apice subtus luteo; alis angustioribus.* (Long. corp. 21—22 lin.; Exp. Alar. 28—32 lin.)

Le. *Virgo*. Linné.—Ca. *Virgo*. Steph. Catal. 308. No. 3423.—Li. splendeo. Harris, Exp. pl. xxx. f. 4 ♂, 5 ♀.

Above of a rich silky-green or brassy-blue, occasionally coppery; mouth and under parts deep black; legs black; abdomen at its apex beneath luteous, and sometimes with a faint line of that hue on each side beneath; anal appendages black, the lower ones luteous at the base beneath. Wings variable.

Var. *α*. Male: wings hyaline, with a broad central transverse bluish-green, or brownish fascia.

Var. *β*. Male: wings deep blue-black, the base hyaline, and apex slightly fuscous.

Var. *γ*. Male and female: wings entirely brownish.

Var. *δ*. Female: wings greenish, with a minute whitish stigma, or nearly immaculate.

Var. *ε*. Female: anterior wings greenish-hyaline, posterior fuscous; all with a white stigma.

The clypeus has sometimes a minute yellow dot; and in some females a round spot of the same is found on the front, near each eye.

A common species throughout the metropolitan district, during the early summer months.

Sp. 2. *Ludoviciana*. *Viridi-aut cæruleo-ænea, sericea, ore abdominisque apice subtus luteis, alis subattenuatis.* (Long. corp. 22—23 lin.; Exp. Alar. 29—32 lin.)

Ca. *Ludoviciana*. Leach MSS.—Steph. Catal. 308. No. 3424.

Above bright silky-green, brassy-blue or coppery; mouth more or less clear luteous, or yellowish; under parts black, except the apex of the abdomen, which is luteous; legs black; anal appendages the same, with the base of the lower ones yellowish. Wings broadish and long, variable in colour.

Var. *α*. Male: wings wholly of a rich deep blue-black.

Var. *β*. Male: wings deep blue-black, with the apex hyaline.

Var. *γ*. Male and female with the wings wholly fuscous; in the latter sex with distinct white stigmata.

Also a common species throughout the metropolitan district: found also in the New Forest and in Devonshire.

Sp. 3. *xanthostoma*? *Supra viridi-ænea, sericea, ore abdominisque lateribus luteis, pectore flavido picto, alis angustioribus, virescentibus, posticis apice fuscis.* (Long. corp. 22 lin.; Exp. Alar. 28 lin.)

Ag. *xanthostoma.* *Charpentier, H. E. 5?*—Ca. *xanthostoma.* *Steph. Nomen. 2d edit. Appendix.*

Above bright silky brassy-green; mouth and sides of the abdomen dull luteous, the three last segments of the latter with a bright testaceous streak; appendages and legs black, these last long and slender; breast varied with yellowish; wings narrow, anterior wholly brownish-green, with greenish nervures, posterior brownish-green, with the apical half brown, all with a white stigma.

Apparently uncommon: my specimens occurred in the vicinity of the metropolis in June, I believe at Darenth wood.

Sp. 4. *anceps.* *Supra viridi-ænea, sericea, subtus atra, labro medio, antennarum basi, abdominisque apice subtus flavis, alis latiusculis, areolis numerosissimis minutissimisque.* (Long. corp. 2 unc.; Exp. Alar. 2 unc. 8 lin.)

Cal. *anceps.* *Steph. Nomen. 2d edit. Appendix.*

Above fine silky brassy-green, beneath black; middle of the labrum and base of the antennæ bright yellow; tip of the abdomen beneath dull yellow; appendages fuscous, black at the apex; legs black; wings broad, wholly of an uniform pale brown, with extremely numerous palish nervures, reducing the areolets to about one-third the size of those in the ordinary species.

It is with some reluctance I give this as a new species, but the extraordinary neuration of the wings demands such a proceeding.

Found at Coombe wood, in June.

## FAMILY II.—LIBELLULIDÆ, *Leach.*

*Head* hemispheric; *ocelli* placed in a line, or in a triangle, on a vesicle: *eyes* very large, mostly contiguous, sometimes remote: *wings*, during repose, placed horizontally, and rather ample: *abdomen* cylindric, or clavate, sometimes depressed, or compressed, rarely thickened in the middle; of the males with a forcipated appendage: *claws* toothed.

The larvæ and pupæ have the body short, and furnished at its extremity with five appendages, which form an acute or subtruncate tail; the mask is arched or flattish, and the upper edge of the anterior terminates in two serratures, occasionally furnished with a moveable hook at the tip.

The indigenous species were divided into the following genera by Leach in 1810; but the continental writers do not appear to recognise more than the two largest groups:—



*Ocellis 3-bus in lineâ transversâ positis.*

*Oculis suprâ contiguïs : abdomine elongato cylindrico.*

- Alis acuminatis ; stigmatibus elongatis :* . . . . . 10. ANAX.  
*obtusis ; stigmatibus oblongis :* . . . . . 11. ÆSHNA.  
*vix contiguïs ; abdomine clavatis :* . . . . . 12. CORDULEGASTER.  
*remotis :* . . . . . 13. GOMPHUS.

*3-bus in triangulo sitis :*

- Capite et thorace metallicis :* . . . . . 14. CORDULIA.  
*haud metallicis :* . . . . . 15. LIBELLULA.

### GENUS X.—ANAX, *Leach.*

*Labium* with its middle lobe transverse, somewhat ovate-quadrate, tumid, divided by a longitudinal impression into two parts, its apex deeply emarginate; lateral lobes not encircling the central one, furnished with a moveable acuminate process, which rests on the upper edge of the inner lobe: *mandibles* with long denticulations: *labrum* slightly emarginate: *head* semiglobose, its front very prominent, somewhat acute and vesicular: *ocelli* placed in a line upon a slight elevation: *eyes* contiguous: *abdomen* elongate-cylindric, its basal segment tumid, third coarctate; the apex of the male with three appendages, the lower one truncate, of the female with two lanceolated ones: *wings* long, slender, somewhat acute at the apex; *stigma* very long and narrow; the hinder margin of the posterior pair rounded in both sexes.

Exclusively of slight variations in the trophi, &c. the only indigenous species of this beautiful genus differs from *Anax* in that both sexes have the hinder margin of the posterior wings rounded within; the abdomen is not clavate, and its anal appendages are long in both sexes.

Sp. 1. *formosa*. *Thorace azureo aut virescente immaculato, abdomine strigâ dorsali angulosâ nigrâ, pedibus nigris, basi rufis.* (Long. corp. 3 unc. 1—2 lin.; Exp. Alar. 4 unc.—4 unc. 2 lin.)

Æshna *formosa*. *Van. Linden* 20.—An. *Imperator*. *Steph. Catal.* 268. No. 3455.

Head azure, luteous beneath, mouth fuscous; eyes green, yellow behind; thorax immaculate azure or greenish, dorsal sutures blackish; space between the wings azure, with black sutures; abdomen with the basal segment tumid, third attenuated, the first greenish, the remainder pale azure, with the margins and a continuous irregular band reaching to the apex black; anal appendages fuscous, legs black, femora reddish at the base; wings hyaline, costal nervures and a few of the transverse ones yellowish, remainder black; stigma oblong, fuscous.

Female with the abdomen fuscous at the base, the hinder margin of the first

segment luteous. In my specimens the wings are brownish, with the costal nervure reddish.

Not uncommon, in June and July, in several parts of the country, especially in the New Forest; also taken on Wandsworth and Wimbledon commons, near Hertford and Epping; likewise occasionally at Arno's Grove, near Southgate.

GENUS XI.—ÆSHNA, *Fabricius*.

*Labium* nearly as in *Anax*, its central lobe not so deeply emarginate on its margin, and the moveable process at the apex of the two lateral ones longer, more slender, and acute: *labrum* tumid, deeply notched: *mandibles* acutely dentate: *head* semiglobose, its front prominent and vesicular; *eyes* contiguous: *ocelli* placed in a line upon a small linear vesicle: *abdomen* elongate-cylindric, the basal segment slightly tumid, the third rather coarctate; the apex furnished in the males with three appendages, of variable form, the upper ones elongate, and in the females with two mostly lanceolate: *wings* ample, rather obtusely rounded at the apex, stigma generally oblong; the inner margin of the hinder pair produced into a more or less acute angle in the males, rounded in the females.

In this genus the males are distinguished from *Anax* by having the inner margin of the posterior wings more or less angulated, and sometimes a little waved in the males, but rounded in the females; both sexes differ in having the anal appendages somewhat dissimilar, and also the trophi: the species are usually of large size: the abdomen is not clavate in either sex.

†Sp. 1. *rufescens*. *Rufa*, thorace fasciis utrinque duabus luteis, abdomine nigro lineato, 2-do segmento maculâ triangulari baseos luteâ, alis flavescentibus, membranulâ accessoriâ magnâ, nigricante. (Long. corp. ♀ unc. 3—7 lin.; Exp. Alar. 3 unc. 4—8 lin.)

Æsh. *rufescens*. *Van. Linden*, p. 27.—Æsh. *Dalii*. *Steph. Catal.* 308. No. 3426.  
Æs. *chrysophthalmus*. *Charpentier*, *H. E.* 33.

Pale red, or lutescent; tip of the mandibles and line on the crown brown; eyes greenish; thorax dusky-red, with 2 oblique luteous streaks on each side, and a yellow raised dot at the base of each wing; abdomen with the basal segment immaculate, second with a triangular spot at the base, and a transverse line on each side luteous; following to the antepenultimate with a longitudinal central line, a transverse one anteriorly, and one or more abbreviated ones behind black, the two succeeding with the longitudinal one ashy, the last immaculate; the sides of all with a fuscous dot; anal appendages fuscous, upper pair lanceolate; legs black, rusty at the base; wings yellowish, with rusty stigma.

Female larger, the yellow triangular spot on the second segment of the abdomen larger.

This is the only species of this family I do not possess, and Mr. Newman—to whom I am much indebted for localities of the Libellulinæ—states that it is “not uncommon at Yarmouth.” It likewise occurs at Whittlesea Mere, and at Halvergate, which last is no great distance, I believe, from Yarmouth:

Sp. 2. *grandis*. *Rufa, thorace fasciis utrinque 2-bus luteis, abdomine maris maculis cæruleis luteisque, fæminæ luteis, membranulâ accessoriâ mediocri, albidâ.* (Long. corp. 2 unc. 7—8 lin.; Exp. Alar. 3 unc. 10 lin.—4 unc.)

Li. *grandis*. *Linné.*—*Donovan*, x. pl. 337. f. 2.—*Æsh. grandis*. *Steph. Catal.* 308. No. 3427.

Lutescent or reddish: head rusty, with a fuscous spot on the crown; wings bluish; thorax red, with two oblique bright luteous fasciæ on each side, and an elevated blue dot at the base of each wing; abdomen pale red, basal segment immaculate, second with a lateral spot at the base on each side, and two transverse dorsal streaks luteous, with two blue dots behind; six following with two transverse luteous streaks, and a blue dot on each side at the base, remainder immaculate; appendages red, lanceolate, pilose within; legs red; wings yellowish, stigma red. Female with the spots on the abdomen, and the hinder margin of the segments luteous.

Abundant, during the summer and autumn, in the vicinity of London, especially in Copenhagen-fields and about the Croydon Canal, at Hertford, Ripley, &c.; in the New Forest, and in Devonshire.

Sp. 3. *maculatissima*. *Fusca, thorace strigis 2-bus dorsalibus et fasciis 3-bus obliquis in utroque latere viridi-luteis, abdomine maculatissimo.* (Long. corp. 2 unc. 9—10 lin.; Exp. Alar. 3 unc. 6—7 lin.)

*Æsh. maculatissima*. *Steph. Catal.* 416. No. 3428.—*Li. grandis*. *Donovan*, v. v. pl. 166.

Brown or reddish; face yellowish-green, mouth brown; spot on the crown black; eyes bright blue-green (brown after death), behind black, with a white dot; thorax with two broad greenish streaks above, and three oblique, somewhat confluent, ones on the side, interrupted in the middle; behind the dorsal streaks are two transverse spots, and beneath these two dots, all greenish; abdomen with a dorsal line, and the edges of each segment black, the basal segment has a double spot behind, and another on each side luteous-green, the second an oblong triangular patch, an interrupted transverse streak in the middle, a dorsal spot behind, and others on the sides, of the same hue; the next six have a double spot of the same on each side at the base, two smaller ones before the middle on the back, and

two longer ones on the hinder margin, the 9th and 10th are black at the base, greenish at the apex, and want the dorsal line; caudal appendages fuscous, with a pale streak, the upper pair waved within, mucronated and incurved, the lower acuminate; legs black; wings transparent, or faintly yellowish, stigma fuscous. Female differs slightly in the spotting of the abdomen, and the apical appendage is shorter and lanceolate.

Wings sometimes fuscous; especially at the tip, and the legs occasionally reddish at the base.

A very abundant species throughout the metropolitan district, during the summer: found also at Leominster, Godalming, Coventry, &c. and in Devonshire, the New Forest, and Suffolk.

Sp. 4. *Juncea fuscescens*, thorace supra maculis 2-bus angustis et fasciis 2-abus lateralibus flavidis, abdomine maculatissimo, alis hyalinis membranulâ accessoriâ nigricante. (Long. corp. 2 unc. 8—9 lin.; Exp. Alar. 3 unc. 2—3 lin.)

Li. *Juncea*. Linné?—Æsh. *Juncea*. Steph. Catal. 309. No. 3429.

Fuscous or reddish; face luteous; crown with a black T; thorax with two narrow yellowish dark streaks, and two broader ones on each side; abdomen spotted, the intermediate segments each with a double bluish spot on each side at the base, two at the apex above and two on the disc, towards the base; anal appendages fuscous, the lower one acuminate; legs pale; wings fuscous; accessory membrane dusky.

Probably a variety of the following species, to which it is closely allied.

Rare: found in the vicinity of Whittlesea Mere, in July.

Sp. 5. *mixta*. Viridescens, thorace supra maculis 2-bus parvis obsoletis et strigis 2-bus lateribus luteis, abdomine maculatissimo, alis hyalinis, stigmatè ferrugineo, membranulâ accessoriâ cinereâ anticè albâ. (Long. corp. 2 unc. 8—9 lin.; Exp. Alar. 3 unc. 2—5 lin.)

Æsh. *mixta*. Latreille.—Steph. Catal. 416. No. 3430.—Li. *Coluberculus Harris*, pl. xxvii. f. 1 ♂.

Head greenish, above luteous, with a black patch on the forehead; eyes blue; thorax fuscous, with two small luteous spots above, and two broad oblique fasciæ on each of the sides; abdomen brown, banded with black, the basal segment with a yellow spot on each side, second with a small triangular spot at the base, and a transverse medial line on each side, of the same hue, posteriorly and on the sides blue, with a luteous spot on each side, and the hinder margin black, six following with a transverse bluish line on the back, two spots behind, and two or three on the sides at the base; anal appendages fuscous, pilose on the inner edge, and slightly attenuated towards the base, lower one rusty and acuminate; legs black, with the base of the femora red; wings hyaline, stigma rather long and rusty; accessory membrane ashy, the base white. Female with the eyes greenish, the spots on the

abdomen green, the second segment with two dots behind; wings slightly yellowish.

Not a common species: taken occasionally, in July, near London, about Ripley, and at Godalming and Epping.

Sp. 6. *affinis*. *Thorace supra brunneo, maculis 2-bus luteis, lateribus luteis nigro lineatis; abdomine fusco maculis cæruleis (mas) aut olivaceo, maculis luteis (fœmina)*. (Long. corp. 2 unc. 6 lin.; Exp. Alar. 3 unc. 2 lin.)

Æsh. *affinis*. *Van. Linden, p. 24.—Steph. Nomen. 2d edit. Appendix.*

Head bluish, with a black patch on the crown resembling the letter T; mouth fuscous; eyes blue; thorax above brown, with two luteous spots in front, the sides luteous, with three black lines, the middle one shortest; abdomen with the basal segment black, with its sides luteous, and a blue marginal spot behind, second blue, with an irregular black spot on each side, seven following blue in front, with a 4-angular black dorsal spot, gradually broader and shorter on the hinder ones, black posteriorly, with four blue dots, nearly united on the anterior segments, 9th and 10th black, the former with four, and the latter with two, blue spots; anal appendages fuscous, upper pair lanceolate; legs black, anterior femora yellow beneath at the base; wings hyaline, stigma rusty. Female with the abdomen olive, the basal segment with a luteous spot behind, 2nd with an oblong spot in the middle, a transverse line, and two dots behind also luteous, five next each with a horizontal and a transverse line black, and two yellow dots, three last black, the 8th with four, 9th with two, and 10th with one luteous spot.

Also a rather uncommon species, or at least apparently so: found at Deptford, Godalming, near Southgate and Hertford, in July.

Sp. 7. *vernalis*. *Fusca, thorace lineis aut maculis 2-abus luteis, abdomine maculis numerosis, cæruleis (mas) aut luteis (fœmina), alis maris hyalinis, fœminæ flavescens, stigmatæ perlongo, lineari, luteo*. (Long. corp. 2 unc. 1 lin.; Exp. Alar. 2 unc. 9—10 lin.)

Æsh. *teretiusscula*. *Leach MSS.—Steph. Catal. 309. No. 3431.—Æsh. vernalis. Van. Linden. 21.*

Fuscous: head luteous, face whitish; crown behind and two transverse frontal lines black or fuscous; eyes blue, brown after death; thorax very pilose, sometimes reddish, with two dorsal spots, occasionally minute, and on each side three oblique fasciæ, the central one narrowest and interrupted; abdomen pilose, the basal segment with a blue spot in the middle, the seven following with two short transverse blue streaks towards the base, and two large blue spots on the hinder margin of each, and also with three blue blotches on each side; the two last segments with two blue spots above and two on each side; anal appendages elongate, the apex of the upper pair three-sided, the inner edge pilose, the lower pair truncate and short; legs black; wings hyaline, stigma ferruginous; accessory membrane

snow-white. The female has only two small luteous spots on the thorax, which are sometimes wholly wanting, and the thorax itself is red; the spots on the abdomen are luteous, and the lower anal appendages are wanting; the wings are yellowish, especially at the base and towards the costa: in one of my specimens they are very bright.

Not very uncommon: found within the metropolitan district in June at Hertford, Epping, &c.; also in the New Forest and in Devonshire.

## GENUS XII.—CORDULEGASTER, *Leach*.

*Labium* with its middle lobe flat, not transverse, somewhat rounded-quadrate, with a faint longitudinal ridge, its edge with a very deep notch, its lobes with an acute tooth: lateral lobes moderate, somewhat acuminate at the apex and furnished with a long moveable process: *labrum* tumid, with a deep marginal notch: *mandibles* acutely dentate: *head* semiglobose-transverse: *forehead* very tumid and pilose: *eyes* scarcely contiguous: *ocelli* placed in a curved transverse line, in a depression: *body* pilose: *abdomen* glabrous, elongate, clavate: its apex in the males furnished with four short acute appendages; in the females, with two very long ones: *wings* rather short and narrowish, the inner margin of the hinder pair obtusely angulated in the males, and rounded in the females.

This genus differs from the preceding, not only in having the abdomen clavate in both sexes, but in the structure of the labium, the central lobe of which is very deeply notched, with its two lobes armed with a short acute tooth; the posterior wings of the male are strongly angulated on the inner margin, but rounded in the female; the anal appendage is very short in the male, but long and acuminate in the female; again the eyes are scarcely contiguous.

Sp. 1. *annulatus*. *Niger*, *flavomaculatus*, *thorace strigis dorsalibus flavis duabus, tribusque utrinque lateribus mediâ tenuiore, abdomine maculis cingulisque flavis*. (Long. corp. 2 unc. 10 lin.—3 unc.; Exp. Alar. 3 unc. 6—8 lin.)

Æsh. *annulata*. *Latreille*.—Co. *annulatus*. *Steph. Catal.* 309. No. 3432.—*Li. Boltoni*. *Donovan*, v. xii. pl. 430.

Head yellow, with a black spot on the crown, which has a yellow crest; mandibles and a transverse line on the face above the labrum black, the extreme base of the last, and a faint descending medial line also black; eyes brown, with a white streak behind; collar spotted with yellow; thorax black, with two oblique yellow dorsal stripes, and three lateral ones, the intermediate one narrow, and sometimes interrupted; at the base of each wing is a yellow dot, and sometimes one on the thorax, between the dorsal and lateral stripes; abdomen black, the basal segment with the sides, the

2d with the base and hinder margin, and the five next with a broad transverse fascia in the middle, slightly interrupted down the back, and two narrow lunate spots on the margin yellow, or luteous, the two last segments black, with a small yellow dot on the lateral base of the penultimate; anal appendages black; legs black; wings hyaline, or slightly fuscous, stigma black. Female similar, excepting in the anal appendages and form of the posterior wings.

Widely distributed, though rarely found within the metropolitan district: it has occurred, in July, near Godalming, and in abundance in the New Forest; also at Worcester, Colebrook Dale, in Devonshire, Somerset, Cornwall, Yorkshire, amongst the lakes in the north of England, and near Edinburgh, and Loch Lomond, and Loch Katrine.

### GENUS XIII.—GOMPHUS, *Leach*.

*Labium* with its central lobe transverse-subquadrate, the upper margin curved and entire, its lateral lobes small, somewhat ovate, armed at the apex with a long moveable process: *labrum* slightly emarginate: *mandibles* deeply toothed: *head* pilose, somewhat semiglobose-transverse, *front* tumid; *eyes* remote; *ocelli* placed in a curved line: *collar* distinct: *thorax* and base of the *abdomen* pilose, the latter with the 3rd segment attenuated, its apex clavate, and furnished in the males with four short appendages, and two processes in the females: *wings* moderate, rather acute at the apex, the hinder pair in the males with a deep notch and acute angle, in the females rounded: accessory membrane, in both sexes, minute.

The remote eyes of the insects of this genus at once point out a ready distinction from the other genera of this family, exclusively of which the abdomen is clavate, furnished with rather short anal processes in both sexes; the posterior wings angulated on the inner margin in the males, but rounded in the females; the middle lobe of the labium has its upper edge entire, and the species are mostly of small size.

Sp. 1. forcipatus? *Thorace nigro, characteribus flavis, abdomine nigro, lineâ dorsali tenui, ultimâ 3-iâ segmentâ abdominaliâ non attingente, maculisque lateralibus flavis, appendicibus pedibusque atris.* (Long. corp. 1 unc. 9—10½ lin.; Exp. Alar. 2 unc. 5—6 lin.)

Li. forcipata. *Linné?*—*Donovan, v. xii. pl. 423.*—*Go. vulgatissimus. Steph. Catal. 309. No. 3433.*

Front yellow, with three transverse black streaks, dilated in the middle, and rarely confluent; eyes cinereous; thorax yellow, with six black lines above,

two being dorsal, and two on each side in pairs; abdomen black above, the basal segment with a triangular blotch, the 2d with a trilobed spot, and the five next with a narrow line, yellow, the three terminal segments silky-black above; on the sides all are spotted with yellow, and the 1st, 2d, and penultimate segments are entirely yellow; caudal appendages black, upper pair straight, with the apex mucronated, lower somewhat curved; legs wholly black, or with a small yellow dot at the base of the anterior femora; wings hyaline, stigma livid; anal angle deeply notched. Female similarly coloured; caudal appendages very short.

Taken occasionally at Coombe wood, in July and August, and in the vicinity of Dartford, and other places within the metropolitan district; also at Dinmore Hill, Herefordshire, but rarely in this locality.

Sp. 2. *flavipes*. PLATE XXX. f. 1.—*Thorace nigro, characteribus flavis, abdomine nigro, lineâ dorsali tenui usque ad ultimum segmentum abdominale ductâ, maculisque lateribus flavis, appendicibus nigris basi flavis, pedibus flavis, nigro lineatis.* (Long. corp. 1 unc. 10 lin.; Exp. Alar. 2 unc. 6 lin.)

Æsch. *flavipes*. Charpentier, *Horæ Ent.* p. 24.—Go. *pulchellus*. *Steph. Catal.* 309. No. 3434.

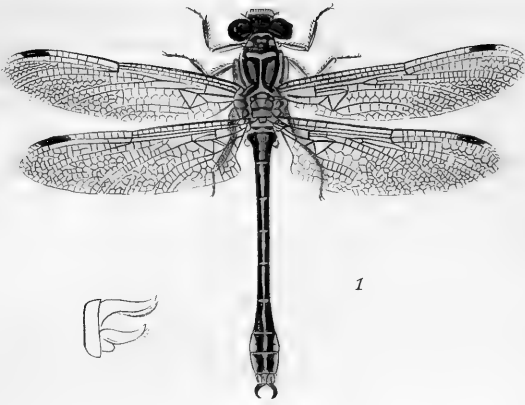
Front yellow, with a single transverse black line; eyes ashy; thorax greenish-yellow, with three nearly equidistant black streaks, on each side of which the two inner ones are united anteriorly, and all posteriorly, leaving a greenish mark on the back resembling a Roman T, and two oval patches on the disc; abdomen black, the sides with a nearly continuous yellow streak, and the back of all but the last segment with a yellow line; the 7th to 9th segments have a narrow yellow edge, and the 10th is black, with a minute yellow spot at the base; caudal appendages alike, and equally diverging, the upper pair gradually tapering to an acute point, all black with the base yellow; legs yellow, above black; wings hyaline, stigma rather long and fuscous, anal angle slightly waved.

The only example of this beautiful insect I have hitherto seen I captured about three miles west of Hastings, on the 5th of August, 1818.

#### GENUS XIV.—CORDULIA, *Leach*.

*Labium* tumid, its middle lobe small, transverse-semicircular, the lateral lobes ample, transverse-quadrate, surrounding the central one, and notched at the base of the inner edge: *labrum* with a slight notch on its margin: *head* large, semiglobose: *forehead* much swollen, and vesicular: *eyes* contiguous in front: *ocelli* three, placed in a triangle on a small vesicle: *thorax* pilose: *body* metallic: *abdomen* somewhat clavate; anal appendages of the





1



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3



4





males rather short: wings moderate, posterior pair of the male with the inner margin angulated, of the female rounded; stigma rather short.

The beautiful insects comprised in this genus, or at least the indigenous species thereof, may be known from *Libellula* by having the prevalent colour of a rich metallic hue; they differ in the form both of the labium and labrum, and in other minor particulars; the males have the hinder wings angulated on the inner margin, and the females rounded: these insects, as well as the *Libellulæ*, are distinguished from all the foregoing genera of this family by having the intermediate lamella of the labium small, and surrounded by the lateral ones.

Sp. 1. *ænea*. *Viridi-ænea, nitida, abdominis basi subtus luteo, stigmatè atro vel fusco, appendice anali inferiori maris bifurcatâ.* (Long. corp. 1 unc. 10—11 lin.; Exp. Alar. 2 unc. 8—9 lin.)

Li. *ænea*. *Linné.*—*Donovan, v. xii. pl. 415.*—*Cor. ænea. Steph. Catal. 309. No. 3435.*

Brassy-green and shining: mouth fuscous, labium luteous; eyes green; thorax with a pale reddish pile; abdomen above brassy-green, the sides at the base and margin of the 2nd segment dull tawny; anal appendages brassy, upper pair somewhat cylindrical, lower deeply bifurcate, the apex of each notched; legs black; wings hyaline, the extreme base sometimes orange; stigma black or fuscous, rarely ferruginous. Female with the margin of the 2nd abdominal segment luteous, the anal appendages short, and the wings sometimes flavescent.

Not very uncommon in several places within the metropolitan district towards the end of May or the beginning of June: I have seen it in plenty in Woodford in Essex, and it also occurs at Epping, and near Godalming, rather abundantly.

Sp. 2. *metallica*. *Viridi-ænea, nitida, abdominis medio incrassato, appendicibus analibus maris simplicibus acuminatis, alis lutescentibus, stigmatè luteo.* (Long. corp. 1 unc. 11 lin.; Exp. Alar. 2 unc. 9—10 lin.)

Li. *metallica*. *Van. Linden, p. 18.*—*Cor. metallica. Steph. Nomen. 2d edit. col. 114.*

Brassy-green, shining; head with a curved frontal fascia, the labium and base of the labrum luteous; eyes green, reddish above; thorax with a red down; abdomen with the edge of the 2nd segment, a dot on each side and a lateral stripe, and with a spot on each side of the base of the 3rd, luteous; anal appendages short, acute, lower pair shortest and triangular; legs black, anterior femora luteous at the base; wings lutescent, stigma luteous. Female with the hinder and lateral margins, and a dot on each side of the

two basal segments of the abdomen luteous, the antepenultimate one beneath with an acuminate process.

Rare in England: it has been found within the metropolitan district in June.

Sp. 3. *Curtisii*. *Æneo-viridis, nitida, abdomine compresso, lineâ interruptâ dorsali luteâ, appendicibus analibus maris superioribus incurvatis, pilosis, inferioribus brevibus emarginatis.* (Long. corp. 2 unc.—2 unc. 1½ lin.; Exp. Alar. 2 unc. 10 lin.—3 unc.)

Co. *Curtisii*. *Dale* (*Loudon's Mag.* v. vi. p. 180.)—Cor. compressa. *Steph. Catal.* 309. No. 3436.

Brassy-green, shining; mouth below and streak on the labrum luteous; eyes greenish; thorax clothed with pale down, its extreme apex and two indeterminate spots towards the base of the wings reddish; abdomen clavate, the two basal segments with a narrow luteous streak, the 3rd to the 7th with an interrupted dorsal line, and the 8th with a spot at the base luteous, 9th immaculate, 10th with a luteous patch; anal appendages moderate, upper pair pilose and incurved, lower pair shorter, emarginate; legs black; wings hyaline. Female of a brighter green, the abdomen compressed and carinated, the dorsal streak broader, and the margins of the 3rd, 4th, and 5th segments luteous; wings flavescent, with a black stigma.

I believe the only locality for this insect to be the New Forest, in the vicinity of Brockenhurst, where it occurs in June and July.

#### GENUS XV.—LIBELLULA *Auctorum.*

*Labium* tumid, its middle lobe small, transverse-semicircular, faintly produced in the middle, lateral lobes very ample, transverse-quadrate, truncate at the apex, and surrounding the inner lobe: *labrum* entire: *head* large, semi-globose: *forehead* vesicular and pilose: *eyes* contiguous, or nearly so, in front: *ocelli* three, placed in a triangle on a distinct vesicle: *thorax* ample, pilose: *body* not metallic: *abdomen* of variable form, rarely clavate, its anal appendages moderate, or short: *wings* ample; posterior pair rounded on the inner margin in both sexes; stigma generally oblong.

As mentioned under *Cordulia*, this genus differs in the form of the labium and labrum, and in general by having the abdomen more or less depressed, rarely clavate; the posterior wings are rounded on the inner margin in both sexes: the genus probably requires subdivision, for the insects belonging to section D. differ considerably from the others, both in size and in general form.

A. *Abdomen depressed and dilated*:—*PLATETRUM*, *Newman*.

Sp. 1. *depressa*. *Abdomine lato, depresso, maculis lateralibus luteis, alis anticis maculâ oblongâ baseos posticis 3-angulari fuscis, membranulâ accessoriâ albâ.* (Long. corp. 1 unc. 8—9 lin.; Exp. Alar. 2 unc. 10 lin.—3 unc.)

Li. *depressa*. *Linné*.—*Donovan*, v. i. p. xxiv. ♀. v. iii. pl. 81. ♂.—*Steph. Catal.* 310. No. 3445.

Head fuscous; thorax reddish-brown, palest above, with two longitudinal whitish streaks; abdomen frequently blue above, sometimes brown or testaceous, more or less of the intermediate segments with a rounded yellow spot on the sides; anal appendages small and black; wings hyaline, stigma black; anterior pair with an oblong fuscous spot, veined with deep tawny; posterior pair with a similar spot of a triangular form; accessory membrane white; legs black; femora red. Female with the thoracic streaks lutescent, the abdomen generally of an olivaceous tinge, with most of the segments bearing a luteous spot on the sides, and the three last with a black dorsal line.

Very abundant, throughout the metropolitan district, from the end of May; taken also in the New Forest and near Dover; in Devonshire, Cambridgeshire, Norfolk, Suffolk, &c.

Sp. 2. *conspurcata*. *Abdomine depresso, supra cærulescente (mas), aut rufo, stigmâ dorsali nigrâ (fœmina), alis omnibus strigâ marginali flavâ, posticis lineâ et maculâ 3-angulari baseos fuscis, membranulâ accessoriâ nigricante.* (Long. corp. 1 unc. 7—8 lin.; Exp. Alar. 2 unc. 7—9 lin.)

Li. *conspurcata*. *Fabricius*.—*Sowerby*, *Brit. Mis.* v. i. pl. 46.—*Steph. Catal.* 309. No. 3443.

Head and thorax fuscous; abdomen above bluish, with the base and apex fuscous; anal appendages curved; legs black; wings hyaline, with an indeterminate yellow or pale orange streak from the base to beyond the middle, tip fuscous; stigma black; the anterior have a faint line at the base, the posterior a similar line and a triangular blotch fuscous, the latter is reticulated with bright tawny; accessory membrane dusky. Female pale rufous, the abdomen with a black dorsal line from the 4th to the 9th segments, increasing in width on the hinder margin of each segment; legs black, femora red.

The wings have sometimes a large blackish spot at the extreme tip, and at others are wholly destitute thereof, and intermediate grades occur: in some examples the wings are almost entirely yellow.

Found, though not very commonly, in the marshes about Bermondsey and Deptford, in June, but abundant in the neighbourhood of Norwich.

B. *Abdomen conical and pointed*:—LEPTETRUM, Newman.

Sp. 3. *quadrimaculata*. *Rufa, abdomine apice late nigro, alis basi croceis omnibus maculâ cubitali et stigmate nigris, posticis maculâ 3-angulâ baseos fuscâ, membranulâ accessoriâ allâ.* (Long. corp. 1 unc. 10—11 lin.; Exp. Alar. 2 unc. 10 lin.—3 unc.)

Li. 4-*maculata*. *Linné.—Donovan, v. xi. p. 407.—Steph. Catal. 310. No. 3444.*

Head lutescent, with a streak in front adjoining the eyes, and the edge of the labrum black; eyes fuscous, greenish beneath; thorax above dull red, with two irregular approximating black streaks on the sides, which last are luteous; abdomen also dull red or flavescens; the basal segment, the apex of the 5th, and the remainder black, the 4th to the 8th with a luteous spot on each side; anal appendages black, upper pair clavate, lower acute; legs black; wings hyaline, saffron-coloured at the base, with a spot in the middle of the costa, and the stigma black or fuscous, the hinder pair with a large somewhat triangular fuscous patch, reticulated with yellow.

The costal spot varies in size, and is sometimes a little ocellated, and at others nearly wanting.

Found at Muswell Hill, not uncommonly, in June and July, and abundant near Godalming and Epping; also at Whittlesea Mere, &c.

Sp. 4. *præ nubila*. *Rufo-fusca, abdominis lateribus luteo maculatis, alis omnibus strigâ abbreviatâ croceâ nebulisque duabus costam attingentibus, posticis maculâ magnâ 3-angulâ fuscâ; membranulâ accessoriâ albidâ.* (Long. corp. 1 unc. 11 lin.; Exp. Alar. 3 unc. 1—2 lin.)

Li. *præ nubila*. *Ent. Mag. (Newman) v. i. p. 416.—Steph. Nomen. 2d edit. Appendix.*

Head brown, with two yellow spots behind the eyes; abdomen brown, slightly attenuated, the five or six intermediate segments with a luteous spot on each side; wings as in Li. 4-*maculata*, but the central spot is surrounded by a brown cloud, and from the stigma a transverse fascia of the same colour extends sometimes completely across the wings, at others but a short distance, and at times nearly obliterated; legs black.

Whether this be really a distinct species I am not prepared to affirm; but its characters appear sufficiently distinct to constitute one; it is rather larger, and its abdomen is less pilose and broader at its extremity than in Li. 4-*maculata*, of which it is generally considered to be a variety.

Abundant about Epping and Godalming; also taken in Burwash fen, Cambridgeshire, in the beginning of July.

C. *Abdomen laterally parallel*:—ORTHETRUM, Newman.

Sp. 5. *bimaculata?* *Testacea, nigro maculata, alis flavescens, ad marginem*

*crassiores fulvescentibus, posticis baseos maculâ magnâ fuscâ.* (Long. corp. 2 unc. 3—4 lin.; Exp. Alar. 3 unc. 2—3 lin.)

Li. bimaculata. *Charpentier, Horæ Ent. p. 45 ?—Steph. Nomen. 2d edit. col. 115.*

Head fulvous; mouth flavescens, dusky above; thorax dull testaceous, with dusky streaks and clouds; abdomen testaceous, with a broad irregular fuscous stripe down the back; anal appendages black, lower one short and emarginate, of the female somewhat cylindrical and divergent; legs black, with the base of the femora fulvous; wings yellowish, with a pale tawny streak from the base to beyond the middle, the posterior pair with a large triangular fuscous spot, with saffron nervures at the base; stigma black.

The anterior wings have sometimes two longitudinal fuscous streaks at the base.

Taken in the neighbourhood of Whittlesea Mere, in June.

Sp. 6. cancellata. *Abdomine supra cinereo-cærulescens, apice nigro (mas), aut olivaceo strigâ utrinque longitudinali nigrâ (fœmina); alis hyalinis, stigmatè nigro.* (Long. corp. 1 unc. 10 lin.; Exp. Alar. 3 unc. 1—2 lin.)

Li. cancellata. *Linné.—Donovan, v. xiv. pl. 472.—Steph. Catal. 309. No. 3442.*

Head ashy; mouth brown; eyes green; thorax olivaceous above, with two short black humeral streaks on both sides, the sides pale, with an olivaceous oblique line, edged with two black ones; breast dusted with whitish; abdomen depressed, gibbous at the base, ashy-blue, with the sides at the base, the tip of the 6th segment, and the remainder black; 3rd with a transverse line, and also, with the four next, a dorsal black line; beneath the 3rd to 6th segments have two oblong pale spots; anal appendages black, with an ashy tip, lower pair acute; legs black; wings hyaline; stigma black; accessory membrane fuscous. Female olivaceous; thorax with two abbreviated dorsal streaks, and another on each side black; abdomen with the margins of the segments, and an irregular longitudinal line on each side, composed of dark streaks, black; legs black; femora red, with a black line.

The male has sometimes a luteous spot on each side of each intermediate abdominal segment; and the lateral line on the abdomen of the female is occasionally very broad.

Not uncommon in the marshes in the vicinity of Crayford and Dartford, in June; and abundant in the neighbourhood of the Croydon Canal, near Oak-of-honour wood, Peckham.

Sp. 7. cærulescens. *Cinereo-fusca abdomine cærulescente (mas) aut rufescens (fœmina), thorace strigis 2-bus pallidis, alis hyalinis, stigmatè fusco aut brunneo, membranulâ accessorîâ albâ.* (Long. corp. 1 unc. 4—6½ lin.; Exp. Alar. 2 unc. 3—7 lin.)

Li. cærulescens. *Fabricius, Supp. 285.—Li. Donovan. Leach.—Steph. Catal. 309. No. 3441.—Li. guttata. Donovan, v. xiii. pl. 449.*

Face luteous; eyes greenish; thorax ashy-brown or bluish, with two pale dorsal streaks; abdomen somewhat depressed, with a longitudinal dorsal line, a transverse one on the 2nd and 3rd segments, and a double posterior spot from the 3rd to the 8th inclusive, and all the margins, black; beneath and base of the femora olivaceous, rest of the legs black; wings hyaline, stigma fuscous or brown; accessory membrane white. Female reddish, with the thoracic and abdominal markings as in the male, but the abdomen has often in addition an indistinct longitudinal streak on each side.

Both sexes are sometimes found reddish, with the legs pale; probably immature; the wings are occasionally yellowish, with a pale luteous stigma, or slightly fuscous, with a black stigma in the male.

Found, not uncommonly, within the metropolitan district, in June, particularly in the vicinity of Godalming; found also in the west of England.

D. *Abdomen* laterally compressed:—*SYMPETRUM*, *Newman*.

Sp. 8. *Scotica*. *Alarum stigmatè pedibusque nigris: mas purpureo-nigra, maculis flavis, alis hyalinis; fœmina olivacea, maculis flavis, subtus nigra; alis hyalinis basi flavis.* (Long. corp. 1 unc. 1 lin.; Exp. Alar. 1 unc. 6—7 lin.)

Li. *Scotica*. *Leach*.—*Donovan*, v. xv. pl. 523.—*Steph. Catal.* 309. No. 3440.

Head purplish-black; sides of the labium and lower part of the face yellow; eyes greenish; thorax purplish-black, with two oblique yellow stripes on the sides, and some spots of the same hue; abdomen purplish-black, with some irregular spots at the base, and one on each side at the base of the 8th and 9th segments dull yellow; legs black; wings hyaline, with a black stigma. Female olivaceous, or reddish; head yellow, with a black patch in the middle of the labium and another on the forehead; thorax marked with yellow as in the male; abdomen with the lower half and the 8th and 9th segments black, the latter each with two yellow spots at the base, as in the male; wings hyaline, slightly stained with saffron at the base, especially the posterior pair.

The legs are occasionally pale, with a black streak above.

Not uncommon in the north of England, but very abundant in Scotland; found in the neighbourhood of New Lanark in plenty; also in the Isle of Arran, &c.

Sp. 9. *pallidistigma*. *Alarum stigmatè pallido; flavescens, thoracis lateribus nigro flavoque mixtis, abdomine suprâ rufescens, subtus nigro, pedibus pallidiorufis extûs nigro lineatis: fœmina alis basi flavescens.* (Long. corp. 1 unc. 3 lin.; Exp. Alar. 1 unc. 10 lin.)

Li. *pallidistigma*. *Steph. Nomen. 2d edit. Appendix.*

Head yellowish, with the face yellow and a black frontal line; eyes pale



greenish; thorax lutescent, with a fuscous dorsal line, and the sides with irregular yellow streaks, and black zigzag lines; abdomen yellowish, the lower half of each segment black, the 8th and 9th black, with a yellow spot, the margins of all with a fine black line; legs pale red, black exteriorly; wings hyaline, those of the female, especially the hinder pair, yellowish at the base; stigma rather long, pale brown in the male, yellow in the female.

Taken in the New Forest, in June.

Sp. 10. *rufostigma*. *Alis sordide hyalinis basi croceis, stigmatate rufo, pedibus nigris*: maris corpore rufo; fœminæ olivaceo lineâ dorsali nigrâ. (Long. corp. 1 unc. 4—5 lin.; Exp. Alar. 2 unc. 10 lin.—2 unc.)

Li. *rufostigma*. *Ent. Mag. (Newman) v. i. p. 512.—Steph. Nomen. 2d edit. Appendix.*

Male fine yellowish-red; sides of the thorax yellowish, with irregular oblique black streaks; abdomen with a blackish line beneath; legs black, the anterior femora sometimes yellowish at the base; wings hyaline, stained throughout with brown, with a saffron-coloured spot at the base, largest on the posterior pair; stigma red, brightest in the males. Female differs in being olivaceous, the sides of the thorax of a brighter yellow, varied with oblique black lines; abdomen with the three or four terminal segments having a black dorsal line, and the sides of the others occasionally blackish.

Abundant in various places within the metropolitan district, in the summer and beginning of autumn, especially at Birch wood, Coombe, &c. Found also in the New Forest and in Devonshire.

Sp. 11. *angustipennis*. *Olivacea, alis hyalinis basi croceis, stigmatate atro, pedibus nigris, femorum basi luteis, thoracis lateribus flavis nigro lineatis*. (Long. corp. 1 unc. 3 lin.; Exp. Alar. 2 unc. 1 lin.)

Li. *angustipennis*. *Steph. Nomen. 2d edit. Appendix.*

Face yellow; forehead with a dusky streak; eyes greenish; thorax olivaceous, the sides yellow, with oblique irregular black lines, the disc with a black T; abdomen olivaceous, the terminal segments with a faint oblique black streak on each, and the three last with a black dorsal line; legs black, with the base of all the femora luteous; wings long and narrow, perfectly hyaline, the base of each with an irregular saffron-coloured patch; stigma deep black.

Found in June, near London.

Sp. 12. *vulgata*. *Mas rufescens*: fœmina olivacea, alis sordide hyalinis basi viri croceis, stigmatate infumato, femoribus tibiisque flavis, lineis nigris, tarsis nigris. (Long. corp. 1 unc. 4—7½ lin.; Exp. Alar. 2 unc. 1—4 lin.)

Li. *vulgata*. *Linné.—Donovan, v. x. pl. 337.—Steph. Catal. 309. No. 3437.*

Male dull red; thorax yellowish on the sides, with irregular oblique black

lines; abdomen with a slender black line on each side, some faint dots of the same towards the hinder margin of each of some of the posterior segments, and two dorsal spots at the base of the 8th and 9th segments; legs yellow, with slender black lines; tarsi black; wings hyaline, sometimes deeply stained with fuscous, the base concolorous, or very faintly tinged, especially the females, with yellowish; stigma smoky-brown, or pale red, sometimes yellow. Female olivaceous; thorax as in the male; abdomen with an interrupted black streak on the sides, and sometimes a dorsal stripe of the same on the 8th and 9th segments.

The wings are sometimes deeply suffused with brown; at others perfectly hyaline.

Very abundant, throughout the metropolitan district, in July and August; taken also near Dover, in the New Forest, Devonshire, &c.

Sp. 13. *basalis*. *Flavescens, alis basi et marginibus costalibus croceo tenuitèr suffusis, stigmatè subinfusato, pedibus nigris, femoribus anticis subtus flavis.* (Long. corp. 1 unc. 3—4 lin.; Exp. Alar. 1 unc. 11 lin.—2 unc. 1 lin.)

Li. *basalis*. *Steph. Catal.* 309. No. 3439.

Dull yellow; thorax of an olivaceous tint, its sides of a brightish yellow, with irregular oblique black lines; abdomen with a faint black dorsal line, and on the posterior segments a distinct lateral one, composed of irregular black spots; legs black, the anterior femora beneath yellow, their coxæ and trochanters pale straw-colour; wings hyaline, stained with pale saffron-colour at the base and along the costal margin, especially the hinder pair; stigma pale smoke-coloured, or flavescent.

Found, in June and July, at Colney Hatch, apparently not very common; also at Deptford once.

Sp. 14. *flaveola*. *Flavescens, pedibus nigris, extus flavo lineatis, alis hyalinis aut flavescentibus basi, posticarum præsertim, late croceis, stigmatè flavo.* (Long. corp. 1 unc. 4—5 lin.; Exp. Alar. 2 unc.—2 unc. 3 lin.)

Li. *flaveola*. *Linné.—Steph. Catal.* 309. No. 3437.

Reddish-yellow; thorax of a brighter hue on the sides, especially beneath, and faintly streaked with black; abdomen black beneath and on the lower part of the sides, the base of the 1st segment also black; legs black, with a yellow line externally on the femora and tibiæ; tarsi black; wings hyaline, or slightly yellowish, anterior with a saffron-coloured blotch at the base, and in the females with another near the centre of the upper margin; posterior wings with a large blotch of the same colour at the base, extending completely across the wing, and occupying above one quarter of the surface; stigma opaque straw-coloured, or brownish.

Rare near London; more abundant in Scotland; it also occurs near Whittlesea Mere.

SECTION IV.—TERMITINA, *Mac Leay*.

*Antennæ* long and filiform, or setaceous, sometimes moniliform, composed of numerous joints, the basal one largest, occasionally clavate: *mandibles* dentate: *head* transverse; *forehead*, or *clypeus*, sometimes tumid: *eyes* more or less prominent, semiglobose and lateral: *thorax* with its anterior segment, or *collar*, generally long, occasionally very long; its other segments variable: *wings* in the typical genera nearly alike, with two central approximating longitudinal nervures, the costal portion usually with numerous transverse nervures, which are occasionally bifid, and sometimes united by longitudinal ones, the other portions mostly with numerous longitudinal nervures, more or less united by transverse ones placed obliquely; in the other genera the two pair of wings are dissimilar, with four very distinct irregularly waved longitudinal nervures, and occasionally one or two transverse ones: *abdomen* long and slender, in one genus furnished at the apex, of the females, with an elongated, curved, ovipositor: *legs* simple: *tarsi* with 5, or 4, joints.

The insects included in this section—which may be divided into families by the few external characters given below—although considerably diversified in appearance, appear to agree sufficiently to form one group, discrepant from the other Neuroptera; but they are evidently divisible into two subordinate groups, the Psocidæ differing from the others in the shorter neck, swollen forehead, and singularly nerved wings, the hinder pair of which are in general much smaller than the anterior; and sometimes all the wings are wanting.

<i>Tarsi</i> articularis 4; <i>collum</i> valdè elongatum:	.	.	.	4. RAPHIIDÆ.
5; <i>collum</i> subelongatum, aut breve:				
<i>Antennæ</i> clavatæ:	.	.	.	1. MYRMELEONIDÆ.
haud clavatæ:				
<i>Alæ</i> plus minus reticulatæ:	.	.	.	2. HEMEROBIDÆ.
venosæ, vix reticulatæ:	.	.	.	3. PSOCIDÆ.

FAMILY I.—MYRMELEONIDÆ, *Leach*.

*Antennæ* thicker towards the extremities, inserted between the eyes, many-jointed, the tip compressed: *palpi* six: *body* elongate: *head* transverse: *eyes* semiglobose, prominent: *ocelli* wanting: *thorax* elongate, somewhat cylindrical-ovate: *collar* narrow, small; *mesothorax* ample: *wings* equal, open, deflexed, nervose, somewhat elongate-trigonal, costa straight, inner margin curved: *abdomen* cylindrical, apex of the males biappendiculate: *legs* short, stoutish: *tarsi* 5-jointed, the first and last joints longest: *claws* two,

FAMILY II.—HEMEROBIDÆ, *Leach.*

*Antennæ* filiform or setaceous, inserted between the eyes, elongate, composed of very numerous and very short articulations, the basal one being stoutest; *palpi* four, maxillary longest, 5-jointed; labial 3-articulate: *body* elongate, soft: *head* trigonate, inflexed vertically: *eyes* prominent, semiglobose; forehead elevated: *wings* equal, ample, deflexed, very much reticulated, costa distinct: *abdomen* elongate, compressed, subcylindric, somewhat falcate: *legs* slender: *tarsi* short, 5-jointed, articulations entire: *claws* two, small.

The insects of this family, or at least their larvæ, have been called *Aphis-Lions*, from preying upon Aphidæ: they are, in general appearance, much allied to those of the preceding family, but are rather more elongate; they do not, however, conceal themselves in a sandy pit, but clothe themselves with the skins of their prey, and hide

strong, elongate, acute. Larva terrestrial; mandibles very stout and porrect, armed within with strong teeth; abdomen large, acute: pupa folliculate and quiescent.

The type of this family having been introduced by error into the British list, it is necessary for me to notice it: the only genus that has been thus introduced is

GENUS XVI.—MYRMELEON, *Auctorum.*

*Antennæ* gradually thickened towards the extremities, curved, not longer than the thorax, the articulations transverse; club ovate, furnished at its apex with a small hook: *labial palpi* with the terminal joint incrassate-fusiform, subulated at the apex: *eyes* entire: *abdomen* very long, linear.

The insects of this genus are known by the name *Ant Lions*, from the peculiar habits of their larvæ: these reside in sandy districts, and form a conical pit in the sand, at the bottom of which they bury themselves, leaving only their large jaws exposed and expanded, ready to seize the first unfortunate ant, or other insect, that may fall therein, upon which they prey: they change in a silky follicle into pupæ, and the perfect insect frequents similar districts with the larvæ, and preys also upon insects.

†Sp. 1. formicarium. *Alis hyalinis, fusco-maculatis, stigmatè anastomosibusque nonnullis albidis.* (Long. corp. 10 lin.; Exp. Alar. 2 unc. 8—10 lin.)

Myr. formicarium. *Linné.—Barbut (!)—Steph. Catal. 310. No. 3446, note.*

Wings hyaline, spotted with fuscous, apex acute; stigma and some anastomoses whitish; clypeus with a fuscous dot; collar with a dorsal line round its edges, and the margins of the abdominal segments reddish-yellow.

Erroneously introduced as British by Barbut.

amongst lichen, &c. on trees, from which, by means of their clothing, they are not easily discerned: the perfect insects frequent weeds and gardens, and are easily known by their ample wings, which are very beautifully reticulated, and in general highly iridescent: their eggs are deposited on leaves, or the stems of trees, upon a more or less lengthened footstalk, somewhat resembling a thin pin stuck thereon.

The indigenous species may be divided into the following genera, thus cursorily distinguished by external characters:—

<i>Ocelli</i> 3, frontales, per triangulum dispositi: . . . . .	17.	OSMYLUS.
nulli:		
<i>Alis anticis</i> posticé excisis: . . . . .	18.	DREPANEPTERYX.
integris, aut rotundatis:		
<i>Antennæ</i> articulis cylindricis: . . . . .	19.	CHRYSOPA.
moniliformes: . . . . .	20.	HEMEROBIUS.

#### GENUS XVII.—OSMYLUS, Latreille.

*Antennæ* short, moniliform: *labium* with its apex straight, transverse, margined, the margin linear and somewhat cleft in the middle: *labrum* round: *head* transverse, *forehead* tumid: *eyes* moderate: *ocelli* three, placed in a triangle, and approximating: *collar* very distinct, elongate-cylindric, rounded in front, much narrower than the *thorax*, which is short, produced a little in the middle behind: *metathorax* tubercular: *wings* long, pilose, depressed when at rest; somewhat lanceolate, and faintly acute on the hinder margin, rather closely nerved, the nervures bifid on the margins, and forming rhomboid or polygonal areolets on the disc; the costa of the anterior pair slightly dilated and rounded.

From the other genera of this family the present may be known by having three distinct ocelli, placed in a triangle and approximating; they also differ in other external points, as in the short moniliform antennæ, the acute spotted wings, the reticulations of which likewise differ, &c.

Sp. 1. *maculatus*. *Fuscus, capite pedibusque testaceis, alis hyalinis, anticis, limbo præsertim, costâque posticarum fusco maculatis.* (Long. corp.  $4\frac{1}{2}$ — $5\frac{1}{2}$  lin.; Exp. Alar. 1 unc. 6—10 lin.)

He. *maculatus*. *Fabricius*.—Os. *maculatus*. *Leach*.—*Samouelle, pl. 7. f. 4.*—*Steph. Catal. 310. No. 3447.*

Head bright testaceous or fulvous; thorax and abdomen fuscous; legs dull testaceous; wings hyaline, anterior pair with several deep fuscous spots on the disc, numerous larger ones on the costa and on the inner margin, and

some of a fainter hue on the hinder margin; posterior pair with the costal edge irregularly spotted and marked with fuscous.

The fuscous markings on the wings vary considerably: in some examples the wings are very much spotted, especially on the inner margin; in others nearly, or quite, immaculate; others have the lower pair with a deep brown central dot.

Rather a local species, but found in great abundance in some places, especially on the margins of a brook on the side of a copse near Colney Hatch, in June; also found near Halifax and Warwick.

### GENUS XVIII.—DREPANEPTERYX, *Leach*.

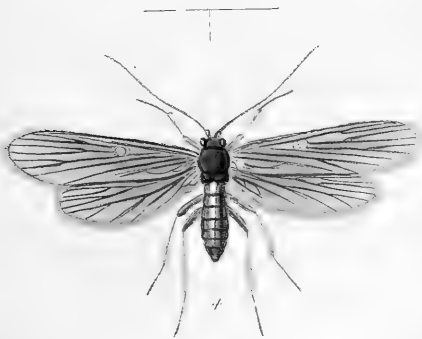
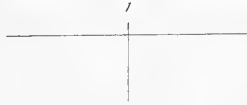
*Antennæ* rather shorter than the body, placed a little remotely, stoutish, moniliform, the basal joint very robust: *palpi* unequal; *maxillary* long and slender, the terminal joint subfusiform, acute; *labial* very short: *labrum* rounded on its outer edge: *head* transverse: *eyes* moderate, prominent: *ocelli* wanting: *collar* simple: *thorax* broad: *wings* broad, deflexed during repose, scarcely pubescent; anterior pair with very numerous dichotomising nervures, united by two longitudinal series on the costal area, and three somewhat irregularly-placed oblique series on the disc, exclusively of the pair common to all the family; much dilated and rounded at the base, the apex recurved; the hinder margin deeply excised, and, with the recurved apex, forming an acute hook, the base of the inner margin with a mucronated process; posterior pair shorter, with fewer nervures, somewhat lanceolate-acute, the hinder margin waved: *abdomen* compressed: *legs* long and slender.

This singular-looking genus is very conspicuous from the form of its anterior wings, which are irregularly excised and somewhat falcate on the hinder margin; they are considerably reticulated, and differ much from those of the two following genera, especially on the costal edge of the anterior wings, as may be seen by comparing the figures in pl. xxxiii. f. 1, and pl. xxx. f. 3 and 4. One indigenous species only is known.

Sp. 1. *Phalænoides*. PLATE xxxiii. f. 1.—*Testacea, corpore saturatiore, alis anticis strigis 2-bus obliquis punctoque fuscis, maculâque triangulari marginali albâ.* (Long. corp. 5 lin.; Exp. Alar. 15 lin.)

He. *Phalænoides*. *Linné*.—*Dr. Phalænoides*. *Steph. Catal.* 310. No. 3448.

Testaceous, body darker; eyes black; anterior wings of a reddish testaceous, with numerous irregular and not very distinct darker transverse streaks, producing, with the nervures (which are darkish), a reticulated appearance,







a fuscous dot towards the base, and two oblique somewhat repanded streaks towards the apex, the first terminating on the inner edge with a small triangular white spot; the inner and hinder margins are umbre-coloured, on the latter interrupted with whitish; posterior wings rather pale, especially towards the base.

Also a local insect: I am indebted to Mr. Little for the first communication thereof; he found it at Raehills in Scotland, and Mr. Walker has taken it near New Lanark.

#### GENUS XIX.—CHRYSOPA, *Leach.*

*Antennæ* as long as, or longer than, the body, filiform, the articulations oblong and cylindric, the basal one very large: *labium* very large, orbicular, entire: *labrum* transverse, with a central marginal notch: *head* short: *eyes* very globose, prominent (brilliant during life): *ocelli* wanting: *collar* somewhat quadrate, nearly as wide as the head: *thorax* broad, rounded in front: *wings* deflexed during repose, iridescent, glabrous, long and narrowish, somewhat elliptical: *costa* with transverse simple nervures only; inner portion with numerous reticulations, forming three rows of areolets on the disc, and the transverse nervures mostly bifid on the margins: *legs* short, slender, and simple.

The insects of this genus may be known by the extreme brilliancy of their beautiful globose eyes, which are of rich golden tints during life, thence called *golden-eyes*, but which fade after death to a greenish- or purplish-brown; but, exclusively of this distinction, the very different neuration of the wings, the structure of the antennæ and trophi, well distinguish them: they have very delicate wings, upon the surface of which the most brilliant iridescent tints are produced by varying the direction of the light; though these fine outward blandishments are sadly contrasted with the fetid odour that is evolved from the insects when handled.

Sp. 1. fulviceps. PLATE XXX. f. 2.—*Niger, capite fulvo; collare et thorace ochraceis lateribus nigro maculatis, pedibus pallidis.* (Long. corp. 5 lin.; Exp. Alar. 1 unc. 6—7 lin.)

Ch. fulviceps. *Steph. Catal.* 310, No. 3449.

Head bright fulvous; eyes black; collar ochreous, with a faint black spot on each side; thorax also ochreous, irregularly spotted, or varied with black on the sides; abdomen fuscous, with a lateral line, and the apex beneath ochreous; legs pale; wings with pale fuscous nervures, and a very faint, fuscous, and elongated stigma towards the apex of the costa.

The outer longitudinal nervure is sometimes pale yellowish-green.

A local insect, found in the vicinity of Windsor; also in the New Forest and in Devonshire, in June and July; also, but very rarely, at Darenth wood.

Sp. 2. capitata. *Piceo-testacea, capite fulvescente pedibus pallide testaceis, alis hyalinis, nervis stigmatæque pallide fuscis.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Exp. Alar. 1 unc. 2—4 lin.)

He. capitata. *Fabricius*.—Ch. capitata. *Steph. Catal.* 310. No. 3450.

Pitchy-testaceous: head fulvous; antennæ black; eyes greenish; thorax pitchy, its anterior portion, or collar, testaceous; wings hyaline, very highly iridescent, with the nervures and costal stigma pale fuscous.

Taken in Devonshire and in the New Forest, but not common, in June; also near Hertford and Ripley.

Sp. 3. reticulata. *Viridis, capite thoraceque nigro punctatis, abdominis dorso ventreque nigris, alis subcærulescenti-viridibus nervis transversalibus nigrescentibus.* (Long. corp. 4—5 lin.; Exp. Alar. 10—14 lin.)

Ch. reticulata. *Leach—Steph. Catal.* 310. No. 3451.—He. chrysops. *Wood, ii. pl.* 49.

Head luteous-green, with various simple and united black spots and marks; palpi varied with black; collar bluish-green, with black spots on the sides; thorax yellowish-green, irregularly marked with black on the sides; abdomen also yellowish-green on the sides and margins of the segments, the back and under surface black; legs green; tarsi reddish; antennæ reddish, the basal joint black beneath, the apex dusky; wings faint bluish-green, with the nervures of a darker tint, most of the transverse ones dusky or blackish.

Not uncommon in woods and woody places, during the month of June, as at Coombe and Darenth woods, near Hertford, Ripley, Dover, the New Forest, &c.

Sp. 4. maculata. *Luteo-viridis thoracis lateribus segmentorumque abdominis basi nigris, capite nigro maculato, alis subabbreviatis, apice rotundato.* (Long. corp. 3 lin.; Exp. Alar. 10 lin.)

Ch. maculata. *Steph. Catal.* 311. No. 3452.

Luteous-greenish: head with two spots on the labrum, one surrounding each antennæ, and uniting behind on the forehead, and one behind each eye black; thorax with its sides irregularly varied with black, approaching to spots on those of the meso- and metathorax; wings short, rounded at the apex, pale green, with pale fuscous nervures, and a faint brownish stigma; abdomen with the base of the segments black; legs pale; antennæ reddish, with fuscous rings.

Taken, in June, at Darenth wood.

Sp. 5. *abbreviata*. *Læte viridis; puncto ad basin antennarum et alarum singularum atro, capite lutescente-viride, punctis munitissimis atris, alis abbreviatis.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Exp. Alar.  $9\frac{1}{2}$ —10 lin.)

Ch. *abbreviata*. *Curtis, v. xi. pl. 520.—Steph. Nomen. 2d edit. Appendix.—Ch. viridis. Curtis, Guide?*

Bright green: antennæ dull ochreous; the basal joint with a black dot above; head lutescent-green, with a minute black dot between the antennæ, two blackish streaks at the base, two dots on the crown behind the antennæ also black; wings rather short, ovate, finely iridescent, with a black dot at the base of each, the nervures and stigma bright green, the former producing black lines, and those of the costa blackish towards the longitudinal common rib; abdomen green, clothed with fine blackish hairs; legs pale green; tarsi ochreous.

Taken near Dover and in Devonshire; also on the coasts of South Wales and Lancashire, and near Yarmouth, in June and July.

Sp. 6. *immaculata*. *Tota læte viridis, immaculata, alis abbreviatis, nervis viridibus, antennis palpisque rufescentibus.* (Long. corp. 3—4 lin.; Exp. Alar. 9—12 lin.)

Ch. *immaculata*. *Steph. Catal. 311. No. 3453.*

Head, thorax, and abdomen wholly of a fine bright green, immaculate; wings short and ovate, rich pale green, and strongly iridescent, the nervures entirely pale green, and producing green hairs; legs pale green, with the tarsi reddish; antennæ and palpi pale reddish, immaculate.

It is possible that this may be a less mature state of Ch. *abbreviata*, which it greatly resembles in form.

Found near London, in June, not very common.

Sp. 7. *carnea*. *Flavescente-incarnata, abdominis dorso rufo punctato, antennis pedibusque flavis, alis abbreviatis nervis rufescentibus.* (Long. corp. 4— $4\frac{1}{2}$  lin.; Exp. Alar.  $11\frac{1}{2}$ —12 lin.)

Ch. *carnea*. *Steph. Nomen. 2d edit. Appendix.*

Head bright rosy-red, or flesh-colour, immaculate; mouth and palpi yellow; collar and thorax also rosy-red, the anterior edge of the latter, and its sides, as also those of the metathorax, and all beneath, yellow; abdomen rosy or flesh-colour, yellow beneath, the edges of the segments above, especially down the back, red; legs pale yellow; antennæ the same, with the basal joint; wings short and ovate, beautifully iridescent, the nervures and stigma reddish.

Taken, in June, near London, and in Scotland.

Sp. 8. *ventralis*. *Virescens, capite thoraceque nigro punctatis, abdomine viridi-*

*lutescente, ventre piceo aut atro, alis subabbreviatis nervis partim fusciscentibus.* (Long. corp. 4—5 lin.; Exp. Alar. 14—16 lin.)

Ch. punctifrons. *Steph. Catal.* 311. No. 3454.—Ch. ventralis. *Curtis, f.* 520.

Head pale yellowish-green, with a black dot between the antennæ, another before each eye, one or two on each side of the collar, two on the back of the thorax, and one on each side between the wings; abdomen pale greenish, with its under side, excepting the apical segment, pitchy or black, the margins of the segments occasionally greenish; legs pale griseous; wings rather short, and outer nervures partially dusky, with pale hairs; antennæ brownish, pale at the base, with a blackish ring on the tip of the basal joint.

The spots on the collar and thorax are sometimes wanting.

Abundant at Darenth wood, at the end of June; also found near Hertford, Ripley, and Dover.

Sp. 9. alba. *Virescente-alba, alis subabbreviatis rotundatis, nervis subfuscentibus, oculis viridi-cæneis.* (Long. corp. 4 lin.; Exp. Alar. 12 lin.)

He. albus. *Linné.*—Ch. alba. *Steph. Catal.* 311. No. 3455.

Greenish-white, immaculate: legs and antennæ pale; wings rather short and rounded at the apex, the nervures very pale fusciscent; eyes golden-green.

Taken, in June, in the neighbourhood of London; also in the New Forest.

Sp. 10. angustipennis. *Pallide-viridis, immaculata, alis subelongatis, angustioribus, apice rotundato, nervis virescentibus.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Exp. Alar. 12—15 lin.)

Ch. angustipennis. *Steph. Nomen. 2d edit. col.* 115.—Ch. angusta. *Steph. Catal.* 311. No. 3457.

Very pale green, immaculate; the back with a paler longitudinal streak: eyes moderate, golden; wings rather long and narrow, the apex rounded, the nervures greenish, with some of the transverse costal ones a little fusciscent towards the mid-rib.

The metathorax has sometimes a rounded brown blotch on each side of the base of the hinder wings.

Found, in June, near London.

Sp. 11. affinis. *Luteo-virescens, metathorace nigro nebuloso, alis subacuminatis viridibus, nervis concoloribus.* (Long. corp.  $3\frac{1}{2}$ — $4\frac{1}{2}$  lin.; Exp. Alar. 12—14 lin.)

Ch. affinis. *Steph. Catal.* 311. No. 3456.

Yellowish-green; head and collar and metathorax immaculate, the latter with some faint blackish clouds, approaching in some specimens to black; wings rather long, somewhat acuminated, pale green, with the nervures of the same hue; the legs and antennæ greenish; eyes brassy.

Not uncommon near London; also found at Dover, and in Devonshire, in June.

Sp. 12. Perla. *Luteo-viridis, alis elongatis, apice acuminato, hyalinis, viridibus, venis subconcoloribus.* (Long. corp. 5—6 lin.; Exp. Alar. 14—21 lin.)

He. Perla. *Linné.*—*Donovan, v. viii. pl. 277. f. 2.*—Ch. Perla. *Steph. Catal. 311. No. 3458.*

Luteous- or yellowish-green, immaculate; antennæ rather fuscous; eyes golden; wings rather long, the apex a little acuminated, hyaline, pale whitish-green, with the nervures and stigma of a darker green.

In some examples the metathorax is slightly clouded with fuscous.

Very abundant in gardens, shrubberies, orchards, &c. during the summer, not only near London, but throughout the south of England; found also near Edinburgh.

Sp. 13. subfalcata. *Luteo-viridis, immaculata, alis elongatis attenuatis, apice acuto, subfalcato, venis virescentibus.* (Long. corp. 6½—7 lin.; Exp. Alar. 14—16 lin.)

Ch. subfalcata. *Steph. Nomen. 2d edit. col. 115.*

Pale luteous-green, immaculate, but the base of the abdominal segments is brownish; wings elongate, very narrow and attenuated, with the apex acute, pale greenish, with rather darker nervures and stigma; legs and antennæ pale; eyes brassy.

Taken, but not commonly, near London, in June.

## GENUS XX.—HEMEROBIUS *Auctororum.*

*Antennæ* nearly as long as the body, moniliform, the two basal joints largest, the terminal ones transverse: *labrum* transverse, rounded on its margin: *palpi* with the terminal joint elongate, fusiform-acute: *head* short, transverse: *eyes* small, prominent: *ocelli* wanting: *collar* rather narrower than the *thorax*, which is as wide as the head: *wings* deflexed during repose, pubescent, in general with very numerous longitudinal nervures, many of which are bifid on the margin, and a few transverse ones, all more or less pubescent: *abdomen* moderate, slender: *legs* slender; posterior *tibiæ* sometimes dilated.

The insects of this genus differ from *Chrysopa* in having the antennæ short and moniliform, the wings abbreviated, broad, and rather closely furnished with fine longitudinal nervures, in addition to which are a few transverse ones, varying in number in several of the species, being numerous in some, and very few in others; those of the last set differ also in having the nervures stronger and less

pilose, and will probably, ere long, be divided as a distinct genus from the others: the species are very much allied, but, from the difference in neuration, may be easily distinguished from each other.

A. *Anterior wings* with the costal nervures chiefly furcate: discoidal nervures mostly arising from the inner longitudinal rib.

a. Longitudinal nervures, *except the first, united on the disc by two or more transverse ones.*

Sp. 1. *hirtus.* *Flavescens, oculis abdomineque fuscis, alis anticis subochraceis, obsolete fusco reticulatis, fasciisque duabus saturatioribus.* (Long. corp. 5—6 lin.; Exp. Alar. 8—10 lin.)

He. *hirtus.* *Linné.—Donovan, v. iv. pl. 113. f. 1, 2.—Steph. Catal. 311. No. 3459.*

Head yellowish or ochreous; eyes fuscous; thorax yellowish; abdomen fuscous; legs pale; anterior wings with the nervures pale fuscous, the transverse ones—of which there are two complete rows—deeper fuscous, forming two oblique streaks of that hue across the wings, in addition to which are some fainter waved streaks and blotches, especially on the inner edge towards the apex, and two or three longitudinal ones; the posterior wings paler, with a faint fuscous margin.

Abundant in woods within the metropolitan district, especially at Coombe and Darenth, in June and July; also found in Scotland.

Sp. 2. *angulatus.* *Testaceo-flavescens, antennis nigro annulatis, alis abbreviatis nervis (transversis præsertim) fuscis, fasciâ angulatâ saturatiore.* (Long. corp. 4—6 lin.; Exp. Alar. 7—9 lin.)

He. *angulatus.* *Steph. Catal. 312. No. 3479.*

Head, thorax, and abdomen testaceous-yellow; eyes fuscous; legs pale testaceous; wings short, yellowish, anterior with the nervures, especially the transverse ones—of which there are three rows—fuscous, in addition to which is an angulated darker fascia towards the apex, and on the inner edge are some fuscous clouds; posterior wings hyaline, with pale brownish nervures; antennæ pale testaceous, with black rings.

Apparently rare; found near London, in June, and in Scotland.

b. *Second longitudinal nervure free: not receiving any transverse one near its origin.*

Sp. 3. *concinus.* *PLATE XXX. f. 3.—Rufescente-ochraceus, metathorace abdomineque piceis, oculis atris, alis lutescentibus, nervis pallidioribus nigro punctatis.* (Long. corp.  $3\frac{1}{2}$ — $4\frac{1}{4}$  lin.; Exp. Alar. 9—11 lin.)

He. *concinus.* *Steph. Catal. 311. No. 3460.*

Head and thorax bright reddish-ochre; metathorax and abdomen pitchy; legs and antennæ pale ochreous; eyes black; anterior wings very pale lutescent, the nervures paler, dotted with fuscous or black, the transverse ones mostly fuscous, the inner and hinder margin more or less clouded with fuscous; posterior pair pale, with the nervures immaculate, all with a darkish elongate stigma.

Found in July at Ripley, and also at South Lambeth; taken likewise near Edinburgh.

Sp. 4. *fuscus*. *Fuscus, fronte, thoracis dorso, antennis pedibusque ochraceo-flavis, alis fuscescentibus, nervis saturatoribus albo punctatis, clypeo nitidissimo.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar. 8—9 $\frac{1}{2}$  lin.)

He. *fuscus*. *Leach MSS.—Steph. Catal. 311. No. 3461.*

Fuscous: face extremely glossy and blackish; forehead, back of the collar, and of the thorax, ochreous-yellow, the yellow dash becoming attenuated on the metathorax; legs and antennæ wholly pale ochreous-yellow; wings brownish, anterior with a few clouds, and the transverse nervures fuscous, the other nervures fuscous, dotted with white; posterior wings paler, more hyaline and iridescent, immaculate.

Common in woody places, about London, in June and July.

Sp. 5. *nebulosus*. *Ochraceo-pallidus, collaris thoracisque lateribus fuscis, antennis fusco annulatis, alis albidis, opalinis, anticis fusco nebulosis, nervis fuscis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 8—9 lin.)

He. *nebulosus*. *Steph. Catal. 311. No. 3462.*

Pale ochreous: head glossy in front; eyes black; sides of the collar and of the thorax fuscous; wings pale hyaline, opaline; anterior with the nervures fuscous; remotely dotted with whitish, the transverse ones, and several irregular blotches and clouds on the inner margin fuscous; posterior immaculate; abdomen pale ochreous; legs yellowish; antennæ yellowish, with fuscescent rings.

Also common in the neighbourhood of London, and taken occasionally in Scotland.

Sp. 6. *subnebulosus*. *Pallidus, clypeo, et thoracis lateribus piceo-rufis, alis albidis, anticarum margine interno subnebuloso, nervis albidis fusco punctatis.* (Long. corp. 3 lin.; Exp. Alar. 9 lin.)

He. *subnebulosus*. *Steph. Catal. 311. No. 3463.*

Pale: clypeus very glossy and pitchy-red; abdomen pale, its sides slightly testaceous; legs pale, tips of the tarsi fuscescent; wings whitish, iridescent; anterior with several faint flavescent clouds on the inner margins, and the nervures whitish, with remote fuscous dots; posterior immaculate; anterior pale ochreous.

Taken in June near London; not very uncommon.

Sp. 7. Humuli. *Pallide ochraceus, alis hyalinis punctis fuscis sparsis, antennis fusco alboque annulatis, pedibus pallidis.* (Long. corp. 4 lin.; Exp. Alar. 5—7 lin.)

He. Humuli. *Linné.—Steph. Catal. 416. No. 3465.*

Pale ochreous: eyes bluish-brass; antennæ pale, with fuscous or black rings; abdomen with a faint row of dusky spots on each side above; legs pale; wings hyaline, sparingly marked with obscure fuscous dots.

Found abundantly in the neighbourhood of Darenth wood, in June.

Sp. 8. obscurus. *Fusco-ochraceus, thoracis lateribus fuscis; alis abbreviatis pallide fuscescentibus, venis subsaturatoribus obsoletissimè albido punctatis.* (Long. corp. 2½ lin.; Exp. Alar. 6 lin.)

He. obscurus. *Leach MSS.—Steph. Catal. 311. No. 3473.*

Fusco-ochreous: antennæ ochreous, annulated with fuscous; eyes fuscescent; thorax with its sides fuscous; abdomen fuscous, palish on the edges of the segments and on the back; legs palish; wings rather short, fuscescent; anterior with very obscure and numerous darker shades, the nervures fuscous, with very indistinct whitish dots; posterior pair with the nervures fuscescent and immaculate.

Found in woods, near London, in June, and in Scotland.

Sp. 9. fasciatus. *Niger, capite thoraceque flavis lituris fuscis, alis albidis, anticis fasciis 3-bus atomisque numerosis nigricantibus.* (Long. corp. 2½ lin.; Exp. Alar. 6½ lin.)

He. fasciatus. *Fabricius.—Steph. Catal. 312. No. 3478.*

Black: head and thorax yellow, with deep fuscous markings, especially on the sides; wings pale opaline white, the anterior pair with numerous fuscescent atoms, and three oblique, somewhat interrupted, blackish streaks, the terminal one on the margin; posterior immaculate; legs fuscous.

Found, but rarely, in the vicinity of Ripley, in June.

c. *Second and third longitudinal nervures free.*

Sp. 10. nervosus. *Nigricans, vertice thoracisque dorso flavicantibus, alis variegatis, nervis albo punctatis.* (Long. corp. 4—5 lin.; Exp. Alar. 6—8 lin.)

He. nervosus. *Fabricius.—Steph. Catal. 311. No. 3464.*

Head dusky, its crown yellowish; eyes black; antennæ yellowish, with dusky wings; thorax black, with the back yellowish; abdomen black; legs yellowish; wings with numerous fuscous dots and points; nervures dotted with black and white.

Not uncommon, in the vicinity of London, in June, in gardens and plantations.



Sp. 11. *perelegans*. *Piceus, fronte thoracisque dorso testaceis, antennis fulvis fusco annulatis; alis fuscis concinnè albo variegatis et punctatis.* (Long. corp. 3 lin.; Exp. Alar. 7 lin.)

He. *perelegans*. *Steph. Nomen. 2d edit. Appendix.*

Deep glossy piceous: the clypeus, forehead, and a line down the middle of the thorax testaceous; eyes deep fuscous; legs pale testaceous; antennæ dull fulvous, with fuscous annulations; wings hyaline, deep fuscous, with darker nervures, the surface very prettily varied with numerous zigzag white streaks and larger marginal blotches, with an irregular band of the same, following the course of the transverse nervures, which are broadly suffused with fuscous.

Of this beautiful insect I possess one specimen only, which I believe was taken in the New Forest.

Sp. 12. *marginatus*. *Pallide ochraceus, oculis nigris, alis albis, nervis transversalibus, nebulisque aliquot ad marginem internum fuscis.* (Long. corp. 3½ lin.; Exp. Alar. 9¼ lin.)

He. *marginatus*. *Steph. Nomen. 2d edit. col. 115.*

Pale ochreous: clypeus slightly glossy; eyes black; abdomen fuscous on the back; wings very hyaline, white and iridescent, anterior with the transverse nervures, a few irregular and very remote portions of the longitudinal ones, and numerous larger irregular clouds on the inner margin fuscous; posterior wings white; legs pale.

Found near Newcastle and Edinburgh, in July.

Sp. 13. *lutescens*. *Flavescens, alis albis fusco-substrigosis.* (Long. corp. 2½ lin.; Exp. Alar. 6—7¼ lin.)

He. *lutescens*. *Fabricius.—Steph. Catal. 311. No. 3466.*

Antennæ, head, thorax, and abdomen yellowish, immaculate; legs also yellowish, but paler; wings whitish, with an opaline tinge, with very indistinct fuscous streaks, and obscure dots of the same on the nervures.

Not uncommon, about Dover and Brighton, in June and July; found also near London, and in the New Forest.

Sp. 14. *affinis*. *Pallide ochraceus, thoracis lateribus abdomineque nigricantibus, segmentorum marginibus albidis, alis albidis anticis dorso fusco subnebuloso, venis pallidis.* (Long. corp. 2—3 lin.; Exp. Alar. 6—7½ lin.)

He. *affinis*. *Leach MSS.—Steph. Catal. 311. No. 3467.*

Pale ochreous, with a luteous tinge on the head and collar, the sides of the latter and of the thorax blackish; abdomen blackish or fuscous, especially beneath, with the margins of the segments broadly pale; legs pale; antennæ immaculate; wings whitish opaline, the anterior faintly clouded with fuscous

on the inner (or dorsal) margin, and very obscurely so towards the apex; nervures white, with very faint, remote, fuscous dots; posterior wings immaculate, with whitish nervures.

Common in the woods within the metropolitan district, especially at Darenth, Coombe, and Colney Hatch, in June, and in the west of England.

Sp. 15. *nemoralis*. *Pallide ochraceus, collaris lateribus, oculisque nigricantibus, abdomine piceo-nigro, segmentorum marginibus pallidis, alis albidis anticis fasciis 2-bus obscuris fuscescentibus.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $6\frac{1}{2}$ — $7\frac{1}{2}$  lin.)

He. *nemoralis*. *Leach MSS.—Steph. Catal. 311. No. 3468.*

Pale ochreous: antennæ rather long, not annulated; eyes black; collar with its lateral margins blackish; thorax somewhat piceous on the sides; abdomen pitchy, with the segments broadly edged with pale ochreous; legs pale; wings opaline-white, anterior with two very faint fuscous bands towards the apex, approximating towards the inner margin, which, with the hinder one, is very faintly clouded with the same colour; nervures white, with a few very remote fuscous dots; posterior pair immaculate, with pale nervures.

Var.  $\beta$ . He. *obsoletus*. *Steph. Catal. 311. No. 3469.*—This variety differs by having the transverse fasciæ very indistinct: the insect is also of a paler hue—probably immature.

Also not uncommon, about London, in June and July.

Sp. 16. *paganus*. *Lutescens, antennis pedibusque pallidis, alis albis, anticis obscure subfasciatis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $6$ — $7\frac{3}{4}$  lin.)

He. *paganus*. *Linné.—Steph. Catal. 311. No. 3470.*

Pale lutescent: eyes black; antennæ and legs pale; wings white, with a golden tinge; anterior with some obscure transverse fuscous streaks towards the apex, the nervures faintly dotted with fuscous; posterior immaculate.

Found within the metropolitan district, in June, not common.

Sp. 17. *apicalis*. *Rufo-ochraceus, thoracis lateribus abdomineque piceis, pedibus pallidis, alis opalinis, anticis, apice præsertim, fusco nebulosis, venis fuscescentibus albo punctatis.* (Long. corp.  $2$ — $2\frac{1}{2}$  lin.; Exp. Alar.  $6$ — $7$  lin.)

He. *apicalis*. *Steph. Catal. 311. No. 3471.*

Ochreous-red: antennæ rather short, not annulated; eyes black; sides of collar and thorax pitchy; abdomen pitchy, the margins of the segments slightly pale; legs pale; wings opaline, anterior clouded, especially at the tip, with pale fuscous; nervures fuscous, with remote white dots; posterior

pair also faintly clouded with fuscous at the tip, the nervures immaculate and pale.

Found at Coombe and Darenth woods, in June.

Sp. 18. *punctatus*. *Ochraceo-rufus, collaris lateribus piccis, oculis brunneis, alis opalinis, anticis venis longitudinalibus albis, fuscescente punctatis, transversalibus fuscis immaculatis.* (Long. corp. 2 lin.; Exp. Alar.  $6\frac{1}{2}$  lin.)

He. *punctatus*. *Leach MSS.—Steph. Catal. 311. No. 3472.*

Ochreous-red, the back of the thorax pale; the sides of the collar pitchy, fuscescent towards the head; abdomen with its sides also slightly pitchy; legs pale; eyes brown; antennæ short, slender, and not annulated; wings rather narrow, opaline, immaculate; anterior with the longitudinal nervures whitish, minutely, but regularly, dotted with fuscous, the transverse ones wholly fuscous; posterior pair immaculate.

Taken, in June, near Dover, and in Devonshire.

Sp. 19. *subfasciatus*. *Pallide ochraceus, thoracis lateribus, abdominisque dorso fuscis, alis attenuatis, opalinis, anticis fasciis interruptis transversis atomisque fuscis.* (Long. corp.  $2\frac{1}{4}$  lin.; Exp. Alar.  $6\frac{1}{2}$  lin.)

He. *subfasciatus*. *Steph. Catal. 312. No. 3474.*

Pale ochreous: antennæ very pale and immaculate; eyes greenish; sides of the thorax and back of the abdomen, especially towards the apex, fuscous, the edges of the segments palish; legs pale; wings long and narrow, opaline, the anterior with pale nervures, thickly dotted with fuscous, most of the transverse ones, and some short irregular transverse streaks fuscous; posterior wings paler, longitudinal nervures pale, transverse ones fuscous.

Also taken in June, near London.

Sp. 20. *irroratus*. *Ochraceo-rufus, antennis fusco annulatis, alis opalinis, anticis crebrè fusco irroratis, posticis immaculatis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $6\frac{1}{2}$ — $7\frac{1}{4}$  lin.)

He. *irroratus*. *Leach MSS.—Steph. Catal. 312. No. 3475.*

Ochreous-red, the sides of the thorax brighter; eyes brownish; antennæ rather long, each joint with a fuscous ring; abdomen immaculate; legs pale, with the tips of the tarsi fuscous; wings opaline, rather narrow, the nervures whitish, thickly dotted with fuscous, and the transverse ones, especially those towards the apex, wholly of that colour; posterior wings paler, with whitish immaculate nervures.

Not uncommon, in woods and shrubby places, within the metropolitan district; also taken near Dover, and in Devonshire.

Sp. 21. *Pini*. *Testaceus, pedibus pallidioribus, abdomine nigro aut picco, antennis fusco annulatis, alis hyalinis, anticis fusco-lutescentibus margine*

*postico saturatiore, punctis fasciisque abbreviatis fuscis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $6\frac{1}{2}$ — $7\frac{1}{2}$  lin.)

He. Pini. *Leach MSS.—Steph. Catal.* 312. No. 3476.

Head and thorax bright testaceous; eyes black; antennæ testaceous, with fuscous rings; legs pale testaceous; wings hyaline, anterior lutescent-brown, with the hinder margin and tip of the inner darker, the disc with numerous fuscous clouds, and some abbreviated darker irregular fasciæ; nervures fuscous, with darker dots, the spaces between their bifid apex on the hinder margin whitish; posterior wings opaline, slightly fuscous towards the apex, the nervures palish, the transverse ones fuscous.

Abundant in pine groves, especially near Hertford and Ripley, in June and July; found also in Scotland.

Sp. 22. *Stigma. Testaceus, pedibus pallidioribus, abdomine piceo, antennis fusco annulatis, alis hyalinis, fusco-lutescentibus, stigmatè rufo-fusco, nervis fuscis albedo punctatis.* (Long. corp. 3 lin.; Exp. Alar.  $7\frac{1}{2}$  lin.)

He. *Stigma. Steph. Catal.* 312. No. 3477.

Testaceous: eyes black; antennæ rather long, annulated with fuscous; abdomen pitchy; legs pale testaceous; wings rather long and narrow, the apex rounded, anterior lutescent-brown, with darker nervures, the latter remotely dotted with whitish; stigma fuscous, posterior paler immaculate, the nervures and stigma rather fuscous.

Taken in June, near Ripley.

Sp. 23. *crispus. Testaceus, thorace lateribus abdomineque saturatioribus, alis opalinis, angustis, anticis fuscescente maculatis, nervis transversalibus fuscis, posticis immaculatis.* (Long. corp. 2 lin.; Exp. Alar. 6 lin.)

He. *crispus. Curtis?—Steph. Catal.* 312. No. 3482.

Testaceous, with the sides of the thorax and the abdomen darker or slightly pitchy; eyes pale brown; antennæ long, faintly annulated with fuscous; wings hyaline, opaline, rather long and narrow, the anterior with numerous, more or less distinct, pale brown clouds and dots, partially disposed in oblique fasciæ; nervures fuscous, with irregular darker and paler dots; posterior wings paler, the hinder margin slightly fuscous; nervures fuscous, immaculate; legs pale testaceous.

Found in June, within the metropolitan district.

Sp. 24. *pallidus. Ochraceo-pallidus, collaris abdominisque lateribus piceis, alis hyalinis costâ nervisque punctatis fuscescentibus.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $6\frac{1}{2}$  lin.)

He. *pallidus. Steph. Catal.* 312. No. 3480.

Head pale testaceous, with a pitchy dot beneath each eye, the latter brown;

collar pale ochreous, with the sides pitchy; thorax pale ochreous; abdomen the same, with a pitchy streak along each side; legs pale ochreous; wings abbreviated, hyaline, and iridescent, the costa and nervures brownish, the latter with remote palish dots; posterior wings rather paler.

Found at Hertford, in July.

d. Longitudinal nervures *all united by two or more transverse ones, placed irregularly.*

Sp. 25. *variegatus*. *Fuscus, alis albo hyalinis, fusco maculatis et subfasciatis nervisque punctatis, antennis ochreo-rufis, pedibus pallidis.* (Long. corp. 2—2½ lin.; Exp. Alar. 5—6 lin.)

He. *variegatus*. *Fabricius*.—*Steph. Catal.* 312. No. 3481.

Deep fuscous: head very glossy in front; antennæ and palpi reddish-ochre; legs pale; wings hyaline, white and iridescent, anterior with several large blotches of deep fuscous, especially towards the inner margin and the apex, sometimes disposed in one or two oblique transverse fasciæ; nervures fuscous, with large fuscous spots; posterior wings paler and more transparent, with three or four distinct fuscous clouds on the margin towards the apex.

A variable and beautiful species: in some examples the abdomen has an ochreous stripe down the back; others have the wings very slightly spotted in the direction of the nervures; in some the fuscous clouds are united in distinct transverse fasciæ, while in others they are placed irregularly, and are not united.

Common, in June and July, in woods about London, as at Darent, Coombe, Birch wood, &c.; also in Devonshire, Dorsetshire, the New Forest, Scotland, &c.

†Sp. 26. *fimbriatus*. *Piceus, thoracis dorso maculisque ochraceis, alis subochraceis, fimbriâ subinterruptâ fusciscente.* (Long. corp. 2½ lin.; Exp. Alar. 5 lin.)

He. *fimbriatus*. *Curtis, v. v. pl.* 202.—*Steph. Catal.* 312. No. 3485.

Pitchy: thorax with a dorsal line and a spot on each side ochreous, meta-thorax varied with the same; abdomen somewhat ferruginous at the base; legs dull ochre; femora, especially the posterior, pitchy; base of the hinder tibiæ and tips of all the tarsi the same; wings somewhat ochreous, iridescent, bordered with fuscous; anterior spotted with fuscous, and the nervures dotted with brown; posterior with a short fuscous streak on the costal edge.

“Daddingston Loch, July.”—*Curtis, l. c.*

B. *Anterior wings* with the costal nervures furcate, with two discoidal nervures only arising from the inner longitudinal rib.

Sp. 27. *elegans*. *Atro-piceus, nitidus, abdomine rufo-piceo, pedibus pallidis,*

*alis abbreviatis, fusco-hyalinis, anticis albo perlepidè irroratis, nervis fuscis, immaculatis.* (Long. corp.  $1\frac{3}{4}$ — $2\frac{1}{4}$  lin.; Exp. Alar.  $4\frac{3}{4}$ — $5\frac{1}{2}$  lin.)

He. elegans. *Steph. Catal.* 312. No. 3483.

Head deep shining black: palpi and antennæ pitchy-black; thorax the same and glossy; abdomen pitchy-red; legs pale; wings short, hyaline, fuscous; anterior with immaculate darker nervures, the spaces between them very prettily and thickly irrorated with white or clear dots; posterior immaculate, more transparent and iridescent.

Taken, but not very commonly, within the metropolitan district, at Coombe and Darenth woods, &c. in June.

Sp. 28. Marshami. *Piceus, nitidus, abdomine pallidiore, alis abbreviatis, rotundatis, fusco-hyalinis, anticis concinè albo punctatis, fasciisque 2-bus fusciscentibus, nervis fuscis immaculatis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 5 lin.)

He. Marshami. *Steph. Catal.* 312. No. 3484.

Pitchy and shining: antennæ short and stout, pitchy-black, with the base pale; abdomen pitchy-testaceous; legs pale testaceous; wings short and rounded, hyaline, fuscous, posterior palest, with the margin dusky; anterior with the nervures fuscous, the transverse ones surrounded by a cloud of the same, and forming two bands; the spaces between prettily marked with very numerous small transparent, or white, dots.

From the Marshamian collection: I am not aware of its locality.

C. *Anterior wings* with the costal nervures simple, few in number; discoidal nervures not arising from the longitudinal rib, but running nearly parallel thereto from their origin at the base.

Sp. 29. fuscatus. *PLATE XXX. f. 4.—Niger, alis fusco hyalinis, nitidissimis, nervis atro-fuscis, pedibus testaceis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5$ — $5\frac{1}{2}$  lin.)

He. fuscatus. *Fabricius.—Steph. Catal.* 312. No. 3486.

Deep black: head and thorax immaculate; mouth obscure testaceous; legs testaceous, with the femora more or less obscure; wings hyaline, very glossy, deep fuscous and immaculate, the nervures darker.

Found, not uncommonly, at Hertford and Ripley, in June and July.

Sp. 30. nitidulus. *Testaceus, alis cinereo-hyalinis, nitidulis, nervis obscurioribus, pedibus pallidis, antennis fuscis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $5$ — $5\frac{1}{2}$  lin.)

He. nitidulus. *Fabricius.—Steph. Catal.* 312. No. 3487.

Head testaceous; eyes brown-black; thorax and abdomen testaceous-immaculate; legs pale; antennæ as long as the body; fuscous; wings ashy-

hyaline, or slightly fuscous, with rather darker nervures, and somewhat glossy, immaculate.

Taken within the metropolitan district, in June and July, not common.

Sp. 31. *confinis*. *Testaceo-fuscus, alis fuscescente-hyalinis immaculatis, nitidis, pedibus testaceis, antennis piceis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{4}$  lin.)

He. *confinis*. *Steph. Catal.* 312. No. 3488.

Testaceous-brown: eyes black; antennæ rather short and pitchy; legs testaceous; wings hyaline, slightly fuscescent, shining and immaculate, with pale fuscous nervures.

Also found within the metropolitan district, in June, but rarely.

### FAMILY III.—PSOCIDÆ, *Leach*.

*Antennæ* rather long and slender, filiform, or setaceous, the articulations either few in number and very indistinct, or numerous and somewhat moniliform: *palpi* two or four, labial sometimes wanting: *collar* very small: *thorax* a little tubercular: *wings* four, or wanting, anterior ample, elongate, with a few irregular longitudinal nervures, and a few transverse ones; posterior pair usually small: *legs* simple: *tarsi* with two, three, or five joints: *body* soft.

As formerly mentioned, the insects of this family differ considerably in habit from the others of this section; their antennæ are much elongated, the collar very small, the wings narrow and elongate, with but few irregular, waved, and radiating nervures, and one or two transverse ones; the posterior wings are usually much smaller than the anterior, and the insects are of small size: they are found on the trunks of trees, old walls, amongst lichens, &c. during the summer, and are very active: their larvæ are active, and have considerable resemblance to the perfect insect, except in being destitute of wings. The indigenous species may be thus divided into genera:

Alati; <i>tarsi</i> articulis 5-que:	21. CONIOPTERYX.
articulis 2-bus:	22. PSOCUS.
Apteri; <i>tarsi</i> articulis 3-bus:	23. ATROPOS.

### GENUS XXI.—CONIOPTERYX, *Leach*.

*Antennæ* long and filiform, composed of from 20 to 40 pubescent, somewhat moniliform, distinct articulations: *labrum* semicircular, slightly concave before: *maxillary palpi* long, porrect, forming a kind of beak, 5-jointed:

*labial* 3-articulate, the terminal joint large, ovate, compressed: *head* orbicular, *forehead* depressed: *eyes* remote, ovate: *collar* distinct; *thorax* gibbous, tuberculated: *wings* deflexed, rounded, covered with a mealy powder; anterior ample, larger than the posterior, which are occasionally small; all with three discoidal areolet: *abdomen* short, elongate-ovate: *legs* moderate: *tarsi* 5-jointed. Larva ovate, conic, with short setose antennæ and legs.

The insects of this genus at first sight resemble certain Homoptera, especially the genus *Aleyrodes*, amongst, and near, which I had placed the only three species that I have seen, the third of which differs from the others in having the posterior wings much smaller than the others: the genus was first characterized by Curtis, but I had previously indicated it, having placed it amongst those families that I stated in a note in Part II. of my Catalogue, p. 361. I had not properly investigated: the larvæ, according to the observations of Mr. Haliday, resemble those of *Hemerobius*, and are broad, ovate, acute, with short antennæ, &c. and are probably aphidivous: the imago differs from the *Psoci* in having the antennæ distinctly multiarticulate, the wings, &c. covered with powder, and the tarsi 5-jointed.

Sp. 1. *Tineiformis*. *Margaritaceo-cinerea*, *opaca*, *abdomine* *rufo-ochraceo*, *antennis* *haud* *corpore* *longitudinis*, *alis* *posticis* *mediocribus*. (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $2\frac{3}{4}$  lin.)

*Aley. dubia*. *Steph. Catal.* ii. 367. No. 9979.—Con. *tineiformis*. *Curtis, f.* 528.

“Dead pearly grey, powdered: antennæ not longer than the body, containing about 25 joints; superior (anterior) wings very ample; inferior (posterior) small; abdomen ochreous.”—*Curtis, l. c.*

Abundant, in June, in lanes near Hertford and Ripley, in fir groves; also taken in Norfolk, the New Forest, Dorsetshire, and near Dover.

Sp. 2. *Aleyrodiformis*. *Margaritaceo-alba*, *opaca*, *abdomine* *piceo*, *antennis* *corpore* *longioribus*, *alis* *posticis* *mediocribus*. (Long. corp. 1 lin.; Exp. Alar. 4 lin.)

*Aley. gigantea*. *Steph. Catal.* ii. 367. No. 9978.

Dead pearly white, powdered; antennæ piceous, rather longer than the body, with about 30 joints; anterior wings ample; posterior rather small; abdomen pitchy; legs pale, with the knees pitchy.

Found, in July, 1827, near Ripley.



Sp. 3. Psociformis. *Margaritaceo-alba, opaca, abdomine concolore, antennis corpore multo longioribus, alis posticis parvis.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar. 4 lin.)

N. G. (1437) Pinicola. *Steph. Catal.* ii. 367. No. 9974.—Co. Psociformis. *Curtis, v. xi. pl. 528.*

“Dead pearly white; antennæ twice as long as the body, composed of nearly 40 joints, subochreous; superior (anterior) wings very ample, and distinctly iridescent; inferior (posterior) small.”—*Curtis, l. c.*

Taken amongst firs, in June, at Ripley; found also in Norfolk and in Scotland.

## GENUS XXII.—PSOCUS, *Latreille.*

*Antennæ* rather long and slightly pilose, setaceous, consisting of about 10 cylindrical articulations, the two basal ones short and thick, the remainder elongate and indistinctly seen: *labrum* transverse-quadrate, rounded laterally and in front: *maxillary palpi* porrect, 4-articulate, the terminal joint largest, ovate-cylindric: *labial* minute: *head* large, trigonate-ovate; *forehead* very convex: *eyes* semiglobose, prominent, distinct: *ocelli* three: *collar* minute: *thorax* ample, with impressed lines: *wings* deflexed, hyaline, nervous; anterior rather largest, elongate-subovate, with a distinct stigma towards the apex; posterior smaller and less nervous: *abdomen* short, sessile, ovate-conic: *legs* rather long: *tarsi* with two short joints. Larva resembling the imago, but apterous: pupa with rudiments of wings.

The Psoci are known by having the antennæ long, and composed of few elongate indistinct articulations, and slightly pilose in the males: the clypeus is very prominent; the body soft; wings four, hyaline, and not covered with powder; the tarsi biarticulate, &c. The species are very numerous, and I think it probable there are many more than are herein indicated, as I have scarcely captured a single example since the publication of my Catalogue, now seven years ago: they differ slightly in the neuration of the wings, and may be divided into sections in accordance therewith.

A. *Anterior wings* with a somewhat quadrate transverse discoidal areolet.

a. First nervure of *anterior wings* deeply bifurcate.

1. *Wings* variegated; *nervures* rather indistinct.

\* *Antennæ* very pilose.

Sp. 1. pilicornis. *Niger, alis anticis maculis nebulisque nigricantibus, antennis longe pilosis.* (Long. corp. 1 lin.; Exp. Alar.  $3\frac{1}{2}$ —4 lin.)

Ps. pilicornis. *Latreille.*—*Steph. Catal.* ii. 416. No. 3489.

**Black:** antennæ very pilose; anterior wings spotted and clouded with dusky; nervures fuscous, with a dot of that colour at the apex of each on the hinder margin; posterior immaculate; legs pale.

Apparently not very common; taken near London, and in Suffolk.

Sp. 2. *pivicornis*. *Niger, alis anticis albo fuscoque variis, antennis piceis*. (Long. corp. 1 lin.; Exp. Alar.  $3\frac{1}{2}$ —4 lin.)

Ps. *pivicornis*. *Fabricius.—Steph. Catal. 312. No. 3490.*

**Black:** abdomen pitchy; antennæ hairy and pitchy; anterior wings variegated with fuscous and white; posterior hyaline, immaculate; legs pale. Female with the antennæ simple.

Common in the vicinity of London, in June, on trunks of trees, &c.

\*\* Antennæ scarcely pilose, or naked.

Sp. 3. *fasciatus*. *Capite thoraceque flavis, lituris fuscis, abdomine nigro, alis anticis hyalinis, fasciis 3-bus atomisque numerosis nigris*. (Long. corp. 1— $1\frac{1}{4}$  lin.; Exp. Alar. 4— $4\frac{1}{2}$  lin.)

Ps. *fasciatus*. *Fabricius.—Steph. Catal. 312. No. 3491.*

Antennæ black, slightly pilose; head and thorax yellow, with fuscous markings; abdomen black; wings hyaline, anterior with three black stripes, the 1st before the middle, the 2nd behind, and the hinder one on the margin, and numerous minute fuscous dots, with a larger one on the inner edge towards the base; posterior immaculate.

Also common in the neighbourhood of London, in woods, &c. during the summer, and in Suffolk.

Sp. 4. *variegatus*. *Niger, fronte, thorace supra, abdomineque ochraceis, alis anticis nigricantibus atomis albis*. (Long. corp. 1 lin.; Exp. Alar.  $3\frac{1}{2}$ — $4\frac{1}{4}$  lin.)

Ps. *variegatus*. *Latreille.—Steph. Catal. 415. No. 3492.*

**Black:** forehead, upper part of the thorax, and the abdomen pale ochreous-yellow; anterior wings blackish, with numerous minute white dots.

Found, less abundantly than the last, within the metropolitan district, in June: taken also in Suffolk.

Sp. 5. *atomarius*. *Piceus, capite flavo, oculis nigris, pedibus pallidis, alis anticis fuscis atomis albis, stigmatè semiflavo*. (Long. corp.  $1\frac{1}{4}$  lin.; Exp. Alar. 4 lin.)

Ps. *atomarius*. *Steph. Catal. 312. No. 3493.*

Pitchy: head yellow; eyes black; anterior wings fuscous, with minute white

dots; stigma fuscous, its basal half yellow; hinder immaculate; legs pale, with the knees yellow; antennæ pale, and very slightly pilose in the male.

Taken in June, near London.

Sp. 6. maculatus. *Piceus, pedibus antennisque pallidis; alis anticis hyalinis maculis distantibus fuscis sparsis.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar. 4 lin.)

Ps. maculatus. *Steph. Catal.* 311. No. 3456.

Pitchy, with an ochreous hue; eyes black; antennæ and legs pale; wings hyaline, with the chief portion of the nervures, the apical half of the stigma, and several remote spots, fuscous, the hinder margin also fuscous.

Also taken near London, in June.

Sp. 7. subfasciatus. *Ochraceus, capite thoraceque nigro variegatis, abdomine piceo, pedibus pallidis alis anticis hyalinis fuscis 2-bus maculis variis fuscis.* (Long. corp. 1 lin.; Exp. Alar.  $4\frac{1}{2}$  lin.)

Ps. subfasciatus. *Steph. Nomen. 2d edit. col.* 116.—Ps. obsoletus. *Steph. Catal.* 312. No. 3495.

Ochreous: head and thorax varied with black, the sutures yellow; abdomen pitchy; legs pale; anterior wings hyaline, stained with yellow, with the nervures and two oblique interrupted fasciæ, and some dots on the hinder margin fuscous; posterior hyaline, immaculate.

Found within the metropolitan district, in June.

2. Wings not variegated; nervures distinct.

\* Discoidal areolet closed by one of the radiating nervures.

Sp. 8. lineatus. *Ochraceus, brunneo maculatus, capite lineis rufo-brunneis, alis anticis basi nigro fasciato.* (Long. corp.  $1\frac{1}{4}$ — $1\frac{3}{4}$  lin.; Exp. Alar.  $5\frac{1}{2}$ —7 lin.)

Ps. lineatus. *Latreille.—Steph. Catal.* 416. No. 3496.

Pale ochreous, spotted with brown; head with several red-brown longitudinal streaks; anterior wings with an oblique black streak at the base within; nervures and stigma pale fuscous.

The anterior wings have occasionally one or two fuscous clouds towards the apex.

Very common on trunks of trees, &c. in woods within the metropolitan district: also taken in Suffolk.

Sp. 9. nebulosus. *Ochraceus, capite brunneo lineato, ocellis et maculis thoracis nigris, abdomine piceo, pedibus pallidis, alis anticis hyalinis venis nebulisque aliquot fuscis.* (Long. corp.  $1$ — $1\frac{1}{2}$  lin.; Exp. Alar.  $4\frac{1}{2}$ — $6\frac{1}{2}$  lin.)

Ps. nebulosus. *Kirby? MSS.—Steph. Catal.* 312. No. 3497.

Pale ochreous: mouth, eyes, ocelli, and some spots on the thorax black; head with longitudinal brown lines; abdomen pitchy; legs pale; anterior wings

hyaline, the nervures fuscous, with broad clouds of the same connected therewith, and forming a radiated appearance at the apex; stigma pale fuscous; posterior pair immaculate, fuscous, with darker nervures.

Also common within the metropolitan district, in June and July, and in Suffolk.

Sp. 10. similis. *Nigricans, abdomine pedibusque piceis, antennis nigris, alis immaculatis anticis fuscescentibus venis fuscis, posticis subhyalinis.* (Long. corp. 1—1½ lin.; Exp. Alar. 4½—6 lin.)

Ps. similis. *Kirby? MSS.—Steph. Catal. 312. No. 3498.*

Blackish: sutures of the thorax and metathorax ochreous or yellowish; abdomen pitchy; legs brownish; antennæ black; wings immaculate, anterior brownish, with a golden gloss and darker brown nervures, the latter interrupted with white between the stigma and the inner edge, forming a waved fascia; stigma fuscous, posterior slightly brownish.

Not uncommon in the vicinity of London, in the summer.

Sp. 11. bifasciatus. *Flavo nigroque variegatus, alis anticis fasciis 2-bus transversalibus punctoque nigris.* (Long. corp. 1—1½ lin.; Exp. Alar. 3½—4¼ lin.)

Ps. bifasciatus. *Latreille.—Steph. Catal. 416. No. 3499.*

Varied with yellow and black: anterior wings with two transverse streaks and a stronger marginal dot, or a stigma, black; antennæ and legs ochreous.

Common near London, in June and July; also in Suffolk.

Sp. 12. contaminatus. *Piceus, nigro variegatus, antennis pedibusque brunneis, alis anticis fuscis 2-bus transversalibus versus basin stigmatæque brunneis.* (Long. corp. 1¼ lin.; Exp. Alar. 4 lin.)

Ps. contaminatus. *Kirby? MSS.—Steph. Catal. 313. No. 3500.*

Pitchy, variegated with black: antennæ and legs pitchy-brown; wings hyaline, anterior with a faint brown transverse streak at the base, and another stronger one before the middle; stigma and nervures fuscous, posterior immaculate, with pale fuscous nervures.

Found also near London, and in Suffolk.

Sp. 13. megastigmus. *Ochraceus, capite brunneo lineato, thorace fusco nebuloso, alis hyalinis, anticis fasciâ obsoletâ mediâ, maculâ, stigmatæque magno, fuscis.* (Long. corp. 1¾ lin.; Exp. Alar. 4 lin.)

Ps. megastigmus. *Steph. Nomen. 2d edit. col. 116.*

Ochreous: head with short longitudinal brown lines in front; eyes large, black; thorax clouded with fuscous; abdomen pitchy, with the edges of the segments ochreous; legs pale; wings hyaline, anterior with a very faint transverse fascia, a spot between it and the base of the stigmata

(which are very large) fuscous, the basal portion of the latter paler; nervures pale fuscous; posterior immaculate.

Taken in June, near London.

Sp. 14. *subnebulosus*. *Ochraceus, nigro variegatus, antennis pedibusque pallidis, alis hyalinis, anticis nebulis fusciscentibus.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar. 2 lin.)

Ps. *subnebulosus*. *Steph. Nomen. 2d edit. col. 116.*

Ochreous: eyes and spot on the crown black; thorax varied with black; abdomen with its apex black; legs and antennæ pale; wings hyaline, anterior pair with faint fuscous clouds, the nervures and stigma also fuscous, but darker; posterior immaculate.

Found at Hertford, in June.

\*\* Discoidal areolet open towards the inner apex.

Sp. 15. *longicornis*. *Niger, ore pedibusque pallidis, antennis longioribus fuscis, alis anticis hyalinis stigmatate fusco.* (Long. corp.  $1-1\frac{1}{2}$  lin.; Exp. Alar.  $4\frac{1}{2}-5\frac{1}{4}$  lin.)

Ps. *longicornis*. *Fabricius.—Steph. Catal. 313. No. 3501.*

Black: thorax and abdomen immaculate; mouth pale; legs wholly pale; wings hyaline, with the nervures and stigma fuscous; antennæ rather long and fuscous, immaculate.

The head is sometimes ochreous in front.

Abundant in June, within the metropolitan district: also found in Suffolk.

Sp. 16. *immunis*. *Fuscus, flavo variegatus, pedibus antennarumque basi luteo-ochraceis, alis hyalinis, stigmatate subfusco.* (Long. corp.  $1\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{4}$  lin.)

Ps. *immunis*. *Kirby MSS.—Steph. Catal. 313. No. 3502.*

Head yellow, dotted with fuscous above, the front streaked with pale brown, clypeus in the middle and tips of the mandibles dusky; eyes prominent, brown; thorax fuscous, the sutures and under part yellow; abdomen fuscous, the edges of the segments and two dots at the apex yellow; legs luteous-ochre, tarsi dusky; wings hyaline, nervures very faint; stigma fusciscent: antennæ somewhat ochreous, the apex dusky.

Found in July near London, and in Suffolk.

Sp. 17. *venosus*. *Ochraceo-rufus, capite thoraceque fusco punctatis, pedibus pallidis, antennis fuscis, articulo basali luteo, alis limpidis nervis fusciscentibus.* (Long. corp.  $1\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{2}$  lin.)

Ps. *venosus*. *Steph. Nomen. 2d edit. col. 116.*

Ochreous-red: tips of palpi fuscous; forehead with a fuscous streak, and a paler cloud on the crown; eyes fuscous; thorax with three fuscous spots in front, and two on the metathorax; abdomen immaculate; legs pale, tips of tarsi black; wings limpid, faintly tinged with yellowish; nervures slightly fuscous; stigma hyaline; antennæ fuscous, the basal joint luteous.

Also taken near London, and at Ripley and Hertford, in June and July.

Sp. 18. *vittatus*. *Atro-fuscus, abdomine piceo, pedibus antennarumque basi pallidis, alis anticis vittâ latâ fuscâ, nervis saturatioribus*. (Long. corp. 1—1½ lin.; Exp. Alar. 3—3½ lin.)

Ps. *vittatus*. Kirby MSS.—Steph. Catal. 313. No. 3503.

Deep shining fuscous: abdomen pitchy; legs pale yellowish; tarsi fuscous above; wings fuscous-hyaline, anterior with a broad longitudinal darker fuscous streak from the base to the apex, branching off to the stigma, which is hyaline; nervures dark fuscous, paler towards the margin; posterior wings with the costa pale; antennæ fuscous, with the base within pale or yellowish.

Immature specimens have the head and thorax, as well as the abdomen, pitchy, or red, and the vitta on the wings somewhat flavescent-brown, with a golden tinge.

Also found at Ripley and Hertford, in the summer, and at Dover, &c. abundantly.

Sp. 19. *ochropterus*. *Pallide ochraceus, abdomine rufo, capite thoraceque fusco punctatis, pedibus flavis, alis subochraceis, venis fusciscentibus*. (Long. corp. ¾—1 lin.; Exp. Alar. 2½—3½ lin.)

Ps. *ochropterus*. Kirby MSS.—Steph. Catal. 313. No. 3504.

Pale ochreous: head and thorax spotted with fuscous; abdomen pale red; legs pale ochreous yellow; wings hyaline, slightly tinged with ochreous, the nervures, especially the inner one of the anterior wings, fuscous; antennæ pale, the tip fuscous.

Taken in July at Ripley, and in Suffolk.

Sp. 20. *flavidum*. *Capite thoraceque ochraceo-rufis, oculis atris, abdomine flavo, pedibus pallidis, alis hyalinis, subfusciscentibus nervis saturatioribus*. (Long. corp. ¾ lin.; Exp. Alar. 2½—3 lin.)

Ps. *flavidum*. Kirby MSS.—Steph. Catal. 313. No. 3505.

Head and thorax above pale ochreous-red, immaculate, beneath yellow; eyes black; abdomen sulphur-yellow; legs pale; wings hyaline, slightly fuscous, with the nervures darker; antennæ pale, a little fuscous at the apex above.

Also taken near London, and in Suffolk.

Sp. 21. *flavicans*. *Niger, collare, abdomineque flavis*. (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar. 3 lin.)

He. *flavicans*. *Linné*.—Ps. *flavicans*. *Steph. Catal.* 313. No. 3506.

Head black; neck yellow; thorax blackish; abdomen ovate, yellow; legs blackish; wings hyaline, with obscure branching nervures; antennæ black.

Found near London; also at Hertford and in Suffolk, in July.

Sp. 22. *obsoletus*. *Pallide rufo-ochraceus, capite postice, abdomineque maculâ dorsali, atris, alis obscure fusciscentibus, nervis tenuibus saturatoribusque*. (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $2\frac{1}{2}$  lin.)

Ps. *obsoletus*. *Steph. Catal.* 313. No. 3507.

Pale ochreous-red: mouth yellow; head behind black; thorax immaculate; abdomen somewhat yellowish-red, with a large patch of black on the back; legs very pale ochre; wings obscurely fusciscent, with very slender darker nervures; stigma pale flavescent-brown; antennæ pale testaceous, with dusky hairs.

Found in July, near London.

Sp. 23. *hyalinus*. *Fusco-piceus, pedibus pallidioribus, abdominis basi ochraceo-flavâ, alis hyalinis, limpidis, stigmatè fusco*. (Long. corp. 1 lin.; Exp. Alar. 3 lin.)

Ps. *hyalinus*. *Steph. Catal.* 313. No. 3508.

Head pitchy-brown, clypeus and mouth paler; eyes black; thorax pitchy-red, immaculate; abdomen above pitchy-brown, with the base ochreous-yellow, beneath pale pitchy-red; legs rufo-piceous, with the tibiæ palest; wings hyaline, limpid, nervures and stigma fuscous; antennæ short, pitchy-brown, palest at the base.

Taken in June, near London.

Sp. 24. *bipunctatus*. *Flavo nigroque varius, alis anticis maculis 2-bus nigricantibus*. (Long. corp.  $\frac{3}{4}$ — $1\frac{1}{4}$  lin.; Exp. Alar.  $2\frac{1}{2}$ — $3\frac{1}{4}$  lin.)

He. *bipunctatus*. *Linné*.—Ps. *bipunctatus*. *Steph. Catal.* 313. No. 3509.

Varied with black and yellow, greenish during life; wings hyaline, with fuscous nervures, anterior with the stigma blackish, and a spot of the same towards the base of the inner margin.

Found occasionally within the metropolitan district, and in Suffolk, in the summer.

Sp. 25. *sexpunctatus*. *Fuscus: alis anticis maculis fuscis punctisque 6 distinctis*. (Long. corp.  $\frac{3}{4}$ —1 lin.; Exp. Alar.  $2\frac{1}{2}$ —3 lin.)

He. *sexpunctatus*. *Linné*.—Ps. *sexpunctatus*. *Steph. Catal.* 313. No. 3510.

Fuscous: wings hyaline, with a golden tint; anterior with fuscous clouds or

spots, and six distinct blackish dots, disposed somewhat semicircularly towards the outer base of the wings; posterior immaculate.

Also taken near London, and in Suffolk.

Sp. 26. quadrimaculatus. *Nigro flavoque varius, alis anticis maculis 4 brunneis.*  
(Long. corp. 1 lin.; Exp. Alar. 3 lin.)

Ps. quadrimaculatus. *Latreille.*—*Steph. Catal.* 313. No. 3512.

Varied with black and pale yellow; wings hyaline, anterior with four brown spots; antennæ pitchy.

Not uncommon within the metropolitan district, where it occurs in the summer.

Sp. 27. striatulus. *Fuscus, flavo maculatus, alis hyalinis, anticis fusco striatis.*  
(Long. corp. 1 lin.; Exp. Alar. 3 lin.)

Ps. striatulus. *Fabricius.*—*Steph. Catal.* 313. No. 3511.

Head yellow, mouth and eyes fuscous; thorax fuscous; breast yellow; abdomen fuscous, the sides ochreous; legs pale yellow; anterior wings hyaline, with fuscous nervures; posterior immaculate; antennæ fuscous.

Found in the summer near London.

Sp. 28. flaviceps. *Fuscus, capite, pedibusque ochraceo-flavis, antennis rufopiceis, alis hyalinis nebulis obscuris subfuscescentibus.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $2\frac{1}{2}$  lin.)

Ps. flaviceps. *Steph. Catal.* 313. No. 3513.

Head pale ochreous-yellow; eyes black; thorax and abdomen fuscous, the edges of the segments a little palish; legs pale ochreous yellow: antennæ short, deep pitchy-red; wings hyaline, with pale fuscous nervures and obscure fuscescent clouds between them.

Taken at Ripley, in June.

Sp. 29. subocellatus. *Niger, albido variegatus, antennis brevibus, alis hyalinis maculis aliquot subocellatis nervisque fuscescentibus.* (Long. corp.  $\frac{3}{4}$ —1 lin.; Exp. Alar.  $2\frac{1}{2}$ —3 lin.)

Ps. subocellatus. *Steph. Nomen. 2d edit. Appendix.*

Black: head and thorax varied with whitish; a lateral streak and the extreme edges of the segments of the abdomen also whitish; legs pale, knees fuscescent; wings hyaline, anterior with the nervures pale fuscous; each areolet with a fuscous spot on a pale ground, producing an ocellated appearance; antennæ rather short.

Found at Hertford and Ripley, and in other places within the metropolitan district, in June and July.



## b. First nervure of anterior wings trifurcate.

Sp. 30. immaculatus. *Pallide ochraceus, oculis atris, antennis longioribus fuscescentibus, pedibus pallidis, alis limpidis, nervis tenuibus stigmatæque fuscescentibus.* (Long. corp. 1—1½ lin.; Exp. Alar. 4—5 lin.)

Ps. immaculatus. *Kirby MSS—Steph. Catal. 313. No. 3514.*

Very pale ochreous, immaculate; eyes deep black; legs pale, with the tarsi fuscescent; antennæ rather long and brownish, the basal joint pale; wings longish and narrow, limpid, nervures very slender, and pale fuscescent; stigma also fuscescent, but very pale.

Found in June near London; also at Ripley and in Suffolk.

Sp. 31. rufescens. *Rufescente-flavus, capite thoraceque nigro maculatis, abdominis dorso subpiceo, pedibus ochraceo-pallidis, antennis longioribus, alis limpidis, stigmatæ concolore.* (Long. corp. 1½ lin.; Exp. Alar. 4½ lin.)

Ps. rufescens. *Steph. Catal. 313. No. 3515.*

Reddish-yellow: crown with a dusky spot, and thorax with three blackish ones; abdomen above somewhat pitchy; legs pale ochreous; antennæ rather long and fuscous, with the basal joint pale; wings long and limpid, stigma concolorous; nervures very slender and brownish.

Taken at Hertford in June.

Sp. 32. flavescens. *Ochraceo-flavus, immaculatus, oculis atris, antennis longioribus fuscis, pedibus pallide flavescens, alis limpidis, stigmatæ subfuscescentibus, venis tenuissimis fuscescentibus.* (Long. corp. 1¼ lin.; Exp. Alar. 4¼ lin.)

Ps. flavescens. *Steph. Nomen. 2d edit. col. 116.*

Pale ochreous-yellow, immaculate; eyes black; legs pale yellowish; antennæ rather long and fuscous, the basal joints palish; wings limpid, with the stigma slightly fuscescent, nervures very slender, and pale fuscescent.

Found at Ripley and Hertford, and other places within the metropolitan district, during the summer.

Sp. 33. quadripunctatus. *Niger, antennis abdomine pedibusque pallidis, alis hyalinis, anticis basi punctis 4 atris, apice fusco radiatis.* (Long. corp. ¾—1 lin.; Exp. Alar. 2½—3½ lin.)

Ps. 4-punctatus. *Fabricius.—Steph. Catal. 313. No. 3516.*

Head and thorax black, immaculate; abdomen, legs, and antennæ pale; wings hyaline, anterior with four distinct large black spots at the base, three of which are on the inner margin, and one towards the disc, the apex with radiating fuscous streaks, posterior immaculate.

In immature specimens the head and thorax are pale pitchy-red.

Very abundant on trunks of trees, throughout the metropolitan district, during the summer; found also in Suffolk and near Dover.

Sp. 34. *subpunctatus*. *Pallide rufus, oculis atris, antennis pedibusque pallidis, alis subflavescentibus nebulis aliquot obscuris nervisque fuscescentibus.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $2\frac{3}{4}$  lin.)

Ps. *subpunctatus*. *Steph. Catal. 313. No. 3517.*

Pale red: eyes deep black; antennæ and legs pale; wings somewhat of a pale yellowish hue, with the nervures and a few obscure dots, or clouds, fuscescent.

Found in the vicinity of London in June.

Sp. 35. *costalis*. *Testaceo-rufus, capite thoraceque fusco punctatis, oculis atris, antennis pedibusque pallide rufis, alis anticis, costa præsertim, fusco maculatis.* (Long. corp. 1 lin.; Exp. Alar.  $2\frac{3}{4}$  lin.)

Ps. *costalis*. *Steph. Catal. 313. No. 3518.*

Testaceous-red: eyes deep black; head and thorax with fuscous spots, darkest on the latter; legs and antennæ pale red; wings hyaline, slightly flavescent, the nervures brownish, the disc and costa with several largish fuscous clouds and spots.

Also taken near London in June.

Sp. 36. *nervosus*. *Testaceo-rufus, oculis, thoracis dorso, abdominisque apice atris, alis hyalinis venis fuscescentibus.* (Long. corp. 1 lin.; Exp. Alar.  $3\frac{1}{4}$  lin.)

Ps. *nervosus*. *Steph. Catal. 313. No. 3519.*

Testaceous-red: eyes black; back of thorax the same; abdomen light red, its apex and a dorsal line black; legs pale; wings hyaline, the nervures slightly fuscescent; stigma brownish.

Found in June within the metropolitan district.

Sp. 37. *maculipennis*. *Niger, pedibus piceis, alis anticis fusco nebulosis maculisque 2-bus magnis versus apicem saturatioribus.* (Long. corp. 1 lin.; Exp. Alar.  $3\frac{1}{4}$  lin.)

Ps. *maculipennis*. *Steph. Nomen. 2d edit. col. 117.*

Black, with some pitchy tints on the sutures of the thorax; legs pitchy; wings hyaline, anterior with the nervures and some obscure clouds fuscescent, and with two large fuscous spots (one the stigma), the other opposed to it on the anal angle; the base of the stigma pale.

Taken near London in July.

B. *Anterior wings* without a discoidal areolet; *second nervure* trifold.

Sp. 38. *nigricornis*. *Niger, collaris et thoracis lateribus pedibusque rufo-piceis, antennis atris, alis fusco-hyalinis.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $2\frac{3}{4}$  lin.)

Ps. *nigricornis*. *Steph. Catal. 313. No. 3520.*

Black: sides of the collar and of the thorax pitchy-red; abdomen dull black;

legs deep piceous, with a tinge of red towards the inner base of the femora and of the tibiæ; antennæ deep black, and slightly pilose in the males; wings hyaline, fuscous; nervures and stigma darker.

Taken in June at Hertford.

Sp. 39. *phæopterus*. *Rufo-piceus, antennis pedibusque pallidioribus, alis hyalinis saturate fuscis, venis stigmatæque saturatoribus.* (Long. corp.  $\frac{3}{4}$ —1 lin.; Exp. Alar.  $2\frac{1}{2}$ —3 lin.)

Ps. *phæopterus*. *Kirby MSS.—Steph. Catal. 313. No. 3521.*

Pitchy-red; eyes blackish; legs and antennæ pale pitchy-red, the latter rather short, and slightly pilose in the males; wings deep fuscous, hyaline, with the nervures and stigma darker.

In some examples there is a whitish fascia on the abdomen, and the extreme edges of the segments are occasionally whitish.

Also found at Hertford in June, and in other places within the metropolitan district.

Sp. 40. *nigricans*. *Piceo-testaceus, pedibus pallidioribus, thorace abdomineque supra nigricantibus, alis hyalinis, sublimpidis, nervis fuscis.* (Long. corp.  $\frac{3}{4}$  lin.; Exp. Alar.  $\frac{2}{3}$  lin.)

Ps. *nigricans*. *Kirby MSS.—Steph. Catal. 313. No. 3522.*

Head pitchy-testaceous: thorax blackish above, the sides and beneath pitchy- or reddish-testaceous; abdomen also pitchy-testaceous, beneath blackish; legs pale testaceous; antennæ dusky; wings hyaline, nearly limpid, the nervures fuscous; stigma slightly fuscous.

Taken in the vicinity of London, and in Suffolk.

Sp. 41. *abdominalis*. *Fuscus, abdomine flavo, ano nigro, alis hyalinis, antennis brevioribus.* (Long. corp.  $\frac{1}{2}$  lin.; Exp. Alar.  $1\frac{1}{2}$ — $1\frac{3}{4}$  lin.)

Ps. *abdominalis*. *Fabricius.—Steph. Catal. 313. No. 3523.*

Fuscous: abdomen pale yellow, with its tip black; wings hyaline, immaculate; nervures fuscous; legs and antennæ pale, the latter short.

Found near London in the summer.

Sp. 42. *dubius*. *Rufo-piceus, antennis pedibusque pallidioribus, abdominis dorso vittâ nigricante, alis hyalinis, flavedine tinctis, nervis subochraceo-fuscis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $1\frac{3}{4}$  lin.)

Ps. *dubius*. *Steph. Catal. 313. No. 3524.*

Pitchy-red: eyes fuscous; abdomen with a blackish streak down the back; legs and antennæ pale pitchy-red; wings hyaline, with a yellowish tinge; the nervures of an ochreous-brown.

Taken in June near London.

GENUS XXIII.—ATROPOS, *Leach*.

*Antennæ* long and slender, composed of about 14 joints, the two basal ones robust, the remainder slender, cylindric, slightly pilose, gradually decreasing in length from the fourth, which is the longest: *palpi* with the two basal joints of equal length, the third longer and more slender, the terminal one stouter, obtuse, nearly as long as the other three: *labrum* transverse, rounded in front: *head* somewhat quadrate: *eyes* small, lateral: *collar* very short, transverse: *thorax* quadrate: *wings* none: *abdomen* oblong, or ovate, depressed, soft; *legs* moderate; four anterior *femora* slightly thickened, tip attenuated; posterior pair considerably incrassated, narrowed at the apex: *tibiæ* all slender and simple: *tarsi* short, 3-articulate.

The minute insects belonging to this genus may be known from the Psoci by not only being destitute of wings, but by having the tarsi 3-articulate, the body depressed, the hinder femora very much incrassated, and in the form of the head and trophi: they are found among collections of insects, plants, and animals, when unprotected by camphor, &c. and are sometimes very destructive to the former, especially to minute Lepidoptera, Hymenoptera, and Diptera, consuming the cilia of the wings of the former, and the antennæ of the others. They are commonly known by the name of *death-watch* or *book-louse*, the latter from their great resemblance to the insect whose cognomen it bears, and the former from their habits, they having the propensity, in common with certain Anobia, of making a peculiar noise, which somewhat resembles the ticking of a watch, and is sometimes prolonged, at intervals of about a minute, for a considerable time. The anatomical details of the type of this genus are given by Nitzsche, in the fourth vol. of Germar's *Magazin der Entomologie*, accompanied by a plate (No. II.)

Sp. 1. *pulsatorius*. *Pallidus*, *abdomine oblongo, ore rubro, oculis luteis*. (Long. corp.  $\frac{1}{4}$ — $\frac{3}{4}$  lin.)

*Termes pulsatorium*. *Linné*.—*Wood*, ii. pl. 75.—*At. pulsatorius*. *Steph. Catal.* 313. No. 3525.

Oblong, pale: eyes yellow; antennæ as long as the body; abdomen beneath with a fuscous spot, and a dot of the same towards its apex; stigmata rufescent; mouth red.

Latreille supposes this to be the larva of *Psocus abdominalis*, but I cannot assent to this opinion.

Very abundant, at all times, in neglected boxes of dried insects, and in books.

Sp. 2. fatidicus. *Ochraceus, abdomine ovato, ore pallido, oculis fuscis.* (Long. corp.  $\frac{3}{4}$ —1 lin.)

Ter. fatidicum. *Linné.*—At. fatedicum. *Steph. Catal.* 314. No. 3526.

Ochreous: body ovate; eyes fuscous; antennæ and mouth pale.

Found, occasionally, in collections of insects, &c.

FAMILY IV.—RAPHIDIIDÆ, *Leach.*

*Antennæ* nearly setaceous: *ocelli* three, arranged in a triangle: *thorax* with its first segment, or *collar*, very much elongated, narrow; 2nd, or *metathorax*, broader and shorter: *wings* of nearly equal size, reticulated: *abdomen* elongate, compressed, soft: *legs* slender; *tibiæ* cylindric; *spurs* minute: *tarsi* with four distinct joints, the last but one bilobate. Larva somewhat linear-elongate, soft, pubescent, dilated in the middle: *head* elongate, smooth; *collar* corneous and elongate; *legs* six, whitish; pupa quiescent, with the parts exposed as in those of Tenthredinidæ.

The insects belonging to this family may be instantly recognised by the great length of their neck, or collar, to which is attached a large obovate head, having the eyes prominent laterally and rather forward, the clypeus broad, inflected, &c.; the wings are all nearly alike and of similar bulk, with very distinct nervures, but which frequently differ on the opposite wings of the same individual, though there is a general habit of permanence existing:—one genus only is found in Britain.

GENUS XXIV.—RAPHIDIA *Auctorum.*

*Antennæ* with very numerous, short, articulations, the two basal ones largest: *palpi* filiform, maxillary four-jointed; labial three-jointed: *labrum* somewhat quadrate, rounded in front: *mandibles* acute: *head* oval, narrowed behind, inflexed: *clypeus* broad: *eyes* prominent: *collar* very long, cylindric, slightly narrowed in front: *wings* deflexed, nervures slightly hairy: *abdomen* of the males, with two teeth at the apex; of the females, with a compressed, elongate, transversely-striated, and somewhat incurved ovipositor.

As above stated, there is but one indigenous genus of this family, which may be known by its very long cylindrical neck, which is slightly narrowed in front, and bears the head, as it were, on a long footstalk—thence called *Snake-flies*:—their larvæ somewhat resemble those of the Hemerobidæ, are active, soft, elongate, dilated in the middle; subsists on other larvæ beneath the bark of trees, &c. and

the pupa has the limbs enveloped in a membrane, but free, as in the Hymenoptera, is quiescent, and not active, as stated by Curtis, in copying from Latreille.

Sp. 1. Ophiopsis. PLATE xxxi. f. 1.—*Atra, nitida, clypeo, antennarum basi, femorum apice tibiis tarsisque ochraceo-flavis, abdomine lineis 2-bus lateralibus marginibusque segmentorum stramineis.* (Long. corp. ♂ 5—6½ lin.; ♀ 7—10 lin.; Exp. Alar. 1 unc. 1—4 lin.)

Ra. Ophiopsis. *Linné.*—*Curtis, v. i. pl. 37.*—*Steph. Catal. 314. No. 3527.*

Shining, black: head moderate, slightly punctured in front and behind; clypeus, base of the antennæ, under surface and tips of the femora, the tibiæ and tarsi ochreous-yellow, base and upper surface of the femora dusky; abdomen with two rows of straw-coloured spots on each side, and the margins of the segments, especially in the middle of the back, and beneath of the same hue, apex of the antennæ fuscous; wings slightly stained with fuscous, with fuscous nervures and black, or brownish stigma.

Found in various places within the metropolitan district, but not very abundantly: it has occurred at Darenth and Coombe woods, also at Colney Hatch, and in the New Forest, in June.

Sp. 2. megacephala. *Atra, nitida, ore, antennarum basi, tibiis tarsisque ochraceo-flavis, abdomine lineis 2-bus lateralibus stramineis, stigmatè brunneo, capite magno lineâ posticè piceâ.* (Long. corp. ♂ 6 lin.; ♀ 7—8 lin.; Exp. Alar. 14—15 lin.)

Ra. megacephala. *Leach MSS.*—*Steph. Catal. 314. No. 3528.*

Shining, black: clypeus, base of the antennæ, the tibiæ and tarsi ochreous-yellow; abdomen with two rows of straw-coloured spots on each side; anterior femora ochreous-yellow, with the base pitchy-black, four posterior ones pitchy-black, with the apex dark ochreous; wings slightly stained with yellowish, nervures fuscous, stigma brown; head very large, faintly punctured, and generally with a dull tawny streak behind.

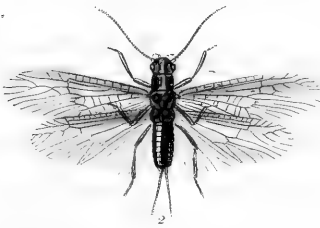
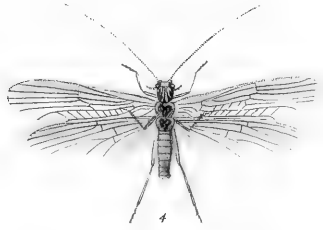
Probably a variety of the preceding species.

Taken occasionally within the metropolitan district, in June.

Sp. 3. Londinensis. *Nigra, nitida, ore, antennarum basi, collaris lateribus, tibiis tarsisque ochraceo-flavis, abdomine flavo punctato, alis hyalinis, stigmatè flavescente.* (Long. corp. ♂ 4—6 lin.; ♀ 5—7½ lin.; Exp. Alar. 8—11½ lin.)

Ra. Londinensis. *Leach MSS.*—*Steph. Catal. 314. No. 3529.*—Ra. Ophiopsis. *Wood, ii. pl. 52?*

Shining black: mouth ochreous-yellow, varied with black; collar with its sides, and occasionally its anterior edge, broadly ochreous-yellow; mesothorax with a yellowish spot in front; abdomen with a dorsal and four lateral rows of yellow spots, the ventral segments edged with the same; legs



I.C. Watwood, del.

G.E. Wagstaff, sc.

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ochreous-yellow, the femora, especially the hinder pair, dusky above; base of the antennæ ochreous; wings hyaline, nervures brown; stigma pale yellowish.

Found in the vicinity of London, in Battersea and Copenhagen-fields, about June, but not very common; apparently more abundant near Rochford, in Essex.

Sp. 4. *affinis*. *Nigra, nitida, antennarum basi, ore, collaris marginibus, pedibusque anterioribus ochraceo-flavis, abdomine punctis flavis, alis hyalinis, stigmatate subflavescente.* (Long. corp. ♂ 5 lin.; ♀ 7 lin.; Exp. Alar. 7—9 lin.)

Ra. *affinis*. *Leach MSS.—Steph. Catal. 314. No. 3530.*

Shining, black: mouth luteous, varied with black; base of the antennæ dull ochreous; all the margins of the collar more or less broadly ochreous-yellow; legs ochreous-yellow, the four anterior femora with a blackish line above, the posterior pair wholly pitchy; tips of hinder tarsi also pitchy; abdomen with minute yellow, or straw-coloured dots, placed in two rows on each side; wings hyaline, with fuscous nervures, and a very slightly fuscous stigma.

Also taken in June, near London.

Sp. 5. *maculicollis*. *Nigra, nitida, antennarum basi, clypeo, tibiis tarsisque ochraceo-flavis, collare fulvescente-ochraceo nigro maculato lateribus luteo-flavis; alis subflavescentibus stigmatate concolore, nervis fusciscentibus.* (Long. corp. ♂ 5 lin.; ♀ 6½ lin.; Exp. Alar. 6—8 lin.)

Ra. *maculicollis*. *Leach MSS.—Steph. Catal. 314. No. 3531.*

Black, shining: head small, slightly punctured; base of antennæ and clypeus ochreous, the latter with two black dots beneath the antennæ; collar dull tawny ochreous, with irregular black spots; the lateral margins broadly ochreous-yellow; abdomen with the edges of the segments pale yellow; legs ochreous-yellow, with the base of the hinder femora, and a line on the others above, dusky or blackish; wings faintly tinged with yellowish, with the stigma concoloured; nervures fuscous.

Taken at Darenth wood in June; also near Coombe wood, and in Devonshire.

Sp. 6. *confinis*. *Nigra, nitida, ore fulvo, collaris lateribus ochraceis, pedibus ochraceo-flavis, alis hyalinis, stigmatate concolore, nervis fuscis.* (Long. corp. ♂ 5 lin.; ♀ 7 lin.; Exp. Alar. 8—10 lin.)

Ra. *confinis*. *Steph. Catal. 314. No. 3532.*

Shining, black: mouth tawny, with a black dot; antennæ ochreous at the base, and the sides of the collar the same; legs ochreous-yellow, with a dusky line on the upper edge of all the femora; abdomen with the margins

of the segments faintly yellowish; wings hyaline, stigma the same and colourless; nervures fuscous.

Found in June, near London.

### SECTION V.—MEGALOPTERINA, *Mac Leay*.

*Antennæ* moderately long, setaceous, articulations numerous, rarely very distinct: *palpi* filiform or setaceous: *labrum* existed, transverse, entire *mandibles* small: *head* rather large, sometimes depressed: *eyes* moderate: *ocelli* three, or wanting: *thorax* with its anterior segment, or *collar*, large, more or less quadrate: *wings* ample, deflexed or incumbent, posterior sometimes largest; nervures distinct, frequently variable on the two sides of the same individual: *abdomen* somewhat curved or elongate, occasionally furnished with two setæ at its apex: *legs* longish and simple, sometimes compressed: *tarsi* with five joints, and the last but one bifid, or with three joints and nearly simple.

The insects included in this section of the order differ considerably in habit from the remainder: they have in general longish setaceous antennæ; the head broad, mostly depressed, and more or less inflexed; are either destitute of ocelli, or have three placed in a triangle; their wings are ample, resemble each other, are rather coarsely veined, the nervures occasionally differing in the same example: the anterior pair are sometimes largest; at others the posterior are most ample, and, although not longer, their surface is larger from their superior width: they are either deflexed or horizontally incumbent. The following families are found in Britain:—

<i>Ocellis</i> nullis: <i>alis</i> deflexis: . . . . .	1. SIALIDÆ.
3-bus, in triangulum dispositis: <i>alis</i> incumbentibus: . . . . .	2. PERLIDÆ.

### FAMILY I.—SIALIDÆ, *Leach*.

*Antennæ* inserted on the front of the head between the eyes, rather longer than the thorax, and composed of numerous simple articulations: *mandibles* small, horny, abruptly hooked at the tip, acute, toothless: *palpi* filiform; *maxillary* long, four-jointed, *labial* 3-articulate, all with the terminal joint rather attenuated at the base and obtuse at the tip: *head* transverse, depressed, nutant, as broad as the thorax: *ocelli* wanting: *wings* of nearly equal size, posterior smallest, deflexed, coarsely but somewhat remotely reticulated, the anterior pair dilated at the base of the costa, and all destitute of a stigma: *legs* simple: *tarsi* five-jointed, with the penultimate joint bifid, heart-shaped. Larva elongate-conic, depressed, with six legs:

head large, somewhat orbiculate; eyes moderate; mandibles stout, curved; antennæ longish, somewhat setaceous, four-jointed; thorax triarticulate; abdomen setose, tail conic; legs long, setose; pupa folliculate.

Of this family one genus only is indigenous, viz.—

GENUS XXV.—SIALIS, *Latreille*.

*Antennæ* short, setaceous, composed of numerous simple joints, the basal one robust: *palpi* filiform, the basal joint somewhat elongate-cylindric: *mandibles* small: *head* moderate, as wide as the thorax: *eyes* prominent: *ocelli* wanting: *collar* ample: *meso-* and *meta-thorax* both transverse, tubercular: *wings* deflexed during repose, all coarsely reticulated, anterior rather the largest; *nervures* variable: *legs* shortish: *tibiæ* with two very short spurs at the apex: *tarsi* five-jointed, the last joint but one bifid. Larva active, aquatic, elongate-conic, depressed, furnished with six elongate bristly legs, two somewhat longish four-jointed antennæ, and stout curved mandibles; the thorax is triarticulate, the abdomen furnished on each side of the seven first segments with a branchial appendage; terminal segment elongate, conic, setose at the apex: pupa quiescent, reposing in a cocoon, removed from the water.

The insects of this genus have the wings deflexed, reticulated with strong nervures, which frequently vary in the two sides of the same individual; the penultimate joint of the tarsi is bifid, and the insects are destitute of ocelli:—one indigenous species only is known, which frequents the borders of rivers, &c.

Sp. 1. *lutarius*. *Niger, obscurus, alis fuscis nervis nigris*. (Long. corp. 4—7 lin.; Exp. Alar. 9 lin.—1 unc. 7 lin.)

†Sp. 2. *flavilatera*. “*Alis reticulatis, caudâ inermi thoracis lateribus flavis*.”—Linné.

Phry. *flavilatera*. Linné.—*Berkenhout* (!)—*Steph. Catal.* 321. No. 3684, note.

Wings somewhat cinereous, reticulated; nervures fuscous and closely reticulated, especially towards the outer margin, which is dilated; body wholly blackish; antennæ half the length of the body; tail simple, without prominent styles; collar anteriorly and posteriorly yellowish.

I have never seen a specimen of this insect: whether, therefore, this is its true location I am not prepared to say; but, from the above Linnean definition, such appears to be the case.

This insect was introduced by Berkenhout amongst our indigenous species, but as no example has occurred in any of the numerous collections—above 250—that have fallen under my inspection, I conceive its introduction must originate in a mistake.

*He. lutarius*. Linne?—Shaw, *G. Z. v. vi. pl. 83. fig. inf.*—*Si. lutarius*. Steph. *Catal. 314. No. 3533.*

Dull, deep black: wings fuscous, with black nervures.

The female lays a great quantity of brown conical eggs, on the leaves of aquatic plants, &c.: they are dispersed with great symmetry, and form large plates: the larva are very active, and swim well.

Very abundant in the vicinity of London, especially on the banks of the Thames, in Battersea-fields, near Putney, Hammersmith, &c.: found also near Ripley and Hertford, in the north of England and Scotland; also in Devonshire, near Dover, &c.

## FAMILY II.—PERLIDÆ, *Leach.*

*Antennæ* remote, inserted before the eyes, setaceous, nearly as long as the body, consisting of very numerous short articulations, the basal one being largest: *mandibles* distinct: *palpi* exerted, inflexed, filiform or setaceous, maxillary longest, the former five-jointed: *head* as broad as, or broader than, the collar, somewhat trigonate, obtuse in front: *eyes* prominent, rather globose: *ocelli* three, placed in a triangle: *collar* flat, transverse-quadrate: *wings* incumbent, posterior generally largest, with longitudinal folds on their inner margin, nervose, twice as long as the *abdomen*, which is soft, depressed-cylindric, elongate, often furnished at the apex with two many-jointed setæ at the apex: *legs* compressed: *tibiæ* and *tarsi* elongate-cylindric, the latter three-jointed, short, the terminal joint longest and obconic.

The insects included in this family have the wings incumbent during repose, but like those of the two foregoing families the reticulations frequently vary in the same specimen: the head is large; ocelli three in number, the abdomen frequently furnished with two articulate setæ, and the tarsi are always simple: the insects frequent damp and marshy places. The indigenous species may be thus divided into genera:—

*Cauda* setis 2-bus multiarticulatis instructa.

*Abdomen* validum.

*Alæ* in utroque sexû consimiles: . . . . . 27. ISOGENUS.

    dissimiles: . . . . . 26. PERLA.

subgracile: . . . . . 28. CHLOROPERLA-

matica.

*Antennis* gracilibus, articulis subindistinctis: . . . . . 29. NEMOURA.

    validioribus, articulis submoniliformibus: 30. LEUCTRA.

GENUS XXVI.—PERLA, *Geoffroy*.

*Antennæ* remote, inserted before the eyes at the base of the mandibles, about the length of the body, composed of numerous articulations, the basal one stoutest and large, second smaller, remainder decreasing in size to the apex: *palpi* unequal, subsetaceous, maxillary long, five-jointed; *labial* shorter, triarticulate, in all the terminal joint most slender: *labrum* transverse, linear: *head* large, much depressed, transverse-ovate: *eyes* lateral, prominent: *ocelli* three: *collar* transverse-quadrate: *meso-* and *meta-* *thorax* unequal: *wings* dissimilar in the sexes; of the male not so long as the body, of the females extending to the apex of the setæ; anterior pair elongate-elliptic; posterior shorter and broader, deeply incised on the outer edge: *abdomen* short, sessile, furnished at its apex with two long jointed setæ: *legs* simple, longest in the males.

The insects of this genus are usually of a large size, and the sexes are very dissimilar, the males (which is rather extraordinary) having the wings very much abbreviated; their legs are also elongated, and their general habit is very dissimilar to the females, which have large expansive wings; the legs are rather shorter than in the males; both sexes have the palpi of dissimilar length, the maxillary ones being much longest, with the last joint slender, and the labrum is linear and somewhat tubercular in the middle.

Sp. 1. *marginata*. *Fusca, capitis maculis abdominis margine flavescentibus, antennis corpore longioribus, thorace subtransverso.* (Long. corp. ♂ 6—7 lin.; ♀ 8—10 lin.; Exp. Alar. ♂ 9 lin.; ♀ 1 unc. 11 lin.—2 unc. 6 lin.)

Pe. *marginata*. *Fabricius.—Steph. Catal. 315. No. 3535.*

Fuscous: antennæ as long as the body; head moderate, black, varied with yellow or ochreous, and with some glossy elevated spots; thorax somewhat transverse, with the disc rugged, a longitudinal dorsal channel, having an elevated line on each side; abdomen more or less ochreous, or yellowish, on its sides and towards the apex; setæ as long as the antennæ, yellowish, with fuscous rings; legs with the tibiæ and tarsi sometimes yellowish, or dull ochreous; wings fuscous, with darker nervures, the fourth discoidal areolet of the posterior pair simple. Pupa pale fuscous, spotted with dusky.

Variable both in size and in colour: in some examples, especially females, the head is ochreous, or yellowish, with two black frontal spots; the thorax is also occasionally varied with ochreous, and the legs are wholly of that colour:—in this state I suspect the insect is the *Per. flavipes*, *Latreille, Hist. Nat. Crust. &c. v. xiii. p. 49*; and the larger specimens to be the *Per. grandis*, *Curtis, fol. 190.—Steph. Catal. 314. No. 3534.*

Not common in the metropolitan district: it has occurred near Sydenham, on the banks of the Croydon Canal; but in the north of England, and in several parts of Scotland, it appears to abound in June and the beginning of July: it is, in common with other species the genus, a favourite food of trout.

Sp. 2. cephalotes. *Fusca, capite lato ochraceo-maculato, thorace transverso-quadrato, rugoso, antennis setisque brevibus.* (Long. corp. ♂ 5—6½ lin.; ♀ 6—8 lin.; Exp. Alar. ♂ 9 lin.; ♀ 1 unc. 10 lin.—2 unc. 4 lin.)

Pe. cephalotes. *Curtis, v. iv. pl. 100.—Steph. Catal. 315. No. 3536.*

Fuscous, shining: head broader than the thorax, with its base and a transverse streak between the eyes ochreous; thorax transverse-quadrate, rugged, with a central dorsal channel, having an elevated line on each side curved outwards; abdomen ochreous at the tip, of the females frequently entirely so; setæ not so long as the antennæ, which are rather short: wings fuscous, with a greenish tinge in the females; nervures fuscous, the fourth discoidal areolet of the posterior pair mostly with two transverse nervures at the apex. Pupa fuscous.

Found on the borders of the lakes in Cumberland and Westmoreland; also in Scotland in June; but I believe not within the metropolitan district.

Sp. 3. bicaudata. *Fusca, capite thoraceque lineâ longitudinali fulvâ.* (Long. corp. ♂ 8 lin.; ♀ 5—7 lin.; Exp. Alar. ♂ 8 lin.; ♀ 1 unc. 4—6 lin.)

Ph. bicaudata. *Linné.—Pe. bicaudata. Steph. Catal. 315. No. 3537.*

Fuscous: head with an irregular longitudinal tawny or orange streak behind; thorax transverse, rugged, with a transverse impressed line in front, and a longitudinal channel, bordered on each side by a raised line, the space between which is tawny or orange, forming a longitudinal streak of that colour; abdomen ochreous beneath; setæ nearly as long as the body, stoutish; antennæ as long as the setæ; wings fuscous, with darker nervures.

Var. β. Pe. nervosa. *Steph. Catal. 315. No. 3538.*—With the wings broader, of a deeper hue, with very dark and distinct nervures.

Found occasionally in June, on the banks of the Thames, near London, as at Fulham, Battersea, Hammersmith, &c.; also in the north of England and in Devonshire.

#### GENUS XXVII.—ISOGENUS, *Newman.*

*Antennæ* remote, slender, shorter than the body, composed of numerous remote articulations, the two basal joints largest, the remainder gradually

decreasing in size and length: *palpi* nearly equal, maxillary five-jointed, the two last joints short, more slender than the others; labial three-articulate, the apical joint very short and slender: *labrum* transverse, linear, rounded in front: *head* large, depressed, transverse-quadrate: *eyes* very prominent: *ocelli* three, placed triangularly: *collar* transverse: *meso-* and *meta-thorax* tubercular: *wings* alike in the sexes; anterior elongate-elliptic, rounded at the apex, as long as the setæ.

From the circumstances of the sexes being similar in habit, by both possessing ample wings, I think Mr. Newman has acted judiciously in dividing this genus from the preceding, although in other respects the structure is very similar to that of Perlæ; the insects are, however, of a more slender form, approximating to those of the following genus, likewise divided by Mr. Newman from Perla, but forming a beautifully-intermediate link in the chain of affinities: the *palpi* appear to be of nearly equal length, the *labrum* more rounded in front, and the antennæ shorter than in Perla.

Sp. 1. nubecula. PLATE XXXI. f. 4.—*Alis anticis sordidè hyalinis, nubeculâ costali ultrâ medium fuscâ.* (Long. corp.  $7\frac{1}{2}$  lin.; Exp. Alar. 1 unc. 3—5 lin.)

Is. nubecula. *Ent. Mag. (Newman) v. i. p. 415.*—*Steph. Nomen. 2d edit. Appendix.*

Dark brown: head and thorax with a longitudinal ochreous line; anterior wings hyaline, slightly tinged with brown, and having a little oval cloud of a darker brown on the costal margin, situated about one-third of the distance from the tip towards the body; posterior wings beautifully hyaline, iridescent; legs pale brown.

The oval cloud on the costa of the anterior wings is sometimes indistinct, as in the example figured.

Mr. Newman, to whom I am indebted for this species, says that it is abundant in the neighbourhood of running waters in Herefordshire, Worcestershire, Nottinghamshire, &c. and is the favourite food of trout and grayling.

#### GENUS XXVIII.—CHLOROPERLA, Newman MSS.

*Antennæ* remote, rather slender, as long as, or longer than, the body, composed of numerous joints, the basal one large, the next smaller, the remainder gradually smaller and shorter: *palpi* dissimilar; maxillary elongate, the two last joints most slender, the terminal one shortest; labial short, the apical joint short and slender: *labrum* small, linear, straight in front: *head* broad, considerably depressed: *eyes* prominent: *collar* ample, transverse-quadrate: *meso-* and *meta-thorax* unequal: *wings* ample, mostly tinged with

greenish hues, anterior elongate and narrowish, posterior wider, with the hinder margin excised: *abdomen* slender, its apex furnished with two jointed setæ: *legs* simple.

Although there is not much structural dissimilarity between the insects of this and of the two foregoing genera, yet, from their great diversity of habit, I perfectly coincide with Mr. Newman in removing them from *Perla*: the sexes are alike, and all the species are more or less distinguished by having the wings tinted with yellowish- or ochreous-green; the nervures are fewer in number, and much less distinct than in *Perla* or *Isogenus*; the insects are of a more slender form, &c.

A. *Anterior wings* with four discoidal areolets, the third and fourth with numerous transverse nervures.

Sp. 1. *fuscipennis*. *Ochraceo-viridis, abdominis dorso oculisque nigris, alis sub-fuscescentibus, venis saturatoribus*. (Long. corp.  $4\frac{1}{2}$  lin.; Exp. Alar. 1 unc.  $\frac{1}{2}$ —1 lin.)

Pe. *fuscipennis*. *Curtis?*—*Steph. Catal.* 315. No. 3539.

Ochreous-green: eyes and ocelli black; sides of the collar somewhat dusky; abdomen above black, its sides and beneath ochreous-green; legs yellowish-green; wings slightly fuscescent, with a greenish tinge, the nervures darker.

Found in the north of England and in Scotland, in June.

Sp. 2. *lateralis*. *Ochraceo-viridis, oculis atris, thoracis lateribus, abdominisque dorso nigris, pedibus flavescentibus fuscescente sublineatis*. (Long. corp. 4— $4\frac{1}{2}$  lin.; Exp. Alar. 9—13 lin.)

Pe. *lutea*. *Steph. Catal.* 315. No. 3540.—Pe. *viridis*. *Curtis, fo.* 190.—Pe. *lateralis*. *Steph. Nomen.* 2d edit. *Appendix*.

Ochreous-green: eyes and ocelli black; thorax, or rather the collar, with a broad black margin; abdomen black above, the base of the ventral segments dusky; legs yellowish-green, with faint fuscescent streaks; antennæ dusky at the apex; wings greenish-yellow, with concolorous nervures.

Not uncommon within the metropolitan district, especially in the vicinity of Ripley, in Walsham-meadows, in June; also found in the New Forest, and abundantly near Leominster.

Sp. 3. *media*. *Virescente-flava, oculis atris, abdominis dorso, mesothorace posticè metathoraceque nigris, alis viridi-flavescentibus*. (Long. corp. 4— $4\frac{1}{4}$  lin.; Exp. Alar. 10—12 lin.)

Pe. *media*. *Curtis?*—*Steph. Catal.* 315. No. 3541.



Greenish-yellow: eyes and ocelli black; sides of the collar obscurely fuscous; mesothorax behind and metathorax black; abdomen black above; legs greenish-yellow, with a dusky streak on the femora; wings pale greenish-yellow, nervures darker.

Taken near Darenth wood in June, and in Westmoreland.

Sp. 4. *venosa*. *Rufescente-ochracea, oculis atris, collaris lateribus abdominisque dorso nigris, alis flavescente-viridibus nervis fusciscentibus.* (Long. corp.  $4\frac{1}{4}$  lin.; Exp. Alar.  $11\frac{1}{2}$  lin.)

Pe. *venosa*. *Steph. Catal.* 315. No. 3542.

Reddish-ochre, with a greenish tinge: eyes and ocelli black; collar with its lateral margins broadly black; abdomen black above, its sides ochreous-green; legs greenish ochre; antennæ dusky, ochreous at the base; wings yellowish-green, with fuscous nervures.

Found in June, near London.

Sp. 5. *rufescens*. *Ochraceo-rufescens, oculis, lineis 2-abus collaris, abdominisque dorso nigris, alis subflavescentibus nervis concoloribus.* (Long. corp.  $4-4\frac{1}{4}$  lin.; Exp. Alar. 11—13 lin.)

Pe. *rufescens*. *Steph. Nomen.* 2d edit. col. 117.

Reddish ochre: eyes and ocelli black; collar with two longitudinal black streaks; abdomen black above, its sides ochreous, and the base of the ventral segments dusky; legs reddish ochre, with a green tinge; wings pale yellowish, with a reddish hue, the nervures darker, but concolorous; antennæ dusky at the tip.

Also taken near London, in June.

B. *Anterior wings* with three discoidal areolets, the third with few (2-4) inæquidistant transverse nervures.

Sp. 6. *flava*. *Ochraceo-viridis, antennæ apice oculisque atris, alis subflavescente-viridibus.* (Long. corp.  $1\frac{1}{2}-2\frac{1}{4}$  lin.; Exp. Alar.  $6-7\frac{1}{4}$  lin.)

Se. *flava*. *Four. Ent. Par.* ii. p. 349.—Se. *viridis*. *Fabricius*.—Pe. *viridis*. *Steph. Catal.* 315. No. 3543.

Ochreous-green: antennæ black at the tip; eyes and ocelli black; collar with a faint broad dusky margin; abdomen green, with a blackish streak above; legs greenish immaculate; wings faintly tinged with yellowish-green, with darker concolorous nervures, the latter few in number; caudal setæ pale.

Apparently not very common: found occasionally near London, but more abundantly in Westmoreland and in Carnarvonshire in June, and especially at Leominster.

Sp. 7. *pallida*. *Pallide rufescente-ochracea, oculis atris, alis hyalinis limpidis, nervis subochraceo-virescentibus.* (Long. corp. 2 lin.; Exp. Alar. 6 lin.)

Pe. *pallida*. *Steph. Catal.* 315. No. 3544.

Pale reddish ochreous: eyes and ocelli deep black; collar and abdomen immaculate; legs pale ochreous green; antennæ the same, dusky at the apex; caudal setæ pale; wings hyaline, limpid, with an almost evanescent tinge of yellowish-green, the nervures pale ochreous-green.

Found near London, in June.

### GENUS XXIX.—NEMOURA, Latreille.

*Antennæ* setaceous, remote, placed before the eyes, and composed of numerous very short cylindrical articulations, the basal one being largest: *palpi* filiform, with the terminal joint oval-cylindrical: *labrum* distinct, semi-circular or subquadrate, rather broader than long, rounded anteriorly and on the sides: *head* rather broad, nearly vertical, not depressed: *eyes* small, lateral: *collar* transverse-quadrate: *wings* incumbent during repose, somewhat folded round the body, and giving it a cylindrical form: *abdomen* with two extremely short tubercular processes at the apex, but destitute of setæ: *legs* simple: *femora* slightly compressed: *tarsi* with all the joints simple, and of nearly equal length.

These insects may be readily distinguished from those of the foregoing genera by wanting the elongated reticulated setæ at the apex of the abdomen, without taking other characters into consideration: from the genus *Leuctra* they differ in having the anterior wings more rounded, and furnished with a plexus of nervures towards the apex, resembling a Greek  $\chi$ ; and the nervures themselves are differently disposed. In common with the other genera of this family, these insects are found in damp and marshy places, during the summer.

A. *Anterior wings* with a  $\chi$ -like plexus of nervures towards the apex; the hinder margin with six longitudinal nerves.

Sp. 1. *nebulosa*. *Fusco-nigra, collaris lateribus rufo-piceis, pedibus pallide rufescentibus femoribus posticis annulo obscuro, alis cinereis nervis fuscis.* (Long. corp.  $2\frac{1}{2}$ — $3\frac{1}{2}$  lin.; Exp. Alar. 9— $10\frac{1}{2}$  lin.)

Ph. *nebulosa*. Linné?—*Steph. Catal.* 315. No. 3545.

Fuscous-black: sides of the collar somewhat pitchy-red; legs pale reddish, the hinder femora with an obscure blackish ring towards the apex; wings dull ashy-brown, with darker nervures.

This insect is the *Ne. nebulosa* of Latreille, but I suspect not of Linnæus; his insect I believe to be *Ne. variegata*.

Abundant in damp hedges within the metropolitan district, especially in Robin Hood lane, near Coombe wood: found also, not uncommonly, in the north of England, and in Scotland, and also in the New Forest, in June.

Sp. 2. fuliginosa. *Fusco-nigra, capite posticè, collaris lateribus, pedibusque fusco rufescentibus; alis fusciscentibus venis fuscis.* (Long. corp. 2—3 lin.; Exp. Alar.  $8\frac{1}{2}$ —10 lin.)

Ne. fuliginosa. *Steph. Catal. 315. No. 3546.*

Brown-black: head and sides of the neck dull reddish-brown: legs pale reddish-brown, the hinder femora with a very obscure blackish spot towards the apex above; wings brownish, with fuscous nervures.

Probably a suffused variety of the preceding species.

Also not uncommon in the vicinity of the metropolis in damp places in June.

Sp. 3. pallida. *Pallide fusco-rufescens, oculis, meso- et meta- thoracis dorso, geniculis intermediis, abdomineque fusco-nigris, alis hyalinis, pallidis, nervis fusciscentibus.* (Long. corp.  $3\frac{1}{2}$  lin.; Exp. Alar.  $10\frac{1}{2}$  lin.)

Ne. pallida. *Steph. Catal. 315. No. 3547.*

Pale reddish-brown, shining: eyes black; meso- and meta- thorax above blackish; abdomen brown-black; legs pale reddish-brown, the intermediate femora blackish at the tips; wings hyaline, pale, with slightly fuscous nervures; antennæ reddish at the base.

Found within the metropolitan district, in June.

Sp. 4. cruciata. *Fusco-nigra, collaris lateribus piceo-rufescentibus, pedibus pallide rufescentibus tibiis tarsisque intermediis piceo-nigris, alis fusciscentibus cruce nervisque saturatioribus.* (Long. corp.  $2\frac{1}{2}$ — $3\frac{1}{4}$  lin.; Exp. Alar. 9— $10\frac{1}{2}$  lin.)

Ne. cruciata. *Steph. Catal. 315. No. 3548.*

Brown-black: labrum pale reddish; sides of the collar pitchy-reddish; anterior and posterior legs pale reddish, intermediate femora the same, their hinder sides and their tibiæ and tarsi pitchy-black; antennæ long and slender, pitchy-black, the basal joint reddish beneath; wings fusciscent, the nervures fuscous, the transverse ones towards the apex broadly edged with the same colour, and forming a brown  $\chi$ .

Not uncommon, in June, within the metropolitan district; also found in Scotland.

Sp. 5. affinis. *Fusco-nigra, collaris marginibus rufescentibus, pedibus anticis piceo-nigris posterioribus pallide rufis, alis cinerascenscentibus cruce fuscâ, nervis subfusciscentibus.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar. 9—10 lin.)

Ne. affinis. *Steph. Catal. 315. No. 3549.*

Brown-black: margins of the collar reddish; anterior pair of legs pitchy-black, two hinder pair pale red; wings ashy, with the nervures somewhat fusciscent, the transverse ones darker, and forming an obscure  $\chi$ .

Also taken near London, in June.

Sp. 6. *pusilla*. *Fusco-nigra, collaris lateribus pedibusque pallide rufescentibus, alis hyalinis pallidis, nervis subfuscescentibus, capite lato, antennis gracilibus.* (Long. corp. 2 lin.; Exp. Alar. 6½ lin.)

Ne. *pusilla*. *Steph. Catal. 315. No. 3550.*

Pitchy-black: head very broad; collar with its lateral margins pale reddish; legs pale reddish, the femora slightly tinged with piceous; wings hyaline, pale, the nervures slightly fuscous, the transverse ones darker, and forming an oblique line; antennæ very slender, and rather long.

Found in the vicinity of London, in June.

Sp. 7. *annulata*. *Rufo-fusca, nigro variegata, pedibus pallide rufescentibus femoribus posticis annulo obscuro fusco, alis fusco-cinereis, nervis fuscis.* (Long. corp. 3 lin.; Exp. Alar. 9 lin.)

Ne. *annulata*. *Steph. Catal. 315. No. 3551.*

Dull red-brown: eyes black; middle of the collar brown-black; meso- and meta- thorax varied with the same, and the back of the abdomen also brown-black; legs pale reddish, the hinder femora with an obscure fuscous ring near the apex; wings pale ashy-brown, with fuscous nervures; antennæ rather long and slender, dusky at the apex.

Not uncommon in the neighbourhood of Hertford in June, frequenting marshy districts.

Sp. 8. *pallipes*. *Piceo-brunnea, nitida, pedibus pallidis, alis hyalinis subcinereis, nervis pallidis, antennis subpilosis.* (Long. corp. 1¾ lin.; Exp. Alar. 5½ lin.)

Ne. *pallipes*. *Steph. Catal. 315. No. 3552.*

Pitchy-brown, very shining: legs pale; wings hyaline, somewhat ashy, with pale nervures; antennæ slightly pilose.

Found at Coombe wood, in June.

Sp. 9. *luteicornis*. *Nigro-picea, nitida, labro, capite posticè, collaris lateribus, pedibusque rufescentibus, alis pallide cinereis, nervis pallidis, antennis gracilibus pallide luteis.* (Long. corp. 2½—3 lin.; Exp. Alar. 9—10 lin.)

Ne. *luteicornis*. *Steph. Catal. 315. No. 3553.*

Shining, pitchy-black: labrum, head behind, and sides of the collar, reddish; legs pale reddish; wings slightly cinereous, with pale nervures; antennæ slender, pale luteous.

One of my specimens is very remarkable for the extraordinary dissimilarity of its antennæ, the right one is slender, with rather indistinct short joints, and of the usual length; the other is about half the length, and composed of about 10 rather elongate subclavate joints, the terminal one being largest, compressed and truncate, forming a kind of club!

Found in the marshes near Hertford, in the beginning of June.

Sp. 10. pallicornis. *Nigro-picea, nitida, antennis elongatis pedibusque pallidis, alis subfusco-cinereis, nervis fuscis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $9\frac{1}{2}$  lin.)

Ne. pallicornis. *Steph. Catal.* 315. No. 3554.

Shining, pitchy-black: antennæ elongate, slender, pale; legs pale; wings somewhat of a fuscous ash, with fuscous nervures.

Also found in the vicinity of Hertford, in June.

Sp. 11. nitida. *Piceo-fusca, nitida, antennis gracilibus elongatis nigris, pedibus pallido-rufis; alis angustis hyalinis, nervis pallidis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $9\frac{1}{2}$  lin.)

Ne. nitida. *Steph. Catal.* 315. No. 3555.

Shining, pitchy-brown: antennæ long and slender, black; legs pale red; wings narrow, hyaline, nervures pale.

The legs are sometimes pitchy towards the apex of the femora and of the tarsi.

Not uncommon, in the vicinity of Hertford and at Ripley, at the end of June and beginning of July.

Sp. 12. Cambrica. *Piceo-nigra, collare rugoso, mesothoracis lateribus pedibusque rufescentibus, alis fuscescentibus, nervis brunneis.* (Long. corp. 2 lin.; Exp. Alar.  $9\frac{1}{4}$  lin.)

Ne. Cambrica. *Steph. Nomen.* 2d edit. col. 118.

Pitchy-black, shining: collar rugged; sides of the mesothorax reddish; legs pale reddish; wings long, narrow, fuscescent, with strong dark brown nervures; antennæ short, black.

Found at South Wales, near Swansea, in October, by L. W. Dillwyn, Esq.

Sp. 13. sulcicollis. *Nigra, nitida, pedibus piceis, collare rugoso, sulco dorsali, alis fuscescentibus, nervis saturatoribus.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $6\frac{1}{2}$ — $7\frac{1}{2}$  lin.)

Ne. sulcicollis. *Steph. Catal.* 315. No. 3556.

Deep shining black: collar rugged, with a dorsal channel; legs pitchy; tibiæ sometimes pale reddish; antennæ short, black; wings narrow, fuscescent, with darker nervures, and sometimes the transverse ones towards the apex bordered with fuscous, and forming a dark  $\chi$ .

Also found near Hertford and Ripley, in June and July, not uncommonly.

Sp. 14. fumosa. *Atra, nitidissima, abdomine tibiisque rufo-piceis, alis fuscescentibus nervis saturatoribus.* (Long. corp.  $1\frac{1}{2}$ — $1\frac{3}{4}$  lin.; Exp. Alar. 5— $6\frac{1}{4}$  lin.)

Ne. fumosa. *Steph. Catal.* 315. No. 3557.

Very glossy, deep black: collar slightly wrinkled; abdomen pitchy-red; femora pitchy-black; tibiæ pitchy-red; tarsi black; wings brownish, with darker nervures, the transverse ones towards the apex bordered with dusky.

Antennæ sometimes pitchy at the base.

Common at Ripley, in June and July; also found in Scotland.

B. *Anterior wings* destitute of a  $\chi$ -like plexus of nervures; hinder margin with nine longitudinal nervures.

Sp. 15. *variegata*. PLATE xxxi. f. 2.—*Fusco-nigra, collare pedibusque rufis nigro variis, alis pallide cinereis fuscis 2-bus fusciscentibus*. (Long. corp. 4 lin.; Exp. Alar. 11 lin.)

Ne. *variegata*. Steph. Catal. 316. No. 3558.

Head and antennæ deep black, the former rather small; collar pale red, slightly clouded on the disc with blackish; meso- and meta- thorax black; abdomen pitchy above, dusky beneath; legs pale red; coxæ ochreous, tip of the femora black; apex and tip of the tibiæ, and a line on their inner edge, as well as the tarsi, black; wings long and narrow, with numerous nervures, pale ashy, with two or three transverse fuscous streaks; nervures also fuscous; posterior wings fuscous, especially at the apex.

I suspect this insect is the true *Phryganea nebulosa* of Linnæus.

Apparently rare: my specimen occurred near Hertford in June.

### GENUS XXX.—LEUCTRA, *Stephens*.

*Antennæ* placed somewhat remotely in front beneath the eyes, somewhat moniliform and pilose, or setaceous and simple, with distinct joints; in all the basal joint robust, the 2nd slightly smaller: *labrum* transverse, rounded in front: *palpi* with the terminal joint a little acute: *head* large and depressed, or small and inflexed: *eyes* moderate, prominent: *ocelli* 3: *collar* more or less quadrate, longitudinally sulcate and rugose: *wings* incumbent during repose; anterior elongate, somewhat acuminate, the transverse nervures placed rectangularly about the middle of the costa, and not forming a  $\chi$ -like mark by the union with the longitudinal ones; posterior pair shorter, narrower, acuminate, and incised on the outer margin: *abdomen* somewhat linear-elongate, the apex not furnished with jointed setæ: *legs* rather slender, simple: *femora* and *tibiæ* slightly compressed and striated: *tarsi* with the intermediate joint slightly produced beneath.

The great dissimilarity of the neuration of the wings of the insects included in this genus from those of the foregoing—as exhibited in Plate xxxi. figs. 2 and 3—sufficiently indicate their distinction; these organs are also more elongate and acuminate at the apex, the anterior pair are narrower; the head smaller, the antennæ more distinctly articulated, &c.

A. *Antennæ* somewhat moniliform, each joint producing a whorl of hairs on both sides: *head* broad, depressed.

Sp. 1. *geniculata*. PLATE XXXI. f. 3.—*Nigro-picea, capite rufo-piceo, nigro vario, abdomine supra rufo-piceo, lateribus nigris, pedibus pallide brunneis, femoribus posterioribus annulo nigro, antennis pallide rufis, pilosis.* (Long. corp. 3—3½ lin.; Exp. Alar. 9—10½ lin.)

Le. *geniculata*. *Steph. Nomen. 2d edit. col. 118.*—N. G. (548). *geniculata*. *Steph. Catal. 316. No. 3561.*

Pitchy-black: *head* pitchy-red, with the eyes, ocelli, and some frontal marks black; *collar* with the sides straight, the disc rugose, and with three dorsal channels; *mesothorax* pitchy-red in front; *abdomen* above pitchy-red, its sides and beneath black; *legs* pale brown, the four hinder femora with a blackish ring near the apex; tips of the tibiæ and of the tarsal joints blackish; *antennæ* pale pitchy-red, the articulations very distinct, each producing a whorl of blackish hairs on each side; *wings* pale fuscous, with darker nervures.

Apparently rare: taken occasionally within the metropolitan district in June; also in the New Forest and in Scotland.

B. *Antennæ* slender and pilose: *head* small.

Sp. 2. *fusciventris*. *Fusco-nigra, collaris lateribus rotundatis, ano piceo, pedibus pallide rufo-piceis, tarsis nigris.* (Long. corp. 2½ lin.; Exp. Alar. 7½ lin.)

Ne. *fusciventris*. *Steph. Catal. 316. No. 3559.*

Brown-black: *collar* with a longitudinal and two nearly parallel dorsal channels, the rest of the surface rugose; *abdomen* fuscous, with the apex pitchy; *legs* pale pitchy-red, with blackish tarsi; *palpi* and *antennæ* black; *wings* fuscous, with darker nervures, the edges of some of the costal nervures fuscous.

Found, in June, near Hertford: not common.

Sp. 3. *abdominalis*. *Piceo-nigra, collare quadrato, ore pedibusque pallide ochraceo-rufis, tarsis nigricantibus, abdomine pallide rufo, maculis lateralibus strigisque ventrali piceo-nigris.* (Long. corp. 3 lin.; Exp. Alar. 8—9½ lin.)

Ne. *abdominalis*. *Steph. Catal. 316. No. 3560.*

Pitchy-black: *mouth* pale red; *collar* nearly quadrate, its surface rugose, with five longitudinal dorsal channels, the two outer ones, on each side, placed obliquely; *abdomen* pale red, with a row of black spots on each side, and a broad streak of black beneath; *legs* pale ochreous-red, the tips of the hinder femora and the tarsi blackish; *wings* fuscous, the nervures darker, with a fuscous shade on each side, the apex of the costa the same; *antennæ* black.

Also found occasionally at Hertford, in June and July.

ORDER V.—TRICHOPTERA, *Kirby*.

*Wings* all membranaceous, much deflexed, anterior pair more or less pilose, posterior sometimes folded, all furnished with more or less branching nervures, and very few transverse ones: *mouth* with merely rudimentary mandibles: *palpi* four, dissimilar, maxillary occasionally long, labial short, sometimes nearly wanting: *maxillæ* and *labium* membranaceous: *body* more or less hairy: *head* small, transverse, vertical, flat above: *eyes* moderate, semiglobose, prominent: *ocelli* two, frontal: *collar* small, transverse: *abdomen* compressed-cylindric, not furnished with setæ at the apex: *legs* slender, *coxæ* elongate, *tibiæ* armed, in general, with two, three, or four long spurs, sometimes spinulose: *tarsi* elongate, five-jointed, cylindric, furnished with two small claws, and an intermediate cushion. Metamorphosis incomplete: larva aquatic, hexapod, active, elongate, subcylindrical, slightly pilose; head corneous, three following segments coriaceous, each having a pair of legs; next frequently dilated and papillose, remainder variable, being sometimes furnished with exerted branchial organs, and occasionally with two caudal appendages: they mostly reside in a cylindric tube, lined within with silk, and clothed without with various materials, according to the groups to which they belong, as hereafter particularized: pupa quiescent, being shut up in the case of the larvæ; it somewhat resembles the imago, the limbs, &c. being distinct. The eggs are deposited in a gelatinous mass.

The insects included in this order are generally known by the name of *Case-* or *Caddice-flies*, *Water-moths*, &c. In their larva state they frequent running streams, lakes, ponds, &c. some species preferring nearly stagnant waters, others the impetuous torrents of mountain-streams, &c.: they are consequently always to be found in marshy districts, and usually make their appearance during the summer months, though some few species do not occur till the autumn: in general habit they greatly resemble each other, and from the almost total uniformity of colouring that obtains amongst them, they are extremely difficult to divide specifically from each other: nevertheless, by a careful attention, sufficiently powerful characters of distinction may be detected, not only in the colouring, but also in the neuration of the wings. Continental naturalists almost universally agree in placing these insects as a great section of the Neuroptera, in which respect they have been partially followed in Britain, but I conceive their characters, especially those drawn from their wings, which are pilose, and have branching nervures, like the Lepidoptera, are unlike any of the true Neuroptera: their *coxæ* and legs are also



constructed on the model of those of the Lepidoptera, and their general habit is towards those insects; their mandibles likewise are nearly obliterated, the collar is narrow and transverse, &c. But few writers have attended to these insects, the admirable Treatise of M. Pictet on the Phryganæ of Switzerland being almost the only guide towards their classification, &c., and from that work I have extracted the two following tables,\* showing the dissimilarities in the larvæ, and also some external characters of the imago:—

<i>Larvæ</i> with a case, opening with a round hole ;		
<i>segments of the thorax</i> rounded ;		
<i>external respiratory organs</i> isolated, <i>legs</i> moderately	long :	PHRYGANEÆ.
	in tufts ;	
	<i>hinder legs</i> long :	MYSTACIDÆ.
	short :	SERICOSTOMA.
<i>segments</i> with the anterior angles pointed :	.	TRICHOSTOMA.
with a case, opening by a cleft :	.	HYDROPTILA.
without a case ;		
<i>Pupa</i> with a double envelope :	.	RHYACOPHILA.
single envelope :	.	HYDROPSYCHE.
<i>Imago.</i>		
<i>Posterior wings</i> folded ;		
with transverse nervures.		
<i>Maxillary palpi</i> moderate and slightly hairy :		PHRYGANEÆ.
long and hairy :	.	MYSTACIDÆ.
without transverse nervures.		
<i>Maxillary palpi</i> different in the sexes ;		
of the male clavate :	.	TRICHOSTOMA.
forming a rounded		
face :	.	SERICOSTOMA.
alike in the sexes ;		
last joint ovate :	.	RHYACOPHILA.
filiform :		HYDROPSYCHE.
not folded.		
<i>Antennæ</i> setaceous :	.	PSYCHOMIA.
filiform :	.	HYDROPTILA.

\* In the 4th volume of the New Series of the Philosophical Magazine—published in February and March, 1834—are short descriptive notices of some of the indigenous Trichoptera, by Mr. Curtis, whose names I have endeavoured to assimilate with my own previously published ones (1829), and with those of M. Pictet; but it is to be regretted that these descriptions have appeared in a work not devoted to the subject, and consequently rarely seen by entomologists, as the result has been that, from the almost simultaneous appearance of M. Pictet's splendid work on this order (July, 1834), the

From these tables it is manifest that considerable diversity occurs amongst the insects of this order, not only in the larva, but in the imago states. Pictet regards the above groups as genera only, but I think the generality of them bear a higher designation, and may probably be nearly equivalent to families; as such, in the present state of our knowledge of the Trichoptera, I shall consider them; and I have endeavoured to characterize them by a slight modification of the above tables, whereby I have reduced the anomaly resulting from taking characters peculiar to the sexes, as employed by Pictet, in some of his groups:—

<i>Pedes</i> haud calcaribus instructis : . . . . .	1. ACENTROPIDÆ.
calcaribus instructis ;	
<i>Antennæ</i> filiformes, aut pectinatae : . . . . .	2. HYDROPTILIDÆ.
setaceæ ;	
<i>Alæ posticæ</i> haud plicati : . . . . .	6. PSYCHOMIDÆ.
plicati ;	
<i>anticæ</i> nervis transversalibus ;	
<i>Palpi maxillares</i> , mediocres, subhirsuti : . . . . .	8. PHRYGANIDÆ.
elongati, hirsutissimi : . . . . .	7. LEPTOCERIDÆ.
<i>anticæ</i> nervis transversalibus ferè destitutis ;	
<i>Palpi maxillares</i>	
articulo ultimo elongato, filiformi : . . . . .	4. HYDROPSYCHIDÆ.
brevi, ovato ; arti. 2-do elongato : . . . . .	5. SERICOSTOMIDÆ.
brevissimo : . . . . .	3. RHYACOPHILIDÆ.

#### FAMILY I.—ACENTROPIDÆ *mih*i.

*Antennæ* nearly setaceous, remote, short: *maxillary palpi* drooping, 3-jointed, labial wanting: *head* and *thorax* clothed with scale-like hairs, the latter furnished on its sides with a pair of *petagiæ*, or *tippets*: *wings* deflexed, anterior acute, posterior ovate, furnished with a connecting bristle at the base: *abdomen* rather elongate: *legs* moderate; *femora* and *tibiæ* shortish, of nearly equal length, the latter not furnished with spurs: *tarsi* 5-jointed.

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nomenclature of the species has been greatly embarrassed, many of Pictet's insects being synonymous with the indigenous ones, and thus in repeated instances a third name has been imposed on the same species; and an additional inconvenience arises from the names of Mr. Curtis's insects occurring in a miscellaneous work, as before referred to, while those of Pictet appear in a work expressly devoted to the subject, and will consequently be more generally employed, although not strictly having the priority.

This anomalous family may be instantly recognized from the genuine Trichoptera by having the legs wholly destitute of spurs, in addition to the very peculiar neuration of its wings, all of which have a long discoidal areolet, from which a radiating series of nervures springs, the nervures extending to the costal and hinder margins; but another great peculiarity apparent is the thorax being furnished with regular tippets, as in the Lepidoptera, and which circumstance, combined with the scale-like clothing of its wings, their structure, the bristle at the base of the hinder pair, the squamous head, &c. appear to warrant its removal to that order of insects, as suggested by Mr. Westwood, in the Entomological Transactions, v. i. p. 118; but amongst which group can it be located? I am not aware of any genus of the Tineidæ (the only family to which it can possibly be allied) that is destitute of spurs\* on the four hinder tibiæ: its

\* The absence of tibial spurs in the genus which forms the type of this family—*Acentria* of my Catalogue—induced me to arrange it with the Neuroptera, in which order these appendages are almost universally deficient, or are extremely minute, even in the gigantic species, while they are as invariably present both in the Lepidoptera and Trichoptera, although various modifications, both in form and number, occur. If I am correct in my reference to Olivier, through Latreille, both those writers place *Acentria* (now *Acentropus*) in the genus *Phryganea* (or Trichopterous division of the Neuroptera) in which they are followed by Mr. Curtis, who places it, *without question*, in the family Phryganidæ, notwithstanding its total want of spurs, whereas the insects included in that family have those organs fully developed, and have, moreover, the tibiæ and tarsi more or less armed with rigid spines, while in *Acentropus* they are perfectly simple! the neuration of the wings is also wholly dissimilar, as is also the structure of the mouth, &c.; the posterior wings are not folded, &c.

In the "*Naturalist*," published on the 1st inst. vol. i. p. 14, Mr. Dale has some remarks on the genus *Acentropus*, in which, after defending Mr. Curtis's assumed ignorance of its identity with *Acentria*,† he justifies its removal from the Neuroptera, and appears to conceive its location to be perfectly natural between *Hydroptila* and *Papilio*!!! and he exults in the fact that Messrs. Curtis and Westwood consider that I did wrong in placing it in the Neuroptera! But this last writer and myself are of opinion that Mr. Curtis is equally in error by placing it with the Trichoptera.

† A point I am disposed to controvert, inasmuch as Mr. Curtis, in naming his insects from my collection, had the opportunity of seeing the insect dozens

metamorphoses are yet unknown; but, when detected, its location will then become evident: for the present, therefore, having completed the Lepidoptera, I shall temporarily remove it to this side of the line of demarcation, and consider it as referrible to this order, rather than omit all notice of this singular family.

GENUS I.—ACENTROPUS, *Curtis*.

*Antennæ* slightly pubescent, inserted close to the eyes, shorter than the body: *labrum* elongate: *maxillary palpi* large, curved, densely clothed with scaly hairs: *head* somewhat globose: *eyes* globose, lateral: *ocelli* two: *wings* dissimilar, anterior with a long discoidal areolet, with numerous radiating nervures, which extend to the costal and hinder margins; posterior smaller, with similar nervures, all furnished with scale-like cilia: *abdomen* attenuated, its apex terminated by a curved hairy lobe and two pilose appendages; in the female simple and acute.

The chief peculiarities of this genus have been already pointed out in the observations upon the family: one species only appears to be known, which seems to frequent marshy places.

Sp. 1. *niveus*. *Pallide rufo-ochraceus, capite thoraceque canescentibus, alis sericeo-niveis, oculis atris.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar. 6— $7\frac{1}{2}$  lin.)

Phr. *nivea*. *Olivier teste Latreille*.—*Acentria niveosa*. *Steph. Catal.* 316. No. 3562  $\delta$ .—*Zancle Hansoni*. *Steph. Nomen.* 2d edit. col. 118  $\varphi$ .—*Acentropus Garnonsii*. *Curtis, v. xi. pl.* 497, var.

Pale reddish-ochre: eyes black; head and thorax clothed with short white and greyish scales; tippets whitish; abdomen ochreous above, dotted with white scales beneath; wings glossy snow-white.

The anterior wings have sometimes the costa and hinder margin more or less of a bright tawny-ochreous.

Brief as *Latreille's* definition of the *Phry. nivea* of *Olivier* is, I believe this to be that insect. *Latreille* says, "Blanche; ailes ciliées; partie supérieure de l'abdomen obscure."—*Hist. Nat. Crust. &c. v. xiii. p.* 93.

Found on willows near the Croydon Canal, by *Greenwich*, in June; also by *Dr. Leach*, in Scotland; *Mr. Hanson*, near Reading, in

of times, and he has appended to his account the localities which I furnished him with many years since; and *Mr. Dale*, upon a visit to me of some days, when he had the uncontrolled range of my cabinets during my unavoidable absence from home, must have noticed so remarkable an insect, which remains to this moment in the actual position it occupied in the drawer in 1826, the period of his sojourn at my residence.

Berkshire ; and by the Rev. W. L. P. Garnons, at Layer Murney, near Colchester, in Essex.

FAMILY II.—HYDROPTILIDÆ *mih*.

*Antennæ* filiform, very short, not very remote : maxillary *palpi* 5-jointed, somewhat pointed ; labial minute : *head* and *thorax* densely clothed with woolly hairs : *wings* narrow, acute, or obtuse ; nervures obscure, radiating, with no discoidal areolet : *abdomen* short or moderate : *legs* shortish ; four posterior *tibiæ* furnished with spurs at the apex and in the middle : *tarsi* 5-jointed. Larva residing in a flat kidney-shaped case, opening at each extremity by a simple cleft, and composed of silk and a few grains of sand ; the larva itself has the head and the three anterior segments narrow, the abdominal segments considerably dilated, and destitute of external respiratory organs ; the legs are short : they undergo their metamorphoses in the case, by closing it and fixing it on a stone.

The pretty little tineiform insects included in this family are distinguished by having very short filiform antennæ, which are either perfectly simple, or strongly pectinated : the wings are long, narrow, and acute, ciliated rather densely at the apex, and in the typical genus along the costa and inner margins ; the four hinder tibiæ are armed with spurs. Three genera occur in Britain, thus simply characterized :—

*Antennis* simplicibus, haud pectinatis ;

*Tibiis* intermediis 2-calcaratis : . . . . . 2. HYDROPTILA.

1-calcaratis : . . . . . 2. AGRAYLEA.

pectinatis : . . . . . 3. NARYCIA.

GENUS II.—HYDROPTILA, *Dalman*.

*Antennæ* sensibly thickened towards the apex, which is obtuse : maxillary *palpi* with the articulations of nearly equal length, the terminal joint ovoid : *head* small : *eyes* small, lateral : *collar* and *thorax* ovate : *wings* narrow, acute, densely pilose, and ciliated on the margins, with few very indistinct nervures ; posterior pair similar, not folded : *abdomen* short, slender, obtuse in the males, acute in the females : *legs* moderate, intermediate and posterior tibiæ furnished with two pair of long spurs.

From *Narycia* this genus differs by having the antennæ perfectly simple, the anterior wings narrow, acute at the apex, densely ciliated on the costal and inner margins, and on the apex ; the palpi are rather long and slender : the insects are of small size, and the species resemble each other considerably in bulk, colour, and habit : they are very active and nimble, and fly in the evening.

Sp. 1. *tineoides*. *Fusca, capite antennis pedibusque pallidis, alis fuscis, anticis fasciis duabus punctoque apicali albis.* (Long. corp.  $1\frac{1}{4}$  lin.; Exp. Alar.  $2\frac{1}{2}$ —3 lin.)

Hyd. *tineoides*. *Dalman.*—*Steph. Catal.* 317. No. 3579.

Fuscous: crown white, forehead and eyes black; antennæ pale, glossy, the apex dusky; thorax griseous, pilose; abdomen pale and shining; wings very pilose, anterior with two parallel, somewhat remote, pale or whitish transverse fasciæ, the basal one sometimes interrupted, with an obscure dot of the same hue between them, and a distinct one on the apex: legs pale.

Common, from the middle of June till towards the end of August, at Hertford.

Sp. 2. *brunneicornis*. *Nigra, fronte albâ, antennis flavo-brunneis apice nigro, alis canescentibus, anticorum marginibus albo nigroque punctatis.* (Long. corp. 1 lin.; Exp. Alar.  $2\frac{3}{4}$ —3 lin.)

Hyd. *marginata*. *Steph. Catal.* 317. No. 3580.—Hyd. *brunneicornis*. *Pictet, p. 226. pl. xx. f. 12.*

Black: head with a white spot between the antennæ, the latter yellowish-brown, with the tip black; anterior wings grey-brown, edged with black and dotted, on the margins especially, with white, forming three faint bands of this colour; posterior wings pale fuscous, or grey.

Taken, occasionally, near London, in June.

Sp. 3. *sparsa*. *Fusco-nigra, fronte canescente, antennis pedibusque fulvis, alis anticis marginibus albo niveoque punctatis.* (Long. corp.  $1\frac{1}{3}$  lin.; Exp. Alar. 3 lin.)

Hyd. *sparsa*. *Phil. Mag. (Curtis) v. iv. p. 217.*—*Steph. Nomen. 2d edit. Appendix.*

“Fuscous black: antennæ and legs fulvous; head grey; anterior wings with a silvery white spot on the middle of the costa, another opposite, the margin between this and the base with an interrupted whitish line, and several minute dots of the same colour at the apex.”—*Curtis, l. c.*

Found in June, near Hertford.

Sp. 4. *Vectis*. *Fusca, fronte albidâ, alis anticis fasciâ mediâ angulatâ punctisque variis ochraceis, ventre pedibusque argenteo micantibus.* (Long. corp.  $1\frac{1}{2}$  lin.; Exp. Alar.  $3\frac{3}{4}$  lin.)

Hyd. *Vectis*. *Phil. Mag. (Curtis) v. iv. p. 217.*—*Steph. Nomen. 2d edit. col. 118.*

“Fuscous: head whitish or ochreous; anterior wings with an ochreous spot near the base, an angulated band across the middle, a spot on the cilia at the stigma and seven round, and one at the apex; legs and belly dull silvery.”—*Curtis, l. c.*

Taken in June, in the south of England.

Sp. 5. *costalis*. *Pallide ochracea, nitida, alis anticis fusco variegatis; ciliis costalibus elongatis nigris areâ centrali pallidâ.* (Long. corp. 1—1½ lin.; Exp. Alar. 3 lin.)

Hyd. *costalis*. *Phil. Mag. (Curtis) v. p. 217.*—Hyd. *Scotica*. *Steph. Nomen. 2d edit. col. 118?*

“Pale ochreous, shining: anterior wings variegated, fuscous, with a dot on the disc, the costal cilia long and black, with a long pale space at the centre.”—*Curtis, l. c.*

Found, occasionally, in June, near London, and probably in Scotland.

### GENUS III.—AGRAYLEA, *Curtis*.

“*Antennæ* not longer than the body, rather short and filiform: *head* rather broad: *abdomen* short: *wings* long, narrow and pubescent: anterior *legs* short, the others slender; four posterior *tibiæ* with long spurs at the apex, intermediate with one at the middle; hinder with a pair above the apex.”—*Curtis, l. c.*

I do not remember to have seen a specimen of this genus, which, from the above definition, appears to belong to this family, and to differ from the other genera by having only one spur in the middle of the intermediate *tibiæ*.

†Sp. 1. *sexmaculata*. *Ochracea, antennarum apice fusco, alis anticis fuscis, maculis sex albidis.* (Long. corp. — lin.; Exp. Alar. 4 lin.)

Agr. 6-maculata. *Phil. Mag. (Curtis) v. iv. p. 217.*—*Steph. Nomen. 2d edit. Appendix.*

“Ochreous: *antennæ* fuscous, except at the base; superior (anterior) wings pale fuscous, with two whitish spots on the costa, two towards the apex, and two oblong spots on the inferior (inner) margin of the same colour.”—*Curtis, l. c.*

I know not the locality of this species.

†Sp. 2. *multipunctata*. *Fusca, vertice griseo, facie, abdomine, pedibusque fulvis, alis anticis maculis plurimis ochraceis.* (Long. corp. — lin.; Exp. Alar. 4 lin.)

Agr. *multipunctata*. *Phil. Mag. (Curtis) v. iv. p. 217.*—*Steph. Nomen. 2d edit. Appendix.*

“Fuscous: crown of head griseous; superior (anterior) wings with a long ochreous spot beyond the stigma, with several small ones on the posterior margin and along the centre to the base, two oblong ones on the inferior

(inner) margin, and two at the base of the cilia; face, abdomen, and legs, fulvous."—*Curtis, l. c.*

Of this species I am also unaware of the locality.

#### GENUS IV.—NARYCIA *mih*i.

*Antennæ* with the basal joint pilose and much incrassated, the remainder furnished on each side with long hairs: maxillary *palpi* drooping, very pilose, rather short: *head* transverse-ovate, pilose in front: *eyes* moderate, lateral, scarcely prominent: *thorax* ovate: *wings* strongly deflexed during repose; anterior elongate-elliptic, obtusely rounded at the apex, which is furnished with short scaly cilia; nervures very indistinct; posterior smaller, somewhat ovate, furnished with longer cilia: *abdomen* shortish, stout, somewhat cylindrical: *legs* stoutish, anterior tibiæ with a single spur at the inner apex; intermediate with a pair, and posterior with a pair at the apex, and a second pair in the middle.

The distinctly pectinated filiform antennæ of the insects of this genus at once serve to distinguish them from the other Trichoptera, from which, like Acentropus, they also differ in having the wings clothed with scale-like hairs; but, unlike that genus, their legs are provided with ample spurs, and the sides of the thorax are not furnished with tippets.

Sp. 1. *elegans*. PLATE xxxii. f. 4.—*Brunneo-nigra, alis anticis nigris brunneo variegatis, punctisque flavis, margine tenuiore ochraceo maculato.* (Long. corp.  $1\frac{1}{2}$  lin.; Exp. Alar. 4 lin.)

*Narycia elegans.* *Steph. Nomen. 2d edit. col. 118.*

Shining brown-black: antennæ very pilose, silvery-grey, with the tips of the articulations black, radii fuscous; anterior wings black, varied with brown, and with numerous yellowish and ochreous dots, of a golden tint, especially on the margins, the inner one having two large blotches of that colour towards the middle; posterior wings fuscous, with darker cilia; legs silvery-grey, varied with brown-black.

Twice taken on palings at the Hermitage, South Lambeth, at the end of June.

#### FAMILY III.—RHYACOPHILIDÆ *mih*i.

*Antennæ* slender, moderate, rarely exceeding the length of the wings: maxillary *palpi* alike in the sexes and 5-jointed, slightly pilose, the two basal joints short, the 2nd being about as long as the 1st, the 3rd elongate, 4th and 5th somewhat shorter, this last being ovoid: *wings* narrow, elongate, slightly



ciliated on the hinder and inner margins; anterior with more or less furcate longitudinal nervures, but very rarely with transverse ones, or with a discoidal areolet; posterior rather shorter and smaller, slightly folded on the inner edge: *abdomen* moderate, of the males occasionally furnished with hairy appendages beneath, and in both sexes sometimes also at the apex: *legs* long and slender, *tibiæ* more or less armed with spurs.

Larva with or without external respiratory organs, not residing in a case; pupæ inclosed in a double envelope, the inner one scaly, the outer silken and mixed with small stones and other foreign materials: they reside in running waters.

The insects of this family are for the most part of small size, and are extremely difficult to discriminate from each other without careful attention to their structure, owing to the similarity of their colouring, and their paucity of markings: it is much to be regretted that M. Pictet, in his otherwise valuable work on these insects, has almost totally omitted to notice the peculiarities of neuration of the wings, or the numbers and positions of the spurs on the *tibiæ* of the respective species, especially of this family, which he seems to have mixed together most heterogeneously: they may generally be distinguished by having the two basal joints of the maxillary palpi very short, and the terminal one not longer than the preceding, and ovate.

The species may be thus divided into genera:—

*Tibiis anticis* 2-calcaratis:

<i>Alis</i> omnibus <i>areolâ</i> discoidali:	. . . . .	8. GLOSSOSOMA.
<i>anticis solùm areolâ</i> discoidali:	. . . . .	9. TINODES.
omnibus <i>areolâ</i> discoidali nullâ;		
<i>Antennis</i> art. basali maximo:	. . . . .	6. BERLEA.
parvo;		
<i>Alis</i> elongatis, angustis, obtusis:	. . . . .	7. ANTICYRA.
brevibus, rotundatis:	. . . . .	5. AGAPETUS.

*Tibiis anticis* 3-calcaratis: . . . . . 10. RHYACOPHILA.

GENUS V.—AGAPETUS, *Curtis*.

*Antennæ* shorter than the wings, and not longer than the body, stout, especially at the base, and divaricating: *palpi* rather short, slightly pilose: *head* densely clothed with woolly hairs above: *eyes* globose, rather prominent: *wings* short, with dense elongate cilia on the hinder and inner margins, anterior rounded at the apex, with four single longitudinal nervures on the costal portion of the apex, and with three bifid ones on the anal portion: *abdomen* short, robust; of the male furnished with an incurved spine in the

middle beneath, and a smaller and similar process behind it; of the female simple and acute at the apex: *legs* rather short, anterior shortest; *tibiæ* all armed with a pair of spurs at the apex, the intermediate and posterior ones with a second pair below the middle, hinder *tibiæ* ciliated on the outer edge; apex of the middle pair and basal joint of the tarsi dilated in the females.

The insects of this genus are small; they have the anterior wings short, rounded, and rather broad in proportion to their length; the antennæ are very robust, especially at the base, and diverge from each other: the males are remarkable from having an incurved spine-like process beneath the middle of the abdomen, and the females have the base of the intermediate tarsi dilated.

Sp. 1. *funereus*. *Niger, obscurus, alis anticis fusco-brunneis, ciliis elongatis nigricantibus, pedibus fuscis*. (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{2}$  lin.)

Ph. *funerea*. *Olivier?*—*Steph. Catal.* 317. No. 3583.

Black, obscure: head slightly clothed with a brown-black pile; anterior wings dusky-brown, with a clothing of fine golden hairs, and with long dusky cilia; posterior wings fuscous, and slightly iridescent; legs fuscous.

Taken occasionally near London, and in Devonshire, in June.

Sp. 2. *fuscipes*. *Niger, supra tomentosus, alis anticis ochraceo-fuscis pilis pallidioribus, pedibus fuscis, ochraceo maculatis*. (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 5 lin.)

N. G. (552) *fuliginosa*. *Steph. Catal.* 317. No. 3586.—*Ag. fuscipes*. *Phil. Mag. (Curtis)* v. iv. p. 217  $\delta$ .—*Rh. lanata*. *Pictet*, 194. pl. xvi. f. 18.—*Ag. ochripes*. *Phil. Mag. (Curtis)* v. iv. p. 217  $\sigma$ .

Black, clothed above, especially on the head and thorax, with a shining griseous pile; anterior wings griseous, with ochreous hairs, the posterior iridescent, with the apex griseous, the nervures of all dusky; legs fuscous, with the trochanters, the knees, and the middle of the hinder tarsi ochreous. Female with the legs pale ochreous, and the basal joints of the intermediate tarsi dilated.

Found, not uncommonly, at Ripley, in June; also in Devonshire and in the New Forest.

Sp. 3. *laniger*. *Brunneus, tomentosus, subtus ochraceus, alis anticis griseo-ochraceis, pilis pallidioribus, pedibus ochraceis, anticis nigricantibus*. (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5-5\frac{1}{2}$  lin.)

N. G. (552) *opaca*. *Steph. Catal.* 317. No. 3584.—*Rh. lanigera*. *Pictet*, 195. pl. xvi. f. 19.

Brown: head densely clothed with a shining griseous pile; thorax the same

above, beneath ochreous; anterior wings bright tawny-griseous, clothed with hairs of a golden hue, especially at the base; cilia long and slightly ochreous-brown; posterior wings more transparent, somewhat fuscous and iridescent; legs ochreous; antennæ dusky.

Common in Walsam-meadows, near Ripley, in June; also at Hertford.

Sp. 4. comatus. *Niger, subtus ochraceo-fulvus, tomentosus, alis anticis canescentibus pilis subochraceis, pedibus ochraceis.* (Long. corp.  $2\frac{1}{4}$  lin.; Exp. Alar.  $5\frac{1}{2}$  lin.)

N. G. (552). flavipes. *Steph. Catal.* 317. No. 3588.—Rh. comata. *Pictet*, 194. pl. xvi. f. 17.

Above black: head and thorax densely clothed with a glossy griseous pile; beneath tawny-ochreous; anterior wings ochreous-brown, clothed with a brighter pile, and ciliated with long ochreous-brown hairs; legs pale ochreous.

Less abundant than the last: taken near Ripley in June.

Sp. 5. setiferus. *Capite corporeque brunneis, antennis ochraceis brunneo annulatis, alis griseo-cinereis sericeis, pedibus flavis.* (Long. corp. 2 lin.; Exp. Alar. 5 lin.)

Rhy. setifera. *Pictet*, 197. pl. xvi. f. 24.—Ag. setiferus. *Steph. Nomen. 2d edit. Appendix.*

Head and palpi brown: antennæ annulated with ochreous and brown; anterior wings griseous-ash, immaculate, ochreous at the base, with long silky griseous cilia; legs ochreous-yellow, with short spines, and dusky cilia on the femora and tibiæ.

Found, in June, at Hertford.

†Sp. 6. azureus. *Niger, antennis fuscis, alis anticis atris, nitidis, posticè atro azureis, pedibus ochraceis.* (Long. corp. 2 lin.; Exp. Alar. 5 lin.)

Ph. azurea. *Linné.*—Turton (!)—Mystacide? azurea. *Steph. Catal.* 320. No. 3660.

Deep glossy black; antennæ short, thick and deep brown; anterior wings shining black, the hinder portion brilliant steel blue, with long black cilia; legs ochreous.

Introduced by Turton into the British list: I supposed that I possessed the insect when my Catalogue was published, seven years since, but my insect proves to be a species allied to *Mystacide niger*, and not the present, according to *Pictet's* detailed description, which appears to place it in this genus.

GENUS VI.—BERÆA *mih*.

*Antennæ* rather slender, shorter than the wings, porrected, the basal joint robust, elongate and hairy: maxillary *palpi* long, stout and hairy: *labial* short: *head* small, transverse, pilose in front: *thorax* ovate: *wings* short, with very indistinct nervures; anterior broadish, rounded at the apex; all very pubescent, and fringed with long hairs: *abdomen* short, obtuse: *legs* rather short: *tibiæ* all with a pair of longish spurs at the apex, the posterior pair with a smaller pair below the middle.

The little insects comprised in this genus differ from the rest of the family by having the *palpi* robust and hairy, the basal joint of the *antennæ* stout, directed forwards, and also very hairy, the *antennæ* themselves being rather slender, especially at the tip; the wings are rather broad, short and rounded at the apex, with very indistinct nervures, and very hairy; they are generally of very sombre dark hues, and the insects of small size: the genus corresponds with *Thya* of Curtis, but as that name was long since employed by Dr. Leach for a genus of Crustacea, I shall adopt the one given previously to Mr. Curtis's, in the second edition of my Nomenclature.

Sp. 1. *albipes*. *Atra*, *alis nigro-fuscis*, *anticis subiridescentibus*, *atomis aliquot albidis*, *pedibus fuscis*, *tarsis albidis*. (Long. corp. 2 lin.; Exp. Alar. 5½—6 lin.)

N. G. (552). *albipes*. *Steph. Catal.* 317. No. 3581.—*Beræa albipes*. *Steph. Nomen.* 2d edit. col. 118.—*Thya pullata*. *Phil. Mag.* (Curtis) v. iv. p. 216?

Deep black: wings brown-black, anterior faintly iridescent, with some obscure whitish atoms towards the apex; cilia long and black; legs fuscous; tarsi whitish-ochreous.

Found near London, and at Hertford, in June.

Sp. 2. *pygmæa*. *Atra*, *alis fuscis immaculatis*, *pedibus fuscis*, *genubus albidis*. (Long. corp. 2 lin.; Exp. Alar. 4½—5 lin.)

N. G. (552). *pygmæa*. *Steph. Catal.* 317. No. 3585.—*Be. pygmæa*. *Steph. Nomen.* 2d edit. col. 119.—*Rhy. Melas*. *Pictet*, p. 196. pl. xvi. f. 21?

Deep black: anterior wings fuscous-black, immaculate, cilia black; legs fuscous, with the knees whitish, or ochreous.

Taken near London, and in Devonshire, in June.

Sp. 3. *Marshamella*. *Atra*, *alis anticis angustioribus subochraceo-fuscis*, *immaculatis*, *pedibus fuscis*, *geniculis tarsisque subochraceis*. (Long. corp. 2 lin.; Exp. Alar. 5 lin.)

N. G. (552). Marshamella. *Steph. Catal.* 317. No. 3587.—Be. Marshamella. *Steph. Nomen.* 2d edit. col. 119.—Thya Maurus. *Phil. Mag. (Curtis)* v. iv. pl. 216.—Rhy. nigrocincta. *Pictet*, p. 197. pl. xvi. f. 23?

Deep black: wings fuscous-black, with a dull lutescent tint; anterior rather narrow; cilia fuscous; legs fuscous, with the knees and tarsi dull ochreous.

From Marsham's cabinet.

## GENUS VII.—ANTICYRA, *Curtis*.

*Antennæ* stoutish, rather longer than the body, but shorter than the wings, the apex slender, basal joint small: maxillary *palpi* stout, nearly glabrous, depending, longish: *head* very hairy in front, small: *eyes* not prominent: *wings* long, nervures indistinct, anterior very narrow, obtusely rounded on the hinder margin, moderately pubescent, and fringed with shortish hairs: *abdomen* short, acute; of the male with two horny lobes at the apex: *legs*, especially the two hinder pair, rather long and slender: anterior *tibiæ* with a pair of short spurs at the apex, two posterior pair each with two long spurs at the tip, intermediate pair with two towards the base, and hinder pair with two below the middle: intermediate *tibiæ* and *tarsi* dilated in the females.

Unlike the insects of the foregoing genus, these are distinguished by having the wings, the anterior especially, very long and narrow, but with indistinct nervures; they are also very pilose, but the *palpi* and basal joint of the *antennæ* are but very slightly hairy, and the last is not conspicuously enlarged, as in *Beræa*; the legs are long, the two hinder pair armed with long spurs, and the intermediate *tibiæ* and *tarsi* are dilated in the females.

Sp. 1. *phæopa*. *Ochracea*, *capite thoraceque supra fuscis, alis anticis griseo-fuscescentibus, posticis iridescentibus, antennis brunneis ochraceo cinctis, tibiis tarsisque fuscescentibus.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{2}$  lin.)

Ti. *phæopa*. *Steph. Catal.* 316. No. 3575.—Rhi. *tomentosa*. *Pictet*, p. 189. pl. xvi. f. 9?

Pale ochreous: head and thorax above fuscous; *antennæ* brown, with ochreous rings; anterior wings dull pale fuscous, with shortish cilia; posterior pair paler, more transparent, slightly iridescent; legs long; *coxæ*, *trochanters*, and *femora* pale ochreous; *tibiæ* and *tarsi* pale fuscous.

Taken in June, at Ripley.

Sp. 2. *gracilipes*. *Pallide fusca, antennis pallidis nigro annulatis, alis anticis nitide ochraceis, pedibus fulvescentibus.* (Long. corp.  $2\frac{1}{3}$  lin.; Exp. Alar.  $5-5\frac{1}{2}$  lin.)

**Ti. lutescens.** *Steph. Catal.* 316. *No.* 3573.—*Ant.* gracilipes. *Phil. Mag.* (Curtis) v. iv. p. 217.

Pale fuscous: head griseous; eyes black; antennæ pale, with black or dusky rings; wings elongate-lanceolate, anterior ochreous and shining, with concolorous cilia; posterior more transparent, slightly iridescent, and pale ochreous; legs slender, dull pale fulvous.

Found at Hertford, in July.

**Sp. 3. subochracea.** *Pallide ochraceo-fusca, antennis fusco annulatis, alis angustis, anticis subochraceis, pedibus fulvescentibus.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $5\frac{1}{2}$ —6 lin.)

**Ti. subochracea.** *Steph. Catal.* 317. *No.* 3576.—*Ant.* latipes. *Phil. Mag.* (Curtis) v. iv. pl. 217. ♀?

Pale ochreous-brown: eyes black; antennæ pale ochreous, annulated with fuscous; wings narrow, anterior pale dull ochreous, with brighter cilia; posterior slightly transparent and fuscous; abdomen ochreous; legs pale fulvous.

Found at Ripley, towards the end of June.

**Sp. 4. ciliaris.** *Pallide ochracea, oculis abdomineque atro-fuscis, thorace rufo, pedibus antennisque pallidis, his fusco maculatis.* (Long. corp.  $1\frac{1}{2}$  lin.; Exp. Alar.  $4\frac{3}{4}$  lin.)

**Ti. ciliaris.** *Steph. Catal.* 317. *No.* 3577.

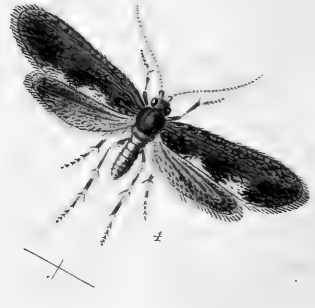
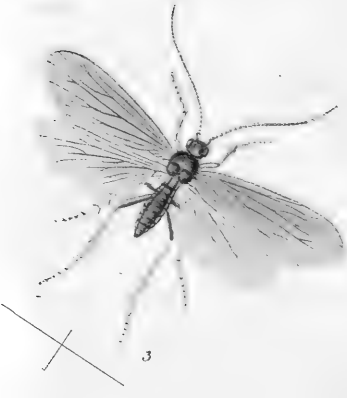
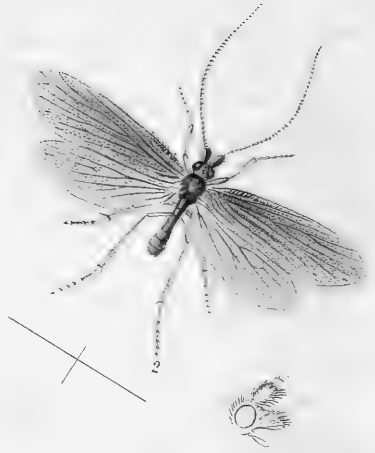
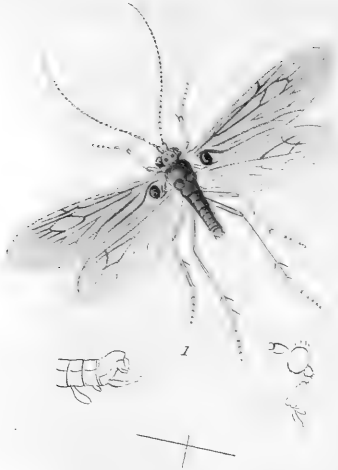
Pale ochreous: head immaculate, rounded; eyes deep fuscous; thorax bright red and shining; wings narrow, anterior pale uniform, yellow-ochreous, with the costa slightly darker; cilia silky and paler; posterior rather darker, more transparent, with the cilia slightly fuscous; abdomen deep fuscous, or black; legs pale.

Taken in June, at Hertford.

#### GENUS VIII.—GLOSSOSOMA, *Curtis.*

*Antennæ* nearly as long as the wings, slender, the basal joint a little thickened; *palpi* alike in the sexes, maxillary with the terminal joint scarcely longer than the preceding one: *head* globose: *eyes* globose, lateral, prominent: *thorax* ovate: *wings* elongate-elliptic, each with a small somewhat lozenge-shaped areolet, placed beyond the middle of the disc; the anterior pair in the male with a raised callous glossy membrane at the base, concave beneath: *abdomen* attenuated to the apex, with a depressed horny appendage on the seventh segment beneath, and a smaller one on the following in the male, the terminal one appendiculated; of the female acute: *legs* dissimilar, anterior pair short, with two minute spurs at the apex of the tibiæ, their *femora* compressed and thickened, two hinder pair slender, elongated, the





*Illustration of a fly-like insect*

*Illustration of a fly-like insect*



intermediate tibiæ with a pair of shortish spurs in the middle, and a second pair at the apex, posterior also with a pair at the apex, and a second pair near the apex; of the female the intermediate tibiæ and basal joint of their tarsi are considerably dilated.

This genus may be known at once by all the wings being furnished with a somewhat lozenge-shaped areolet, towards the apex of the disc, and the anterior pair in the males having an elevated callous membrane near the base; the terminal joint of the maxillary palpi is not longer than the preceding, the legs are slender, but the female has the intermediate tibiæ and the basal joint of their tarsi dilated and compressed: the abdomen of the males is armed with two horny lobes beneath, as represented in the left hand figure (l. pl. xxxii.)

†Sp. 1. Boltoni. *Fusco-castanea, abdominis apice pedibusque ochraceis, alis pallidè fusciscentibus, anticarum apice maculis obscure ochraceis.* (Long. corp. 4? lin.; Exp. Alar. 10 lin.)

Gl. Boltoni. *Phil. Mag. (Curtis) v. iv. p. 216.—Steph. Nomen. 2d edit. Appendix.*—Rhy. vernalis. *Pictet, 189. pl. xv. f. 4?*

“Antennæ, head, thorax, and abdomen fuscous-castaneous, the former annulated with, and the latter tipped with ochreous; wings pubescent, pale fuscous; superior (anterior) with the callous lump at the base in the male brown, clothed with black hairs; stigma and a spot opposite on the inferior margin fuscous, and each nervure terminated by a spot of the same colour on the margin alternating with ochreous spots, with an indistinct row behind them, and two or three near the disc of the same colour; inferior (posterior) wings grey and transparent at the base.”—*Curtis, l. c.*

The locality of this insect is not stated.

Sp. 2. fimbriata. PLATE XXXII. f. 1.—*Piceo-fusca, capite abdominis apice pedibusque ochraceis, alis pallidè fusciscentibus immaculatis.* (Long. corp. 2½—3 lin.; Exp. Alar 5¼—7 lin.)

Ti. fimbriata. *Steph. Catal. 316. No. 3563.—Ti. simplex. Steph. Catal. 316. No. 3564 ♀.*

Head ochreous, eyes and palpi fuscous; thorax and abdomen pitchy-brown or dusky-chestnut, the apex of the latter ochreous; wings pubescent, uniform pale fuscous, and wholly destitute of spots; stigma and nervures a little darker, anterior with the callous spot at the base fuscous, darker towards the disc; posterior wings rather paler and more transparent; legs and antennæ ochreous, the latter annulated with pale fuscous.

Found, but rarely, near London; also taken in Scotland by the late Dr. Walker.

GENUS V.—TINODES, *Leach MSS.*

*Antennæ* somewhat remote, shorter than the wings, slender, the basal joint slightly thickened: *palpi* similar in the sexes, maxillary long, a little pubescent, with the terminal joint considerably longer, and more slender, than the preceding one: *head* transverse: *eyes* globose, lateral: *thorax* slender: *wings* narrow; anterior elongate-elliptic, with two small discoidal areolets, and four furcate nervures on the posterior margin, and in the males with a depressed, shining, membranous spot at the base: *abdomen* short, obtuse in the male, horny and acute at the tip in the female: *legs* slender; anterior *tibiæ* with two very short spurs at the apex; intermediate with a pair of long ones towards the base, and another at the tip; hinder ones with a pair near the apex, and a second pair at the apex itself; intermediate *tibiæ* and *tarsi* rarely dilated in the females.

This genus closely resembles the foregoing, but the posterior wings are destitute of a discoidal areolet, and the anterior pair have, in addition to the lozenge-shaped one, towards the apex of the disc, an elongate-pentagonal one between it and the anal angle; they are likewise furnished with a rounded membranous spot towards the base, which is not, however, raised as in *Glossosoma*: the legs are slender in both sexes, and the abdomen of the male is not armed with horny appendages beneath; the basal joint of the antennæ is rather small, the terminal joint of the palpi considerably longer than the preceding, &c.

A. *Anterior wings* with the nervures distinct, discoidal areolet closed; (intermediate *tibiæ* and *tarsi* not dilated in the females).

Sp. 1. *pallescens*. *Pallide ochraceo-fulvus, abdomine saturatiore apice pallido, pedibus ochraceis, alis anticis ochraceo-flavis, nervis pallidis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 6—7 lin.)

Ti. *pallescens*. *Steph. Catal.* 316. No. 3565.

Pale tawny-ochreous: eyes fuscous; head clothed with a griseous down; antennæ pale, faintly annulated with dull ochreous; abdomen brown on the back at the base, the apex pale; legs pale ochreous; wings iridescent, pale ochreous yellow, very sparingly clothed with short golden hairs; cilia pale ochreous yellow; nervures of all pale.

Found, occasionally, near London, in June.

Sp. 2. *flaviceps*. *Ochraceus, thorace abdomineque supra schistaceis, antennis brunneis, pedibus capiteque ochraceo-flavis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 7—8 lin.)

Ti. *flaviceps*. *Steph. Catal.* 316. No. 3566.

Ochreous: head yellowish-ochre; eyes black; antennæ brown; thorax and abdomen above slate-colour, the apex of the latter ochreous; wings somewhat transparent, slightly iridescent, pale fuscous, sparingly clothed with short golden hairs; nervures brownish-ochre, hinder pair more transparent, and of a darker hue; legs ochreous-yellow.

Also taken in June, near London.

Sp. 3. *xanthoceras*. *Fuscus, antennis pedibusque flavo-ochraceis, alis hyalinis, iridescentibus, ochraceo-fuscis, nervis saturatoribus.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 8 lin.)

Ti. *xanthoceras*. *Steph. Catal.* 316. No. 3567.

Head, eyes, thorax, and abdomen fuscous, the latter darkest and pale at the apex; antennæ bright ochreous yellow; wings hyaline, iridescent, especially the posterior, all pale ochreous-brown, with darker nervures, the costal one darkest, and very sparingly clothed with short gold-coloured hairs; legs ochreous-yellow.

Inhabits the vicinity of London, in June and July.

Sp. 4. *luridus*. *Fusco-ochraceus, antennis capite thorace supra abdomineque saturate brunneis, alis (posticis præsertim) iridescentibus venis fuscis, pedibus ochraceo-fulvis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $8\frac{1}{2}$ — $9\frac{1}{4}$  lin.)

Ti. *picornis*. *Steph. Catal.* 316. No. 3568.—Ti. *luridus*. *Phil. Mag. (Curtis)* v. iv. p. 216.

Ochreous-brown: antennæ, head, thorax above, and abdomen, deep reddish-brown; wings long and rather narrow, anterior slightly hyaline and iridescent, somewhat fuscous, with darker nervures; posterior more hyaline and iridescent, with fuscous nervures; legs tawny-ochre.

Common, in June, at Hertford; also in other places within the metropolitan district.

Sp. 5. *pallipes*. *Ochraceo-brunneus, palpis oculisque nigris, alis latioribus anticis ochraceo-fuscis, aureo pilosis, nervis fuscescentibus, posticis iridescentibus, pedibus flavis.* (Long. corp. 3 lin.; Exp. Alar.  $8\frac{1}{2}$  lin.)

Ti. *pallipes*. *Steph. Catal.* 316. No. 3572.

Ochreous-brown: palpi and eyes black; apex of abdomen ochreous; wings rather short and broad, hyaline; anterior ochreous-brown, with fuscescent nervures, densely clothed with golden hairs, transparent, with a conspicuous dot towards the base within; posterior more transparent, iridescent, with fuscous nervures; legs ochreous-yellow.

Found in the vicinity of London, in June.

Sp. 6. *annulicornis*. *Ochraceus, palpis oculis thoracis dorso, abdominisque basi*

*suprà fuscescentibus, pedibus ochraceo-flavis, antennis brunneis ochraceo-annulatis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 8 lin.)

Ti. annulicornis. *Steph. Catal.* 316. No. 3569.

Ochreous: palpi and eyes brownish; antennæ brown, with narrow whitish rings; thorax above and upper base of the abdomen fuscescent, the tip of the latter shining ochreous; wings nearly glabrous, iridescent, pale brownish, with scattered golden hairs, and fuscescent nervures; posterior more transparent and iridescent; legs ochreous-yellow.

Taken, but apparently not very common, near London, in June.

Sp. 7. *albipunctatus.* *Pallide ochraceus, capite, thorace abdomineque suprâ fuscis, pedibus pallide flavis, alis subochraceo-fuscis, anticis ad marginem posteriorem nebulis saturatoribus punctisque albidis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar.  $7\frac{1}{2}$  lin.)

Ti. albipunctatus. *Steph. Catal.* 316. No. 3570.

Pale ochreous: head, thorax, and abdomen above fuscous, or slate colour; eyes fuscous; antennæ ochreous; wings of an ochreous-brown, slightly hyaline and iridescent, anterior of a brighter hue, clothed with short golden hairs, which form by their union a darkish stigma and minute spots on the hinder margin at the apex of the nervures, each space between the nervures with a minute whitish spot on the cilia; posterior immaculate; legs and antennæ pale ochreous-yellow; intermediate tibiæ at the apex and base of the tarsi dilated in the female.

Apparently rare: found, in June, near London.

B. *Anterior wings* with the nervures indistinct, discoidal areolet open behind; (intermediate tibiæ and tarsi dilated in the females).

Sp. 8. *obscurus.* *Ochraceo-flavus, oculis abdomineque suprâ subfuscis, alis subhyalinis, anticis fuscescente-ochraceis, immaculatis, antennis pedibusque ochraceo-flavis.* (Long. corp.  $2\frac{3}{4}$  lin.; Exp. Alar.  $8\frac{1}{2}$  lin.)

Ti. obscurus. *Steph. Catal.* 316. No. 3574.

Ochreous-yellow: eyes and abdomen above fuscescent; wings somewhat hyaline, slightly iridescent, anterior of a brownish-ochre, with darker nervures, immaculate, and sparingly clothed with golden hairs; posterior more transparent and iridescent; cilia of all fuscous; legs and antennæ pale ochreous-yellow.

Also rather uncommon: found in June, near London.

Sp. 9. *pusillus.* *Brunneo-fuscus, abdomine nigricante, alis fusco-testaceis, antennis ochraceo fuscoque annulatis, pedibus ochraceo-flavis.* (Long. corp. 2 lin.; Exp. Alar. 7 lin.)

Ph. *pusillus.* *Fabricius?*—*Steph. Catal.* 317. No. 3582.

Fuscous-brown: eyes and abdomen blackish; wings rather narrow, brownish-

testaceous, densely clothed with golden hairs, immaculate; cilia slightly fuscous, posterior somewhat more transparent and slightly iridescent; legs ochreous-yellow; antennæ ochreous, annulated with fuscous.

Taken within the metropolitan district, in June.

GENUS X.—RHYACOPHILA, *Pictet*.

*Antennæ* rather slender, not so long as the wings, placed somewhat remotely, the basal joint stoutish: maxillary *palpi* rather long, slender, nearly glabrous, a little porrected obliquely: *head* smallish, and rounded, hairy in front: *eyes* rather prominent, lateral: *wings* long, and somewhat elliptic-acute; anterior with three elongate discoidal areolets, from the first of which arise four sub-simple nervures, running parallel with the stigma, then follow two bifid ones, and on the anal angle are two simple ones, which arise from the apex of the inner areolet; posterior wings shorter, small, also with three elongate-discoidal areolets, and with one of the nervures very distinctly furcate near the margin: *abdomen* longish, compressed, attenuated to the apex; of the males furnished with long horny appendages, the two intermediate being laminated and bifid, the two others spiniform, the larvæ are bifurcate: *legs* rather slender; anterior pair shortest: *tibiæ* all armed with a pair of long spurs at the apex, the anterior with one also below the middle, the intermediate and hinder pair each with a pair near the apex. Larva with external respiratory organs, the segments somewhat remote, rounded on the sides, the terminal one with a bifid appendage at each side.

The three-spined anterior *tibiæ* of the insects of this genus, form a conspicuous mark of distinction from those of the other genera of this family, and their *palpi* remove them from the Hydropsychidæ, in which family several genera are characterized by having a spur on the side of the anterior *tibiæ*: the larvæ of the Rhyacophilidæ have their respiratory organs external.

A. *Body* slender: (intermediate *tibiæ* and *tarsi* of the females not dilated).

Sp. 1. *vulgaris*. *Fusco-ochracea, alis hyalinis, anticis fusco subpunctatis, maculæque dorsali communi rhomboidali pallide-flavescente.* (Long. corp. 5—6 lin.; Exp. Alar. 1 unc. 12—13 lin.)

Phi. *obsoletus*. *Steph. Catal.* 318. No. 3604.—Rh. *vulgaris*. *Pictet*, p. 182. pl. xv. f. 1.—Phi. *dorsalis*. *Phil. Mag.* (*Curtis*) v. iv. p. 213?

Head, antennæ, and body ochreous-brown, spotless; eyes black; anterior wings hyaline, pale dull ochreous-brown, with minute darker punctures in the direction of the nervures, especially towards the inner and hinder margins, and an irregular, somewhat triangular, spot in the middle of the inner edge, forming, with the opposite wing, when closed, a rhomboid spot; the posterior wings are more transparent, faintly iridescent, and spotless; legs pale ochreous.

Larva with the head narrow, yellow, with three black spots; collar yellow; meso- and meta- thorax and abdomen purplish, varied with greenish; respiratory organs purple; legs ochreous: it inhabits rivulets.

Found, occasionally, in the vicinity of the metropolis, in June and July, but more abundantly in Devonshire; taken also in the New Forest and in Scotland.

Sp. 2. Stigma. *Pallide ochracea, alis fuscescentibus atomis flavescens, stigmatum elongato, fusco, antennis pedibusque fulvescentibus.* (Long. corp. 5—6 lin.; Exp. Alar. 12—15 lin.)

Phi. Stigma. *Steph. Catal. 318. No. 3603.*—Phi. longipennis. *Phil. Mag. (Curtis) v. iv. p. 213?*

Pale ochreous: eyes fuscous; back of the abdomen sometimes fuscescent; legs and antennæ rather pale fulvous, the latter with darker rings; anterior wings fuscescent, with numerous indistinct minute yellowish atoms, and a whitish dot in the middle; posterior wings more transparent, of an uniform colour, all with an elongate tawny-fuscous stigma, sometimes dotted with ochreous.

Found near London, and in Devonshire, in July.

Sp. 3. opaca. *Subfuscescente-ochracea, alis fuscescentibus ochraceo indistinctè irroratis, nebulisque albidis, antennis crassis brevibusque, his pedibusque fulvescentibus.* (Long. corp. 5 lin.; Exp. Alar. 11½ lin.)

Phi. opacus. *Steph. Catal. 318. No. 3605.*

Brownish-ochreous, with the under parts and the apex of the abdomen palest; eyes fuscescent; antennæ rather short and thick, fulvescent; anterior wings fuscous, very indistinctly irrorated with ochreous, and with some obscure whitish clouds on the inner margin; stigma obscure; posterior wings hyaline, immaculate-fuscous; legs pale tawny.

Taken, in June, within the metropolitan district.

B. *Body broad: (intermediate tibiæ and tarsi of the females dilated.)*

Sp. 4. nebulosa. *Ochraceo-fusca, abdomine ochraceo-cingulato, pedibus fulvescentibus, coxis fuscescentibus, alis subfusco nebulosis anticis apice subtruncato.* (Long. corp. 6 lin.; Exp. Alar. 13½ lin.)

Phi. nebulosus. *Steph. Catal. 318. No. 3606.*

Very broad, ochreous-brown: palpi and eyes fuscous; margins of the abdominal segments both above and below broadly ochreous; legs pale tawny, with the coxæ fuscescent; anterior wings obliquely truncate at the apex, the disc obscurely clouded with fuscous, the hinder margin with a brownish dot at the tip of each nervure; intermediate tibiæ and tarsi dilated in the females.

Found at Hertford, in the autumn.

FAMILY IV.—HYDROPSYCHIDÆ, *Curtis*.

*Antennæ* in general very slender, sometimes very much attenuated and elongate, at others stouter and not so long as the wings: maxillary *palpi* similar in the sexes, 5-jointed, the terminal joint very long and filiform, frequently longer than the four others united, the basal joint mostly short, the two next of nearly equal length, and the fourth rather longer: *wings* moderately broad, the anterior with very few, or no, transverse nervures, the hinder margin either rounded or somewhat obliquely truncate; posterior wings ample, more or less folded towards the inner edge: *abdomen* longish and rather stout, of the males with small horny lamellæ at the apex, of the females obtuse: *legs* moderate: *tibiæ* with a pair of spurs at the apex, the anterior sometimes with a single additional one in the middle, the intermediate and posterior with a pair at or below the middle.

Larva, as in the preceding family, with or without external respiratory organs, not residing in a case; pupa inclosed in a single silken envelope, constructed of silk, with bits of plants and small stones intermixed, or merely a simple cocoon.

The insects of this family differ from those of the foregoing by having the terminal joint of the palpi remarkably long and slender, and apparently divided into numerous rings or rudimentary joints; they are of dull hue in general, and many of them are so extremely similar to each other that the utmost caution is requisite to separate them: the respective genera, however, differ much in habit from each other.

This family may be thus divided into genera:—

*Tibiis anticis* 3-calcaratis;

- |  |                   |   |                    |
|--|-------------------|---|--------------------|
| <i>Alis anticis</i> nervis transversalibus diversis: | .                 | . | 14. CYRNUM.        |
|  | paucis;           |   |                    |
| <i>Antennis</i> alis longioribus;                    | .                 | . | 11. PLECTROCNEMIA. |
|  | haud longioribus; | . | 15. POLYCENTROPUS. |

*Tibiis anticis* 2-calcaratis;

- |  |  |   |                   |
|--|--|---|-------------------|
| <i>Antennis</i> gracilis alis longioribus; |  |   |                   |
|  | <i>Alis posticis</i> parvis, vix plicatis; | . | 12. PHILOPOTAMUS. |
|  | amplicibus, valdè plicatis;                | . | 13. HYDROPSYCHE.  |
|  | brevibus alis brevioribus;                 | . | 16. APHELOCHEIRA. |

GENUS XI.—PLECTROCNEMIA\* *mih*.

*Antennæ* rather slender, about as long as the wings, slightly pubescent, the basal joint largest, but not conspicuously robust: maxillary *palpi* rather slender, with the terminal joint considerably longer than the others united: *head* broadish, clothed with long hairs on the crown: *eyes* rather prominent: *thorax* stoutish: *wings* much deflexed during repose; anterior elongate-elliptic, with all the nervures bifurcate on the hinder margin, and the subcostal one united to the costal by a transverse nervure at the base of the stigma, forming one long discoidal areolet; posterior wings ovate-triangular, with about five bifurcate nervures on the central portion of the hinder margin: *abdomen* shortish, terminated by two lateral, angulated, horny appendages in the males: *legs* rather slender, anterior shortest and stoutest, their tibiæ armed with a pair of longish spurs at the apex, and a single one in the middle of the inner edge; intermediate tibiæ with a pair of long slender ones at the apex, and a second pair below the middle; hinder ones with a pair at the apex, and another pair above the middle.

From the two following genera this may be known by the anterior tibiæ being furnished with a strong spur in the middle, in addition to the pair at the apex, as in *Cyrnus* and *Polycentropus*, but from those genera the different neuration of the wings, as well as the general habit, remove it: the antennæ are longer than in the last genus, and rather stouter.

Sp. 1. senex. *Fuscescente-brunnea, fronte thoraceque pilis argenteo-albidis vestitis, antennis fulvis albo annulatis, alis anticis canescentibus, albido nigroque variegatis costâ nigro-punctatâ.* (Long. corp. 5—6 lin.; Alar. 12—13 lin.)

N. G. (554). *nigripunctatus.* *Steph. Catal.* 317. *No.* 3591.—*Phil. conspersus.* *Phil. Mag. (Curtis) v. iv. p.* 213?—*Hyd. senex.* *Pictet,* 219. *pl. xix. f.* 1.

Head and thorax pale fuscous, the former with a band of silvery-white hairs round the eyes, and a tuft of the same on the forehead, and the latter with white hairs above; the under side, palpi, and legs, are pale tawny; antennæ tawny, with white rings; anterior wings ashy, or hoary, with numerous irregular whitish blotches and black spots, placed somewhat regularly on the margins, but irregularly on the disc, and the hinder margin with some indistinct yellowish and dusky spots, and near the base, towards the inner margin, is a tuft of brown hairs; posterior wings pale ashy, and immaculate.

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\* Πληκτρος calcar, κνημη tibia.



Larva with the head fulvescent, dotted with black, the central spots disposed in a circle, the rest of the body pale fleshy-yellow.

Apparently rare near London, but not uncommon in Devonshire, in July.

## GENUS XII.—PHILOPOTAMUS, *Leach MSS.*

*Antennæ* nearly as long as the wings, slender, with a tuft of hair at the base: maxillary palpi very long, the terminal joint considerably longer than the others united, and attenuated to the tip: *head* moderate: *eyes* large, subglobose: *thorax* stout: *wings* elongate-elliptic; anterior with four indistinct transverse nervures, placed nearly in a line with the stigma, and another situated obliquely about the middle of the costa; posterior small, very slightly folded: *abdomen* shortish, broad, depressed, acute at the apex, which is furnished with horny appendages in the males: *legs* moderately long: anterior tibiæ armed with a pair of longish spurs at the tip, intermediate and posterior each with a long pair at the tip, the former with a second pair above the middle, and the latter with a pair below the middle: *tarsi* moderate, middle pair not dilated in the females.

The pretty insects contained in this genus differ from the following in having a distinct transverse nervure, placed rather obliquely, about the middle of the costa, the other transverse nervures are situated in nearly a straight line, somewhat parallel with the hinder margin, and arising from the stigma; the anterior wings are rather acutely-elliptic, very prettily maculated with yellow or tawny, on a brown ground; the posterior ones are small and but little folded; the anterior tibiæ are destitute of a medial spur.

Sp. 1. *Scopulorum*. *Niger, pedibus antennisque fulvis, his brunneo annulatis, alis anticis brunneis luteo-maculatis, posticis fusciscentibus brunneo-maculatis.*  
(Long. corp. 4—5¼ lin.; Exp. Alar. 9—15 lin.)

Phi. *Scopulorum*. *Leach MSS.—Steph. Catal. 317. No. 3599.*

Black: palpi and antennæ tawny, the latter annulated with brown; forehead with a dense griseous pile; anterior wings brown, irregularly spotted with round pale luteous spots of various sizes, largest on the costa; posterior wings fusciscent, with obscure luteous and brownish spots on the margins; legs pale tawny.

Extensively distributed throughout the mountainous districts of England, Scotland, and Ireland; found but rarely in the lower parts of the country: it occurs in June.

Sp. 2. *variegatus*. *Niger, antennis pedibusque fulvescentibus, alis anticis*  
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*brunneis maculis numerosis, rotundatis, luteis, posticis griseis.* (Long. corp. 5 lin.; Exp. Alar. 1 unc. 2—4 lin.)

Phr. variegata. *Fabricius*.—Phi. variegatus. *Steph. Catal.* 318. No. 3601.

Black: antennæ and palpi pale tawny; anterior wings deep brown, with numerous distinct, rounded, bright luteous spots, the largest of which are on the margins; posterior wings plain griseous; legs pale tawny.

Taken, but not very commonly, in Devonshire, in June.

Sp. 3. *montanus*. *Niger, antennis brunneis, pedibus fulvis, alis fuscescentibus brunneis, luteo obscurè maculatis.* (Long. corp. 3—4 lin.; Exp. Alar. 9—11 lin.)

Phr. montana. *Donovan, v. xvi. pl. 548. f. 1.*—Phi. montanus. *Steph. Catal.* p. 318. No. 3609.

Black: palpi and antennæ brown; legs tawny; anterior wings dusky-brown, with numerous indistinct rounded luteous spots; posterior wings darker, more transparent, and with a few dusky spots on the margin, at the extremities of the nervures.

Found in Devonshire, and in South Wales and Ireland, in July.

### GENUS XIII.—HYDROPSYCHE, *Pictet*.

*Antennæ* very slender, generally longer than the wings, and sometimes a little serrated within, the basal joint rather stout: maxillary palpi above as long again as the labial, the terminal joint very much elongate and slightly attenuated, irregularly wrinkled transversely, as is also the apical joint of the labial: *head* pilose: *eyes* small: *thorax* subovate: *wings* rather ample, anterior elongate, narrow at the base, the apex obliquely truncate,

†Sp. 4. *reticulatus*. *Niger, alis subferrugineis atro reticulatis maculatisque.* (Exp. Alar. 15 lin.?)

Phr. reticulata. *Linneé*.—*Turton* (!)—Phi. reticulatus. *Steph. Catal.* 318. No. 3602, note.

Black: wings pale ferruginous, anterior transversely reticulated with black, with some spots of the same on the hinder margin and on the disc; posterior with a waved black fascia, and a marginal row of somewhat confluent black spots.

I have never seen this insect: from the Linnean definition, it hardly belongs to this genus, but I know not where else to locate it: from Panzer's figure it seems allied to the foregoing insects, and probably the Linnean term, "venis atro reticulatis," merely refers to the appearance of reticulation arising from the colouring.

*Turton* gives this as indigenous, but I believe improperly.

or rounded; transverse nervures few in number, irregularly dispersed, the middle of the costa without one: posterior wings ovate, with a trifid nervure in the centre: *legs* moderately stout: anterior *tibiæ* with a pair of spurs at the apex, intermediate and posterior with a pair of long ones at the tip, the former with a second pair above the middle, and the latter with a pair much below the middle: intermediate *tibiæ* and their *tarsi* dilated in the females. Larva furnished with external respiratory organs.

These insects differ from those of the preceding genera by having the antennæ usually considerably longer than the wings and very slender; the wings are of different shape, being somewhat truncate at the apex, and they are generally destitute of a transverse nerve towards the middle of the costa; the proportions of the joints of the palpi are slightly different; their colours are of sombre hue, the wings not being prettily maculated with yellowish on a brown ground, as in *Philopotamus*, and the posterior pair have a trifid central nervure.

Sp. 1. *atomaria*? *Brunnea, infrà ochracea, cano pilosa, alis canescentibus, anticis ochraceo nigroque maculatis, pedibus flavescentibus.* (Long. corp.  $4\frac{1}{2}$  lin.; Exp. Alar. 9—11 lin.)

*Phr. maculata.* *Donovan, v. xvi. pl. 548. f. 2.*—*Phi. maculatus.* *Steph. Catal. 318. No. 3600.*—*Phi. instabilis.* *Phil. Mag. (Curtis) v. iv. p. 213.*—*Hyd. atomaria.* *Pictet, p. 201. pl. xvii. f. 1?*

Head and thorax brown, clothed above with greyish hairs, the sides and under surface of the latter ochreous; abdomen brown above, ochreous beneath and at the apex; wings pale grey, the anterior with a few more or less indistinct blackish dots and ochreous spots, the former predominating on the costa, and the latter on the inner margin, where are two rather larger brownish blotches, separated by two ochreous ones; on the hinder margin are also some conspicuous ochreous spots; legs and antennæ pale tawny, the latter annulated with brown; palpi brown.

Var.  $\beta$ . *Phi. obliquus.* *Steph. Catal. 318. No. 3610.*—Wings more distinctly spotted, the spots disposed in two somewhat oblique streaks.

Larva with the head brown, with four azure spots, the three following segments brown, the abdomen greyish-green, its last segment and legs yellowish.

Found, occasionally, near London, in June and July, but more abundantly in Devonshire and Scotland.

Sp. 2. *tenuicornis.* *Capite, thorace abdomineque nigricantibus, antennis gracilibus, ochraceis, alis anticis canescentibus, ochraceo nigroque punctatis, posticis fuscescentibus, pedibus ochraceo-fulvis,* (Long. corp. 4 lin.; Exp. Alar. 10—11 lin.)

*Phi. antennatus.* *Steph. Catal.* 318. No. 3612.—*Hyd. tenuicornis.* *Pictet,* p. 203. pl. xvii. f. 2.

Head, thorax, and abdomen dusky, or blackish, clothed with a greyish pile; antennæ very long and slender, pale ochreous; anterior wings hoary-brown, minutely sprinkled with ochreous and black dots, the latter condensed into black spots on the inner margin; posterior wings dusky-brown, immaculate; legs tawny-ochreous, tibiæ palest.

Larva with the head and three anterior segments blackish, the former with three orange spots; the remaining segments, except the last, which, and its appendages, are ochreous, greyish-green; respiratory organs orange; legs yellowish.

Not common: found, occasionally, in July, near London.

Sp. 3. *guttata.* *Capite, thorace abdomineque nigris, griseo pilosis, alis anticis canescentibus ochraceo nigroque distinctè maculatis, posticis albidis, pedibus fulvis.* (Long. corp.  $3\frac{1}{2}$  lin.; Exp. Alar. 9—10 lin.)

*Phi. bimaculata.* *Steph. Catal.* 318. No. 3611.—*Hyd. guttata.* *Pictet,* p. 203. pl. xvii. f. 3.

Head, thorax, and abdomen black, clothed with a greyish pile; antennæ moderately long, pale tawny; anterior wings hoary, distinctly spotted with ochreous and black, the latter predominating towards the inner margin; posterior wings whitish hyaline; legs tawny; claws black.

Larva with the head brown, its sides and round the eyes yellowish, the crown with a black T; the three following segments grey, yellowish on the sides, and edged with black; abdomen greenish, its apex and respiratory organs whitish; legs yellow.

Also uncommon: taken, in June, near London.

Sp. 4. *pellucidula.* *Capite palpis thoraceque nigricantibus, abdomine brunneo, antennis ochraceis, fusco punctatis, alis semihyalinis, anticis indistinctè ochraceo fuscoque irroratis, marginibus internis et posticis ochraceo maculatis.* (Long. corp.  $6\frac{1}{2}$  lin.; Exp. Alar. 13— $15\frac{1}{2}$  lin.)

*Phi. dorsalis.* *Steph. Catal.* 318. No. 3614.—*Phi. pellucidulus.* *Phil. Mag.* (*Curtis*) v. iv. p. 213.—*Hyd. læta.* *Pictet,* 204. pl. xvii. f. 4.

Palpi dusky; head and thorax blackish above, clothed with very short greyish hairs; abdomen brown; wings semitransparent, anterior very obscurely irrorated with pale fuscous and ochreous, this last colour condensed into roundish spots at the apex of the costa and on the hinder margin, and into elongate ones on the inner margin, forming, when the wings are closed, conspicuous dorsal marks; posterior wings paler and more transparent; legs pale ochreous; antennæ very long and slender, ochreous, with dusky spots.

Larva robust; head ochreous, with a blackish spot in form of a cross; thoracic

segments pale brown, the two last each with an oblique black streak on the anterior angle, all edged with black; abdomen ochreous; respiratory organs whitish; legs yellow.

Found, near London, in June and July, and rather abundantly in Devonshire, and in Scotland and Ireland.

Sp. 5. *hibernica*. *Ochracea, capite, thorace, abdomineque fuscis, alis hyalinis nervis ochraceis, anticis posticè obscure fusco punctatis.* (Long. corp. 4—5 lin.; Exp. Alar.  $11\frac{1}{4}$ — $12\frac{1}{2}$  lin.)

Phi. ochroleucus. *Steph. Catal.* 318. No. 3613.—Hyd. *hibernica*. *Curtis, folio* 601.

Ochreous: head, thorax, and abdomen fuscous, the former clothed with bright greyish hairs; wings semitransparent, with ochreous nervures, anterior indistinctly spotted towards the base, and more distinctly on the tip of the costa and on the hinder margin with ochreous and pale fuscous; antennæ shortish, pale ochreous, with slender oblique brownish rings at the base; legs pale ochreous.

I obtained a pair of this species from the Marshamian collection: the locality unknown. “Roundstone in Connemara.”—*Curtis, l. c.*

Sp. 6. *lanceolata*. *Capite thorace abdomineque nigricantibus, alis fuscis, anticis subfalcatis, obscure irroratis, margine postico fusco punctato.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Exp. Alar. 12—13 lin.)

Phi. *marginepunctatus*. *Steph. Catal.* 318. No. 3615.—Hyd. *lanceolata*. *Phil. Mag.* (*Curtis*) v. iv. p. 213.

Head, thorax, and abdomen blackish, clothed with pale greyish hairs; wings fuscous, anterior slightly falcate, clothed with shining ochreous pubescence, somewhat freckled, and the hinder margin spotted with fuscous; legs pale tawny ochreous; antennæ moderately long.

Found, occasionally, near London, in July, and in the north of England, rather commonly.

Sp. 7. *angustipennis*. *Capite thorace abdomineque nigricantibus, alis fuscis, anticis ochraceo tinctis stigmatè brunneo, maculisque ochraceis, antennis subserratis.* (Long. corp.  $3\frac{1}{2}$ — $4\frac{1}{2}$  lin.; Exp. Alar. 10—13 lin.)

Phi. *affinis*. *Steph. Catal.* 318. No. 3608.—Hyd. *angustipennis*. *Phil. Mag.* (*Curtis*) v. iv. p. 213.

Head, thorax, and abdomen blackish, the latter paler beneath; wings fuscous; anterior tinged with ochreous, with a brown stigma, an oblong ochreous spot before and a round one at the hinder angle, most distinct in the males; legs ochreous, the base dusky or fuscous; antennæ slender, ochreous, obscurely serrated within, and faintly annulated with brown.

Found, occasionally, near London, in July; also in Norfolk and in Scotland.

Sp. 8. fulvipes. *Niger, abdominis segmentorum marginibus pallidis, tibiis tarsisque pallidè fulvis, alis anticis brunneis, obscure ochraceo nebulosis.* (Long. corp. 5—6 lin.; Exp. Alar. 13—14 lin.)

Phi. obscurus. *Steph. Catal.* 318. No. 3607.—Hyd. fulvipes. *Curtis, v. xiii. pl.* 601.

Brown-black: head and neck clothed with griseous hairs; margins of the abdominal segments pale or ochreous; wings pale tawny-brown, obscurely freckled with ochreous, nervures dark, with a small dot on the costa at the apex of the first furcate one; posterior wings paler, not freckled, and slightly iridescent; legs tawny, femora and sometimes the tibiæ dusky; antennæ tawny, annulated with brown.

Not common: taken in July near London; also at Carlisle, and in Devonshire and in Dorsetshire.

Sp. 9. angustata. *Fusco-griseus, abdomine nigricante subtus virescente, alis subhyalinis, anticis ochraceis, holosericeis, iridescentibus, nebulis 2-bus subochraceis.* (Long. corp. 2½ lin.; Exp. Alar. 6½—7 lin.)

Hyd. angustata. *Curtis, fol.* 601.—Hyd. angustata. *Steph. Nomen. 2d edit. Appendix.*

“Antennæ shorter than the wings, annulated; head and thorax griseous; abdomen slate-colour, beneath silky-green or whitish; wings subdiaphanous, fuscous; superior (anterior) ochreous, with silky yellowish pubescence, and slightly iridescent, a large obscure ochreous spot on the costa towards the apex, and another on the interior margin beyond the middle.”—*Curtis, l. c.*

This insect appears to unite the present genus with *Cyrnus*, but the anterior tibiæ are not spurred in the middle: it differs considerably in habit from *Hydropsyche*.

I possess a pair of these insects, which answer to the above definition of Mr. Curtis: they were found in July in the garden at the Hermitage: it occurs, according to Mr. Curtis, in Loch Derg.

#### GENUS XIV.—CYRNUM *mihî.*

*Antennæ* stoutish, considerably shorter than the wings, but as long as, or longer than, the body, the basal joint slightly thickened: *palpi* slender, maxillary ones long, the terminal joint filiform and transversely wrinkled: *head* rather large, pilose: *eyes* globose: *thorax* subovate: *wings* small; anterior narrow, elongate-elliptic, rounded at the apex, narrowed at the base, the hinder margin with four bifid nervures, the longitudinal nervures each united by a transverse one, forming three elongate discoidal areolets, and two triangular ones towards the apex; posterior small, ovate, slightly folded, the costal portion divided by a row of transverse nervures: *legs* stoutish, and rather long: anterior *tibiæ* with a pair of shortish spurs at the apex, and a single

longer one in the middle; intermediate and posterior each with two pair, one pair at the apex, the other pair in the former towards the base, and in the latter below the middle.

From the foregoing genera this may be known by the anterior tibiæ being furnished with three spurs, two at the apex, and one in the middle, and from the following, which agrees in that particular, by the different neuration of the wings: these last organs are generally of plain hue, and have mostly a transparent spot on the disc: the antennæ are shorter than the wings, which are rounded at the apex.

Sp. 1. *unipunctatus*. *Nigricans, antennis pedibusque fulvis, alis fusciscentibus, nervis saturatoribus, anticis maculâ albo-hyalinâ.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar.  $2\frac{1}{2}$ —3 lin.)

Tin. *unipunctatus*. *Steph. Catal.* 316. No. 3571.

Blackish: head brown; margins of abdominal segments beneath pale ochreous; legs and antennæ tawny, the latter faintly annulated with brown; wings brownish, with an ochreous tinge, the nervures fuscous; anterior with a white hyaline spot at the apex of the inner discoidal areolet; posterior wings more transparent, and slightly iridescent.

Not common: taken in June and July, at Hertford, Ripley, and in other places, within the metropolitan district.

Sp. 2. *pulchellus*. *Fuscus, pedibus fulvis, antennis ochraceis, brunneo annulatis, alis ochraceo-fuscis, anticis ad apicem, pallidè luteo irroratis, punctoque discoidali albido.* (Long. corp. 3 lin.; Exp. Alar. 6—7 lin.)

N. G. (553). *pulchellus*. *Steph. Catal.* 317. No. 3589.

Fuscous: apex of the abdomen, palpi, and legs tawny; antennæ ochreous, annulated with brown; anterior wings ochreous-brown, prettily freckled with pale luteous, especially at the apex, with a whitish hyaline dot at the tip of the inner discoidal areolet, the nervures dark fuscous; posterior wings darker fuscous, iridescent and immaculate.

This also occurs in various places within the metropolitan district, in June and July, and likewise in the New Forest and in Devonshire.

Sp. 3. *urbanus*. *Gracilis, ochraceus, capite thoraceque suprâ brunneis, alis angustis, immaculatis, antennis brunneo annulatis, palpis nigricantibus.* (Long. corp.  $2\frac{1}{3}$  lin.; Exp. Alar.  $5\frac{1}{2}$ —6 lin.)

Hyd. urbana. *Pictet, p.* 213. *pl.* xix. *f.* 13.—Cyr. cognatus. *Steph. Nomen.* 2d edit. col. 119.

Very slender: head and thorax light ochreous, brown above; eyes and palpi blackish; antennæ ochreous, annulated with brown; anterior wings narrow,

especially at the base, pale ochreous, immaculate, nervures very faint; legs pale yellow.

Taken near London, in June.

Sp. 4. unicolor. *Subgracilis, ochraceus, capite palpisque brunneis, alis hyalinis, perlepidè iridescentibus.* (Long. corp. 2 lin.; Exp. Alar. 6 lin.)

Hyd. unicolor. *Pictet, p. 218. pl. xx. f. 5.*

Rather slender: head and palpi brown, the latter darkest or dusky; rest of the body, with the legs and antennæ, bright ochreous; wings pale ochreous, very transparent, immaculate, and beautifully iridescent.

Found in June, at Hertford.

#### GENUS XV.—POLYCENTROPUS, *Curtis.*

*Antennæ* stoutish, shorter than the wings, but longer than the body, the basal joint thickened, the apical ones attenuated: *palpi* slender, slightly pilose; maxillary long and incurved, the terminal joint somewhat filiform, transversely wrinkled, and about as long as the others united: *head* transverse-ovate: *eyes* globose: *thorax* robust: *wings* small; anterior somewhat elliptic-ovate, rounded at the apex, narrowed at the base, the costa with a central transverse nervure, two others in a line towards the tip at the base of the second furcate nervure, an oblique one towards the hinder angle, and another between that and the inner margin towards the base; posterior slightly folded: *legs* rather stout, anterior shortest, their *tibiæ* furnished with a pair of spurs at the apex, and another on the side above the middle; intermediate and posterior each with a pair at the apex, the former with a second pair above the middle, and the latter with a pair near the apex; intermediate *tibiæ* at the apex, and their *tarsi*, dilated in the females.

This genus—Amathus of my Nomenclature, 2nd edit., (555) of my Catalogue—agrees with *Cyrnus* and *Plectrocnemia* in having a spur, or spine, about the middle of the anterior *tibiæ*, as in many *Lepidoptera*, in addition to a pair at the apex; but from these genera the different neuration of the wings, exclusively of the variation in the structure of the palpi, distinguishes the present; the colouring is gayer than in those insects, and the form of the wings dissimilar: the species are of small size, and rather difficult to discriminate from each other.

Sp. 1. subpunctatus. *Fusco-brunneus, antennis pedibusque ochraceis, alis ochraceo-fuscis, anticis obsolete fusco irroratis.* (Long. corp. 1½—2 lin.; Exp. Alar. 6—7 lin.)



N. G. (555.) *subpunctatus*. *Steph. Catal.* 317. No. 3592.—Am. *subpunctatus*.  
*Steph. Nomen.* 2d edit. col. 119.

Dusky-brown: head paler, clothed with griseous hairs; palpi and legs pale ochreous; antennæ the same, faintly annulated with brown; wings ochreous-brown, anterior clothed with golden hairs, and obsoletely dusted with fuscous, nervures fuscous; posterior wings paler, slightly iridescent.

Found, occasionally, in June and July, near Hertford.

Sp. 2. *pivicornis*. *Nigricans, tibiis tarsisque ochraceis, antennis piceis nigro annulatis, alis fusco-fulvescentibus, anticis obsoletè fusco nebulosis.* (Long. corp. 2 lin.; Exp. Alar. 6—7 lin.)

N. G. (555.) *pivicornis*. *Steph. Catal.* 317. No. 3593.—Am. *pivicornis*.  
*Steph. Nomen.* 2d edit. col. 119.

Dusky: palpi and femora the same; tibiæ and tarsi dull ochreous; antennæ pitchy, with obscure black rings; head clothed with griseous hairs; wings of a tawnyish-brown, anterior with golden hairs and obscure darker shades; posterior paler, somewhat hyaline and iridescent.

Taken in July, in Devonshire.

Sp. 3. *pyrrhoceras*. *Fusco-nigricans, antennis fulvis, brunneo annulatis, pedibus ochraceo-fulvis, alis fusciscentibus, anticis ochraceo irroratis.* (Long. corp. 2½ lin.; Exp. Alar. 1 unc. 6½ lin.)

N. G. (555.) *pyrrhoceras*. *Steph. Catal.* 317. No. 3596.—Am. *pyrrhoceras*.  
*Steph. Nomen.* 2d edit. col. 119.

Bluish-brown: head clothed with griseous hairs; antennæ tawny, with brown rings; legs tawny-ochreous, with the femora rather dusky behind; wings fuscous, anterior rather thickly and uniformly sprinkled with small rounded ochreous dots; nervures fuscous; posterior more transparent, slightly iridescent.

Apparently not common: taken in the vicinity of London in July.

Sp. 4. *fuliginosus*. *Capite thoraceque nigricantibus, antennis abdomineque piceis, pedibus obscurè ochraceis, alis fusco-infumatis obsoletissimè ochraceo irroratis.* (Long. corp. 2½ lin.; Exp. Alar. 7—7½ lin.)

N. G. (555.) *fuliginosus*. *Steph. Catal.* 319. No. 3594.—Am. *fuliginosus*.  
*Steph. Nomen.* 2d edit. col. 119.

Head and thorax blackish, clothed with a dull griseous pile; abdomen pitchy; wings dull smoky-brown, anterior very obscurely freckled with minute indistinct ochreous atoms; posterior immaculate, more transparent; legs dirty-ochreous, the tibiæ and tarsi brightest; antennæ pitchy, obscurely annulated with brown.

Also found in the neighbourhood of the metropolis, in July.

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Sp. 5. *concinuus*. *Capite thoraceque brunneis, abdomine fusco basi pallidiore, pedibus antennisque ochraceo-fulvis, his obscurè brunneo annulatis, alis anticis fulvescente-fuscis ochraceo irroratis.* (Long. corp.  $2\frac{3}{4}$  lin.; Exp. Alar. 8 lin.)

N. G. (555.) *concinuus*. *Steph. Catal.* 317. No. 3595.—Am. *concinuus*. *Steph. Nomen. 2d edit. col.* 119.

Head and thorax brown, clothed with griseous hairs; abdomen fuscous, with the base paler, the margins of the segments also palish; wings tawny-brown, anterior with a slightly golden pile, and thickly, but minutely, freckled with ochreous, some of the spots rather confluent on the costa; posterior wings of a darker hue, more transparent, a little iridescent, with brown nervures, and immaculate; legs and antennæ tawny-ochreous, the latter annulated with brown.

Taken at Ripley, in July.

Sp. 6. *trimaculatus*. *Ochraceo-fuscus, alis anticis punctis numerosis rotundatis ochraceis, pedibus antennisque ochraceis, his annulis pallidioribus.* (Long. corp.  $1\frac{1}{2}$ —2 lin.; Exp. Alar. 5—6 lin.)

Am. *cambricus*. *Steph. Nomen. 2d edit. col.* 119.—Pol. *trimaculatus*. *Phil. Mag. (Curtis) v. iv. p.* 213.

Ochreous-brown, with a coppery tinge; head clothed with pale griseous hairs; wings fuscous, anterior with numerous round ochreous spots, largest on the margins, with three or four more distinct towards the hinder angle; posterior wings paler iridescent, and more hyaline, the margin somewhat fuscous; legs and antennæ dirty-ochreous, the latter with paler rings.

Found occasionally at Hertford, towards the end of June, and in Norfolk.

Sp. 7. *irroratus*. *Fusco-brunneus, alis anticis maculis numerosis ochraceo-sericeis ornatis nebulisque fuscis, pedibus subcastaneo ochraceis.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Exp. Alar. 8—9 lin.)

N. G. (555.) *flavomaculatus*. *Steph. Catal.* 317. No. 3597.—Am. *maculatus*. *Steph. Nomen. 2d edit. col.* 119.—Pol. *irroratus*. *Curtis, v. xii. pl.* 544.

“Brown, head and thorax with shining yellowish hairs; antennæ annulated with ochre; superior (anterior) wings with numerous ochreous silky spots, close together, but leaving several spaces, forming seven or eight brown patches on the costa, disc and inferior (inner) margin; under wings very iridescent; legs dull ochreous, with a pale castaneous tint.”—*Curtis, l. c.*

Found, occasionally, in the vicinity of the metropolis, in June, but more abundantly in the north of England, and in Scotland.

Sp. 8. *multiguttatus*. *Fuscus, alis anticis punctis numerosissimis ochraceis notatis, maculæque albæ.* (Long. corp. 3 lin.; Exp. Alar.  $8\frac{1}{2}$ —9 lin.)

N. G. (555.) subnebulosus. *Steph. Catal.* 317. No. 3598.—Am. subnebulosus. *Steph. Nomen.* 2d edit. col. 119.—Pol. multiguttatus. *Curtis, fol.* 544.

“Fuscous, iridescent: antennæ nearly as long as the superior (anterior) wings in the male, spotted or annulated with ochre; superior (anterior) wings with innumerable ochreous spots, with a white dot on a fuscous space on the interior margin, and an oblique line on the disc; posterior tibiæ brown, especially the upper side in the male.”—*Curtis, l. c.*

Also found, occasionally, within the metropolitan district, in June, and not uncommon in Scotland, in July.

#### GENUS XVI.—APHELOCHEIRA\* *mihi.*

*Antennæ* rather shorter than the wings, slender, placed somewhat remotely, and distinctly serrated within: *palpi* slender, maxillary ovate, the basal joints of nearly equal length, the terminal one scarcely longer than the others united, transversely wrinkled: *head* densely pilose on the crown: *eyes* globose: *thorax* short, ovate: *wings* ample, broad, anterior a little elongate, narrowed at the base, expanded near the apex, which is obtusely rounded; towards the tip are one or two very faint transverse nervures, but no vestige of one on the costa; hinder wings short, ovate, also with few indistinct transverse nervures: *abdomen* rather short and robust, compressed, the tip with two short horny processes in the males, obtuse in the females: *legs* rather short; anterior *tibiæ* slender, with two short spurs at the apex, intermediate and posterior each with a pair of spurs at the apex, and a second pair below the middle; hinder *tibiæ* rather stoutest and longest.

The brevity of the antennæ and wings, combined with the breadth of the latter, the few transverse nervures with which they are furnished, of which there are none about the middle of the costa; the simple unarmed anterior tibiæ, &c. sufficiently point out their distinction from the other genera of this family; the wings are of sombre hue, more or less faintly freckled with a pale tinge, in some cases amounting almost to spots, as in the genus *Philopotamus*; but the general habit of the insects demands their separation from those insects.

Sp. 1. *flavomaculata?* PLATE XXXII. f. 3. var.—*Fusco-brunnea*, *abdominis seymontorum marginibus pallidis, alis griseo-fuscis, anticis obsolete luteo maculatis.* (Long. corp.  $2\frac{1}{2}$ — $2\frac{3}{4}$  lin.; Exp. Alar. 6—8 lin.)

\* Αφελος simplex, χεῖρ manus.

Hyd. flavomaculata. *Pictet*, p. 220. pl. xix. f. 2?—Aph. flavomaculata? *Steph. Nomen. 2d edit. Appendix.*

Dusky-brown: head densely clothed with short griseous hairs; antennæ ochreous, annulated with brown; abdomen with the margins of the segments pale; anterior wings griseous- or tawny-brown, more or less obscurely freckled with yellowish, or ochreous, the nervures darker; posterior wings more transparent, iridescent and immaculate; legs tawny-ochreous.

The anterior wings are sometimes totally destitute of luteous spots, as in the individual whence the figure was taken.

Apparently rare, or rather very local: found in June in Devonshire, near Plymouth.

Sp. 2. subaurata. *Brunnea*, *pedibus ochraceo-fulvis*, *alis subfuscis*, *anticis immaculatis*, *aureo-pilosis*. (Long. corp.  $1\frac{3}{4}$  lin.; Exp. Alar.  $5\frac{3}{4}$  lin.)

Ti. subaurata. *Steph. Catal.* 317. No. 3578.

Brown: head pale, clothed with short griseous hairs; legs pale tawny-ochreous; antennæ ochreous, annulated with brown; wings somewhat fuscous, the anterior clothed with a short golden pile, immaculate; posterior more transparent and iridescent, with brown nervures.

Found within the metropolitan district.

#### FAMILY V.—SERICOSTOMIDÆ *mihi*.

*Antennæ* shortish, robust, with the basal joint enlarged and longish, or slender, with the basal long and very hairy: *palpi* dissimilar in the sexes; maxillary in the males triarticulate, with the terminal joint clavate or pilose, or spoon-shaped, and forming by their union a kind of mask; in the females they are five-jointed, the terminal joint being slender; the second joint, in both sexes, rather long: *wings* long and narrow, sometimes very pilose, almost wholly destitute of transverse nervures, and the longitudinal ones not very distinct: posterior wings small, and but slightly folded on the inner margin: *abdomen* rather stout, the apex of the males armed with horny appendages, and of the females obtuse: *legs* moderate: *tibiæ* mostly armed with spurs at the apex, the two hinder pair each with a pair above the tip.

Larva robust, short, slightly attenuated to the apex, which is truncate, and furnished with short terminal processes; head and following segment scaly, the remainder soft and fleshy: in some instances the anterior angle of each thoracic segment is acutely pointed, in others rounded; legs rather slender, hinder pair short: the larva resides in double flat cases, to which pieces of stone, &c. are fastened; or in slightly curved ones, which are attenuated at one end, and resemble shells belonging to the genus *Dentalium*.

The insects of this family are generally of moderately large size,

and are remarkable for the disparity that exists in the palpi of the sexes, the labial ones in the males being more or less clavate, and in the females having their terminal joint small; the wings are almost destitute of transverse nervures, and are usually rather thick, are of plain colours, rarely adorned with spots. The indigenous species may be thus divided into genera :—

<i>Tibis anticis</i> haud calcaratis :	.	.	.	.	18. POTOMARIA.
bicalcaratis ;					
<i>intermediis</i> bicalcaratis :	.	.	.	.	19. SERICOSTOMA.
quadricalcaratis ;					
<i>Antennis remotis ; calcaribus</i> brevibus :	.		.	.	17. BRACHYCENTRUS.
approquantibus ;					
art <sup>o</sup> . basali vix elongato :	.		.	.	20. NOTIDOBIA.
elongato ;					
hirsutissimo :	.		.	.	23. MORMONIA.
vix hirsuto ;					
( <i>Palpis maxillaribus</i> maris) divaricatis :	.		.	.	21. SILO.
recurvis . . . . .	.		.	.	22. GOËRA.

GENUS XVII.—BRACHYCENTRUS, *Curtis*.

*Antennæ* remote at their origin, shorter than the wings, stout in the males, rather slender in the females, the basal joint slightly robust: maxillary *palpi* in the males short, diverging and very pilose, in the females long and slender: *head* rather small, transverse, pilose: *eyes* globose, lateral: *thorax* short, hairy: *wings* ample, broadest towards the apex, which is obtusely rounded; anterior with a small triangular areolet on the disc between the stigma and the inner margin, from which arise four somewhat parallel nervures, which extend to the hinder margin, the following nervure is trifid, each branch becoming furcate on the margin, the second costal nervure is abruptly angulated before the stigma; posterior wings smaller, ovate, with the costal nervures bifid at the apex, the inner one simple: *legs* rather short: *tibiæ* with a pair of short spurs at the apex, the intermediate and hinder pair with a second pair below the middle.

These insects are remarkable for having the spurs of the tibiæ very short; the antennæ, which are of dissimilar degrees of robustness in the sexes, are placed somewhat remotely from each other; the palpi are short, diverging and very pilose in the males, but slender and longer in the females; the wings are less opaque than in the other genera of this family, and have the nervures distinct, with a conspicuous elongate-triangular areolet on the upper pair towards the apex of the disc.

Sp. 1. *subnubilus*. *Niger, alis fuscescentibus nervis piceis, anticis flavescente subnebulosus, tibiis tarsisque ochraceis.* (Long. corp.  $2\frac{1}{2}$ — $3\frac{1}{2}$  lin.; Exp. Alar.  $8\frac{1}{2}$ —12 lin.)

N. G. (557.) *nubilus*. *Steph. Catal.* 318. No. 3616.—*Meröe nubila*. *Steph. Nomen.* 2d edit. col. 119.—*Br. subnubilus*. *Phil. Mag. (Curtis)* v. iv. p. 215.

Black: head and thorax clothed with griseous hairs; wings pale fuscous, anterior with a slight tawny hue, the nervures pitchy, the areolets on the hinder margin, the small discoidal one, and the stigma yellowish in the middle, the inner margin and the edges of the transverse nervures dark fuscous; posterior wings paler, immaculate, with the nervures dull pitchy; femora dusky, tibiæ and tarsi pale ochreous; antennæ black.

Taken in the New Forest and in Devonshire, and occasionally near London in June.

Sp. 2. *concolor*. *Ater, alis fuscescentibus, immaculatis, nervis piceis, tibiis tarsisque ochraceo-fuscis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 8 lin.)

N. G. (557.) *concolor*. *Steph. Catal.* 318. No. 3617.

Deep black: head and thorax clothed with blackish pile; wings pale fuscous, with darker or pitchy nervures; anterior immaculate, posterior more transparent and paler; femora blackish, tibiæ and tarsi dusky-ochre; antennæ stout and black.

Also found, occasionally, near London, in June, and in Devonshire.

Sp. 3. *costalis*. *Ater, alis fuscescentibus, immaculatis, costâ stigmatæque fuscis, nervis piceis, femoribus fuscis, tibiis tarsisque fusco-ochraceis.* (Long. corp.  $2\frac{1}{2}$  lin.; Exp. Alar. 8 lin.)

N. G. (557.) *costalis*. *Steph. Catal.* 318. No. 3618.

Deep black: head and thorax clothed with blackish hairs: wings pale fuscous, anterior immaculate, the nervures pitchy, costa and stigma fuscous; femora fuscous; tibiæ and tarsi dirty-ochre.

Taken in June, near London.

#### GENUS XVIII.—POTOMARIA, *Leach MSS.*

*Antennæ* shorter than the wings, moderately stout, the basal joint robust and slightly pilose: *maxillary palpi* clavate in the males, very short; elongate, slender and pilose in the females, with the terminal joint short and attenuated: *head* small, pilose: *eyes* large, globose: *thorax* stout: *wings* narrow, anterior narrowed at the base, rounded at the apex, with a few transverse nervures towards the hinder margin, which is somewhat obtusely truncated obliquely: posterior wings small, ovate-triangular, slightly folded within: *abdomen*

robust, obtuse, somewhat elongate: *legs* rather short and slender; anterior *tibiæ* without spurs, intermediate with a pair at the apex, hinder with a pair at the apex, and a second pair considerably below the middle.

These insects may be known by having the anterior *tibiæ* destitute of spurs, either in the middle or at the apex; the antennæ are shorter than the wings and stout, with the basal joint slightly robust and a little pilose:—they are of large size, and have the wings obtusely rounded at the apex: they frequent running waters.

Sp. 1. *analis*. PLATE XXXIV. f. 4.—*Nigra, alis fuscis, anticis maculâ anali albâ, nebulisque basali albidis*. (Long. corp.  $4\frac{1}{2}$ —6 lin.; Exp. Alar. 13—15 lin.)

Phr. *analis*. *Fabricius*.—Po. *analis*. *Steph. Catal.* 318. No. 3622.

Black: head densely clothed with a golden pile; antennæ deep brown, with darker clouds; wings fuscous, with darker nervures, posterior immaculate, anterior more or less clouded with whitish towards the base, and with a somewhat triangular white spot on the anal angle; legs dirty-ochreous, femora dusky.

Apparently rare: taken in July in the New Forest, near Brockenhurst, and likewise in Devonshire.

Sp. 2. *assimilis*. *Nigra, alis fuscis, cupreo tinctis, immaculatis, tibiis tarsisque obscurè ochraceis*. (Long. corp. 4—5 lin.; Exp. Alar. 13—14 lin.)

Po. *assimilis*. *Steph. Catal.* 319. No. 3623.

Black: head with a bright ochreous tuft behind; palpi and antennæ dusky; wings fuscous, immaculate, anterior with a coppery tinge, the nervures darker; legs dusky, with the *tibiæ* and tarsi dirty-ochreous.

Also found in the New Forest, in July, and in the north of England, and in Devonshire.

Sp. 3. *hyalina*. *Nigra, antennis gracilibus, brunneis, alis subhyalinis pallidè fuscescentibus, immaculatus, palpis tibiis tarsisque ochraceis*. (Long. corp.  $4\frac{1}{2}$  lin.; Exp. Alar. 14 lin.)

Po. *hyalina*. *Steph. Catal.* 319. No. 3624.

Black: head with a pale tawny patch of hairs behind; palpi ochreous; antennæ slender, pale brown; wings somewhat transparent, pale fuscous, with darker nervures; anterior immaculate, posterior rather dusky; femora blackish; *tibiæ* and tarsi ochreous.

Inhabits the metropolitan district, in June.

GENUS XIX.—SERICOSTOMA, *Latreille*.

*Antennæ* not so long as the wings, very stout, especially at the base, the basal joint robust, slightly pilose: maxillary palpi in the males recurved, densely hairy, the two united forming an obtuse rounded mask, concave within and convex without, and furnished with a silky pile within; in the females elongated, five-jointed, the terminal joint short and slender: *head* small, with a tuft between the antennæ: *eyes* large: *thorax* robust: *wings* narrow, anterior without transverse nervures, somewhat obtusely rounded at the apex; posterior smaller, elliptic-ovate, slightly folded on the inner margin: *abdomen* somewhat robust, obtuse: *legs* shortish, slender: *tibiæ* all armed with a pair of spurs at the apex, the intermediate without a second pair below the middle, and the hinder with a pair near the apex. Larva somewhat cylindric, with the head and following segment scaly above, the remainder soft: *legs* short, pilose.

At the time of the appearance of my Catalogue, I was not aware that this genus had been named, as above, and characterised, by Latreille,\* and therefore I could not employ his name, but adopted the very expressive one of Leach, from (Προσωπιον, persona,) the mask-like appearance of the male palpi, which had previously suggested a similar name to Spence for the only indigenous species, as referred to in my Catalogue.

Sp. 1. Spencii. PLATE xxxiii. f. 2.—*Fusco-nigrum, alis anticis sericeo-testaceis, aureo tinctis, antennis brunneis, basi punctoque verticis aurantiaco-ochraceis.* (Long. corp. 4—5 lin.; Exp. Alar. ♂ 10—♀ 14 lin.)

Prosoponia Leachii. *Steph. Catal.* 319. No. 3627.—Pro. Spencii. *Kirby and Sp. Int. Ent.* (4th edit. 1830) iii. 488.—Ser. Latreillii. *Phil. Mag.* (*Curtis*) v. iv. p. 214.

Brown-black: antennæ reddish-brown, with some scale-like hairs at the base, and a tuft on the crown orange-ochreous; anterior wings testaceous-brown, with a golden silky gloss; femora dusky-brown; tibiæ and tarsi ochreous, the female has the antennæ darker at their base, and the orange spot on the crown is less conspicuous; the mask on the face is wanting.

In my Catalogue I named this conspicuous insect after my lamented friend Dr. Leach, whose brilliant career was suddenly obscured some years since, and has now, alas! within these few weeks been brought to a conclusion, his death having occurred on the 24th of August last, at Genoa. In Mr. Curtis's sketch of the undescribed species of May-flies, &c. he has

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\* In *Fam. Nat.* p. 439.



followed Mr. Haliday in naming this species after Latreille ; but the following note\* will show that his name must fall, it having been described long since in Kirby and Spence.

Found in the New Forest, about Brockenhurst, in June and July ; also in the west of England, in South Wales, near Carlisle, in Scotland, &c.

GENUS XX.—NOTIDOBIA† *mihi*.

*Antennæ* much shorter than the wings, very robust, especially in the males, in which sex they are somewhat serrated within ; the basal joint very slightly elongate, but robust and a little pilose : *maxillary palpi* short, somewhat divaricating and pilose in the males ; longer and more slender, less pilose in the females, with the terminal joint elongate-ovate ; *labial* slender : *head* small, pilose : *eyes* large, subglobose : *thorax* stoutish : *wings* rather narrow, short, anterior narrowed at the base, rounded at the apex ; all with a small ovate-triangular areolet towards the hinder margin, adjoining to which is a waved series of transverse nervures : *abdomen* short, robust and obtuse : *legs* short, stoutish ; *tibiæ* all armed with a longish pair of spurs at the tip, the intermediate and posterior each with a second pair below the middle, lowest in the latter.

The short incrassated basal joint of the antennæ of this genus,

\* “But the animal distinguished by the most remarkable cheeks is a species of *Phryganea*, *L.* (*Phryganea personata*, Spence) ; for from this point projects a spoon-shaped process, which curves upwards, and uniting with that of the other cheek, forms an ample mask before the face, the anterior and upper margins of which, in the insect’s natural state, are closely united ; and the posterior part, being applied to the anterior part of the eye, causes the face to appear much swoln. It looks as if it was a single piece ; but, upon pressing the thorax, it opens, both above and in front, into two parts, each convex without and hollow within, and each having attached to its inside a yellow tuft of hair resembling a feather.”

To this account the following note is appended :—

“This insect was taken both at Matlock and Exmouth. The body and thighs are of a light brown, wings testaceous, legs pale ; antennæ between setaceous and filiform, two-thirds the length of the body ; first joint not much thicker than the rest.”—*Kirby and Sp. Ent.* iii. p. 489. (1826.)

In the 2nd edition of this vol. p. 488 (published in 1830) the insect bears the name *Prosoptiona Spencii*, as above given ; the generic name being adopted from my Catalogue, which appeared in July 1829.

† ΝΟΤΙΩ humiditas, βΙΩΩ vivo.

combined with the approximation of the insertion of the latter, the 4-spurred posterior tibiæ, short, divaricating maxillary palpi, and slender labial ones, exclusively of the diversity in the formation of the wings, which have a distinct somewhat ovate areolet on the disc, towards the apex of the wings, the dark colour of the latter, and the brevity and stoutness of the antennæ, serve to discriminate them from the allied genera of this family.

Sp. 1. atrata. *Nigra, alis (anticis præsertim) fuscis, immaculatis, tibiis tarsisque obscure testaceis.* (Long. corp. 4 lin.; Exp. Alar. 10—13 lin.)

Phr. atrata. *Fabricius*.—Not. atrata. *Steph. Catal.* 319. No. 3626.—Ser. atratum. *Pictet*, p. 178. pl. xiv. f. 5, a—c.

Black and pilose: antennæ brown-black; anterior wings deep brown, with a coppery tinge, and clothed with a short black pile, immaculate; posterior wings rather paler; femora black; anterior and middle tibiæ and tarsi obscure testaceous, posterior pale testaceous, or ochreous.

Not very uncommon: taken in June at Hertford; also in the New Forest.

#### GENUS XXI.—SILO, *Curtis*.

*Antennæ* shorter than the wings, the basal joint porrected, parallel, long, stout, cylindric, hairy: *palpi* pubescent, maxillary in the males diverging, slightly pilose, the three terminal joints of equal length: *head* small, hairy on the crown: *eyes* prominent: *wings* nearly twice as long as the body, obtusely lanceolate; anterior with two costal nervures, then three furcate ones, and three others united near the disc, with a curved one near the hinder angle; posterior wings small: *abdomen* short and robust: *tibiæ* with a pair of spurs at the apex; intermediate and posterior with a pair also below the middle.

This and the following genus are distinguished by having the basal joint of the antennæ very much lengthened and robust, the two are parallel with each other and porrected; the males of the present genus are distinguished from those of the following by having the maxillary palpi divaricating and short; they are also very pubescent, and the females have the same organs rather stout, but slender at the apex; the neuration of the wings is also somewhat different in the two genera, which are, however, closely allied.

Sp. 1. pallipes. *Nigra, alis nigro-fuscis, immaculatis, pedibus pallide ochraceis.* (Long. corp. 4 lin.; Exp. Alar. 9—11 lin.)

Phr. pallipes. *Fabricius*.—Not. pallipes. *Steph. Catal.* 319. No. 3625.

Black and slightly pilose: antennæ dusky-black; wings brown-black, immaculate, anterior with a griseous tinge; legs pale ochreous.

In some examples the wings are of a paler hue than others, while some are deep black.

Rather common, in the neighbourhood of Hertford, in June and July.

GENUS XXII.—GOËRA, *Hoffmansegg*.

*Antennæ* longer than the wings, the basal joint stout, long and pubescent; parallel, the remainder very small, much attenuated at the apex: *palpi* pubescent; maxillary in the males recurved, and slightly clavate; of the females slender: *head* rather small, pilose: *eyes* somewhat prominent: *wings* rather broad, rounded at the apex, obtusely-lanceolate; nervures not very distinct, two on the costa, then three furcate ones, followed by a curved one towards the posterior angle, which forms a dilated somewhat circular areolet<sup>t</sup> towards the apex of the inner margin; posterior wings small, slightly folded within: *legs* rather short: *tibiæ* all with a pair of spurs at the tip, the two hinder pair with another pair below the middle.

As previously mentioned, these insects have the basal joint of the antennæ porrected, elongate and robust, and the two are parallel with each other; the males are distinguished by having short maxillary palpi, which are recurved and closely applied to the head; those of the female are long and slender; the wings have a very silken appearance, and have a conspicuous dilated and orbicular areolet towards the apex of the inner margin.

Sp. 1. *pilosa*. *Sericeo-ochracea, alis anticis subtestaceo-ochraceis, immaculatis, posticis subfuscescentibus, oculis nigris.* (Long. corp.  $3\frac{1}{2}$ —5 lin.; Exp. Alar. 9—11 lin.)

Phr. *pilosa*. *Fabricius*.—Goë. *pilosa*. *Steph. Catal.* 319. No. 3628.

Ochreous: eyes black; head and thorax clothed with silky pile; anterior wings pale testaceous-ochre, immaculate and silky; posterior somewhat fuscous; legs pale ochreous; antennæ brownish-ochre, the basal joint palest.

Abundant, in July and September, at Hertford; found also in other parts of the country.

Sp. 2. *flavipes*. *Sericeo-ochracea, thorace abdomine coxis femoribusque fuscis.* (Long. corp.  $3\frac{1}{2}$ —5 lin.; Exp. Alar. 10—12 lin.)

Goë. *fuscata*. *Steph. Catal.* 319. No. 3630.—Goë. *flavipes*. *Phil. Mag.* (*Curtis*) v. iv. p. 215.

Ochreous: eyes dusky; thorax and abdomen blackish, clothed with silky pile; anterior wings silky-ochreous, immaculate, beneath fuscous; posterior somewhat fuscous; legs fuscous; tibiæ and tarsi pale ochreous; antennæ brown, the basal joint clothed with ochreous hairs.

Less abundant than the last, but found in plenty within the metropolitan district, at Hertford, Ripley, &c.

Sp. 3. *vulgata*. *Nigra, alis flavo-testaceis immaculatis, pedibus ochraceo-flavis.* (Long. corp.  $3\frac{1}{2}$  lin.; Exp. Alar. 10 lin.)

Phr. *vulgata*. *Olivier.*—Goë. *vulgata*. *Steph. Catal.* 319. No. 3629.

Black, clothed with silky hairs; wings testaceous-yellow, immaculate; posterior slightly paler; legs wholly pale ochreous-yellow; antennæ dusky.

Found, in June, near London, and in Devonshire; not common.

†Sp. 4. *irrorata*. *Ochracea, alis anticis subochraceis, punctis numerosis indistinctis albidis, antennis piceis ochraceo subannulatis.* (Long. corp. — lin.; Exp. Alar. 7 lin.)

Goë. *irrorata*. *Phil. Mag. (Curtis) v. iv. p. 215.*—*Steph. Nomen. 2d edit. Appendix.*

“Ochreous, pubescent: antennæ piceous, slightly annulated with ochre, the basal joint long, stout, and very hairy; wings very pale fuscous; superior (anterior) subochreous, with numerous indistinct whitish dots.”—*Curtis, l. c.*

I know not this species, nor its locality.

### GENUS XXIII.—MORMONIA, *Curtis*.

*Antennæ* approximating at the base, rather longer than the wings, the basal joint robust, considerably elongated, very pilose, and the two parallel and porrected, the apical joints very slender: *palpi* moderate, maxillary in the males porrected, slightly clavate and thickly clothed with short hairs; labial slender: *head* small, very pilose: *eyes* globose, rather prominent: *thorax* densely hairy: *wings* moderately ample, anterior somewhat ovate-lanceolate, and rather diaphanous, with few or no transverse nervures, especially on the inner margin, towards the base of which is a patch densely clothed with longish erect hairs; posterior rather small: *abdomen* shortish and robust: *legs* slenderish: *tibiæ* all furnished with a pair of spurs at the apex, the two hinder ones each with a second pair below the middle.

These insects may be known by having the antennæ placed somewhat closely at their origin, and by their slenderness, the great length and hairiness of the basal joint, pilosity of the head, and brevity of the palpi in the males, and their slenderness in the

females; the wings are somewhat hyaline, short and narrow, and the anterior pair are adorned with a dense hairy patch at the base within.

Sp. 1. *nigromaculata*. PLATE xxxii. f. 2.—*Fusco-brunnea, oculis nigris, pedibus antennisque ochraceis, his brunneo annulatis, alis fusciscentibus, anticis nigro irroratis*. (Long. corp.  $2\frac{3}{4}$  lin.; Exp. Alar.  $9\frac{1}{2}$  lin.)

Goë. *nigromaculata*. *Steph. Catal.* 319. No. 3633.

Fuscous-brown: hairy; eyes black; wings fusciscent, with darker nervures, minutely sprinkled, especially the anterior, with black dots, particularly in the direction of the nervures; abdomen on its sides and apex, and the legs ochreous; antennæ pale ochreous, with brown rings.

Found, but very rarely, in June, near London, and in Devonshire.

Sp. 2. *hirta*. *Fusco-brunnea, alis anticis maculis duabus obscurioribus, pedibus pallidis, antennis pallidis brunneo annulatis*. (Long. corp. 3 lin.; Exp. Alar. 9—10 lin.)

Phr. *hirta*. *Fabricius*.—Goë. *hirta*. *Steph. Catal.* 319. No. 3631.—*Mor. gracilicornis*. *Phil. Mag. (Curtis)* v. iv. p. 215 ♂.

Fuscous-brown: palpi and eyes black, very hairy; anterior wings hairy, pale fuscous-brown, with an ochreous hue, and two obscure clouds, or spots, one on the disc, the other towards their inner margin; the extreme hinder margin is also slightly obscure; posterior wings nearly glabrous and fuscous; legs and antennæ pale, the latter annulated with fuscous or brown, with the basal joint very pilose.

Not uncommon, within the metropolitan district, in June, about Hertford, Ripley, &c.; found also in the New Forest, in Devonshire, near Oxford, &c.

Sp. 3. *immaculata*. *Ochraceo-brunnea, alis anticis pallide brunneis immaculatis, antennis ochraceis fusco punctatis*. (Long. corp.  $2\frac{1}{2}$ — $3\frac{1}{4}$  lin.; Exp. Alar. 9—10 lin.)

Goë. *immaculata*. *Steph. Catal.* 319. No. 3632.—*Mor. maculicornis*. *Phil. Mag. (Curtis)* v. iv. p. 215 ?

Ochreous-brown, or dusky, very pubescent: eyes black; anterior wings pale brown, immaculate; posterior fusciscent; legs pale ochreous; antennæ ochreous, dotted with fuscous above.

Found, in the vicinity of Hertford, in June; also in Devonshire.

Sp. 4. *minor*. *Ochraceo-brunnea, oculis nigris, alis hyalinis, iridescentibus,*

*immaculatis, pedibus antennisque ochraceis.* (Long. corp. 2 lin.; Exp. Alar. 7 lin.)

Mor. minor. *Steph. Nomen. 2d edit. Appendix.*

Ochreous-brown: eyes black; wings hyaline, iridescent, immaculate, pilose; legs and antennæ pale ochreous, the latter faintly annulated with fuscous.

Taken, in June, in Devonshire.

#### FAMILY VI.—PSYCHOMIDÆ, *Curtis.*

*Antennæ* stoutish, not exceeding the length of the wings: maxillary *palpi* similar in the sexes and 5-jointed, the terminal one elongate-filiform: *wings* narrow, obtuse, or acute, without transverse nervures; anterior with three or four bifid ones on the hinder margin; posterior small, resembling the anterior, but not folded within; cilia of all short: *abdomen* stoutish and short: *legs* moderate: anterior *tibiæ* sometimes without spurs at the apex, two hinder ones each with a pair at the tip, and a second pair towards the middle.

The insects of this family, like the Hydropsychidæ, have the terminal joint of the palpi very long and slender; but from them they may be known by the slenderness of the wings, which are totally destitute of transverse nervures: the only indigenous genus frequents mountain torrents, which I believe to be the case with the other genera of this family.

#### GENUS XXIV.—CHIMARRA, *Leach.*

*Antennæ* scarcely so long as the wings, especially in the females, somewhat robust, the basal joint longest, subovate, some of the following short, the remainder oblong: *palpi* rather long, maxillary with the 2nd and 3rd joints very long, the apical one slender; labial with the terminal joint nearly as long as the two others united, and filiform: *head* subglobose: *eyes* globose, very prominent: *thorax* ovate: *wings* slightly deflexed during repose, destitute of transverse nervures; anterior elongate, narrow, rounded at the apex, with about nine longitudinal nervures, of which the four which extend to the hinder margin are more or less deeply bifurcate: posterior *wings* small, not folded: *abdomen* short, furnished with a short recurved process at the apex in the females: *legs* rather long and stout, anterior the shortest, their *tibiæ* without spurs at the tip, the others with a longish pair at their apex, another pair above the middle in the intermediate, and the posterior with a pair below the middle: the intermediate *tibiæ* of the females at the apex, and the basal joint of their tarsi, slightly dilated.

The only indigenous genus of this family, and may be recognised by having the palpi very long, with the 2nd and 3rd joints considerably lengthened and stoutish, the terminal one slender: one species only occurs in Britain.

Sp. 1. *marginata*. PLATE xxxiii. f. 4. var. ♀.—*Fusco-nigra*, *alis costá*, *marginæ postico*, *lineisque aliquot anticarum ochraceo-flavis*. (Long. corp. 4—5 lin.; Exp. Alar. 6—9 lin.)

Phr. *marginata*. Linné.—Chi. *marginata*. Steph. Catal. 318: No. 3621.—Curtis, v. xii. pl. 561.

Brown-black: head and basal joint of the antennæ bright ochreous; crown black; thorax with its anterior edge, or the collar, bright ochreous; anterior wings with the costa, the extreme hinder margin, and one or two of the inner longitudinal nervures, bright ochreous-yellow, the other nervures dusky; posterior wings, with the upper portion of the costa, bright ochreous; legs ochreous, the anterior pair and tips of the hinder tibiæ palest; the base of the femora and apex of the anterior tarsi blackish.

Some examples—as in the one figured—are of a paler hue, and have the yellow edgings to the anterior wings, the oblique nervures, and the collar of a faint brownish-ochreous.

Found on the banks of torrents in England and Ireland; about Dunlough Gap, near Killarney, and near Plympton in Devonshire, very abundantly; also in Cumberland and South Wales.

#### FAMILY VII.—LEPTOCERIDÆ, *Leach*.

*Antennæ* slender, considerably longer than the wings, sometimes four or five times as long, setaceous: maxillary *palpi* similar in the sexes, 5-jointed, long, and generally hairy: *wings* furnished with several transverse nervures, mostly disposed in an irregularly waved line, a little beyond the middle; anterior pair very long and narrow, posterior smaller and much folded within: *abdomen* moderate or short, rarely long: *legs* short, or somewhat elongate: *tibiæ* with spurs at the apex, and the two hinder pair frequently with others below the middle. Larva long and slender, without external lateral respiratory organs, the latter generally short, the four anterior segments and legs bristly, the latter sometimes slender and elongate, at others short and stout: it inhabits an elongate moveable case, in which it changes to pupa.

The insects of this family are usually of a gregarious nature, and may be sometimes observed, especially towards evening, in large flocks, like gnats, sporting about, near the edge of slowly running and quiet streams; they are rendered very conspicuous by

the great length of the antennæ, which are sometimes four or five times as long as the body, and are usually very slender; the wings, especially the anterior, are also long and narrow; the legs short, sometimes having only a single pair of spurs on each of the four posterior tibiæ; the eyes are in general very prominent, and the palpi hairy. The indigenous species have been divided into the following genera:—

*Tibiis posterioribus* bicalcaratis;

*Palpis maxillaribus* art. 2-bus basalibus brevibus: . . . 26. CERACLEA.  
art. basali solo breve: . . . . . 27. LEFTOCERUS.

*Tibiis posterioribus* quadricalcaratis;

*Antennis* gracilibus alis longioribus (in masculis denticulatis): 25. ODONTOCERUS.  
incrassatis, haud alis longioribus, haud denticulatis: 28. MOLANNA.

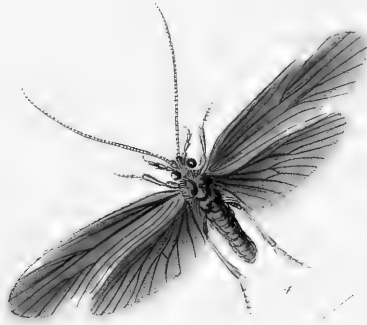
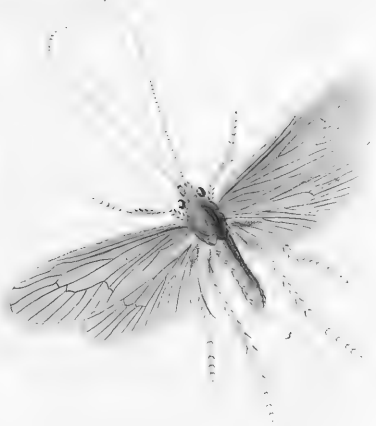
### GENUS XXV.—ODONTOCERUS, *Leach*.

*Antennæ* somewhat longer than the wings, stoutish at their base, their inner edge regularly denticulated nearly to the apex, which is slender, the basal joint elongate, porrect and robust: *palpi* very pilose, maxillary with the three basal joints rather short, somewhat cylindric and of equal length; the 4th elongate, 5th scarcely pilose, rather shorter than the 4th: *head* small, transverse: *eyes* large, subglobose: *thorax* robust: *wings* rather long; anterior elongate-elliptic, rounded at the apex, the 2nd longitudinal nervure furcate from about its middle, the 3rd bifid nearly from the transverse nervure, the remainder simple and parallel, but the 4th is bifid in the females; posterior elongate-triangular: *abdomen* rather stout, obtuse at the apex in both sexes: *legs* shortish: anterior and intermediate *tibiæ* with a pair of short spurs at their apex, and the latter with a long pair near the base, hinder ones with a long pair near the apex, and a similar pair on the tip itself. Larva robust, fleshy, broad, cylindric, truncate at the apex: legs short and slightly pilose.

The denticulated antennæ of these insects, exclusively of the difference in the structure of the palpi, the neuration and opacity of the wings, the double-spurred posterior tibiæ, &c. sufficiently point out their distinction as a genus; to which may be added, that the posterior legs of the larvæ are shorter than the 2nd pair, and the larva itself is robust and somewhat cylindric.

Sp. 1. albicornis. PLATE XXXIV. f. 1 ♀.—*Griseo-fuscus, alis griseis aut canescentibus vix maculatis, antennis albido-ochraceis.* (Long. corp. 4—6 lin.; Exp. Alar. 15—18 lin.)







Phr. albicornis. *Scop. Ent. Car. No. 689.*—Odo. griseus. *Leach.—Steph. Catal. 319. No. 3635.*

Dusky-brown: head griseous, with whitish hair in the front; palpi brown; thorax with griseous hairs in front, and some obscure spots beneath, at the insertion of the legs, which are dull ochreous; anterior wings griseous in the male, and with a hoary tinge in the female, the nervures prominent, dusky, especially the transverse ones, which are edged with the same; several of the areolets are clouded with a paler tinge; cilia and posterior wings fuscous; antennæ pale, whitish-ochreous.

Found, occasionally, near London, in June and July; abundant about Cheltenham and in Devonshire; also common about Carlisle, in Scotland; Ireland, near Killarney; and in Norfolk.

†Sp. 2. maculipennis. *Niger, alis anticis ochraceis nigricante maculatis, pedibus fulvis anticis femoribusque obscuris.* (Long. corp. — lin.; Exp. Alar. 16 lin.)

Odo. maculipennis. *Phil. Mag. (Curtis) v. iv. p. 214.*—*Steph. Nomen. 2d edit. Appendix.*

“Pubescent, black: head and thorax griseous, scutellum ochreous; superior (anterior) wings ochreous; nervures, margin, and cilia black, a spot on the costa, the stigma, another beyond it, a large one at the posterior angle, and several small ones round the disc, pale black; legs fulvous; anterior pair and thighs dusky.”—*Curtis, l. c.*

“New Forest, in June.”—*Curtis, l. c.*

#### GENUS XXVI.—CERACLEA, *Leach.*

*Antennæ* slender, very much longer than the wings, not denticulated within, the basal joint rather short and stout, the terminal ones extremely slender: *palpi* very pilose; maxillary with the two basal joints short, the 3rd elongate, 4th shorter than the 3rd, 5th slender, slightly pilose: *head* small, densely hairy in front: *eyes* large, subglobose: *thorax* stout: *wings* transparent; anterior elongate, narrow, rounded at the apex, nervures very distinct, the 3rd and 5th bifid at the tip; posterior obtusely triangular; *cilia* of all short: *abdomen* short, rather slender in the males, stout and obtuse in the females: *legs* shortish; *tibiæ* all furnished with a pair of spurs at the apex only; intermediate and posterior pair somewhat bristly beneath.

The antennæ of Ceraclea are remarkably long and slender, which character, united to the transparency of the wings, their conspicuous nervures, the two short basal joints of their palpi, robust thorax, &c. serve to distinguish the genus from Leptocerus, in which genus the

four posterior tibiæ, in common with *Ceraclea*, are armed with spurs at the apex alone.

Sp. 1. *nervosa*. *Nigra, alis anticis griseis, nervis fuscis, posticis hyalinis obscuris, pedibus obscurè ochraceis, nebulis obscurioribus.* (Long. corp. 4 lin.; Exp. Alar. 11—13 lin.)

Phr. *nervosa*. *Latreille*.—*Cer. nervosa*. *Steph. Catal.* 319. No. 3635.

Black: head with a whitish patch of hair between the antennæ, the latter spotted with white, especially beneath; anterior wings griseous, with black nervures; posterior transparent, dull fuscous, with darker nervures; legs obscure ochreous, varied with darker shades.

Abundant, at the end of May and in the beginning of June, in Battersea-fields, near Hammersmith, Putney, and along the banks of the Thames; also taken near Killarney, in the Reeks Mountains.

#### GENUS XXVII.—LEPTOCERUS, *Leach*.

*Antennæ* much longer than the wings, especially in the males, slender, not denticulated within, the basal joint shortish and robust: *palpi* in general very hairy; maxillary with the basal joint short, the remainder elongate, the terminal one slender, and sometimes apparently divided into a 6th joint: *head* small, pilose: *eyes* large, subglobose: *wings* long and narrow, rounded at the apex, nervures not very distinct, variable in position, as shown in the sectional divisions: *cilia* short: *abdomen* rather long and slender: *legs* slender: *tibiæ* each furnished with a single pair of spurs at the apex alone.

Larva slender, fleshy, attenuated behind and truncate at the apex; legs long and slender, the hinder pair especially.

*Leptocerus*, like *Ceraclea*, is distinguished by having the antennæ remarkably long and slender, in some cases exceeding the length of the body four or five times; the basal joint alone of the palpi is short, the terminal one sometimes very long, and apparently divided about its middle, producing the appearance of a sixth joint; the wings are long and opaque, with the nervures rather indistinct, but varying in position at the apex, or hinder margin, of the wing: the genus probably requires division, the first and last sections being very dissimilar to each other; the former one, as containing the type of *Latreille's* genus *Mystacide*, might retain that name, while a new one is required for the other.

§ A. *Apical areolets* of anterior wings formed by a slightly curved line of transverse nervures:—MYSTACIDÆ, *Latr.*

Sp. 1. ochraceus. *Pallide ochraceus, oculis atris, thorace ferrugineo, lineis 3-bus longitudinalibus obscuris, alis posticis hyalinis.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Long. Antennarum 15—16 lin.; Exp. Alar. 12—13 lin.)

Lep. ochraceus. *Curtis, v. ii. f. 57.—Steph. Catal. 319. No. 3636.*

“Pale dull ochre colour: eyes black; antennæ towards their apex and annulations fuscous; head and thorax ferruginous, the latter with three longitudinal fuscous obscure stripes; abdomen cinereous; superior (anterior) wings long, lanceolate, rounded; cilia fuscous; inferior (posterior) wings semitransparent; legs pale.”—*Curtis, l. c.*

Found on palings in the Regent’s Park, and at Benacre, in Suffolk, by Mr. Curtis.

†Sp. 2. testaceus. *Rufescente-ochraceus, oculis nigris alis posticis hyalinis apice subfusco.* (Long. corp. — lin.; Exp. Alar. 8 lin.)

Lep. testaceus. *Phil. Mag. (Curtis) v. iv. p. 214.—Steph. Nomen. 2d edit. Appendix.*

“Reddish-ochre, very pubescent: antennæ long; eyes black; cilia fuscous; inferior (posterior) wings transparent, subfuscous at their tips.”—*Curtis, l. c.*

Locality not known to me.

Sp. 3. obtusus. *Niger nitidus, antennis pedibusque brunneis, alis fuscis, anticis rotundato-obtusis.* (Long. corp. 3— $3\frac{1}{2}$  lin.; Long. Ant. 8—9 lin.; Exp. Alar.  $7\frac{1}{2}$ —8 lin.)

Lep. obtusus. *Steph. Nomen. 2d edit. col. 120.*

Shining black: eyes dull black; antennæ very long, brown, with the base and upper surface dusky; wings somewhat hyaline, fuscous, with dusky nervures, the anterior pair very obtuse at the apex; legs brown; tibiæ and tarsi with an ochreous tinge on the outer edge.

Not common; found, occasionally, within the metropolitan district, in July.

Sp. 4. nigricans. *Niger nitidus, antennis albo annulatis, alis fuscis, pedibus brunneis, tarsis ochraceis.* (Long. corp.  $3\frac{1}{2}$  lin.; Long. Ant.  $7\frac{1}{2}$  lin.; Exp. Alar. 9 lin.)

Lep. nigricans. *Steph. Catal. 320. No. 3648.*

Blackish and shining: eyes black; antennæ annulated with white; wings fuscous, with darker nervures, the anterior pair obtuse at the apex; legs brown; tarsi ochreous.

Found, in June, near London.

Sp. 5. ater. *Ater, oculis nigris antennis nigro alboque subannulatis, alis immaculatis subiridescentibus, pedibus nigris.* (Long. corp. 3 lin.; Long. Ant.  $7\frac{1}{2}$  lin.; Exp. Alar. 9 lin.)

Mys. phæa. *Steph. Catal.* 320. No. 3661.—Mys. atra. *Pictet, p.* 169. pl. xii. f. 4.

Dull obscure black, with the antennæ faintly annulated with white; the maxillary palpi long and hairy; the wings immaculate, slightly ciliated, and a little iridescent; posterior nearly as dark as the anterior.

Larva slender, bright pale ochreous, with numerous black dots, forming  $\chi$ -like marks on the head and two first thoracic segments, the 3rd segment with two black dots; legs ochreous, dotted with black.

Taken near London, in June; but apparently rare.

Sp. 6. niger. *Niger nitidus, alis anticis splendide chalybeo-nigris, oculis rufis, antennis nigro alboque annulatis, pedibus brunneis.* (Long. corp. 3— $3\frac{1}{2}$  lin.; Long. Ant. 9 lin.; Exp. Alar.  $8\frac{1}{2}$ — $9\frac{1}{2}$  lin.)

Phr. nigra. *Linné.*—Mys. ? nigra. *Steph. Catal.* 320. No. 3659.

Bright shining black: eyes bright red during life, brown after death: antennæ very long, annulated with black and white; anterior wings of a rich bluish or steel-black, and very glossy, with an obscure patch towards the apex of the inner margin; legs brown.

Larva attenuated behind, very pale ochreous, the head and two anterior segments of the thorax spotted with black, the following segment with two or three black dots; legs also dotted with black, and very slender, the hinder pair considerably elongated.

A specimen—which I supposed was the Ph. azurea of Linné—in my collection, has the antennæ of a pure white, and only four lines long; the anterior wings of a rich violet.

Extremely abundant, in June and July, within the metropolitan district; found also in Devonshire and in Scotland.

§ B. *Anterior wings* with the 2nd and 3rd nervures bifid on the hinder margin.

Sp. 7. perfuscus. *Niger, alis anticis fusco-brunneis, immaculatis, posticis saturatè fuscis, antennis albo nigroque annulatis, pedibus ochraceis.* (Long. corp. 3 lin.; Long. Ant. 12 lin.; Exp. Alar. 9 lin.)

Lep. perfuscus. *Steph. Catal.* 319. No. 3640.

Black: palpi brown; head with a brownish tuft of hairs between the antennæ, the latter very long and annulated with black and white; anterior wings rich fuscous-brown, with a coppery tinge, immaculate; posterior dark fuscous, a little brownish at the base; legs pale ochreous, especially the tarsi.

Found, in the vicinity of London, in June.

Sp. 8. aureus. *Niger, cano pilosus, antennis albo annulatis, alis anticis aurco-sericeis, posticis griseis, iridescentibus, pedibus pallidis, tarsis albis brunneo-annulatis.* (Long. corp. 3 lin.; Long. Ant. 10 lin.; Exp. Alar. 10—11 lin.)

Lep. tarsalis. *Steph. Catal.* 319. No. 3641.—*Mys. aurea. Pictet, p.* 162. *pl. xiii. f.* 1.

Black, clothed above with a hoary down; palpi griseous; antennæ annulated with black and white; anterior wings thickly covered with a short golden pile, with a brighter spot towards the apex of the inner margin; posterior griseous and iridescent; legs dull ochreous, with the tips of the tibiæ brown; tarsi white, annulated with brown.

Also taken near London, and obtained from the Marshamian collection.

Sp. 9. annulatus. *Niger, alis brunneis, maculis holosericeo-fulvescentibus ornatis, palpis, pedibus, antennisque brunneis, his albo subannulatis.* (Long. corp. 3 lin.; Long. Ant. 9 lin.; Exp. Alar. 10—11 lin.)

Phr. annulata. *Gmelin, p.* 2367.—Lep. subannulatus. *Steph. Catal.* 319. No. 3642,

Deep black: antennæ slender, above twice the length of the wings, brown, annulated with white at the base, indistinctly so at the apex; palpi and legs brown; hinder tibiæ obscure; anterior wings brown, glossy, and adorned with a few yellowish hairs, forming rather ill-defined spots; cilia black; posterior wings griseous, with fuscous cilia.

Obtained from Marsham's cabinet: locality unknown.

Sp. 10. dissimilis. *Fulvo-ochraceus, oculis nigris, antennis albidis, brunneo-annulatis, alis anticis griseo-ochraceis, immaculatis, posticis hyalinis concinnè iridescentibus.* (Long. corp. 3 lin.; Long. Ant. 8 lin.; Exp. Alar. 8½—9 lin.)

Lep. dissimilis. *Steph. Catal.* 319. No. 3637.

Bright tawny-ochreous, inclining to ferruginous on the thorax; eyes black; antennæ whitish, annulated with brown: anterior wings griseous-ochre, immaculate; posterior very transparent and beautifully iridescent; abdomen greenish-brown; legs pale ochreous.

Common, at Hertford, in June; also found in other places within the metropolitan district.

Sp. 11. bimaculatus. *Niger, alis fuscis, anticis maculâ laterali duplici flavâ, aut griseâ.* (Long. corp. 2½ lin.; Long. Ant. 7 lin.; Exp. Alar. 9 lin.)

Phr. bimaculata. *Linné.*—Lep. bimaculata. *Steph. Catal.* 320. No. 3645.

Black: antennæ black, faintly annulated with whitish towards the base; wings fuscous, anterior with a lunate yellowish or griseous spot about the middle

of the inner margin, and a second smaller one a little beyond; posterior immaculate; legs pitchy-brown.

Taken, but rarely, near London, in July.

Sp. 12. interruptus. *Niger, alis fuscis, anticis strigis aliquot interruptis niveis, margineque postico albo punctato.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Long. Ant.  $8\frac{1}{2}$  lin.; Exp. Alar.  $8\frac{1}{2}$ — $9\frac{1}{2}$  lin.)

Phr. interrupta. *Fabricius.—Donovan, v. xvi. pl. 551.—Lep. interruptus. Steph. Catal. 320. No. 3650.*

Black: antennæ annulated with white; crown with a white patch; palpi pale; wings fuscous, anterior with about three or four transverse snow-white streaks, forming, as it were, interrupted lines, the 1st before the middle, the 2nd rather beyond the middle, and a 3rd placed obliquely towards the apex; the hinder margin frequently dotted with white on the cilia; posterior wings more transparent, immaculate; legs pale.

The number and position of the niveous streaks on the anterior wings vary slightly.

Abundant in the north of England and in Scotland, frequenting the borders of lakes, in June and July: taken also on the banks of the Tay, in Devonshire.

Sp. 13. affinis. *Ater, antennis albo annulatis, alis anticis punctis duobus marginalibus albis, pedibus subochraceis, tarsis albis.* (Long. corp. 3 lin.; Long. Ant. 6 lin.; Exp. Alar.  $8\frac{1}{2}$  lin.)

Lep. affinis. *Leach MSS.—Steph. Catal. 320. No. 3657.*

Deep black: antennæ annulated with white; anterior wings with two white spots on the margin, a little beyond the middle, one of them on the costa, the other on the inner margin; posterior immaculate; legs somewhat ochreous, clouded with blackish; tarsi white.

Found in the north of England, near Carlisle, in June.

§ C. *Anterior wings* with the 2nd nervure bifid, the 5th trifid, on the hinder margin.

Sp. 14. assimilis. *Viridi-fuscus, oculis brunneis, antennis albo fuscoque annulatis, alis anticis griseo-ochraceis, immaculatis, posticis hyalinis, iridescentibus.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Long. Ant. 7 lin.; Exp. Alar. 8—9 lin.)

Lep. assimilis. *Steph. Catal. 319. No. 3638.*

Green-brown: head clothed with hoary pile in front; antennæ annulated with fuscous and white; thorax with a faint pale longitudinal streak; anterior wings plain, immaculate, griseous-ochre; posterior hyaline, iridescent; legs pale ochreous; tips of the tarsal joints brownish.

Found, not uncommonly, near London, in June.



Sp. 15. *annulicornis*. *Pallide fuscus, antennis albis, nigro annulatis, palpis pedibusque ochraceis, alis anticis griseo-brunneis, posticis subhyalinis, fuscescentibus.* (Long. corp.  $2\frac{1}{2}$ —3 lin.; Long. Ant. 6 lin.; Exp. Alar. 9—10 lin.)

Lep. *annulicornis*. *Steph. Catal.* 319. No. 3639.

Pale fuscous: antennæ black, annulated with white; palpi ochreous; anterior wings griseous-brown, immaculate; cilia rather pale; posterior wings slightly hyaline, brownish; legs pale.

Also taken, not very commonly, near London, in June.

Sp. 16. *seminiger*. *Niger, antennis albo-annulatis, alis anticis griseo-ochraceis, posticis atro-fuscis, immaculatis, pedibus pallidis.* (Long. corp. 3 lin.; Long. Ant. 6 lin.; Exp. Alar. 9 lin.)

Lep. *seminiger*. *Steph. Catal.* 319. No. 3643.

Black: antennæ annulated with white; palpi ochreous; anterior wings griseous-ochre, with a very faint paler ochreous dot before the middle of the inner margin, two or three others placed obliquely towards the apex of the wings; posterior deep fuscous, immaculate; legs pale.

Found near Hertford, and in the New Forest, in June and July.

Sp. 17. *cinereus*. *Cinereo-fuscus, alis anticis cano pubescentibus, costâ nebulisque aliquot subochraceis, tibiis tarsisque albido-ochraceis.* (Long. corp. 4— $4\frac{1}{2}$  lin.; Long. Ant. 10 lin.; Exp. Alar. 12—13 lin.)

Lep. *grossus*. *Steph. Catal.* 320. No. 3644.—Lep. *cinereus*. *Phil. Mag.* (*Curtis*) v. iv. p. 214.

Fuscous: eyes black; “antennæ very long, black, annulated with white, clothed with griseous hairs; wings fuscous; superior (anterior) clothed with grey pubescence; costa slightly ochreous, as well as some iridescent marks; a small portion of the base of the inferior (posterior) wings pale ochreous; tibiæ and tarsi of the same colour.”—*Curtis, l. c.*

Inhabits the vicinity of London, and the New Forest, in July.

Sp. 18. *filosus*. *Niger, capite infra fulvo, antennis gracilibus brunneo alboque annulatis, alis anticis ochraceo-brunneis, marginibus flavescentibus, posticis hyalinis iridibus, pedibus pallidis brunneo annulatis.* (Long. corp. 3— $3\frac{1}{2}$  lin.; Long. Ant. 7 lin.; Exp. Alar. 11 lin.)

Phr. *filosa*. *Linné*.—Lep. *filosus*. *Steph. Catal.* 320. No. 3646.

Black: head yellowish beneath; palpi and antennæ brown, the latter very slender and long, annulated with white from the base to the middle; anterior wings clear pale brown, somewhat transparent and immaculate, the costal and inner margins pale tawny; posterior wings more transparent and iridescent; legs whitish, faintly annulated with brown.

Taken near London, in June.

Sp. 19. *caliginosus*. *Niger, antennis tenuissimè albo annulatis, alis brunnescente-fuscis, immaculatis, posticis basi subiridescentibus, pedibus ochraceo-brunneis, tarsis pallidioribus.* (Long. corp. 3 lin.; Long. Ant. 11 lin.; Exp. Alar. 9—10 lin.)

Lep. ater. *Steph. Catal. 320. No. 3647.*

Deep black: antennæ with very narrow white rings; wings brownish-fuscous, immaculate; posterior a little darker, and slightly iridescent, especially at the base; legs ochreous-brown, with the tarsi paler.

In this and the following insect, as well as the immediately preceding one, the third, or hinder twig of the 5th nerve arises nearly upon the transverse nervure.

Pictet having a *Mys. atra* (described in p. 196), it becomes necessary to change the name I had applied to this species.

Common, within the metropolitan district, in June and July.

Sp. 20. *aterrimus*. *Ater, antennis albo tenuissimè annulatis, alis fusco-nigris, nervis saturatoribus, pedibus fuscis.* (Long. corp. 3 lin.; Long. Ant. 6½ lin.; Exp. Alar. 8½—9½ lin.)

Lep. *aterrimus*. *Steph. Catal. 320. No. 3649.*

Deep black: antennæ with slender white rings; palpi fuscous; wings brown-black, with darker nervures, and immaculate; posterior somewhat paler; legs fuscous.

Also common, in the vicinity of the metropolis, in June and the beginning of July.

Sp. 21. *bilineatus*. *Niger, palpis antennisque brunneis, his obscurè flavo annulatis, alis brunneis, lineis 2-bus abbreviatis albidis, pedibus ochraceis.* (Long. corp. 2¾ lin.; Long. Ant. 6 lin.; Exp. Alar. 8 lin.)

Phr. *bilineata*. *Linné.*—Lep. *bilineatus*. *Steph. Catal. 320. No. 3651.*

Black: palpi brown; antennæ brown, with several of the lower articulations faintly annulated with ochreous; anterior wings brown, each with three oblique whitish lines or streaks, one of them on the inner margin, forming a streak common to both wings, the other two towards the apex of the costa; posterior wings hyaline and iridescent; legs ochreous; the tarsi faintly annulated with brown.

Not common: taken in June near London.

§ D. *Anterior wings* (sometimes very narrow) with the nervures rather indistinct, the 2nd nervure alone bifid on the posterior margin.

Sp. 22. *quadrifasciatus*, *Niger, alis ochraceo-testaceis, anticis fasciis quatuor latis nigris posticis immaculatis.* (Long. corp. 2½—3 lin.; Long. Ant. 7 lin.; Exp. Alar. 8—10 lin.)

*Phr. quadrifasciata.* Fabricius.—Lep. quadrifasciatus. Steph. Catal. 320. No. 3656.

Black: antennæ annulated with black and white; wings dull ochreous-testaceous, anterior with four broad black bands, placed nearly equidistantly, the fourth at the apex; posterior immaculate, paler; nervures dusky; abdomen greenish-brown; legs pale, hinder femora dusky.

Not very abundant: taken occasionally near London, but more frequently in Devonshire and in Scotland.

Sp. 23. longicornis. *Fuscus, alis anticis griseo et nigricante variis, posticis griseis immaculatis, antennis pedibusque pallidis.* (Long. corp. 3 lin.; Long. Ant. 9 lin.; Exp. Alar. 9½ lin.)

*Phr. longicornis.* Linné.—Lep. longicornis. Steph. Catal. 320. No. 3655.

Pale fuscous: eyes black; antennæ whitish, about thrice the length of the body; anterior wings pale griseous, varied with dusky or blackish dots; posterior griseous and immaculate; legs whitish.

Apparently rare: taken in June near London.

Sp. 24. rufo-griseus. *Fuscus, alis anticis rufo-griseis, atomis pallidioribus, posticis fuscis, subhyalinis, pedibus pallidis, antennis albis nigro maculatis.* (Long. corp. 2½ lin.; Long. Ant. 9 lin.; Exp. Alar. 7½—8 lin.)

Lep. rufogriseus. Steph. Catal. 320. No. 3652.

Fuscous: eyes black; anterior wings griseous-red, with numerous fainter atoms; posterior somewhat transparent, fuscous, darkest on the margins; abdomen pale; legs whitish; antennæ very slender, white, with narrow black rings.

Not common: found in Devonshire, in July, and occasionally near London.

Sp. 25. bicolor. *Capite, thorace et alis anticis ochraceo-ferrugineis, abdomine alisque posticis nigricantibus, antennis nigris albo annulatis, pedibus fulvis.* (Long. corp. 2½—3¾ lin.; Long. Ant. 7½ lin.; Exp. Alar. 6—8 lin.)

Lep. rufus. Steph. Catal. 320. No. 3653.—Lep. bicolor. Phil. Mag. (Curtis) v. iv. p. 214.

Head, thorax, and anterior wings light rusty-ochre; posterior wings and abdomen blackish; legs fulvous; antennæ very long and slender, black, faintly annulated with white.

Rather more abundant than the last: found near London, and in the New Forest, and in Devonshire, in July.

Sp. 26. elongatus. *Pallide rufo-ochraceus, alis anticis angustis, ochraceis atomis paucis atris, posticis hyalinis fusco, iridescentibus, pedibus antennisque pallide*  
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*griseis, his albido annulatis.* (Long. corp. 2 lin.; Long. Ant.  $8\frac{1}{2}$  lin.; Exp. Alar. 7 lin.)

Lep. elongatus. *Steph. Catal.* 320. No. 3658.

Pale ochreous-red: eyes black; anterior wings very narrow, reddish-ochre, with some minute black dots on the nervures, especially towards the apex; cilia rather pale; abdomen pale; posterior wings hyaline, and slightly iridescent, with a fuscous tinge; legs pale; antennæ pale griseous, annulated with whitish.

Taken in June, near London.

Sp. 27. *tineiformis.* *Fusco-cinereus, alis anticis angustissimis nervis fusco irroratis, pedibus ochraceo-albis, antennis albis nigro annulatis.* (Long. corp. 2— $2\frac{1}{2}$  lin.; Long. Ant.  $4\frac{1}{2}$  lin.; Exp. Alar. 6— $6\frac{1}{2}$  lin.)

Lep. gracilis. *Steph. Nomen.* 2d edit. col. 120.—Lep. *tineiformis.* *Phil. Mag.* (*Curtis*) v. iv. p. 214.

Ashy-brown: eyes black; forehead very pilose; anterior wings long and very narrow, the nervures faintly, but minutely, dotted with fuscous; posterior wings also narrow, immaculate, with longish cilia; abdomen pale; legs ochreous-white; antennæ moderate, white, annulated with black.

Found, in June, at Ripley; also in the west of England.

Sp. 28. *attenuatus.* *Capite thoraceque fuscis, alis angustissimis, subhyalinis pallidis immaculatis, abdomine pedibusque ochraceo-pallidis, antennis pallidis, fusco annulatis.* (Long. corp.  $1\frac{3}{4}$ —2 lin.; Long. Ant.  $4\frac{1}{2}$  lin.; Exp. Alar. 5—6 lin.)

Lep. attenuatus. *Steph. Catal.* 320. No. 3654.

Head and thorax fuscous: eyes black; wings very narrow, hyaline, pale, immaculate, the posterior pair faintly suffused with fuscous, with their cilia very long; abdomen and legs pale ochreous; antennæ pale, annulated with fuscous.

Taken, at the end of June, at Ripley.

## GENUS XXVIII.—MOLANNA, *Curtis*.

*Antennæ* stout, not longer than the wings, the basal joint longish and robust: *palpi* slender, slightly hairy; maxillary with the two basal joints short, the 3rd and 4th longish and stout, the 5th slender, filiform, a little longer than the 4th: *head* small: *eyes* slightly prominent: *thorax* stoutish: *wings* long and narrow, obtusely rounded at the apex, anterior with the 4th nervure trifid, the 5th bifid, posterior with the 1st and 3rd nervures bifid: *abdomen* shortish, slender, obtuse at the apex in the females: *legs* long, slightly pubescent, and setose beneath, all the *tibiæ* armed with a pair of longish

spurs at the apex, and the intermediate and posterior each with a second pair considerably below the middle.

This genus, in my opinion, scarcely belongs to the present family, yet I know not where better to place it: from the other genera it differs in having the antennæ not longer than the wings, the latter very obtusely rounded at the apex, and differing in the positions of the transverse nervures from the true Leptoceridæ and the Phryganidæ; the legs, moreover, are rather long, and the two hinder pair of tibiæ are each furnished with two pair of longish spurs, one pair at the apex, and the other pair much below the middle.

Sp. 1. *nigripalpis*. PLATE XXXIII. f. 3.—*Capite, palpis abdomineque fuscis, thorace fulvo, alis anticis ochraceo-sericeis, posticis pallide fuscescentibus, pedibus fulvis*. (Long. corp. 3 lin.; Exp. Alar. 12 lin.)

*Amblypteryx nigripalpis*. *Steph. Catal.* 318. No. 3619.

Head and palpi fuscous; thorax bright tawny; abdomen fuscous, its apex rather ochreous; anterior wings thickly clothed with an ochreous silky pubescence, the nervures somewhat fuscous; posterior wings pale fuscous, with darker nervures; legs pale tawny; antennæ tawny, spotted with fuscous.

Found, but apparently very rarely, in the vicinity of London, at Hertford, in June; also taken in the New Forest.

Sp. 2. *angustata*. *Capite thorace abdomineque fuscis, palpis pedibusque rufo-ochraceis, alis anticis subfulvis, nervis fuscis, posticis fuscescentibus*. (Long. corp. 3 lin.; Exp. Alar. 12 lin.)

*Amb. rufipalpis*. *Steph. Catal.* 318. No. 3620.—*Mo. angustata*. *Phil. Mag.* (*Curtis*) v. iv. p. 214.

Head, thorax, and abdomen, fuscous; palpi and legs ochreous-red; anterior wings dull tawny, clothed with a silken pile, with the nervures fuscous; posterior pale fuscous; antennæ tawny, with fuscous spots above.

The head, thorax, and abdomen, are sometimes pale tawny-ochreous; all the wings dull fuscous-ochre, with darker nervures.—Probably a distinct species.

Likewise taken near London, in July, and in Devonshire, in June.

#### FAMILY VIII.—PHRYGANIDÆ *mih*i.

*Antennæ* setaceous, longer than the body, but not longer than the wings: *maxillary palpi* slightly hairy, dissimilar in the sexes, those of the male being 3 or 4-articulate, and of the female 5-jointed, the terminal joint shorter

than the two preceding united; *labial* 3-articulate, the last joint ovoid; *wings* furnished with a series of transverse nervures, forming a flexuous or repanded line towards the bifurcations of the longitudinal ones; posterior wings ample, considerably folded within: *abdomen* moderate, slightly compressed: *legs* rather short: *tibiæ* mostly furnished with a pair of long spurs at the apex, and the two hinder pair with others about the middle; the *tibiæ* themselves and the *tarsi* very frequently armed with short spurs beneath. Larva residing in a moveable case of various forms, and differently composed: the head and thorax are scaly, and the legs short: the respiratory organs are isolated, and arise transversely on the upper and under surface of the body.

The insects embraced in this family are amongst the largest of the order, especially those of the typical genus, some of which are very bulky: in the structure of the oral organs there is considerable difference, in general, between the sexes, the maxillary palpi of the males being mostly 3- or 4-jointed, while those of the females are invariably 5-jointed; the antennæ are longer than the body, but shorter than the wings, and are rather stoutish: the wings are distinctly furnished with a somewhat repanded series of transverse nervures, placed a little beyond the middle, and the posterior pair are much folded; in the anterior there is considerable diversity of outline, as well as of neuration, whence the species may be readily subdivided in groups, or genera: the *tibiæ* and *tarsi* are mostly armed with short rigid spire-like setæ, and the legs are rather short. The larvæ reside in moveable cases, composed of various substances, and of various forms; the head and thorax are scaly, and the rest of the body soft, the first abdominal segment being, in general, much dilated and rounded on the sides; the terminal joint is truncate, and furnished with two hooks.

The British species may be thus divided into genera:—

<i>Tibiis</i> haud setigeris :	. . . . .	35. NEURONIA.
setis armatis ;		
<i>Corpus</i> latum, depressum :	. . . . .	34. AGRYPNIA.
subcompressum, haud depressum ;		
<i>Alis</i> setis erectis ornatis :	. . . . .	31. CHÆTOPTERYX.
pilosis, vix setigeris ;		
<i>Palpi</i> maxillares		
arti <sup>o</sup> . ult <sup>o</sup> . breve, subelliptico :	. . . . .	29. PHRYGAEA.
elongato, filiformi		
<i>Alis anticis</i> latis, versus apicem dilatatis, margine postico		
rotundato :	. . . . .	30. HALESUS.
angustis, margine postico rotundato :	. . . . .	33. ANABOLIA.
obliquè truncato	. . . . .	32. LIMNETHILUS.

GENUS XXIX.—PHRYGANEÆ *Auctorum.*

*Antennæ* setaceous, approximating, longer than the body, but shorter than the wings, slightly pubescent beneath: *palpi* rather pubescent; maxillary of the male 4-jointed, of the female 5-jointed, the terminal joint elliptic-ovoid: labial 3-articulate in both sexes, the apical joint of the male robust, somewhat ovate, of the female more slender and somewhat elliptic: *head* ovate: *eyes* globose, prominent: *thorax* ovate: *wings* slightly deflexed during repose; anterior elongate, lanceolate, with a waved line of transverse nervures, placed rather beyond the middle, at the origin of the bifurcation of the longitudinal ones; posterior more ample, ovate-triangular: *abdomen* of the males compressed, and furnished at the apex with two long, incurved horny appendages, two shorter ones below them, and a bilobed one between; of the females robust, and obtuse at the apex: *legs* rather stout; *tibiæ* with numerous short spines, and two spurs at the apex, the two hinder pair with a second pair of spurs below the middle; the hinder tibiæ long and curved. *Larva* with the head and following segment scaly, the 5th segment much dilated on the sides, the respiratory organs prominent, and placed obliquely, the apex of the abdomen with two hooks; case formed of pieces of aquatic plants.

This genus contains the largest species of the order, and, exclusively of their great bulk, they may be known by having the terminal joint of the palpi rather short and ovate; the palpi themselves are dissimilar in the sexes, those of the males being 4-jointed, and of the females 5-jointed: the wings are in general ornamented with rather conspicuous colours, the anterior being somewhat lanceolate, and rounded at the apex, and the posterior being very simple, and of plain colours.

Sp. 1. *grandis*. *Brunneo-fusca, supra pubescente-grisea, alis fusco-testaceis maculis parvis numerosissimis pallidioribus, punctoque albido, mas; aut fusco-cinereis nebulis pallidioribus, lineolisque duabus interruptis nigris, punctoque albo, fœmina.* (Long. corp. 4—9 lin.; Exp. Alar. 1 unc. 6 lin.—2 unc. 4 lin.)

*Phr. grandis.* Linné.—Wood, v. ii. pl. 48.—Steph. Catal. 321. No. 3678 ♀.—*Phr. striata.* Linné?—Steph. Catal. 321. No. 3677 ♂.

Dusky-brown, clothed, especially above, with a pale griseous or ashy down; eyes black; *antennæ* testaceous-brown, dotted at the base above with dusky, or pitchy; sides of the thorax black; wings of the male dull testaceous-brown, anterior thickly clouded with small palish spots, with a larger and brighter one towards the hinder angle, the nervures obscurely dotted with blackish, or fuscous, and the hinder margin spotted with the latter

colour; of the female the anterior wings are more of an ashy hue, less freckled with pale dots, especially on the disc, which last is clouded with fuscous, and bears one or two irregular and interrupted black streaks, the longest one terminating in a conspicuous white dot; posterior wings in both sexes immaculate; legs dull tawny, four anterior annulated with fuscous.

The markings on the anterior wings vary considerably in intensity, and are sometimes nearly obliterated.

Rather local, but in some places very abundant, especially about Albury in Surrey, in June and the beginning of July; also taken at Ripley, Hertford, in the New Forest, and in Devonshire.

Sp. 2. *Beckwithii*. *Griseo-fusca, alis anticis nigro valdè nebulosis, antennis piceis*. (Long. corp. 6 lin.; Exp. Alar. 1 unc. 9 lin.)

Phr. *Beckwithii*. *Leach MSS.—Steph. Catal. 321. No. 3679.—Phr. grandis. Kirby and Sp. Int. pl. iii. f. 4?*

Griseous-brown, clothed with a paler down; antennæ pitchy; sides of thorax dusky; anterior wings fuscous, thickly freckled with paler spots, and very much clouded with dusky-black; nervures slightly dotted with fuscous, the hinder margin spotted with the same; legs pitchy.

I suspect this to be only a strong variety of the foregoing species.

Sp. 3. *atomaria*. *Fusco-cinerea, alis anticis fusco-cinerascentibus, punctis nigris numerosissimis sparsis, pedibus ochraceis*. (Long. corp. 7 lin.; Exp. Alar. 1 unc. 10 lin.)

Phr. *atomaria*. *Fabricius.—Steph. Catal. 321. No. 3681.*

Ashy-brown: eyes black; antennæ yellowish; head and thorax hairy; body cinereous; wings pale ashy-brown, the anterior very thickly sprinkled with minute black dots; legs ochreous, with blackish spurs.

Apparently very rare: taken in the vicinity of the metropolis, in July.

Sp. 4. *varia*. *Griseo-fusca, alis anticis nigro alboque variis, puncto distincto niveo, antennis pedibusque fulvis, fusco annulatis*. (Long. corp. 5—7 lin.; Exp. Alar. 11—16½ lin.)

Phr. *varia*. *Fabricius.—Donovan, v. viii. pl. 277. f. 1.—Steph. Catal. 321. No. 3682.*

Head griseous-brown, with tawny down; palpi testaceous, with the tip black; eyes black: antennæ dull testaceous, annulated with brown; thorax fuscescent, or ochreous, with griseous or ashy pile; anterior wings fuscous, irregularly varied with black clouds and spots, largest towards the inner margin, and with numerous white dots and blotches, two of the latter



being large, and placed somewhat obliquely on the inner margin; towards the apex of the disc is a conspicuous snow-white dot, appended to a black streak, and another edged with black near the posterior angle; the posterior wings are slightly iridescent, with the apex rather broadly tipped with brown; legs pale tawny, annulated with brown.

Extremely variable in the intensity of the markings, and slightly so in their positions.

Larva dirty shining green, with the head and legs ochreous, the former with elongate black streaks; the following segment also ochreous, edged anteriorly and posteriorly with black.

Not very uncommon, in the vicinity of London, towards the end of June; taken also in Norfolk, Cambridge, South Wales, Devon, and Scotland.

Sp. 5. minor. *Fusco-ochracea, alis anticis ochraceis, nigro-fusco nebulosis, maculâ costali fuscâ, fasciâque subrepandâ posticâ albido-ochraceâ.* (Long. corp.  $3\frac{1}{2}$ —5 lin.; Exp. Alar. 9—12 lin.)

Phr. flexuosa. *Steph. Catal.* 321. No. 3680.—Phr. minor. *Curtis, v. xiii. pl. 592.*

“Subochraceous: antennæ annulated with brown, the base, crown of head, and back of thorax greyish, with ochreous hairs; base of abdomen brown, back fuscous; wings pubescent, nervures brown; superior (anterior) ochreous, variegated and reticulated, with a brown patch at the base, an imperfect fascia at the middle, with a black lunate spot and white dot on the disc; a brown fimbria at the posterior margin, bearing two round ochreous spots on the costa, a distinct line formed of similar spots parallel to the margin, which is broken by similar spots, and the edges spotted with brown; inferior (posterior) wings iridescent, pale fuscous at the apex; palpi, anterior thighs, and tips of tibiæ brown.”—*Curtis, l. c.*

The ochreous spots vary a little in position in different specimens, and, in lieu of the imperfect central fascia, there is only a deep fuscous costal spot.

Taken in the garden at the Hermitage, South Lambeth, in July;

†Sp. 6. *Phalænoides. Nigra, alis albidis, maculis nigris sparsis.* (Long. corp. — lin.; Exp. Alar. — lin.)

Phr. *Phalænoides. Linné.—Turton (!)—Steph. Catal.* 321. No. 3683, note.

Black: antennæ half the length of the body; wings whitish; anterior sprinkled with numerous black dots, disposed in a row on the hinder margin; posterior white, the hinder margin with a black band, the lateral margin with black dots.

Indicated, but improperly, by Turton, as British.

also in other parts within the metropolitan district, and in the New Forest and in Scotland, but not very plentifully.

GENUS XXX.—HALESUS *mihi*.

*Antennæ* setaceous, short, somewhat remote, longer than the body, and as long as the wings: *palpi* slightly pubescent; *maxillary* of the males 4-jointed, of the females 5-jointed, the terminal joint long and somewhat acuminate; labial 3-articulate in both sexes, the terminal joint ovate, most robust in the males: *head* transverse, *front* rather prominent: *eyes* large, globose: *thorax* ovate, collar distinct: *wings* considerably deflexed during repose; anterior elongate, lanceolate, with the costa somewhat dilated towards the apex, the hinder margin rounded, nervures moderately distinct; posterior very ample, transparent, and much folded: *abdomen* of the males slightly compressed, furnished at the apex with short horny appendages; of the females more robust, and somewhat cylindrical, with the apex obtuse: *legs* rather stout: *tibiæ* armed with numerous short spines, and two spurs at the apex; the two hinder pair each with a pair below the middle; hinder *tibiæ* straight.

Larva very robust, the head and following segments scaly, the 3rd dilated, the body cylindrical: case formed of pieces of wood and stones, connected with much regularity.

The very ample posterior wings of the insects of this genus, and the large anterior ones, of which the costa is somewhat dilated towards the apex, and the hinder margin distinctly rounded, will sufficiently distinguish them from the allied genera; and from *Limnephilus* this last character alone will enable the reader to know them, inasmuch as in that genus the hinder margin of the anterior wings is always truncate, and sometimes deeply excised.

Sp. 1. *digitatus*. *Ochraceo-brunneus, antennis brunneis, alis anticis pallidis nervis albidis brunneo marginatis, areolis posticis lineâ longitudinali brunneâ.* (Long. corp. 7—9 lin.; Exp. Alar. 18—24 lin.)

Phr. *digitata*. *Schranck, 309. No. 616.—N. G. (371). (Halenus, Nom.) radiatus. Leach MSS.—Steph. Catal. 321. No. 3670.*

Pale ochreous-brown: head with a longitudinal tawny streak; palpi pale; antennæ brown; thorax also brown and pubescent, the anterior margin rather tawny; anterior wings ample, the nervures whitish-ochre, edged with brown, forming a border to each areolet, the groundwork of which is whitish-ochre, in some with paler spots and brown lines, and the areolets on the hinder margin have a more or less distinct brown central line, producing a radiated appearance; posterior wings very transparent pale yellowish, immaculate; legs pale tawny, with black spines.

Extremely variable as to the markings on the anterior wings, which are sometimes nearly obliterated, and at others remarkably powerful.

Larva robust, fleshy: head and thorax brown, with numerous black streaks, forming regular figures, radiated on the head; the abdomen is pale yellow; legs tawny: it forms a very compact case, comprised of small pieces of wood, &c. placed somewhat longitudinally, or a little inclined.

Extremely abundant, in the autumn, about Hertford and its vicinity; also taken at Ripley, in Devonshire, near Carlisle, in Scotland, Suffolk, the New Forest, &c.

Sp. 2. *cingulatus*. *Fulvo-ochraceus, oculis nigris, alis anticis pallide ochraceis immaculatis, abdomine fulvescente segmentorum marginibus nigris*. (Long. corp.  $8\frac{1}{2}$  lin.; Exp. Alar. 18 lin.)

N. G. (371.) *cingulatus*. (*angulatus*). *Steph. Catal.* 321. No. 3671.—*Philosa*. *Pictet*, p. 134. pl. vi. f. 2?

Tawny-ochre: antennæ brown; eyes black; thorax with its sides dusky; anterior wings pale ochre, immaculate; nervures yellowish-ochreous, faintly edged with a darker tint, the base of some brownish; posterior wings very transparent, pale whitish-yellow, with pale ochreous nervures; abdomen pale tawny, with the margins of the segments and its apex blackish; legs tawny, with black spines.

Taken in July, in Devonshire.

Sp. 3. *Vibex*. *Ochraceus, alis anticis subangustatis pallide brunneo-ochraceis, atomis numerosis pallidioribus, costâ exceptâ, sparsis*. (Long. corp. 7—9 lin.; Exp. Alar. 14—22 lin.)

N. G. (571.) *angustatus*. *Steph. Catal.* 321. No. 3672.—*Lim. Vibex*. *Phil. Mag.* (*Curtis*) v. iv. p. 125.

Ochreous: eyes black; antennæ tawny; thorax with its sides brown; anterior wings rather narrow and somewhat acute at the tip, of a very pale ochreous-brown, thickly freckled throughout with numerous paler dots, excepting the costa, which is immaculate; nervures pale luteous-ochre; posterior hyaline, faintly iridescent, very pale whitish-ochre; legs pale tawny, with blackish spines.

Found, in the autumn, in Devonshire, and occasionally in the vicinity of London; also in Norfolk and the New Forest.

Sp. 4. *latipennis*. *Pallide ochraceus, oculis nigris, alis anticis sublatis ochraceo-brunneis, vix pallidè irroratis, nervis fusco submarginatis*. (Long. corp. 7— $8\frac{1}{2}$  lin.; Exp. Alar. 18—20 lin.)

N. G. (571.) *confinis*. *Steph. Catal.* 321. No. 3673.—*Lim. latipennis*. *Phil. Mag.* (*Curtis*) v. iv. p. 125.

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Pale ochreous: eyes black; antennæ pale tawny; anterior wings rather broad, pale ochreous-brown, very obscurely, or not at all, freckled with paler atoms, the nervures pale, and faintly edged with pale fuscous; posterior wings immaculate, transparent, pale whitish-ochre, with the apex and nervures darker; abdomen and legs pale tawny, the spines on the latter black.

Taken near Hertford, in September; also at Ripley, in the New Forest, &c.

Sp. 5. *hieroglyphicus*. *Ochraceo-flavus, oculis nigro-brunneis, alis anticis, costâ exceptâ, brunnescentibus, atomis pallidioribus confertim irroratis*. (Long. corp. 8—10 lin.; Exp. Alar. 17—25 lin.)

N. G. (571.) *flavus*. *Steph. Catal.* 321. No. 3674.—Lim. *hieroglyphicus*. *Phil. Mag. (Curtis)* v. iv. p. 125.

Ochreous-yellow: eyes brown-black; antennæ tawny; anterior wings with a pale brown tint, excepting the costa, which, with numerous minute atoms throughout the rest of the wing, is of a paler tint; legs pale tawny, with blackish spines.

Found in the vicinity of Ripley and Albury, in August and September, and in other places within the metropolitan district.

Sp. 6. *lateralis*. *Fulvo-ochraceus, oculis nigris, thoracis lateribus fusciscentibus, alis anticis pallide ochraceis, concinnè irroratis, nervis subfulvis*. (Long. corp. 8 lin.; Exp. Alar. 17—20 lin.)

N. G. (571.) *lateralis*. *Steph. Catal.* 321. No. 3675.—Ph. *striata*. *Pictet*, p. 132. pl. vi. f. 1?

Pale tawny-ochre: eyes black; antennæ tawny; thorax pale tawny, with its sides blackish or brown; anterior wings broad, fuscous, with somewhat tawny nervures, the disc, especially towards the inner margin, very thickly and prettily freckled throughout with minute palish spots; posterior wings ample, iridescent, whitish, with the tips and nervures rather darker; legs pale fulvous, with blackish spines.

Taken, occasionally, within the metropolitan district, in August, and likewise in Devonshire.

Sp. 7. *stellatus*. *Ochraceus, alis anticis fusciscentibus lineis maculisque pallidis*. (Long. corp. 5½—6 lin.; Exp. Alar. 16—18 lin.)

N. G. (571.) *obscurus*. *Steph. Catal.* 321. No. 3676?—Lim. *stellatus*. *Phil. Mag. (Curtis)* v. iv. p. 125.

Ochreous: "superior (anterior) wings very pubescent fuscous-ochre, with pale lines at the base and centre of the discoidal nervures, two or three small spots at the base, a bilobed one near the centre, two dots by the transverse

nervures, and a curved series of pale streaks beyond them; inferior (posterior) wings fuscous-ochreous, very pale at the base."—*Curtis, l. c.*

Found rarely near London; also in the Isle of Wight, Devonshire, and Dorsetshire.

### GENUS XXXI.—LIMNEPHILUS, *Leach.*

*Antennæ* slender, setaceous, somewhat approximating and slightly pubescent, especially in the males, shorter than the wings: *palpi* pubescent; maxillary 5-jointed, pilose at the base, the 4th joint shorter than the 5th, which is slightly elongated and a little attenuated; labial 3-articulate, with the two basal joints pilose: *head* small, transverse: *eyes* prominent, globose: *thorax* small, subovate-convex: *wings* deflexed during repose; anterior long and narrow, the costa not dilated towards the apex, the hinder margin obliquely truncate, and sometimes deeply excised; posterior ample, thin, and much folded when at rest: *abdomen* slightly compressed in the males, stouter and rather longer in the females: *legs* moderate: *coxæ* long and setose: *femora* slender, unarmed; *tibiæ* and *tarsi* armed with short spines, the former with a small pair of spurs at the apex, and the hinder pair with two others below the middle. Larva with the head and three anterior segments horny, 4th segment with two or three tubercles, the terminal one with two claws; legs long: inhabits a case composed of sand, pebbles, pieces of wood, bones, &c. in which the pupa is also formed.

Known from the allied genera by having the hinder margin of the anterior wings more or less truncate, and in some instances deeply emarginate: the wings are in general narrower than in the other Phryganidæ, and the nervures somewhat indistinct: there is great similarity among the species, which, however, form several very distinct groups, and the last species offers many points of distinction: the species of the 1st section may probably form a distinct genus, as indicated in the 2nd edition of my Nomenclature.

A. Anterior wings with the hinder margin cut out:—GLYPHOTÆLIUS *mihi*.

Sp. 1. *pellucidula*. *Ochraceus, alis anticis emarginatis pallidis fusco irroratis, maculis duabus hyalinis, posticis hyalinis apice ochraceo, in maribus fusco nebuloso.* (Long. corp. 6—8 lin.; Exp. Alar. 15—18 lin.)

Phr. *pellucidula*. *Olivier, E. M. 541. 12.*—Lim. *pictus*. *Steph. Catal. 323. No. 3732 ♂.*—Lim. *angulatus*. *Steph. Catal. 325. No. 3728 ♀.*—Lim. *basalis*. *Phil. Mag. (Curtis) v. iv. p. 122 ♂.*—Lim. *emarginatus*. *Phil. Mag. (Curtis) v. iv. p. 122 ♀.*

Dusky, or brownish-ochre, clothed with similarly-coloured hair; antennæ and palpi paler or fulvescent; eyes fuscous; abdomen dusky-green (yellowish-ochre in the dried state); anterior wings of the male thickly and minutely

freckled with brown, having a conspicuous clear oblique transparent spot in the middle of the disc, a second irregular one between that and the apex, frequently united to the former; the hinder margin also pale, with three distinct brown spots towards the apex, and a patch of the same hue on the anal angle; some of the inner nervures are deeply freckled with blackish-brown, and the stigma is usually deep fuscous; posterior wings very transparent and iridescent, with the apex ochreous, varied with brown:—female with the anterior wings of a more uniform tint, faintly freckled with pale brown, having a narrow oblique spot on the disc, and a second, generally remote, and somewhat indistinct and irregular towards the apex, the hinder margin with the anal angle and three spots towards the costa brown; stigma pitchy-brown; posterior wings transparent, with a pale uniform brownish spot on the apex; legs in both sexes pale tawny, with black spines.

*Lim. ornatus.* *Steph. Catal. 323. No. 3731, var. ♂.*

Rather larger, with the anterior wings paler, less deeply freckled with fuscous, but having a very distinct lunate transparent discoidal spot; stigma pale fuscous; a triangular blotch of a pitchy hue at the base of the inner margin; the costa prettily freckled with brown; posterior wings with the apex ochreous, faintly varied with brown.

*Lim. diaphanus.* *Steph. Catal. 323. No. 3730, var. ♂.*

Less than the former; the anterior wings pale ochreous, very faintly freckled with a deeper tint, leaving only a broad oblique transparent blotch on the disc; the stigma and three spots on the hinder margin faintly pitchy; posterior wings with the apex unvaried pale ochreous-brown.

*Lim. cognatus.* *Steph. Catal. 323. No. 3729, var. ♀.*

With the anterior wings pale ochreous, faintly mottled with a darker tint, leaving a very narrow oblique transparent line on the disc, and a faint one towards the hinder margin, which last has three rather indistinct pitchy spots towards the apex, and a tinge of the same hue on the hinder angle; stigma pale pitchy-brown.

An extremely variable species: in some examples the stigma on the anterior wings is wholly wanting, in others it is very distinct, and in some partly obliterated; the tranverse nervures are occasionally edged with deep fuscous.

The larva (according to Pictet) is large, has the head and two first segments dull uniform brown, divided with black streaks, the following segment pale, with some blackish spots; the abdomen pale greenish; legs brown.

This variable species is far from uncommon, throughout the metropolitan district, during the early summer months: it also occurs in the New Forest, Devonshire, Norfolk, Suffolk, near Dover, in Scotland, &c.

B. *Anterior wings with the hinder margin entire, truncated obliquely.*

Sp. 2. *Lineola. Pallide ochraceus, alis anticis pallidis fusco irroratis, posticis immaculatis lineolâ apicis fuscâ.* (Long. corp. 6—9 lin. ; Exp. Alar. 14—22 lin.)

Phr. *Lineola. Villers Ent. iii. 41.*—Lim. *Striola. Leach.—Steph. Catal. 322. No. 3685.*—Lim. *Strigosa. Phil. Mag. (Curtis) v. iv. p. 122.*

Pale ochreous : eyes and sides of the thorax fuscous ; antennæ pale fulvous ; anterior wings more or less freckled with minute brown dots, but in some instances wholly immaculate ; these dots are occasionally united, and form a distinct line on the hinder margin ; posterior wings very transparent and delicate, the nervures and apex slightly tinged with ochreous-brown, with a more or less distinct longitudinal streak of a darker hue on the latter ; abdomen pale greenish, fuscous above ; legs pale tawny, with pale spines.

Not uncommon, during the summer, in the vicinity of London ; found also in Devonshire, in the New Forest, and near Carlisle ; also in Scotland in July.

Sp. 3. *flavicornis. Ochraceus, abdomine virescente, alis anticis hyalinis griseo variegatis, nervis margineque interiore fuscopunctatis, antennis pedibusque flavescentibus.* † (Long. corp. 5—6 lin. ; Exp. Alar. 14—16 lin.)

Phr. *flavicornis. Fabricius.—Pictet, p. 151. pl. ix. f. 2.*—Lim. *flavicornis. Steph. Catal. 322. No. 3689.*

Ochreous : thorax brown above ; abdomen pale green beneath, the back and sides griseous ; anterior wings very transparent, slightly variegated with griseous towards the apex ; the nervures ochreous, sparingly freckled with brown towards the inner edge of the wings, which is also slightly spotted with the same : legs pale tawny, with black spines.

Larva with the head and three anterior segments deep brown, with various black streaks and marks, the following segment pale brown ; abdomen pale greenish ; legs very long, brown, and spotted with black.

Not uncommon in various parts of the country during the summer : found also in Scotland.

Sp. 4. *dorsalis. Virescente-ochraceus, alis pallidis anticis hyalinis margine interiore brunneo irroratis, antennis flavescentibus, brunneo annulatis.* (Long. corp. 5—6½ lin. ; Exp. Alar. 14—16 lin.)

Lim. *dorsalis. Steph. Catal. 322. No. 3687.*

Greenish-ochreous : abdomen brighter ; wings pale ; anterior hyaline, with the inner margin very thickly, but irregularly, freckled with brown, with a more transparent blotch beyond the middle, and a less distinct one covering the transverse nervures ; posterior wings very transparent and immaculate,

legs flavescent, with black spines; antennæ fulvescent, annulated with pale brown.

Also found throughout the metropolitan district, and in other parts of the country, during the summer.

Sp. 5. *discoidalis*. *Sordide ochraceus, alis anticis fuscescentibus basi pallidioribus, maculâ discoidali et alterâ posticè semihyalinis, posticis apice fusco.* (Long. corp. 7 lin.; Exp. Alar. 15 lin.)

Lim. *palescens*. *Steph. Nomen. 2d edit. col. 121.*—Lim. *discoidalis*. *Phil. Mag. (Curtis) v. iv. p. 123.*

Dusky-ochreous: "superior (anterior) wings pale brown, with the costa (as far as the stigma), a large spot below the disc connected with a large one covering the transverse nervures, and numerous dots, semitransparent; apical margin of inferior (posterior) wings fuscous."—*Curtis, l. c.*

Found, occasionally, within the metropolitan district, in July.

Sp. 6. *rhombicus*. *Ochraceus, alis anticis griseo-flavescentibus maculâ magnâ rhomboidali pallidâ utrinque brunneo marginatâ.* (Long. corp. 6—8 lin.; Exp. Alar. 12—16 lin.)

Phr. *rhombica*. *Linné.—Donovan, v. vii. pl. 220.*—Lim. *rhombicus*. *Steph. Catal. 322. No. 3692.*

Bright ochreous: eyes fuscescent; anterior wings bright yellowish-griseous, palest at the base; on the disc, beyond the middle, is a large oblique pale or whitish spot, and an indistinct one towards the apex; the fuscous spot is bordered anteriorly and posteriorly with brown; the inner and apical portion of the wing is of a deeper hue than the rest, and immaculate; the posterior wings are very transparent, whitish, with pale ochreous nervures; legs tawny, with black spines.

Not a very abundant, but a very handsome species; taken, however, in various parts of the country, in the middle of summer: found also in Scotland.

Sp. 7. *marmoratus*. *Ochraceus, alis pallidioribus, anticis fusco nebulosis, maculis duabus subhyalinis, nervis transversalibus fuscis.* (Long. corp. 6—7 lin.; Exp. Alar. 12—15 lin.)

Lim. *nebulosus*. *Steph. Catal. 322. No. 3690.*—Lim. *marmoratus*. *Phil. Mag. (Curtis) v. iv. p. 123.*

Dull ochreous: eyes fuscescent; sides of the thorax brownish; anterior wings pale ochreous, prettily variegated, or clouded, with brown, except an oblique transverse spot, about the middle of the disc, and an irregular blotch covering the transverse nervures, which, with some dots beyond them, are brown; stigma fuscescent; posterior wings very transparent and iridescent,



immaculate, the apex very slightly tinted with ochreous; abdomen ochreous, greenish beneath during life; legs tawny, with black spines.

Some examples are of a browner tint than others, and they vary a little in markings.

Not uncommon, within the metropolitan district, in July and August; taken also in Devonshire, and in other parts of the country.

Sp. 8. *binotatus*. *Sordidè ochraceus, alis anticis flavescens, maculis tribus pallescentibus, stigmatè piceo.* (Long. corp. 6 lin.; Exp. Alar. 14 lin.)

Lim. *glaucopterus* *Steph. Catal. 322. No. 3691.*—Lim. *binotatus*. *Phil. Mag. (Curtis) v. iv. p. 125.*

Dull ochreous: anterior wings yellowish-ochreous, deepest at the base, with three small pale transparent spots on the disc, and a larger one towards the apex, covering the transverse nervures; near the hinder angle is a large brown spot; stigma large, dull pitchy-brown; posterior wings hyaline, faintly tinted with ochreous at the tip; abdomen greenish-ochreous, green beneath during life; legs pale tawny, with blackish spines.

Found, but not very commonly, within the metropolitan district.

Sp. 9. *elegans*. *Fusco-ochraceus, alis anticis pallide fuscis, vittis aliquot albidis subradiatim dispositis.* (Long. corp. 6—7 lin.; Exp. Alar. 14—16 lin.)

Lim. *albovittatus*. *Steph. Nomen. 2d edit. col. 121.*—Lim. *elegans*. *Phil. Mag. (Curtis) v. iv. p. 123.*—*Curtis, v. xi. pl. 488.*

“Palpi and antennæ ferruginous: head and thorax somewhat castaneous, the crown of the former and the back of the latter lead colour; abdomen ochreous, the back fuscous, with whitish margins to the segments; wings shining, superior (anterior) pale brown, the nervures darker, with the third cell (areolet), a stripe on the disc, the 1st, 2nd, 4th, and 5th posterior cells, and a spot at the base of the 3rd and 6th, whitish, the superior discoidal cell very long.”—*Curtis, l. c.*

My specimens of this beautiful species were taken by Mr. Weaver in the New Forest, where it has also been taken in June by Mr. Dale, as stated by Curtis, as above quoted.

Sp. 10. *nebulosus*. *Ochraceus, alis anticis flavescens-ochraceis, fusco variegatis, maculâ discoidali rhombæâ utrinque fusco marginatâ, lunulâque apicis pallidis.* (Long. corp.  $3\frac{1}{2}$ —5 lin.; Exp. Alar. 13— $14\frac{1}{2}$  lin.)

Lim. *affinis*, *Steph. Catal. 322. No. 3693.*—Lim. *nebulosus*. *Phil. Mag. (Curtis) v. iv. p. 123.*—Lim. *apicalis*. *Phil. Mag. (Curtis) v. iv. p. 123, var. Phr. lunaris. Pictet, p. 132. pl. ix. f. 3.*

Ochreous: thorax griseous above; head and antennæ pale ochreous, the former fuscous on the crown; anterior wings yellowish-ochre, darker at

the apex, which is variegated with deep brown; on the disc is a large oblique subrhomboid transparent spot, as in *L. rhombicus*, bordered anteriorly and posteriorly with deep brown; beyond this is an irregular blotch of the same, covering the transverse nervures, which last are pitchy-ochreous, the others of a paler hue; on the hinder margin is a pale suboval spot, edged within with a deep border of brown clouds, and forming a lunate mark; stigma deep ochreous, sometimes pitchy, and occasionally wanting; posterior wings very transparent, faintly tinted with ochreous at the apex; legs pale tawny, with black spines.

A very variable species: in some instances the anterior wings are almost immaculate; in others very much clouded with fuscous.

Larva with the head and thorax very pale ochreous, the former and two following segments with minute black dots; abdomen whitish; legs ochreous, with black dots: the case in which it resides is composed of vegetable materials, which are always disposed longitudinally, and vary considerably in different individuals.

An extremely abundant and greatly diffused species, occurring, during the autumn, in profusion in marshy places throughout the metropolitan district; found also in Wales, the north of England, and Scotland.

Sp. 11. *lunatus*. *Ochraceus, alis anticis fuscis, costâ maculâ centrali alterâque sublunatâ posticè subhyalinis, stigmatè magno, piceo.* (Long. corp. 5 lin.; Exp. Alar. 14½ lin.)

Lim. stigma. *Steph. Catal.* 322. No. 3701.—Lim. *lunatus*. *Phil. Mag.* (Curtis) v. iv. p. 123.

Head and thorax above ochreous: "superior (anterior) wings brown, the costa, a spot on the disc, and a large sublunate spot beyond it semihyaline; there are four pale rays between this and the posterior margin, which is spotted brown and whitish; stigma large and piceous."—Curtis, *l. c.*

Found, occasionally, within the metropolitan district, in June. "Whittlesea Mere, July."—Curtis, *l. c.*

Sp. 12. *stigma*. *Ochracea, alis anticis saturatoribus, basi costâque pallidis, disco immaculato, stigmatè rotundato, piceo.* (Long. corp. 5—6 lin.; Exp. Alar. 14—15 lin.)

Lim. *bimaculatus*. *Steph. Catal.* 322. No. 3686.—Lim. *stigma*. *Phil. Mag.* (Curtis) v. iv. p. 123.

Ochreous, with a reddish tint: antennæ pale tawny-ochreous, annulated with pale fuscous; eyes fuscous; anterior wings very pale yellowish-ochre, darker on the inner (or dorsal) edge and hinder margin, the disc immaculate, stigma very distinct, rounded and deep pitchy; nervures pale ochreous; posterior wings transparent, faintly tinted with yellowish, the apex and

nervures darker; abdomen ochreous, greenish beneath during life; legs pale tawny-ochreous, faintly annulated with brownish, spines black.

Taken near London, in June, and in the New Forest.

Sp. 13. griseus. *Fusco-griseus, alis anticis brunnescentibus flavido irroratis maculæque albidâ, stigmatè nigro fusco.* (Long. corp. 5—6½ lin.; Exp. Alar. 12—15½ lin.)

Phr. grisea. Linné.—Lim. griseus. *Steph. Catal. 322. No. 3688.*

Head and thorax griseous-brown above, ochreous beneath; mouth tawny; antennæ brown, annulated with griseous; anterior wings fuscous, minutely freckled with pale yellowish, with some of the nervures, especially on the hinder margin, dotted with deep brown; towards the middle of the disc is an indistinct whitish blotch; the transverse nervures are blackish-brown, and terminated in a large ovate stigma of a similar hue; posterior wings transparent, with the nervures and apex brownish; legs ochreous, with black spines.

Not very abundant, at least within the metropolitan district, where it occurs in July; found also in the New Forest and in Scotland.

Sp. 14. costalis. *Ochraceus, alis anticis fusciscentibus nebulis saturatoribus, nervis transversis fuscis, alteris plerisque fusco irroratis, stigmatè perfusco.* (Long. corp. 6 lin.; Exp. Alar. 13 lin.)

Lim. costalis. *Steph. Catal. 322. No. 3699.*

Ochreous: head and thorax above ashy; antennæ pitchy, with paler rings; wings pale fusciscent ochre, anterior obscurely freckled with darker clouds, most of the nervures, especially those towards the inner margin, dotted with brown, and the transverse ones wholly of that colour; stigma conspicuous and deep brown; posterior wings hyaline and highly iridescent; abdomen fusciscent above, ochreous beneath; legs dull ochreous, with black spines.

Taken near London, and at Whittlesea Mere, in June and July.

Sp. 15. affinis. *Pallide ochraceus, alis pallidioribus, immaculatis, nervis piceo irroratis, stigmatè piceo.* (Long. corp. 5½—6 lin.; Exp. Alar. 13—14 lin.)

Lim. punctulatus. *Steph. Catal. 322. No. 3700.*—Lim. affinis. *Phil. Mag. (Curtis) v. iv. p. 123.*

Pale ochraceous: antennæ fulvescent, annulated with brown; abdomen brownish above, with the margins of the segments pale; anterior wings pale fuscous, freckled irregularly with ochreous; nervures, especially the transverse ones, more or less dotted with pitchy-brown; stigma pitchy; posterior wings transparent and highly iridescent, faintly tinted with ochreous at the apex; legs pale fulvescent, with the extreme tips of the tarsal joints and the spines black.

Also found, but not very abundantly, within the metropolitan

district, in June and July, and in the New Forest, in Kent, Suffolk, and Scotland.

Sp. 16. *marginalis*. *Supra fuscus subtus ochraceus, alis anticis fuscescentibus, lunulâ mediâ, maculâque tripartitâ postice hyalinis, stigmatè piceo.* (Long. corp.  $5\frac{1}{2}$  lin.; Exp. Alar. 12 lin.)

Lim. *marginalis*. *Steph. Catal.* 322. No. 3698.

Ochreous beneath, fuscous above, the margins of the abdominal segments pale; anterior wings pale fuscous, irregularly freckled with ochreous, with a lunate pale hyaline spot, placed obliquely, beyond the middle, and an ovate spot of similar hue beyond the transverse nervures occupying the base of three of the marginal areolets; stigma pitchy, darkest towards the disc; posterior wings very transparent, iridescent and immaculate; legs pale tawny, with the spines and tips of the tarsal joints blackish.

Also found, but not very abundantly, in the vicinity of the metropolis, in June.

Sp. 17. *fenestralis*. *Ochraceus, suprâ fuscus, alis anticis albidis, basi excepto irregularitèr fusco irroratis et maculatis, lineolâ discoidali maculisque posticè subhyalinis, stigmatè piceo.* (Long. corp. 5— $6\frac{1}{2}$  lin.; Exp. Alar. 10—15 lin.)

Lim. *versicolor*. *Steph. Catal.* 322. No. 3694.—Lim. *fenestralis*. *Phil. Mag.* (Curtis) v. iv. p. 123.

Head and thorax fuscous above, ochreous beneath; abdomen above fuscous, beneath ochreous, with a broad fuscous streak on both sides; anterior wings whitish, minutely and irregularly freckled and dusted with pitchy-brown, except at the base of the costa, with a clear oblique spot on the disc, another irregular one behind the transverse nervures, mostly united to a smaller one on the hinder margin near the anal angle; towards the base there is frequently also a triangular spot of similar hue towards the base of the inner margin; stigma pitchy-brown, or blackish, with pale dots; posterior wings very transparent, pale, and faintly tinted with fuscous at the apex; legs pale tawny, with black spines.

The markings on the anterior wings vary a little in extent, and are sometimes bordered with deep pitchy-brown, with which colour the extreme inner margin is frequently dotted.

Found in the vicinity of the metropolis, occasionally, in June and July; also in the New Forest.

Sp. 18. *bipunctatus*. *Fuscus, infrâ ochraceus, alis anticis albido-fuscis, pallide irroratis, lunulâ mediâ maculâque bisinuâtâ postice hyalinis plerisque brunneo marginatis, nervis longitudinalibus albo punctatis, stigmatè piceo.* (Long. corp. 6—7 lin.; Exp. Alar. 10— $13\frac{1}{2}$  lin.)

Lim. *tessellatus*. *Steph. Catal.* 322. No. 3695.—Lim. *bipunctatus*. *Phil. Mag.* (Curtis) v. iv. p. 123.

Above fuscous, beneath ochreous: abdomen with a broad fuscous streak; anterior wings pale whitish-brown, darkest towards the apex, thickly freckled with whitish, except on the costa, and a lunate spot on the disc, another behind the transverse nervures resembling a reversed S, and nearly united to a small one on the hinder margin; these spots are very frequently broadly edged with deep fuscous-brown; the longitudinal nervures on the inner margin are generally pitchy, dotted irregularly with white; stigma also pitchy, with a few pale dots; posterior wings very transparent, iridescent and immaculate; legs tawny, spines and tips of tarsal joints black.

Not uncommon, within the metropolitan district, in June and July; also found in the New Forest, near Cambridge, in Scotland, Devonshire, &c.

Sp. 19. *signatus*. *Ochraceus, supra fuscus, alis anticis ochraceo-albidis, maculâ mediâ utrinque fusco marginatâ albâ, stigmatè pallide brunneo.* (Long. corp. 6 lin.; Exp. Alar. 12 lin.)

Lim. *signatus*. *Steph. Catal. 322. No. 3696.*

Ochreous: head, thorax, and abdomen above fuscous, the sides of the latter with a fuscous streak; antennæ pale reddish-brown, with darker rings; anterior wings very pale ochreous-white, minutely, but very sparingly, freckled with brown towards the apex, especially on the anal angle; on the disc is a small white oblique spot, edged anteriorly and posteriorly with deep fuscous; the stigma is pale brown; posterior wings ample, hyaline, pale and immaculate; legs tawny, anterior tibiæ faintly annulated with fuscous, the others armed with black spines.

Taken, in the vicinity of London, in August.

Sp. 20. *obliquus*. *Fuscus, infra ochraceus, alis anticis flavescente-ochraceis, maculâ præobliquâ pallidâ, stigmatè piceo.* (Long. corp. 5 lin.; Exp. Alar. 10 lin.)

Lim. *obliquus*. *Steph. Catal. 322. No. 3697.*

Above fuscous, beneath ochreous: palpi pale; antennæ fuscous, with faint pale rings; anterior wings pale yellowish-ochre, obscurely freckled with a paler hue, with a narrow larger and paler spot, placed very obliquely, about the middle of the disc; transverse nervures and stigma pitchy; posterior wings pale and hyaline; legs pale tawny, with black spines.

Found, but rarely, near London, in July.

Sp. 21. *luniger*. *Ochraceo-fuscus, alis anticis fusciscentibus, lunulâ mediâ maculâque posticè subhyalinis, stigmatè brunneo.* (Long. corp. 5½ lin.; Exp. Alar. 11 lin.)

Lim. *lunatus*. *Steph. Catal. 322. No. 3702.*

Ochreous-brown, paler beneath: abdomen with the margins of its segments pale; anterior wings brownish, obscurely freckled with darker tints, with a somewhat crescent-shaped transparent spot in the middle towards the inner margin, an ovate spot beyond the transverse nervures, which are dusky, also transparent, the stigma dull pitchy-brown; posterior wings slightly fuscous, transparent and very iridescent; legs dull ochreous, with blackish spines.

Also somewhat uncommon: found in the neighbourhood of London in July.

Sp. 22. *Auricula*. *Ochraceus, alis anticis lucidis, saturate ochraceis, maculâ mediâ, alterâque auriculæformi posticè hyalinis, stigmatè obscure fusco.* (Long. corp. 4—5 lin.; Exp. Alar. 10—11 lin.)

Lim. fenestralis. *Steph. Catal.* 322. No. 3703.—Lim. *Auricula*. *Phil. Mag.* (*Curtis*) v. iv. p. 124.

Ochreous: head, thorax, and abdomen above fuscous, the margins of the segments of the latter and the under surface greenish-ochre during life; antennæ faintly annulated with brownish; anterior wings shining and pubescent, deep ochre, with a transparent spot on the disc, varying in magnitude, and sometimes nearly obliterated, and a larger irregular, somewhat earshaped one over the transverse nervures, which are pale; stigma obscure fuscous-ochre; posterior wings whitish-hyaline, pale brown at the tip; legs pale tawny-ochreous, spines fuscous.

The inner margin of the anterior wings is occasionally fuscous.

Not uncommon, in June and July, within the metropolitan district; taken also near Carlisle, in Devonshire, the New Forest, Suffolk, Scotland, &c.

Sp. 23. *geminus*. *Fuscus, alis anticis lucidis, fusciscente-ochraceis, maculâ geminatâ mediâ hyalinâ, stigmatè ochraceo.* (Long. corp.  $3\frac{1}{2}$ —5 lin.; Exp. Alar. 9—11 lin.)

Lim. *geminus*. *Steph. Catal.* 322. No. 3704.

Fuscous: beneath ochreous; edges of the abdominal segments pale; anterior wings rather narrow, shining and deep dusky-ochreous, with a double hyaline spot in the middle, in other respects immaculate; posterior wings dusky-hyaline, very iridescent, with their apex fuscous; legs pale tawny, with blackish spines.

Found, in the vicinity of London, at Hertford, Ripley, &c. in June; also taken in the New Forest.

Sp. 24. *obscurus*. *Ochraceus, alis anticis angustis fusco-ochraceis, maculâ centrali seriisque duabus punctorum posticis hyalinis, stigmatè fusco-ochraceo.* (Long. corp. 4—5 lin.; Exp. Alar. 10—12 lin.)

Lim. assimilis. *Steph. Catal.* 322. No. 3705.—Lim. obscurus. *Phil. Mag.* (Curtis) v. iv. p. 124.

Ochreous, fuscous above: abdomen with the edges of its segments pale; antennæ brown; anterior wings narrow, dusky-ochre, with a pale hyaline dot on the disc, and two irregular rows of pale dots towards the hinder margin, one anterior to, and the other behind, the transverse nervures; the extreme hinder margin and the stigma dark fuscous ochre; posterior wings dusky hyaline, with the apex fuscous; legs pale dirty ochre, with dusky spines.

Taken, occasionally, near London, in June; also in the New Forest, and in Devonshire.

Sp. 25. fuscus. *Ochraceo-fuscus, alis anticis fuscis, atomis maculisque quatuor pallidis, stigmatè fusco-piceo immaculato, tibiis anticis fusco annulatis.* (Long. corp.  $3\frac{1}{2}$ —4 lin.; Exp. Alar. 10—11 lin.)

Lim. fuscus. *Steph. Catal.* 322. No. 3706.

Ochreous-brown, darkest above: antennæ pitchy-brown; anterior wings deep fuscous, freckled, especially on the apical and hinder margins, with whitish, with a blotch of the same towards the base of the costa, another on the costa before the stigma, a third on the inner margin, opposite to the second, and a fourth covering the transverse nervures; the inner or dorsal nervures are thick, deep fuscous, with remote whitish dots, the others slender and pale; stigma pitchy-brown, immaculate; legs pale ochreous, with black spines; anterior tibiæ and tarsi annulated with fuscous.

Also taken, near London, in June and July.

Sp. 26. cœnosus? *Ochraceo-fuscus, alis brevibus fuscis pallide ochraceis obsolete irroratis, stigmatè obscuro, utrinque pallide marginato.* (Long. corp. 4 lin.; Exp. Alar. 10—11 lin.)

Lim. caliginosus. *Steph. Nomen.* 2d edit. col. 122.—Lim. cœnosus. *Phil. Mag.* (Curtis) v. iv. p. 123?

Deep ochreous-brown: antennæ faintly annulated with a paler hue; abdomen dusky; anterior wings broad, short and glossy, deep fuscous, obsoletely freckled with pale ochreous, with an obscure darker stigma, bordered anteriorly and posteriorly with whitish; on the inner margin towards the hinder angle is an obscure palish spot, and the inner nervures are slightly dotted with whitish; posterior wings very transparent pale fuscous, with the apex darker; legs fuscous, with darker spines.

Taken at Whittlesea Mere, in July, and also in Scotland?

Sp. 27. punctatissimus. *Ochraceo-fuscus, alis anticis angustis pallide fuscis, perlepidè vagèque albido irroratis, antennis brunneis, ochraceo tenuitèr annulatis.* (Long. corp.  $4\frac{3}{4}$  lin.; Exp. Alar. 12 lin.)

Lim. punctatissimus. *Steph. Catal.* 322. No. 3707.

Ochreous-brown: antennæ brown, with slender ochreous rings; anterior wings narrow, pale fuscous, thickly, irregularly, and prettily freckled throughout with whitish dots and blotches; stigma indistinct, immaculate; posterior wings delicate, hyaline, iridescent, pale fuscous, with the tips darker; abdomen with the edges of the segments pale; legs pale ochreous-brown, with dusky spines.

Found, near Hertford, in June and July.

Sp. 28. Vinculum. *Ochraceo-fuscus, alis anticis fuscis, maculis quatuor pallidis, stigmata fusco, pallide irrorato.* (Long. corp.  $3\frac{1}{2}$  lin.; Exp. Alar.  $9\frac{1}{2}$ —10 lin.)

Lim. 4-maculatus. *Steph. Catal. 322. No. 3708.*—Lim. Vinculum. *Phil. Mag. (Curtis) v. iv. p. 124.*

Ochreous-brown: "superior (anterior) wings deep fuscous, the stigma a little darker, with numerous pale dots, and a larger one before the stigma, two opposite on the inferior (inner) margin and another upon the transverse nervures; apex of inferior (posterior) wings fuscous."—*Curtis, l. c.*

Taken near London, and in the New Forest, in July and August.

Sp. 29. tenebricus. *Fuscus, alis anticis saturate fuscis plus minus ochraceo irroratis maculisque duabus pallidis, stigmata piceo.* (Long. corp. 4— $5\frac{1}{2}$  lin.; Exp. Alar. 12—14 lin.)

Lim. confluens. *Steph. Catal. 322. No. 3709.*—Lim. tenebricus. *Phil. Mag. (Curtis) v. iv. p. 123.*

Fuscous: thorax with a pale streak on each side; abdomen with the edges of the segments pale; anterior wings very dark fuscous, more or less freckled and dotted with ochreous, especially at the base of the costa and on the extreme hinder margin, inner margin very dark, in some examples almost black at the base, with a pale ochreous spot towards the apex, opposite to the stigma, which is fuscous and immaculate, and edged anteriorly with ochreous; posterior wings fuscous, with the tip darker: antennæ pitchy-brown, with ochreous annulations; legs ochreous, with blackish spines.

Not uncommon, in the neighbourhood of London, during the summer; also found in the New Forest, Devonshire, the north of England, &c.

Sp. 30. fuscatus. *Ochraceo-fuscus, alis anticis pallidè fuscis, marginibus interioribus et posticis saturatoribus, stigmata fusco-piceo, pallide irrorato.* (Long. corp.  $4\frac{1}{2}$  lin.; Exp. Alar. 12 lin.)

Lim. fuscatus. *Steph. Catal. 322. No. 3710.*

Ochreous-brown: antennæ faintly annulated with ochreous; anterior wings pale fuscous, with the inner and posterior margins darker, the stigma pitchy-brown, with a few pale dots, the wings immaculate, except an indistinct palish spot on the inner margin towards the hinder angle; poste-



rior wings ample, transparent, slightly iridescent, pale fuscous, with the apex darker; legs dull ochreous, with fuscous spines.

Found, occasionally, at Hertford, in June.

Sp. 31. *sparsus*. *Fuscus, infra ochraceus, alis anticis fusco-ochraceis, atomis pallidioribus, maculæque posticè ochraceâ, pedibus ochraceis, tibiis anticis fusco annulatis.* (Long. corp. 4—5½ lin.; Exp. Alar. 11—13 lin.)

Lim. *nubilus*. *Steph. Catal. 322. No. 3711.*—Lim. *sparsus*. *Phil. Mag. (Curtis) v. iv. p. 123.*

Fuscous, ochreous beneath: antennæ brown, rather broadly annulated with ochreous; anterior wings silky, pale brown, thickly freckled with ochreous, with a larger spot of the same hue towards the apex of the inner margin; posterior wings fuscous, slightly iridescent, with the apex brown; legs pale ochreous, anterior tibiæ annulated with fuscous.

A common species, frequenting the marshy districts in the vicinity of London; taken at Battersea, Coombe wood, Ripley, Hertford, &c.; the New Forest, Devonshire, Dorset, Wilts, Suffolk, &c. and the north of England.

Sp. 32. *irroratus*. *Ochraceus, antennis brunneo annulatis, alis anticis pallide ochraceis, atomis numerosissimis pallidioribus, abdominis dorso fusco, pedibus ochraceis spinis fuscis.* (Long. corp. 4½ lin.; Exp. Alar. 11 lin.)

Lim. *irroratus*. *Steph. Catal. 322. No. 3712.*

Ochreous: antennæ faintly annulated with brown; anterior wings pale yellowish-ochre, freckled throughout with very numerous paler dots, stigma obsolete; posterior wings iridescent, yellowish, with the apex dusky; abdomen fuscous above; legs pale ochreous, with fuscous spines.

Apparently rare: taken, near London, in June.

Sp. 33. *flavescens*. *Ochraceus, alis anticis pallide flavescente-ochraceis, immaculatis, posticis pallidissimè flavescentibus.* (Long. corp. 6 lin.; Exp. Alar. 14 lin.)

Lim. *flavescens*. *Steph. Catal. 322. No. 3713.*

Pale ochraceous: antennæ faintly annulated with whitish; anterior wings wholly of a plain yellowish-ochre, very clear and entirely immaculate; nervures pale ochreous; posterior wings very pale yellowish, with the apex darker; legs pale ochreous, with dusky spines.

Also taken, near London, in June, at Ripley, but apparently not common.

Sp. 34. *ochraceus*. *Supra fuscus, infra ochraceus, alis anticis pallide fusco-flavidis, flavo irroratis, stigmato obscuro.* (Long. corp. 4—4½ lin.; Exp. Alar. 10½—11 lin.)

Lim. testaceus. *Steph. Catal.* 322. No. 3714.—Lim. ochraceus. *Phil. Mag.* (*Curtis*) v. iv. p. 124.

Ochraceous: back of the thorax and of the abdomen fuscous; eyes blackish; anterior wings pale dusky-yellow, obscurely freckled with pale yellow; nervures ochreous; stigma faintly darker; posterior wings pale, whitish-hyaline, iridescent, the apex yellowish; legs bright ochreous, with dusky spines.

Taken, occasionally, near London, in June, and in the New Forest.

Sp. 35. consobrinus. *Supra fuscus, subtus ochraceus, alis anticis ferrugineo-ochraceis fusco irroratis, angulo postico brunneo ochraceo irrorato.* (Long. corp. 4—5½ lin.; Exp. Alar. 10—11½ lin.)

Lim. subnebulosus. *Steph. Catal.* 323. No. 3715.—Lim. consobrinus. *Phil. Mag.* (*Curtis*) v. iv. p. 124.

Above fuscous, beneath ochreous: anterior wings pale rusty-ochre, the inner and hinder margins darker and freckled with brown; anal angle brown, freckled with yellowish; costa immaculate; stigma obscure; posterior wings whitish-hyaline, iridescent, obscurely tinted with ochreous at the apex; legs ochreous, with blackish spines.

Also found within the metropolitan district, in June, and in the New Forest.

Sp. 36. notatus. *Ochraceus, dorso fusco: alis anticis pallide ferrugineo-flavidis atomis saturate brunneis longitudinalitèr notatis, angulo postico brunnescente ochraceo irrorato.* (Long. corp. 5 lin.; Exp. Alar. 10½ lin.)

Lim. notatus. *Steph. Catal.* 223. No. 3716.

Ochraceous: back of thorax and of abdomen fuscous; anterior wings pale rusty-yellowish, with the costa immaculate, the inner and hinder margins darker; the disc with scattered brown atoms disposed in longitudinal lines; hinder angle brownish, freckled with ochreous; posterior wings pale yellowish, hyaline, iridescent, with the apex ochreous; legs ochreous, with black spines.

Inhabits the vicinity of London, in June.

Sp. 37. substrigosus. *Ochraceus, thoracis abdominisque dorso fuscescentibus, alis anticis pallide ochraceus margine interno apiceque saturationibus, strigis duabus obscuris brunneis.* (Long. corp. 5½ lin.; Exp. Alar. 12 lin.)

Lim. substrigosus. *Steph. Nomen.* 2d edit. col. 122.

Ochreous: thorax and abdomen above somewhat fuscous; anterior wings pale ochraceous, the inner and apical portions darker; towards the inner margin are two obscure brown streaks, extending nearly from the base to the apex; stigma concolorous with the costa; posterior wings whitish-hyaline,

iridescent, with the apex a little ochreous; legs pale-ochreous, with dusky spines.

Also found within the metropolitan district, about Hertford, in June.

Sp. 38. *bipartitus*. *Ochraceus, alis anticis pallidioribus, margine interno et postico vagè brunneo irroratis, disco lineâ longitudinali brunneâ.* (Long. corp.  $4\frac{1}{2}$ —5 lin.; Exp. Alar. 10—11 lin.)

Lim. interruptus. *Steph. Catal.* 323. No. 3717.—Lim. *bipartitus*. *Phil. Mag.* (*Curtis*) v. iv. p. 124.

Ochreous: anterior wings paler, with the costa immaculate, the inner margin darker, thickly and irregularly freckled with brown, as is a triangular blotch on the hinder margin; this space is bounded on the disc with a longitudinal brown line, partially interrupted towards the apex; posterior wings whitish, hyaline, with a yellowish tinge towards the apex; legs ochreous, with dusky spines.

Not uncommon, in August and September, at Coombe wood, and in other places within the metropolitan district; taken also in the New Forest and near Dover.

Sp. 39. *vittatus*. *Subtestaceus, alis anticis ochraceo flavis, vittâ longitudinali interruptâ brunneâ.* (Long. corp.  $3\frac{1}{2}$  lin.; Exp. Alar. 9 lin.)

Phr. *vittatus*. *Fabricius, E. S., Supp.* 201.—Lim. *vittatus*. *Steph. Catal.* 323. No. 3718.

Pale testaceous-ochre: thorax and abdomen rather darker, the latter with a palish lateral streak; anterior wings with an interrupted longitudinal brown line, expanded at the apex, the inner and posterior apical margins of the wing darker than the costa; posterior wings yellowish, hyaline, slightly darkest at the apex; legs pale ochreous, with black spines.

Apparently scarce: taken, in September, near London.

Sp. 40. *nigrivittatus*. *Ochraceus, antennis pedibusque pallidioribus, alis anticis ochraceo-flavis, lineâ abbreviatâ longitudinali mediâ nigrâ, margine postico brunneo irrorato, stigmatè brunneo.* (Long. corp.  $4\frac{1}{2}$  lin.; Exp. Alar. 11 lin.)

Lim. *lineola*. *Steph. Catal.* 323. No. 3719.—Phr. *elegans*. *Pictet, p.* 137. *pl. x. f.* 3.

Ochreous: head with a blackish dash between the antennæ, which are pale ochreous; abdomen rather dusky above; anterior wings ochreous-yellow, shining, and rather narrow, with the nervures light; on the hinder margin is a triangular blotch, formed of brown freckles, and on the disc, rather beyond the middle, is a short longitudinal black streak, placed over the 5th longitudinal nervure; stigma brown; posterior wings transparent, whitish, faintly tinted with ochreous at the apex; legs ochreous, with black spines.

Larva with the head and thorax brown, the following segment with four black dots; the abdomen ochreous; legs brown.

I am compelled to change the name originally proposed in my Catalogue for this species, as the name *lineola* is employed by Villers, and that of *elegans*, given by Pictet, was previously used to designate a very different insect by Curtis, who, with ill-judged taste, has confused the nomenclature of the Trichoptera considerably, by adopting many of the *same names* as I had previously employed *to very different insects*, as may be seen by the synonyms.

Also rare: found within the metropolitan district, in the autumn.

Sp. 41. *præustus*. *Fuscus, infra ochraceus, alis anticis pallide ochraceis, margine postico maculâ apicali stigmatæque ustulatis.* (Long. corp. 3 lin.; Exp. Alar. 6 lin.)

Lim. *præustus*. *Steph. Catal. 323. No. 3720.*

Fuscous, beneath ochreous: antennæ brownish; anterior wings pale ochreous, with a triangular blotch at the anal angle, an obscure spot on the apex towards the costa, and the stigma umbre brown; posterior wings whitish, hyaline, iridescent, with the apex faintly tinted with ochreous; legs pale ochreous, with dusky spines.

Found, but rarely, near London, in July.

Sp. 42. *flavus?* *Ochraceus, thoracis dorso abdomineque brunneis, alis anticis flavis vittis duabus indistinctis longitudinalibus brunneis.* (Long. corp. 5 lin.; Exp. Alar. 10—11 lin.)

Phr. *flava*. *Linné, ii. p. 910?*—Lim. *variabilis*. *Steph. Catal. 323. No. 3722.*  
—Lim. *terminalis*. *Phil. Mag. (Curtis) v. iv. p. 124?*

Ochreous: back of the thorax and the abdomen brown; anterior wings rusty yellowish-ochre, with the nervures concolorous, the inner margin and a portion of the hinder one thickly freckled with brown, forming two indistinct longitudinal streaks, and having an ovate immaculate patch on the hinder margin; posterior wings hyaline, pale, immaculate, with the apex faintly tinged with ochreous; legs and antennæ bright tawny, the former with black spines.

A very variable species: in some examples the anterior wings are very much freckled with brown; in others they are almost immaculate.

Larva with the head and two anterior segments brown, the following ochreous, with four dusky dots, the abdomen pale ochreous, with long cilia; legs brown.

Not uncommon, in June, in the neighbourhood of the metropolis, and apparently very abundant in December: taken likewise in the New Forest.

Sp. 43. *centralis*. *Ochraceus, alis anticis fuscis, interne ochraceo irroratis, maculâ centrali alterâque posticâ, lunulâque marginali pallidis.* (Long. corp. 4—5 lin.; Exp. Alar. 10—11 lin.)

Lim. *apicalis*. *Steph. Catal. 323. No. 3725.*—Lim. *centralis*. *Phil. Mag. (Curtis) v. iv. p. 124.*

Ochreous: thorax above and abdomen brown; anterior wings fuscous, thickly freckled with ochreous, the costa wholly of the latter colour; on the disc is an obscure pale spot, and a smaller and less distinct one on the transverse nervures, and on the hinder margin is a large somewhat ovate blotch of the same, extending almost from angle to angle; posterior wings pale, hyaline, with the apex ochreous; legs and antennæ pale tawny-ochreous, the former with black spines.

Also taken within the metropolitan district, but less frequently than the last, in June and July.

Sp. 44. *punctatus*. *Brunneo-ochraceus, alis anticis pallide ochraceis, internè brunneo punctatis.* (Long. corp. 5 lin.; Exp. Alar. 10 lin.)

Lim. *punctatus*. *Steph. Catal. 323. No. 3723.*

Brownish-ochreous, with a tawny hue: eyes black; anterior wings pale ochreous, the costa immaculate, the disc, inner and hinder margins, thickly covered with somewhat confluent brown freckles; nervures brownish at the apex and towards the base of the inner margin; posterior wings very transparent, pale, with the apex rather ochreous; legs pale tawny, with brownish spines.

Found in July, near London.

Sp. 45. *elongatus*. *Pallide ochraceus, alis anticis angustatis et elongatis, pallide ochraceis internè brunneo subirroratis.* (Long. corp. 3½ lin.; Exp. Alar. 11—12 lin.)

Lim. *elongatus*. *Steph. Catal. 323. No. 3726.*

Pale ochreous: antennæ long and tawny; anterior wings narrow and somewhat elongate, pale ochreous, with the extreme inner margin and the apex faintly freckled with brown, the costa immaculate; posterior wings very transparent, pale ochreous white; legs pale tawny, with blackish spines.

Also found, in July, near London.

Sp. 46. *fuliginosus*. *Brunneo-ochraceus, abdomine pallido, alis anticis fusco-fuliginosis, atomis pallidioribus obscure notatis, posticis hyalinis, albidis, iridescentibus.* (Long. corp. 4 lin.; Exp. Alar. 11 lin.)

Lim. *fuliginosus*. *Steph. Catal. 323. No. 3727.*

Ochreous-brown: antennæ pale tawny; anterior wings dull smoky-brown, with a few very obscure paler freckles on the disc, the nervures dusky;

posterior wings hyaline, whitish, iridescent and immaculate; abdomen pale, ochreous; legs pale ochreous, with black spines.

Inhabits the metropolitan district, in June; not uncommon.

Sp. 47. *ustulatus*. *Ochraceus, abdomine pallidiore, alis anticis ochraceis, brunneo irroratis, costá immaculatá, disco maculá magná irregulari brunneo-ustulatá.*  
(Long. corp. 4 lin.; Exp. Alar.  $9\frac{1}{2}$  lin.)

Lim. *ustulatus*. *Steph. Catal. 323. No. 3724.*

Ochreous: antennæ reddish; abdomen pale; anterior wings ochreous, with darker nervures, the costa immaculate, except at the extreme apex, the rest of the wings indistinctly freckled with brown, with a large irregular umbre-brown patch, obscurely dotted with pale, on the disc towards the middle of the costa; posterior wings pale ochreous, hyaline and immaculate, with the tip slightly tinted with brown; legs pale, with blackish spines.

Rare: found in June, near London.

Sp. 48. *incisus*. *Ochraceus, alis pubescentibus, subbrevis, anticis margine interno nervisque brunneo irroratis, posticis pallidis ad apicem emarginatis.*  
(Long. corp. 3— $4\frac{1}{2}$  lin.; Exp. Alar.  $9\frac{1}{2}$ — $10\frac{1}{2}$  lin.)

Lim. *villosus*. *Steph. Catal. 323. No. 3721.*—Lim. *incisus*. *Phil. Mag. (Curtis) v. iv. p. 124.*

Ochreous: thorax brownish above; anterior wings rather short, somewhat acute at the apex, pubescent, yellowish-ochreous, the nervures and extreme inner margin closely freckled with brown, in other respects immaculate; posterior wings pale, hyaline, iridescent, the hinder margin towards the apex deeply notched, the apex itself tinted with ochreous; abdomen and legs pale ochreous, the latter with black spines.

This insect differs considerably in habit from the other species of the genus, the anterior wings being much shorter and more acute, with the discoidal areolets elongate, and the hinder wings have the posterior margin towards the apex deeply notched.

Not uncommon, during the middle of the summer, within the metropolitan district, but much more abundant in the west of England, about Tavistock and Ashburton.

## GENUS XXXII.—AGRYPNIA, *Curtis*.

*Antennæ* as long as the body, inserted in front of the head, close to the eyes, slender, slightly pubescent: *palpi* rather pubescent; maxillary long, compressed, 5-jointed, the basal joint short; the 2nd and 3rd longer, equal in length, the other two shorter than these, also equal in length, the 5th somewhat elliptic; labial 3-articulate, short, the apical joint longest and somewhat ovate: *head* very broad, transverse-ovate: *eyes* globose: *thorax* small, suborbicular: *abdomen* depressed, long, very broad, narrowed at the base: *wings* long; anterior rather narrow, sublanceolate, rounded at the

apex; posterior short, folded within: *legs* rather slender: *femora* simple: *tibiæ* sparingly armed with spines, posterior slightly bent, all armed with a pair of short spurs at the apex, and the four hinder with a second pair below the middle.

This genus, established by Mr. Curtis, may be at once recognised from the other Trichoptera by having the body depressed and very broad, the head is also large, but the wings in neuration closely resemble those of the first section of the following genus; from its depressed form and large head, it reminds one forcibly of the genus *Lyda* amongst the Hymenoptera, with which, however, it has no affinity: one species (and I believe one specimen only) has been hitherto taken, which is described and figured by Curtis, from whose account its characters have been abridged.

†Sp. 1. *Pagetana*. *Ochracea, oculis brunneis, alis immaculatis, apicibus subfuscantibus.* (Long. corp. 4 lin.; Exp. Alar. 12 lin.)

Agr. *Pagetana*. *Curtis, v. xii. pl. 540.—Steph. Nomen. 2d edit. Appendix.*

“Pale dull ochreous: eyes and ocelli brownish; antennæ, head, and thorax, a little more ferruginous, and clothed with ochreous hairs, the latter with an ash-coloured tint, the postscutellum and abdomen dull castaneous, with a grey bloom, the base of the segments in the latter dark, the apex ochreous, tips of superior (anterior) wings slightly fuscous; inferior (posterior) transparent, iridescent, the tips suffused with ochre, all the nervures dark brownish-ochre, excepting a few of the basal ones in the under wings, legs and underside brighter ochre.”—*Curtis, l. c.*

I have never seen this insect, which is said to have been “taken by C. J. Paget, Esq., in a salt marsh, between Yarmouth and Caistor, the 14th August.”—*Curtis, l. c.*

### GENUS XXXIII.—ANABOLIA\* *mihî*.

*Antennæ* longer than the body, but not so long as the wings, rather stout, especially the basal joint, slightly pubescent: *palpi* slightly pilose and pubescent; maxillary slender, 5-jointed, the three basal joints short, the two apical ones elongate-cylindric, of equal length; labial 3-articulate and very short, the terminal joint thickened: *head* small, transverse: *eyes* very prominent: *thorax* ovate: *wings* considerably deflexed during repose, the anterior long and narrowed, somewhat lanceolate, and faintly dilated on the costa, the apex rounded; posterior smaller, and folded within, furnished

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\* *Αναβολή* dilatio.

with numerous longitudinal nervures, placed very closely towards the apex: *abdomen* short, slightly compressed, obtuse at the tip; of the female more robust and obtuse: *legs* rather long and slender: *femora* simple: *tibiæ* and *tarsi* rather thickly armed with longish spines, the former with a pair of short spurs at the apex, and the four hinder ones each with a second pair below the middle.

The insects of this genus—at least those of the first section—almost too closely resemble those of the immediately preceding, the neuration of the wings exactly corresponding; but from them they differ in having the body rounded and somewhat compressed, the palpi slightly dissimilar, and the antennæ apparently shorter: those of the second section have the wings a little abbreviated and slightly dilated on the inner margin towards the apex, and resemble in form those of the genus *Chætopteryx*, from which, however, they are removed by the absence of the rigid setæ, with which the wings of that genus are adorned.

§ A. *Anterior wings* rather narrow and elongate: *palpi* very slightly pilose.

Sp. 1. *nervosa*. *Capite thorace abdomineque suprâ fusco-brunneis, infrâ ochraceis, antennis nigricantibus, alis anticis fusco-ochraceis maculâ subcentrali albidâ, posticis subhyalinis apice ochraceo.* (Long. corp. 4—6 lin.; Exp. Alar. 13—15 lin.)

Lim. *nervosus*. *Leach MSS.—Samouelle, pl. 7. f. 3.—An. nervosa. Steph. Catal. 320. No. 3662.—Ph. fusca. Pictet, p. 133. pl. x. f. 1.*

Head, thorax, and abdomen dusky-brown above, tawny-ochreous beneath; antennæ blackish; anterior wings ochreous-brown, the nervures dark-brown, the margins, especially the hinder one, dusky-brown, and towards the centre of the disc a lunate whitish spot, and one or two at the base of the 2nd or 3rd marginal areolet; posterior wings somewhat transparent, their apex tinged with ochreous-brown; legs ochreous, with the tarsi brown.

Larva with the head and three following segments blackish-brown, the three first adorned with numerous regular blackish markings, the rest of the body ochreous; legs ochreous, spotted with black.

Abundant at Hertford, and in other places within the metropolitan district, towards the end of August and beginning of September: found also near Dover and Ramsgate, in the New Forest, and in Scotland.

Sp. 2. *lurida*. *Suprâ ochraceo-brunnea, infrâ lurido-ochracea, antennis brunneis, alis anticis lurido-ochraceis, maculâ obsoletâ albidâ, posticis hyalinis apice lurido.* (Long. corp. 5—7 lin.; Exp. Alar. 14—16 lin.)

Ana. *lurida*. *Steph. Catal. 320. No. 3663.*



Head, thorax, and abdomen above ochreous-brown, beneath lurid-ochreous ; antennæ brown ; anterior wings lurid-ochreous, the nervures dark brown ; towards the apex of the 3rd discoidal areolet is a whitish dot, and another at the base of the 3rd marginal one ; posterior wings very transparent, slightly iridescent, with the apex lurid.

These may be only larger and more brilliant examples of the foregoing species, to which they are greatly allied.

Taken also within the metropolitan district in September.

B. *Anterior wings* short and rather broad ; *palpi* long and pilose:—

DRUSUS, *Steph.*

Sp. 3. testacea. *Rufescente-ochracea, alis pallidioribus anticis atomis paucis pallidis, pedibus ochraceis, oculis nigris.* (Long. corp. 4—5 lin. ; Exp. Alar. 12—13 lin.)

Phr. testacea. *Gmelin.*—N. G. (569.) (Drusus *Nom.*) planus. *Steph. Catal.* 321. No. 3665.—Lim. luridus. *Phil. Mag. (Curtis) v. iv. p. 124.*

Reddish-ochre: eyes black ; thorax very pilose ; wings transparent, pale reddish-ochreous, with a few minute paler dots, the nervures distinct and slightly dusky, the surface clothed with very fine golden hairs ; posterior wings paler, immaculate, the apex with a dusky tinge ; legs ochreous, with black spines.

Not very common : taken in July and August at Hertford ; also in the New Forest and in Devonshire.

Sp. 4. annulata. PLATE XXXIV. f. 3.—*Rufescente-ochracea, oculis nigris, alis hyalinis flavescente-ochraceis, immaculatis, abdomine fusciscentis, marginibus segmentorum ochraceis.* (Long. corp. 3 lin. ; Exp. Alar. 11 lin.)

N. G. (569.) annulatus. *Steph. Catal.* 321. No. 3666.

Reddish-ochre: eyes black ; thorax rather dusky ; wings very transparent, pale immaculate, yellowish-ochre, the nervures distinct and somewhat darker ; posterior very pale at the base, and slightly iridescent ; abdomen fuscous, with the edges of the segments ochreous ; legs reddish-ochre, with dusky spurs and setæ ; antennæ pale reddish ochre.

Rare : found in June in Devonshire.

Sp. 5. flavipennis. *Rufescente-ochracea, oculis brunneis, alis subhyalinis tomento subaurato ornatis.* (Long. corp. 3 lin. ; Exp. Alar. 9½ lin.)

N. G. (569.) lutescens. *Steph. Catal.* 321. No. 3667.—Phr. flavipennis. *Pictet, p. 133. pl. xi. f. 8.*

Reddish-ochre: eyes brown ; wings transparent, pale ochreous, immaculate, clothed with a golden down ; nervures slightly darker ; abdomen greenish-brown, darkest above ; legs very pale ochreous, with black spines.

Apparently rare : taken, in June, in Devonshire.

Sp. 6. *nigricornis*. *Ochracea, oculis antennisque picco-nigris, capite thoraceque supra brunneis, alis anticis pallide ochraceis, albido indistinctè irroratis.* (Long, corp. 4 lin.; Exp. Alar. 10—11 lin.)

N. G. (569.) *picicornis*. *Steph. Catal. 321. No. 3668.*—*Phr. nigricornis.* *Pictet, p. 136. pl. vi. f. 4.*

Ochreous: antennæ and eyes pitchy-black; head and thorax brown above; palpi ochreous; anterior wings broad, pale ochreous, with minute indistinct whitish dots, especially towards the inner margin, which is darker than the anterior; towards the base are some larger and more distinct spots, with a larger one in the middle, and another on the inner edge, where the nervures decussate; legs pale, with dull black spines.

Not a common species: found, in the vicinity of London, in June.

Sp. 7. *dubia*. *Rufescente-ochracea, antennis brunneo annulatis, oculis fuscis, alis anticis pubescentibus, fusco-ochraceis punctis remotis pallidioribus.* (Long, corp. 5½ lin.; Exp. Alar. 12 lin.)

N. G. (569.) *dubius*. *Steph. Catal. 321. No. 3664.*

Reddish-ochreous: antennæ annulated with brown; eyes fuscous; anterior wings very pubescent, slightly granulated, ochreous-brown, with the nervures darker, the areolets minutely sprinkled with remote paler dots; the hinder angle is somewhat dilated; posterior wings hyaline, pale, with a faint ochreous tinge, the nervures and apex distinctly ochreous; legs pale ochreous, with black spines.

This remarkable insect makes a near approach to the following genus, but differs in having the wings less distinctly rounded at the apex, and somewhat longer and narrower.

Also an uncommon species: found, in June, in the vicinity of the metropolis.

#### GENUS XXXIV.—CHÆTOPTERYX\* *mih*i.

*Antennæ* longer than the body and the wings, very slender, simple: *palpi* slightly pubescent, also very slender; maxillary 5-jointed, the two basal joints short, the other three long and slender, the apical one slender and acute; labial 3-articulate, the terminal joint obtuse ovate: *head* small: *eyes* large, prominent: *thorax* ovate: *wings* much deflexed during repose; anterior short, broad, much rounded at the apex, and very pubescent, the costa rounded in the middle and deeply ciliated, the disc granulated, and producing long rigid setæ; posterior wings less pilose, short, very broad and ample, faintly notched on the hinder margin: *abdomen* short, robust,

\* *χαίτη* seta; *πτερυξ* penna.

narrowed at the base, dilated at the apex, of the female longer, more robust and very obtuse: *legs* long, rather stout: *femora* simple: *tibiæ* and *tarsi* furnished with numerous short spines, the former with a pair of spurs at the apex of each, and the four hinder ones each with a second pair below the middle.

The insects of this genus may be known, not only by a slight diversity in the form of the palpi, but especially by having the anterior wings very broad, granulated, beset throughout with rigid erect bristles, very pubescent, and rounded at the apex: in fact, their entire habit is very dissimilar to that of any other genus of this family: two species only are known.

Sp. 1. *villosa*. *Fulvescente-ochracea, antennis brunneis, alis anticis subgranulatis ochraceo-brunneis punctis duobus pallidis.* (Long. corp.  $4\frac{1}{2}$ — $5\frac{1}{2}$  lin.; Exp. Alar. 10—12 lin.)

Phr. *villosa*. *Fabricius*.—Chæ. *villosa*. *Steph. Catal.* 321. No. 3669.

Of a tawny-ochreous, darker above: eyes black; antennæ brown; anterior wings ochreous-brown, with the nervures slightly prominent and tubercular, furnished with distinct, long, silky, blackish hairs, longest on the inner margin, the membrane also bearing minute tubercles, with a pale dot towards the hinder angle on the inner margin, and another above it; posterior wings very transparent; abdomen ochreous; legs pale ochreous, with black spines.

Larva with the five anterior segments brown, the remainder and legs ochreous.

Not uncommon, in July and August, within the metropolitan district, especially in the vicinity of Hertford.

Sp. 2. *brevipennis*. *Ochracca, supra brunnescens, abdomine nigricante, alis anticis tuberculatis fulvescente-ochraceis punctis tribus minutissimis pallidis.* (Long. corp. 3— $3\frac{1}{2}$  lin.; Exp. Alar. 9—11 lin.)

Lim. *brevipennis*. *Phil. Mag. (Curtis) v. iv. p. 125.*—Phr. *tuberculosa*. *Pictet, p. 140. pl. vii. f. 4.*

Ochreous, brownish above: eyes black; antennæ brown; anterior wings very broad and rounded, rough and tawny-ochreous, with the nervures very prominent and tubercular, clothed with long silky black hairs, the membrane also slightly tubercular, with a pale spot at the base of the 3rd marginal areolet, another below the centre, and a third towards the hinder angle, the hinder margin darkish, with pale dots; abdomen greenish-black, with its apex ochreous; legs pale ochreous, with black spines.

Larva resembling that of the foregoing species in colour, &c.

Also common in the vicinity of London, as at Hertford, Ripley, Guildford, &c.; found also in Suffolk and in Cambridgeshire.

GENUS XXXV.—NEURONIA, *Leach.*

*Antennæ* longer than the body, but shorter than the wings, very stout, pubescent: *palpi* very pubescent and pilose; maxillary longest, 5-jointed, the three basal joints short, the two apical ones longer, stout, ovate; labial 3-articulate, the basal joints slender, the terminal one robust, ovate: *head* broad, transverse, with a tuft of hair between the antennæ: *eyes* slightly prominent: *collar* pilose: *thorax* ample, subovate: *wings* very slightly pilose, shining, and hyaline, furnished with coarse and numerous nervures, anterior with the costal one in place of the stigma, suddenly curved; at the apex of the disc is a short ovate areolet; posterior smaller, rounded on the hinder margin: *body* robust, cylindric, of the male with the apex broadly expanded, of the female larger and obtuse: *legs* rather slender and elongate: *tibiæ* not armed with spines, but all furnished at the apex with a pair of long spurs, the four hinder ones also with a pair below the middle: *tarsi* also spineless.

This genus—the last of the order—is rendered conspicuous by the remarkable transparency of its wings, which are very slightly pilose, but are furnished with strong and very distinct nervures, of which the second longitudinal one is abruptly waved towards the apex, in place of the usual stigma, as in the genera *Phryganea* and *Halesus*; but from these genera the structure and form of the wings, exclusively of the diversity in the palpi, and their stout, short antennæ, remove them.

Sp. 1. *fusca*. PLATE XXXIV. f. 2.—*Nigricante-fusca, tibiis posticis ochraceis, alis subochraceo-fuscescentibus, nervis piceis.* (Long. corp. 5—7 lin.; Exp. Alar. 10—15 lin.)

*Phry. fusca.* *Linné?*—*Neu. fusca.* *Steph. Catal.* 323. No. 3733.

Blackish-brown: collar clothed with griseous hairs; anterior wings of a dark uniform fuscous, with an ochreous tinge and pitchy nervures; posterior rather paler and more transparent, especially at the base; legs blackish-brown, with the hinder tibiæ bright yellowish-ochreous.

This appears to be a scarce insect: it is met with occasionally within the metropolitan district in the summer.

## A P P E N D I X.

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Page 5. *FORFICULA borealis*. *Curtis, v. xii. pl. 560.*

Mr. Curtis, in the folio quoted, says, "Mr. Stephens gives the *F. media* of Marsham as a variety of this species," after stating that the British Forficulidæ have been divided into four genera, as I alone have done in p. 4; and if the reader will refer to p. 5, he will find that I give *F. media* as a distinct species, the forceps of which I have figured from Marsham's original insect.

Page 20.† *LOCUSTA Christii*. *Curtis, v. xiii. pl. 608.*—" *Pallide viridis, lineis 2-bus faciei mandibulisque cærulescentibus, elytris maculatis, femoribus posterioribus subtus, internè cærulescentibus, nigro maculatis.* (Long. corp. 2 unc. 4 lin.; Exp. Alar. — unc. — lin.)

"Pea-green: antennæ subferruginous; an ochreous and purplish longitudinal line behind each eye, face with two lines down the middle, and the mandibles blue-black; thorax triangular behind, with a sharp convex carina; abdomen reddish-brown, marbled with greenish-yellow; elytra more or less spotted, nervures reddish-brown, variegated with green towards the base; wings delicate yellow, inclining to green, the apical portion more grey, nervures brown and piceous, reticulations ochreous; hinder legs pale green; thighs blue internally beneath, with a large black space from the base to the middle, a blackish band beyond it, and a ring near the apex, which is brown above; spines of tibiæ tipped with black; tarsi grey."—*Curtis, l. c.*

"Taken by Wm. Chistry, Esq. upon some French-beans in a garden on the Clapham-road, in July, 1826."—*Curtis, l. c.*

Page 46. *ECTOBIUS lapponicus*—*Blatta lapponica*, *Curtis, v. xii. pl. 556*, where it is stated "there are 11 species (of *Blatta*) registered as inhabitants of England."—I had previously described 12, for although the date of the plate is July 1, it was not published till August 1.

Page 90. *CORDULIA Curtisii*.—*Loudon, v. vii. p. 60.*—*Curtis, v. xiii. pl. 616.*—The reference to Loudon's Magazine, by some accident, is erroneously stated in this page.

Page 184. *SERICOSTOMA Spencii*.—The death of Dr. Leach, here referred to, took place at Genoa on the 24th of August last, from an attack of cholera, after an illness of seven hours only, in, I believe, the 47th year of his age.

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PAGE	LINE	for	by	read	
3	8	—	<i>me'ytra</i>	—	<i>elytra</i> .
3	21	—	as the	—	at the.
7	9	—	<i>Hagenbach</i>	—	<i>Hagenbach</i> .
20	8	—	Zetterstedt	—	Zetterstedt (and elsewhere).
37	13	—	ECANTHUS	—	ECANTHUS.
30	10	—	family	—	group.
—	—	—	genera	—	families.
53	30	—	ANISOPTERA	—	ANISOPTERINA.
58	26	—	nigriscans	—	nigriscans.
63	18	—	<i>nerveis</i>	—	<i>nerveis</i> (and in other places).
64	12	—	<i>stigmata subochracea</i>	—	<i>stigmata subochraceo</i> .
—	21	—	<i>niger</i>	—	<i>nigris</i> .
97	11	—	portions	—	portion.
—	13	—	four	—	few.
103	4	from bottom	joint:	—	joint rose:
113	4	for	CONIOPTERYX, Leach.	—	CONIOPTERYX, Curtis.
151	2	—	Layser Murney	read	Layser Marney.
155	6	—	hairy	—	horny.
171	34	—	azure	—	orange.
183	30	—	<i>innocentulus</i>	—	<i>innocentalis</i> .
199	26	—	iridescent	—	indistinct.

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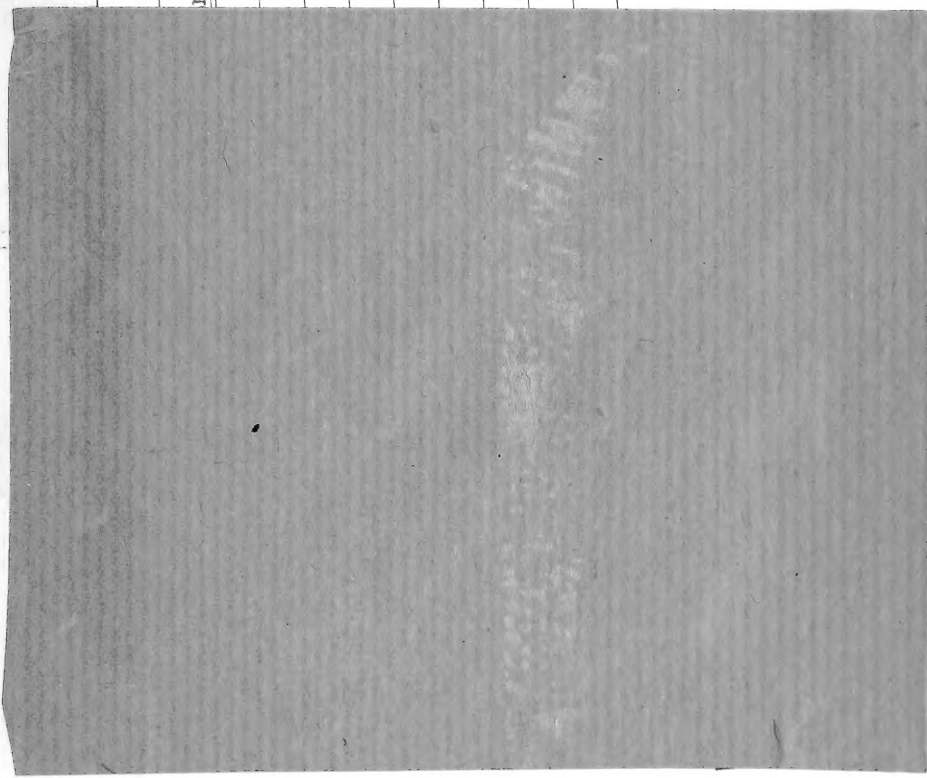
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